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

Package G-1

400 kV Sub-station Nawada, Faridabad &
400 kV Sub-station Nuhiyawali, Sirsa, Hissar

Draft Environmental Management Plan (EMP)

December 2008

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1.0 INTRODUCTION

1.1 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, Utranchal, 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 14, 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. (UHBVN) & 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 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
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

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>
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<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>1100.00</td>
<td>1100.00</td>
<td>1100.00</td>
<td></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)</td>
<td></td>
<td></td>
<td>750.00</td>
<td>750.00</td>
<td></td>
</tr>
<tr>
<td>{Haryana: Delhi - 50:50}</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional availability through PPA</td>
<td>111.70</td>
<td>233.70</td>
<td>876.70</td>
<td>1126.70</td>
<td>1930.70</td>
</tr>
<tr>
<td>with IPPs/CPSU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yamuna Nagar Extension</td>
<td></td>
<td></td>
<td>300.00</td>
<td>300.00</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 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 falls 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.

**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 1.2 shows the clearances required during different stages of substation.

**Table 1.2: Clearance Requirements for sub station**

<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>1</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 trees cutting, if available at selected site</td>
<td>Local Authority (DM/DC)</td>
<td>HPVNL, Haryana</td>
<td>2-3 months</td>
</tr>
<tr>
<td>4</td>
<td>Storage of fuel oil, lubricants, diesel etc. at sub-station</td>
<td>Manufacture storage and Import of Hazardous Chemical Rules 1989</td>
<td>Permission for storage of hazardous chemical</td>
<td>State Pollution Control Board, Haryana and or Local Authority (DM/DC)</td>
<td>The Contractor/ HPVNL</td>
<td>2-3 months</td>
</tr>
<tr>
<td>5</td>
<td>Extraction of ground water</td>
<td>Ground Water Rules of 2002</td>
<td>Permission for extraction of ground water for use in substation construction activities</td>
<td>State Ground Water Board</td>
<td>The Contractor/ HPVNL</td>
<td>2-3 months</td>
</tr>
<tr>
<td>6</td>
<td>Use of surface water for construction</td>
<td>Permission for use of surface water for use in substation construction</td>
<td>Local Committee of concerned Water Users</td>
<td>The Contractor/ HPVNL</td>
<td>1-2 months</td>
<td></td>
</tr>
<tr>
<td>7</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 eco-sensitive 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:

(i) Bhihdawas Sanctuary, Jhajjar;
(ii) Nahar sanctuary, Rewari;
(iii) Chhilchhila Sanctuary, Kurukshetra;
(iv) Bir Shikargah 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 G1 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\(^1\), 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 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)\(^2\).

(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.

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\(^1\) 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

\(^2\) 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.
(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\(^3\) 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.

**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\(^4\).

**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 G1**

As per 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
  - (i) Protected Areas notified under the Wild Life (Protection) Act, 1972,
  - (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time,
  - (iii) Notified Eco-sensitive areas,
  - (iv) inter-State boundaries and international boundaries
- Human habitation

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\(^3\) 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.

\(^4\) For definitions of project categories A and B, see OP 4.01, Environmental Assessment, paragraph 8
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 significant and permanent change in the land use pattern of the proposed land for the sub projects. 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.

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’s Environmental Impact Assessment Notification, 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 has been arranged between Superintending Engineer & Other Divisional Officers, HVPNL, Hisar & Faridabad circle and Social & Environmental Expert, SMEC on 08th 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: Collection of Toposheet and other related data of the proposed Sub-station

Social & Environmental Experts have collected the Toposheet, Relevant letters of Land Acquisition, and General Electric Layout (GELO) of sub-station under Faridabad & Hissar circles.

Activity 3: Site visit and public consultation (Two levels – institutional and community level)

Social & Environmental Experts have visited the Sub-stations of Faridabad and Hissar circles and collected the available details at site. The Public consultation at the location of the proposed Sub-station and the nearby villages at Panchayat level have been done by Social & Environmental Experts. Focused Group Discussion was adopted as a tool for public consultation.

Activity 4: Preparation of EMP

Based on collected data and site visit of sub-station & transmission line, an Environmental Management Plan (EMP) has been developed.

The methodology is given in following flow chart.

```
Kick-off Meeting with Superintending Engineer & Other Divisional Officers, HVPNL

Collection of Toposheet and other related data of Sub-station

Site visit and public consultation of Sub-Station under Faridabad & Hissar circle

Site visit and public consultation

Preparation of EMP
```
2.0 DESCRIPTION OF THE PROJECT

2.1 The Project

The project under Package G-1, Package G-2, Package G-3 and Package G-4 of Sub-station and Transmission line of Faridabad and Hisar circle is given in Table 2.0.

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

<table>
<thead>
<tr>
<th>Package</th>
<th>Sub-Project</th>
<th>Name of Circle/Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-1</td>
<td>400 kV Sub-station Nawada with 2 X315 MVA, 400/220 kV, 2X100 MVA, 220/66 kV, 1X100 MVA, 220/33 kV &amp; 1X1 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>Hisar</td>
</tr>
<tr>
<td>G-2</td>
<td>220 kV Sub-station Rangala Rajpur (Firozpurzirka) with 1X100 MVA, 220/66 kV+1X100 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+1X100 MVA, 220/33 kV transformer</td>
<td>Hisar</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>Hisar</td>
</tr>
<tr>
<td>G-4</td>
<td>220 kV D/C Palwal-Rangala Rajpur (Firojpuzirka) with 0.4 sqm &quot;ACSR-Conductor&quot;</td>
<td>Faridabad</td>
</tr>
<tr>
<td>G-4</td>
<td>220 kV D/C line from Kirori (Fatehabad) to Samain (Tohana) with 0.5 sqm ACSR</td>
<td>Hisar</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>Hisar</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>Faridabad</td>
</tr>
<tr>
<td>G-4</td>
<td>LILO of 1 ckt. of 220 kV D/C A-3 Palla to A-5 (Faridabad) to A-5 line at proposed 220 kV sub-station A-4 Faridabad with 0.4 sqm ACSR</td>
<td>Faridabad</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Package</th>
<th>Original Length (Km)</th>
<th>Revised Length (Km)</th>
<th>Name of Circle/Division</th>
</tr>
</thead>
<tbody>
<tr>
<td>G-3</td>
<td>50</td>
<td>90</td>
<td>Hisar</td>
</tr>
<tr>
<td>G-4</td>
<td>55</td>
<td>50.3</td>
<td>Faridabad</td>
</tr>
<tr>
<td>G-4</td>
<td>40</td>
<td>34.6</td>
<td>Hisar</td>
</tr>
<tr>
<td>G-4</td>
<td>50</td>
<td>46.55</td>
<td>Hisar</td>
</tr>
<tr>
<td>G-4</td>
<td>15</td>
<td>13.2</td>
<td>Faridabad</td>
</tr>
<tr>
<td>G-4</td>
<td>4</td>
<td>0.5</td>
<td>Faridabad</td>
</tr>
</tbody>
</table>

Total Length of proposed Transmission line: 214 235.150
2.1.1 Sub-Project under Faridabad circle- Sub-station of 400 kV at Nawada, Faridabad (Package G1)

The Sub-station of 400 KV is proposed at Nawada, Faridabad. It is proposed with 2 X315 MVA, 400/220 kV, 2X100 MVA, 220/66 kV, 1X100 MVA, 220/33 kV & 1X1 MVA, 33/0.4 kv transformer. The General Electric Layout (GELO) is being designed by HVPNLL. This is not available at site office, Faridabad. The 33 Acres of land has been identified by HVPNLL for proposed sub-station, which belongs to the Gram Panchayat of the Nawada Village and Gram Panchayat agrees to give their land for sub-station purpose. There is no alternative site identified or available for substation. The panchayat has given their consent for proposed sub-station, which is given in Annexure- IA. The existing features of the proposed land are given in the Table 2.1:

Table 2.1: Existing features of the project Site for the proposed 400 kV Substation at Nawada, Faridabad Circle

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Features of the proposed Substation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Required Land for Substation</td>
<td>33 Acres</td>
</tr>
<tr>
<td>2.</td>
<td>Name of the Village</td>
<td>Nawada</td>
</tr>
<tr>
<td>3.</td>
<td>Terrain</td>
<td>Plain</td>
</tr>
<tr>
<td>4.</td>
<td>Existing Land use</td>
<td>Barren land</td>
</tr>
<tr>
<td>5.</td>
<td>Type of existing vegetation</td>
<td>Local shrubs and weeds exist on the proposed land. However, there exists agricultural land in the close proximity, which is used for the cultivation of Wheat, Mustard, Grains, Vegetables, lentils etc.</td>
</tr>
<tr>
<td>6.</td>
<td>NH Crossing / Nearby NH (Within 500 m of the project site)</td>
<td>Nil</td>
</tr>
<tr>
<td>7.</td>
<td>Nearby Railway Crossing</td>
<td>Nil</td>
</tr>
<tr>
<td>8.</td>
<td>No. of Affected person</td>
<td>Nil</td>
</tr>
<tr>
<td>9.</td>
<td>Nearby River / Surface water</td>
<td>A small pond exists approximately 500m from the proposed site</td>
</tr>
<tr>
<td>10.</td>
<td>Tree/ Crop and its extent of damage</td>
<td>Nil</td>
</tr>
<tr>
<td>11.</td>
<td>Forest involvement</td>
<td>An open mixed jungle exists approximately 500m away from the project site.</td>
</tr>
<tr>
<td>12.</td>
<td>Concerned Forest Department for necessary approval, if any</td>
<td>District Forest Office, Faridabad District, Haryana</td>
</tr>
<tr>
<td>Sl. No.</td>
<td>Features of the proposed Substation</td>
<td>Remarks</td>
</tr>
<tr>
<td>--------</td>
<td>------------------------------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| 13.    | Type of Common Flora & Fauna       | Common flora (at project site) – Kikar and small bushes  
Common fauna- domestic animals like dogs, buffalo, cow, goats, common rodents, common reptiles, etc.  
Common avifauna- Birds like Eagle, sparrow, crow, Pigeons, Common ducks, Common geese etc |
| 14.    | Endangered Species, if any         | Nil     |
| 15.    | Historical/ Cultural monuments     | Nil     |
| 16.    | Details of Tribal area if any      | Nil     |

The existing condition of the project site for the proposed sub-station is given in Figure 2.0a. The sub-station is marked on the toposheet, which is given in Figure 2.0b.
2.1.2 Project under Hissar circle- Sub-station of 400 kV at Nuhiyawali, Hissar (Package G1)

The Sub-station of 400 KV is proposed at Nuhiyawali, Sirsa District, Hissar Circle. Total 52.425 acres of land is identified by HVPNL for proposed sub-station, which belongs to Gram Panchayat of Nuhiyawali Village and Gram Panchayat agrees to give their land for sub-station purpose. There is no alternative site identified or available for substation. The Panchayat has given their consent for proposed sub-station, supporting document is given in Annexure - IB. The Sub-station is proposed with 2 X315 MVA, 400/220 kV, 2X100 MVA, 220/132 kV, 1X16/20 MVA, 132/11 kV transformer. The General Electric Layout (GELO) is given in Annexure - II. The existing features of the proposed land are given in the Table 2.2:

Fig 2.0b: Proposed site selected for 400 kV Substation in Nawada, Faridabad
Table 2.2: Existing features of the project Site for the proposed 400 kV substation at Nuhiyawali, Hissar Circle

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Features of the proposed Substation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Required Land for Substation</td>
<td>52.425 Acres</td>
</tr>
<tr>
<td>2.</td>
<td>Name of the Village</td>
<td>Nuhiyawali</td>
</tr>
<tr>
<td>3.</td>
<td>Terrain</td>
<td>Plain</td>
</tr>
<tr>
<td>4.</td>
<td>Existing Land use</td>
<td>Barren land</td>
</tr>
<tr>
<td>5.</td>
<td>Type of existing vegetation</td>
<td>Local shrubs and weeds exist on the proposed land. Agricultural land exists far away from the proposed the Sub-station site.</td>
</tr>
<tr>
<td>6.</td>
<td>NH Crossing / Nearby NH (Within 500 m of the project site)</td>
<td>Nil</td>
</tr>
<tr>
<td>7.</td>
<td>Nearby Railway Crossing</td>
<td>Nil</td>
</tr>
<tr>
<td>8.</td>
<td>No. of Affected person</td>
<td>Nil</td>
</tr>
<tr>
<td>9.</td>
<td>Nearby River / Surface water</td>
<td>An artificial rain water storage pond exists adjacent to the proposed site.</td>
</tr>
<tr>
<td>10.</td>
<td>Tree/ Crop and its extent of damage</td>
<td>Approximately 80 – 100 small trees to be cut for the proposed sub-station. The permission from Forest Department for tree cutting is under process.</td>
</tr>
<tr>
<td>11.</td>
<td>Forest involvement</td>
<td>Nil</td>
</tr>
<tr>
<td>12.</td>
<td>Concerned Forest Department for necessary approval, if any</td>
<td>District Forest Office, Sirsa District, Haryana</td>
</tr>
<tr>
<td>13.</td>
<td>Type of Common Flora &amp; Fauna</td>
<td>Common flora (at project site) – Kikar and small bushes Common fauna - domestic animals like dogs, buffalo, cow, goats, common rodents, common reptiles, etc. Common avifauna- Birds like Eagle, sparrow, crow, Pigeons, Common ducks, Common geese etc</td>
</tr>
<tr>
<td>14.</td>
<td>Endangered Species, if any</td>
<td>Nil</td>
</tr>
<tr>
<td>15.</td>
<td>Historical/ Cultural</td>
<td>Nil</td>
</tr>
</tbody>
</table>
The existing condition of the project site for the proposed sub-station is given in **Figure 2.1**. The toposheet for the sub-station area is not available with the HVPNL.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Features of the proposed Substation</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>Details of Tribal area if any</td>
<td>Nil</td>
</tr>
</tbody>
</table>

**Fig 2.1a: Proposed site selected for 400 KV Substation at Nuhiyawali, Sirsa**
3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

3.1 Environmental Impact during Construction Activities

3.1.1 Impact on Topography

During construction of sub-stations, the topography will change due to excavation, cuts and fill for leveling, construction of supporting infrastructures, etc.

3.1.2 Impact on land use

Permanent change in land use pattern is envisaged during the construction phase. At present both the lands chosen for Sub-station is barren with no productivity which will be converted in to a built-up area during construction of substations.

3.1.3 Impact on Ambient Air Quality

During construction, activities will involve excavation for sub-station 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. Spraying of water during excavation will reduce the dust emission to a great extent.

3.1.4 Impact on Ambient Noise level

During construction the major sources of noise pollution will be movement of vehicles transporting construction material and equipment to the site. Since, both the project sites are approachable through motor road, constructional equipments shall be transported easily. 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

A small pond exists around 500 m away from the project site of Sub-station of 400 kV at Nawada, Faridabad which is used by local villagers for washing purpose. In the Nuhiyawali sub-station area, an artificial rain water storage pond exists within 500 m, which is used for irrigation purpose. Construction of Sub-station will not have any major impact on surface and groundwater quality in the area. Contamination of water bodies or increase in turbidity level may result due to spilling of construction materials and surface runoff from the construction site. Even during construction of the tower of substation, total suspended solids, and some other chemical parameters like biochemical oxygen demand are likely to increase. This can be avoided by careful selection of site and access roads so that surface runoff does not enter the river.

Care should be taken to locate the temporary construction worker colony away from water bodies at a distance of 500 m. Adequate drinking water facilities, sanitary facilities, and drainage in the temporary colonies should be provided to avoid polluting surface water.
Provision of adequate washing and toilet facilities with septic tanks and appropriate refuse collection and disposal systems should be obligatory. The sludge generated at the trap should be kept in a specified place inside the premise of substations and sold to authorized contractors/third parties. No sludge disposal on land will be allowed.

3.1.6 Impact on Soil

There will not be any significant impact on soil, as the proposed location for substation is barren land.

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. As such the proposed land is barren in nature hence; anticipated loss of vegetation is minimal.

3.1.8 Impact on Fauna

The existing land 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

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. Apart from this, necessary training regarding safety aspects to the personnel working at the substation and line inspectors will be provided. A safety and emergency procedures manual will be developed and kept at the substations. Priority will be given to maintain hygienic conditions and good aesthetics at the substations.

It is expected that local villagers may enter the project site during construction that may injure them as well. Necessary protection wall therefore shall be built at the project boundary itself to avoid any accident. Local villagers shall be informed about the safety plan, necessary Do’s and Don’ts and necessary precautionary measures.

3.1.10 Impact on Socioeconomic 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. Local nuisance though is still anticipated in form of disturbance by noise, solid waste disposal, wastewater discharge etc which is preventable with proper mitigation measures as described in Annexure IV.
3.1.11 Impact on Resettlement

There is no issue of resettlement due to proposed sub-station, the details related to resettlement and rehabilitation is discussed in the Rehabilitation & Resettlement Action Plans (RRAP, Package G1).

3.1.12 Impact on Cultural Sites

No archaeological, historical, or culturally important sites are located near the proposed substation. 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 concern department and approval will be taken to erect the tower for transmission line.

3.1.13 Impact from Waste generation

Solid waste may be generated, such as metal scraps, wooden packing material, and oily waste. Oily waste and scrap will be collected and disposed of in compliance with the Environmental Protection Act, 1986, and applicable regulations and rules.

List of the units registered with MoEF/CPCB as recyclers/reprocessors in Haryana having environmentally sound management facilities used/waste oil re-processors is given in Annexure III.

Wastewater shall be discharged during construction phase from labour camps. Care shall be taken for proper discharge of effluent to avoid contamination of groundwater.

3.2 Environmental Impact during Operation Activities

3.2.1 Impact on Topography

Permanent topographical changes on the existing land are envisaged during the operation phase.

3.2.2 Impact on land use

Permanent change in land use pattern is envisaged during the operation phase. At present the land is barren with no productivity. Post construction of substation, this will be a built-up area.

3.2.3 Impact on Air Quality

The sub-station does not generate any air emissions during operation. Thus, there will not be any deterioration of ambient air quality.

3.2.4 Impact on Noise

As per CPCB Noise Standards for Industrial operation, the noise level during day time should not exceed 75 dB (A) and during night time it should not exceed 70 dB(A). All the workers during Operation and Maintenance in the substation may come in close contact.
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

with the noise that may adversely affect their hearing ability or may lead to other related diseases without any protective measures. Therefore, workers shall be provided with PPEs like Ear muffs, Ear plugs and helmets during Operation Phase to avoid any possible health hazards due to excessive noise.

During project operation, noise from the substation and powerhouse operation, and corona noise from the conductors will be felt only up to 15–30 m. The noise generated will not be intense and no major settlements are within 30 m from the proposed sites. The best alternative to reduce noise pollution is proper maintenance of the equipment/machines inside the substations so that the ambient noise level meets the Central Pollution Control Board (CPCB) standard for residential areas 55 dB (A) audible decibels during daytime and 45 dB (A) during night time at the boundary of substations. Hence, the impact will not be significant.

3.2.5 Impact on Water Quality

Groundwater pollution can occur only if chemical substances, oil and grease from the transformers percolate to the groundwater table. Transformers free of polychlorinated biphenyl can be used for the substations. To avoid groundwater pollution, it is suggested to have a soak pit below the Transformers to collect any leakage of oil mixed with water which further goes to the separator tank. An overall negligible impact on water quality is predicted due to the project activities.

3.2.6 Impact on Soil

Impact on soil is envisaged only if chemical substances, oil and grease from the transformers percolate to the soil. To avoid this impact, it is suggested to have a soak pit below the Transformers to collect any leakage of oil mixed with water which further goes to the separator tank.

During O & M activities, the workers / staff of the substation may dispose solid waste like plastic, scraps, paper, etc on the ground contaminating the soil. Adequate no. of dustbins therefore shall be provided to prevent the same

Considering that the aforementioned impacts are easily mitigable, an overall negligible impact on soil quality is predicted due to the project activities.

3.2.7 Impact on Flora

During the operational phase, clearing of vegetation and trimming of trees (if any) along the project boundary will be done at regular interval for maintenance purposes. This will reduce the chance of fires due to electric sparks. This will require regulatory approval from forest department.
3.2.8 Impact on Fauna

During the operation phase, birds may hit the transmission lines. Deflectors will be added to minimize this risk. Boundary walls along substations shall prevent animals to enter the project area for any possible accidents.

3.2.9 Impact on Health and Safety

HVPNWL maintains safety as a top priority, apart from various labour laws dealing with workers’ health and safety. HVPNWL 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 HVPNWL 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.

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 IV. These mitigation measures will be implemented as applicable for these subprojects.

4.3 Rainwater Harvesting

Adequate site drainage system shall be provided by the Contractor within the switchyard fencing under the present scope including connection at one or more points to the outfall point located outside the substation boundary wall is in the scope of contractor. In addition to drainage of rainwater with adequate site drainage, the contractor shall make arrangement for rainwater harvesting also. Rainwater harvesting shall not be done if the depth of water table is within 8.0 m from finished ground level. Rainwater harvesting shall be done by providing two numbers recharge structures with bore wells. The recharge structures shall be suitably located within the sub-station. Branch drains from the main drain carrying rainwater from entire switchyard, constructed in accordance with adequate site drainage, shall be connected to the recharge structures.

The internal diameter of recharge shafts shall be 4.5 meter with 230 mm thick lining of brick work up to a depth of 2.0 meter from ground level and 345 mm thick brickwork below 2.0 meter depth. The brickwork shall be constructed with cement mortar 1:6 (1 cement: 6 coarse sand). The overall depth of shaft shall be 5.0 meter below invert level of drain. The shaft shall be covered with RCC slab for a live load of 300 kg per sq.m. Two openings of size 0.7x0.7 meter shall be provided in the RCC cover slab as shown in the drawing. An iron cover made of 5 mm thick chequered plate with hinges shall be provided on the openings. Galvanized M.S. rungs of 20mm diameter at spacing of 300mm shall be provided in the wall of shaft below the opening in the RCC slab to facilitate cleaning of shaft. A 300 mm diameter bore well shall be drilled in the centre of the shaft. The depth of bore well shall be 5.0 meter more than the depth of sub soil water or as per directions of the Engineer-in-charge. A 100 mm dia medium duty MS pipe conforming to IS 1161 shall be
lowered in the bore well keeping bail plug towards bottom of bore well. The pipe shall have 1.58 mm holes for 4.0 meter length starting from 1.0 meter from bottom of bore well. Holes of 3.0 mm dia shall be provided for a length of 2.0 meter starting from the bottom level of coarse sand and downwards. The overall length of pipe shall be equal to total depth of bore well plus depth of shaft. Gravel of size 3mm to 6mm shall be filled around 100 dia MS pipe in the bore well. The shaft shall be filled with 500mm thick layers each from the bottom of shaft with boulders of size 50mm to 150mm, gravel of size 5mm to 10mm coarse sand having particle size 1.5mm to 2.0 mm and boulders of size not less than 200mm respectively. The budget for development of water harvesting shall be considered in detailed design.

4.4 Institutional Frame work

HVPNL will have three tier 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 HVPNL.

4.4.1 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.

Fig 4.0: Three tier Institutional body at HVPN L
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.

4.4.2 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.

4.5 Capacity Building

Training and development of employees are integral part 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.

4.6 Environmental Monitoring

Table 4.0 is the Environmental Monitoring Plan during construction phase for the proposed substations.
Consultancy Service for the preparation of
RRAP and EMP for World Bank aided project of HVPNL

Table 4.0: Environmental Monitoring Plan

<table>
<thead>
<tr>
<th>Parameters of Monitoring</th>
<th>Sampling Location</th>
<th>Frequency</th>
<th>Measurement Method</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ambient Air</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPM</td>
<td>1 location at construction site</td>
<td>Ambient Air monitoring should be on quarterly basis for 2 years (till the construction period)</td>
<td>Gravimetric with glass fibre filter paper (Respirable Dust Sampler)</td>
<td>(a) The location for monitoring should be 10-30 meter from road edge and 1.5 to 5 m from ground.</td>
</tr>
<tr>
<td>RPM</td>
<td></td>
<td></td>
<td>Gravimetric (Respirable Dust Sampler)</td>
<td></td>
</tr>
<tr>
<td>SO₂</td>
<td></td>
<td></td>
<td>EPA Modified West &amp; Gaeke method</td>
<td></td>
</tr>
<tr>
<td>NOₓ</td>
<td></td>
<td></td>
<td>Arsenite modified Jacob &amp; Hochheiser</td>
<td></td>
</tr>
<tr>
<td>CO</td>
<td></td>
<td></td>
<td>NDIR technique</td>
<td></td>
</tr>
<tr>
<td><strong>Ambient Noise</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dB (A)</td>
<td>1 location nearby school / college / religious area close to construction site</td>
<td>Ambient Noise level should be collected 24 hourly on quarterly basis for 2 years (till the construction period)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Surface water</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH, BOD, COD, TDS, TSS, Mg, Na, Ca, K, Total hardness, Fe, Faecal Coliform, Total Coliform</td>
<td>A small water body near proposed 400 kV substation in Nuhiyawali, Sirsa village, Hisar</td>
<td>1 sample on quarterly basis for 2 years (till the construction period)</td>
<td>Grab sample method - APHA</td>
<td>-</td>
</tr>
<tr>
<td><strong>Groundwater</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH, BOD, Mg, Na, Ca, K, Total hardness, Fe</td>
<td>1 sample nearby tube well</td>
<td>1 sample on quarterly basis for 2 years (till the construction period)</td>
<td>Grab sample method - APHA</td>
<td>-</td>
</tr>
</tbody>
</table>
4.7 Environmental Budget

Table 4.1 shows the tentative environmental budget for two 400KV Substations in package G1 during construction phase only on an annual basis. This has been calculated on the basis of environmental monitoring plan as discussed in section 4.6 (Table 4.0) of this report. The exact budget shall be finalized by the HPVNL during detailed design.

Table 4.1 Environmental Budget for Package G1

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Item Description</th>
<th>Quantity / substation</th>
<th>Unit</th>
<th>Rate (Rs.)</th>
<th>Amount (Rs.) for one substation</th>
<th>Amount (Rs.) for two substations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Environmental Monitoring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A.1</td>
<td>Ambient air quality monitoring as per Environmental Monitoring Plan</td>
<td>4</td>
<td>No.</td>
<td>10,000</td>
<td>40,000</td>
<td>80,000</td>
</tr>
<tr>
<td>A.2</td>
<td>Ambient noise level monitoring as per Environmental Monitoring Plan</td>
<td>4</td>
<td>No.</td>
<td>300</td>
<td>1,200</td>
<td>2,400</td>
</tr>
<tr>
<td>A.3</td>
<td>Groundwater quality monitoring as per Environmental Monitoring Plan</td>
<td>4</td>
<td>No.</td>
<td>5,000</td>
<td>20,000</td>
<td>40,000</td>
</tr>
<tr>
<td>A.4</td>
<td>Surface water quality monitoring as per Environmental Monitoring Plan</td>
<td>4</td>
<td>No.</td>
<td>7,000</td>
<td>28,000</td>
<td>56,000</td>
</tr>
<tr>
<td></td>
<td><strong>Sub Total A</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>1,78,400</strong></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Mitigation &amp; Enhancement Measure Cost</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B 1</td>
<td>Water Sprinkling by Water Tanker at project site to minimise the dust pollution during construction activities for at least 1 hours/ day for 250 working days for 2 years</td>
<td>500</td>
<td>hrs</td>
<td>250</td>
<td>1,25,000</td>
<td>2,50,000</td>
</tr>
<tr>
<td>B 2</td>
<td>Tree plantation as environment enhancing measure</td>
<td>500</td>
<td>No.</td>
<td>300</td>
<td>1,50,000</td>
<td>3,00,000</td>
</tr>
<tr>
<td></td>
<td><strong>Sub Total B</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>5,50,000</strong></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Capacity Building / Training and Awareness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C 1</td>
<td>EMP Training at site</td>
<td></td>
<td>Lump sum</td>
<td>70,000</td>
<td>70,000</td>
<td>140,000</td>
</tr>
<tr>
<td></td>
<td><strong>Sub Total C</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>1,40,000</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Environmental Cost (A+B+C)</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>8,68,400</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contingency charges @ 6% on total</td>
<td></td>
<td></td>
<td></td>
<td><strong>52,104</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Environmental Budget for package G-2</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>9,20,504</strong></td>
<td></td>
</tr>
</tbody>
</table>

5 For 400 kV Substation at Nuhiyawali, Sirsa village, Hisar, only
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 sub-station;
➢ 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.

5.3 Process Adopted

Public consultation is an integral part of EMP report. Community consultations covering Environmental and Social aspects have been done at proposed sub-stations 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 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 well aware of the proposed sub-stations. All the participants welcomed the project and requested for early completion. People are sure about their more opportunities due to this project, especially through direct engagement during construction. Specific environmental concerns and suggestions put forth by the local community are as below:
The local villagers are not satisfied with the present condition of electricity supply. They are expecting and demanding sufficient supply of electricity for the following purposes:

- Pumping of Water for irrigation purpose;
- Feeding their domestic animals with fodder that requires electric machines only;
- Electricity for education of their children; and
- Using electric home appliances, etc.

Local villagers are expecting employment in the substation during construction and operation phase.

Local villagers are expecting improvement in infrastructure at the operation phase. This will bring the problem of water (poor quality and less availability) in to the notice of local government. They demand better facility of water, especially for drinking and household purposes.

Villagers are expecting rise in the values of land in the close proximity of substation and hence, is encouraging the project.

As the proposed site for substations belong to local panchayat and the land is barren, therefore the panchayat showed a positive approach towards transfer of this land for some beneficial purpose (Refer Annexure IA and Annexure IB).

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

5.5 Institutional Stakeholders’ Consultation

Stakeholders’ consultation has been done to collect the following specific information.

- Site visit done for sub-station;
- Any ecological sensitive area passing through / close to sub-station;
- Project features related with environmental and social issues;
- Land acquisition process for sub-station; and
- Toposheet for sub-station.
6.0 FINDINGS AND RECOMMENDATION

6.1 Findings

The proposed land for both the substations belongs to panchayat of respective villages, which are found to be suitable from environmental consideration. The reasons being are follows:

- The proposed lands for both the sub-stations are barren with negligible vegetation;
- No natural water body exists in the close proximity to proposed sub-stations;
- No forest area exists in the close proximity to proposed sub-stations; and
- The land is not fertile, so no cultivation is possible as per the consultation with the local villagers, farmers and panchayat members.

The Gram panchayat of respective villages agreed to give the lands with no objection in purview of the following:

- Better electric supply
- Employment opportunities
- Best possible use of proposed barren land
- Future developments in other infrastructure like water supply, drainage and sanitation, education, health etc.

6.1.1 Specific Findings of Sub-station (400 kV) at Nawada, Faridabad Circle

- The 33 acres of land has been identified by HVPNL for proposed sub-station, which belongs to Gram Panchayat of the Nawada Village;
- An open mixed jungle exists approximately 500m away from the project site;
- The identified site for proposed substation is categorized as Category B as per World Bank OP 4.01;
- The proposed location is Barren land;
- A small pond exists approximately 500 m from the proposed site;
- The identified land for proposed sub-station is panchayat land and Gram Panchayat agrees to give their land for sub-station purpose. There is no alternative site identified or available for substation. The Gram Panchayat has given their consent for proposed sub-station and; and
- The General Electric Layout (GELO) is being designed by HVPNL. This is not available at site office, Faridabad.
6.1.2 Specific Findings of proposed 400 kV substation at Nuhiyawali, Hissar Circle

- The 52.425 Acres acres of land has been identified by HVPNL for proposed sub-station, which belongs to the Gram Panchayat of Nuhiyawali Village;
- The proposed location is barren land and it is approximately 500 m away from habitation;
- The identified site for proposed substation is categorized as Category B as per World Bank OP 4.01;
- An artificial rain water storage pond exists adjacent to the proposed site;
- Approximately 80 to 100 numbers of small trees to be cut for the proposed sub-station. The permission from Forest Department for tree cutting is under process;
- The identified land for proposed sub-station is panchayat land and Gram Panchayat agrees to give their land for sub-station purpose. There is no alternative site identified or available for substation. The Gram Panchayat has given their consent for proposed sub-station; and
- The General Electric Layout (GELO) is prepared by HVPNL. This is available at site office, Hissar.

6.2 Recommendations

- The proposed sites of 400 kV Substation at Nuhiyawali, Sirsa, Hissar and 400 KV Substation at Nawada, Faridabad are the best suitable locations from Environmental as well as 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 phase has been suggested to HVPNL/ Independent Agency, deployed by HPVNL.
ANNEXURE – I

APPLICANTS APPLYING FOR CONSENT/AUTHORIZATION UNDER VARIOUS PROVISIONS/ACT ARE REQUIRED TO APPLY AS PER THE FORMAT BELOW

HARYANA STATE POLLUTION CONTROL BOARD

PROFORMA FOR SUBMITTING INFORMATION FOR OBTAINING NO OBJECTION CERTIFICATE (N.O.C)

TO:

The Member Secretary
Haryana State Pollution Control Board
S.C.O 11-A, 1Ind Floor, Sec 7-C,
Chandigarh

FROM:

____________________

S.C.O 11-A, 1Ind Floor, Sec 7-C,
Chandigarh

Telephone: ____________________
Telex : _____________________

NAME & ADDRESS OF APPLICANT IF DIFFERENT FROM ABOVE

NAME, DESIGNATION AND ADDRESS OF THE PERSON AUTHORISED TO DEAL WITH THIS APPLICATION (POWER OF ATTORNEY TO BE ATTACHED)

TOTAL CAPITAL INVESTMENT OF UNIT:

(Which shall include the original cost of investment in Land, Buildings & Machines together with any additions to date. This is also applicable to cases where the factory, land & buildings are rented leased or mortgaged (Please tick appropriate boxes)

Approval of Town & Country Planning Dept.

Planning Deptt.  Yes  No  Other Authority  Yes  No

If YES please specify
1 DETAILS OF PRODUCTION AND PROCESS.

1.1 List the main product which is approved to produce together with the designed daily capacity.

1.2 List any By-products which are produced together with the designed daily capacity.

1.3 Time scale for achieving full production.

1.4 List all Raw Materials with the daily consumption at full production capacity.

1.5 State if any recycled material from the waste of your industry or any other industry is used in the process

Yes  No

If yes, specify the Process materials and quantities.

2 MANUFACTURING PROCESS

2.1 State the source of the process know how.

In House  National Laboratory  Foreign  Other (Specify)

2.2 Give a brief description of the process technology utilised and provide a flow chart

2.3 Have you any foreign collaboration? Yes  No

(If yes, give details of any know how and equipment for pollution control purposes available to you under your agreements.)

3 ENERGY CONSUMPTION

3.1 Source of Energy  Public Supply  Generation

3.2 If energy is generated in plant, state the quantity of fuel consumed daily and indicate the source e.g Diesel Generating set with capacity, boiler with capacity etc.

<table>
<thead>
<tr>
<th>Source</th>
<th>Fuel</th>
<th>Coal</th>
<th>Fuel Oil</th>
<th>Diesel</th>
<th>Nat. Gas</th>
<th>Wood (Specify)</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPN

Calorific Value
% Ash Content
Sulphur Content
Other

4 LOCATION
4.1 Where is it proposed to locate the plant? (Attach indexed plan and site plan with detailed plant layout.)
4.2 Area of land proposed to be acquired.
4.3 Area proposed to be developed
4.4 Present use of land

Agriculture ☐ Forest ☐ Grazing ☐ Settlement/with population ☐

4.5 Is the unit situated within the limits of:
   (i) Municipal Committee
   (ii) Municipal Corporation

4.6 Is the land situated in an approved Industrial Zone or Estate
   Yes ☐ No ☐

4.7 Indicate if any of the following features exist within a 10 Kilometer radius of the site:
   (i) Reserved Forests
   (ii) Sanctuary
   (iii) National Park
   (iv) Historical & National Monuments

This section must only be completed by units using coal as fuel and/or industries discharging Sulphur Dioxide.

5. TOWNSHIP
5.1 Do you propose building a township housing/quarters for your employees?
   Yes ☐ No ☐

5.2 Area allocated for the purpose Hectares/cu.m
5.3 Population to be accommodated
5.4 Distance from township to site km.
5.5 Services provided in the township:
   (i) Water Supply ☐ Yes ☐ No ☐ Daily consumption
   ☐ ☐ ☐
6. **WATER REQUIREMENTS**

6.1 Source of water supply.

6.2 Public Supply System

- Own source

Indicate whether Ground/River/Lake with discharge.

6.3 Average daily quantities of water to be consumed:

   (i) For process and wash
   
   (ii) For cooling
   
   (iii) Sanitary
   
   (iv) Total

7. **WASTE WATER DISCHARGES**

7.1 Waste Water discharge per day from:

   (i) Process and wash
   
   (ii) Cooling
   
   (iii) Sanitary
   
   (iv) Total

7.2 Through what will the wastewater be discharged?

- Separate Sewer
- Combined Sewer

7.3 Mode of discharge

- Stream
- Public Sewer
- On Land
- Irrigation water channels/water courses

7.4 Type of treatment to be adopted

- Biological
- Chemical

7.5 What arrangements have been made to handle and dispose of sludge from treatment plant?

- Incinerator
- Land Fill
- Composting

7.6 Are toxic substances are likely to be discharged? Yes No
If yes, specify substances used.

Organic:
(Including Pesticides)
Others:

8. **SOLID WASTES**

8.1 Total quantity of solid waste in tonnes per day.

8.2 Nature of waste

<table>
<thead>
<tr>
<th>Lumps</th>
<th>Granules</th>
<th>Sludge</th>
</tr>
</thead>
</table>

8.3 Proposed method of disposal including treatment of sludge.

<table>
<thead>
<tr>
<th>Landfill</th>
<th>Dumping</th>
<th>Composting</th>
<th>Incineration</th>
</tr>
</thead>
</table>

8.4 Have you considered the possibility of recovery and reutilization of any portion of the solid wastes? If Yes please give details

Yes [ ] No [ ]

9. **ATMOSPHERIC EMISSION**

9.1 Emission from fuel burning

<table>
<thead>
<tr>
<th>Composition</th>
<th>Particulars</th>
<th>Gases</th>
</tr>
</thead>
</table>

9.2 Emission from process

9.3 Stack/source of emission:

<table>
<thead>
<tr>
<th>(i) Total Number</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>(ii) Source</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iii) Height in m. above G.I</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(iv) Height in m. above top of Building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(v) Internal Diameter in mm</td>
<td></td>
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<td></td>
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</tbody>
</table>
9.4 Proposed Air Pollution control System
Give information on type and add detailed specifications

<table>
<thead>
<tr>
<th>Collectors</th>
<th>Precipitators</th>
<th>Scrubbers</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

9.5 Proposed method of handling and disposal of waste trapped by pollution arresting equipment

- Landfill
- Dumping
- Incinerators

10. OTHER SOURCES OF POLLUTION

10.1 Is your industry likely to cause noise pollution? Yes □ No □
If yes what noise abatement programme have you planned

10.2 Is there any odour problem likely to occur from your industry? Yes □ No □

10.3 Is there any thermal pollution of surface water likely to occur from your industrial discharge? Yes □ No □
If yes what measures do you propose taking?

11. COST OF POLLUTION CONTROL

What is the total expenditure proposed for pollution monitoring and control both for air and water?
Rs. □
What is this as a percentage of your capital Investment? □
What is this as a percentage of your Operating Expenditure? □

12. CAPITAL RECURRING

12.1 Enclose a copy of the Project Report.

12.2 Name of the Institution/Institute from which Financial Assistance is being sought.
12.3 Any other additional information about beneficial or adverse environmental impact from your industry.

12.4 In the event the industry does not have any trade effluent, you should submit an affidavit duly attested by First Class Magistrate/Notary Public to the effect that the industry after commissioning will not discharge any ‘Trade Effluent’ and shall not discharge any trade effluent in future without the prior permission of the Board.

12.5 You should also submit an affidavit duly attested by a First Class Magistrate: That the industry shall raise the stack height of Diesel Engined Generating Sets and Boilers as per the prescribed standards and necessary arrangements shall be made by the industry for controlling Air Pollution before commissioning the plant and the pollutants will meet the Emission and other Standards as will be prescribed by the Board from time to time.

12.6 You should also give an affidavit to the effect:

That the works of treatment plant shall be completed side by side with the construction of the main plant and the industry will be commissioned only after the treatment plant is complete and commissioned.

* Trade Effluent * includes the liquid gaseous or solid substance which is discharged from any premises used for carrying on any trade or industry other than domestic sewage.

ADD SEPARATE SHEETS WHEREVER NECESSARY

PLACE____________________  SIGNATURE____________________

DATE____________________  NAME___________________________

ADDRESS

____________________________________________________________________

____________________________________________________________________

Annexure:

1. Partnership Deed
2. Project Report
3. Index Plan/Detailed Plan of the Unit
4. Pollution Control Project Report (i) Water (ii) Air
5. Affidavits covering 12.4, 12.5, 12.6
6. Flow Chart
7. Details of Stacks
HARYANA STATE POLLUTION CONTROL BOARD

Application For Consent / Authorization

FROM

________________________________________
________________________________________
________________________________________

TO

The Member Secretary
Haryana State Pollution Control Board
Chandigarh

Sir

I/We hereby apply for consent/authorization for the year _________________ to _________________

1 Consent to /operate/renewal of consent under section 25,26 of the Water (Prevention & control of Pollution) Act, 1974 as amended.

2 Consent to /operate/renewal of consent under section 21 of Air (Prevention & control of Pollution) Act, 1981 as amended

3 Authorization / renewal of authorization under rule V of the Hazardous waste (Management & handling rules) 1989 as amended in connection with my/our existing/proposed/altered/ additional manufacturing / processing activities from the premises as per detail given below.

Part A: General

1 Name, Designation, Office Address, Telephone
Fax & E-Mail address of the Applicant

2
   a) Name & location of the Industrial Unit/Premises for which the application
      is made (Give revenue survey Number / Plot No. Name of the taluka &
      Distt with Telephone No. & Fax No.
   b) Details of planning permission obtained from M.C/Directorates of urban
      development or town & country Planning/HUDA/ which ever applicable
   c) Name of the M.C/Panchyat Samiti/ Panchayat under whose jurisdiction the unit is
      located & name of the license issuing authority.

3
   Names Address with telephone, fax & e-mail address of the Managing Director/
   Managing Partner & officer responsible for the matter Concerned with Pollution Control
   & Hazardous Waste Disposal.

4
   if registered as a small-scale industrial unit give number & date

5
   Gross Capital Investment of the unit without depreciation till the date of application (cost
   of building, land, plant & machinery)(to be supported by affidavit, annual report, and
   certificate from Chartered accountant. For proposed units)

6
   If the site is located near seashore /river bank/ other water bodies; indicate the name &
   distance of the water body.

7
   Does the location satisfy the requirements under relevant central/state Govt.
   Notifications on ecologically fragile area etc. if so give details?

8
   If the site is situated near in notified industrial estate:
       a) Whether the authority has provided effluent collection, treatment & disposal system.
       b) Will the applicant utilize the system if provided
       c) If not provided, details of proposed arrangement for the treatment of effluent.

9
   Total Plot area, Built up area & area available for the use of treated sewage/trade
   effluent.
10 Month & year of the proposed commissioning of the unit

11 Number of workers & office staff

12 a) do you have a residential colony within the premises in respect of present Application is made?
   b) If yes, please state population staying
   c) Indicate its location & distance w.r.t plant site.

13 list of products & by-products manufactured in tones/month, kl/month or Numbers /month. Give figures corresponding to maximum installed production capacity.

14 List of Raw materials & process chemicals with annual consumption corresponding to above stated production figures tones/month, kl/month or Numbers /month.

15 Description of process of manufacture for each of products showing input/output quality & quality of solid liquid gaseous wastes, if any forms each unit process to be supported by flow sheet &/or material balance.

PART B Waste Water Aspects (For Water Consent) If Not Applicable Write N.A)

16 Water Consumption for different uses (m3/day)
   1 Industrial cooling, Spraying in mine pits or boiler feeds.
   2 Domestic purpose
   3 Processing whereby water gets polluted & the pollutants are easily biodegradable & are toxic.
   4 Processing whereby water gets polluted & the pollutants are not easily biodegradable & are toxic.
   5 Other such as agriculture, gardening etc.

   Total___________________
17 Source of Water supply, Name of the authority granting permission if applicable & quality permitted

18 Quantity of waste water (effluent) generated (m3/day)
   1 Domestic
   2 Industrial

19 Water Budget calculations accounting for difference between water consumption & effluent generated.

20 Present treatment of sewage / canteen effluent (give sizes capacity)

21 Present treatment of trade effluent (give sizes / capacity of treatment units)
   (A schematic diagram of treatment scheme with inlet/outlet characteristics of each unit operation / process is to be provided. Include details of residue management system (sludge’s)

22 a) Are sewage & trade effluent mixed together
   b) If yes, state at which stage whether before or after treatment.

23 Capacity of treated effluents slump Guard pond if any

24 Mode of Disposal of treated effluents with respective quantity
   1) Into stream/river (name of the river)
   2) Into drain/sewer (owner of the sewer)
   3) On land for irrigation on owned land / lease land specify the cropped area (to be supported by relevant documents)
   4) Quantity of treated effluent reused / recycled. Provide a location map of the disposal arrangement indicating the outlets of for sampling.

25 Quality of untreated / treated effluents (specify PH & concentration of SS BOD COD & specifics pollutants relevant to the industry. TDS to be reported for disposal of land into stream / river.

   Enclose a copy of latest report of analysis from the laboratory approved by Haryana State Pollution Control Board/ Central Board / Central Govt. in the ministry of Env & Forests. For proposed unit furnish expected characteristics of the untreated / treated effluents
PART C Air Emission Aspect For (Air Consent) If Not Applicable Write N.A.

26 Fuel Consumption

<table>
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<tr>
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<th>Coal</th>
<th>LSHS Furnace</th>
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<th>Others</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(specify)</td>
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<tr>
<td>Fuel Consumption (TPD)</td>
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<tr>
<td>Caloric value</td>
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<tr>
<td>Ash content%</td>
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<tr>
<td>Sulpher content%</td>
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<td>Others</td>
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</table>

27 Details of stack

a) Stack numbers
b) Attached to
d) Fuel type
e) Fuel quantity
f) Material of Construction
g) Shape
h) Height
i) Diameter
j) Gas quantity
k) Gas temp
l) Exit gas
m) Control equipment preceding the stack

28 Do you have adequate facility of collection of samples of emission in the form of part holes, platform, ladder etc as per Central Board Publication “EMISSIONS regulations part III (Dec 1985)

29 Quality of treated flue gas emission & process emissions specify concentration of criteria pollutants & industry/ process specific pollutants stack wise. Enclose a copy of latest report of analysis from the approved laboratory by HSPCB /central board/ central government in the ministry of Environment & forest. For proposed units furnish the expected characteristics of the emission.
PART D: Hazardous Waste Aspects (For Authorization Under Hazardous Waste Rules) If Not Applicable write N.A.

30  a) whether the unit is generating hazardous waste as defined in the HW (management & handling rules) 1989 as amended.
b) if so, the category No.

31  Authorization required for

   i)  Collection
   ii) Reception
   iii) Treatment
   iv)  Transport
   v)   Storage
   vi)  Disposal
        Of the HW

32  Quantity of the HW generated (kg/day) or (mt/month)

33  Characteristics of the Hazardous waste specify the concentration of the relevant pollutants

   Enclose a copy of latest report of analysis from the laboratory approved by HSPCB / central board / central govt in the ministry of Environment & forest.

34  Mode of Storage (intermediate / final)(describe area location methodology)

35  Present treatment of Hazardous Waste, if any (give type & capacity of treatment units)

36  Quantity of HW disposed

   i)  Within the factory
   ii) Outside the factory (specify location & enclose copies of agreement)
   iii) Through sale (Enclose documentary proof copies of agreement)
   iv)  Outside state / union Territory, if yes particulars of (i) & (ii) above.
   v)   Others (specify)
PART E: Additional Information

37  a) do you any proposals to upgrade the present system for treatment & disposal of
     effluent/emission & for HW
     b) If yes give the details with time –schedule for the implementation & approximate
        expenditure to be incurred on it.

38  Capital & recurring (o & m) expenditure on various aspects of environment protection
     such as
     effluent emission HW solid waste tree plantation monitoring data acquisition etc.

39  To which the pollution control equipment separate meters for recording consumption of
     electric
     energy are installed?

40  Which of the pollution control items are connected to D.G set (captive power source) to
     ensure the running in the event of normal power failure?

41  Nature, quantity & method of disposal non-hazardous solid waste generated separately
     from the process of manufacture & waste treatment.

42  Hazardous chemicals are defined under the manufacture, storage & import of
     Hazardous chemicals, rules, 1989.
     a) List of HC stored (imported & indigenous)
     b) Details of isolated storage
     c) Details of emergency preparedness plans prepared.

43  Brief details of tree plantation/ green belt development within applicant’s premises.

44  Information of schemes for waste minimization, source recovery & recycling
     implemented & to be implemented, separately.

45  Any other additional information that the applicant desires to give.

46  I/We further declares that the information furnished above is correct to the best of my/our
     knowledge.

47  I/we hereby submit that in case of any change from what is stated in this application in
     respect of Raw materials, products, process of manufacture & treatment &/or disposal of
     effluent, emissions, Hazardous waste etc. in quality & quantity: a fresh application for
     consent/authorization shall be made & unit the grant of fresh consent/authorization no
     change shall be made.
48 I/we undertakes to furnish any other information within 1 month of its being called by the Board/Committee.

49 I/we agreed to submit to the board an application for renewal of consent/authorization in 2 months in advance before the date of expiry of the consent/authorization validity period.

50 I/we enclose herewith a demand draft for Rs__________ (Rupees ____________) drawn in favor of ______________ Pollution Control Board/Committee as the fee for consent/authorization.

Yours Faithfully

Signature_________
Name____________
Designation_______

Documents enclosed:

1 Demand draft or receipt of deposit in an authorized bank towards consent fee/authorization.
2 Undertaking of affidavit or statement from the annual report or certificate from the C A in support of gross fixed capital investments
3 Site plan/location map (in cases NOC was not obtained earlier)
4 Declaration regarding the distance of unit from the bank of Main River & in respect of stone crusher, hot mix plant for distance from highways & habitations.
5 Layout plan showing the location of stacks, effluent treatment plant, effluent disposal areas, air pollution control devices, HW treatments & disposal areas.
6 Manufacturing process flow sheet, with descriptive note on the manufacturing process for each product.
7 Copies of latest consent/authorization/environmental impact assessment clearance.
8 Copy of small-scale industries registration certificate, if applicable.
9 Copies of letter of indent/industrial licenses, clearances, from the dept or any other relevant document.
10 Copies of the planning permission certificate issued by the MC/Directorates of urban development or town & country planning/HUDA.

Note the documents are at Sr.No 2-11 are necessary for first application. For applications for renewal of document at Sr No.7 is necessary.
Annexure – IA

Letter for transfer of Panchayat land for the Construction for 400 kV substation in Nawada Village, Faridabad

<table>
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<tr>
<th>Country</th>
<th>Panchayat Name</th>
<th>Village</th>
<th>District</th>
</tr>
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<tbody>
<tr>
<td>India</td>
<td>ग्राम पंचायत नवादा, तिगांव</td>
<td>Nawada Village</td>
<td>Faridabad</td>
</tr>
</tbody>
</table>

The letter to the Panchayat of Nawada, Tigaon in Haryana, India, requests transfer of Panchayat land for the construction of a 400 kV substation in Nawada Village, Faridabad.

<table>
<thead>
<tr>
<th>Date</th>
<th>Page</th>
<th>Subject</th>
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<tbody>
<tr>
<td>6/9/08</td>
<td>1</td>
<td>Letter for transfer of Panchayat land for the Construction for 400 kV substation in Nawada Village, Faridabad</td>
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<td>5/19/08</td>
<td>2</td>
<td>Transfer of land for substation construction</td>
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</table>

<table>
<thead>
<tr>
<th>Land</th>
<th>Area</th>
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</thead>
<tbody>
<tr>
<td>Panchayat land</td>
<td>22.5 acres</td>
</tr>
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</table>

The letter requests the Panchayat to transfer the required land for the construction of the substation.
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

Preliminary EMP – Package G1
Annexure – IB

Letter for transfer of Panchayat land for the Construction for 400 KV substation in
Nuhiyawali Village, Sirsa
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

नकल जमांबंदी (पड़ता पूलवार)

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<th>गाँव: नृहीरीवाली</th>
<th>तहसील: बक्सारी</th>
<th>मुख्या भिष्मा</th>
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563 बांध 1091  
प्रम. पंचायत अब्बद बांध  
मककुटा गांव  
आम चालु  

1092  
मककुटा बांध  

Mutations &  
Aad Rahanse  
Update ज्ञापी
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

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Preliminary EMP-Package G1
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

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<th>गाँव</th>
<th>पुलियापालीं</th>
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</table>
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

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<td>102 19 20 11</td>
<td>8-0 करो</td>
<td>6 7 8 9 10 11 12 13 14 15 16 17 18 19 20</td>
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Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPN

Preliminary EMP - Package G1

RRAP and EMP for World Bank aided project of HVPN
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNHL

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Preliminary EMP-Package G1
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNL

Preliminary EMP-Package G1
Annexure II  General Electric Layout (GELO) for Substation of 400 KV at Nuhiyawali, Hissar
## Annexure III

### LIST OF THE UNITS REGISTERED WITH MOEF/CPCB AS RECYCLERS/REPROCESSORS HAVING ENVIRONMENTALLY SOUND MANAGEMENT FACILITIES USED/WASTE OIL RE-PROCESSORS

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of the unit</th>
<th>Waste permitted and Quantity allowed</th>
<th>Registration Valid upto (DD-MM-YYYY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haryana</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>M/s. Bharat Oil &amp; Grease Company C-4/15, MIE, Bhadurgarh, Jhajjar Haryana</td>
<td>Used Oil - 2880 KLA</td>
<td>No expiry date. . Validity as per the <strong>Terms &amp; Conditions</strong> specified in the registration certificate</td>
</tr>
<tr>
<td>2.</td>
<td>M/s. Universal Lubricants &amp; Speciality Products, Village - Danialpur, Kunjpura Road, Dist. Karnal (Haryana)</td>
<td>Used Oil - 3600 KLA</td>
<td>No expiry date. . Validity as per the <strong>Terms &amp; Conditions</strong> specified in the registration certificate</td>
</tr>
<tr>
<td>3.</td>
<td>M/s. Kuwait Oil Processors, Khasra No. 89, Delhi Rohtak Road, Sampla, Dist. Rohtak (Haryana)</td>
<td>Waste Oil - 4800 KLA</td>
<td>05/07/2008</td>
</tr>
<tr>
<td>5.</td>
<td>M/s. Haryana Petro Chemicals, Vill. Sheikhpura Meerut Road, Karnal, Haryana</td>
<td>Used Oil – 1200 KLA</td>
<td>27/03/2009</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waste Oil – 4200 KLA</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>M/s. Haryana Industrial Oils Co. Pct. Ltd., Najafgarh Road. Industrial Area, Bahadurgarh-124 507, (Haryana) E-Mail :- <a href="mailto:hioc87@yahoo.com">hioc87@yahoo.com</a></td>
<td>Used Oil - 3750 KLA</td>
<td>No expiry date. . Validity as per the <strong>Terms &amp; Conditions</strong> specified in the registration certificate</td>
</tr>
<tr>
<td>S. No.</td>
<td>Name of the unit</td>
<td>Waste permitted and Quantity allowed</td>
<td>Registration Valid upto (DD-MM-YYYY)</td>
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<td>-------</td>
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<td>-------------------------------------</td>
</tr>
<tr>
<td>11. M/s. Satyam Petro Chemical, Plot No. 5, Sector – 4, Industrial Area, Faridabad (Haryana)</td>
<td>Used Oil - 360 KLA</td>
<td>14/10/2009</td>
<td></td>
</tr>
<tr>
<td>12. M/s. Lubri Sales (India) 32, Industrial Development Colony, Mehrauli Road, Gurgaon - 122001 (Haryana)</td>
<td>Used Oil - 6000 KLA</td>
<td>No expiry date. Validity as per the Terms &amp; Conditions specified in the registration certificate</td>
<td></td>
</tr>
<tr>
<td>13. M/S Shiv Refinery, Vill. Newel, Kunjpura Road, Karnal - 132 001, Haryana</td>
<td>Used Oil -1000 KLA</td>
<td>09/03/2010</td>
<td></td>
</tr>
</tbody>
</table>

Source: http://cpcb.nic.in/oldwebsite/Hazardous%20Waste/wasteoil.html
# Environment Management Plan for 400 kV substations at Nawada Village, Faridabad and Nuhiyawali Village, Sirsa

## Pre construction / Design Phase

<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>
</table>
| Selection of land        | Change in land use | 1. Avoidance of forest land, cultivable land and builtup area.  
2. At least 100 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 |

| Equipment Specifications and design parameters | Release of Chemicals and gases in receptors | 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 | 1. Transformers design  
2. Process, equipment and design | Once during design phase | HVPNL |

<p>| Designing drainage pattern | Impact on groundwater and nearby agricultural field | Appropriate mitigation measures to be adopted in the design itself to avoid accidental hazards in the drainage system | Ground condition for flow of drain water | Part of detailed design survey | HVPNL |</p>
<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>Rainwater Harvesting</td>
<td>Positive Impact</td>
<td>Construction techniques and machinery selection seeking to minimize ground disturbance</td>
<td>-</td>
<td>Part of detailed design survey</td>
<td>HVPNL</td>
</tr>
<tr>
<td><strong>Construction Phase</strong></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Equipment layout and</td>
<td>Noise and</td>
<td>Construction techniques and machinery selection seeking to minimize ground disturbance</td>
<td>Construction techniques</td>
<td>Construction techniques and machinery creating minimal ground disturbance—once at the start of construction phase</td>
<td>Contractor/ HPVNL</td>
</tr>
<tr>
<td>installation</td>
<td>Vibrations</td>
<td></td>
<td>and machinery</td>
<td></td>
<td></td>
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<tr>
<td>Physical Construction</td>
<td>Disturbed nearby</td>
<td>Construction activities on land timed to avoid disturbance on the nearby field crops (within 1 month of harvest wherever possible)</td>
<td>Time period of the</td>
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<td>Contractor/ HPVNL</td>
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<tr>
<td></td>
<td>farming activities</td>
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<td>construction</td>
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<tr>
<td>Mechanized Construction</td>
<td>Noise and</td>
<td>1. The machines should be properly fitted with silencers</td>
<td>Constructional equipments</td>
<td>Once at the start of constructional activities and at least once during middle of construction duration</td>
<td>Contractor/ HPVNL</td>
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<tr>
<td></td>
<td>Vibration</td>
<td>2. Regular maintenance of constructional equipments</td>
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<tr>
<td></td>
<td></td>
<td>3. Turning off plant when not in use</td>
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<tr>
<td>Vehicular movement</td>
<td>Impact on ambient</td>
<td>Water sprinkling on haul road will minimize the dust generation due to vehicle movement. The machinery and construction vehicle will be fitted with silencer. The DG set will kept on closed unit to reduce the noise level. Green belt development will be done around the premises of sub-station.</td>
<td>Ambient air quality and ambient noise quality</td>
<td>Ambient air and Ambient noise will be monitored with approved monitoring agency at construction site as per monitoring plan (Table 4.0).</td>
<td>Contractor/ HPVNL</td>
</tr>
<tr>
<td>during Construction</td>
<td>air quality and</td>
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<td></td>
<td>impact on ambient</td>
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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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<tr>
<td></td>
<td>Danger to local villagers</td>
<td>Safety awareness program among the villagers prior to construction</td>
<td>Safe movement of the</td>
<td>Safe driving of construction vehicle</td>
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<td>construction vehicles</td>
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<td>Contractor/HPVNL</td>
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<td>Temporary blockage of utilities</td>
<td>Overflows or discharge</td>
<td>Temporary filling in drains not to be permitted</td>
<td>Temporary fill placement (m³)</td>
<td>Avoid filling in drains every 4 weeks</td>
<td>Contractor/HPVNL</td>
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<tr>
<td>Site clearance</td>
<td>Impact on vegetation and microbial</td>
<td>Marking of vegetation to be removed prior clearance and strict control on clearing activities to ensure minimum clearance</td>
<td>Vegetation marking and minimum clearance</td>
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<td>Contractor/HPVNL</td>
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<td>Earthwork</td>
<td>1. Accidental runoff and</td>
<td>1. Regular check over accidental spillage</td>
<td>1. Type and quantity of spillage</td>
<td>1. Appropriate fill disposal sites − every two weeks</td>
<td>Contractor/HPVNL</td>
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<tr>
<td></td>
<td>2. Solid waste disposal can cause groundwater contamination</td>
<td>2. Excavated unsuitable material shall be disposed off at proper location</td>
<td>2. Soil disposal location and volume (m³)</td>
<td>2. Acceptable soil disposal sites − every 2 weeks</td>
<td>Contractor/HPVNL</td>
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<tr>
<td>Substation Construction</td>
<td>Loss of Soil and soil erosion</td>
<td>The borrow area shall be identified with proper consent of land owner. The loss of soil erosion shall be control by grassing over the available land during construction of sub-station.</td>
<td>Requirement of Borrow area</td>
<td>Acceptable borrow areas at every 2 weeks</td>
<td>Contractor/HPVNL</td>
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<td>Water pollution</td>
<td>Avoidance of constructional activities during monsoon</td>
<td></td>
<td>pH, BOD, Mg, Na, Ca, K, Total hardness, Fe etc</td>
<td>With approved monitoring agency at construction site as per monitoring plan (Table 4.0)</td>
<td>Contractor/HPVNL</td>
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<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, fuel storage location and regular check over the same</td>
<td>-</td>
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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>
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<td>Constructional Schedules</td>
<td>Noise pollution</td>
<td>Constructional activities to be undertaken during day time only and local community shall be informed about the constructional schedule</td>
<td>Time of construction and noise level [dB(A)]</td>
<td>Once in a quarter at construction site</td>
<td>Contractor/ HPVNL</td>
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<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>
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</tbody>
</table>
| 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  
4. Contractor to arrange for health and safety training sessions | Safety provision during construction; and Contract provision for safety issue | Contract clauses compliance – once every quarter | Contractor/ HPVNL |
| 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 | 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 | Contractor/ 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>
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<td>Operational Phase</td>
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<td>Oil Spillage</td>
<td>Contamination of groundwater</td>
<td>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</td>
<td>Substation bonding “as-built” diagrams</td>
<td>Bonding capacity and permeability – once</td>
<td>HVPNL</td>
</tr>
</tbody>
</table>
| 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 | HVPNL                         |
| 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                          | HVPNL                         |
| Operation and maintenance staff skills less than acceptable | Unnecessary environmental losses of various types | 1. Adequate training to all the staff  
2. 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 | 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>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>Environmental parameters-every 6 months</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 2. Noise barriers</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 – V

Attendance of Public Consultation for 400 KV substation at Nawada Village, Faridabad

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Name</th>
<th>Signature</th>
</tr>
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<tr>
<td>1</td>
<td>Rajesh</td>
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<td>2</td>
<td>Rekha</td>
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<td>3</td>
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<td>Chetram</td>
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<td>6</td>
<td>Mohan Lal</td>
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<tr>
<td>7</td>
<td>Lakhman</td>
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</tr>
</tbody>
</table>
Consultancy Service for the preparation of RRAP and EMP for World Bank aided project of HVPNCL

Attendance of Public Consultation for 400 KV substation at Nuhiyawali Village, Sirsa

Preliminary EMP – Package G1
Annexure – VI

**Photographs of Public Consultation for 400 KV substation at Nawada Village, Faridabad**

1. Consultation with members of Panchayat, Nawada village
2. Participants during women consultation at Nawada village

**Photographs of Public Consultation for 400 KV substations at Nuhiyawali Village, Sirsa**

3. Consultation with members of Panchayat, Nuhiyawali village
4. Public consultation at Nuhiyawali village