

**Rajasthan Spinning &  
Weaving Mills Limited**

# **Allain Duhangan Hydroelectric Project: Tehsil Manali, District Kullu, Himachal Pradesh**

## **Environmental & Social Management and Monitoring Plan**

**Draft Final Report, Volume-II (Revised)**

December 2003

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Rajasthan Spinning & Weaving Mills Limited

**Allain Duhangan Hydroelectric  
Project: Tehsil Manali, District  
Kullu, Himachal Pradesh  
Environmental & Social  
Management and Monitoring  
Plan**

*VOLUME-II (REVISED)*

December 2003

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For and on behalf of  
Environmental Resources Management

Approved by: *Dr. T.K. Moulik*

Signed: \_\_\_\_\_



Position: *CEO & Vice Chairman*

Date: *15 December 2003*

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# 1 ENVIRONMENTAL & SOCIAL MANAGEMENT AND MONITORING PLAN

## 1.1 INTRODUCTION

This section discusses the environmental and social management and monitoring plan (ESMMP) for mitigation/ abatement of identified adverse environmental impacts and enhancement of beneficial impacts due to the proposed Allain Duhangan Hydroelectric Power generating facility to be set up in Manali, Himachal Pradesh.

## 1.2 ENVIRONMENTAL & SOCIAL MITIGATION MANAGEMENT PLAN

The ESMMP has been designed within the framework of requirement under Indian legislative and IFC's safeguard policies on environmental and socio-economic aspects.

The actions need to be taken up to minimise adverse environmental impacts as identified in the previous section. Mitigative measures to be adopted for the implementation of the proposed project include the following:

- Environmental Action Plan;
- Resettlement Action Plan;
- Community Development Plan;
- Public Consultation and Disclosure plan;
- Catchment Area Treatment Plan;
- Construction Labour Management Plan;
- Traffic Management Plan;
- Muck Disposal Plan;
- Emergency Response Plan;
- Fisheries Monitoring Plan; and
- Transmission line Impact Mitigation Framework.

The ESMMP has been prepared considering life cycle approach. RSWML will own and operate the Allain Duhangan Hydroelectric project for a period of 40 years. During this time RSWML will have the sole responsibility to meet the identified environmental and social requirements under the ESMMP.

## 1.3 ENVIRONMENTAL ACTION PLAN (EAP)

The EAP for the proposed hydroelectric project is given in *Table 1.1*.



**Table 1.1**      **Environmental Action Plan (EAP) for Hydroelectric Power Project**

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
<b>A</b>	<b>Pre-Construction Phase</b>			
A.1	Land acquisition for the project components	Loss of land, livelihood, assets etc. broader socio-economic impacts	<p>Compensation for land and assets negotiated on the basis of current HP government norms</p> <p>Rehabilitation Assistance ( Transition Allowance, income restoration measures and employment ) for vulnerable families and families losing more than 25% of their total land</p> <p>An option between land-for- land or cash compensation for families losing more than 75% of their total land and Scheduled Tribe families.</p> <p>Community Development Programme in the project area.</p>	<p>RSWML</p> <p>Local Administration</p> <p>Appointed Agency for Monitoring</p>
A.2	Forestland diversion for establishing project components	Loss of 32 ha of forestland and removal of trees and other vegetation	Compensatory afforestation over 64 ha of double degraded land.	<p>RSWML</p> <p>Ecologist/Env. Engr.</p> <p>DFO</p> <p>MOEF</p>
A.3	Establishment of Camp  Provision of civic amenities for construction labour and movement of truck drivers for transporting construction material.	Health Risks due to lack of health and sanitation conditions through disposal of sewage on open land which may cause mosquito nuisance, water borne diseases etc. Chances of spread of sexually transmittable diseases like AIDS	<p>Construction of toilet facilities and sewage collection system for treatment.</p> <p>Provision of treatment plant for sewage before its disposal, meeting the stipulated standards of discharge.</p> <p>Arrangements for first aid,</p> <p>Awareness programmes on AIDS etc.</p>	<p>RSWML</p> <p>Local Health Administration</p> <p>HP Factory Inspectorate</p>
A.4	General	Health, Safety, Solid Waste Disposal (domestic and project)	Develop codes of practice for safety and disposal of muck and solid waste prior to taking up of construction activities	<p>RSWML,</p> <p>HPSEPPCB</p> <p>Factory Inspectorate</p>
<b>B</b>	<b>Construction Phase – Construction Activities</b>			

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
<b>BA</b>	<b>Temporary Occupation by Construction Labour</b>			
BA.1	Establishment of buildings, storage facilities, workshops for maintenance of vehicles and machinery/equipment	Deterioration in surface water quality or soil and ground water quality when discharged untreated	Treatment plants for wastewater generated from workshop etc and domestic wastewater generated from camp and colony	RSWML Construction Engineer Environment Engineer HPSEPPCB
BA.3	Water supply	Impact due to drawing of water for domestic purposes	Emphasis on optimisation water usage.	RSWML Construction Engineer
BA.4	Fuel requirement of workers during construction phase	Pressure on forest produce for fuel use	Provision of fuel allocation to construction workers so as to reduce pressure on forest produce	RSWML Construction Engineer
BA.5	Solid waste disposal	Diseases, rats etc.	Arrangement for kitchen waste disposal – identify locations for establishing humus pits, which can be covered with soil for anerobic composting.	RSWML Construction Engineer
<b>BB</b>	<b>Site Preparation – Construction of Roads etc.</b>			
BB.1	Demolition and Removal of structures, if any	Noise disturbance and dust	Water sprinkling and Demolition limited to day time only	RSWML Construction Engineer
BB.2	Construction of Roads and Development of other areas	Dust raised during various construction activities; Soil erosion; Reduction in water quality	Realignment of road, where feasible to avoid cutting of large trees and area falling under forest/ devbans. Sprinkle water on unpaved roads to reduce incidence of dust in air Proper engineering designs of access roads. High slope area be provided with adequate erosion control measures like grass turfing etc. Provide adequate culverts and drainage channels	RSWML Construction Engineer Environment Engineer DFO

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
BB.3	Transportation -Vehicular movement, Loading/unloading	Causes dust nuisance as well as NO <sub>x</sub> pollution due to vehicular emissions	Traffic Management through daily arrangements for fleet management, sprinkling of water on construction road	RSWML Safety Officer
<b>BC</b>	<b>Diversion of water</b>			
BC.1	Diversion of Allain and Duhangan streams for construction of Allain Barrage and Duhangan weir.	Soil erosion and Reduction in water quality	Adequate provision for proper channel for carrying diverted water from both streams.	RSWML Construction Engineer Environment Engineer
BC.2	Construction equipment for Diversion of water	Noise generation	Day time operation of high noise generating equipment Regular maintenance of equipment Provision of enclosures for high noise generating equipment	RSWML Construction Engineer Environment Engineer
<b>BD</b>	<b>Construction of Other Project Components</b>			
BD.1	Excavation and blasting during tunnel development	High Impulsive Noise levels	Adopting optimised blasting techniques using delay detonators, blasting in confined areas (inside the tunnels)	RSWML Construction Engineer Safety Officer Blasting Specialist
BD.2	Blasting Operations for Tunnel Development	Impulsive ground vibrations. Impacts short term and reversible.	Adopting optimised blasting techniques using delay detonators, blasting in confined areas (inside the tunnels)	RSWML Construction Engineer Safety Officer Blasting Specialist
BD.3	Blasting Operations for Tunnel Development	Affects wild life through air & noise pollution. Short term and reversible impacts	Optimised blasting operation. Controlled Traffic management.	RSWML Construction Engineer

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
			Provision of enclosures and other measures for high noise generating machinery/equipment	Blasting Specialist Environment Engineer Safety Officer
BD.4	Excavation and blasting during tunnel development	Occupational health hazards  Deteriorates workers health (occupational health hazards) due to air & noise pollution, accidents & injuries. Restricted to construction phase – short term and reversible	Optimised blasting restricted to tunnels (confined area) only provided with adequate exhaust system Compulsory use of respiratory personal protective equipment. For those working in deep caverns, arrangement of life line should also be made. Use of fire proof cables inside the tunnels for lighting during construction phase.	RSWML Construction Engineer Safety Officer
BD.5	Excavation and blasting during tunnel development	Occupational safety hazards Construction place safety hazards	Provision of safety management on daily basis under direct supervision of a permanent safety officer on site during construction and operation phases; Provision of adequate safety personal protective equipment like safety helmets, safety goggles, gum boots, gloves etc.  Provision of fireproof cables inside the tunnels to prevent any short- circuiting during construction phase.  Develop code of practice for safety during construction phase.	RSWML Construction Engineer Safety Officer
BD.6	Excavations, drilling, transportation and other project activities	Soil erosion/sedimentation during construction phase	Reuse of over 30% of muck in road construction, Proper staking and their compacting, afforestation, improvement of landscape measures and catchment area treatment to reduce incidence of soil erosion.  Provision of measures to control silt/sediments during construction phase, provision of check walls, check dams and spurs	RSWML Construction Engineer Environment Engineer HPSEPPCB
BD.7	Water withdrawal for construction purposes i.e. for dust suppression, workshop, domestic supply at construction site and colony etc.	Reduced flow - Impact due to drawing of water reversible	Optimise Water Requirement – Avoid Spills  Emphasis on reuse of water during wet drilling of tunnels.	RSWML Construction Engineer Environment Engineer



Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
				Engineer
BD.8	Muck and other solid waste including associated overburden disposal	Impact on landuse, topography, soil etc.	Reuse of maximum solid waste. Minimum 30% of muck to be reused in road construction, improvement of landscape measures  Disposal of Muck (excavated rock and soil) as per Muck Disposal Plan.  Further possibility for reuse of muck is to be considered by getting it tested for feasible strength and other features.	RSWML Construction Engineer Environment Engineer HPSEPPCB
BD.9	Stock piling of solid waste (spoil) and muck their disposal	Increase in SPM level during high winds	Proper staking and compacting of muck and spoil,  Afforestation and improvement of landscape as per catchment area treatment plan  Other dust preventive measures like water sprinkling etc to reduce incidence of high SPM during windy conditions.	RSWML Construction Engineer Environment Engineer Ecologist
BD.10	Construction phase – DG Set operation for power generation in case of abrupt power supply form State Electricity Board	Increase in SO <sub>2</sub> and NO <sub>x</sub> levels	Standby operation during construction phase only  Provision of stipulated stack height, DG set operations at dispersed locations  DG sets will be spread at 4 locations within the project area	RSWML Construction Engineer Environment Engineer HPSEPPCB
BD.11	DG sets, Concrete Mixing Plants and other machinery generating noise and vibrations	Increase in noise and vibrations	Provision of enclosures for high noise producing machinery like concrete mixing plants, DG sets and other equipment,  Provision of mufflers (silencers) on DG sets  Provision of temporary but proper foundation supported with rubber padding to control vibrations.  Optimised operation of construction related machinery	RSWML Construction Engineer Environment Engineer HPSEPPCB
BD.12	Transportation – vehicular movements	Increase in noise levels  Adverse effect due to air and	Fleet management on daily basis	RSWML Construction

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
		noise pollution due to vehicular traffic	Restricted vehicular movement during night time	Engineer
		Adverse impact of dust and air emissions.	Vehicles carrying construction material will be properly covered and water sprinkling,	Environment Engineer
			Vehicular traffic is mainly confined to project area and DG sets will be spread at 4 locations within the project area., vehicles carrying construction material will be properly covered and water sprinkling will be done at construction areas to minimise incidence of dust and air emissions	Safety Officer
BD.13	Transportation – Due to increase in vehicular Traffic on Manali – Nagar roads	Increase of traffic will lead to increased incidences of road accidents	Regulated traffic on daily basis with the help of local administration so as to avoid blocking of the roads.	RSWML
		Blocking of roads due to transportation on the Nagar – Manali Road	Nagar – Manali road although not commonly used by tourists en-route Manali. Regulated traffic on daily basis with the help of local administration so as to avoid blocking of the roads.	Safety officer Local Traffic Administration
BD.14	Deployment of construction labour not belonging to the project area and restriction on employment of child labour.	Influx of people of various cultures will have substantial effect on local culture. Employment of child labour would be in violation of IFC norms.	Regular check and measures to control through supervisors that construction labour does not interfere with the local inhabitants for their cultural values.	RSWML Social Scientist
<b>C</b>	<b>Catchment Area Treatment</b>			
C.1	Repair of slope failures and erosion	Reduced downstream sedimentation	Strict implementation of Catchment Area Treatment Plan through periodical internal and external monitoring and evaluation.(Refer to Section 10.12 of main ESIA document)	RSWML Construction Engineer Environment Engineer
C.2	General maintenance and ecological protection	Improvement of terrestrial habitation by compensatory afforestation conservation of flora and fauna through periodical monitoring by internal and	Strict implementation of Catchment Area Treatment Plan  Although no fish found in Allain and Duhangan streams, a Fish survey is to be done for 12 months of the year and as discussed above minimum recommended flow of `150 litres per second must be ensured from diversion structures for downstream users	RSWML Construction Engineer Environment

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
		external agencies.	must be ensured from diversion structures for downstream users and ecological life protection.	Engineer
		Conservation of water resources		Ecologist
				DFO
<b>D</b>	<b>Demobilisation of Temporary Construction Infrastructure</b>			
D.1	Demobilisation and removal of all temporary buildings and magazines	Aesthetics, health, safety, reduction in water quality	Convert accommodation to schools/ local welfare activities if close to any village else demolish or remove such temporary building from site	RSWML
			Re-vegetate bare areas	Construction Engineer
			Remove all construction equipment from project site	Environment Engineer
			Remove all waste from site and dispose it off appropriately as per the requirement of HPSEPPCB	Ecologist
			Rehabilitate muck and other spoil dumping sites.	Safety Officer
<b>E</b>	<b>Operation Phase</b>			
E.1	Water diversion for hydroelectric power generation	Impact due to diversion of water for power generation during operation phase and reduced flow in stretches between diversion structure and tail race discharge point on Allain and downstream of the Duhangan stream.	Provision of maintaining minimum recommended flow of 150 litres per second both downstream Allain and Duhangan streams immediately after diversion points	RSWML
			Installation of flow measuring gauges both electronic and manual measurement basis.	Environment Engineer
E.2	Wastewater generation from project workshop and domestic supply including flushing of sand accumulated in the de-silting chambers	Deterioration in surface water if wastewater from project workshop and domestic source when discharged untreated	Sewage Treatment plant for domestic wastewater	RSWML
			Controlled discharge of flushing from desilting chambers	Environment Engineer
E.3	Vehicular movement and hydropower generation	Minor increase in noise levels	Limited vehicular movement during operation phase	RSWML
			Regular maintenance of company owned vehicles	Safety Officer
E.4	Development of Reservoir	Beneficial impacts to avi-fauna	Regular cleaning and maintenance of the reservoir	RSWML
			Pasture Development and Afforestation in the reservoir	Environment

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
			surroundings	Engineer
E.5	Reduction of water flow in the stretch between diversion point to tailrace discharge in Allain stream while in Duhangan stretch between diversion point to its confluence in Beas River	Reduced flow and increased silt level during operation phase	Provision of maintaining minimum recommended flow of 150 litres per second both in Allain and Duhangan streams immediately after diversion points;  Sewage Treatment plant for domestic wastewater;  Controlled discharge of flushing from de-silting chambers over pro-longer period or during high flow periods  Provision of check walls with boulders, stones and with/ without meshes at 5 locations, check dams with boulders & stones at 4 locations and spurs at 5 locations as per details given in Section 10.12 on Catchment Area Treatment.	RSWML  Environment Engineer  HPSEPPCB  DFO
E.6	Illumination – provision of light along all the project component areas	Poses potential of disturbance to mammals and birds at nights	Minimum light will be maintained for safe and secured project operations	RSWML  Security Officer  Safety Officer
E.7	Development of water storage reservoir and submergence area near Allain diversion point	During project operation water storage poses potential to provide breeding grounds for vector and water borne diseases – Impacts will be long term and irreversible if not controlled	Provision for control of water borne diseases vectors through regular health monitoring and taking up necessary mitigative measures  Regular Cleaning and maintenance of the area to attract avi fauna	RSWML  Health Officer  Environment Engineer
E8	Natural Hazards	Any incidence of natural hazards can hamper with local resources and affect people in the surroundings	Provision of detailed engineering by taking adequate engineering measures of earthquakes, cloudburst in the detailed engineering design aspects for project components like Allain barrage and intermediate reservoir sites. For other components also measures of landslides, avalanche, forest fires etc. will be taken  Provision of automatic shutoff of powerhouse in case of natural calamity  Appointment of an independent engineer as required by IFC under OP4.37 safety of dams for design verification and periodical inspection/ audits  Linkage of cut off of water flow from diversion points into the	RSWML  Security Officer  Safety Officer  Emergency Response Team

Sl.#	Issue - Project Activities	Associated Impacts	Mitigative Measures – Action Plan	Responsibility
			intermediate reservoir	
			Regular dam safety design inspection and maintenance	
			Provision of warning system for any major release due to any natural hazard/accident	
			Regular education to downstream users or likely affected people about do's and don'ts in case of any mishap	
			Provision of appropriate emergency response plan	
F	Decommissioning/ Abandonment			
F.1	Demobilisation/ Abandonment	Smooth Flow	Slow De-watering of intermediate reservoir, connected tunnels and Allain barrage	RSWML
		Area Restoration		Civil Engineer
	Restoration of Area		Remove sediments and dispose of properly	Contractor
			Demolish intermediate reservoir/ dam structures	Safety Officer
			Re-vegetate exposed areas at Allain barrage and Duhangan weir sites	
			Convert intermediate reservoir back to an agricultural field or re-vegetate in discussion with the local administration.	

## 1.4 *RESETTLEMENT ACTION PLAN*

## 1.5 *PRINCIPLES*

The policy objective influencing the resettlement action plan is to avoid or minimize, to the extent possible, the hardships and impoverishment that land acquisition may cause, and to mitigate any adverse impacts thereof at the household and community levels. These objectives are detailed and made more specific in terms of the principles and guidelines to be followed for land acquisition, adoption of compensation/entitlement policies and planning and implementation of rehabilitation activities.

These principles, definitions and entitlement framework will be applicable when assessing and compensating social impacts due to the transmission line also.

### 1.5.1 *Definitions and Eligibility for compensation and rehabilitation*

#### *Project Affected Family*

A Project Affected Family (PAF) is one which, as a consequence of the project, sustains losses by reasons of impact on a) land b) structure c) immovable asset and/ or d) livelihood/ incomes. A PAF will be identified through a census survey that shall be undertaken after all the design component of the project is frozen.

PAFs may include the following one or more of the following categories:

#### *Agricultural PAFs*

- Titleholders
- Sharecroppers
- Tenants/ Lessee
- Non-legal Users/ Occupants

**The project does not propose to impact any structure or homestead land. The sample survey also did not come across PAFs in the tenant and lessee categories.**

#### *Non-legal Cultivators*

All the families who are directly impacted in terms of loss of livelihood and income through loss of land, and other assets, whether they have a legal right over the land/ structure/ asset or not, are to be recognized as project affected families and will be covered in the entitlement framework. For non-legal cultivators, no compensation will be paid for loss of land to which they do not have legal titles, but rehabilitation assistance shall be provided for loss of livelihood and income. Compensation for loss of land will be paid to the owner of that land. In case of family members have informal arrangements for use of land, the compensation money to be paid to the legal owner, may be shared by the members on the basis of their mutual understanding. It would be the responsibility of the village Panchayat and the District Administration to ensure



that the compensation money would be proportionately distributed among all the rightful shareholders of the concerned property.

#### *Cut-off Dates*

Cut-off dates will be established to determine eligibility of persons and their assets. *These are the dates on which the census of the affected families and their assets will be done.* Assets like structures and other which are created or groups claiming to be affected, after the cut off dates, will be ineligible for compensation.

#### *Non-resident Owners*

Compensation for loss of land/ structure/ assets will be made to owner/ owners of the land/ structure/ assets. Non-resident owners of structures/ land who do not live in the project area and have not been covered under the census survey, will have to come forward to claim their compensations. Their claim will be individually verified before disbursement of entitlements.

#### *Family Unit*

Family unit, in the project context, would be household members living in one house and sharing a kitchen. All cash payments to each family unit shall be made in joint accounts (of the husband and the wife). Every family member above the age of 18 years (i.e., adult sons, unmarried/ widowed/ separated/ abandoned daughters) will be considered for specific rehabilitation assistance in form of skill upgradation and income restoration.

#### *Vulnerable Families*

Families with income below the poverty line (Rs 20,000 per annum per family)<sup>1</sup>, families with mentally or physically challenged members, senior citizens (above the age of 60) and women headed households have been identified as vulnerable and are eligible for special assistance. In addition families losing more than 25% of their land through acquisition would be also identified as vulnerable.

#### *Most Vulnerable Families*

Families losing more than 75% of their actual land holding (and not only as per land records), and Scheduled Tribe families will be categorised as “most vulnerable”.

#### *Transition Allowance:*

For vulnerable families, including families losing more than 25% of their total land holding after land acquisition, the project will provide rehabilitation assistance in form of a monthly Transition Allowance for a period of 1 year. In addition Transition Allowance would be provided to sharecroppers and employees for loss of income for an appropriate period of time.

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<sup>31</sup> Source: Department of Land Revenue

### *Land Purchase Assistance*

It is likely that public knowledge of the project would result in an artificial inflation of the land prices in the immediate vicinity, especially for people who have received compensation and intend to purchase replacement land.

However, in areas beyond the immediate influence of the project, the land prices are unlikely to rise substantially. The project proponents, through their land purchase assistance program shall make an assessment of the availability of land prices of different categories in a few selected areas and provide such information to those land losers willing to purchase replacement land

The land purchase assistance will therefore:

- Assist the family in identifying alternate lands
- Provide information on market prices

### *Tree Shifting Assistance*

Wherever demanded, and technically feasible, the project proponents will assist the PAFs in shifting their apple trees to another part of their land holding not affected by the project or in new plots of land purchased. This assistance will involve providing vehicle to move trees as well as technical support from experts brought to the area for the purpose. The PAF will be responsible for the uprooting and re-planting of the tree. While the survival rate of such trees are not known, this assistance will not bar the PAF to be eligible for various other entitlements outlined under the relevant categories. This assistance will be more of a good will and confidence building measure by the project proponent, specially as PAFs have requested this assistance in various public consultations.

### *Skill upgradation and income restoration assistance*

All Project Affected families will be eligible for special skill enhancement income restoration assistance to enable them to restore and preferably enhance their incomes through supplementary avenues.

## **1.5.2**

### ***Land Acquisition and Impact Mitigation Principles***

#### *Land Acquisition*

It is estimated that approximately 140 families will be directly impacted through land acquisition and there may be few more indirectly impacted families (wage labourers and sharecroppers). A full census will be carried out in the beginning of the implementation stage of the project that will identify all the directly and indirectly impacted families.

In keeping with the policy objectives stated above, RSWML will adopt the following measures:

- To the extent possible, negotiate and buy the land required at market price. Only in cases where negotiations break down or do not take place, the project can go in for land acquisition, the process for which is already underway.

- Explore alternative designs and alignments to minimize the need for land acquisition. Even within this the aim would be to minimize the need to acquire private land and substitute it with government or revenue land.
- Ensure that no homesteads are being impacted.
- Wherever feasible, road alignments and location and design of colonies will use land that are of lower productive value in terms of productivity and use.
- Ensure that the project activities do not impact religious sites, cultural property and common property resources.
- Wherever land holdings left after land acquisition become economically unviable, the landowners will be given option to offer the entire holding for acquisition.

### *Impact Mitigation*

Beside provisions outlined in the law of the land for land acquisition, provisions of the IFC and World Bank will be used to supplement those.

- As opposed to the requirements in the acquisition law, absence of legal titles will not be a bar to assistance, especially for the socio-economically weaker sections.
- Vulnerability, in terms of women headed households, family with aged and physically challenged members, and families below the poverty line, will be identified and issues specific to them will be addressed through appropriate policies and support. In addition families losing more than 25% of their land, after acquisition, will also be identified as vulnerable.
- Land alienation will be prevented in the case of tribal families, through a land-for-land provision unless the PAF demands otherwise.
- At present the project does not intend to impact any Common Property Resources or cultural property. However, in case, after designs and alignments are complete, and if some elements may cause community wise impacts (restricting access to CPRs, or use of community facilities etc.) the project will re-build such facilities and provide for alternative access.

### **1.5.3 Entitlement Framework.**

*The compensation modalities are based on the assumption that no residential structures, homestead land, CPRs and cultural property will be impacted by the project.*

#### *Compensation for loss of land and assets*

- Compensation for the acquired lands will be paid at costs negotiated on the basis of current government norms. The process to determine land value will be in consultation with the landowners.
- All affected non-land property, such as structures and trees, seasonal and perennial crops, orchards and other immovable items of value, will be compensated at negotiated costs.
- Families losing more than 75% of their land after acquisition, will be identified as most vulnerable and the project will provide them an option of cash compensation or an alternative land equivalent in size, value and quality to that they are losing.<sup>1</sup> The land should not be far from where these

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<sup>41</sup> Similar arrangement was made for people becoming landless in the "R & R Policy for Project Affected Persons" in the Naptha Jhakri Hydroelectric Project.

families are currently located. The project proponent will seek the assistance of the revenue department for this purpose

- All affected Scheduled Tribe families will be provided a similar option of land for land.
- PAFs would be assisted in moving and re-planting of their apple trees in other plots of land owned by them or in new plots brought by them.
- Compensation and entitlements will be paid in full *before* the PAFs are evicted from the acquired land.
- Utilisation of compensation money will be regulated by the project proponent to ensure that the cash is not spent on waste full expenditure. The project will encourage and facilitate the PAFs to use the money for building their asset base, repayment of debts, starting some enterprise of their own etc.

#### *Compensation for loss of livelihood and incomes*

Rehabilitation assistance is to be provided to all PAFs who will lose more than 25% of their total landholding and whose livelihoods and incomes are to be affected by the loss of land and asset (mainly trees). While the compensation for the loss of land/ asset will enable them to replace their affected land/asset, the rehabilitation assistance (in the form of a transition allowance, and skill development and training schemes, etc.) will allow the PAFs to tide over the transition period immediately after incurring the loss and till the time they are able to re-establish their original economic activities or initiate new ones.

#### *Mitigation of Impacts on Cultural Property / Access to Common Property Resources, Public Infrastructure and Amenities*

The project designs till the time of the survey has ensured that no cultural or common property will be impacted. However, where impacts on cultural properties are unavoidable at a later stage, the structures will be relocated and restored in a convenient location in a culturally appropriate manner in consultation with the local community. Where common property resources such as grazing lands are affected, alternative arrangements would be made at an appropriate location.

#### **1.5.4**      *Addressing Safety Concerns*

Safety concerns and accident hazards, likely to result due to new roads will be appropriately addressed at the design stage.

#### **1.5.5**      *Participation and Consultations*

Finalisation of the entitlement packages and the rehabilitation measures shall be done in a participatory manner, with active involvement of the local community and village institutions. Regular consultations shall be held with the local community at the time of implementation of the social impact mitigation plan. The implementation process shall be monitored and evaluated by independent agencies and a grievance redressal mechanism shall be established to identify problems and take appropriate corrective actions.

## 1.6 ENTITLEMENTS

### 1.6.1 Entitlements for Agricultural PAFs

#### *Legal Title-owners*

**1. Compensation for Loss of Land:** Cash compensation shall be paid to landowners for the affected parcel of land at negotiated value (minimum compensation should be the prevailing government norms for equivalent category and location of land, and to be determined by the negotiation committee.). Seasonal and perennial crops grown on that land will be compensated at 3 times the net average annual income from that land during the last three years.

*1 a) If the agricultural PAF is losing more than 25% of the total landholding:*

PAFs losing more than 25% of their landholding would be classified in the vulnerable category. The project authorities in such cases, shall pay, in addition to the negotiated value, rehabilitation assistance in the form of a transition allowance, skill upgradation through vocational training and income restoration programs.

*1 b) If the agricultural PAF is losing more than 75% of the total landholding:*

Families losing more than 75% of their land after acquisition, will be identified as most vulnerable and the project will provide them an option of either cash compensation at negotiated value or an alternative land equivalent in size, value and quality to that they are losing. The land that will be provided free of any transaction costs such as registration fee, transfer taxes etc. The project proponent will seek the assistance of the revenue department for this purpose.

If such PAFs choose the option of alternate land, and would like to start cultivation there, the project will provide additional start-up assistance, equivalent to 3 months transition allowance.

The project authorities in such cases, shall also pay, rehabilitation assistance in the form of transition allowance, skill upgradation through vocational training and income restoration programs, irrespective of whether the remaining parcel of land is viable or not.

*1c) If agricultural PAF belongs to the ST category*

All ST families will be provided an option for land equivalent land (wherever feasible and available) in area and in quality to the land getting acquired. The land that will be provided free of any transaction costs such as registration fee, transfer taxes etc. The project proponent will seek the assistance of the revenue department for this purpose.

**2. Rights to Use of Land:** The affected landowners shall have the right to use the land till compensation has been fully paid. Also adequate notice (minimum of 3 months) has to be provided before eviction and the cultivator shall have the right to harvest standing crop sown before the eviction notice is issued. *This*

*provision is not necessary if the compensation of land includes the compensation for standing crop.*

**3. Loss of Trees:** Compensation for loss of trees which are present within the affected parcel of land will be based on negotiated value of the trees, calculated on the basis of the annual productivity of the trees and the average productive life span of the trees.<sup>1</sup>

**4 Loss of Assets, if any:** If the agricultural PAF has any immovable asset /s which is located within the affected parcel of land, such as private tap-stands, other irrigation structures, cattle troughs and sheds, then loss of all such assets shall be compensated.

### **5. Loss of Livelihood/ Income:**

7 a) *Transition Allowance* - A monthly transition allowance of Rs 2000<sup>2</sup> will be provided to all vulnerable agricultural PAFs for a period of one year.

7 b) *Income Restoration Programs* -Rehabilitation assistance in the form of skill upgradation through vocational training and income restoration programs will be provided to all PAFs, irrespective of vulnerability.

7 c) *Land Purchase Assistance Program:* Land Purchase assistance as defined in section 10.5.1 will be provided to all PAFs wanting to purchase alternate land.

7d *Tree Shifting Assistance:* as defined in section 10.5.1 will be provided if so demanded by the PAF.

### *Non-legal Users/Occupants of Agricultural Land*

Non-legal occupants of agricultural land are not directly eligible for compensation for loss of land.<sup>3</sup> They are however eligible to the following entitlements:

**1. Loss of Crop Income:** Seasonal and perennial crops grown on that land will be compensated at 3 times the net average annual income from that land during the last three years.

**2. Rights to use of Land:** The PAFs shall be provided adequate notice (minimum of 3 months) before eviction and the cultivator shall have the right to harvest standing crop sown before the eviction notice is issued. *This provision is not necessary if the compensation of land includes the compensation for standing crop.*

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<sup>1</sup> The Department of Horticulture in HP has determined a formula for compensating fruit bearing tree. However, in our assessment, this may be lower than the present market value of the tree. Hence the value determined by the Horticulture Department would need to be appropriately "topped up". The exact amount of topping up would need to be decided by independent assessment by experts.

<sup>2</sup> TA amount is slightly more than the current poverty line of Rs 20,000/ annum per family. The project will like to ensure that no family falls below the poverty line in the course of the project.

<sup>3</sup> They will get a share of the money from the title holder and not directly from the LAO. The Panchayat will ensure that the land compensation will be fairly divided among rightful shareholder of the land, even if the land record are not updated and do not recognise them as owners. Mahila Mandals in each village will monitor the process.



**3. Loss of Trees:** Compensation for loss of trees owned by the PAF which are present within the affected parcel of land cultivated by the PAF will be paid based on negotiated value of the trees, calculated on the basis of the annual productivity of the trees and the average productive life span of the trees.

**4. Loss of Assets, if any:** If the agricultural PAF has any immovable asset/s which is located within the affected parcel of land, such as private tapstands, other irrigation structures, cattle troughs and sheds, then loss of all such assets shall be compensated.

**5. Loss of Livelihood / Income:**

7 a) *Transition Allowance* - A monthly transition allowance of Rs 2000 will be provided to all vulnerable PAFs for a period of 1 year.

7 b) *Income Restoration Programs* -Rehabilitation assistance in the form of skill upgradation through vocational training and income restoration programs will be provided to all PAFs

7c *Tree Shifting Assistance:* This assistance as defined in section 10.5.1 would be provided if so demanded by the PAF.

**1.6.2 Entitlement for Sharecroppers**

**All sharecroppers will be identified during the census survey.** If a family is practising sharecropping continuously on the land to be acquired, for over three years, they would be eligible for crop compensation for seasonal and perennial crops grown on that land. The compensation will be 3 times the net average annual income from that land during the last three years. In addition they will also be eligible for a Transition Allowance of Rs 1000 per month for 6 months<sup>1</sup> as entitlement against loss of income. The census survey will verify their claim through discussions with other villagers and the village Panchayat.

The sharecropper families will be eligible for rehabilitation assistance in the form of skill upgradation through vocational training and income restoration programs

**1.6.3 Entitlement for loss of employment**

People, employed in land that will be acquired for the project for at least three years, will be compensated for the loss of income. **Such people will be identified by the census survey** and will be entitled to a Transition Allowance of Rs 1000 for six months. Claims for employee status will be verified through discussions with other villagers and the village Panchayat

Employees, in addition, will be eligible for rehabilitation assistance in the form of skill upgradation through vocational training and income restoration programs

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<sup>1</sup> The TA is less in this case and for a shorter duration because sharecropping is done only for a few months in a year. Sharecropping income is rarely the primary source of income for families. It rather supplements the income from land that the family owns and cultivates.

#### **1.6.4**            *Entitlement for Vulnerable Families*

Vulnerable families under each category of PAFs are eligible for special rehabilitation assistance, as outlines in the sections above.

#### **1.6.5**            *Entitlement for Scheduled Tribe Families*

All vulnerable ST families will be eligible for the special assistance being provided for vulnerable families. In addition, and following the Himachal Pradesh's policy of prevention of land alienation among tribals in the state<sup>1</sup>, the project will provide a lands-for land option to all tribals whose land is getting acquired for the project. The land that will be provided will be equal in size, value and quality to the one they are losing.

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<sup>1</sup> Himachal Government has various policies to ensure that tribals do not get alienated from their lands, and that such land transfers are strictly regulated. Various project specific R & R policies (e.g. Naptha Jhakri & Baspa-II HEP) provide for alternative lands or employment for tribal families.

**Table 1.2 Entitlement Matrix for Allain Duhangan Hydroelectric Project**

Category Of Loss	Entitled Person (EP)	Sub-Category Of EP	Entitlement	Rehabilitation Assistance
Agriculture land	Owner of land	Losing < 25% of total land holding	<ul style="list-style-type: none"> <li>• Cash compensation for land at negotiated value, based on current government norms.</li> <li>• Cash compensation for seasonal and perennial crops at 3 time the net average income from that land during the last three years.</li> <li>• Compensation for loss of assets and trees at negotiated cost</li> <li>• Compensation for loss of standing crop at negotiated value</li> <li>• Right to use the land till compensation is fully paid/settled</li> </ul>	<ul style="list-style-type: none"> <li>• Land Purchase Assistance</li> <li>• Tree Shifting Assistance</li> <li>• Eligible for skill enhancement and Income Restoration Programme</li> </ul>
		Losing between 25-75% of total landholding (vulnerable)	<ul style="list-style-type: none"> <li>• Cash compensation for land at negotiated value</li> <li>• Cash compensation for seasonal and perennial crops at 3 time the net average income from that land during the last three years</li> <li>• Compensation for loss of assets and trees at negotiated cost</li> <li>• Compensation for loss of standing crop at negotiated value</li> <li>• Right to use the land till compensation is fully paid/settled</li> </ul>	<ul style="list-style-type: none"> <li>• Transition Allowance of Rs 2000 per month for 1 year.</li> <li>• Land Purchase Assistance</li> <li>• Tree Shifting Assistance</li> <li>• Eligible for skill enhancement and Income Restoration Programme</li> </ul>
		Losing > 75% of total landholding (vulnerable)	<ul style="list-style-type: none"> <li>• Cash compensation for land at negotiated value, or</li> <li>• Land equivalent in size and quality in an appropriate location. The land that will be provided free of any transaction costs such as registration fee, transfer taxes etc. The project proponent will seek the assistance of the revenue department for this purpose</li> <li>• Cash compensation for seasonal and perennial crops at 3 time the net average income from that land during the last three years</li> <li>• Compensation for loss of assets and trees at negotiated cost</li> <li>• Compensation for loss of standing crop at negotiated value</li> <li>• Right to use the land till compensation is fully paid/settled</li> </ul>	<ul style="list-style-type: none"> <li>• Transition Allowance of Rs 2000 per month for 1 year.</li> <li>• An additional start up assistance for families choosing the land option and aiming to start cultivation in that land.</li> <li>• Land Purchase Assistance</li> <li>• Tree Shifting Assistance</li> <li>• Eligible for skill enhancement and Income Restoration Programme</li> </ul>

Category Of Loss	Entitled Person (EP) Non legal users/Occupants*	Sub-Category Of EP	Entitlement	Rehabilitation Assistance
		Losing < 25% of total land holding	<ul style="list-style-type: none"> <li>• Cash compensation for seasonal and perennial crops at 3 time the net average income from that land during the last three years</li> <li>• Compensation for loss of assets and trees at negotiated cost</li> <li>• Compensation for loss of standing crop at negotiated value</li> <li>• Right to use the land till compensation is fully paid/settled</li> </ul>	<ul style="list-style-type: none"> <li>• Land Purchase Assistance</li> <li>• Tree Shifting Assistance</li> <li>• Eligible for skill enhancement and Income Restoration Programme</li> </ul>
		Losing > 25% of total land holding (vulnerable)	<ul style="list-style-type: none"> <li>• Cash compensation for seasonal and perennial crops at 3 time the net average income from that land during the last three years</li> <li>• Compensation for loss of assets and trees at negotiated cost</li> <li>• Compensation for loss of standing crop at negotiated value</li> <li>• Right to use the land till compensation is fully paid/settled</li> </ul>	<ul style="list-style-type: none"> <li>• Transition Allowance of Rs 2000 per month for 1 year.</li> <li>• Land Purchase Assistance</li> <li>• Tree Shifting Assistance</li> <li>• Eligible for skill enhancement and Income Restoration Programme</li> </ul>
	Sharecropper		Cash compensation for seasonal and perennial crops at 3 time the net average income from that land during the last three years	<ul style="list-style-type: none"> <li>• Transition Allowance of Rs 1000 per month for 6 months</li> </ul>
	Employee on that land			<ul style="list-style-type: none"> <li>• Transition Allowance of Rs 1000 per month for 6 months</li> </ul>
	Scheduled Tribe families		<ul style="list-style-type: none"> <li>• Cash compensation for land at negotiated value, or</li> <li>• Land equivalent in size and quality in an appropriate location. The land that will be provided free of any transaction costs such as registration fee, transfer taxes etc The project proponent will seek the assistance of the revenue department for this purpose.</li> <li>• Cash compensation for seasonal and perennial crops at 3 time the net average income from that land during the last three years</li> <li>• Compensation for loss of assets and trees at negotiated cost</li> <li>• Compensation for loss of standing crop at negotiated value</li> <li>• Right to use the land till compensation is fully paid/settled</li> </ul>	<ul style="list-style-type: none"> <li>• Land Purchase Assistance</li> <li>• Tree Shifting Assistance</li> <li>• Eligible for skill enhancement and Income Restoration Programme</li> </ul>

Category Of Loss	Entitled Person (EP)	Sub-Category Of EP	Entitlement	Rehabilitation Assistance
	Vulnerable Families**			<ul style="list-style-type: none"> <li>• Transition Allowance of Rs 2000 per month for 1 year.</li> <li>• Land Purchase Assistance</li> <li>• Tree Shifting Assistance</li> <li>• Eligible for skill enhancement and Income Restoration Programme</li> </ul>

*\*Non legal cultivators will get their share of the compensation for land from the title holders and not directly from the LAO.*

*\*\*Vulnerable families will be identified and specially supported under each loss category, including ST families.*

As described in the entitlement framework in section 10.6, all PAFs will be eligible for rehabilitation support. In addition vulnerable families, including those that will lose more than 25% of their land through acquisition, will be entitled to additional support. Rehabilitation support will consist of the following provisions:

- Transition Allowance for a specified period of time for loss of income and livelihood for vulnerable families (defined in the entitlement framework)
- All families who are impacted directly or indirectly by the project will be eligible for skill upgradation and income restoration programmes as well as Land Purchase Assistance.
- The project will also use the opportunity to initiate a broader Community Development Programmes, targeted at all the village community in the four villages influenced by the project. (this has been described in details in the chapter on Community Development Plan)

This section focuses specifically on the skill upgradation and the income restoration programme.

## 1.8

**INCOME RESTORATION**

The section on project impacts has indicated that while a majority of family incomes are getting marginally impacted (< 25%) there are still a significant number of families (upto 15%) who may have a serious to severe impacts on their family income. Following IFC guidelines, the rehabilitation plan will focus on restoration of incomes, specially for vulnerable families and use this process to initiate a larger and sustainable community development programme. The income restoration strategy will have the following components.

## 1.8.1

**Land Based Livelihoods***Restoring Apple Orchards*

For the severely affected families (losing more than 75% of land), and ST families, the project will try to offer an option of land-for land. There will also be PAFs who will have viable plots of land left after acquisition. If these PAFs so request, and if it is technically feasible (suitability of terrain, age of trees etc.) the project proponent will help the PAF in shifting apple trees from the land to be acquired to the replacement land (through vehicles and technical support). While the local people who have been growing apples for decades, would be the most knowledgeable about how feasible this option is and how best to increase survival rates, they may need advice from specialists from the Horticulture Department. The project proponent will facilitate this process by inviting such specialists for a training session, which will identify the kind of trees to be shifted for best survival, the best time and method of doing this and the risk factors and mitigation steps. Such training sessions will be held for each village separately (Prini, Hamta, Jagatsukh and Aleo).



### *Improving Productivity of land*

As the primary occupation in the region is agriculture, the project will initiate a land productivity enhancement drive in the 4 villages of Aleo, Prini, Jagatsukh and Hamta. This will include forming a team of experts/resource persons who will discuss land productivity issue with the local villagers and GPs in the villages, assess the ground situation in the field and the current agricultural practices, and come up with a strategy for intervention in productivity enhancement. This team of experts will comprise specialists from the field of agriculture, horticulture and rural development among others, brought together from government and non-government sources. The team will also explore the possibility of multi-cropping and vegetable gardening to enhance rural incomes, without significantly disturbing the local land use.

This land productivity improvement initiative will be linked to the Community Development Planning and Implementation process outlined in the section on CDP.

#### **1.8.2**      *Non-land based livelihoods*

Consultation with the local community and the sample survey revealed that job and income generation opportunities are very limited in and around Manali. Tourism industry is the biggest employer in the service sector. While most family depend on agriculture for livelihood, incomes are supplemented by providing vehicles for transport and tourism, while some families lease/rent out their land and houses for hotels and other tourism related activities. The people, specially the educated youth, are looking for local employment or self-employment opportunities to enhance family incomes. This will also buffer the severe cash crunch families face during bad harvest years, which are frequent in the area.

#### *Employment during construction phase*

The construction phase of the project will require unskilled and semi-skilled labour. The project will ensure that the project affected families are given priority in such employment opportunities. Wherever some amount of skill enhancement is required, and there are eligible people among PAFs who could be trained to carry out such activities, such people will be identified during the census survey through specific skill assessment survey, and be appropriately trained. Where possible, the project proponent will aim to employ at least one member from each vulnerable family.

The project proponent are of the opinion that to provide people labour employment opportunities would be short-sighted, as often those employed labour find themselves out of work once the construction phase is over and the contractors move away. Hence the idea would be to encourage and train them to become self-employed by providing services (tea and grocery shops, restaurants, repair services etc.) to cater to the project or train them to able to do semi-skilled work as discussed in the next section. This would be a more meaningful and sustainable support and help that the project can provide.

### *Skill Upgradation and micro-enterprise.*

In face of job constraints in the area, skill upgradation and self-employment would be a vital input in the process of income restoration. While the general level of literacy among the youth is high, they would need guidance and training, as well as initial financial support to start any venture of their own.

The project will create a Rehabilitation and Community Development Cell, which will oversee the income restoration programme as also the Community Development Programme. This cell will comprise of a Community Development Officer and at least two support staff. The cell will first conduct a skill assessment survey, and through consultations with the PAFs, identify 3-4 skills that be suitable for the local area and will have a local market. Some such skills could be automobile repair, tourist guides, drivers and tour operators, computer based skills etc. The objective would be to train the identified people to be able to avail the local employment opportunities, specially linked to the local tourism industry as well as the project population. The cell will also hold Focus Group Discussions with women to understand their choices in terms of skills to be acquired and enable them to equally avail of local opportunities. The local women are skilled weavers and one option could be to further develop and refine these skills to suit the local and outside market. Specific programmes could be identified for women in Hamta village who stay behind to look after their houses and cattle during the winter season in Hamta, while the rest of the family moves down to Prini. The winter months could be used by these women to generate additional income for the family.

The CD officer will identify an NGO or social organisation/ institution that could take over the entire responsibility of identifying skills, setting up training programmes, providing linkages to local micro-credit schemes, including through SHGs, and supporting the trained persons to find suitable jobs in the local market. This entire process could either be done as a separate exercise, or as a part of the village community development programme. The specific activities and programmes would be identified through the village micro-planning exercise.

### *Focus on women*

The entire rehabilitation exercise will undertake immediate and practical initiatives to ensure that the lives of women in the area are significantly improved and that they are able to adapt to the potential changes that the project may bring about in the local environment and economy. Some of these steps include:

- Ensuring that women play an equal role in decision making on the utilisation of compensation money. The owner of land who is entitled to the cash compensation, would be encouraged to open a joint bank account, to be operated by both spouses.
- Reducing workloads of women by encouraging (through advice) and enabling (by contributing to the village funds) the village development programme to focus on basic necessities like provision of drinking water, access to fuelwood and fodder, improved household appliances, specially

for cooking and agriculture and most importantly, access to better health services.

- Increasing incomes by setting up Self Help Group, training and access to markets.

Through a combination of the above measures, the project will ensure that incomes of the PAFs, specially the vulnerable families, ST families and women are improved over a period of 2-3 years. The process will be closely monitored by a rigorous internal monitoring as well as independent external evaluation.

## 1.9

### *INDIGENOUS PEOPLES DEVELOPMENT PLAN*

The Operational Directive OD 4.20 of the World Bank outlines the Bank's policy regarding indigenous peoples (IP). It stipulates that:

- IP benefit from the development projects
- The project should avoid or mitigate potentially adverse affects on IP caused by the Bank-assisted projects.

Special action needs to be undertaken where the Bank's investments affect indigenous peoples, tribes, ethnic minorities, or other groups whose social and economic status restricts their capacity to assert their interests and rights over land and other productive resources.

The definition of indigenous in the OD is broad and includes communities that exhibit distinct characteristics as a cultural group, have close attachment to ancestral lands, use an indigenous language, often different from the national language, primarily depend on subsistence production and adhere to customary social and political institutions.

### 1.9.1

#### *The Indian Context*

The Constitution of India identifies certain groups/communities as tribal groups and lays out special provisions for such group with the objective of promoting and safeguarding the social, educational and economic interests of the Schedules Tribes. While people use different interpretation of the term "tribes", the word has not been described in the Constitution. It rather prescribes a method and an agency for designating them as such. The President is empowered to specify, after consultations with the Governor of a state "tribes or tribal communities" to be listed under the Schedules tribe list. In the context of India, therefore, tribal groups are considered concomitant with indigenous people as defined by OD 4.20

As brought out by the sample survey, the project area has only about 3% tribal population. Most of these tribals belong to Lahaul and Spiti and may have land at both Lahaul and in Manali area. They do not live in any separate clusters of hamlets but are part of the main village, and in no major way, different from the other village community.

The project area also does not fall within the “Scheduled Area” of the state. These areas are determined by the Sixth Schedule of the Constitution on the basis of preponderance of tribal population; compactness and reasonable size of the area; under-developed nature of the area; and marked disparity in economic standard of the people.

*Hence a separate Indigenous People’s Development Plan is not recommended under this study.* The vulnerable families among STs will be eligible for special support as other such families. In addition ST families will be provided an option of land for land against land acquisition.

#### 1.10

##### **RESPONDING TO OTHER COMMUNITY CONCERNS**

The villagers have voiced several concerns ranging from invasion of their local culture and lifestyle by the presence of outsiders, fears about damage to crop and trees through pollution and dust, specially during construction, increase in pressure on local services and amenities etc. Some of these concerns would be addressed and assuaged through consultations and proper information dissemination, so that rumours and unnecessary issues do not get encouraged. The ESMMP will ensure that dust, pollution and safety concerns will be minimised and that there would be negligible impacts on crops and habitation. Similarly, the villagers will be informed in detail about the project activities and assured that they will continue to have adequate water, even after a part of the water in Duhangan stream is diverted.

While no major impacts are envisaged on common property resources, there may be families who may lose access to the fuelwood they used to access from the forest areas to be impacted by the project. The Community Development Programme has the scope and flexibility to address these community level issues CDP can explore possibilities of afforestation or regeneration of degraded areas or village common lands, or exploring opportunities on alternative fuels in the area.

Concerns have also been raised about loss of access to high quality potato seeds from the potato farm, which is now closed. While this issue was not brought out by villagers during various public consultations held, the project proponents will provide seeds of similar quality to the village Panchayats, if so requested.

The labour camps being constructed will have adequate infrastructure for basic services and would not in any way depend upon the infrastructure at the villages. Local communities will be trained and supported financially to set up petty business and services to cater to the needs of the labour camps and the project in general.

#### 1.11

##### **COMMUNITY DEVELOPMENT PLAN**

Any company, along with active support from government, has a role to play in development of an area in which it works. In most cases, it is difficult to operate and do business without the co-operation of the local communities and other

stakeholders. To build a good rapport with the local communities, it is essential to engage the local community along with village level institutions in an ongoing process of consultations and discussions involving the kind of joint initiatives the project can initiate for the sustainable development in the village.

While the entitlement framework and rehabilitation action plan specifically focus on the project affected families, the project proponents see this project as an opportunity to initiate a broader community development programmes in the area.

The community development plan is based on the following principles

- Consultations with community members and key stakeholders through all the phases of the project
- Building trust among the company, community members and other stakeholders for successful implementation of the project as well as community development plan
- Roles of the company in development activities of the villages and its commitment towards the community development programmes need to be clearly defined as community members, village level institutions and local government department may have huge expectations from the company.
- The project staff will have to develop adequate skills in implementation of the community development plan if it plans to implement the programme. Otherwise the company can have a partner organisation (a local reputed NGO) to facilitate the implementation process.
- The local, state level and the central governments have many existing/ongoing development programmes for up-liftment of village communities. In such cases the project need not duplicate the efforts, rather the community development programme can be dovetailed into ongoing programmes
- The community development plan should be able to yield long-term benefits to the community members. Therefore, these programmes have to be sustainable even beyond company's involvement. This is possible by building the capacities of the local communities to manage such programmes and develop strong partnerships with other organisations.
- The community will demonstrate its involvement in the programme through cash and labour contributions.

#### **1.11.1 Community Development**

Allian Duhangan Hydro Power Project activities would be spread over a few villages like Aleo, Prini, Jagatsukh, Hamta etc. While Aleo and Hamta would be marginally affected, as only the road would pass through the villages, Jagatsukh and Prini would be affected in a major way as colonies for the project staff are proposed in these villages. Prini would be affected by the construction of road as well. Some focus group discussions were held with the community members- separate discussions with women, GPs, men, elderly people- to understand their apprehensions and expectations from the project.

This section presents a brief outline of the processes that would be adopted for planning and implementation of CDP, which would ensure that the apprehensions of the local communities, especially those not directly affected by

the project are dealt with. Some major concerns expressed by the larger community included:

- Additional pressure on local resources like water, fuel wood, fresh vegetables, milk etc
- Impact on irrigation potential, specially in Jagatsukh
- Loss of forests surrounding the villages

The CDP would like to utilise the existing local institutions and enhance the on-going programmes in these village rather than duplicate the efforts or initiate parallel institutions. Some of existing village level institutions that are also functional include:

- Gram Panchayat (GP) which is local governing body and undertakes most development works in the villages
- Village committee locally called '*nyayaik samiti*' which resolves local conflicts and discusses the main problems of the village
- Jagatsukh and Prini have Watershed Development Committees (WDCs) Jagatsukh also has a Joint Forest Management (JFM) committee and few Self Help Groups (informal savings and thrift societies)

The following sub sections presents the kind of activities and the phases in which these can be initiated.

#### **1.11.2 Stakeholder consultations**

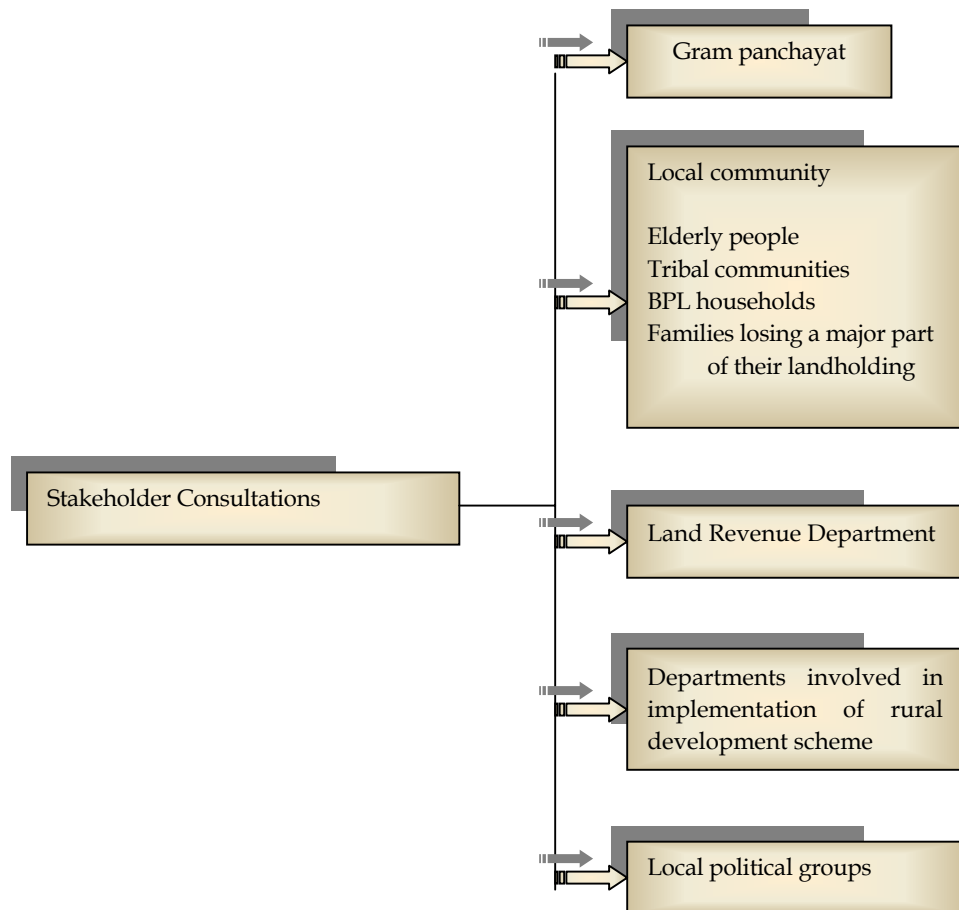
The project proponents would need to initiate an on-going process to engage stakeholders in meaningful consultations. The main stakeholders for the project include

- Local communities, both directly and indirectly affected by the project:
- The Gram Panchayats
- Local political groups
- The Land Revenue Department
- Other government departments like Himachal Pradesh State Electricity Board, Department of Power, Department of Finance, Forest Department, Tribal Development Department, District Treasurer

While the stakeholders at the local, state and central government levels have already been engaged by the project proponent to seek the due clearances from different authorities, this CDP focuses on involving the local communities and local governing bodies and developing strong partnerships among different departments for development of the area.

The stakeholders' engagements could be held in the following steps

***Initiate a dialogue with the GP:*** Initiating the dialogue with the GP would ensure the local support and would also earn the trust of the local communities. While initially the meetings would involve only GP members to understand their concerns, gradually the larger community could also be involved in these consultations to gain their support.



***Consultations with the Community:*** Once the consultations with the GP have reached a stage where the project has gained some level of support and co-operation from them, the project authorities can initiate the process of consultations with the larger community.

These consultations would provide valuable information regarding their concerns and means of integrating them in the CDP. It would also provide an opportunity to the Company to present the kind of development needs that can be addressed by the project.

The details of the processes involved in stakeholder consultations are provided in Public Consultations and Disclosure Plan (PCDP).

### 1.11.3 *Trust building measures*

While the consultations with the community are being held, the project proponents can initiate small confidence building measures to prove their commitment to the community. These measures will also help to mitigate negative vibes, if any towards the project. The trust building measures can vary from repairing the water supply systems (replace a broken tap, a water tank or leaking pipes), strengthen/develop small irrigation channels, improve the existing school building or the local Primary Health Care centre or construction of community toilets etc.

### 1.11.4 *Developing village specific micro plans for the CDP*

The stakeholder consultations will help the project proponent identify the development needs and prioritise them. The project proponents can decide to

focus on few of those needs that can be managed at the community and the project. These micro plans will be developed by the community (preferably through an existing institutional body in the village or specifically formed for the project) in association with the project which should also have an approval from the GP. The micro plans would have the following details:

- The issues and problems identified by the community
- Process of selecting the issues that would be addressed by the CDP
- Implementation details like
  - Role and responsibilities of the project proponents, community and the GP.
  - Details of the intended beneficiaries
  - Time frame for implementation over a period of 2-3 years
  - Potential benefits, and methods of measuring them
  - Safeguards to ensure transparency and participation
  - Indicative budget
  - Means to ensure that the objectives of the programmes are being met
  - Ways to link CDP with on-going government programmes
  - Internal and external monitoring mechanisms by the community members and the project proponents respectively.

While some GPs may have the experience and ability to prepare micro plans along with the community, some others may require training and support from outside. In such cases, NGO implementing the income restoration programme may be involved in the micro planning process.

The systems for developing and implementation of CDP can be such that these activities can sustain beyond the life of the project.

#### **1.11.5      *Developing village common funds***

Once the micro plans have been finalised and approved by the community, GP and the project proponents and an indicative budget has been prepared to carry out the activities, a detailed implementation plan will be prepared. As mentioned above many of the development activities might be integrated with the ongoing government programmes and the project may not need to fund all the activities on its own. As the CDP would be a joint effort between the GP (and the community) and the project, it would be preferable if the costs were also shared by the two partners.

The CDP costs would be shared between the project proponents and the GP (and indirectly by the community). At present a 50-50 partnership is envisaged. The GP will provide 50% of the costs, channelising some of the funds it receives from the state, as well as encouraging community members to contribute the remaining through a combination of cash and labour contribution. In turn, the project proponents will pledge an equal contribution to the village fund.

#### **1.11.6      *Monitoring & evaluation of the CDP implementation***

To assess the impacts of CDP implementation and to ensure that it is moving in the right direction, it is important that an effective monitoring and evaluation



mechanism is put in place. As the onus of CDP implementation would largely be on the GP/community, internal monitoring is essential to monitor that the activities are being implemented within the prescribed time frame and are likely to produce desirable results. An internal monthly monitoring by the community is recommended so that they are able to identify the gaps and make an effort to bring it back on the right track.

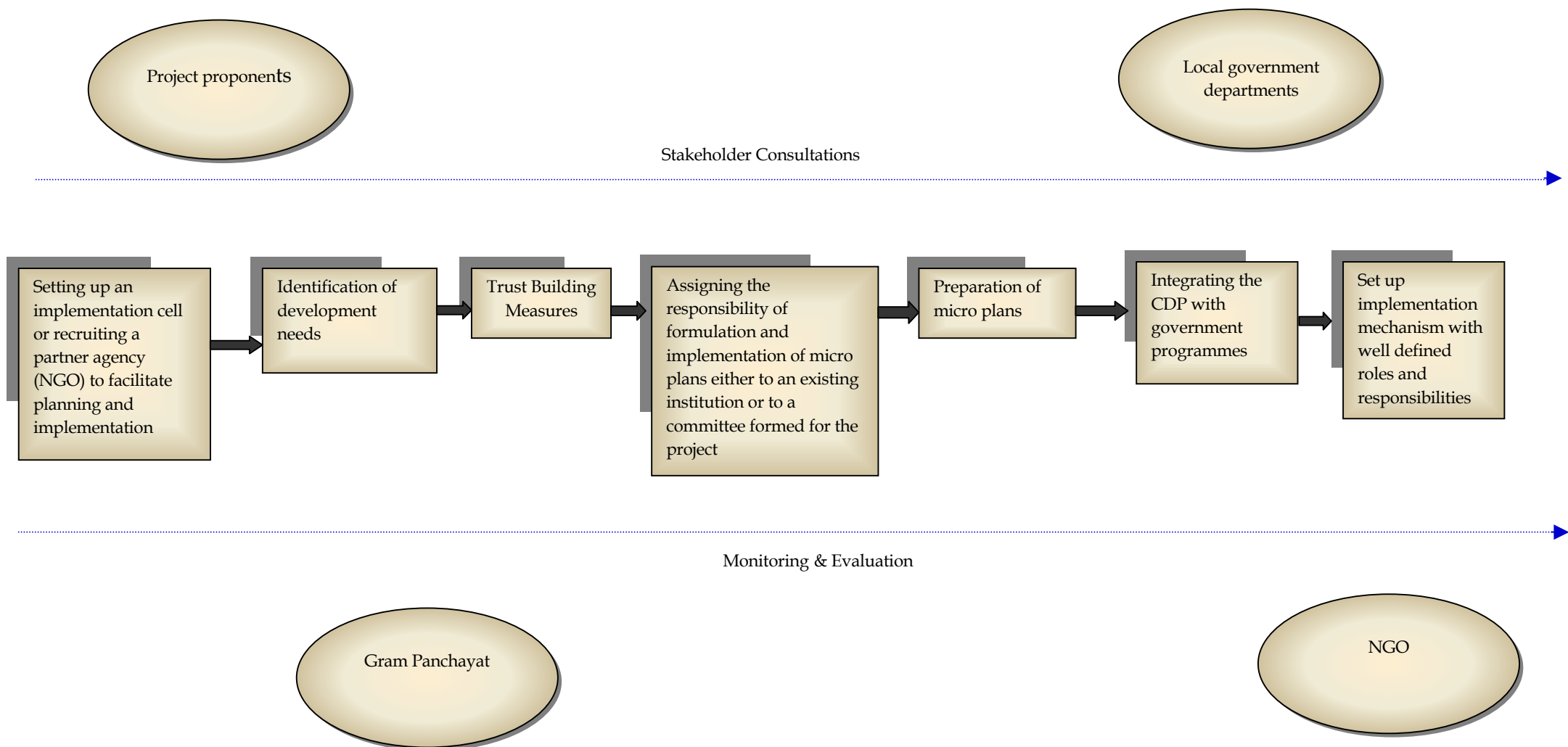
The implementation cell of the project or the facilitating NGO would be required to undertake quarterly monitoring to identify the gaps and redress them. It would also help in assessment of the impacts made so far. An independent mid-term and end term evaluation by the external agency is recommended. The mid term assessment would provide an objective view of the project activities and process of consultations during the implementation and any deviations from the micro plans. It will also suggest means to overcome the problems in implementation and ways to enhance the positive impacts of the project. The end term evaluation will evaluate whether the objectives of the CDP have been met. It will also evaluate whether the process was transparent, the needs of the vulnerable groups were met and implementation was carried out in a participatory manner.

The processes involved in the formulation and implementation of village wise CDPs are presented in the following flow chart.

#### **1.11.7 *Budgetary Implications***

The Village Development Fund is envisaged to be a “joint partnership” of the village communities and the project proponents, and each has to contribute 50% of the costs of preparing and implementing village microplan. To ensure that the programmes and activities identified in the microplan are sustainable, small scale and locally suited, the consultants propose that each village fund should not exceed Rs 10,00,000 and that the contributions from both sides do not exceed Rs 5,00,000 for each village. Hence for the project proponent, this CDP should not exceed a budget of Rs 20,000 (this does not include the costs of hiring NGOs, conducting training, M & E etc.).

## Processes involved in formulation & Implementation of Community Development Plans



The proposal for Catchment Area Treatment Plan has been prepared as per the requirement of MOEF. A study was carried out by RITES (A Govt. of India Enterprise) on behalf of RSWML to prepare an up to date status of the vegetation cover present in the catchment area on 1:50000 maps, so that treatment measures could be planned accordingly. The following methodology was adopted to finalize the comprehensive afforestation plan.

The Catchment Area Treatment Plan which extends from the Prini village near the proposed underground Power House up to and beyond the Allain Barrage Site and from Jagatsukh Village up to and beyond the Duhangan Weir Site.

### 1.12.1 Afforestation under Catchment Area Treatment Plan

#### *Area proposed for Afforestation*

The Catchment Area Treatment has been suggested considering the land use pattern, soil cover and topography. The areas where afforestation and pasture development is to be carried out is as given in the **Table 1.3** below.

**Table 1.3: Area proposed for Afforestation and Pasture Development**

Sl.#	Village	Afforestation (ha)	Pasture Development (ha)
1	Prini	140	-
2	Hamta	120	-
3	Sianthen	60	30
4	Jagatsukh	160	-
4	Chikka springs	120	-
5	Jabri Nallah	100	-
6	Ustream storage reservoir	100	90
7	Pahali Nallah	-	20
8	Hamta Garh	-	30
9	Tangra/ Chikka Springs	-	30
Total		800	200

#### *Species to be planted for Afforestation*

Among a variety of trees to be planted under the afforestation scheme, the following species of trees, which were observed in the area and therefore, have been identified for plantation are:

**Table 1.4: Species Identified for Afforestation**

Sl. #	Plant Species to be Afforested	
	Vernacular Name	Scientific Name
1	Kail	<i>Pinus Wallichiana</i>
2	Deodar	<i>Cedrus Deodara</i>
3	Devidyar	<i>Cupressus Torulosa</i>
4	Morus	<i>Morus alba</i>
5	Horse Chest Nut	<i>Aesculus Indica</i>

Sl. #	Plant Species to be Afforested	
	Vernacular Name	Scientific Name
6	Kosh	<i>Alnusnitida</i>
7	Populus	<i>Acupressus Torulosa</i>

### 1.12.2 Catchment Area Treatment Works

To prevent incidences of soil erosion, details of various types of spurs, check walls, check dams to be provided are described in *Table 1.5* below.

**Table 1.5: Details of Catchment Area Treatment Works**

S No.	Item	Check wall with boulders & stones with/without wire mesh	Check dam with boulders & stones	Spur	Total
1	Jabri Nallah	10	10	-	20
2	Footpath to Chandratal	15	-	1	16
3	Footpath to Sainthen	19	-	4	23
4	Allain Nallah	15	25	2	42
5	Duhangan Nallah	11	16	1	28
6	Hamta Nallah	7	14	1	22
	Total	77	65	9	151

### 1.12.3 Soil Erosion Control

During precipitation, despite most of the project components being underground, there is potential for soil erosion from open excavation, tree cutting leaving large areas reduced of vegetation and from areas where construction spoil/muck is dumped. It is suggested that proper compaction of dumps is done and areas reduced of vegetation or other open areas are treated with rip-rap stabilization.

### 1.12.4 Cost of Catchment Area Treatment

The total cost for implementation of Catchment Area Treatment Plan works out to Rs 3,98,05,650.00 as per the details given in the *Table 1.6* below.

**Table 1.6: Cost of Catchment Area Treatment Works**

Sl. #	Description	Rs.
1	Afforestation 800 ha	23612000.00
2	Pasture development 200 ha	1900000.00
3	Engineering measures such as check wall, check dam, spur farm, pond	4530000.00
4	Maintenance @ 5% per year for 6.5 years	9763650.00
	Total	39805650.00

### 1.12.5 Monitoring and Implementation of Environmental Safeguards for CAT

As per the advise of the Ministry of Environment & Forest, the Government of Himachal Pradesh has constituted Committees for monitoring and implementing the environmental safeguards in respect of all state/private/joint sector hydroelectric projects in Himachal Pradesh vide notification no. FFE-B-(F)-2-25196 dated April 7, 1997. The High Level Committees are represented as *Table 1.7*.

**Table 1.7: Agencies to be involved in monitoring and implementation of CAT Plan**

S No.	Committee Members	Designation
State Level		
1	F.C.-cum-Secretary (Fts)	Chairman
2	Chairman/Member (Projects) BPSEB	Member
3	Principal Chief Conservator of Forests	Member
4	Conservator of Forests (Planning)	Member Secretary
Project Level		
1	Pr. Chief Conservator of Forests	Chairman
2	General Manager of project concerned	Member
3	Conservator of Forests concerned	Member
4	Superintending Engineer concerned	Member
5	Divisional. Forest Officer concerned	Member Secretary

The above committees will be monitoring the progress achieved on catchment area treatment plans etc as approved by the Ministry of Environment & Forests, Government of India, both in terms of funding by the project authorities and implementation in the field by the State Government Forest Department. In addition to the aforesaid, participation of local people in the implementation of environmental mitigation measures will also be ensured.

In addition to the. above, through the same Notification, the Govt. of Himachal Pradesh has also appointed the Forest Department of the Govt. of Himachal Pradesh to act as 'Nodal Agency' for implementation and monitoring of the function of the above Committees.

The Govt. of Himachal Pradesh has therefore taken necessary action to ensure that the commitments, made by the implementing Agency to the Ministry of Environment & Forests, are implemented at site and in view of the above it is submitted that the Area identified for providing Catchment Area Treatment Plan may kindly be approved.

#### **1.12.6 Role of Local Communities in Forest Management**

The involvement of local communities to collaborate with the Forest Department in the monitoring of the project implementation and project performance cannot be ensured directly. However, Himachal Pradesh Government promotes role of local communities in joint forest management for better protection and management of forests. The 25% of the revenue generated from the jointly managed forests go to the local communities for development purposes.

### **1.13 CONSTRUCTION LABOUR MANAGEMENT PLAN**

#### **1.13.1 Provision of Labour Accommodation**

The labour strength is expected to peak during the 3<sup>rd</sup> to 6<sup>th</sup> year of construction while the strength will be around 1500 persons during the 2<sup>nd</sup> and 7<sup>th</sup> year of construction and is not likely to exceed 500 persons during the first year of construction.

The labour will be provided individual dwelling units made of G.I. sheets and locally available building material like boulders etc. The dwelling units will be supported by common latrines and bathing facilities duly segregated for male and female labour. Piped water supply will be made available within 50 meters of each dwelling unit.

RSWML proposes to arrange for a short term lease for a period not exceeding 10-years of Government land for temporary works for the construction of the project on such terms, conditions and rates as may be prescribed/ fixed by the Government from time to time.

### **1.13.2 Fuel Arrangement for Construction Labour**

During construction of the project, a large number of people will be working in the project area. The necessary fuel wood requirement will have to be met through supply of fossil fuel to avoid encroachment on forest area during construction phase. In order that influx of labourers in the project area does not lead to deforestation, necessary arrangements for supply of coal/fuel wood and kerosene to the labourers on an individual basis will be made by RSWML in association with its contractors and with the help of local government.

In order to reduce pressure on forest wood, following actions are to be taken up by RSWML:

- Need to undergo a construction phase (approx. 8 years) of purchase agreement with Government agencies like the Indian Oil or Bharat Petroleum Ltd to provide regular kerosene oil at the project site for distribution to the labour engaged for work at site.
- Similarly purchase orders for fuel wood / charcoal, to be placed on to State Forest Department for regular fuel supply to the labourers from authorised fuel/wood/charcoal depots of the district.

Other alternative fuel is coal. For about 2000 people (labour + dependants) working during 5 ½ years (66 months) of construction phase at a rate of 0.5 kg of coal per day per person for cooking etc works out to about  $0.5 \times 365 \times 2000 = 365$  tonnes per year. The total coal requirement for the project construction is estimated to be about 2370 tonnes. This is considering the peak requirement since the peak labour force of 2000 people would be staying in the project area only between the 3<sup>rd</sup> to 6<sup>th</sup> year of project construction stage.

In order to assure regular fuel supply, RSWML has kept a provision of Rs. 5 million for the construction phase. Provisions shall be made to establish a fuel depot at the project site for supplying regular fuel to the workers. RSWML will construct sheds using non-forest products such as bricks and cement.

### **1.13.3 Health Management for Construction Labour and People in the Vicinity**

About 2000 people (including dependants) will be working during the construction period. According to the criteria of Ministry of Health and World Health Organisation, one Health Centre with one doctor and minimum five health personnel (nurses, compounders etc) will be required with at-least ten beds. Under the health plan, several provisions like facilities for mobile dispensaries, infrastructure, medical laboratory, medicines and necessary staff will be provided as per the following details.

a) *Mobile Dispensary*

Three ambulances will be procured and provided by the project for meeting immediate and urgent medical calls in and around the project area including emergency calls from local villages.

b) *Infrastructure*

The project would provide medical/health assistance to the project employees and the surrounding village population by procuring and providing medical testing/diagnostic, emergency operating and recuperating facilities. These will include emergency medical facilities like Oxygen (Cylinders), fracture attendance, pre-natal and post-natal care for mother and child etc.

The project will employ the services of Medical Officers, Compounders, Lab Technologist, Epidemiologist, Drivers and other helping staff to provide the medical facilities. In addition to the above provisions, the project will also construct buildings for housing a permanent hospital and a separate Field Hospital.

For the Construction phase the cost of health measures proposed include the following:

**Table 1.8: Budget for health Management during Construction Phase of the Project**

Sl. #	Provisions under Health Plan	Budget in Rupees for Health during construction phase
Capital Expenses		
1	Hospital Buildings (2nos)	948,000
2	Provision of Ambulance (3nos.)	1,050,000
3	Laboratory	1,000,000
Recurring Expenses		
1	Provision for Medicines	500,000
2	Medical assistance	13,000,000
3	Medical Personnel (Wages)	6,500,000
4	Epidemiologist & Lab Technologist (Wages)	1,950,000
5	Residence, accommodation and other facilities for Medical Personnel	1,500,000
6	Residence, accommodation and other facilities for Epidemiologist & Lab Technologist	700,000
Total		27,148,000

In view of the above, the total amount proposed for providing comprehensive health plan/medical assistance in the project area will be Rs. 271.48 lakhs. This health plan would serve satisfactorily not only the personnel employed on the project but also the local population.

During operation phase, the main factors influencing the water borne vectors and pathogens. The stagnant water and vegetation provide favourable breeding conditions for mosquitoes and snails. For the proposed project, water storage will be at Allain barrage location, inside the tunnels and at intermediate reservoir. It is important to note that the water at these storage locations will not be stagnant i.e. it will be used on daily basis for power generation and will be located at an elevation over 1800 m amsl, resulting in lower chances of vector life to thrive. During

operation phase, RSWML will make regular field surveys and take necessary actions to curb the disease if it thrives in the area with additional budget.

#### **1.14 TRAFFIC MANAGEMENT PLAN**

It is expected that there will be an increase of traffic of 58 truck trips on the Nagar – Manali Road once the construction activities are started. This would disturb local people in the area and also increase chances of road accidents. It is therefore necessary that a detailed traffic management plan is prepared prior to start of construction activities in consultation with the local administration. The traffic management is to be monitored on a daily basis to evenly spread traffic flow during a day so as to avoid congestion and minimise chances of road accidents.

#### **1.15 MUCK DISPOSAL PLAN**

The construction of Allain Duhangam Hydroelectric Project may generate a large amount of muck. This project has an underground component as well as surface work. The underground component of the project includes a desilting basin at Duhangan intake, the Allain and Duhangan tunnel measuring 3.3 km and 4.4 km in length respectively, two adits for each tunnel, a surge shaft having a diameter of 10 m and height 60m, a 1.6 km long pressure shaft, two adits to pressure shaft, a 900 m long Main Access Tunnel. This will also include an underground powerhouse, transformer cavern, cable tunnel and tail race tunnel.

The surface work includes the diversion barrage at the intake of Allain stream, a trench weir at Duhangan stream, the storage reservoir and an open swithyard. It is expected that overall 1035,000 cum of earthwork will be carried out during project construction. It is estimated that 175,000 cum of rock and soil excavation will be carried out in approximately 28 km long road construction for both Allain and Duhangan areas. As the road alignment has been fixed to optimise the use of excavated muck in filling, it is estimated that approximately 1,20,000 cum (Approximately 70% of total muck) will be used in filling of roads, road soling and building retaining walls etc. Balance 55,000 cum of muck will be disposed off in identified muck disposal areas.

The construction of project components will generate about 8,60,000 cum of soil and rock spoils. As the major components of the project are underground, rock cuttings will form the bulk of the 8,60,000 cum muck. It is expected that 30% of this quantity will be reused in project construction works such as wire crates, retaining walls, rip-rap, soling, etc. Further petrographic analytical studies shall be carried out on the muck to determine its use as aggregate for project construction works. However, as per estimated figures, a total of about 6,53,000 cum of muck will be disposed in the identified muck disposal sites as per the Muck Disposal Plan. Muck will be disposed at identified disposal sites and reused at plant areas. These disposal sites and plant areas are shown in the drawings attached at **Attachment – I of Annex H** (Please refer to **Volume I - Main ESIA Report for Annex H**).

The total muck generated from road excavations is 175,000 cum, 70% of which shall be reused in associated road works like road-soling, retaining walls on road boundaries, step-wise wire crating, etc. Typical details of cutting, filling, retaining



walls and breast wall structure are shown in drawing enclosed as **Attachment II of Annex H**. The total length of road to be built is 28 km (16 km at Allain and 12 km at Duhangan). The quantity of excavation and filling of construction of road is given in **Table 1.9**.

**Table 1.9** *Muck excavation and filling of roads (cubic meter)*

Sl#	Particular	Quantity and Type of Muck			Total Excavation	Total Muck fill
		Soil	Soft Rock	Hard Rock		
1.	Road to Allain Barrage to Pirni	70000	30000	15000	115000	75000
2.	Road to Duhangan Weir from Jagatsukh	10000	10000	40000	60000	45000
TOTAL		80000	40000	55000	175000	120000

The remaining 55,000 cum soil from road construction shall be disposed at an identified site. Five muck disposal sites with a total area of 18 ha have been identified. The total quantity of muck generation, reuse and disposal is given in **Table 1.10**. It also shows the quantity to be reused and quantity of muck to be disposed and the dumping sites identified for it. The three disposal sites include the following:

- Disposal Site - I (DS-I) : Near Surge Shaft area;
- Disposal Site - II (DS-II) : Near Power House switchyard area; and
- Disposal Site - III (DS-III): Near Jagatsukh village

Muck will also be reused as a fill material at following places (other than for road filling):

- Plant Area - 1 (PA-1) : Near Allain Barrage; and
- Plant Area - 2 (PA-2) : Near Jagatsukh

**Table 1.10** *Muck Generation, Reuse and Disposal*

Sl #	Description	Structure								Total
		Allain Barrage	Duhan-gan Weir	Surge Shaft	HRT Allain	HRT Duhangan	Pressur e Shaft	Power House	Road	
1.	Total Excavation	68000	14000	423000	81000	91000	61000	122000	175000	1035000
2.	Muck Reuse	8000	4000	73000	40000	45000	30000	60000	120000	380000
3.	Muck Disposal	60000	10000	350000	41000	46000	31000	62000	55000	655000
4.	Reuse/ Disposal Sites	PA-1	PA-2	DS-1	DS-1	DS-1 & PA-2	DS-2	DS-2	DS-3	

The detailed contour plans of plant areas PA-Ia, PA-Ib, PA-Ic, PA-Id, PA-Ie, PA-II and disposal sites DS-I, DS-II and DS-III are enclosed at **Attachments III, IV, V, VI, VII, VIII, IX, X (a & b) and XI** respectively in **Annex H**.

No muck will be disposed in rivers or stream. The proposed redressal of natural slope and its treatment is shown in the drawings enclosed at **Attachment XII and XIII of Annex H**.

The following steps shall be used for proper redressal of the muck disposal sites:

- Provision of retaining walls/ wire-crates at each disposal site to retain the muck in the specified area;
- Maintaining slope stability by leaving 5 m berms for filling at each of the disposal site with an angle of repose not more than 35°;
- Provision of catchment and toe drains at each disposal site to facilitate rain/snowmelt water to natural drain;
- Provision of silt traps in the catchment and toe drains to arrest any scree escaping with running water and arrangement of regular cleaning of these drains;
- Transportation of muck to the disposal site through tipper during non-peak hours (if passed through public road) and proper compaction by using bulldozers, where required to maintain stability. Compacting will also reduce area requirement for muck disposal by 15-24% depending on type of compaction;
- Stabilisation and rehabilitation of each of the disposal site by planting indigenous plant species like Fir, Blue pine, Walnut, Horsechestnut, Kharsu, Poplar etc and grasses like festuca grass etc;
- Provision of rip – rap treatment of filled muck surface depending on the type of land using boulders and soil from the muck and further consolidated by planting grasses, etc. This kind of treatment would be especially effective to prevent erosion due to running surface water;
- The details of proposed area, volume and redressal mechanism for each disposal/reuse site is given in *Table 1.11*.

**Table 1.11**     *Details of Disposal Sites*

Sl.#	Code	Location	Area (Sq. m.)	Volume (cum)	Redressal
1.	DS-1	Near Surge Shaft	90000	411000	Compaction, Plantation
2.	DS-2	Near Power House	20000	93000	Compaction, Plantation
3.	DS-3	Near Jagatsukh	20000	55000	Compaction, Plantation
4.	PA-1	Near Allain Barrage	40000	60000	Compaction, Plantation, Rip-rap
5.	PA-2	Near Khanun	10000	36000	Compaction, Plantation, Rip-rap
TOTAL			180000	655000	

Cost for muck disposal plan is integrated with the project cost.

The project requires detailed Emergency Response Plan both for probable hazards likely to take place during construction and operation phases. During the construction phase, the ERP should address hazards associated with handling of heavy machinery and explosives required for excavation of about 14 km of total tunnels.

**1.16.1*****Construction Phase ERP***

Following natural/ accidental hazards may occur during construction phase of the project:

- slope failure at the project component locations including en-route proposed roads;
- accident due to explosives;
- accident due to heavy equipment/ machinery;
- sabotage in case of magazine; and
- accidents due to fly excavations/ drilling.

In order to take care of above hazards/ disasters, the following control will be adopted:

- all safety precautions and provisions as suggested under approvals from Chief Controller for handling and storage of Explosives
- checking and regular maintenance of steep slope areas
- provision of adequate culverts and cross drainages across access roads and slopes cordoned due to project activities;
- Entry of unauthorised persons shall be prohibited;
- fire fighting and first aid provisions at the project sites and office;
- provision of all the safety appliances such as safety boots, helmets, goggles etc. be made available to the construction labour and employees and regular check to ensure the use;
- training and refresher courses for all the employees working in the confined/ hazardous premises;
- follow up of all regulatory provisions;
- handling of explosives, charging and blasting shall be carried out by competent persons only;
- provision of magazine at safe place with fencing and necessary security arrangement;
- suppression of dust on the haulage roads;
- awareness of safety and disaster through competitions, posters and other similar drives
- Structure Designs must be established after considering safe margins for earthquakes etc.
- Establishing detailed reporting procedures and communicating systems with elaborate tie up with local administration like hospital, police station, fire brigade, flood control department etc.

### 1.16.2 *Operation Phase ERP*

Although the probability of natural or manmade threats to the proposed project during operation phase would be very low, however, RSWML must prepare an elaborate and detailed emergency response plan to counter any event like earthquake, landslides, avalanche, forest or other fires and any accident related to the project.

Elaborate procedures on do's and don'ts have to be worked out with reporting mechanism, emergency preparedness team and tie up with local administration.

### 1.17 *FISHERIES MONITORING PLAN*

The most effective mitigation measure for the impact on aquatic ecology, due to change in water levels, currents and water quality is to ensure minimum ecological flows downstream of the diversion and maintain the river water quality. This ecological flow may be designed based on the habitats of the most valued aquatic species in the river. Special care is required to ensure minimisation of losses of spawning grounds.

Since the project involves reservoir storage also, it is recommended that periodic water releases be optimised in a strategic way to maximise revenues and minimise environmental impact of the project. Likewise attention should be paid to mandatory releases to the downstream river.

In order to demonstrate RSWML's commitment to downstream users, it is proposed that flow measuring devices both electronic and manual measurement basis are installed on both Allain and Duhangan streams. Also to preserve water quality downstream due to flushing from de-silting chambers, the flushing is to be done over longer period and during high flow periods like afternoon period or depending upon flow pattern for each month.

The baseline on fish catch attempted twice in the month of January and April 2003 showed presence of no fish in the Allain and Duhangan streams. However, in early April 2003, before confluence of Duhangan stream with Beas River, a few of the finger fish varieties were observed as a result of migration from Beas to the Duhangan river. The Allain and Duhangan streams flow with many abrupt falls leaving lesser chances of migrating fish to traverse upstream. However, during peak flow or monsoon season, there is possibility of fish to migrate upstream for some of the distance.

The average inflow observed at diversion sites in the past indicates variation in flows ranging from 1.54 to 21.78 m<sup>3</sup>/sec in Allain and 1.38 to 7.31 m<sup>3</sup>/sec in Duhangan streams. A 90% dependability flow of 3.028 m<sup>3</sup>/sec is available in Allain while 1.301 m<sup>3</sup>/sec is available in Duhangan stream.

Based upon minimum flows (22year data – refer to *Annex D*) contributed by other channels post diversion structure on Allain and Duhangan and water required for local demand and minimum water required for ecological sustenance, minimum flows have been recommended downstream the diversion structures. The

minimum flow post diversion structure on Allain has been found to be 0.226 m<sup>3</sup>/sec in the month of February during driest year of 1973-74. It is recommended that RSWML maintain a minimum flow of 0.150 m<sup>3</sup>/sec (i.e. 150 liters per second or 12,960 m<sup>3</sup>/day) downstream the Allain barrage all the time. This flow along with minimum flow available through other channels downstream the Allain would make the available flow to be more than 0.376 (0.150+0.226) m<sup>3</sup>/sec i.e. 32,466 m<sup>3</sup>/day, which is about 21% of the minimum flow ever observed on Allain at Aleo.

Similarly, the minimum flow contributed by other channels post diversion structure on Duhangan has been found to be 0.360 m<sup>3</sup>/sec in the month of February during 1987-88. It is recommended that RSWML also maintain a minimum flow of 0.150 m<sup>3</sup>/sec (i.e. 150 liters per second or 12,960 m<sup>3</sup>/day) downstream the Duhangan-weir structure all the time. This flow along with minimum flow available through other channels downstream the Duhangan would make the available flow to be more than 0.510 (0.150+0.360) m<sup>3</sup>/sec i.e. 44,064 m<sup>3</sup>/day, which is approximately 40% of the ever observed minimum flow on Duhangan stream at Jagatsukh.

It is important to mention that flows recommended above on Allain and Duhangan are far more than the 100 liters per day as suggested by Manali Town and Country Planning, a Division of Government of Himachal Pradesh.

The minimum recommended discharges downstream the Allain and Duhangan are to be maintained so as to maintain ecological sustenance and local demand downstream. RSWML is to ensure this monitoring of minimum recommended water flow by installing electronic and manual measurements devices at the diversion structures.

There will also be change in flow of Allain stream in the stretch of about 1.5km falling between tailrace outlet to the point of confluence in Beas River. In this stretch, a peak flow of approximately 26.8m<sup>3</sup>/sec (96,480 m<sup>3</sup>/hr) will be discharged during 4 hours of peak power generation period. This significant impact of increased flow through tailrace discharge would result in increased level and discharge rate by 8.85 times the present 90% dependable flow in Allain.

Further, adequate sewage treatment plant for domestic wastewater from the project should be maintained to assure safe water quality. Adequate measures as spelled out in the catchment area treatment plan for soil erosion control will be implemented to conserve water quality of the streams.

## **1.18 COMPLIANCE UNDER STATUTORY APPROVALS**

### **1.18.1 Maintenance of Provisions stipulated under Forest Clearance**

The Allain Duhangan Hydroelectric Project has received in-principle clearance followed by a formal approval for diversion of forest land required for the project, upon deposition of requisite amount for Compensatory afforestation, with the following conditions for monitoring & control during the construction phase of the project:

- Specified land use of the total forest land (totalling 32.167 ha) for all the project components that require diversion of forest land. Non-usage of forestland for any purpose other than that specified in the proposal.
- Unchanged legal status of forestland.
- Compensatory afforestation at the cost of "Rajasthan Spinning & Weaving Mills Limited" over double the degraded forest land i.e. 63.334 ha. RSWM will transfer the cost of implementing the catchment area treatment plan to the State Forest Department, in a phased manner.
- No tree felling in the area between Intermediate Reservoir Level and 4m below FRL of the reservoir.
- Felling of minimum number of trees wherever possible.
- No setting up of labour camps in the forest areas. RSWML should make labour camps in the adjoining villages and make necessary arrangements for transport of the labour to and from the project site.
- Proper utilisation of excavated material for construction purposes or stabilisation and not throwing the excavated material on the slopes or inside the forestland.
- Carrying out the rehabilitation as per the scheme submitted.
- Complying with all the conditions which the State Government or Conservator of Forests (Central), Regional Office-Chandigarh may stipulate from time-to-time in the interest of conservation, protection or development of forests.
- Furnishing a progress report regularly (not less than once in a year) by the State Government/ RSWM on compliance of all the conditions specified, to Regional Office of MoEF at Chandigarh.

#### 1.18.2 *Maintenance of Provisions stipulated under Environmental Clearance*

The Allain Duhangan Hydroelectric Project has received environmental clearance from the Ministry of Environment and Forests on 12<sup>th</sup> of December 2000 with the following conditions for environmental control & monitoring during the construction phase of the project:

- Resting of full responsibility of environmental safeguards with "Rajasthan Spinning & Weaving Mills Limited".
- Strict adherence to the action plan for Catchment Area Treatment for seven years, as per the plan submitted. This involves year-wise physical targets for the activities:
  - Afforestation at 7 locations.
  - Pasture development at 5 locations.
  - Engineering treatment consisting of building checkwalls with boulders, stones and with/without wire mesh (at 5 different locations), check dam with boulders & stones (at 4 different locations) and Spur (at 5 different locations).
- Strict adherence to the action plan for Health Settlement & Fuel Supply to the labourers for five years.
- Inclusion of species of medicinal plants (identified in the region) under afforestation programme.
- Submission of six monthly monitoring report to the Ministry and its Regional Office, at Chandigarh for review.
- Restoration of construction area including dumpsite of excavated materials by levelling, filling up of burrow pits, landscaping etc. The area should be properly afforested with suitable plantation.

- Arrangement of adequate free fuel arrangement to the labour force engaged in the construction work at project cost, to prevent indiscriminate felling of trees.

### 1.18.3 *Maintenance of Provisions of Himachal Pradesh State Environmental Protection and Pollution Control Board (HPSEPPCB)*

The Allain Duhangan Hydroelectric project is in process of obtaining Consent to Establish from HP State Environment Protection and Pollution Control Board with the following conditions for environmental control and monitoring during the construction and pre-construction phases:

- Re carry out environmental monitoring in terms of water, air and soil sampling so that the baseline data is representative of the whole study area under the potential impacts due to project.
- Muck-dumping plan may be quantified in monetary terms including cost of restoration of dumping areas and included in EMP.
- Integrate the details of total debris produced, debris proposed to be reused, debris to be disposed and dumping site where this surplus debris is to be disposed for each component of the project, in the Environmental Impact Assessment and present it to the Board
- Quarterly reports w.r.t dumping of debris shall be submitted during the construction period of the project, to the Kullu Regional Office of the Board along with a copy to the Head Office. Besides, a logbook for this purpose shall be maintained.
- Get a third party post environmental monitoring of the project in order to assess the implementation of various components of EMP including CAT plan.
- Conduct bio-monitoring of macro-invertebrates both upstream and downstream of the diversion works.
- Creation of an EMP cell which shall be managed by the professionals who would report directly to the top management.

## 1.19 *FRAMEWORK OF MITIGATION MEASURES FOR LIKELY ENVIRONMENTAL & SOCIAL IMPACTS DUE TO PROPOSED POWER TRANSMISSION LINE*

### 1.19.1 *Environmental Mitigation Measures Framework*

The possible environmental impacts, mitigation measures and monitoring are given in the *Table 1.12*.

**Table 1.12 Checklist of Environmental Parameters for Power Transmission Line**

Sr. No.	Actions Affecting Environmental Resources and Values	Recommended Feasible Protection Measures	Monitoring
A.	Environmental Problems due to Project Location	Careful site selection to minimise losses and any adverse impacts on migratory paths.	Undertaken at design level by Relevant Authority. To be enforced further during detailed survey.
A.1	Historical/Cultural Monuments Value	Careful selection of route. Construction activity will be immediately stopped at the site and Archaeological Survey of India (ASI) notified. Work will proceed only after clearance from ASI.	Protection of archaeological, historic and cultural effects to be made part of the contract <sup>(1)</sup> .
A.2	Encroachment into precious ecological areas	Careful selection of route.	Detailed survey to avoid any ecological areas.
A.3	Encroachment into other valuable lands	Careful selection of route. Proper compensation	Detailed survey to avoid any valuable land.
A.4	Interference with other utilities and traffic	Careful selection of route. Co-ordination with other authorities (road, rail, state electricity)	To be made part of the contract.
A.5	Interference with drainage pattern	Careful selection of route	Monitoring to be done so that no major deviation is done in the route plan and no towers are spotted on riverbeds.
B.	Environmental Problems Related to System Design	Careful design utilising appropriate technologies to minimise losses and hazards	
B.1	Interference with other utilities and with traffic and blockages of access ways	Careful selection of route. Co-ordination with other authorities (road, rail, state electricity)	To be made part of the contract.
B.2	Escape of polluting materials	No chemical to be used for vegetation clearance.	To be made part of the contract.
B.3	Explosion/ fire/ hazardous spills	No impacts anticipated. In extreme case of use of explosives in the hilly region, proper H&S practices to be followed (cordonning off the area, use of earmuffs, etc). Permission to use explosives will be obtained from concerned government departments.	Records of use of explosives and significant H&S issues will be maintained.

(1) Contract between RSWML and any subcontractor entrusted to lay the transmission lines. In the case RSWML within its own resources constructs the transmission line, under that case RSWML is expected to have mechanism within itself to monitor the suggested mitigation measures.



Sr. No.	Actions Affecting Environmental Resources and Values	Recommended Feasible Protection Measures	Monitoring
B.4	Inadequate buffer zones for protection of adjacent properties/values	Careful route selection	Adherence to un-inhabited routes. Monitoring to be done to ensure no major deviations from route plan.
B.5	Interference with drainage patterns	Careful design by not placing towers on river beds and swampy areas	Adherence during final survey.
B.6	Erosion hazards due to inadequate provision for resurfacing of exposed areas	Scheduling to be done in a manner that construction activities are not undertaken during monsoon months. Backfilling and compacting as per good engineering practices.	To be made part of the contract.
B.7	Impairment of aesthetics	Careful route selection	Monitoring to be done so that no major deviation from preliminary survey is done.
B.8	Noise/vibration nuisances	Use of manual labour to the extent possible instead of heavy machinery in populated areas.	Will for part of the contract with regular compliance checks.
		Construction activity to be undertaken only during daytime. Only under necessary conditions will the work be undertaken during night time and will be undertaken with consent from the Construction Engineer on field.	Will form part of the contract. Permission to undertake work during night will be given by RSWML's Construction Engineer on field.
		Sequential arrangement of activities	
B.9	Blockage of wild life passageways/ migratory paths/ migratory flight pathways	Care to be taken at design stage. No impacts anticipated.	Monitoring to be done so no major deviation from preliminary route plan.
B.10	Inadequate provisions for worker's health and safety during operations stage	Adequate design measures to be adopted. RSWML is expected to have a Corporate policy geared towards Health & Safety of the employees.	Monitoring for adherence to Corporate H&S policy
B.11	Electric shock hazards	Adequate provision for putting up notices (danger sign boards) and anti-climbing devices to be put up on all faces of the tower	Will form part of the contract
C.	Environmental Problems During Construction Phase	Careful/proper construction practices	
C.1	Uncontrolled silt runoff	Proper storage of construction material/ excavated soil Adherence to good engineering practices.	Compliance monitoring to be undertaken
C.2	Inadequate construction stage monitoring	Proper briefing of contractors and workers.	Compliance monitoring to be undertaken

Sr. No.	Actions Affecting Environmental Resources and Values	Recommended Feasible Protection Measures	Monitoring
C.3	Nuisance to nearby properties (noise, dust, fumes, fires, explosion)	Dust will be suppressed by: Sprinkling water on dust generating areas Limited speed limits on unpaved roads Covering fine material Adopting best construction practices	Compliance monitoring to be undertaken
C.4	Interference with utilities and traffic and blockage of access ways	Proper planning and speedy completion of construction activity Co-ordination with other state authorities (road, rail, state electricity)	Adequate provisions in the contract to meet statutory obligations
C.5	Inadequate resurfacing for erosion control	Proper backfilling and levelling	Compliance monitoring to be undertaken
C.6	Blockage of wild life passageways/ migratory paths/ migratory flight pathways	Care to be taken at design stage. No impacts anticipated.	Monitoring to be done so no major deviation from preliminary route plan.
C.7	Inadequate disposition of borrow areas	Proper selection of quarries for raw materials	
C.8	Protection of workers health and safety Inadequate housing/ water supply/ sanitation Inadequate communicable disease control provisions, especially malaria Inadequate provisions for fires/ explosions Flooding hazards due to construction impediments to natural drainage Blockage of wildlife passage ways	Appropriate health & safety policy in place Proper planning of labour camps Proper maintenance of labour camps Proper planning of labour camps Proper planning of construction activity Proper planning of construction activity	To be made part of the contract
D.	Environmental Problems Resulting from Operations		
D.1	O & M staff/ skills less than acceptable resulting in variety of adverse effects similar to those in items B(1) to B(2)	Proper training of O & M staff	Training records to be monitored on a regular basis
D.2	Inadequate periodic environmental monitoring	Provision of adequate monitoring	Monitoring schedule to be prefixed

### 1.19.2

### *Potential Social Impacts*

#### *a) Stakeholder Identification & Consultation*

The detailed principles, definitions, PAF entitlements have been outlined in the RAP of the ESA report. The mitigation plan for the transmission lines broadly follows the same framework. Effective mitigation of social impacts will require identification of relevant stakeholders, appropriate and timely information dissemination and engaging them in meaningful consultation regarding project

details, likely impacts, proposed mitigation measures, implementation strategy and timeframe.

The primary stakeholder group will constitute the affected people. The various categories of likely affected people are summarised in the following table

**Table 1.13 Stakeholder Identification**

Categories of Affected People	Categories of losses
Agricultural landowners affected by transmission lines incurring long term losses	Loss of land and productivity and loss of income Loss of trees/ plantations
Agricultural landowners affected by transmission lines incurring short term losses	Loss of income from crop damages Loss of trees/ plantations
Owners of trees/ plantations	Loss of trees/ plantations
Non agricultural/commercial land owners	Loss of land
Village Panchayats	Impact on common properties such as pasture and grazing lands and other associated effects.

Secondary stakeholders may include individuals or groups with interest in the project, such as local and district administration, village Panchayats, political representatives in the region, and advocacy groups.

#### ***b) Compensatory Arrangements***

To mitigate the adverse impacts on land, productivity and standing crops, the entitlement framework will cover the following categories of affected people:

- Agricultural landowners incurring long term losses;
- Agricultural landowners incurring temporary losses; and
- Owners of trees/ plantations.
- Non agricultural/commercial land owners

At this stage there has been no exact enumeration of the people that are likely to be affected by the construction of the transmission lines as the route is not finalised. However the category of people likely to be affected could include both the people on whose land the towers will be constructed as well as the temporarily affected people whose land will be used during construction activities and stringing of the towers. Apart from landowners, there could also be impacts on common property resources/ Panchayat land, if any, which will need to be mitigated or compensated.

The compensatory arrangements for mitigation of the impacts mentioned above is suggested in the following sections:

#### ***c) Agricultural Landowners Affected by the Transmission Lines Incurring Long Term Losses***

These affected landowners should be compensated for loss of land, productivity and income as well as damage to standing crops during construction activities at value to be determined by the negotiation committee set up for the project.

***d) Agricultural Landowners Affected by Transmission Lines Incurring Short Term Losses***

Some people's land could be affected by short-term losses, that is, the people whose land may be affected by the construction activities and stringing of the towers.

These temporarily affected people will be affected by the damage caused to standing crops and disruption of agricultural activity during construction work and stringing and will need to be paid adequate compensation for crop damages at replacement value.

***e) Owners of Trees / Plantations***

As it is a completely mountainous area with dense green cover and orchards/ plantations it is likely some trees may need to be removed, which may impact privately owned trees, which will need to be compensated at replacement value.

***f) Non-agricultural/ commercial land owners***

Although the proposed route is at very high altitudes some commercial land may also exist (factories, substations, other commercial ventures). Some of the towers might have to be constructed on non-agricultural/ commercial land, where the entire land under the tower and its immediate periphery becomes unavailable for any commercial use or for the purpose of future construction.

Owners of such land will also form a category of stakeholders and would have to be consulted to determine the amount of compensation to be paid.

***g) Gram Panchayats, Municipality authorities***

The Gram Panchayats and other village institutions, such as local clubs and other influential members of the community, would form an important stakeholder category. These institutions represent either interests of specific groups or provide an independent forum for interaction for the village people. Invariably matters regarding land acquisition for construction of the towers, crop damages and disruption of agricultural activity for tower construction would get discussed in these forums. It is also necessary to provide the village institutions with information regarding the routing of transmission lines in the vicinity of schools, cremation grounds, any common property resources such as grazing grounds, pasture lands, water bodies, etc. The village institutions are considered to be an important stakeholder to whom providing the accurate information will facilitate the building of the right process of a dialogue.

In the event that the transmission line passes through the vicinity of municipality areas or congested and inhabited areas, it is essential to involve the municipality authorities or the relevant Panchayats in the project planning process. Restrictions on construction activities in the corridor of the transmission line need to be discussed with the municipality officials.

All losses to public properties and common resources should be compensated or alternative arrangements made at appropriate locations to consult with the villagers and panchayats.

## **1.20 ENVIRONMENTAL MANAGEMENT SYSTEM**

RSWML will adopt environmental management system (EMS) which will assist project management to meet both current and future environmental requirements and challenges. EMS will provide a structural view and control of the organisation's environmental performance that will be applied from planning and power generation to decommissioning/abandonment of project. The following components are taken to establish an EMS:

- Organisational Commitment;
- Environmental Policy;
- Environmental Action Plan;
- Objectives and Targets;
- Resettlement & Rehabilitation (R&R) Policy;
- Community Development Plan/ Indigenous People's Development Plan;
- Documentation;
- Responsibilities and Reporting Structure;
- Training;
- Environmental Review Audits; and
- Emission and performance monitoring.

RSWML will follow a comprehensive and systematic health and safety function which involves all personnel seeking to identify hazards and assessing risk to prevent and eliminate all accidents/ injuries. A basis will be evolved for identifying and correcting unsafe practices and conditions, monitoring safely performance and recognising results.

RSWML will follow National Occupational Safety Association (NOSA) standard, which is pro-actively and successfully utilised by numerous companies throughout the world. The key components on NOSA standard are:

- Premises and Housekeeping;
- Electrical, Mechanical and Personal Safeguarding;
- Fire Protection and Prevention;
- Accident Recording and Investigation; and
- Safety Organisation.

In future RSWML may follow ISO-14000 standard ostensibly being designed for corporate environmental management system.

## **1.21 INSTITUTIONAL ARRANGEMENTS FOR ENVIRONMENTAL & SOCIAL CONTROL & MONITORING PROGRAMME**

For successful implementation of an ESMMP, it is important that an effective environmental monitoring cells be set up whose role would be to check the efficiency of the organisational set up responsible for implementation of EAP and RAP.

The project proponent will establish dedicated cells for environment and social issues within the RSWML institutional structure to address all social and environmental impacts of the project, as well as ensure proper implementation of the public consultation and disclosure programmes and the rehabilitation action plan/community development plan.

Apart from the institutional support to be provided by the RSWML personnel, an implementing agency (an effective social organisation/institution or an NGO) will be appointed for the implementation of the RAP and for consultation and participation with the local communities. In case RSWML believe that they have internal capacity to manage the rehabilitation programme, then they should ensure that there is full-time dedicated staff and senior officials responsible for the implementation of the rehabilitation and community development programmes.

#### **1.21.1 Corporate Organisation Structure**

At the corporate level, the RWSML will set up a cell for Environment, Resettlement and Safety, which will be headed by a General Manager. This cell will have the following key functions:

- Setting up appropriate institutional arrangements at the project site to oversee implementation of social and environment mitigation action plans.
- Appointing an independent Monitoring and Evaluation agency
- Establishing village development funds with 50% contribution from the project in each of the villages where the CDP will be planned and implemented.
- Monitoring the RAP activities.
- Address grievances not addressed by the project office
- Ensure that the RAP and EAP is implemented in accordance to the guiding policies of RWSML and IFC
- Arrange training programmes for officers to be involved in the RAP and RAP.
- Develop corporate linkages with financial institutions and banks to facilitate financing of income generating schemes for the PAFs.
- Regular compliance of stipulated conditions by the regulatory agencies and reporting of the same as per the specified period.
- Undertake mid term corrective actions, if required.

#### **1.21.2 Project Office Organisational Structure**

A Cell for Environmental and Social Management within RSWML at the project level will take the overall responsibility for co-ordination of the actions required for environmental and social management and mitigation, and for monitoring the progress of the proposed management plans and actions to be taken for the project. The Cell will be under the overall supervision of the General Manager, RSWML, and responsible for monitoring of the implementation of the various actions which are to be executed by the agencies specified in the EAP and RAP. The Cell will report on a regular basis to the General Manager.

At the project office level, a post of Manager (Social and Environment) will be created, who will co-ordinate the RAP, CDP and EAP. He/she will report to the General Manager, locally in charge of the entire project implementation. He will be supported by other members of the cell that will include an Environmental Engineer, a Geologist/ Blasting Specialist, a Community Liaison Officer – CLO preferably from a social science background, an Ecologist/ a Horticulturist, a Health Officer, a Epidemiologist and a Safety Officer.

### 1.21.3 *Responsibilities of the Members of ESMC*

The Environmental and Social Management Cell will have three sub-units:

- Environmental Management unit
- Social Management unit
- Monitoring and Evaluation Unit

These units will be under the overall supervision of a Manager (Environment & Social)

#### *Manager (Environment & Social)*

A person of the rank of Manager will be responsible for planning and implementation of the control and protective measures. He will co-ordinate the environment and social related activities within the project area. He will have to co-ordinate on a daily basis with the team members for proper allocation and functioning of the Pollution control and monitoring equipment including implementation of EAP and RAP. He will also have to co-ordinate with the outside agencies including contractors for monitoring and controlling the tasks related to afforestation and other social and biological reclamation. He shall also interact with the health officer and collect & synthesise the workers' sickness record to analyse the possible occurrences of occupational diseases.

#### *Environmental Management Unit*

The Environment Management unit will comprise of the following:

*Environmental Engineer:* He will be responsible for implementation of EAP and maintaining the schedule, duration and parameters to be monitored. He will be supported by an Assistant Engineer, a Junior Officer and 2 workmen. The Assistant Engineer will also supervise the implementation of environmental protection measures viz. water sprinkling/ spraying, proper drainage system including culverts and other protective measures/ arrangements.

*Geologist/ Blasting Specialist:* He will be responsible for supervising and guiding safe blasting operations undertaken for tunnel development. He will also look after other stabilisation/ integrity of the tunnels etc.

*Ecologist / Horticulturist:* He will be the overall in-charge of biological reclamation and afforestation scheme to be carried out in and around the project component areas and implementation of Catchment Area Treatment Plan. He will be taking decisions regarding the selection of plant/tree species having high survival rate based on the climatic conditions and soil characteristics. He will be responsible for

setting up a nursery and acquiring saplings from local nurseries, if necessary and supervise and control the contractors engaged for plantation. He will in direct liaison with Divisional Forest Officer (DFO).

*Safety Officer:* He will be responsible for safety functions of the project both during construction and operation phases. Two Safety Supervisors who will supervise and issue daily hot work permits to construction contractor will support the Safety Officer.

#### ***Social Management unit***

*Community Liaison Officer (CLO):* The CLO will co-ordinate the functioning of two dedicated cells on Land Acquisition and Rehabilitation and Community development and regularly interact with different stakeholders, specially the PAFs to get feedback on the implementation process. He will report to Manager (Environment and Social) and also to General Manager (Project).

In addition, there will be a Grievance Redressal Cell (GRC) the details of which are provided later.

The Rehabilitation and Community Development cell will have a Community Development Officer (CDO) and 2 support staff who would oversee the entire individual and community rehabilitation and development. Alternatively, there can be a Community Development and Rehabilitation Officer, instead of a cell, who will be supported by adequate support staff.

Directly working with the CDO will be the implementing agency (either an NGO , an institution or the implementing arm of the RSWML itself) that will manage the income restoration and skill upgradation programme.

It is estimated that the services of implementing agency will be required for 3-5 years, within which the environment and social impacts are proposed to be mitigated. The hired organisation should have adequate capacity to have a regular field presence in the 4 villages, especially of community workers and women staff members. In addition the organisation will have a dedicated senior person who will be overall in-charge of the implementation of the rehabilitation plan.

The main responsibilities of the implementing agency will be:

- Establish rapport with the community and hold public consultation and disclosure sessions as required by the PCDP.
- Act as a contact point for grievance redressal and dispute settlement at the village level
- Assist in the rehabilitation process, payment of compensation, training and income generation programme.
- Facilitating the villagers and Gram Panchayats in the preparation of village micro plans and its implementation.
- Establish linkages with labour co-operatives and local employment exchanges to identify potential employment opportunities for PAFs
- Develop linkages with ongoing Government programmes at the district, block and village levels.



The implementing agency will be selected through a transparent and competitive evaluation of its capabilities and capacities. The contract will specify the responsibilities and accountability, reporting patterns and financial arrangements.

#### **1.21.4 *Grievance Redressal Mechanism***

The RAP proposed includes a mechanism to ensure that entitlements are effectively transferred to the beneficiaries and there is proper disclosure of information and consultations with the affected community. However there is an additional need for an effective and efficient grievance redressal mechanism which will respond to people's queries and problems and address key issues, concerns and complaints.

A Grievance Redressal Cell will be established in the Project/ Field Office. It will consist of the Manager (Social and Environment), CLO, 1 member of the Land Acquisition cell, member of the implementing agency and at least two key district government representatives (if possible the Additional District Magistrate or ADM and the local patwari). The cell will also have representation from the PAFs. While the representation from district officials is not mandatory, it is definitely a preferred situation as they would be able to swiftly handle grievances related to land acquisition and legal claims.

The GRC will look into complaints and concerns about ownership disputes, inheritance of assets, distribution of compensation among heirs, missing affected assets and persons in the census etc. The procedure will not replace existing legal processes but will, based on consensus, seek to resolve the issues quickly in order to expedite the receipt of compensation, without resorting to expensive and time-consuming legal actions.

In addition to the above, if there are any grievances related to environmental management issues in the project area, the GR cell will record these grievances and suggestions and pass it on to the Environmental Engineer and the Manager (Environment and Social) in the project site for necessary action in consultation with the higher management (General Management).

The GRC will meet at least once every fortnight in the first 3 months of implementation, and thereafter once every month. At every meeting it will summarise the issues raised in the last meeting and report on action taken against each. Issues that cannot be resolved at the GRC would be referred to the responsible General Manager in the corporate office for resolution. The PCDDP will inform the PAFs of the GRC structure and processes and encourage PAFs to approach this cell with their problems and suggestions.

#### **1.22 *MONITORING & EVALUATION CELL***

Internal and external monitoring is proposed in the project. Internal monitoring of the EAP, RAP & CDP implementation will be the responsibility of the M&E cell of RSWML. This M&E cell will regularly interact with the Environmental Engineer for the EAP and Community Liaison Officer for the RAP and will report to the Manager (Social and Environment). The M&E cell will prepare simple formats for monitoring both social and environment mitigation and action plans. These formats will be duly filled every month by the LA cell, the Rehabilitation and CD

cell, EMC, the implementing agency and the GR cell and the report will be collated by the M&E cell.

### **1.22.1 Internal Monitoring**

#### *Environmental Management Cell (EMC)*

The EMC will prepare a formal report on environmental and social management and mitigation for the General Manager at quarterly basis. Reports on any urgent or significant issues may be prepared at shorter intervals. Apart from responsibilities listed above, the EMC will have the responsibility of the following:

- Regular monitoring of water, air and noise quality within and outside the project component areas;
- Implementation of the control and protective measures;
- Implementation of Catchment Area Treatment Plan;
- Co-ordination of the environment related activities within RSWML;
- Collection of the statistics of health of workers;
- Afforestation including nursery management;
- Awareness and implementing safety programmes; and
- Monitor the progress of implementation of EAP.

#### *R&CD Cell*

The R & CD cell will regularly monitor the following:

- Review of schedule integrating land acquisition and RAP and CDP implementation
- Census of PAFs to fix cut-off dates for identification of PAFs.
- Delivery of compensation and rehabilitation assistance
- Consultation and public disclosure programme
- Setting up and functioning of the GRC
- Valuation of assets, land and trees.
- Determining the market value or replacement costs.
- Preparation of individual entitlement packages
- Effectiveness of land purchase and tree shifting assistance etc.

### **1.22.2 External Monitoring and Evaluation**

#### *Resettlement Action Plan*

##### *Monitoring*

The external monitoring of the process will be conducted by an independent agency. The agency, besides reviewing some of the issues being covered under the internal monitoring will also assess/evaluate:

- Adequacy of compensation
- Adequacy of project staff and training programmes,
- Effectiveness of the EAP implementation
- Effectiveness of the GR mechanisms.
- Transparency of the entire process etc.
- Consultation and participation of stakeholders, specially women

- Process and effectiveness of income restoration programmes (numbers that availed the assistance, kind of skills and programmes people opted for, availability of micro-credit and loans, training, present status etc.)  
Employment opportunities created and availed of.
- Specific opportunities for women

### *Evaluation*

There will be a mid-term at the end of one and a half years and an ex-post evaluation of the implementation of the RAP at the end of three years. On both occasions, a comprehensive socio-economic survey of the PAFs will be conducted. As the number of PAFs is estimated to be less than 150, a 100% survey for evaluation should be conducted. The results of these surveys will be compared to the baseline information obtained from the census survey conducted before the rehabilitation process commenced, to gauge the effectiveness of the R&R process over time. The socio-economic surveys will verify, among others:

- Effectiveness of the Rehabilitation assistance
- Income and living standards of PAPs (before and after rehabilitation)
- Effectiveness of various institutional arrangements made for the project
- Quality of interaction between project proponents and local communities.
- Opinions and perception of local communities regarding the project and project people.
- Issues such as sense of security among people, disruption in lifestyles, in – migration, pressures on local infrastructure

### *Environmental Action Plan*

To evaluate the effectiveness of environmental management programme, regular monitoring of the important environmental parameters will be taken up. The schedule, duration and parameters to be monitored are shown in the **Table 1.14** below.

**Table 1.14: Monitoring Schedule and Parameters**

Sl. #	Description of Parameters	Schedule and duration of monitoring
1.	Air Quality (SPM,RPM,CO, SO <sub>2</sub> , NO <sub>x</sub> )	
1.A	In the vicinity of the villages Hamta, Jagatsukh (near proposed colony) and Prini (near camp sites) and	One sample over 24 hours continuous duration, twice a week on a quarterly basis except during monsoon.
1.B	In the surrounding areas near Reservoir (village Hamta) and Switchyard site near village Prini	One sample over 24 hours continuous duration, twice a week on a quarterly basis except during monsoon.
2.	Water Quality	
2.A	Treated Wastewater quality generated from Workshop and STP	Twice a week for selected parameters like, pH, TSS, TDS, COD, BOD and Oil and Grease. The detailed analysis should be carried out once in three months.
2.B	Surface & groundwater quality in the vicinity of the downstream Allain and Duhanan streams and nearby springs for groundwater quality as per Drinking Water Standard IS: 10500 : 1991	Once in three months.
3.	Ambient Noise	
3.A	Ambient Noise level at the locations of ambient air quality	Quarterly

Sl. #	Description of Parameters	Schedule and duration of monitoring
4.	Ecological Resources	
4.A	Inventory of flora and fauna at intermediate reservoir and along Allain and Duhangan streams	Once in two years in project monitoring area
5.	Soil Quality	
5.A	Soil quality at all the locations reported under baseline	Once a year on all reclaimed areas and adjoining villages

In addition to the above, all conditions specified by the regulatory bodies governing environmental control and monitoring required during operational phase are listed below:

#### *HPSEP&PCB*

The project is in process of receiving Consent to Establish from HP State Environment Protection and Pollution Control Board with the following conditions for environmental control and monitoring during operational phase of the project:

- Maintenance of requisite percentage of water flow downstream of the diversion works in order to maintain the riverine ecology and furnish basis of arriving at this percentage.
- Monitor the impact on macro-invertebrates with diversion of the flow and also correlate it with maintenance of a minimum percentage of water flow downstream of the diversion works.
- Get a third party post environmental monitoring of the project in order to assess the implementation of various components of EMP including CAT plan.
- Creation of an EMP cell which shall be managed by the professionals who would report directly to the top management.

#### *Ministry of Environment & Forests (Forest Clearance)*

The Allain Duhangan Hydroelectric Project has received Forest Clearance - a formal approval for diversion of forest land required for the project, with the following conditions for monitoring & control of the project:

- Furnishing a progress report regularly (not less than once in a year) by the State Government/ RSWML on compliance of all the conditions specified, to Regional Office of MoEF at Chandigarh.
- Complying with all the conditions which the State Government or Conservator of Forests (Central), Regional Office-Chandigarh may stipulate from time-to-time in the interest of conservation, protection or development of forests.

#### *Ministry of Environment & Forests (Environmental Clearance)*

The Allain Duhangan Hydroelectric Project has received environmental clearance from the Ministry of Environment and Forests on 12<sup>th</sup> of December 2000 with the following conditions for environmental control & monitoring during the operational phase of the project:

- Resting of full responsibility of environmental safeguards with "Rajasthan Spinning & Weaving Mills Limited".
- Submission of six monthly monitoring reports to the Ministry and its Regional Office, at Chandigarh for review.

- Give full co-operation, facilities and documents/ data during inspection by officials from Regional Office MoEF (Chandigarh), who would be monitoring the implementation of environmental safeguards.

### 1.22.3 *Reporting*

#### *RAP*

The internal monitoring process will share its findings through monthly monitoring reports in the first year of the project, which it will share with the Manager (Social and Environment). This report will be shared with the corporate office on a quarterly basis. RWSML will report to IFC on a half-yearly basis.

The external monitoring for Resettlement Action Plan will be held every quarter during the implementation process. Evaluations will be conducted once in mid term (1.5 years) and once at the end of the rehabilitation process (3 years). The reports will be shared with the corporate office and IFC

#### *EAP*

For effective implementation and mid-term corrective measures, if required, monitoring and control of programme implementation are essential For EAP, external auditing will be carried out half yearly during the construction phase. These reports should be forwarded to IFC for necessary review. During Operation phase, the external auditing can be done on an annual basis.

### 1.22.4 *Estimated Budget for ESMMP*

*Capital Cost Estimated for EAP:* The **Tables 1.15 & 1.16** below gives overall investment on the environmental safeguards and measuring for successful monitoring and implementation of control measures.

**Table 1.15: *Estimated Budget for EAP***

S No	Particulars	Total Cost (Rs in million)
A	Pollution Control Provisions in Project Areas	
1	Water Management and Quality including Water Lorries/Sprinklers and Effluent Treatment Plant	3.00
2	Drainage system – Adequate Culverts and Cross Drainage along roads and places where obstruction/ diversion is taken up so as to prevent soil erosion	1.00
3	Exhaust System for Tunnels	1.00
4	Adequate stacks height, provision of mufflers, rubber padded foundation etc. for DG sets	0.30
5	Sewage Treatment Plant	2.00
6	Excavation Muck and Soil - Solid Waste Management i.e. Restoration of Soil Disposal Sites (Filling and Redressing)	21.65
<b>Sub-Total "A"</b>		<b>28.95</b>
B	Provision for Emergency Response Plan	
1	Water Hydrant system	1.00
2	Other provisions	0.50

S No	Particulars	Total Cost (Rs in million)
<b>Sub Total "B"</b>		<b>1.50</b>
C	Environmental Monitoring - Air, Water, Noise and Soil and Bio Monitoring	3.6
D	Catchment Area Treatment Plan – Catchment Afforestation, Pasture Development and Civil Engg Works	32.85
E	Plantation and Compensatory Afforestation	2.01
F	Loss of Environmental Value of 32.167 ha of forestland proposed to be diverted for the project	25.73
G	Provision of Fuel Wood	5.0
H	Health Management Plan – Health Facilities	27.15
<b>Grand Total (A to H)</b>		<b>96.95</b>

**Table 1.16**      **Estimated Budget for RAP**

Sl. No.	Particulars	Rate	Total (Rs.)
1.	Land Acquisition (including cost of land, assets, trees, structures etc.)	NA	NA
2.	Transition Allowance	@Rs2000/family for 1 yr*	12,00,000
3.	Start-up-assistance	@ Rs 6000/per family for 5 families	30,000
4.	Tree Shifting Assistance	@ Rs 2000 per family	2,80,000
5.	Income Restoration Assistance	@ Rs 5000 per family	7,00,000
6.	Community Development Plan	@Rs 5,00,000 per village	20,00,000
7.	Technical Assistance (Training, Advisors etc.)		8,00,000
TOTAL (excluding LA cost)			50,10,000

*\*For the budget is has been assumed that about 50 families will show vulnerability. The actual numbers of vulnerable families in the census survey may be different*

The estimated budget for ESMMP would be Indian Rupees 101.96 million (96.95 + 5.01), excluding the cost of land acquisition. The budget does not include many of the measures, which are integrated by RSWML in the Project Cost.