

# Quarterly Environment & Social Monitoring Report (July 2011 to September 2011)

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Environmental and Social Performance Report  
December 2011

## IND: Mundra Ultra Mega Power Project

Prepared by SENES Consultants India Pvt Ltd.

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# **Quarterly Environment & Social Performance Report – Tata Ultra Mega Coal Fired Power Plant, Mundra**

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**Period: July to September 2011**

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**Submitted to: Coastal Gujarat Power Ltd (CGPL)**

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**Prepared by: SENES Consultants India Pvt Ltd.**

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# **QUARTERLY ENVIRONMENTAL AND SOCIAL PERFORMANCE REPORT (ESPR)**

Reporting Period: July to September 2011

Site visit date: 22<sup>nd</sup> – 24<sup>th</sup> November 2011

## **1 Introduction**

### **1.1 Background**

Coastal Gujarat Power Limited (CGPL), a wholly owned subsidiary of the Tata Power Company Limited will build, own and operate an ultra mega power plant at Mundra in Gujarat. The project includes five supercritical units of 800 MW each, with total capacity of 4000 MW. The plant will use 12 Million Metric Ton Per Annum (MMTPA) of imported coal as fuel, and sea water for once through cooling of condensers. Power will be evacuated through six 400 KV power lines to benefits the states of Gujarat, Maharashtra, Punjab, Haryana and Rajasthan.

The project has started in September, 2007 with the targeted commercial operation of the first unit is February, 2011 and that of the fifth unit in June, 2012. CGPL has sought financial loans from several international banks including the International Finance Corporation (IFC) and Asian Development Bank (ADB). As per the common term schedule to loan agreement between CGPL and the Lenders; Tata Power has entrusted SENES Consultants to carry out Environment Health Safety and Social (EHSS) compliance audits on a quarterly and annual basis during the construction period.

### **1.2 Objective**

The purpose of this Quarterly Environmental & Social Performance Report (ESPR) is to report on CGPL's compliance with the Environmental and Social Performance Requirements of IFC/ADB (including implementation of the Environmental Management Plan and the Social Management Plan) and to asses any corrective actions implemented/proposed. The ESPR encompasses implementation by CGPL of all phases of the Project. It includes:

- Contact information for responsible individuals
- Compliance by CGPL with environmental and social requirements for the Project
- Environmental and social aspects of the Project under implementation
- Occupational health and safety performance and significant incidents
- Sustainable development initiatives and community relations

### 1.3 Project Status

The actual progress for the month has been 0.92% against an early schedule of 0.27% & late schedule of 1.60%. Overall actual progress stands 90.51% against an early schedule of 99.28% and late schedule of 94.70%. Major engineering is completed and all packages awarded with materials' delivery continuing. Major accomplishments for the month includes

**Unit#10 & Common** – 400KV plant switch yard energized on 01/10/11 with all 03 GTs back charged through 400kV switchyard on 15/10/11. Coal firing successfully achieved on 27/10/11 and start-up activities are in progress; Auxiliary power shifted on 400kV switchyard from 03/11/11; Bottom ash slurry system taken into service on 29/10/11; Fly ash slurry disposal system commissioned on 11/11/11. **Unit#20** – Pulverizer motor solo test done on 11/11/11 & turbine interlock test done on 05/11/11; MSCV/CRV interlock test completed on 07/11/11. **Unit#30** – CCCW system restoration and ID/FD and PA fan lube oil pump load run completed on 12/11/11; Boiler chemical cleaning completed on 06/10/11; STG lube oil system restoration completed on 10/10/11. **Unit#40** - Pre-boiler system (HP Piping) hydrotest commenced on 25/10/11 (condensate system on 25/10/11 and feed water suction line completed on 08/11/11); **Unit#50** - Boiler Hydrotest commenced on 12/11/11.

**Coal handling system** – Conveyor's priority areas hood installation completed and it is in progress in other areas. Conveyor extension from Ut#20 to 50 is in progress. **Ash handling system** – Bottom ash slurry system taken into service on 28/10/11 and fly ash slurry system commissioned on 11/11/11. **Transformer Yard** – PGCIL commissioned Vadavi-Bhachau-Mundra and 400KV plant switch yard energized on 01/10/11. Work on other three power evacuation lines (Mundra – Surajbari – Limbdi, Mundra - Surajbari – Jetpur and Gandhar – Navsari) under progress. **Chimney-1** - 2nd flue erected, CEMS commissioned on 05/11/11 and it is ready for use. Elevator installed. Stair case, electrical and C&I works are in progress. **Chimney-2** - flue-cans erection for Unit#30 & 50 in progress. **M/s. ADANI (CW Intake, ECHP and Coal Jetty)**: ROW for ECHS and Revised PSA, signed with MPSEZL.

## 2 Environmental & Social Management

### 2.1 ESPR Preparer

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Signature:



Report Date: December 2011

## 2.2 Environmental Management Plan (EMP) & Social Management Plan (SMP) Implementation

The following groups of the Tata Power Corporate Office and CGPL's on-site team are responsible for EMP and SMP implementation:

- **Tata Power Corporate Office** : Sustainability & SHE Group; HR - Land Acquisition, R&R, CSR
- **On-site team at Mundra**: Safety & Environment; HR – Labour & Health; CSR

The list of individuals contacted during the site visit is given in **Annexure 1**.

## 3 Compliance with CGPL Environmental & Social Requirements

This section describes current compliance of the project with IFC/ADB's environmental & social policies and guidelines, Environmental & Social Management Plans and presents the key environmental & social performance indicators. The current project activities have been assessed with respect to observations and comments offered in the last audit.

### 3.1 Environmental Aspects

CGPL continues to demonstrate appreciable efforts in green belt development with 41750 nos. saplings being planted till Oct'11 (**Photo 1**). However with the site area occupied by construction material the green belt development progress is reported to be temporarily affected. Appreciable efforts have also been made by CGPL along with AAKAR to spread environmental awareness among nearby community schools.



*Photo 1: Green Belt Area*

Although CGPL has ensured the operation of Desalination Plant since Sep'11 to meet potable water requirements of labor camp workforce the supply of water to the camp need to be regularized. Also given that no feedback has been obtained from CGWB till date on the approval of the rain water harvesting plan it is suggested that CGPL continues with its efforts towards liaising with CGWB on the said matter

Availability of coal for project operations is identified to be critical considering the escalation of imported coal price due to a revision in Indonesian Export Policy on natural resources. Although proactive efforts are being made by the Tata Power Management Team to find a feasible solution it is recommended that the same should be guided by relevant covenant conditions (particularly with respect to coal quality) as agreed upon between CGPL and IFC. Any deviation in coal quality in contrast to that mentioned in the EC document to be

communicated to the relevant regulatory authorities' viz. MoEF and GPCB. It is also imperative that CGPL assesses and evaluates the implication of such change on performance of air pollution control equipment, ash generation and disposal, coal storage yard and ash pond design etc and keep stakeholders including SENES updated on the same. Further CGPL also need to undertake a validation study of the thermal dispersion modeling of intake and outfall discharge of cooling water in relation to concerns raised by the Machimar Society – an NGO representing fisherfolk and as committed in the marine EMP prepared by NIO.

Given the potential cumulative EHS risks on Vandh village communities with respect to fugitive dust and noise generated from coal conveyor operations and coal stockpiles it is required that CGPL undertakes source emission modeling study along with detailed baseline monitoring of environmental components (air & noise) at the said location to monitor any deviations from the baseline environment and formulate appropriate corrective actions, if necessary. Presently CGPL is also in the process of assessing the feasibility of wind barrier construction at coal storage yard as recommended by regional office of GPCB. Also in light of the complaints raised by Tragdi Bunder fishing community on anticipated impacts on fish drying due to chimney emissions, it is recommended that CGPL carries out a baseline AAQ monitoring at the fishing village during both construction and operational stages to monitor any possible deviations and formulate appropriate mitigation measures, if necessary.

As per the EMP requirement CGPL is required to establish linkage for maximum utilization of fly ash in nearby industries (cement) on a fast track basis. The same need to be governed by the quality of the coal available during operations given the criticalities associated with the availability of imported coal from Indonesia as discussed above.

Adequate efforts need to be made by CGPL towards improvement of STP performance as the function of the treatment facility is being largely affected resulting from lack of biological growth and alum dosing. Although MSDS have been displayed in local language at STP chemical storage area the chemical containers was observed without proper labeling (**Photo 2**). Further the contractor personnel lacked adequate training and awareness on the potential hazards and emergency response measures with



*Photo 2: Chemicals stored without proper labeling*

respect to such chemical storage and handling. Efforts need to be made by CGPL towards proper labeling of chemical containers at the chemical storage area. Additionally it is recommended that job specific training programs are implemented by CGPL for such worker group to enhance their awareness with respect to chemical storage and handling risks. Further provision for installation of a meter at STP outlet to be made in order record daily volume of treated sewage being generated thereby serving as an indicator to monitor STP performance.

Review of the environmental monitoring reports for Jul-Sep'11 revealed high values for respirable particulate matter concentration and ambient noise levels monitored at project villages in comparison to the national ambient air and noise quality standards (both day and night time). Presently with PM<sub>2.5</sub> only being monitored at the project site it is recommended that PM<sub>2.5</sub> is considered as key parameter for village level ambient air quality monitoring.

With respect to waste management although color coded and labeled waste storage bins have been provided at the camps proper recycling and disposal of such waste is being affected due to lack of proper segregation at source (**Photo 3**). In this regard it is recommended that CGPL take adequate measures through involvement of AAKAR and continued supervision to induce behavioural change within residing workforce. Although a feasibility study for biogas plant facility has been undertaken by CGPL as reported during Jan-Mar'11 quarterly audit report, the commissioning and operation of the same is still pending and need to be taken up on a fast track basis.



*Photo 2: Waste segregation in progress at disposal ground*

Based on the IFC recommendation a due diligence study will be carried out by SENES in the upcoming audit in Jan'12 to assess the status of environment management measures at West Port operations in accordance to specific provision of relevant international conventions on marine pollution viz. MARPOL.

As recommended in the Jan-Mar'11 quarterly audit report the development of Environmental Action Plan and Coastal Biodiversity Management Plan is still pending. The Environmental Action Plan will be prepared to identify deviations observed in the ambient environmental quality while the formulation of Coastal Biodiversity Management Plan is to be based on the Bombay Natural History Society (BNHS) survey on marine and coastal biodiversity near the outfall channel. Further it is also recommended that CGPL carries out a due-diligence study with the PMU coordinating pilot approaches in the Gulf of Kutch, under the WB funded Integrated Coastal Zone Management Project, with respect to the anticipated project's risks and interactions with marine resources, conservation needs, and coastal communities.

### **3.2 Social Management**

Review of documents made available by CGPL including those available in public domain reveals that the main activities under CSR UMPP have been undertaken and a few are in process. The current project activities have been assessed with respect to observations and comments offered in the last audit.

#### *CSR/Risk Mitigation*

The work of the CSR department is currently focused on risk mitigation which affects both planning and implementation of long term activities. As suggested in the April to June 2011 Report both aspects are crucial for interaction with stakeholders and implementation of CSR activities. This should be reflected in the current structure of the department and existing roles and responsibilities. Required changes must keep risk mitigation at the centre with directions emerging from the centre for key activities and interventions.

#### *Mechanisms Developed for Improving Effectiveness*

An interdepartmental Committee has been formulated for addressing issues relating to risks and their mitigation, grievances, communication with affected communities, crisis management and risk mitigation and other concerns. It is scheduled monthly but is held for special purposes also, apart from routine meeting viz. Meeting HR, CSR, Finance, Security, Purchase and Civil under the chairmanship of Head (O&M and CR). The Committee is an effective mechanism for streamlining and addressing concerns through a joint effort.

VDC meeting has been held in one village to finalize the CSR activities to be undertaken. There was poor participation by women due to social and cultural factors. Therefore an option to have separate seating for women needs to be worked out. Most of the concerns raised in the first meeting were related to employment and related issues.

Mechanisms for information dissemination and directly interacting with Communities and for addressing grievances have been developed and in place. CIC has commenced in the beginning of November. As the systems are relatively new in terms of functioning, a review of these mechanisms will be undertaken in the next audit. This is a good initiative to provide an open channel of communication between CGPL and the Stakeholders.

#### *Database Related to PAFS/PAPs: Up-gradation*

Land sellers/land losers/PAF list has been finalized as the basis for extending entitlements and monitoring the socio economic conditions of the PAPs. A Nomination Form has been drafted to obtain the names of the nominees from affected families for training and employment. Concerns related to priority, alternatives in case the AF or AP as not ordinarily residing in the village, death of nominee, absence of legal heirs for AFs need to be worked out in principle and practice.

It has been recommended in the last audit that the PAF/PAP list database finalized needs to be linked to the HR requirements to enable selection of candidates from the PAPs list for extending employment, contractual work etc before recruiting from the open market. Column

on benefits needs to be updated in the PAPs list to enable CSR to monitor the extent of benefits accruing to each PAF and to ensure the inclusion of all PAFs.

Based on the PAPs list entitlement matrix as suggested under the RP to be worked out for each family/person. As benefits are given this also need to be updated in the PAPs to ensure that all families are covered as per the entitlements extended.

The supplementary list also needs to be prepared for families indirectly affected from loss of common property resources and private & government land, non land based livelihood dependents, encroachers and vulnerable groups. Specific services such as health, education, pension (if unable or incapable of work) etc planned to be extended to the aforesaid groups.

#### *Issues Related to Economic Rehabilitation/Income Generation Activities*

Currently training in handwork for the women in villages (Tunda, Vandh, Mota Kandagara) has been imparted but piece work has not been given to the women. There has been a small increase in the rate paid to the women by private parties for Bandhini. Once VRTI commences allocating work on payment basis the rate per piece/hour should be worked out to ensure than earning have increased and aren't on par with pre training rates.

Employment opportunities direct and indirect have been identified with large proportion being in Housekeeping, Green Belt and Catering. For direct jobs with CGPL the requirements and qualifications of the job is not being fulfilled by the affected persons. Therefore, CGPL proposes to offer training and education opportunities to enable the PAPs to fit criteria and has proposed to accommodate PAPs in sectors identified. A time bound programme needs to be worked out in terms of positions made available and PAPs completing training.

A visit was made to Tragadi and Tragadi Bandar. A more extensive visit and analysis of secondary data is required in order to assess CGPL's compliance with the Environmental and Social Performance Requirements of IFC/ADB.

For procurement the process of identifying work and the procedure is being developed. The guidelines and criteria are in the process of being finalized.

The Project does not have a separate local hiring plan. The plan is being finalized for Tata Power and the same will be adopted by the Project at site.

#### *Other CSR Measures Undertaken*

Some of the work undertaken regarding well and pond recharge and farm bunding in Tragadi has been found to be effective. The work on the pond was not completed due to the early onset of monsoon. The incomplete work is planned to be completed shortly. The water from the wells and pond needs to be tested to see the impact of the recharge on the TDS. Milk Collection Centres in Tragadi and Nana Bhadiya have been initiated. Case studies of these practices need to be documented along with photographs to enable more people in other villages to get involved with the on-going programmes.

### *Documentation and Reporting*

Each of the past and current (with a continuation of the same for future) development projects undertaken as part of CSR, should be documented in the form of a complete report. The reports should also include photographs and handing over of the project to the Panchayat or the applicable group.

Mechanism needs to be established for monitoring, motivating and evaluating effectiveness of implementation of activities by NGO. The mechanism should also bring in more clarity to differentiate the role of NGO and the ground level CSR staff, as there is an obvious overlap of roles especially with respect to dealing with the intended beneficiaries. While the current roles of the staff are more towards carrying out or conducting activities some additional inputs from the staff on specific requirements of programs or individuals need to be captured. For example, under the Guashala/animal husbandry program additional inputs regarding stall feeding, diary development, by products that can be used as fodder, supplementary nutrition for cattle to increase milk production, biogas to meet part of the fuel or energy requirements of families, etc.

SENES needs regular (monthly) updating on progress of several key social conflicts presently being worked upon by CGPL, such as those relating to livelihood of fishermen, their access inconveniences / concerns, the issue on Tunda – Vandh road diversion, and discontent expressed by the villagers against the NGO deployed.

### *Pending/Unresolved Issues*

Tunda Vandh road, issue has not been currently addressed or resolved. CGPL is in the process of developing a plan to resolve the issue.

## **4 Health & Safety**

CGPL has adopted the health and safety system (with guidance from Dupont) that includes well defined performance standards, procedures and guidelines (HIRA, SCAR, etc), safety awareness programs (Safety Time Out) and key performance indicators (e.g. lost time incidents, severity rate, near miss etc.), which are used to track compliance with Health and Safety (H&S) targets. Specific health and safety plans and onsite emergency plan have been developed & augmented on regular basis by CGPL and communicated to contractors. The plans outline the policies and strategies, the organization, resources and documentation required, the HS risk management principles, and reporting requirements.

### **4.1 Health & Safety Management**

With the augmentation in safety staffing by CGPL, proper implementation of specific plan and procedures, communication between the contractor workers, safety training and awareness, incident reporting, visual aids etc the onsite Health & Safety Management of CGPL continues to demonstrate considerable improvement. Improvement in safety performance sustained by CGPL through continued and effective implementation of method statements, job safety analysis (HIRA), pre start up safety review process, TBM etc and related activities. Presently CGPL plans to obtain OHSAS, EMS and QMS certification for its operations through development and implementation of an Integrated Management System (IMS) integral to environmental, health & safety and quality aspects. In this regard CGPL is in the process of developing a legal and risk register establishing/outlining the applicable national regulations/consents conditions and key operational EHS risks respectively. Subsequent to this, specific work instructions will be prepared by CGPL to mitigate any identified significant EHS risks/impacts associated with the operational stage activities in compliance with legislative and Tata group EHS policy requirements. However it is important that CGPL consider the requirements of IFC EHS Guidelines of Thermal Power Plant, IFC General EHS Guidelines, IFC-CGPL Covenants and IFC Performance Standards (IFC PS) during legal and risk register preparation encompassing EHS aspect.

However the following safety related observations were made with respect to CGPL onsite activities which require focused efforts to ensure necessary compliance:

- Welding and gas cutting was observed to be in progress at TG#50 and TG#30 area without adequate supervision, safety barricading/signage and proper fire safety measures viz. use of fire blankets (**Photo 4**). Further the acetylene cylinders utilized for gas cutting was found to be transported onsite through use of hydra/cranes without adequate support and use of conveyors, trolleys and cradles of adequate strength.

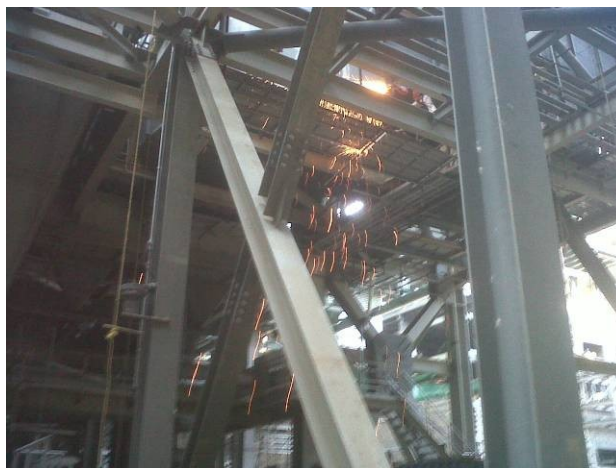


Photo 4: Gas cutting undertaken without fire blankets

- Transformer oil drums (approx 60-80 nos) observed to be indiscriminately stored at BHEL storage yard without adequate secondary containment and spill prevention & control equipments (**Photo 5**). All such chemical containers need to be shifted in covered, paved and bunded storage area equipped with spill control equipments.



Photo 5: Indiscriminate storage of transformer oil drums

Development and implementation of process/mechanism to cater to the grievances related to basic labor requirements of the workforce residing outside the project boundary is still pending. However it is also required that CGPL regularly monitors the amenities/facilities (sanitation, first aid, safety, recreation, wages etc) provided to such workforce by contractor in accordance to IFC and national regulatory provisions specified under labor and working conditions.

## 4.2 Safety Performance

The health and safety performance of the project monitored with respect to safety performance indicators for the period July-September 2011 is presented in the **Table-1** below.

**Table 1: Safety Performance Indicator Status (July to September 2011)**

Sl.No	Performance Indicators	Reporting Period		
		Jul-11	Aug-11	Sep-11
1	Induction Training Attendees	4029	3335	3152
2	LTIs	0	1	0
3	First Aid Cases	96	82	86
4	Medical Treatment Cases (MTC)	2	1	0
5	Safe Man Hours Worked till last fatality/LWDC	3493868	0*	3350920
6	Total Person Hours Worked	3493868	3551400	3350920
7	LTI Frequency Rate	0.00	0.28	0.00
8	Severity Index	3.20	3.06	3.16
9	Fire Cases	11	11	8
10	Near Misses	109	90	60
11	Fatality	0	0	0

\* Last LWDC recorded on 31.08.2011

**Table 2: Safety Action Plan**

Sl.No.	Items	Targets	Jul		Aug		Sep	
			Tar	Act	Tar	Act	Tar	Act
<b>1</b>	<b>Safety Sub-Committee meeting (Dates)</b>							
	a) CSC	<b>12</b>	1	1	1	1	1	1
	b) Incident Investigation	<b>12</b>	1	1	1	1	1	1
	c) Contractor Safety management	<b>12</b>	1	1	1	1	1	1
<b>2</b>	<b>STOP Observation</b>							
	a) Nos. of observers	<b>98</b>						
	b) Nos. of observations	<b>392</b>	373	299	369	297	369	312
<b>3</b>	<b>C F S A (as applicable)</b>	<b>4</b>	4	4	4	4	4	4
<b>4</b>	<b>HIRA / JSA (as applicable to SBU)</b>	<b>Yet to Finalized</b>						
	a) New			25		22		15
	b) Review in 5 working days			16		14		10
<b>5</b>	<b>Site Specific safety Procedures</b>	<b>As and when</b>						
	a) New additions			-		-		-
	b) Review / Updation of existing procedures							
<b>6</b>	<b>External / Statutory audits -Safety Audit(as applicable to SBU)</b>	<b>1 in Year</b>						
<b>7</b>	<b>Emergency Preparedness drill</b>	<b>12</b>	1	1	1	1	1	1
	a) Scenerio / periodicity							
<b>8</b>	<b>Audits plan by site safety officers-</b>	<b>1 in year</b>						
	( System Audit) -For major contractors							
	(Cross function team to be made- )							
<b>9</b>	<b>Safety inspections schedule - ( By safety stewards)</b>	<b>4 Inspection/ month</b>						
	a) Lifting equipment & accessories - <b>6 monthly</b>							
	b) Housekeeping- <b>Monthly</b>		1	1			1	1
	c) PPE usage -(PPE Inspection - Safety harness,helmet )		1	1	1	1	1	1

Sl.No.	Items		Targets	Jul		Aug		Sep	
				Tar	Act	Tar	Act	Tar	Act
	d)	Handtools- Power tools-		1	1	1	1	1	1
	e)	Access & work platform- NA							
	f)	Pressure vessels & gas cylinders – NA							
	g)	Portable electrical equipment- (Welding and cutting - <b>Quarterly</b>		1	1	1	1	1	1
	h)	Fire fighting equipment ( <b>Fixed Systems/ Fire extinguishers</b> )		1	1	1	1	1	1
	i)	Fire alarm system							
	j)	Fire exits, escape routes marking. Office area.							
	k)	Buildings, plant structures NA							
	l)	Plant lighting							
	(m)	Safety signages -							
	(n)	Conveyors NA							
	(o)	Moving machinery NA							
		Vehicle Inspection -		1	1			1	1
<b>10</b>	<b>"On-The-Job" Safety events</b>								
	a)	Environment day celebration-	<b>1</b>						
	b)	Electrical Safety week	<b>1</b>						
	c)	Housekeeping week	<b>1</b>						
	d)	Road safety week-	<b>1</b>						
	e)	Safety week celebration HSE department -Mar 2012	<b>1</b>						
	f)	Fire awareness week	<b>1</b>						
<b>11</b>	<b>"Off-The-Job" Safety events</b>		<b>3</b>						
	a)	Home safety-	<b>1</b>						
	b)	Defensive driving-(Traffic safety awarness)	<b>1</b>						
	c)	Environment & Hygiene	<b>1</b>						
	d)	Electrical Safety							

### Annexure 1: Persons Interviewed

Sl. No.	Name	Position
<b>CGPL</b>		
1	Mr. Sharad Baijal	Head - Operations
2	Mr. Abhijit Basu	Chief Manager - Finance
3	Mr. Ramesh K Dhawan	Chief – SHE
4	Mr. Vishal C. Shah	Senior Manager - Environment
5	Mr. Himanshu Shrivastav	Member, HR
6	Mr. Pradeep Ghosal	Associate Group Head – CSR
7	Mr. Saurab Sharma	CSR Personnel