Consultancy for Resettlement & Rehabilitation Action Plan and Environmental Management Plan (RRAP & EMP) for World Bank aided project of HVPNL

Package G-3
LILO of 1 ckt. of 400 kV D/Cc Hisar- PS Fatehabad line at 400 kV sub-station Nuh iyawali with twin moose ACS R - 50 km

Draft Environmental Management Plan (EMP)

December 2008
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1.0 INTRODUCTION

11 General

Haryana became a new state of India on 1st November, 1966 with Chandigarh its capital, and since then it has made spectacular progress to become one of the most prosperous states of India. Haryana’s geographical proximity to the national capital New Delhi and, a well-developed telecom and transport infrastructure, are its major strengths in the economic field.

Haryana is a small state in north India. It has a total of 81 cities and towns. It has 6,759 villages. For administrative purpose, the state is divided into four divisions - Ambala, Rohtak, Gurgaon and Hissar. Haryana is situated in the north between 27° 37’ to 30° 35’ latitude and between 74° 28’ to 77° 36’ longitude. Haryana has Uttar Pradesh (U.P) on its eastern border, Punjab on its western border, Uttrakhand, Himachal Pradesh & Shivalik Hills on its northern border and Delhi, Rajasthan and Aravali Hills on its southern border. The altitude of Haryana varies between 700 ft to 900 ft above the sea level. An area of 1,553 sq km is covered by forest.

Climate of Haryana is similar to other states of India lying in the northern plains. It is very hot in summer (up to a high of 50 deg Celsius) and cold in winters (down to a low of 1 deg Celsius). The hottest months are May and June and the coldest being December and January. Rainfall is varied, with Shivalik Hills region being the wettest and the Aravali Hills region being the driest. About 80% of the rainfall occurs in the monsoon season (July-September) and sometimes causes local flooding.

The State’s power sector was restructured on August 14th, 1998. The Haryana State Electricity Board (HSEB) was reorganized into two State owned corporations namely Haryana Vidyut Prasaran Nigam Ltd. (HVPNL) and Haryana Power Generation Corporation Ltd (HPGCL) on 14.08.1998. HPGCL was made responsible for operation & maintenance of State’s owned power generating stations. HVPNL was entrusted the power transmission and distribution functions. Simultaneously, an independent regulatory body i.e. Haryana Electricity Regulatory Commission, was constituted on 16.08.1998 to aid and advise the State Government on the development of the power sector and take appropriate measures to balance the interest of various stake holders in the power sector namely electricity consumers, power entities and generation companies, etc.

The growth of power demand in Haryana on the average has been of the order of 7 to 8% in the past but now it is in the range of 14% for the state as a whole, whereas in certain pockets like Gurgaon and other industrial belts, this rate has touched a high level of 20-25%. Looking at the aspirations of the consumers, their paying capability, expectations and electrical equipment available for consumer use, the rate of growth is likely to be higher than the rate which existed a few years back.
1.2 Brief Profile of HVPNL

Haryana power sector comprises of four wholly State-owned Nigams i.e. Haryana Power Generation Corporation Ltd (HPGCL), Haryana Vidyut Prasaran Nigam Ltd. (HVPNL), Uttar Haryana Vidyut Prasaran Nigam Ltd. (UHBVNL) & Dakshin Haryana Vidyut Prasaran Nigam Ltd. (DHBVNL), which are responsible for power generation, transmission and distribution in the State. Earlier, all these activities were performed by the erstwhile Haryana State Electricity Board.

HVPNL is committed to provide a clean environment, ecology and sustainable development in all its developmental activities. All the transmission projects are, therefore, very carefully planned, following the stipulated guidelines, to ensure that the least possible, if any, adverse environmental & social impacts are caused at the same time reliability, security and economy are also not compromised with. HVPNL also ensures that natural resources, natural habitat, cultural habitat, historical monuments/ structures etc. are conserved for the future generations.

HVPNL has within the overall corporate ethics of avoidance, minimization and alleviation has now developed its Corporate Environmental and Social Policy and Procedures (ESPP) to address the environment and socio-economic issues arising from its activities. The ESPP outlines HVPNL's approach and commitment to deal with environmental and social issues, relating to its transmission projects, and lays out management procedures and protocols to alleviate the same. The ESPP includes framework for identification, assessment, and management of environmental and social concerns at both organizational and project levels.

HVPNL believes that the ESPP is an energetic and living document, which shall be upgraded with the changes in the social and environmental governance in the state and modified in the light of the experiences gained with field implementation of the HVPNL projects. It is the logical vehicle to give a human face to the corporate functioning and moves away from classical cost-benefit approach to the larger realm of corporate social responsibility, while mainstreaming and up scaling environmental and social concerns. It is dedicated to the firm commitment of the HVPNL to the paradigm of sustainable development and appropriate processes.

1.3 Purpose of the Project

Demand for electric power in Haryana is likely to grow at over 10% in the coming years. To help meet this demand, Haryana Power System Improvement Project aims to improve the transmission and distribution scenario in Haryana through strategic investments in the infrastructure and institutions with loan assistance from the World Bank. The project will be implemented through HVPNL, UHVBNL, and DHVBNL.

At present HVPNL have 256 Grid substations of voltage rating 66 kV to 220 kV along with 7844 Km of associated transmission lines. In addition there are 6 nos. 400 kV substations.
of PGCIL 2 Nos. 400 kV & 8 Nos 220 kV substation of Bhakra Beas Management Board (BBMB) located in Haryana which are catering to the load requirements of distribution companies. The abstract of the Grid substations is given in Table 1.0.

Table 1.0: Abstract of the Grid substations

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of substation</th>
<th>No. of substation as on 31.03.2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>400 kV substation</td>
<td>6 (PGCIL) + 2 (BBMB) = 8</td>
</tr>
<tr>
<td>2</td>
<td>220 kV substation</td>
<td>32 + 8* = 40</td>
</tr>
<tr>
<td>3</td>
<td>132 kV substation</td>
<td>120</td>
</tr>
<tr>
<td>4</td>
<td>66 kV substation</td>
<td>104</td>
</tr>
</tbody>
</table>

Source: ESPP, September 2008

*including 8 No. 220 kV substations of Bhakra Beas Management Board (BBMB) in Haryana area. For meeting power load growth & evacuation of the proposed capacity (expected 14 % growth) addition of power, Haryana Vidyut Prasaran Nigam Limited (HVPNL) has made a comprehensive transmission expansion program at an estimated cost of Rs. 7643 crore during 11th five year plan, which is given in Table 1.1.

Table 1.1: Comprehensive capacity addition program under 11th five year plan

<table>
<thead>
<tr>
<th>Source of installed capacity</th>
<th>2007-08</th>
<th>2008-09</th>
<th>2009-10</th>
<th>2010-11</th>
<th>2011-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Owned Projects</td>
<td>1587.40</td>
<td>1587.40</td>
<td>1587.40</td>
<td>1587.40</td>
<td>1587.40</td>
</tr>
<tr>
<td>Central Sector Share</td>
<td>1514.40</td>
<td>1514.40</td>
<td>1514.40</td>
<td>1514.40</td>
<td>1514.40</td>
</tr>
<tr>
<td>Shared Projects - BBMB &amp; IP</td>
<td>937.50</td>
<td>937.50</td>
<td>937.50</td>
<td>937.50</td>
<td>937.50</td>
</tr>
<tr>
<td>DCRTPP Yamuna Nagar</td>
<td>600.00</td>
<td>600.00</td>
<td>600.00</td>
<td>600.00</td>
<td>600.00</td>
</tr>
<tr>
<td>Hisar TPS (600X2) Mega Plant Status</td>
<td></td>
<td></td>
<td>1100.00</td>
<td>1100.00</td>
<td>1100.00</td>
</tr>
<tr>
<td>Jhajjar Case- II ~ (1150 ± 15%)*</td>
<td></td>
<td></td>
<td>1150.00</td>
<td>1150.00</td>
<td></td>
</tr>
<tr>
<td>Aravali STPS, Jhajjar (500*3) {Haryana: Delhi - 50:50}</td>
<td></td>
<td></td>
<td>750.00</td>
<td>750.00</td>
<td></td>
</tr>
<tr>
<td>Additional availability through PPA with IPPs/CPSU</td>
<td>111.70</td>
<td>233.70</td>
<td>876.70</td>
<td>1126.70</td>
<td>1930.70</td>
</tr>
<tr>
<td>Yamuna Nagar Extension</td>
<td>300.00</td>
<td>300.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faridabad Gas</td>
<td></td>
<td></td>
<td>432.00</td>
<td>432.00</td>
<td></td>
</tr>
<tr>
<td>Total Capacity (MW)</td>
<td>4751.00</td>
<td>4873.00</td>
<td>6616.00</td>
<td>9498.00</td>
<td>10302.0</td>
</tr>
<tr>
<td>Total Available Capacity (at 80% PLF)</td>
<td>3800.80</td>
<td>3898.40</td>
<td>5292.80</td>
<td>7598.40</td>
<td>8241.60</td>
</tr>
</tbody>
</table>

Source: ESPP, September 2008

1.4 Environmental and Social Policy & Procedures (ESPP) of HVPNL

HVPNL is committed to identify, assess, and manage environmental and social concerns at both organization and project levels by strictly following the basic principles of avoidance, minimization and mitigation of environmental & social impacts with the improvement of Management System and introduction of State of the Art and proven technologies. The
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

Power transmission system includes and incorporates the transmission line, its right of way (ROW), Switchyards, Sub-stations. The principle structure of the transmission line includes the line itself, conductors, towers supports etc. The voltage capacity of the transmission line affects the sizes required for principal structures. The ROW in which transmission line is constructed ranges in width from 18 meters (66 kV) to 52 meters (for 400 kV line). The key principals of HVPNL environmental and social policy (ESPP) are:

- Avoid carrying out operations in environmentally sensitive areas such as forests, national park, and biosphere reserves;
- Consider environmental implications of location, terrain, and sensitive areas in impact identification and mitigate these with innovative / practical engineering solutions;
- Application of efficient and safe technology practices;
- Abate pollution in all its activities and operations;
- Minimizing energy losses and promote energy efficiency in all activities;
- Avoid any disruption of socially sensitive areas with regard to human habitation and areas of cultural significance;
- Wherever losses are suffered, assistance will be provided to the affected persons to improve or at least regain their living standards;
- Consultations will be held among local population regarding finalization of proposed route of the transmission lines and sub-stations;
- Ensure in delivering R&R entitlements and compensation for lost assets based on HVPNL’s entitlement framework;
- Involuntary resettlement will be avoided or minimized by exploring all viable alternative project designs;
- All adversely affected persons including those without title to land will be provided assistance to improve or regain their living standards to the pre project levels;
- Special attention will be paid for the improvement of living standards of marginalized and vulnerable groups;
- Resettlement Action Plan (RAP) will be prepared in close consultation with the affected families to ensure their acceptability as well as timely delivery of entitlements and assistance;
- If any person’s remaining land holding becomes operationally non viable, the entire holding will be acquired and compensated accordingly, if the Affected Family (AF) desires. A similar approach will be adopted for structures affected partially; and
- Physical works will not commence on any portion of land before compensation and assistance to the affected population have been provided in accordance with the policy framework.
1.5 Policy, Legal and Regulatory Framework

As per provision contained in Haryana Electricity Reforms Act 1997 & Electricity Act, 2003 Acts, HVPNL has authority to install transmission towers in any kind of land.


1.5.1 Salient Features of the Forest (Conservation) Act, 1980

Investigations and surveys carried out in connection with development projects such as transmission lines, hydro-electric projects, seismic surveys, exploration for oil drilling etc. will not attract the provisions of the Act as long as these surveys do not involve any clearing of forest or cutting of trees, and operations are restricted to clearing of bushes and lopping of tree branches for purpose of sighting. If, however, investigations and surveys involve clearing of forest area or felling of trees, prior permission of the Central Government is mandatory. Notwithstanding the above, survey, investigation and exploration shall not be carried out in wildlife sanctuaries, national parks and sample plots demarcated by the Forest Department without obtaining the prior approval of the Central Government, whether or not felling of trees is involved.

The Forest (Conservation) Act, 1980 provides for the conservation of forests and regulating diversion of forestlands for non-forestry purposes. When transmission projects fall within forestlands, prior clearance is required from relevant authorities under the Forest (Conservation) Act, 1980. State governments cannot de-reserve any forestland or authorize its use for any non-forest purposes without approval from the Central government. There are three steps of forest clearance for Transmission line.

**(a) Route Alignment:**

To achieve this, route selection of transmission lines is undertaken in close consultation with representatives from the State Forest Departments and the Department of Revenue. Alterations are made to avoid environmentally sensitive areas and settlements at execution stage.

**(b) Right of Way (ROW):**

Right of Way (ROW) width depends on the line voltage. A maximum width of ROW for transmission lines on forest land and minimum clearances between conductors and trees to be adhered in route selection as specified in IS: 5613 and by the MOEF guidelines, which is given in Table 1.2.
Table 1.2: ROW clearance between Conductors and Trees

<table>
<thead>
<tr>
<th>Transmission Voltage (KV)</th>
<th>Max ROW (m)</th>
<th>Ground Clearance (m)</th>
<th>Minimum Clearance between Conductors &amp; Tops of Tree (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 kV</td>
<td>7</td>
<td>2.75</td>
<td>2.6</td>
</tr>
<tr>
<td>33 kV</td>
<td>15</td>
<td>3.70</td>
<td>2.8</td>
</tr>
<tr>
<td>66 kV</td>
<td>18</td>
<td>4.00</td>
<td>3.4</td>
</tr>
<tr>
<td>110 kV</td>
<td>22</td>
<td>4.00</td>
<td>5.7</td>
</tr>
<tr>
<td>132 kV</td>
<td>27</td>
<td>4.60</td>
<td>4.0</td>
</tr>
<tr>
<td>220 kV</td>
<td>35</td>
<td>5.50</td>
<td>4.6</td>
</tr>
<tr>
<td>400 kV</td>
<td>52</td>
<td>7.30</td>
<td>5.5</td>
</tr>
</tbody>
</table>

MoEF guidelines are available in Annexure- VII of ESPP, September, 2008.

(c) Formulation of Forest Proposal:

After finalization of route-alignment and ROW width, and if the ROW passes through forest area, HVPNL will submit the details in prescribed performa (Annexure-II of ESPP, September, 2008) to the respective Nodal Officer (Forest) of State Government. Nodal Officer will forward the details to the concerned Divisional Forest Officer (DFO) for formulation of forest proposal for processing of clearance under the Forest (Conservation) Act, 1980. The DFO will then survey the relevant forest area required for the construction of transmission line under the possible alternatives. The proposal will then be submitted to the State Forest Department and shall be forwarded to the Principal Chief Conservator of Forests (PCCF) in the state and finally to the State Secretariat. The State Government will then recommend the proposal for further processing and approval to:-

a) Concerned Regional Office of the MoEF, if the area involved is 40 hectare or less

b) MoEF, New Delhi if the area is more than 40 hectare

Proposal involving diversion of forest land up to 1 ha: In such cases, no alternate non-forest land is to be given by user agency. They are to deposit amount for compensatory afforestation equal to ten times the number of trees likely to be felled. If the forest land involved is without trees amount for compensatory afforestation @ 2500 plants per ha, will be deposited by the user agency.

Proposal involving diversion of forest land above 1 ha: In such case equivalent non forest land is also given by the user agency for compensatory afforestation along with the amount for compensatory afforestation

The MoEF approves the proposal in two stages. In principle or first stage approval is accorded with certain conditions depending upon the case. Second stage or final approval is accorded by the MoEF after receiving the compliance report from State Government. The Forest approval procedure is given in Figure 1.0.
Figure 1.0: Procedure for obtaining forest clearance
Compensatory Afforestation:

(i) Compensatory afforestation is one of the most important conditions stipulated by the Central Government while approving proposals for dereservation or diversion of forest land for non-forest uses. It is essential that with all such proposals, a comprehensive scheme for compensatory afforestation is formulated and submitted to the Central Government.

(ii) The detailed compensatory afforestation scheme along with details of non-forest/degraded forest area identified for compensatory afforestation, map, etc. is required to be submitted in the prescribed form.

Land for Compensatory Afforestation:

(i) Compensatory afforestation shall be done over equivalent area of non-forest land;

(ii) In the event that non-forest land of compensatory afforestation is not available in the same district, non-forest land for compensatory afforestation may be identified anywhere else in the State/UT as near as possible to the site of diversion, so as to minimise adverse impact on the micro-ecology of the area;

(iii) Where non-forest lands are not available or non-forest land is available in less extent to the forest area being diverted, compensatory afforestation may be carried out over degraded forest twice in extent to the area being diverted or to the difference between forest land being diverted and available non-forest land, as the case may be;

(iv) The non-availability of non-forest land for compensatory afforestation would be accepted by the Central Government only on the Certificate from the Chief Secretary to the State/UT Government to that effect; and

(v) The above compensatory afforestation may be raised over degraded forest land twice in extent of the forest area being diverted/de reserved in respect of laying of transmission lines upto 220 kV.

1.5.2 Salient Features of Environment (Protection) Act, 1986

The Environment (Protection) Act, 1986 is an umbrella legislation that provides a holistic framework for the protection and improvement to the environment. Environmental clearance is not applicable to Power transmission projects as per EIA Notification, 2006. Following Rules and Regulations under the Environmental (Protection) Act, 1986 are applicable during operation of HVPNL.

(i) Batteries (Management and Handling) Rules, 2001;

(ii) Hazardous Wastes (Management and Handling) Amendment Rules, 2003; and

1.5.3 Other Applicable Statutory Environmental Clearances

The applicability of environmental and other relevant rules and acts has been assessed. The Table 1.3 shows the clearances required during different stages of transmission line.

### Table - 1.3: Clearance Requirements for Transmission line

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Activity</th>
<th>Statute</th>
<th>Requirement</th>
<th>Competent Authority</th>
<th>Responsible Agency for Obtaining Clearance</th>
<th>Time Required</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre-Construction Stage (Responsibility: HPVNL, Haryana)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Forest Clearance</td>
<td>Forest Conservation Act 1980 &amp; MoEF Letter Dt. 18.02.1998</td>
<td>Acquisition of forest land for transmission line passing through forest</td>
<td>Local Community, State and MoEF</td>
<td>HPVNL, Haryana</td>
<td>Takes minimum 5-6 months, whereas the approval is not required as the proposed transmission line is not passing through forest land</td>
</tr>
<tr>
<td>2</td>
<td>Tree cutting from non-forest area</td>
<td>Forest Conservation Act 1980 &amp; MoEF Letter Dt. 18.02.1998</td>
<td>Permission for tree cutting due to proposed transmission line</td>
<td>Local Authority (DM/DC)</td>
<td>HPVNL, Haryana</td>
<td>2-3 months</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Construction Stage (Responsibility: Contractor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Engagement of labour</td>
<td>Labour Act</td>
<td>Labour license</td>
<td>Labour Commissioner</td>
<td>The Contractor</td>
<td>2-3 months</td>
</tr>
</tbody>
</table>

1.5.4 Declaration of eco-sensitive zones by Haryana Government

Haryana Government vide its letter No. 1471-Ft-4-2007/3281 dated 6.3.2007 has submitted a proposal to Ministry of Environment & Forests Government of India for declaration of ecosensitive zones around all the National parks & Wildlife Sanctuaries in the State as per Annexure-XI of ESPP. The notification of the eco-sensitive zone prohibiting certain activities is yet to be issued by Government of India under Environment Protection Act.

**National Parks include:**

(iv) Kalesar National Park, Yamunanagar and
(v) Sultanpur National Park, Gurgaon.

**Wildlife Sanctuaries includes:**

- Bhihdawas Sanctuary, Jhajjar;
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

(ii) Nahar sanctuary, Rewari;
(iii) Chhilchhila Sanctuary, Kurukshetra;
(iv) Bir Shikargarh Sanctuary, Panchkula;
(v) Abubshehar Sanctuary, Sirsa;
(vi) Saraswati Sanctuary, Kaithal & Kurukshetra;
(vii) Khaparwas Sanctuary Jhajjar;
(viii) Bir Bara Ban, Jind;
(ix) Kalesar Sanctuary, Yamunanagar and
(x) Morni Sanctuary, Panchkula.

Since the transmission line projects are non-polluting in nature and do not involve any disposal of solid waste, effluents and hazardous substances on land, air and water, so limited requirements of Environment (Protection) Act, 1986 are applicable. However, through a notification under the Environment (Protection) Act, 1986; Power Transmission Projects located in Aravali region in Gurgaon in Haryana will require Environmental Clearance from the MoEF.

None of the sub project under Package G3 is passing or close to above list

1.6 Project Categorisation

Categorization of project from environmental consideration is important to define the scope of further environmental study. It needs to be undertaken as part of the project preparation.

1.6.1 Project Categorisation as per MoEF

As per MoEF EIA Notification, dated 14th September 2006, the proposed project does not fall under any of the Categories. Therefore, the project would not require prior environmental clearance from MoEF, where as the Forest clearance is applicable as per Forest (Conservation) Act, 1980.

1.6.2 Project Categorisation as per World Bank

1.6.2.1 World Bank OP- 4.01 on Environmental Assessment

The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA. The Bank classifies the proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

(a) Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project’s potential negative and positive environmental impacts. compares them with those of feasible

\[\text{A potential impact is considered "sensitive" if it may be irreversible (e.g., lead to loss of a major natural habitat) or raise issues covered by OP 4.04, Natural Habitats; OP/BP 4.10, Indigenous Peoples; OP/BP 4.11 Physical Cultural Resources or OP 4.12, Involuntary Resettlement}\]
alternatives (including the “without project” situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally an EIA (or a suitably comprehensive regional or sectoral EA).

(b) **Category B**: A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas—including wetlands, forests, grasslands, and other natural habitats—are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A EA. Like Category A EA, it examines the project’s potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.

The findings and results of Category B EA are described in the project documentation (Project Appraisal Document and Project Information Document).

(c) **Category C**: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts.

Beyond screening, no further EA action is required for a Category C project.

(d) **Category FI**: A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

### 1.6.2.2 World Bank OP- 4.36 on Forest

This policy applies to the following types of Bank-financed investment projects:

(a) projects that have or may have impacts on the health and quality of forests;

(b) projects that affect the rights and welfare of people and their level of dependence upon or interaction with forests;

(c) projects that aim to bring about changes in the management, protection, or utilization of natural forests or plantations, whether they are publicly, privately, or communally owned.

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When the screening process determines, or national legislation requires, that any of the environmental issues identified warrant special attention, the findings and results of Category B EA may be set out in a separate report. Depending on the type of project and the nature and magnitude of the impacts, this report may include, for example, a limited environmental impact assessment, an environmental mitigation or management plan, an environmental audit, or a hazard assessment. For Category B projects that are not in environmentally sensitive areas and that present well-defined and well-understood issues of narrow scope, the Bank may accept alternative approaches for meeting EA requirements: for example, environmentally sound design criteria, siting criteria, or pollution standards for small-scale industrial plants or rural works; environmentally sound siting criteria, construction standards, or inspection procedures for housing projects; or environmentally sound operating procedures for road rehabilitation projects.

The rights and welfare of people affected by projects should be assessed in relation to the requirements and procedures of OP 4.10, Indigenous Peoples, OP 4.11, Physical Cultural Resources, and OP 4.12, Involuntary Resettlement.
1.6.2.3 World Bank OP- 4.11 on Physical Cultural Resources

The following projects are classified during the environmental screening process as Category A or B, and are subject to the provisions of this policy: (a) any project involving significant excavations, demolition, movement of earth, flooding, or other environmental changes; and (b) any project located in, or in the vicinity of, a physical cultural resources site recognized by the borrower. Projects specifically designed to support the management or conservation of physical cultural resources are individually reviewed, and are normally classified as Category A or B.

1.6.2.4 World Bank OP- 4.04 on Natural Habitats

The OP 4.04 pertains to policies for conservation of natural habitats such as National Park, Sanctuaries, Game Reserves, and Biosphere Zones. The bank does not support any project involving significant conversion of natural habitats unless there are no feasible alternatives for the project and its siting.

1.7 Categorisation of sub-project under package G3

As per Walkover survey, toposheet and site verification by a team of Social and Environmental Experts, none of the following have been found throughout the project area:

- Environmentally important areas such as
  - Protected Areas notified under the Wild Life (Protection) Act, 1972,
  - Critically Polluted areas as notified by the Central Pollution Control Board from time to time,
  - Notified Eco-sensitive areas,
  - Inter-State boundaries and international boundaries
- Human habitation

Therefore, it does not fall under Category A as per the World Bank (OP 4.01). During construction, there might be minimal impact on environment for the short run and there will be minor change in the land use pattern for the proposed route for transmission line. Hence, the proposed project has been considered as Category B project.

1.8 Requirement of Environmental Management Plan (EMP) for the Project

HVPNL undertakes its transmission activities within purview of Indian laws keeping in mind appropriate obligations and guidelines of statutory and World Bank, funding agency. Power transmission projects are not included in EIA Notification, 14th September, 2006; hence environment clearances are not required for power transmission projects and require limited environmental analysis and Environmental Management Plan (EMP) only.

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1 For definitions of project categories A and B, see OP 4.01, Environmental Assessment, paragraph 8
1.9 Scope of the Report

- To prepare Environmental Management Plan (EMP) in accordance with World Bank’s Operational Policies (OP) and Government of India Guidelines;
- To carry out the preliminary environmental screening to assess the direct and induced impacts due to the project;
- Comparison among candidate locations based on criteria in ESPP;
- Recommendation of the most suitable site/alignment;
- Assessment of magnitude of impact on selected site;
- Formulation of mitigation measures in line with ESPP to meet with site requirements;
- Quantification of works required to be executed through the Contractor (e.g. rain water harvesting structures), and other agencies (e.g. plantation through Forest Department); and
- To conduct adequate public consultation and the recommendations arising thereon.

1.10 Methodology

The methodology used for preparation of EMP is based on the MoEF EIA, dated 14th September 2006, World Bank’s Operational Policies (OP) and Government of India Guidelines.

The project was carried out through various defined activities as detailed in this section of the report. The methodology adopted includes the following work plan:

Activity 1: Kick-off Meeting with Superintending Engineer & Other Divisional Officers, HVPNL

A kick-off meeting was arranged between Superintending Engineer & Other Divisional Officers, HVPNL, Hissar circle and Social & Environmental Expert, SMEC on 08 December, 2008 to discuss the following:

(a) Walkover survey carried out by HPVNL;
(b) Proposed location of Sub-station and Transmission line; and
(c) Site visit schedule and related activities for the same.

Activity 2: Study of Walkover survey by Social & Environmental Experts of Transmission line

The blue print of Walkover survey has been collected by Social & Environmental Experts for the proposed transmission line (Nuhiyawali – Fatehabad) and discussion held with HVPNL officers.

Activity 3: Collection of Toposheets from HVPNL Office

Toposheets of districts through which the proposed transmission line from Nuhiyawali to Fatehabad will pass have been collected by a team of Social & Environmental Experts. The proposed transmission line has also been marked on Toposheets. Out of total 90 km
transmission line, toposheets for 75 km have been collected and rest 15 km is not available with the HVPNL.

**Activity 4: Site visit and public consultation (Two levels ± Institutional and Community level)**

Social & Environmental Experts have visited the proposed route for transmission line from Nuhiyawali to Fatehabad and collected the available details at site. The Public consultation has been done by Social & Environmental Experts at the nearby villages (with the villagers and Sarpanch wherever possible) of the proposed transmission line. Focused Group Discussion was adopted as a tool for public consultation.

**Activity 5: Preparation of EMP**

Based on collected data and site visit of proposed route for transmission line, an Environmental Management Plan (EMP) has been developed. The methodology is given in following flow chart.
2.0 DESCRIPTION OF THE PROJECT

21 The Project

The project under Package G-1, Package G-2, Package G-3 and Package G-4 of Substation and Transmission line of Faridabad and Hissar circle is given in Table 2.0

Table 2.0: Sub-station and Transmission line of Faridabad and Hissar circles

<table>
<thead>
<tr>
<th>Package</th>
<th>Sub-Project</th>
<th>Name of Circle/ Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G-1</td>
<td>400 kV Sub-station Nawada with 2 X315 MVA, 400/220 kV, 2X100 MVA, 220/66 kV, 1 X100 MVA, 220/33 kV &amp; 1 X1 MVA, 33/0.4 kV transformer</td>
<td>Faridabad</td>
</tr>
<tr>
<td>G-1</td>
<td>400 kV Sub-station Nuhiyawali with 2 X315 MVA, 400/220 kV, 2X100 MVA, 220/132 kV, 1X16/20 MVA, 132/11 kV transformer</td>
<td>Hissar</td>
</tr>
<tr>
<td>G-2</td>
<td>220 kV Sub-station Rangala Rajpur (Firozpurzirka) with 1 X100 MVA, 220/66 kV+1 X100 MVA, 220/33 kV transformers</td>
<td>Faridabad</td>
</tr>
<tr>
<td>G-2</td>
<td>220 kV Sub-station Samain (Tohana) with 2 X100 MVA, 220/132 kV+1 X100 MVA, 220/33 kV transformer</td>
<td>Hissar</td>
</tr>
<tr>
<td>Transmission Line</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Package</td>
<td>Sub-Project</td>
<td>Original Length (Km)</td>
</tr>
<tr>
<td>G-3</td>
<td>LILO of 1 ckt. of 400 kV D/Cc Hisar-PS Fatehabad line at 400 kV sub-station Nuhiyawali with twin moose ACSR</td>
<td>50</td>
</tr>
<tr>
<td>G-4</td>
<td>220 kV D/C Palwal-Rangala Rajpur (Firojpurzirka) with 0.4 sqm &quot;ACSR-Conductor&quot;</td>
<td>55</td>
</tr>
<tr>
<td>G-4</td>
<td>220 kV D/C line from Kironi (Fatehabad) to Samian (Tohana) with 0.5 sqm ACSR</td>
<td>40</td>
</tr>
<tr>
<td>G-4</td>
<td>220 kV D/C line from Samain (Tohana) to Masudpur (Hansi) with 0.5 sqm ACSR</td>
<td>50</td>
</tr>
<tr>
<td>G-4</td>
<td>Const. of 220 kV D/C line with 0.5 sqm &quot;ACSR&quot; from A-3 Palla to A-5 Faridabad Moose</td>
<td>15</td>
</tr>
<tr>
<td>G-4</td>
<td>LILO of 1 ckt. of 220 kV D/C A-3 Palla b A-5 (Faridabad) b A-5 line at proposed 220 kV sub-station A-4 Faridabad with 0.4 sqm ACSR</td>
<td>4</td>
</tr>
<tr>
<td>Total Length of proposed Transmission line</td>
<td></td>
<td>214</td>
</tr>
</tbody>
</table>
2.1.1 Sub-Project under Hissar circle - Transmission Line 400 KV D/Cc at from Nuhiyawali to Fatehabad (Package G-3)

The Transmission Line is proposed with LILO of 1 Ckt. of 400 kv D/Cc starting from Sub-station Nuhiyawali with twin moose ACSR and ending at Fatehabad, which is connected to Fatehabad Sub-station. The total length of the Transmission Line was 50 km as per the contract, where as the actual length is 90 km as per walkover survey. Following are the existing features along the proposed transmission line:

**Table 2.1: Existing features of the project Site for proposed 400 KV Transmission Line from Nuhiyawali to Fatehabad**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Parameters</th>
<th>Features along the proposed Transmission Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Required ROW for Transmission Line</td>
<td>52 m</td>
</tr>
<tr>
<td>2.</td>
<td>Name of the nearest Villages along the Transmission Line</td>
<td>Nuhiyawali, Pani Walla Mota, Dhuka Wali, Burj Bhangu, Maliwala, Nezadala Khurad, Nezadala Kalan, Darbi, Rasulpur, Bahudin, Bahuwali, Karhaul, Haripur, Dalautpur Fatehabad, Majra</td>
</tr>
<tr>
<td>3.</td>
<td>Terrain</td>
<td>Plain</td>
</tr>
<tr>
<td>4.</td>
<td>Existing Landuse</td>
<td>Mainly Agricultural Land</td>
</tr>
<tr>
<td>5.</td>
<td>Type of existing vegetation</td>
<td>Existing agricultural land is used for the cultivation of Wheat, Mustard, Grains, Vegetables, lentils, fruits etc.</td>
</tr>
<tr>
<td>6.</td>
<td>NH Crossing / Nearby NH</td>
<td>NH-10 Crossing</td>
</tr>
<tr>
<td>7.</td>
<td>Metal Road Crossing / PWD Road Crossing</td>
<td>Metal Road crossings near village Rasulpur, Bahudin, Karhaul, Haripur, Dalautpur PWD Road crossing near village Fatehabad</td>
</tr>
<tr>
<td>8.</td>
<td>Railway Crossing</td>
<td>One Railway Crossing near village Burj Bhangu</td>
</tr>
<tr>
<td>9.</td>
<td>Nearby River or Surface water/ Canal Crossing</td>
<td>Crossing of Rori Canal near village Burj Bhangu, crossing of Ghaggar River near village Nezadala Kalan</td>
</tr>
<tr>
<td>12.</td>
<td>Tree/ Crop and its extent of damage</td>
<td>Few numbers of trees has been observed along the NH-10 and metal road where the Transmission Line is crossing. The exact number of trees will be counted at the time of detailed survey. The permission for cutting / lopping of trees will be taken from State Forest Department before construction stage.</td>
</tr>
<tr>
<td>13.</td>
<td>Forest involvement</td>
<td>Nil</td>
</tr>
<tr>
<td>14.</td>
<td>Concerned Forest Department for necessary approval</td>
<td>District Forest Offices, Sirsa, Fatehabad and District, Haryana</td>
</tr>
<tr>
<td>15.</td>
<td>Type of Common Flora &amp; Fauna</td>
<td>Common flora- Rauni, Kkar, Khairi, Neem, Dhauk, Semal, Safeda, Pipal, Papri, Eucalyptus etc. Common fauna- monkey, domestic animals like dogs,</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Parameters</td>
<td>Features along the proposed Transmission Line</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>buffalo, cow, goats, common rodents, common reptiles, etc</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Common avifauna- Birds like Eagle, sparrow, crow, Pigeons, Common ducks, Common geese etc</td>
</tr>
<tr>
<td>16.</td>
<td>Endangered Species, if any</td>
<td>Nil</td>
</tr>
<tr>
<td>17.</td>
<td>Historical/ Cultural monuments</td>
<td>Nil</td>
</tr>
<tr>
<td>18.</td>
<td>Details of Tribal area if any</td>
<td>Nil</td>
</tr>
</tbody>
</table>

The existing condition of the project site along the proposed Transmission Line is given in *Annexure I*. The Transmission Line is also marked on the toposheet, which is given in *Annexure II*.

### 2.2 Justification for Selecting Alignment of proposed Transmission Line

*Table 2.2* justifies suitability of the proposed alignment of the transmission line from the environmental point of view.
Table 2.2: Justification for Selecting Alignment of proposed Transmission Line

<table>
<thead>
<tr>
<th>Stretches</th>
<th>Option 1 Finalized alignment</th>
<th>Option 2 If the alignment had been a straight line all through</th>
<th>Remarks Reason for Selecting Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starting Point at Nuhiyawali to Otu Feedar Canal</td>
<td>Agricultural lands with NH-10 crossing</td>
<td>Toposheet is not available for this stretch as it is restricted</td>
<td>There are few crossings such as metal road, railway line, minor canal, power line exist in Option 1 as well as Option 2, which have negligible impact on the surrounding environment.</td>
</tr>
</tbody>
</table>
| Otu Feedar Canal to Railway Crossing (Rewari Fazika Section) | Agricultural lands with 2 small feeder canal crossing, and a railway crossing | a. Same as option 1  
    b. Would have been very close to habitation at Burj Bhangu village | No settlements/ habitation are affected due to Option 1 alignment; where as many of the villages along the stretch would be fully or partially affected due to Option 2 alignment. |
| Railway Crossing (Rewari Fazika Section) to Bahudin | Agricultural lands with 5 metal road crossings, 2 power line crossings, 1 small river crossing and 2 minor distributory crossings | a. Same as option 1  
    b. The villages viz. Nezadala, Malliwal, Darbi would have been affected or very close to habitation | In between Bahudin and Bekhowali stretch, the proposed line would pass through Punjab State, if Option 2 would have been chosen which requires the Clearance from respective Department of Punjab State. |
| Bahudin to Bekhowali | Agricultural lands with 1 metal road and 1 power line crossing | a. Same as option 1  
    b. Would have been through Punjab State |  |
| Bekhowali to End point at Fatehabad | Agricultural lands with 5 metal road crossings, 3 power line crossings and 1 minor canal crossings | a. Same as option 1  
    b. Fatehabad Town, Karhaul and Majra villages would have been affected or very close to habitation |  |

Therefore, Option 1 is considered to be the best suitable option from the Social and Environmental point of view.
3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Environmental Impact during Construction Activities

3.1.1 Impact on Topography

During construction phase, minor changes of surface features and topography will occur at the tower erection site due to excavation, filling and cuts for leveling and along the ROW to facilitate construction.

3.1.2 Impact on land use

Minor change in land use pattern is envisaged during the construction phase. At present most of the land is agricultural land. During erection of tower at construction phase, crop productivity would be reduced.

3.1.3 Impact on Ambient Air Quality

During construction, activities will involve excavation for erection of tower and movement of vehicles carrying the construction material, etc. This will result in the emission of dust particles thereby affecting ambient air quality marginally at the site; this will be transitory. Spraying of water during excavation will reduce the dust emission to a great extent.

3.1.4 Impact on Ambient Noise level

During construction phase, the sources of noise pollution will be movement of vehicles transporting construction material and equipment to the site. Since, the project site is away from habitation, the villagers will not be affected due to increased noise level. The major construction work is expected to be carried out during the day time. Noise produced will not have a significant impact on existing ambient noise levels. Use of low-noise-generating equipment and restriction of construction activity for limited periods will minimize disturbance from noise pollution.

3.1.5 Impact on Water Quality

Erection of towers for transmission line will not have any major impact on surface and groundwater quality along the line. There is one Canal and one small river crossing throughout the stretch of 90 Km. During construction phase, total suspended solids, and some other chemical parameters like biochemical oxygen demand are likely to increase at the proposed towers just beside the river/ canal only because of possible runoff. This can be avoided by careful selection of location so that surface runoff does not enter the river.

3.1.6 Impact on Soil

Minimum loss of top soil is envisaged during various constructional activities like excavation of earth, land leveling etc. at the places where the towers will be erected for transmission line, which can be prevented with proper mitigation measures.
3.1.7 Impact on Flora

The initial construction work along the alignment involves land clearance, cutting, filling, and leveling; and may cause loss of vegetation. Care should be taken to avoid thick vegetation; towers should be located where the vegetation is thin. This will greatly minimize tree loss and compensation to be paid to tree owners. The project involves cutting of trees for selected location along the proposed transmission line. Hence, clearance for tree to be cut will be required from Forest Department and Compensatory Afforestation has to be done in association with the state Department of Forests. Trimming of trees should be done in consultation with the Department of Forests.

3.1.8 Impact on Fauna

The existing land use for the transmission line is not used for grazing by domestic animals like cow, buffalo, goats etc; hence minimal disturbance to local animals is anticipated during construction.

3.1.9 Impact on Health and Safety

HVPNL maintains safety as a top priority, apart from various labour laws dealing with workers’ health and safety. HVPNL has a dedicated health unit to oversee all health aspects of its project employees under the Director/ health and has framed safety codes in English & Hindi, guidelines/ checklist for workers’ safety as its personnel are exposed to live EHV apparatus and transmission lines. All supervisory technical official of HVPNL are required to pass safety code test. These guidelines/ codes include work permits, frequently asked questions and safety precautions for work on the transmission lines during construction and operation. An extract from safety code consisting of Dos & Don'ts for workers on substation & transmission line equipments are attached as Annexure-VIII of ESPP. There have been some concerns about the possibility of an increased risk of cancers from exposure to electromagnetic radiations from overhead transmission lines.

Constructional workers might be injured or meet accidents during constructional activities. Injuries, bruises, transmissible diseases, etc are expected to be observed due to unhygienic condition or without any protective measures. Therefore, Personal Protective Equipments (PPEs) like safety gloves, helmet, and noise protection will be provided during construction work. Necessary training regarding safety aspects to the personnel working at site and line inspectors will be provided.

Though the transmission lines will be out of reach of people, Local villagers shall be informed about the safety plan, necessary Do’s and Don'ts and necessary precautionary measures. The Contractor shall follow the National Electrical Code Handbook, 2008 for safety measures during construction phase of transmission line.
3.1.10 Impact on Socio-economic Condition

During construction, impacts on socio-economic condition envisaged are positive such as direct productivity in terms of electric supply and indirect productivity in terms of water supply, agricultural and employment generation.

3.1.11 Impact on Resettlement and Rehabilitation

There is no issue related to resettlement and rehabilitation as it has been avoided during the walkover survey. The rehabilitation & resettlement action plans (RRAP) Report (RRAP - Package G3) can be referred for further details.

3.1.12 Impact on Cultural Sites

No archaeological, historical, or culturally important sites are located near the proposed Transmission Line. During construction phase, if any cultural property is found, the work will be stopped immediately and the Contractor will immediately intimate to HPVNL about availability of cultural property. HPVNL will intimate to Department of Archeology & Museums, Haryana and approval will be taken to erect the tower for transmission line.

3.2 Environmental Impact during Operation Activities

3.2.1 Impact on Topography

Permanent topographical changes are envisaged during the operation phase.

3.2.2 Impact on land use

Minor change in land use pattern is envisaged during the operation phase. At present the portion of land where towers will be erected is mainly agricultural land. During operation phase, the same land can again be utilized for agriculture purpose. Therefore the impact on land use is very less, though permanent in nature.

3.2.3 Impact on Air Quality

No emission of air pollutants will be there from Transmission Line during operation. Therefore, the ambient air quality will not deteriorate.

3.2.4 Impact on Noise Level

During project operation, there will not be any change on ambient noise level. Thus, no impact on Ambient Noise level is envisaged.

3.2.5 Impact on Surface and ground Water Quality

The operation of the proposed transmission line and sub-station will not have any major impact on the surface and groundwater quality.

3.2.6 Impact on Soil

Negligible impact on soil is expected during the operational phase.
3.2.7 Impact on Flora

During the operational phase, growing of existing trees (where the line is passing above it) may increase the chance of fires due to electric sparks. Therefore, trimming of trees throughout the transmission line at regular interval is suggested to minimize the risk of accidents and proper maintenance. This will require regulatory approval from Forest Department.

3.2.8 Impact on fauna

Birds may also hit the transmission lines. Addition of deflectors will minimize this risk.

3.2.9 Impact on Health and Safety

Necessary precautions will be considered during design of towers wherever there are crossings such as metal road, NH, river/ canal and railway line, so that the risk can be minimized to the extent possible.

Villagers shall be informed about the safety plan, necessary Do’s and Don’ts and other precautionary measures. Personal protective equipment like safety gloves, helmet etc will be provided during maintenance work.

3.2.10 Impact on Socio-economic Condition

Rural and urban electrification is expected to have beneficial impacts on socioeconomic conditions. Anticipated light industrial development will trigger the economic growth. During operational phase, other infrastructural developments are likely to occur subsequently in the long run. Therefore, the overall impact on socio-economic condition will be positive for this project.
4.0 ENVIRONMENTAL MANAGEMENT PLAN

4.1 Components of EMP

The Environmental Management Plan (EMP) consists of a set of mitigation, monitoring and institutional measures to be taken for the project to avoid, minimize and mitigate adverse environmental impacts and enhance positive impacts. The plan also includes the action needed for implementation of these measures.

The major components of the Environmental Management Plan are:

- Mitigation of potentially adverse impacts;
- Monitoring during project implementation and operation; and
- Institutional arrangements.

4.2 Impacts, Mitigation and Institutional Responsibilities

The identified environmental issues and suggested mitigation measures with institutional arrangements for implementation, supervision and monitoring have been provided in matrix format ([Environmental Management Plan]) in Annexure III. These mitigation measures will be implemented as applicable for this subproject.

4.3 Institutional Frame work

HVPNL will have three levels of Institutional Bodies to oversee and implement ESPP. The bodies are constituted at Head Quarter level, Zonal level and Divisional level. Three levels Institutional body is given in Figure 4.0. *The EMP implementation may be done by HPVNL or an independent agency deployed by HPVNL.*

4.3.1 EMP implementation by HPVNL

The EMP implementation may be done through Divisional level. The role and responsibilities are defined in following section for Head Quarter level, Zonal level and Divisional level at HPVNL.

**At Head Quarter Level**

Environment, Resettlement and Rehabilitation Committee (ER&R) has been constituted under the chairmanship of Director Technical. The other members of the committee include the concerned Chief Engineer/TS and CE/P&D HVPN, Panchkula and Deputy Secretary/Projects. Deputy Secretary/Projects will be the Member Secretary of the R&R Committee.

**At Zonal Level**

The Environment & Social Monitoring Committee (ESMC) constitute of concerned Chief Engineer/TS, concerned Superintendent Engineer/TS, concerned Executive Engineer/TS, Land Acquisition Officer and two representatives of AFs and ESMC would report to Director Technical, HVPN, Panchkula.
At Divisional Level

In addition to above, Environment & Social Implementation Unit (ESIU) has also been constituted consisting of Executive Engineer/TS and SSE/SDO/ Construction of concerned place.

The role and functions of the ER&R, ESMC & ESIU include but are not limited to:

- Co-ordinate among various agencies involved in implementation of the ESPP programs;
- Monitor and review implementation of the ESPP Plans;
- Function as a grievance redressal body; and
- Provide overall guidance and leadership for smooth implementation of resettlement and rehabilitation plans.
- To review the ESPP Policy after every two years.

Figure 4.0: Three levels Institutional body at HVPNL
Major Responsibility of Environment & Social Implementation Unit (ESIU) at Divisional Level:

- Advise HVPNL on preparing reports to World Bank and other statutory bodies;
- Preparing procedures for implementing EMP;
- Review Contractor’s EMP, traffic management plan and safety plan and recommend for its approval;
- Provide training to HPVNL and Contractors’ staff on implementing environmental safeguard measures;
- Advise on obtaining various statutory environmental clearances on time;
- Conduct periodic field visits to examine environmental compliances and suggest corrective actions; and
- Any other issues as will be required to ensure environmental compliance.

4.3.2 EMP implementation by Independent Agency

HPVNL may engage Independent Agencies/Engineer for carrying out pollution monitoring activities. The Independent Agencies/Engineer will liaise with HPVNL environment unit to ensure that Contractor complies with the requirements of various environmental safeguard measures through supervision, monitoring and reporting on the same. Efforts must be made by Independent Agencies/Engineer to ensure that environmental mitigation and good-construction-practices are not only considered but actually implemented as integral component of each civil activity. It should be considered as day-to-day activity. The project may have a provision of part time input of Environmental Specialist within Independent Agencies/Engineer to supervise implementation of safeguard measures. His role would be more on advisory.

- Advise HPVNL on preparing reports to World Bank and other statutory bodies;
- Preparing procedures for implementing EMP;
- review Contractor’s EMP, traffic management plan and safety plan and recommend for its approval;
- provide training to HPVNL and Contractors’ staff on implementing environmental safeguard measures;
- advise on obtaining various statutory environmental clearances on time;
- conduct periodic field visits to examine environmental compliances and suggest corrective actions; and
- any other issues as will be required to ensure environmental compliance.

For ensuring that EMP is properly implemented, contract shall appoint a full time qualified and experienced Environmental and Safety Officer (ESO) from the commencement to completion of the project. The qualification and responsibilities of ESO as stipulated below should be considered.
The qualification of ESO will be as given below:

- Diploma or Graduate in Civil Engineering with post graduate specialization in Environmental Engineering or Environmental Science or equivalent;
- 5 to 10 years of total professional experience; and
- About 3 to 5 years of experience in similar projects i.e. management of environmental issues in design and construction of Sub-station / Transmission line.

The responsibilities of ESO of Contractor will include the following:

- Directly reporting to the Project Manager of the Contractor;
- Discussing various environmental issues and environmental mitigation, enhancement and monitoring actions with all concerned directly or indirectly;
- Prepare Contractor’s EMP and safety plan as part of their Work Program;
- Ensure contractor’s compliance with the EMP stipulations and conditions of statutory bodies;
- Conducting periodic environmental and safety training for contractor’s engineers, supervisors and workers;
- Preparing a registers for material sources, labour, pollution monitoring results, public complaint and as may be directed by the Engineer/ Independent Agencies;
- Assisting the HPVNL on various environmental monitoring and control activities including pollution monitoring; and
- Preparing and submitting monthly reports to Independent Agencies/ Engineer on status of implementation safeguard measures.

4.4 Capacity Building

Training and development of employees is integral for implementation of ESPP. Training will be imparted to the Superintending Engineer, Executive/ Non Executive, so as to enable them to understand the ESPP document and, to take necessary steps in right time of EMP implement. The training will be imparted at the HPVNL training institutes.

4.5 Environmental Budget

For Transmission Line, monitoring of environmental parameters is not necessary, since it does not have any impact on the air, water and noise quality. The tentative environmental budget for 400 KV Transmission Line in package G3 during construction phase has been calculated on lump sum basis. Assumptions have been made for number of tree to be planted (depending on length of the Transmission line) as a compensatory tree plantation due to tower erection and transmission lines. Exact budget shall be finalized after detailed survey.
### Table 4.0 Environmental Budget for Package G3

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Item Description</th>
<th>Quantity</th>
<th>Rate / Unit (Rs)</th>
<th>Amount (Rs.) for Total 90 Km Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Compensatory tree plantation (Considered for 1000 number of tree)- for 90 km</td>
<td>300</td>
<td>3,00,000</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>EMP Training at site</td>
<td></td>
<td>Lump sum</td>
<td>70,000</td>
</tr>
<tr>
<td></td>
<td><strong>Total Environmental Cost (A+B)</strong></td>
<td></td>
<td></td>
<td><strong>3,70,000</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Contingency charges @ 6% on total</strong></td>
<td></td>
<td></td>
<td><strong>22,200</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Total Environmental Budget for package G-3</strong></td>
<td></td>
<td></td>
<td><strong>392,200</strong></td>
</tr>
</tbody>
</table>
5.0 PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

5.1 Public consultation

Transmission projects do not create much environmental and social impact which may result in resistance from public. In spite of this, HVPNL has a firm commitment towards public awareness of possible social & environmental impacts, however minor these may be. As a first step, as per Section 29 of Electricity (Supply) Act-1948, public notification of the projects is published in local newspaper to invite objections from Public within two months.

Before finalization of ESPP document, due consultation with public at large was done by issuance of the notice in the newspaper by making available the draft ESPP at circle headquarters and website of the corporation. The comments / suggestion offered by the public were given due weightage and incorporated in the ESPP.

5.2 Purpose

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 incorporate possible mitigation measures based on local knowledge of the communities

5.3 Process Adopted

Public consultation is integral part of EMP report. Environmental and Social public consultations have been done at villages along the proposed transmission line. Local communities, who are primary stakeholders on environmental aspects, have been chosen for consultation. Focussed Group discussion with the local community is adopted as a tool for the consultation at Sub-stations. The local communities have 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.

5.4 Outcome of Public Consultation

Local communities are aware of the proposed transmission line. Most of the participants welcomed the project and requested for early completion with an expectation that they will get more power supply as a benefit out of the project. Specific environmental concerns and suggestions emerged from the local community consultation are summarised as follows:

- Majority of the villages receive only 5-6 hrs of electricity supply per day, leading to inconsistent and inadequate water supply and hampering the agricultural productivity of the region
The intermittent electric supply has led to installation of diesel generator sets at major places, this is not only having a negative impact of the environment but is also hampering the economics of the region as the cost of power from these diesel generator sets is much higher than the normal electric supply.

Small scale and household industries can be developed if they get adequate electric supply.

The consistent supply of electricity would have a positive impact on the education of children which is deprived off in the present situation.

Household works like ironing, refrigeration etc would also get a positive impact due to the project.

The documents on public consultation such as attendance sheet and photographs of the participants are provided in *Annexure IV* and *Annexure V* respectively.

### 5.5 Institutional Stake holder’s consultation

Stake holder’s consultation has been done to collect the following specific information.

- Walk over survey carried out for transmission line;
- Any ecological sensitive area passing through / close to transmission line;
- Project features related with environmental and social issues;
- Process for compensation for agricultural land in which the tower of Transmission Line will be erected and
- Toposheet of districts through which the transmission line is passing through.
6.0 FINDINGS AND RECOMMENDATION

6.1 Findings

The routes of proposed transmission lines have been selected as best possible option because of the following reasons:

- No Human habitation is affected
- Exclude Ecologically sensitive areas
- Environmentally important areas (wetlands, forest lands etc) has been avoided
- No grazing land in vicinity of the project area

The proposed line will pass through mainly agricultural land which belongs to nearby villagers. The conclusion emerged from the consultation with the villagers is that they have no objection in giving their land provided they are given proper compensation for their land and crop.

There are 5 metal road crossings, 1 NH crossing, 1 small river crossing, 1 canal crossing, 1 railway line crossing and 4 transmission line crossings throughout the stretch.

**Positive impacts of the project observed during public Consultation:**

- Better electric supply
- Employment opportunities
- Future developments in other infrastructure like water supply, drainage and sanitation, etc.
- Improvement in Education and Health
- Growing of small scale household industries

6.1.1 Specific Findings of sub-project

- The sub-project is categorized at Category B as per World Bank OP 4.01.
- The Transmission Line is proposed with LILO of 1 Ckt. of 400 kv D/Cc starting from Sub-station Nuhiyawali with twin moose ACSR and ending at Fatehabad, which is connected to Fatehabad Sub-station. The total length of the Transmission Line was 50 km as per the contract, where as the actual length is 90 km as per walkover survey and field verification;
- The Required ROW for Transmission Line is 52 meter;
- Few numbers of trees has been observed along the NH-10 and metal road, where the Transmission Line is crossing. The exact number of trees will be counted at the time of detailed survey. The permission for cutting / lopping of trees will be taken from State Forest Department before construction stage.
- No settlements/ habitation are affected due to proposed alignment of transmission line.
6.2 Recommendations

- As the transmission line project itself is termed as pollution free project, the impact on the environmental is minimal. The proposed transmission lines (alignment chosen during walkover survey) are the best suitable alignment from Environmental and Social point of view.

- The Specific Environmental Management Plan with EMP budget has been recommended during construction phase of the project. The responsibility for EMP implementation during construction stage has been suggested to HVPNRL/Independent Agency, deployed by HPVNL.

- The permission for cutting / lopping of trees will be taken from State Forest Department before construction stage.
Annexure - I

Photographs of project site along the proposed Transmission Line from Nuhivawali to Fatehabad

1. Site for Nuhiyawali Sub-station - Starting point of Transmission Line

2. Crossing of Rori Canal near village Burj Bhangu

3. NH-10 Crossing

4. Metal Road Crossing
5. crossing of Ghaggar River near village Nezadala Kalan

6. Crossing of Transmision Line

7. View of Agricultural Land through which the transmission line is passing

8. View nearby Village
Annexure  II Proposed Transmission Line on Toposheet
## Environment Management Plan for 400 kV D/Cc Transmission Line from Nuhiyawali to Fatehabad, Hissar Circle

### Annexure - III

<table>
<thead>
<tr>
<th>Project Activity / Stage</th>
<th>Potential Impact</th>
<th>Mitigation Measures</th>
<th>Parameters to be Monitored</th>
<th>Measurement and Frequency</th>
<th>Institutional responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre construction / Design Phase</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Selection of land | Change in land use | 1. Avoidance of forest land, cultivable land and builtup area.  
2. At least 500 m away from the surface water body  
3. Should be away from environmental sensitive locations such as school, colleges, hospitals, religious structures, monuments etc  
4. Minimum tree cutting  
5. Consultation with local villagers and relevant authorities | Land use of the site and nearby location | Part of detailed design survey | HVPNL |
| Location of transmission towers, alignment and design | 1. Exposure to safety related risks  
2. Impact on water bodies | 1. Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at site  
2. Avoidance of location of towers nearest to the water bodies at maximum extent possible | Tower Location and line alignment selection with respect to the nearest dwellings and water body | 1. Setback distance to nearest houses and water body one time  
Consultation with local villagers and landowners | HVPNL |
| Transmission line design | Exposure to electromagnetic interference | Transmission line design to comply with the limit of exposure to electromagnetic interference from overhead power lines | Electromagnetic field strength for proposed line design | Line design compliance with relevant standards one time | HVPNL |
| Transmission line through forest land / jungle | 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 needed | 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 | HVPNL |
<table>
<thead>
<tr>
<th>Project Activity / Stage</th>
<th>Potential Impact</th>
<th>Mitigation Measures</th>
<th>Parameters to be Monitored</th>
<th>Measurement and Frequency</th>
<th>Institutional responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socially, Culturally and Archaeologically sensitive area</td>
<td>Nearest distance</td>
<td>The site should be at appropriate distance (Minimum 500 m)</td>
<td>Nearest distance from these sensitive areas</td>
<td>The site should be at appropriate distance (Minimum 500 m)</td>
<td>HPVNL</td>
</tr>
<tr>
<td>Air Craft hazards from Tower</td>
<td>Nearest Air port and distance</td>
<td>The site should be at appropriate distance from nearest air port/air force station etc.</td>
<td>Distance from nearest Air port</td>
<td>The site should be at appropriate distance from nearest air port/air force station etc.</td>
<td>HPVNL</td>
</tr>
<tr>
<td>Equipments submerged under flood</td>
<td>Contamination of receptors (soil, water etc)</td>
<td>Avoid location of towers above high flood level</td>
<td>Land above high flood level</td>
<td>Base height as per flood design</td>
<td>HPVNL</td>
</tr>
<tr>
<td>Equipment Specifications and design parameters</td>
<td>Release of Chemicals and gases in receptors</td>
<td>1. Pollution Control equipments to be used in Substation transformers or other project facilities or equipment. 2. Process, equipment and system not to use CFCs including halon, and their use, if any, in existing processes and systems should be phased out and to be disposed off in a manner consistent with the requirement of the government</td>
<td>1. Transformers design 2. Process, equipment and design</td>
<td>Once during design phase</td>
<td>HPVNL</td>
</tr>
<tr>
<td>Designing drainage pattern</td>
<td>Impact on groundwater and nearby agricultural field</td>
<td>Appropriate mitigation measures to be adopted in the design itself to avoid accidental hazards in the drainage system</td>
<td>Ground condition for flow of drain water</td>
<td>Part of detailed design survey</td>
<td>HPVNL</td>
</tr>
<tr>
<td>Explosions / Fire</td>
<td>Hazards to life</td>
<td>1. Design to include modern fire control system / firewalls 2. Provision of fire fighting equipments close to transformers</td>
<td>Design in compliance with fire prevention and control codes</td>
<td>Design specification</td>
<td>HPVNL</td>
</tr>
<tr>
<td>Rainwater Harvesting</td>
<td>Positive Impact</td>
<td>No Mitigation measures</td>
<td>Part of detailed design survey</td>
<td>Part of detailed design survey</td>
<td>HPVNL</td>
</tr>
<tr>
<td>Project Activity / Stage</td>
<td>Potential Impact / Environment</td>
<td>Mitigation Measures</td>
<td>Parameters to be Monitored</td>
<td>Measurement and Frequency</td>
<td>Institutional Responsibility</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>Tree cutting on private land</td>
<td>Impact on environment</td>
<td>Tree plantation in case of cutting trees on private land</td>
<td>Number of tree to be cut</td>
<td></td>
<td>HPVNL</td>
</tr>
</tbody>
</table>

**Construction Phase**

| Equipment layout and installation | Noise and Vibration | 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 construction phase | Contractor/HPVNL |

| 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 | 1. Crop disturbance post harvest 2. Crops once | Contractor/HPVNL |

| Mechanized Construction | Noise and Vibration | 1. The machines should be properly fitted with silencers 2. Regular maintenance of constructional equipments 3. 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 | Contractor/HPVNL |

| 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) nearest dwelling or social institution | Use of established roads wherever possible every 2 weeks | HVPNL/Contractor |

Minimise need to acquire agriculture land |

| Tower location and line alignment selection (distance to agricultural land) | Consultation with local authorities and land owners - Once | HVPNL/Contractor |

<p>| 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 | Contractor/HPVNL |</p>
<table>
<thead>
<tr>
<th>Project Activity / Stage</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Temporary blockage of utilities</td>
<td>Overflows or discharge</td>
<td>Temporary filling of drains not to be permitted</td>
<td>Temporary fill placement (m³)</td>
<td>Regular cleaning of drains at every 4 weeks</td>
<td>Contractor/HPVNL</td>
</tr>
<tr>
<td>Site Clearance</td>
<td>Vegetation</td>
<td>Minimum disturbance to vegetation shall be permitted due to tower errection.</td>
<td>Vegetation marking and clearance control</td>
<td>Clearance strictly limited to target vegetation</td>
<td>Contractor/HPVNL</td>
</tr>
<tr>
<td>Tree cutting or Trimming of trees within ROW</td>
<td>1. Fire hazards, 2. Loss of vegetation and biodiversity</td>
<td>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 the each tree felled.</td>
<td>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 the each tree felled.</td>
<td>1. Presence of target species in ROW following vegetation clearance - once 2. No. of trees planted as compensatory afforestation</td>
<td>Contractor/HPVNL</td>
</tr>
<tr>
<td>Encroachment into precious ecological area</td>
<td>Loss of precious ecological values/damages to precious species</td>
<td>Avoid encroachment by careful site and alignment selection</td>
<td>Tower location and line alignment selection (distance to nearest designated ecological protection area)</td>
<td>Consultation with local forest authorities to avoid / minimize forest involvement-Once</td>
<td>Contractor/HPVNL</td>
</tr>
<tr>
<td>Transmission line through forest land</td>
<td>Deforestation and loss of biodiversity</td>
<td>By careful site and alignment selection</td>
<td>Line alignment selection (distance to nearest protected or reserve forest)</td>
<td>Sitting and alignment survey/ design- Local authorities-Once</td>
<td>Contractor/HPVNL</td>
</tr>
<tr>
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<tr>
<td>Project Activity / Stage</td>
<td>Potential Impact</td>
<td>Mitigation Measures</td>
<td>Parameters to be Monitored</td>
<td>Measurement and Frequency</td>
<td>Institutional responsibility</td>
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<td>-------------------------------------------------------------------------------------</td>
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<td>----------------------------------</td>
</tr>
<tr>
<td>Tower construction- Disposal of surplus Earthwork/ fill</td>
<td>1. Accidental runoff and 2. Solid waste disposal can cause groundwater contamination</td>
<td>1. Excess fill from tower foundations excavation disposed of next to roads or around houses, in agreement with the local community / landowner 2. Regular check over accidental spillage 3. Excavated unsuitable material shall be disposed off at proper location</td>
<td>1. Type and quantity of spillage 2. Soil disposal location and volume (m³)</td>
<td>1. Appropriate fill disposal sites- every two weeks 2. Acceptable soil disposal sites- every 2 weeks.</td>
<td>Contractor/ HPVNL</td>
</tr>
<tr>
<td>Storage of constructional materials</td>
<td>Accidental contamination in groundwater</td>
<td>Fuel and other hazardous materials to be stored securely.</td>
<td>Location of hazardous material, spill reports (type of chemical spilled and quantity, etc)</td>
<td>Fuel storage location and regular check over the same</td>
<td>Contractor/ HPVNL</td>
</tr>
<tr>
<td>Provision of facilities to the constructional workers</td>
<td>Contamination of receptors (land, air, water)</td>
<td>Proper sanitation, water supply and waste disposal facilities</td>
<td>Amenities of workforce facilities</td>
<td>Presence of proper sanitation, water supply and waste disposal facilities</td>
<td>Contractor/ HPVNL</td>
</tr>
<tr>
<td>Inadequate Construction stage monitoring</td>
<td>Likely to maximize damages</td>
<td>1. Training of environmental monitoring personnel 2. Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental</td>
<td>1. Training Schedules 2. Respective contract checklist and remedial actions taken</td>
<td>1. Number of programs attended by each person once a year 2. Submission of duty completed checklists of all contracts for</td>
<td>Contractor/ HPVNL</td>
</tr>
</tbody>
</table>
### Project Activity / Stage

<table>
<thead>
<tr>
<th>Potential Impact</th>
<th>Mitigation Measures</th>
<th>Parameters to be Monitored</th>
<th>Measurement and Frequency</th>
<th>Institutional Responsibility</th>
</tr>
</thead>
</table>
| Encroachment to cultivable land               | 1. Irrigation facilities not to be disturbed  
2. Prevent / preserve top soil just after construction  
3. Compensation to the farmers for the loss in production                                                                 | 1. Status and usage of existing facilities  
2. Implementation of compensation being paid for damaged crops | each site – once                                | Consultation with land owners and local villagers | HPVNL                       |

### Operational Phase

| Workers’ health and safety                     | 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 | HPVNL                                      |
| Electric Shock hazards                         | 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                                  | HPVNL                                      |
| Transmission Line maintenance                  | Transmission line design to comply with the limits of electromagnetic interference from overhead power lines | Required ground clearance (meters) | Ground clearance - Once                        | HPVNL                                      |
| Operation and maintenance staff skills less than acceptable | 1. Adequate training to all the staff  
Preparation and training in the use of O and M manuals and standard operating practices | Training / Mock drills for all the staff | Number of programs and number of staff covered – once every year | HPVNL                                      |
<table>
<thead>
<tr>
<th>Project Activity / Stage</th>
<th>Potential Impact</th>
<th>Mitigation Measures</th>
<th>Parameters to be Monitored</th>
<th>Measurement and Frequency</th>
<th>Institutional responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental monitoring</td>
<td>Inadequate Environmental monitoring will cause diminished ecological and social values</td>
<td>Staff to receive training of environmental monitoring at various point of time during operation</td>
<td>1. Environmental and social parameters 2. Training / Mock drills / Awareness for all the staff</td>
<td>1. Environmental parameters-every 6 months 2. Number of programs and number of staff covered - once every year</td>
<td>HVPNL</td>
</tr>
<tr>
<td>Noise generating equipments</td>
<td>Nuisance to neighbouring properties</td>
<td>1. Equipments to be well installed with noise absorbing techniques</td>
<td>Noise level in dB (A)</td>
<td>Every month or as desired in consultation with affected parties (if any)</td>
<td>HVPNL</td>
</tr>
</tbody>
</table>
Annexure IV

Attendance of Public Consultation for 400 KV Transmission Line from Nuiyawali to Fatehabad

1) Dirda
2) Om Prakash Kiran
3) Jabbaran Malhotra
4) Kulkarni Kumar
5) Jagadeesh Kumar
6) Chandrasekhar Kumar
7) Rathnath Kumar Pramto
8) Phusmeta
9) Bidai
10) Patna
11) Mallok
12) Chandras
Public Consultation for Transmission Line at village Haripur

1) 
2) 
3) 
4) 
5) 
6) 
7) 
8) 
9) 

Date __

Public Consultation for Transmission Line at Village Mallewala

- Gomindutt
- Suresh Kumar (Sarpanch)
- Harishan Kall

Date 09/
Public Consultation for Transmissionline

at Village Ramnagar

1) Sitaram Sharma
2) Devendra
3) Rakesh
4) Shankar
5) Bal Flor
6) Shwer Sharma
7) Rupinder Singh
8) Prem Kumar
9) Prabhakar
10) Satish
11) (Signature)

Date: _______
Annexure V

Photographs of Public Consultation for 400 KV Transmission Line from Nuhivawali to Fatehabad

1. Institutional Stakeholder Consultation at Sirsa

2. Consultation with Panch members at village Nuhiyawali

3. Public Consultation at village Dhuka Wali

4. Consultation with Sarpanch and villagers at Mallewala village