



**REPORT OF THE:**

## **EXTERNAL COMPLIANCE MONITORING GROUP**

### **SALAYA – BHOGAT CRUDE OIL PIPELINE EXTENSION**

2<sup>nd</sup> Site visit: January 2011

India



*Prepared for*

International Finance Corporation

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*Prepared for:* International Finance Corporation

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***FREQUENTLY USED ACRONYMS***

AGI: Above Ground Installation  
AST: Aboveground Storage Tank  
BSPT: Bhogat Storage and Pumping Terminal  
DISC: Dredging International Services  
CA: Competent Authority  
CEIL: Cairn Energy India Pty Limited  
CSR: Corporate Social Responsibility  
DG: Diesel Generator  
ECMG: External Compliance Monitoring Group  
EHS: Environmental Health and Safety  
EIA: Environmental Impact Assessment  
EIRA: Environmental Impact and Risk Assessment  
EMP: Environmental Management Plan  
ESMP: Environmental and Social Management Plan  
FAB: Fluidized Aerobic Bioreactor  
HS: Health and Safety  
IFC: International Finance Corporation  
IOTL: Indian Oil Tank Limited  
KP: Kilometer Pipeline  
KPI: Key Performance Indicator  
LACP: Land Acquisition and Compensation Plan  
L&T: Larsen and Toubro  
NGO: Non Governmental Organization  
PCDP: Public Consultation and Disclosure Plan  
PLEM: Pipeline End Manifold  
PLL: Punj Lloyd  
PM: Particulate Matter  
PPE: Personal Protection Equipment  
PS: Performance Standard  
RO: Reverse Osmosis  
RoU: Right of Use  
SEHMS: Skin Effect Heat Management System  
SOP: Standard Operating Procedures  
SPM: Suspended Particular Matter  
SPMo: Single Point Mooring  
SRT: Stakeholder Relations Team  
STP: Sewage Treatment Plant  
WMP: Waste Management Plan

## **INTRODUCTION**

This report summarizes observations made during the second site visit (9<sup>th</sup> to 20<sup>th</sup>, January 2011) by D'Appolonia S.p.A., Italy (D'Appolonia), serving as the External/Independent Environmental, Health and Safety (EHS) Compliance Monitoring Consultant (referred to as the External Compliance Monitoring Group – ECMG) for the Salaya – Bhogat Crude Oil Pipeline Extension Project, India (“the Project”).

This External Compliance Report is broken down into three key subject areas, as follows:

- compliance with International Finance Corporation (IFC) Policies and Guidelines;
- compliance with the Environmental Impact and Risk Assessment (EIA) documentation and Project Environmental and Social Management Plan (ESMP); and
- recommendations for improvements based on the findings of the visit and D'Appolonia's experience.

ECMG observations that require action and that will be reviewed in subsequent assessments have been collected in Table 1 – Follow-up Issues. Table 1 will be updated by the ECMG following each Project visit assessment. The Follow-up table is structured as follows: new issues are given a distinctive, progressive number with the first digit indicating the mission (1 for the first mission, 2 for the second, etc.); when applicable, issues closed during the current visit have been designated as such and highlighted in gray; closed issued from previous missions will be eliminated from the table. The ECMG has also provided recommendations for Project improvement based on the collective experience and expertise of the team members. These recommendations are not always to be considered compliance requirements and there is no onus on the operation for implementation. ECMG, however, encourages the Project to consider the usefulness of the recommendations and incorporate them, as appropriate, into management activities.

Cairn Energy India Pty Limited (CEIL), a subsidiary of Cairn India Limited, is party of the RJ-ON-90/1 Block (Rajasthan Block) Production Sharing Contract, dated May 15 1995, and Operator of it on behalf of a Joint Venture with the Oil and Natural Gas Corporation Ltd, a Public Sector Organization which holds 30% interests in the Joint Venture. In addition, in August 2007 the Government of India accorded to Cairn India and ONGC the right to acquire the Right of User for laying a crude transportation pipeline from Barmer to Salaya. The original plan included the construction of the Mangala Processing Terminal near Barmer, Rajasthan, a pumping terminal at Viramgam, Gujarat (Phase I), and the laying of a 600 km heated pipeline connecting the Mangala Processing Terminal to Viramgam and the Salaya nodal point with spur lines connections to the Essar and Reliance crude oil tank farms (Phase II). However, due to environmental constraints and eco-sensitivity issues along the coastline off Salaya, a new Single Point Mooring (SPMo) location was identified along the coast of the Arabian Sea near Bhogat.

To reach this SPMo location, CEIL has developed a new phase (Phase III) of the Project that includes the extension of the Barmer – Salaya pipeline for an additional 75 km to reach Bhogat (the Salaya – Bhogat section), a crude oil Storage and Pumping Terminal at Bhogat, and a Marine Offshore Tanker Loading Facility. The pipeline extension from Salaya to Bhogat will have the same design and characteristics of the Barmer – Salaya pipeline; it consists of a 24 inch diameter insulated pipe, equipped with a Skin Effect Heat Tracing System, and an 8 inch diameter gas line. Three Above Ground Installations (AGIs) necessary to heat the pipeline will also be part of this new pipeline section (AGIs 34, 35, and 36). The pipeline corridor passes through the Jamnagar District of the Gujarat State along mostly open scrub land and agricultural fields. The Bhogat Storage and Pumping Terminal (BSPT) area is located approximately 1.5 km from the Bhogat village and about 7 km from the coastline. The total Terminal area will cover approximately 100 hectares and includes: seven (7) above ground storage tanks (AST) for crude oil with fixed roofs and a capacity of 300,000 barrels; four (4) diluent AST with floating roofs, one with a capacity of 300,000 barrel (approximately 48,000 m<sup>3</sup>) and three with a capacity of approximately 90,000 barrels; a blending facility; a captive power generation plant with an estimated output of 15 MW; and other associated facilities (emergency power generators, boilers, buildings housing offices workshops etc., water supply and treatment plant). The Marine Facility consists of a twin 24 inch pipeline running 7 km on land, from the BSPT to the landfall location, and approximately 6 km sub-sea, from the landfall point to the SPMo, a pipeline end manifold and interconnecting houses, and a tanker loading mooring. CEIL has obtained the necessary clearances from the Ministry of Environment and Forests (August 2009) and the Gujarat Maritime Board (November 2008) to develop the Project subject to compliance to the terms and conditions indicated by each Authority.

CEIL has sought financial assistance from IFC and committed to apply its Performance Standards (PS) on Social and Environmental Sustainability to the design, construction, operation, and closure of the Project. In general, IFC involvement and financing require both pre-finance project due diligence and post-finance project assurance with respect to various social, environmental, health, and safety and IFC Policy and PS relevant to the Project. CEIL has committed to external/independent social, environmental, health, and safety compliance monitoring to provide an additional level of transparency to the implementation of its management programs.

D'Appolonia scope of work is to conduct quarterly visits during the construction of the Project in order to:

- identify areas and degrees of compliance with the Equator Principles and the following IFC Policies and Guidelines:
  - IFC General Environmental, Health and Safety Guidelines (April 2007); and
  - IFC Environmental, Health and Safety Guidelines for Oil and Gas Development, Onshore (April 2007) and Offshore (December 2002);
- identify areas and degree of compliance with each of the following IFC PS:
  - Performance Standard 1: Social and Environmental Assessment and Management Systems,
  - Performance Standard 2: Labor and Working Conditions,
  - Performance Standard 3: Pollution Prevention and Abatement,
  - Performance Standard 4 Community Health, Safety and Security,
  - Performance Standard 5: Land Acquisition and Involuntary Resettlement, and
  - Performance Standard 8: Cultural Heritage;
- compliance with any previously developed Action Plans and/or agreements between Cairn and IFC and other Banks;
- identify areas and degree of compliance with the following CEIL developed plans:
  - Environmental, Health, Safety and Social Management System as described in the Cairn India Corporate Responsibility Management System, and
  - Projects specific EIA and ESMP,
  - provide practical guidance and advice to Project's field teams, and
  - identify specific EHS issues and conduct follow-up and closure of open issues.

The Focus areas of the EHS reviews are the following:

- EHS Management performance;
- EHS compliance (versus Indian and International standards as presented in Project specific EIA and ESMPs);
- compliance with IFC PS on Social and Environmental Sustainability and EHS Guidelines;
- facilities review; and
- implementation of the EHS Action Plans (as presented in the EIA and ESMPs).

During the field activities, D'Appolonia assessed all Project's associated facilities (the Salaya to Bhogat pipeline, the BSPT and associated facilities, and the Marine Facilities area) based on direct observations, interviews with Project personnel, and pertinent documentation provided by CEIL.

Specific activities conducted during this site visit included the following:

- evaluation of implementation of the commitments contained within the Project specific EIA and ESMP. Items addressed in these documents include: air quality, surface and ground water resources, soil resources, natural resources (flora and fauna), noise and vibrations at off-site receptors, waste management, and cultural resources;
- evaluation of the Project compliance with Corporate Responsibility Guiding Principles and Management System, with the Public Consultation and Disclosure Framework Plan (Corporate, and for Gujarat) and with the Land Acquisition Framework Plans (Corporate, and those developed specifically for Gujarat);

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- evaluation of the implementation of Project commitments contained within specific EHS Action Plans developed in the EIA and ESMP;
- evaluation of compliance with IFC PS Policies and Guidelines listed above;
- visit to the Project facilities including: four road crossings (No. 178, 180, 183, and 191) along the Salaya - Bhogat Pipeline; the Sinhan River and the Ghi River crossing; sections of the pipeline corridor at Kilometer Pipeline (KP) 16 and 38; AGIs 34, 35 and 36; Khambaliya Base Camp and two storage yards; the Bhogat Terminal under construction and its associated facilities like CEIL staff camp, Punj Lloyd (PLL) labor camp, Indian Oil Tank Limited (IOTL) labor camp under construction, and Hariom Batch Plant; two composting facilities and municipal landfills near Khambaliya and Dwarka; and the marine working area (including Leighton camp Dredging International Serviced (DISC) camp, pipe stringing/welding yard, the landfall point and off-shore vessels);
- meetings of the ECMG social team included:
  - Corporate Social Responsibility, Stakeholders Relationship and Land Acquisition teams in Bhogat and Khambaliya, and
  - the site management, Industrial relations, Community Liaison officers of Larsen and Toubro (L&T), PLL, Leighton, and DISC;
- interviews with land-owners in Bhogat, Sodasla and Bhatel villages;
- visit of the fishermen's settlement near the marine facility and meeting with the fishermen;
- visit of one school near Bhogat camp;
- visit to Leighton, PLL and L&T labor camps;
- review of documentation provided by CEIL specifically related to the projects; and
- review of the documentation relating to the development program..

The final closeout meeting was conducted at CEIL's Gurgaon offices on October 20<sup>th</sup>, 2011, and the information presented in this meeting has formed the basis for this report. The information, observations, and opinions presented in this report are those of D'Appolonia and are independent of those of CEIL and the IFC.



### ***EXECUTIVE SUMMARY***

The overall Project, which is in the early stages of construction, could be subdivided into three main sub-projects: (1) Salaya-Bhogat Pipeline; (2) Bhogat Terminal; and (3) Marine off-shore works. L&T is the Engineering Procurement and Construction contractor for this sub-project with pipeline works that have started along the 77 km corridor (clearing and grading – 5.5 km, trenching – 2.5 km, welding – 1.7 km). Two river crossings, out of a total of four, six road crossings, out of eight, and one railway crossing, out of three, are under construction. Civil works at all three AGIs along the pipeline route have started. At the Bhogat Terminal PLL, IOTL, DG Infra, VI Pandya, and Janka are the main contractors. PLL has been awarded the tank foundations (11 Tanks) and plate fabrication contract while IOTL is in charge of internal road construction (470 m road profile completed, 320 m duly compacted, and 180 m first layer completed), PCC work for culvert, excavation and PCC work for the administrative building, and contractor office and labor camp construction. DG Infra has been awarded the construction of CEIL offices and living quarters, originally scheduled to be completed by January. At the off-shore, Leighton is the Engineering Procurement and Construction contractor with DISC being subcontracted for the off-shore dredging work. On-shore works include: pipe stringing (75% completed); welding of pipe joints (78% completed); Skin Effect Heat Management System (SEHMS) pipe welding (21% completed); and field joint coating (1% completed). Off-shore works include: piling (45% completed); dredging (75% completed); Pipeline End Manifold (PLEM) installation (50% completed); pipe pulling (scheduled to start mid February 2011), SPMo installation (scheduled to start by end of March 2011); hydro-testing (scheduled to start of March 2011).

The Project EHS management organization is divided in two main structures, one for the Bhogat Terminal sub-project and one that oversees the pipeline construction, including both the Salaya - Bhogat pipeline extension and the off-shore pipeline section. All Contractors currently onsite have developed and finalized their respective EHS Management Plans. DG Infra, which is working on the construction of CEIL living quarters, developed a brief EMP although some additional EHS procedures are still missing. Monthly EHS reports are issued by L&T, Leighton, and PLL and now include several additional EHS data and analyses. However, such reports from IOTL, DG Infra and VI Pandya were not available for review during this visit. Field observations of EHS practices generally corresponded to the level of available documentation with fairly good practices observed for contractors working on the larger operations and less good to marginal or unacceptable practices and implementation for the smaller operations, specifically DG Infra. Overall, the current Project Environmental Management structure appears to be consistent with Project commitments and requirements at all key managerial positions. However, according to observation and information provided in the field, the Project should consider increasing the EHS structures of DG Infra and VI Pandya that appeared undersized and not adequate to fulfil Project's standards.

CEIL has worked on integrating some of the data/information pertaining to several issues of the marine EIA section of the Project. In particular, the Project provided additional information on the presence/absence of marine turtle species, mammals, and coral colonies in the area of interest, on initiatives undertaken for issues related to marine fisheries and fish spanning areas, and on Environmental Management Plans with respect to blasting activities. CEIL has undertaken a socio-economic assessment of the Project impacts on the fishing communities around Bhogat during the construction and operational phases to clearly understand fishing activities and fishing grounds in the area, determine the value of local fishery landings, and gather information on the number of vessels by gear type. It has to be noted that no blasting will be used in trenching the off-shore section of the pipeline. The EMPs outlined in the EIA marine section are in the developmental stages or are too general to be implemented. Therefore, the Project should develop detailed EMPs and SOPs to cover and be used during the off-shore construction activities.

Overall, dust control measures at Project sites have been found to be sufficient for the current weather conditions. However, dust issues are likely to increase as the dry season progresses and more windy conditions are present. The Project conducted an ambient air quality monitoring campaign between the end of December 2010 and early January 2011. During this campaign, air samples were collected at ground level at all working sites. However, as recommended in the October 2010 report, the Project should develop official reports that include detailed information on the monitoring campaign results and discussion on exceedances, if any. The Project is now conducting 24 hours air sampling (instead of the 8 hours period used in the first campaign) for SO<sub>2</sub> and Particulate Matter; however, sampling of NO<sub>x</sub> should be conducted



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over a 1 hour period only. The Project should ensure that ambient air sampling duration for each specific analyte is done according to IFC/EIA requirements. Overall, PM10 and PM2.5 concentrations measured throughout the Project areas are within the Gujarat Pollution Control Board and National Ambient Air Quality Standards but exceed the IFC standards. Although PM measurements may be affected by the arid and windy conditions of the area, the Project should continue and strengthen dust control measures and consider the use of wetting agents to decrease the water use and to increase dust suppression effectiveness, in particular at the Bhogat Terminal.

At most Project sites water to satisfy construction needs (industrial and domestic) is currently withdrawn from groundwater bore wells with consumption records kept at all locations. While a groundwater abstraction permit has been obtained for groundwater extraction at the Bhogat terminal, permits for water abstraction at the Khambaliya Camp and AGIs bore wells have not been provided. The Project should obtain/provide all the permits from the Local Authority on all the water abstraction locations being used by the Project. The source location of hydro-testing water for the eleven oil storage tanks under construction at the Bhogat Terminal has not been defined yet while, for the Salaya-Bhogat pipeline, the water will be abstracted from the Ghi River. For the off-shore pipeline section, marine water will be used and Leighton has developed a detailed plan describing pigging and hydro-testing operations. No such plans were available for the Bhogat Terminal (tanks and flowlines) or the Salaya – Bhogat pipeline. Although the Project is in the early stages of construction, CEIL should develop a detailed plan for the hydro-testing operations for each of the sub-projects (the Bhogat Terminal and the Salaya to Bhogat pipeline section) and provide details on the sea water discharge operations for the marine section of the pipeline.

Monitoring campaigns (noise, waste and drinking water, soil) were conducted by CEIL and its main contractors at all Project sites in the period spanning from October to December 2010. However, no noise monitoring was submitted for working sites along the pipeline corridor. The Project should consider establishing monitoring locations at those locations (AGIs) along the pipeline corridor where workers may be exposed to noise. Furthermore, comprehensive monitoring reports providing details on the monitoring campaigns and discussing any anomalous results are still not available as they are being finalized. It should be noted that in all the monitoring results submitted for review, only the limits from the local legislation are reported while IFC and/or Project specific standards are not listed. The Project should include IFC limits to the results to enable comparison with international standards. Overall, monitoring tests do not show any serious exceedance from Project and/or local limits with the exception of some analytes, including coliforms, in few drinking samples. The Project should ensure that all drinking water analytes are within the drinking water parameters and any excursion, in particular with respect to coliforms, should be quickly investigated and mitigations implemented.

The Project conducted pre-construction soil fertility testing at selected locations along the RoU and at the Bhogat Terminal. The Project will conduct a second top soil monitoring campaign at the end of the construction phase to verify if activities have impacted the areas 'soil. Also, the Project has started to strip and stockpile the soil along the RoU and, as observed by ECMG, these operations have been carried out with good care. According to field personnel, a detailed rock disposal plan is under development by the Project. This Rock Disposal Plan should be finalized and the Project should identify proper disposal quarries and/or document any agreement with local end users. In concert with CEIL and the Lenders, tracking of some late construction activities (final closure of some yards and the spur line from Viramgam terminal to Oil India Terminal) has been shifted to the Salaya – Bhogat Crude Projects Oil Pipeline Extension Project.

Central accumulation areas for non-hazardous waste are in place and in use at all visited sites with the exception of the DG Infra site. Waste tracking sheets, giving information on the type and quantity of waste generated, generation frequency, collection, and storage, and kind of treatment/reuse/disposal are used throughout the Project areas. Dedicated receptacles (separate food waste and solid waste bins) for non-hazardous waste have been observed to be present and well maintained at all Project sites visited. However, two municipal landfill sites, located in the twos of Khambaliya and Dwarka, were currently being used by the Project for small quantities of mixed waste coming from surplus of waste segregation. These facilities are not in compliance with IFC standards and, as already highlighted in the October 2010 report, the Project should ensure that no waste is disposed in an uncontrolled or improperly engineered landfill, in particular when CEIL has constructed its own engineered landfill with hazardous and non-hazardous cells.

Food/organic waste generated by the Project is collected in dedicated bins and transported to two municipal composting facilities. Both facilities have been audited by the CEIL and have been found suitable for the processing of organic waste. However, workers at these facilities were observed lacking basic PPEs; therefore, the Project should consider providing these workers with basic PPE (e.g. gloves and masks) and, if necessary, provide training and capacity building programs for proper waste handling. Hazardous waste generated by the Project (waste oil, empty chemical drum, paint drum, incinerable waste) is sent to Reliance Barrel Supply Co., a hazardous waste recycler and disposal facility located in Ahmedabad, Gujarat. Dev Biomedical Waste Management Services, a biomedical waste treatment facility located near Jamnagar and authorized by the Gujarat Pollution Control Board, is used by the Project for the disposal of its biomedical waste generated from all contractors' medical facilities. Wastewaters are treated by on-site SPTs or FAB (Khambaliya camp) units. However, the DISC camp STP was reported to be undersized and excess sewage is sent to the composting in Dwarka to be sprinkled on the compost piles. This is not an appropriate practice since the effluent of the STP also contains some not biodegradable pollutants like detergents from the on-site cloth washing facility. Therefore, the Project should consider using the Leighton STP to process the excess of sewage from DISC camp and discontinue the current practice to send it to the composting facility in Dwarka. Detailed start-up and final tests of wastewater, showing the STPs systems are operating properly, were never provided for review. The Project should consider implementing detailed start-up and final tests for any new STPs units installed to ensure that optimal system conditions are reached before they become fully operational. Portable toilets are presents at most Project sites with the exception of some working locations along the RoU.

Hazardous materials were observed to be proper segregated throughout the on-shore Project sites and on the visited vessels used for off-shore work. At the Leighton work barge, an extra area dedicated to the storage of hazardous material, mainly motor oil, was observed not to be provided with secondary containment but a work order has already been approved for it construction. In addition, ventilation in the barge paint storage room was found not adequate for the amount of open paint being stored. Since increasing the ventilation in this room is not currently possible, the contractor should implement specific safety mitigation measures (designate specific personnel to enter the room and brief them on the potential HS issues, use a body system when accessing the room).

It should be noted that right before ECMG site visit to the marine area, an accident occurred at the landfill point. An excavator working off-shore (approximately 50 m from the shore line) turned over into the sea during dredging operations with no injuries to the operator or any other worker were recorded and no spills of hazardous material reported. The Project implemented all required oil spill response procedures by delimited the area with booms that were brought onshore from the Leighton working barge stationed offshore. Because of this incident, the working barge was temporally left without booms although, according to Leighton personnel, replacement oil spill kits were just received and on their way to the barge. The Project should have enough oil spill emergency response equipment to cover all its onshore and offshore operations.

Works along the RoU have just started and given that the pipeline is in the early stages construction, the length of open trench is reasonable. However, considering the probable increase in construction activities along the RoU in the incoming period, the Project should carefully plan trenching to avoid leaving long sections of excavated ditch open for extended periods of time. During the visit at the RoU, the ECMG observed that sufficient passages for local people along the pipeline corridor were present and farmers irrigation pipes were kept operational and in good order. However the ECMG social team reported issues related to water flow and the size of the pipes, associated to the gravity type of irrigation. In addition, following ECMG previous recommendations, open ends of assembled pipe strings have been provided with end caps to prevent access by children or animals. However, fencing along open trenched sections was found to be missing at most sites. The Project should provide safety fences and/or other protective means to prevent people or animals from falling into the open trench at all working sites along the RoU.

Project specific HS plans, which include Emergency Disaster Response Management Procedures, have been developed by CEIL and adopted by most subcontractors (L&T, Leighton, PLL, IOTL and VI Pandya) but DG Infra that has still to submit their HS plans. These plans discuss safety procedures but specific attention to road safety for personnel, equipment, and material transport was provided only by L&T, PLL, and IOTL that also make references to CEIL road safety policy. As recommended during the October 2010 report, all contractors' EHS Plans should include specific road safety sections, pertinent to their work assignments, rather than just referring to CEIL requirements.

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Medical facilities have been observed to be present at most Project sites. However, the PLL and IOTL facilities at the Bhogat terminal have been found inadequate for the workforce currently present on-site especially considering that the nearest hospital is located in Jamnagar, about one and a half hour drive from the Bhogat Terminal. These medical facilities should be equipped with all the necessary medical supplies and provided with well equipped ambulances. First aid kits were present and found adequate at all Project sites while emergency contact numbers were posted in English but not in local languages. An Emergency Mock Drill and a Fire Demonstration Drill were performed respectively in September and October 2010 at the Salaya-Bhogat pipeline sub-project (L&T). However, the Project should perform periodic emergency drills at all sub-project locations involving all working contractors. Furthermore, the Project should conduct at least one major emergency response drill in cooperation with local authorities and municipal response teams (e.g. local fire fighting brigade, local hospitals etc.)

The use of PPEs is widespread throughout the Project working sites, with few exceptions. However, DG Infra workers have been found not using even basic PPEs (gloves and safety shoes).

All labor camps visited by ECMG were found in good conditions and well maintained. Fencing is generally present at Project sites and access to work sites is restricted by entrance gates and security personnel. Housekeeping was found to be generally good at the time of the site visit with material and equipments found to be neatly staged in appointed areas throughout the Project, and waste was not observed to be accumulated outside the appointed accumulation areas.

At the time of ECMG visit, the Project was experiencing a very difficult situation with the land owners: only 18% of land titles could be acquired and most of the land owners have organized a common front asking for increased compensation. Therefore, most human resources (including CSR staff and high level managers from Gurgaon) have been mobilized to settle the problem and engagement with land owners and local stakeholders is very intense. The dialogue is carried out at all levels: individual land owners; associations of land owners; local authorities; local contractors; the Competent Authority for land acquisition; and the state and central government.

According to the Project, the strategy to solve the issue includes: dialogue at all levels; employment and contracts opportunities at the local level and particularly to land owners; establishment of a Bhogat Village Committee holding regular meetings between CEIL, main contractors and local stakeholders; selected CSR activities; improved security; and negotiations with individual land owners to obtain access to crossings in order to start works activities. Eventually, the final decision on compensations is in the sole jurisdiction of the Competent Authority appointed by the Government. According to the Project's team, the Competent Authority will exercise the maximum flexibility to accommodate genuine issues, in the spirit of the Land Acquisition and Compensation Plan, as done in the upper part of the pipeline.

Given the tense situation, the Project seems to be aware of the importance of continuing engagement and opportune liaison network. According to the construction camps' management, community liaison officers are established at all camps to deal with possible incidents involving local population, such as road accidents, and requests from the local communities. They also interact with land owners and local contractors in coordination with CEIL staff.

The ECMG team visited some landowners who accepted allow access to their land to the Project. Apparently, follow-up engagement with these farmers and the grievance mechanism were not properly functioning, as some issues (mainly concerning irrigation pipelines) have not been properly addressed up by the Project's team. ECMG recommends that the Project keeps a good relationship with the land owners willing to collaborate. Their complaints should be adequately and quickly settled. The visit of the contractor's liaison person and CEIL staff should be frequent, even in the absence of complaints. The Project should keep records of all interactions and complaints. The Project's stakeholder engagement and communication strategy should be presented in the updated version of the Public Consultation and Disclosure Plan for Gujarat.

ECMG understands that the Project's priority is resolving the situation with the reluctant land owners and commends the moderate and multi-stakeholders' approach it is implementing. However, ECMG recommends that the stakeholders who do not represent (for the moment) a potential of area of concern or a problem for the Project not be neglected. These include the fishermen near the marine facilities and the land owners who accepted to give the land.

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ECMG visited the fishermen community and found that, for the moment, they have not experienced any major negative impact or nuisance from the Project's activities. However, the settlement is very close to the marine facilities and the community is expecting some benefits in term of infrastructure from the Project's presence (the fishermen mentioned electricity and road). Moreover, the fishermen expressed their concern regarding of wake waves and potential of their nets being "trapped" by the Project's vessels. ECMG's conclusion is that the scope of the ongoing study on fisheries and local fishermen remains valid, as the Project needs a baseline to fully understand the inherent risks of its activities and also to address any potential future claims or disputes. The study will form the basis of an action plan, which includes CSR activities and adequate communication to maintain good relations with this community.

In the discussions between the Project and various stakeholders, the main topic is obviously the negotiation on the compensation. Nevertheless, other issues are also discussed that can facilitate the negotiation and improve the relationship with local stakeholders, such as local contracts and community development activities. However, at present, the CSR activities have been limited, due the opposition of land owners and focus of the CSR team's engagement on issues pertaining to land owners. Some activities in schools and on health improvement have been carried out and the Project has planned to start some economic development activities for farmers at one site, to be expanded later. A CSR Action Plan for the Bhogat Project should be prepared in the frame of the corporate Community Development Plan.

The CSR staff operating in the Midstream project has not been augmented by the two staff members as planned in the last mission, but one CSR officer has been moved to the Bhogat-Salaya area (based in Khambaliya) as suggested in the last ECMG report. The Project should monitor whether the number of CSR officers dedicated to the Salaya-Bhogat Project is sufficient for the construction period given the intense engagement with stakeholders and the start of new CSR activities.

In the previous report, ECMG highlighted the issue of dangerous road and/or traffic conditions that are still a challenge in some areas. Of particular concern is the one lane road running from Bhatiya to Bhogat, which represent a serious problem in terms of community safety. The road is intensively used by the Project's vehicles (including trucks) and appears to be potentially very dangerous, considering the local driving style. According to Project's team, CEIL contacted the local government for widening of the road. Though commendable, this is a long-term solution while the issue requires immediate attention during the construction period. Speed-meters are reportedly used, together with a sanction system, for drivers who break required speed limits. However, more short-term mitigation measures should be urgently developed. ECMG particularly recommends training of the Project's drivers on safe driving and public awareness communication within the local communities.

No community health and safety campaign has been conducted insofar by the Project to mitigate construction works' impacts on communities. In particular, the influx of workers from outside the area requires the launch of a campaign on Sexually Transmitted Diseases and AIDS. The Project should establish the opportune link with the National AIDS Control Program at District level and organize a campaign addressed to workers and the local population.

At the time of the ECMG visit, about 1,700 workers were reportedly mobilized for the Project. Three labor camps are functioning and were visited by the ECMG team. In Bhogat, 180 workers live in PLL labor camp. The camp is overall adequate but needs the following improvements: the gravel outdoor area should be paved; the health center ward toilet should be provided with a water sink; and the toilets system that should control odors. Workers' grievance committee and grievances' records are properly established. At the marine facilities, Leighton and DISC (offshore contractors) labor camps accommodate around 240 workers. The two camps are of high standards although the ECMG recommends establishing a more formal grievance procedure for workers and recording complaints.

**FOLLOW-UP ISSUES**

<b>Mission/ Issue No.</b>	<b>IFC Policy / ESIA Compliance</b>	<b>Description</b>	<b>Status</b>	<b>Comments</b>	<b>Priority</b>
<b>EHS Management Organization</b>					
M1.1	IFS Performance Standard 1 p.4	The Project should finalize the detailed EHS organization charts indicating management, supervisory, and field EHS personnel and for CEIL, VI Pandya, DG Infra, IOTL and Leighton.	Closed		Medium
M1.2	IFC General EHS Guidelines p. 2 ESMP - Table 3	The Project and its main subcontractors should develop all necessary EHS documentation prior to mobilization in the field. Therefore, VI Pandya, DG Infra, and IOTL should develop the necessary EHS documentation (e.g. HS plans, task specific SOPs, etc.) as soon as possible.	Closed	DG Infra's EHS documentation still to be finalized (see recommendation M2.1).	Medium
M1.3	ESMP § 8.1	The Project should ensure that monthly EHS reports are completed for all contractors.	Partially implemented		High
M1.4	Contractors' EMPs	Supervision and on-the-field training by Cairn experienced personnel is still required to ensure that Project standards and procedures are applied throughout the sub-projects.	Closed		High
M2.1	IFC General EHS Guidelines p. 2 ESMP - Table 3	DG Infra should develop all the necessary EHS documentation as soon as possible.	New		Medium
<b>Environmental Impact Assessment – Marine Section</b>					
M1.5	IFC PS 1, 3, 4, 5, and 6	The Project should provide additional information and/or studies of index beaches to fully understand the overall nesting trend of these turtle species and, if necessary, implement mitigation measures during the construction phase.	Closed		High
M1.6	IFC PS 1, 3, 4, 5, and 6	The Project should have a clear knowledge of fishing activities and fishing grounds in the area. Commercial and artisanal fisherman activities associated with the landing area should be identified and assessed as well as the direct and indirect impacts of construction and operations activities. If necessary mitigation measures should be developed and implemented by the Project.	Pending	Socio-economic assessment study is on-going.	High



Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
M1.7	IFC PS 1, 3, 4, 5, and 6	The Project should study the impact on fish spawning and breeding in the area due to construction activities. If deemed necessary carry out surveys to provide evidence for fish eggs and larvae to demonstrate that construction and operational phases will not significantly affect fish spawning and rearing. If necessary mitigation measures should be developed and implemented by the Project.	Pending	Activity reported to be inserted in the Socio-economic assessment study that is on-going.	High
M1.8	IFC PS 1, 3, 4, 5, and 6	The Project should carry out a systematic transect-type coral survey of the area to confirm that coral resources are not present in the area, in particular along the marine RoU.	Closed		High
M1.9	IFC PS 1, 3, 4, 5, and 6	The Project should develop detailed EMPs to be used during the off-shore construction activities ( <b>Modified</b> ).	Pending		Medium
M1.10	IFC PS 1, 3, 4, 5, and 6	The Project should clarify toxicity tests of seawater effluent generated during pigging operations and any <i>No fishing Zone</i> around the proposed facility.	Closed	Project committed to follow the Gujarat Pollution Board standards for effluent water released in the ocean.	Medium
M1.11	IFC PS 1, 3, 4, 5, and 6	If blasting is necessary during the trench excavation, a comprehensive and detailed description of the potential impacts on the marine environment and relative mitigation measures (e.g. seasonal blasting windows, clearing areas, etc.) should be developed.	Closed	Blasting reported to be not required.	Medium
<b>Environmental Organization and Staffing</b>					
M1.12	IFC General EHS Guidelines § 2 p.60 Contractors' EMPs	The Project should increase the presence of trained EHS supervisors and technical professionals, in particular at Bhogat Terminal and at off-shore sub-project, to ensure that EHS Project standards are fulfilled and implemented throughout the Project.	Closed		Medium High
M2.2	IFC General EHS Guidelines § 2 p.60 Contractors' EMPs	The Project should consider increasing the EHS structures of DG Infra and VI Pandya that appeared very weak and not adequate to fulfil Project's standards.	New		Medium High



Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
<b>Air Quality</b>					
M1.13	IFC General EHS Guidelines § 1.1 p.4 EIA § 6 p. 24 ESMP § 8.3	The Project should ensure that ambient air sampling duration for each analyte is done according to IFC/EIA requirements <b>(Modified)</b> .	Partially implemented	NO <sub>2</sub> sampling period should be 1 hour.	Medium
M1.14	IFC General EHS Guidelines § 1.1 p.4 EIA § 6 p. 24 ESMP § 8.3 p. 38	The Project should carry out the required ambient monitoring of all their working areas and develop comprehensive reports.	Closed	Developing comprehensive reports still to be implemented (see recommendation M1.15).	Medium High
M1.15	IFC General EHS Guidelines § 1.1 p. 10	The Project should develop official reports that include detailed information on the monitoring campaign results and discussion on any exceedances.	Pending		Medium
M2.3	IFC General EHS Guidelines § 1.1 p. 4	The Project should respect at all working sites both local and IFC limits for ambient air monitoring and in particular stay below the most stringent limit, taking particular care of PM concentrations for ambient air.	New		High
<b>Groundwater and Surface Water</b>					
M1.16	IFC General EHS Guidelines § 3.1 p.77	The Project should complete the study of the impacts on the local groundwater regime at all abstraction locations, including the AGIs, to ensure that current and projected Project water needs do not directly or indirectly affect the local suppliers and/or communities.	Closed		Medium
M1.17	IFC General EHS Guidelines § 3.1 p.77	The Project should develop a detailed plan for the hydro-testing operations for each of the sub-projects: the Bhogat Terminal and the Salaya to Bhogat pipeline section. <b>(Modified)</b> .	Pending		Medium Low
M2.4	ESMP § 4.2	The Project should provide all the permits from the Local Authority on all the water abstraction locations being used by the Project.	New		Medium
M2.5	IFC Onshore Oil and Gas Development § 1.1 p. 6	CEIL should develop detailed plans for the discharge of hydro-test water used in the marine portion of the pipeline.	New		Medium Low

Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
<b>Monitoring</b>					
M1.18	IFC General EHS Guidelines § 1.1 p. 10	Comprehensive monitoring reports should be developed by the Project providing details on the monitoring campaigns (e.g. methodology, location of samples, results, applicable standards, etc.) and discussing any anomalous result.	Pending	On-going	Medium
M1.19	IFC General EHS Guidelines § 1.7 p. 53 ESMP § 8.3 p. 39	The Project should provide noise data for the night time and ensure that the monitoring period and data collected are sufficient for statistical analysis and conforms with IFC recommended monitoring periods.	Closed		High Medium
M1.20	IFC General EHS Guidelines § 2.1	The Project should ensure that before being used, drinking water sources are tested and results fall within local and WHO standards.	Closed		High
M1.21	IFC General EHS Guidelines § 1.1 p. 10	The Project should collect drinking water samples from as many point sources as possible and should clearly specify the location and methodology used for the collection and analysis of the samples, provide applicable (e.g. Project, IFC; WHO, local) limits for each parameter, and discuss anomalous results.	Closed		Medium
M1.22	IFC General EHS Guidelines § 1.3 p. 30 EMP §6.1.4	The Project should also include in their analysis of wastewater those parameters required by IFC (e.g. Total Nitrogen, Total Phosphorus, and Total coliform bacteria) and any other required by the local legislation.	Closed		High Medium
M1.23	IFC General EHS Guidelines § 1.7 p. 53	The Project should include noise in their regular monitoring programme at the off-shore sub-project sites.	Closed		High
M2.6	IFC General EHS Guidelines § 1	The Project should include IFC limits to the results to enable comparison with international standards.	New		High
M2.7	IFC General EHS Guidelines § 1.7 EIA § 6.1.5.2	The Project should consider establishing monitoring points at those locations (AGIs) along the pipeline corridor where workers may be exposed to noise.	New		High Medium
M2.8	IFC General EHS Guidelines § 3.0	The Project should ensure that all drinking water analytes are within the drinking water parameters and any excursion, in particular with respect to coliforms, should be quickly investigated and mitigations implemented.	New		Medium High

Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
<b>Reclamation, Revegetation, and Topsoil Management</b>					
M1.24	Contractors' EMPs	Document the source(s) of sand, gravel, and crushed rock that is used for the project as well as any reclamation needs at such source(s).	Closed		Low
M1.25	Environmental And Risk Impact Assessment § 6	The Project should finalize a comprehensive greenbelt developing plan outlining details of the revegetation plans for all locations.	Closed		Medium
M1.26	Environmental And Risk Impact Assessment § 6	The Project should finalize and execute plans for soil fertility testing along the RoU.	Closed		High
M2.9	ESMP § 6.1.4 p.22-23 Contractors' EMPs	The Project should finalize the Rock Disposal Plan and identify proper disposal quarries and/or document any agreement with local end users.	New		High Medium
<b>Waste Management</b>					
M1.27	IFC General EHS Guidelines § 1.6 p.50 Contractors' EMPs	The Project should ensure that at each site the waste tracking system for non-hazardous and hazardous waste is well maintained by all main contractors.	Closed		Medium
M1.28	IFC General EHS Guidelines § 1.6 p.48 IFC Guidelines for Waste Management Facilities § 1.1.1 EIA § 4.3.2 ESMP § 6.1.4	Project should ensure that no waste is disposed in an uncontrolled or properly engineered landfill, in particular when CEIL, as an option, could use its own engineered landfill located in the Barmer area .	Pending	The Project should immediately cease the use of the Khambaliya and Dwarka dump site and begin storing its own waste until a suitable solution is found	High
M1.29	IFC General EHS Guidelines § 1.3 p.30	The Project should consider implementing detailed start-up and final tests for any new STPs units built in the field to ensure that optimal system conditions are reached before they become fully operational ( <b>Modified</b> ).	Pending		Medium Low
M1.30	IFC General EHS Guidelines § 1.6	The Project should not dispose of its wastewater using the local municipal sewage infrastructures unless it is provided with waste water treatment plant.	Closed		High
M1.31	IFC General EHS Guidelines § 1.3 p.27 ESMP § 6.1.4	The Project should construct soak pits at those locations where STPs are not present and septic tanks are the only alternative.	Closed		High

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Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
M1.32	IFC General EHS Guidelines § 2.1 p. 62 Contractors' EMPs	The Project should provide toilets at all work sites (separate female facilities when necessary) and along the pipeline RoU sections when workforce is present.	Pending		Medium
M1.33	ESMP § 8.1 Contractors' Waste Management Procedure	CEIL should conduct internal audits, before contracts are awarded, for non-hazardous and biomedical waste processing facilities to ensure that they are managed/operated according to Project/IFC standards.	Closed		Medium High
M2.10	IFC General EHS Guidelines § 1.6 Contractors' EMPs	DG Infra should construct a proper waste accumulation area where non-hazardous waste (paper, plastic, wood, etc.) is kept segregated.	New		Medium
M2.11	IFC General EHS Guidelines § 2.7 Contractors' EMPs	CEIL should consider providing personnel at the composting facilities used by the Project with basic PPE (e.g. gloves and masks) and, if necessary, provide training and capacity building programs for proper waste handling.	New		Low
M2.12	IFC General EHS Guidelines § 1.3 p.28	The Project should consider using the Leighton STP to process the excess of sewage from DISC camp and not sending it to the composting facility in Dwarka.	New		High Medium
<b>Hazardous Materials Management and Pollution Prevention</b>					
M1.34	IFC General EHS Guidelines § 1.5 Contractors' EMPs	Diesel generators and hazardous material storage areas should be well ventilated, located away from other materials, and underlain with concrete floors or other impervious barriers. The edges of the impervious barriers should be silled or bermed so as to contain spills.	Closed		Medium
M1.35	IFC General EHS Guidelines § 2.4 Contractors' EMPs	Store fire extinguishers in highly visible locations that are close to but not immediately adjacent to flammable materials.	Closed		Low
M2.13	Contractor's Emergency Response Plan	The Project should have enough oil spill emergency response equipment to cover all its onshore and offshore operations.	New		High
M2.14	IFC General EHS Guidelines	Ventilation in the Leighton work barge paint storage room was not adequate; therefore, the contractor should implement specific safety mitigation measures.	New		High

## ECMG

Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
<b>ROU Management</b>					
M1.36	IFC Onshore Oil and Gas Development § 1.1 p. 12	Open ends of assembled pipe strings should always be capped to prevent access by children or animals.	Closed		Medium
M2.15	Environmental and Risk Impact Assessment § 6.5.4 and 7.6.2.1 Contractors' EMPs	The Project should provide safety fences and/or other protective means to prevent people or animals from falling into the open trench at working sites along the RoU.	New		Medium
<b>Health and Safety Management and Occupational Health</b>					
M1.37	IFC General EHS Guidelines § 3.4 p. 81	All Contractor EHS Plans should include specific road safety sections, pertinent to their specific work assignments, rather than just referring to CEIL requirements ( <b>Modified</b> ).	Pending		High
M1.38	IFS Performance Standard 1 p.4	VI Pandya should immediately submit a EHS Plan.	Closed		Medium
M1.39	IFC General EHS Guidelines § 3.3 p. 81	All contractors (and CEIL) should amend EHS Plans to include safety procedures in case of electrical storms.	Closed		High
M1.40	IFC General EHS Guidelines § 2.1 Contractors' EMPs	Medical personnel should review all first aid supplies for adequacy considering the number of workers on site and their tasks.	Closed		Medium
M1.41	IFC General EHS Guidelines § 2.4 Contractors' EMPs	All hazardous material and cement storage areas should be well ventilated.	Closed		Medium
M1.42	IFC General EHS Guidelines § 1.4	Sewer gas traps should be used and should also be accessible for inspection and maintenance.	Pending		Low
M1.43	IFC General EHS Guidelines § 2.1 p. 62	Install smoke detectors in bedrooms sleeping quarters at all camps.	Pending		Medium

## ECMG

Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
M1.44	IFC General EHS Guidelines § 1.5 p. 39 Environmental and Risk Impact Assessment § 10.2.2 Environment and Social Management Plan - Table 3	Encourage the use of PPE, including gloves, safety shoes, and dust masks for some contractors' workforce ( <b>Modified</b> ).	Partially implemented	DG Infra workers use of PPE still a challenge	Medium
M1.45	IFC General EHS Guidelines § 3.7 p. 86	Emergency contact information should be also posted in the prevailing local language(s) and not only in English.	Pending		Low
M1.46	IFC PS 4	The Project should finalize the security plan in accordance with Cairn policies and IFC PS 4 requirements.	Closed		High
M1.47	IFC General EHS Guidelines § 4.3 p. 94	Appropriate security fencing should be installed to control access at all facilities in the Bhogat area.	Closed		Medium
M1.48	IFC General EHS Guidelines § 3.4 p. 81 IFC General EHS Guidelines § 4.3 p. 95	The Project should consider and quickly implement all feasible measures to improve road and traffic safety along the one lane road connecting Bhatiya to Bhogat – <i>Repeated</i> ( <b>Modified</b> ).	Pending		High
M1.49	IFC General EHS Guidelines § 3.4 p. 81 IFC General EHS Guidelines § 4.3 p. 95	The Project should consider measures to improve roadways, particularly for the narrow road from Bhatiya to Bhogat.	Closed	Combined with M1.48	High



## ECMG

Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
M2.16	IFS Performance Standard 1 p.4	DG Infra should submit as soon as possible its HS plans.	New		Medium
M2.17	IFC General EHS Guidelines § 2	Medical facilities at Bhogat Terminal should be equipped with all the necessary medical supplies and equipment and provided with well equipped ambulances.	New		High
M2.18	IFC General EHS Guidelines § 2 p.76 ESMP § 8.3	The Project should perform periodic emergency drills at all sub-project locations involving all working contractors.	New		Medium
M2.19	IFC General EHS Guidelines § 2	The Project should conduct at least one major emergency response drill in cooperation with local authorities and municipal response teams (e.g. local fire fighting brigade, local hospitals etc.).	New		Medium
<b>Security</b>					
M2.20	IFC PS4,	CEIL draft corporate security document (E5) expand and better detail Section 14 (Guards and Guard Management) to incorporate CEIL policies and procedures when private and/or governmental security forces are directly hired by CEIL.	New		High
M2.21	IFC PS4 – CEIL E5 (§11) EIA § 10.3	A Project specific security risk assessments and security plans consistent with identified threats should be developed along with strong contingency planning, emergency response plans and specific training/briefing of security and EHS field management and personnel.	New		Medium

## ECMG

Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
<b>Social Management</b>					
M1.50	IFC PS 1 § 17 "Organizational Capacity"	A Community Development program (CSR Action Plan) dedicated to the Salaya-Bhogat extension should be included in the Community Development Framework in preparation.	Pending	Draft prepared, to be revised and disclosed. The Project should prepare a specific CSR Action Plan for the Salaya-Bhogat project.	High
M1.51	IFC PS 1 § 19 "Community Engagement"	Provide sufficient management sponsorship and human and financial resources on an ongoing basis to achieve effective and continuous social performance.	Pending	Two more officers were planned by the Project and have not been hired. One CSR officer has been based in Khambaliya. The Project should monitor whether this is sufficient.	High
<b>Project impact on fisheries and fishing communities</b>					
M1.52	IFC PS 1 § 4 "Social and Environmental Assessment"	A specific assessment of the project's impacts on fish production and fishing communities should be conducted and mitigation measures developed together with the affected stakeholders, as needed.	Closed	In preparation	High
<b>Stakeholders Engagement</b>					
M1.53	IFC PS 1 § 19 CEIL framework PCDP	The construction contractors should establish liaison personnel in all construction sites, speaking the local language and linked to the CSR, land and SR teams, briefed on Cairn policies and approach (including the PCDP) and recording all interactions and complaints.	Closed	The liaison personnel should properly record all interactions	Medium
M1.54	IFC PS 1 § 19	Fishing communities affected by the project should be included in consultations and CSR activities as all other stakeholders.	Closed	On-going	High

Mission/ Issue No.	IFC Policy / ESIA Compliance	Description	Status	Comments	Priority
M1.55	IFC PS 1 § 19 CEIL framework PCDP	Prepare a Public Consultation and Disclosure Plan (PCDP) for the Bhogat-Salaya Project. Brief project staff and contractors on the Plan.	Pending	CEIL should present the stakeholder engagement and communication strategy in the frame of the updated version of the PCDP for Gujarat.	Medium
M2.22	IFC PS1 §19 CEIL framework PCDP	Intensify engagement and improve grievance management for those land owners that have provided the project access to land	New		High
<b>Land Acquisition</b>					
M1.56	IFC PS 5 and CEIL framework LACP	Prepare a Land Acquisition and Compensation Plan (LACP) for the Salaya-Bhogat project. Brief CA and staff on LACP and IFC PSs and maintain a copy in the local languages, at each local office.	Closed	An updated framework LACP has been issued for the whole Gujarat (Midstream) project.	Medium
<b>Community Health and Safety</b>					
M1.57	IFC PS 4 § 6, 7	Mitigate the community exposure to risks from transportation of project goods on public roads.	Pending	The measures taken are not sufficient.	High
M1.58	IFC PS 4	Develop public awareness campaign on H&S issues.	Pending	Include STD/AIDS awareness for locals and workers.	High
<b>Labor and Working Conditions</b>					
M1.59	PS 2 § 13	Establish grievance committees, with representation of workers and management for each camp. Where women workers are present, representation of women should also be included in the committee. Record meetings of the grievance committee, all complaints/queries and feedback.	Closed	Formalize grievance procedure in Leighton and SINC camp.	Medium
EIA: Environmental Impact Assessment ESMP: Environmental and Social Management Plan EMP: Environmental Management Plan					

## SECOND SITE VISIT OF THE D'APPOLONIA ECMG TO THE BHOGAT CRUDE OIL PIPELINE EXTENSION, INDIA, JANUARY 2010

### 1 CONSTRUCTION STATUS

The overall Project, which is in the early stages of construction, could be subdivided into three main sub-projects: (1) Salaya-Bhogat Pipeline; (2) Bhogat Terminal; and (3) off-shore works. Current status (mid January 2010), as presented to ECMG, is as follows:

- 1. Salaya-Bhogat Pipeline.** L&T is the engineering procurement and construction contractor for this sub-project. The total manpower working along the Right of Use (RoU) is approximately 520 persons (mainly from local villages), including staff personnel. The Khambaliya Base camp is still operational (housing about 180 people between staff and skilled workers) while the Essar labor camp have been closed and returned to the owner (it had been rented by the Project between September and October 2010). The Project is using two storage yards near Khambaliya Camp: the first, which was operational since the first ECMG visit, is used for storing several kind of equipment; the second yard is new and is used only for storing pipes. Pipeline works have started along the 77 km corridor (clearing and grading – 5.5 km, trenching – 2.5 km, welding – 1.7 km). Two river crossings, out of a total of four, six road crossings, out of eight, and one railway crossing, out of three, are under construction,. Civil work at all three AGIs along the pipeline route has started.
- 2. BSPT.** PLL, IOTL, DG Infra, VI Pandya, and Janka are the main contractors working at the Bhogat Terminal site. Janka, a new contractor, has yet to mobilize at the time of the visit. The total manpower is approximately 590 persons, including staff personnel. PLL labor camp (currently housing 200 people but with the population expected to reach 430 people when at full capacity in February/March 2011) and CEIL staff camp are operational while construction of the IOTL camp (designed for 300 people) has just started. Camps are designed following IFC Workers' accommodation guidance. PLL has been awarded the tank foundations (11 Tanks) and plate fabrication contract while IOTL is in charge of internal road construction (470 m road profile completed, 320 m duly compacted, and 180 m first layer completed), PCC work for culvert, excavation and PCC work for the administrative building, and contractor office and labor camp construction. DG Infra has been awarded the construction of CEIL offices and living quarters, scheduled to be completed by January. Currently, Janka and VI Pandya, which has been suspended from working at the site 6 weeks before ECMG visit, are not working at the terminal. These two contractors are in charge of site grading operations and boundary wall construction (not commenced yet) respectively. Three batch plants are operational throughout the Project and one more is foreseen.
- 3. Marine Works.** Leighton is the engineering procurement and construction contractor for the off-shore sub-project. The current total manpower is approximately 600 persons, including staff personnel. Leighton's contractor for dredging operations (DISC) has been mobilized and is currently working off-shore. Leighton Camp is operational (currently housing 140 people) and a second camp, which belongs to DISC, has recently been constructed and is now operational (currently housing 100 people but with a full capacity of 150). On-shore works include: pipe stringing (75% completed); welding of pipe joints (78% completed); SEHMS pipe welding (21% completed); and field joint coating (1% completed). Off-shore works include: piling (45% completed); dredging (75% completed); PLEM installation (50% completed); pipe pulling (scheduled to start mid February 2011), SPM installation (scheduled to start by end of March 2011); hydro-testing (scheduled to start of March 2011).

## 2 EHS MANAGEMENT ORGANIZATION

### *Project Strategy:*

CEIL environmental, health, safety and social commitments are contained and grouped under the overall CEIL Corporate Responsibility Management System and are also outlined in the Project specific EIA and the ESMP. In addition, CEIL requires that all of its subcontractors, as part of their contractual obligations, develop their respective EHS and Social plans in line with CEIL commitments and standards.

The Environmental Impact and Risk Assessment, which is an integral component of CEIL Project overall planning, design and implementation, has been developed. The Project EIA, published in January 2009, identified the sub-projects management programs and specific mitigation measures that will be implemented to reduce potentially adverse impacts to acceptable levels. In addition, the ESMP developed by CEIL includes requirements for environmental monitoring in order to verify the effectiveness of mitigation during all phases of the Projects. Main contractors developed their own Environmental Management Plans (EMPs) and procedures providing guidance for environmental commitments to be followed during the construction activities.

### *Observations:*

The Project EHS management organization is divided in two main structures, one for the Bhogat Terminal sub-project (with PLL, IOTL, DG Infra, VI Pandya and Janka being the main contractors) and one that oversees the pipeline construction, including both the Salaya - Bhogat pipeline extension (with the main contractor being L&T) and the off-shore pipeline section (work contracted to Leighton). Construction organizational charts were available from CEIL showing all contractors currently working on-site, EHS managers, lines of authority or responsibility matrices, and field level positions. Detailed information on the Project EHS staffing is presented in the Section 3.1. All Contractors currently on-site have developed and finalized their own EHS Management Plans.

At the Bhogat Terminal, PLL already submitted for review to ECMG several plan/procedures on Environmental and Health and Safety aspects as well as several Standard Operating Procedures (SOPs) used on-site (house keeping & waste management at labor camp, grit blasting & painting, chemical handling and spill prevention control and response procedure, top soil striping and preservation, etc.). During this mission, IOTL provided the ECMG team with its Environmental Management Plan, Waste Management Plan, EHS and Social Plan, and Environmental procedures. VI Pandya, following ECMG recommendation, has developed and finalized its EHS plan and additional EHS procedures have been developed. It should be noted that, according to CEIL personnel, this contractor has been asked to cease activities at the Bhogat Terminal about 6 weeks before the ECMG visit. DG Infra, which is working on the construction of CEIL living quarters, developed a brief EMP but some additional EHS procedures are still missing. Therefore, DG Infra should develop all the necessary EHS documentation as soon as possible. Finally, Janka Contractor, which is yet to mobilize, did not provide any EHS documentation. This contractor should develop all necessary EHS documentation and submit it to CEIL approval prior to its mobilization in the field.

L&T has now developed its Environmental and Monitoring plan, EHS Plan, Waste Management plan, and additional EHS procedures (night work, rock blasting, work at height, lifting and material handling, etc.).

Leighton already submitted for review several EHS plan/procedures. During this visit the contractor provided documentation relative to risk assessments (work at night, onshore pipeline installation, pigging hydro-testing and leak test, rock dumping, etc.) These assessments were developed in tabular form detailing cause of adverse effects, type of environmental impact, and mitigation controls. A similar risk assessment has also been developed by L&T for rock blasting procedures.

Security Plans have been provided from CEIL, Leighton, IOTL and VI Pandya, although this last contractor's plan was very base. In addition, CEIL submitted an updated Security Organizational Chart. Security aspects will be described in Section 6 of this report.

Weekly meetings are held by CEIL and attended by all contractors as documented by weekly EHS reports where current EHS issues are summarized, responsibilities for remedial action assigned, and status of open issues is tracked. Following ECMG recommendations, CEIL's weekly EHS reports now include unresolved issues from previous reports and tabulation of how long issues have remained unresolved. Monthly EHS reports are issued by L&T, Leighton, and PLL and, as per ECMG recommendations, now

include analysis of EHS Project statistics, quantities of liquid and solid wastes generated during the reporting period, as well as environmental incidents, EHS training, and fuel, water, and power consumption. Details of worker hours, accidents, injuries, first aid cases, and other Key Performance Indicators (KPI) are also included in these monthly reports. No such reports from IOTL, DG Infra and VI Pandya were available for review during this visit. The Project should ensure that monthly EHS reports are fully completed and regularly submitted by all contractors.

Field observations of EHS practices by ECMG generally corresponded to the level of available documentation (EHS plans and procedures), with fairly good practices observed for contractors working on the larger operations (L&T, Leighton, and PLL) and less good to marginal or unacceptable practices and implementation for the smaller operations, specifically DG Infra (inadequate PPE implementation, improper storage of waste, etc.). Supervision and on-field training by CEIL experienced personnel appear to be sufficient to ensure that Project standards and procedures are applied throughout the Project activities. However, CEIL personnel should continue their pro-active coaching and continuous field training of some contractors' workforce and supervisors.

*IFC Policy and/or EIA/ESMP Action Items*

- |      |   |
|------|---|
| M1.3 | The Project should ensure that monthly EHS reports are completed for all contractors (IOTL and DG Infra missing). |
| M2.1 | DG Infra should develop all the necessary EHS documentation as soon as possible.                                  |

*Recommendations for Improvement:*

- a. Janka should develop all necessary EHS documentation and submit it to CEIL for approval prior to its mobilization in the field; and
- b. CEIL personnel should continue their pro-active coaching and continuous field training of some contractors workforce and supervisors.



### 3 ENVIRONMENT

#### 3.1 ENVIROMENTAL IMPACT ASSESSMENT - MARINE SECTION

CEIL has worked on integrating some of the data/information concerning several issues on the marine EIA section of the Project as outlined in the October 2010 audit report. The integration was necessary to ensure that IFC and/or international standards/practices were properly addressed and to complete the information presented in the EIA baselines. In particular, the Project provided additional information on the presence/absence of marine turtle species, mammals, and coral colonies in the area of interest, on initiatives undertaken for issues related to marine fisheries and fish spanning areas, and on Environmental Management Plans with respect to blasting activities.

The marine EIA provided general information on the nesting and spawning ground of marine turtles, in particular the Green and Olive Ridley species listed as an endangered by the International Union for Conservation of Nature. The Project submitted additional background information on these species and on their nesting areas along the sandy beaches of the interested area. According to this new information, although the overall nesting density of the Olive Ridley and Green turtles is generally low along the Jamnagar coast, the Navadra-Lamba beach stretch shows one of the highest nesting density for Olive Ridley (10 nests/Km) and Green (17.6 nests/Km) of the reported index beaches. However, this beach stretch is located about 6 km south of the Project landing point and no nesting of either species was recorded near or close to the Project landing point. CEIL has informed the contractors (Leighton and DISC) working on the off-shore section and the landing area about the potential presence of these turtles species in the area. In addition, the Project has submitted additional information supporting the EIA statement that no coral colonies and/or concentration of marine mammals are present in the area of interest.

In order to characterize fishing activities and fishing grounds in the area, CEIL has undertaken a socio-economic assessment of the Project impacts on the fishing communities around Bhogat during the construction and operational phases. A detailed scope of work has been developed to clearly understand fishing activities and fishing grounds in the area, determine the value of local fishery landings, and gather information on the number of vessels by gear type (see further details in Section 7.1). In addition, according to Project management, CEIL will include in the current scope of work activities in support the EIA statement that the area interested by construction activities, is not a known fish spawning area.

The EMPs outlined in the EIA marine section are in the developmental stages or are too general to be implemented. Therefore, the Project should develop detailed EMPs and SOP to be adopted during the off-shore construction activities

According to Project field personnel, seawater, mixed with oxygen scavenger, bactericide, and corrosion inhibitor chemicals will be used for hydro-testing of the off-shore pipeline section. Effluent will be tested against Gujarat Pollution Control Board standards before being released in the ocean. Finally, blasting is not used in trenching the off-shore section of the pipeline. Normal on-shore trenching equipment (excavators) is used in the beach section of the RoU (first 600 meters) while in the intertidal zone (the first 250 meters) CAT excavator fitted with rock breakers/hammers and rock bucket will be used to excavate the trench. From 250 meters to the mourning point (about 6 Km out), trenching will be done using a Cutter Suction Dredger barge. Restoration of the marine RoU section entails the re-filling of the trench with the excavated material. This material is presently being stockpiled at regular intervals on the seafloor along the trench by a spreading barge that is supporting the Cutter Suction Dredger.

*IFC Policy and/or EIA/ESMP Action Items*

- |      |   |
|------|---|
| M1.6 | The Project should have a clear knowledge of fishing activities and fishing grounds in the area. Commercial and artisanal fisherman activities associated with the landing area should be identified and assessed as well as the direct and indirect impacts of construction and operations activities ( <b>On-going</b> ).   |
| M1.7 | The Project should study the impact on fish spawning and breeding in the area due to construction activities. If deemed necessary, carry out surveys to provide evidence and/or begin seasonal surveys for fish eggs and larvae to demonstrate that construction and operational phases will not significantly affect fish spawning and rearing. If necessary mitigation measures should be developed and implemented by the Project ( <b>On-going</b> ). |
| M1.9 | The Project should develop detailed EMPs and used during the off-shore construction activities ( <b>Modified</b> ).   |

### 3.2 ENVIRONMENTAL ORGANIZATION AND STAFFING

#### *Project Strategy:*

Overall, Health, Safety, Environment, Security, and Corporate Social Responsibility fall all under the umbrella of CEIL Corporate Responsibility Management System. At the head of each department is a Project Director, who reports directly to Company Operating Officer.

#### *Observations:*

EHS management structures are in place and information on the current CEIL's and main contractors' EHS structures have been provided thought detailed EHS Organization Charts.

CEIL's EHS management includes two corporate-based managers, one Environmental Manager and one EHS manager. In the field, an Environmental Manager and an EHS Manager oversee the Bhogat Terminal sub-project. In addition, an Environmental Manager, an EHS Manager and an assistant EHS Manager are assigned to the pipeline sub-projects (both the Salaya - Bhogat pipeline and the off-shore pipeline). EHS field Managers report directly to the corporate EHS Manager while field Environmental Managers report to the corporate environmental manager. Furthermore, three EHS Engineers are assigned to the Bhogat Terminal, four to the Salaya - Bhogat pipeline, and an additional three to the Marine Project. On-site EHS engineers report to the in-field environmental and EHS Managers.

Each contractor has appointed its own EHS field structure whose organizational charts have been submitted for review. At the Bhogat Terminal, PLL has one EHS manager and one EHS head that report directly to the Resident Construction Manager. In addition, four EHS Officers and one Environmental Officer report to the EHS Manager and coordinate seven EHS site supervisors, two paramedics and one First Aider. IOTL has one EHS Manager who report directly to the Resident Construction Manager. The Manager oversees three officers, one Environmental Engineer, and one on-site officer. DG Infra has only one project EHS officer that report directly to the Project Senior General Manager. Finally, VI Pandya has one EHS Manager, which report directly to Project Manager, that oversees one EHS/Environmental officer and one EHS/First Aider. The contractor Janka, which is yet to mobilize, did not provide any EHS organizational structure.

Along the Salaya - Bhogat pipeline, L&T has one EHS Team Leader, supported by a Regional EHS Manager and a Health and Safety (HS) Manager, who reports directly to the Project Manager. An EHS Officer, an EHS Engineer, and an Environmental Engineer integrate the team. In addition, an EHS Supervisor, a Yard Inspector, and an EHS officer, in charge of inductions and training, are present at site. Along the pipeline, six field supervisors are currently in charge of the operations along the mainline and at crossings and blasting sites.

At Marine sub-project, Leighton has an EHS Manager that reports directly to the Construction Manager. One Environmental Manager, supported by two EHS Officers, one for the daytime and one for the night, reports to the EHS Manager. In addition, for the on-shore section of the Marine sub-project, there is one

Assistant EHS Manager, who shares three EHS Officers with the Environmental Manager while for the off-shore section there is one DISC's EHS Engineer supported by a DISC's EHS Officer.

Overall, the current Project Environmental Management structure appears to be consistent with Project commitments and requirements at all key managerial positions. Field personnel appear to be fully aware of Project's relevant EHS aspects/issues/procedures. However, according to observation and information provided in the field, the Project should consider increasing the EHS structures of DG Infra and VI Pandya that appeared very weak and not adequate to fulfil Project's standards. High level actions may need to be taken to compel DG Infra and VI Pandya to fulfill their EHS responsibilities. In addition, Janka should develop an appropriate EHS structure to oversee its activities before mobilization in the field.

EHS training is ongoing for all contractors. A comprehensive list of on-going EHS training, along with attendance sheets, have been provided from the contractors detailing the several kind of EHS training performed, number of workers that attended, and date when the training was performed. Overall, contractors perform training pertinent general EHS issues and specific to their field work activities.

Furthermore, the Project is carrying out Emergency Mock Drill and a Fire Demonstration Drill programs, as described in Section 5.

Finally, appropriate visitors' induction was delivered at all visited sites. The inductions covered the Do's and Don'ts, the required use of PPE, alarms, locations of muster points, layout of the site, etc. A record of the visitor inducted is kept at most sites.

*IFC Policy and/or EIA/ESMP Action Items*

M2.2 The Project should consider increasing the EHS structures of DG Infra and VI Pandya that appeared very weak and not adequate to fulfil the Project's standards.

*Recommendations for Improvement:*

- a. High level actions may need to be taken to compel DG Infra and VI Pandya to fulfill their EHS responsibilities; and
- b. Janka should develop an appropriate EHS structure to oversee its activities before mobilization in the field.

### **3.3 AIR QUALITY**

*Project Strategy:*

The Project EIA recognizes dust as the main potential impact on air quality during the construction phase since several activities (earth work, excavation, embankment formation, transport of construction materials, handling, laying and jointing of pipelines, etc.) could generate dust particles that will be mobilized by wind and affect the local ambient air quality. Other gaseous emissions are mainly generated from operation of Diesel Generators (DGs) and vehicular exhausts, although these emissions were evaluated to be minor, localized, and transient in nature.

Control measures to mitigate fugitive dusts, as outlined in the Project EIA and ESMP, include watering of the working areas, minimization of vehicle trips, storing dusty materials in sealed containers or taking other preventive measures to avoid putting it in suspension, compaction of soil during various construction activities, control of particulate emissions through water sprinkling of unpaved roads and active RoU, covering the payload of trucks hauling granular or particulate material, etc. During those activities where dust is a potential impact, nose masks are required as standard PPE for workers. Gaseous emissions should be mitigated through proper operation and maintenance of all equipment that, if appropriate (e.g. DGs), should have sufficient exhausts height to ensure adequate dispersion.

The Project has committed to implement dedicated air monitoring programs for both ambient air and gaseous emissions control. Air quality parameters to be checked during construction and operational phases are summarized in Tables 5 and 6 of the ESMP – Section 8 (Monitoring and Reporting). Additional

site-specific requirements are outlined in the contractors' Environmental Monitoring Procedures and in the Project EIA – Chapter 6 (Environmental Monitoring Programme).

#### *Observations:*

The ECMG team visited the Project sites at the beginning of the dry season when the dust issue starts to be more evident. Field observations indicated no instances where suspended dust had a visible impact at working sites. Dust suppression measures, by watering the grounds, are reported to be implemented at most Project sites. At the Bhogat Terminal, watering operations with treated wastewater from the two on-site Sewage Treatment Plants (STPs) are reportedly performed every day. The ECMG team also observed watering of the ground during the site visit. Watering is not performed along the pipeline corridor while it is reportedly performed at the Khambaliya camp every 3-4 days using the treated wastewater from the on-site STP. At the Leighton site, dust suppression measures, as also observed during the ECMG visit, are in place and reportedly performed daily. As an alternative to watering, some of the Leighton site grounds have been covered with a layer of crushed rocks to prevent dust dispersion. The Project may consider extending the use of a crushed rock cover at other sites, particularly for those areas where vehicular traffic is more intense. Overall, dust control measures at Project sites have been found to be sufficient for the current weather conditions. However, dust issues are likely to increase as the dry season progresses and more windy conditions are present.

Stack heights of permanent DGs has been observed to be generally adequate at all Project sites. According to the information provided, the stack height of temporary DGs has been checked by CEIL personnel and found to be sufficient, in particular considering the small power of such DGs. During the site visit, only few small DGs have been observed having horizontal stacks but appeared not to be an issue given the small electrical power output and their temporary use. The Project provided the ECMG team with the Air Pollution Sources and Management Tracking Sheet for the Bhogat Terminal where records on equipment maintenance like DGs, air compressors, excavators, cranes, etc., are kept. The maintenance frequency is reported to be every 250 hours.

The Project conducted an ambient air quality monitoring campaign between the end of December 2010 and early January 2011. During this campaign, air samples were collected at ground level at all working sites. Results of ambient air quality monitoring have been provided in the form of laboratory certificates, giving only schematic information on the times and locations of the samples, listing the analytes, their concentrations, and the analytical methods used. As recommended in the October 2010 report, the Project should develop official reports that include detailed information on the monitoring campaign results and discussion on any exceedances. Such a monitoring report, comprehensive for all monitored sites, should outline the methodology used, provide information on the location of samples, list the results along with applicable standards, highlight exceedances, and, where applicable, provide an explanation of any anomalous result.

Following ECMG recommendations, the Project is now conducting 24 hours air sampling (instead of the 8 hours period used in the first campaign) for SO<sub>2</sub> and Particulate Matter, in line with IFC requirements although sampling of NO<sub>x</sub> should be conducted over a 1 hour period only. Therefore, the Project should ensure that ambient air sampling duration for each specific analyte is done according to IFC/EIA requirements. In addition, following ECMG recommendations and according to the Environmental Monitoring Schedule outlined in the Project EMSP for the construction phase, CO and Hydrocarbons (HC), are now included in the analytes for ambient air and stack emission monitoring. Furthermore, the Project is now monitoring ambient air and stack emissions for all contractors currently working at Project sites and implementing a site wide monitoring scheme with enough sampling location to cover the whole terminal area as appropriate.

At the Bhogat terminal, samples were collected from six locations: inside DG Infra site, out side DG Infra site, at IOTL site, at Batching Plant inside Bhogat Terminal, between PLL Office and the Batching Plant and at CEIL Camp. Tested parameters include: Particulate Matter (PM) less 10 µm (PM10) that ranged between 62 and 94.2 µg/m<sup>3</sup>, PM2.5 that showed values between 29 and 48.0 µg/m<sup>3</sup>, SO<sub>2</sub> ranging between 2.94 and 30.35 µg/m<sup>3</sup>, and NO<sub>x</sub> with concentrations between 15.21 and 38.74 µg/m<sup>3</sup>, CO ranged between 0.39 and 0.52 mg/m<sup>3</sup> and HC that was not detected at working sites.

Along the Salaya-Bhogat pipeline ambient air sample were collected near the L&T camp and at AGI 34. Tested parameters detected PM10 concentrations of 72 and 80 µg/m<sup>3</sup> respectively, 38 and 44 µg/m<sup>3</sup> of

PM2.5, 5.47 and 7.12  $\mu\text{g}/\text{m}^3$  of  $\text{SO}_2$ , 18.07 and 20.20  $\mu\text{g}/\text{m}^3$  of  $\text{NO}_x$ , 0.44 and 0.56  $\text{mg}/\text{m}^3$  of CO, while HC was not detected at either location.

At the marine site, ambient air samples were collected near the Leighton camp and near the terrace. Concentrations of PM10 at 68 and 87  $\mu\text{g}/\text{m}^3$  respectively, PM2.5 at 36 and 45  $\mu\text{g}/\text{m}^3$ ,  $\text{SO}_2$  at 3.27 and 5.08  $\mu\text{g}/\text{m}^3$ ,  $\text{NO}_x$  at 12.12 and 14.26  $\mu\text{g}/\text{m}^3$ , CO at 0.41 and 0.34  $\text{mg}/\text{m}^3$  were measured while no HC was not detected at either sampling points.

It should be noted that all PLL measurements, performed by Pollucon Laboratories, give values for Suspended Particulate Matter, which is comparable to PM100, and Respirable Particulate Matter, comparable to PM10. Therefore, PM2.5, which one of the parameter included in the IFC standards, is missing from the list of analytes.

Overall, PM10 and PM2.5 concentrations measured throughout the Project areas are within the Gujarat Pollution Control Board and National Ambient Air Quality Standards (100  $\mu\text{g}/\text{m}^3$  for PM10 and 60  $\mu\text{g}/\text{m}^3$  for PM2.5) but exceed the IFC standards of 50  $\mu\text{g}/\text{m}^3$  for PM10 and 25  $\mu\text{g}/\text{m}^3$  for PM2.5. It should be noted that, as indicated by PM10 baseline values reported in the Project EIA (PM10 values around 100  $\mu\text{g}/\text{m}^3$  during the dry season), PM measurements are probably affected by the arid and windy conditions of the area of interest. However, the Project should continue and strengthen dust control measures and consider the use of wetting agents (e.g. General Electric DusTreat) to decrease the water use and to increase dust suppression effectiveness, in particular at the Bhogat Terminal. No other significant exceedances were found in any of the other analytes.

Stack emission tests were also performed by all contractors currently working in the different sub-project areas. The testes included concentration measurements values for PM,  $\text{SO}_2$ ,  $\text{NO}_x$ , CO and HC as required by the Project EIA and ESMP. Test results show that GPCB local limits are respected at all Project sites.

*IFC Policy and/or EIA/ESMP Action Items*

- |       |  |
|-------|--|
| M1.13 | The Project should ensure that ambient air sampling duration for each analyte is done according to IFC/EIA requirements ( <b>Modified</b> ).   |
| M1.15 | The Project should develop official reports that include detailed information on the monitoring campaign results and discussion on any exceedances.  |
| M2.3  | The Project should respect, at all working sites, local and IFC limits for ambient air monitoring and in particular stay below the most stringent limit, taking into particular care of PM concentrations for ambient air. |

*Recommendations for Improvement:*

- The Project should continue and strengthen dust control measures and consider the use of wetting agents (e.g. General Electric DusTreat) to decrease the water use and to increase dust suppression effectiveness, in particular at the Bhogat Terminal;
- Alternative dust control measures, like covering the grounds with crushed rocks, may be implemented at selected worksites; and
- A monitoring report, comprehensive of all monitored sites, should be developed outlining the methodology used, information on the location of samples, results along with applicable standards, highlight exceedances, and, where applicable, provide an explanation of any anomalous result.

### 3.4 GROUNDWATER AND SURFACE WATER

*Project Strategy:*

According to the Project EIA and ESMP, the water requirement during the construction phase is negligible as compared with the operational phase. Industrial water for construction is needed for civil works, sanitation purposes, dust suppression measures, and hydro-testing of the pipeline and oil tanks at the Bhogat Terminal. In addition, domestic water is needed for the various workers camps and yards and



Project offices. According to the Project EIA, peak industrial and domestic water requirements for the camps during the construction phase was estimated at 100 m<sup>3</sup> per day while during operations the Bhogat Terminal will require approximately 2,000 m<sup>3</sup> per day (for cleaning and domestic use). Therefore, according to Project EIA and ESMP estimates, the impact on the water environment during construction is expected to be minor and temporary. The Project EIA also remarks that during operations no impact on water resources is foreseen as water requirements are minimal and CEIL plans to tap brackish deep aquifer that is not in use in the region.

As outlined in the Project EIA and ESMP, impacts on surface water may arise from sediment washing during the laying of the pipeline. However, most water bodies along or near the RoU are small and not perennial. Furthermore, the marine environment can be affected by the effluent discharge from the ships and the vessels deployed for construction and by potential oil spills from increased of marine traffic near the SMP waters.

#### *Observations:*

At most Project sites the water to satisfy construction needs is currently withdrawn from groundwater bore wells with consumption records kept at all locations.

#### Bhogat Terminal

At the Bhogat terminal, two/three water wells are being used for industrial water (40 existing wells are present inside the Bhogat Terminal area), while domestic water is supplied by local vendors and delivered on site by trucks. A Reverse Osmosis (RO) plant, supplied by a water well, is present at the PLL labor camp to treat water used for drinking and cooking purposes. Bottled water is also supplied to the camp to supply the on-site offices. Water used for dust suppression at the Terminal is the treated wastewater from the on-site STPs.

It should be noted that the Project has obtained a groundwater abstraction permit from the Central Ground Water Authority of the Ministry of Water Resources allowing to withdraw 2,000 m<sup>3</sup>/day from ten water wells. According to this permit, the total water abstraction is subdivided in 300 m<sup>3</sup>/day for industrial activity, 300 m<sup>3</sup>/day for residential/domestic purposes, and 1,400 m<sup>3</sup>/day for greenbelt development. Conditions to the permit include the Project commitment to monitor groundwater quality twice a year (pre and post monsoon), monitor groundwater abstraction by using its own water meters and piezometers, and implement groundwater recharge measures to the tune of 248,290 m<sup>3</sup>/year. With respect to this last requirement, the Project has already identified some abandoned Dug-wells inside the Bhogat Terminal that will be used for groundwater recharge. As part of the permit commitments, the Project has conducted (May 2010) a Hydro-geological and Geophysical Survey at Bhogat Terminal. Objectives of this survey were to study the physiographic and hydrological conditions around the terminal, understand the ground water regime of the area, assess the aquifers, select suitable sites for drilling exploratory wells, suggest rainwater harvesting solutions and recommend feasible water well structures. The Project also carried out a survey to determine water level (pre-monsoon and post-monsoon), yield and concentration of Total Dissolved Solid for each well located inside the terminal area.

The source location of hydro-testing water for the eleven oil storage tanks under construction at the Bhogat Terminal has not been defined yet.

Detailed information on water consumption is carefully tracked and reported for each construction area inside the Bhogat Terminal (PLL, IOTL, DG Infra and VI Pandya) as along with information on water procurements for the CEIL and PLL camps located just out side the Terminal area. According the data provided, the total amount of industrial and domestic water used by all contractors as the Bhogat Terminal was 565 m<sup>3</sup> in October 2010, 903 m<sup>3</sup> in November 2010, and 1177 m<sup>3</sup> in December 2010. The gradual increase clearly indicates that construction activities in the area have step up since ECMG last visit.

#### Salaya-Bhogat pipeline

Along the pipeline, industrial water is sourced from local wells at AGIs 34 and 35 while at AGI 36 the Project drilled its own well. At the Khambaliya Camp, a bore well (137 m deep) is being used for all domestic purposes. An on-site RO plant is used to supply drinking water to the camp population and to workers along the pipeline RoU. The plant water is now tested twice per month to ensure it falls within drinking quality standards.



Water used for dust suppression at Khambaliya Camp is the treated wastewater from the on-site STP.

Records on industrial and domestic water consumption are being kept by L&T showing the total amount of water consumption of 1498 m<sup>3</sup> in October 2010, 1649 m<sup>3</sup> in November 2010, and 1994 m<sup>3</sup> in December 2010, in line with the increased activities in the field. It should be noted that in December 2010, 18 m<sup>3</sup> of bore well water were also used for pre-hydro-testing operations.

Permits for water abstraction at the Khambaliya Camp and AGIs bore wells have not been provided. The Project should provide all the permits from the Local Authority on all the water abstraction locations being used by the Project.

According to the information provided during the site visit, hydro-testing water for the Salaya-Bhogat pipeline will be abstracted from the Ghi River.

#### Marine site

At the marine site, water is supplied from local vendors by trucks. Drinking and cooking water is provided by a local vendor while water for sanitary purposes, civil works and dust suppression is supplied from private bore wells (on-shore) and from RO plants on the vessels (off-shore). Records on water consumption are kept on-site and indicate a water consumption of 1304 m<sup>3</sup> in October 2010, 700 m<sup>3</sup> in November 2010, and 1330 m<sup>3</sup> in December 2010. Water consumption of the off-shore vessels were 682 m<sup>3</sup> in October 2010, 1082 m<sup>3</sup> in November 2010, and 1143 m<sup>3</sup> in December 2010.

With respect to hydro-testing operations, Leighton has submitted a detailed plan describing pigging and hydro-testing operations. According to field personnel, seawater, mixed with oxygen scavenger, bactericide, and corrosion inhibitor, will be used for the hydro-test and left in the pipe until commissioning. CEIL will be responsible for discharge of this water; therefore, detailed plans should be developed for this operation. No such plans were available for the Bhogat Terminal (tanks and flowlines) or the Salaya – Bhogat pipeline. Although the Project is in the early stages of construction, CEIL should develop a detailed plan for the hydro-testing operations for each of the sub-projects (the Bhogat Terminal and the Salaya to Bhogat pipeline section). The plan should clearly indicate all sources, required permits and/or studies (in case of withdrawn from river flows), discharge points, monitoring requirements (water discharge analytes and standards, sediment controls, etc.), and specific procedures associated with hydro-testing operations. In particular, if rivers, as indicated by Project personnel at the Salaya – Bhogat pipeline sub-project, or local wells are used as water sources, the Project should expedite the required hydrologic or hydrogeological studies to ensure that water extraction at the proposed sites have no negative short, medium, or long range impacts on the local hydrogeology.

#### *IFC Policy Action and/or ESIA/EMP Actions Items*

- |       |   |
|-------|---|
| M1.17 | The Project should develop a detailed plan for the hydro-testing operations for each of the sub-projects: the Bhogat Terminal and the Salaya to Bhogat pipeline section <b>(Modified)</b> . |
| M2.4  | The Project should provide all the permits from the Local Authority on all the water abstraction locations being used by the Project.   |
| M2.5  | CEIL should develop detailed plans for the discharge of hydro-test water used in the marine portion of the pipeline.  |

#### *Recommendations for Improvement:*

- a. The Project should demonstrate that local communities around the Project are not affected in terms of water supply by the Project abstraction of water;
- b. The Project is in the early stages of construction, CEIL should develop a detailed plan for the hydro-testing operations for each of the sub-projects (the Bhogat Terminal and the Salaya to Bhogat pipeline section). The plan should clearly indicate all sources, required permits and/or studies (in case of withdrawn from river flows), discharge points, monitoring requirements

(water discharge analytes and standards, sediment controls, etc.), and specific procedures associated with hydro-testing operations; and

- c. If rivers, as indicated by Project personnel at the Salaya – Bhogat pipeline sub-project, or local wells are used as water sources, the Project should expedite the required hydrologic or hydrogeological studies to ensure that water extraction at the proposed sites have no negative short, medium, or long range impacts on the local hydrogeology.

### 3.5 MONITORING

#### *Project Strategy:*

Monitoring of key environmental parameters is both a Project commitment and an IFC requirement. The ESMP clearly outlines CEIL commitment to develop an Environmental Monitoring program covering both the construction and operational phases of the Project. Monitoring shall include direct measurements and recording of quantitative information of physical and chemical indicators to characterize ambient environmental quality in the Project areas. Also, the program should be designed and implemented to confirm that Project commitments are confirmed and to ensure compliance with statutory and corporate requirements.

According to the Project EIA (Section 6.1.5 – Monitoring Methods and Data Analysis), all environmental monitoring and relevant operational data will be stored in a relational database and linked GIS system. This should enable efficient retrieval and storage and interpretation of the data. Regular data extracts and interpretive reports should be sent to the regulator.

The Project ESMP described specific parameters and monitoring schedules to be carried out during the construction and operational phases. These parameters and schedules are summarized in Tables 5 and 6 of the ESMP – Section 8 (Monitoring and Reporting). Additional requirements are present in the contractors' Environmental Monitoring Procedures and in the Project EIA – Chapter 6 (Environmental Monitoring Programme). IFC requirements for environmental monitoring are described in the IFC EHS General Guidelines (April 2007). Table 3.1 summarizes the parameters to be monitored by the Project during the construction phase.

**Table 3.1: Monitoring Parameters**

Medium	Parameter	Frequency
Ambient Air	SPM, RPM, SO <sub>2</sub> , NO <sub>x</sub> , CO	Monthly
Stack emissions (DGs)	PM, SO <sub>2</sub> , NO <sub>x</sub> , CO and HC	Monthly
Noise	Leq(night), Leq(day), Leq(dn)	Quarterly
Soil	Particle size distribution, Texture, pH, Electrical conductivity, CEC, Alkalinity metals, SAR, Permeability, Water holding capacity, Porosity	Seasonal
Wastewater	pH, TSS, TDS, BOD, COD, Temperature Total Nitrogen, Total Phosphorus, Total Coliform Bacteria	Weekly
Drinking Water	Colour, Turbidity, pH, Total Hardness, Calcium as Ca, Magnesium as Mg, Copper as Cu, Iron, Manganese, Chlorides, Sulphates, Nitrates, Fluoride, Phenols, Mercury, Cadmium, Selenium, Arsenic, Cyanide, Lead, Zinc Anionic detergents, Chromium as Cr+6, Poly nuclear aromatic, Hydrocarbons, Mineral Oil, Residual free Chlorine, Pesticides, Radio active, Coliforms	Monthly

*Observations:*

Monitoring campaigns (noise, waste and drinking water, soil) were conducted by CEIL and its main contractors at all Project sites in the period October-December 2010. Details on ambient air and stack emission monitoring have been presented in the Section 3.3 of this report. Summary tables for noise monitoring and laboratory certificates for wastewater, drinking water, and top soil were provided to ECMG for review. According to information provided, and following ECMG recommendations, the development of comprehensive monitoring reports is on-going. However, at the time of the visit, these comprehensive reports were not yet available. As outlined in Section 3.3 these reports should provide details on the monitoring campaigns (methodology, location of samples, results, applicable standards, etc.) and discuss any anomalous result.

It should be noted that in all monitoring results submitted for review, only the limits from the local legislation are reported while IFC and/or Project specific standards are not listed. The Project should include IFC limits to the results to enable comparison with international standards.

**Bhogat Terminal**

A second noise monitoring campaign was conducted on December 2010 at four working locations within and outside the Bhogat Terminal: the DG Infra area (stations located inside and outside the site); the IOTL site; and the PLL Batching Plant site. Given the increased construction activities at the Bhogat Terminal, the Project may consider locating noise measurement stations in proximity of any residential, institutional, and/or educational areas, if any, outside the Terminal area. Noise measurements have been taken every hour for a 24 hours period at all the Project locations and, following ECMG recommendations, night data were also collected. As outlined in the October 2010 report, the Project may consider extending the noise monitoring period to 48 hours with continuously or hourly data logging instrumentation, as per IFC requirements. According to data provided, no noise measurement exceeds IFC (70 dBA) or National Ambient Air Quality Standards (daytime: 75 dBA; nighttimes: 70 dBA) for industrial/commercial areas.  $L_{eq}(\text{day})$  ranges from a minimum of 56.9 dBA to a maximum of 62.2 dBA while  $L_{eq}(\text{night})$  ranges between 52.6 and 54.7 dBA.

Wastewater monitoring started at the end of December 2010 for the two STPs located at the PLL labor camp and at PLL working area inside the Bhogat Terminal. The STP at labor camp reported exceedances against IFC and Gujarat Pollution Control Board limits in terms of BOD, COD, Nitrogen, and Phosphorus while the STP at PLL working area exceeded in BOD, COD, phosphorus and Total Suspended Solids concentrations. However, the measured parameters are in line with parameters indicated by the Indian Central Pollution Control Board for effluent water used for irrigation purposes (Category E – treated sewage for irrigation use standard). It should be noted that both STPs reported coliforms to be present in the effluents but no information on their concentration is provided (IFC requirements in terms of coliforms for Treated Sanitary Sewage Discharges is 400 MPN/100ml). Therefore, the Project should clearly indicate coliform concentration in the wastewater test monitoring results.

Monthly drinking water test results have been provided for the period October 2010 – January 2011 for all contractors working at the Bhogat Terminal (PLL, IOTL, DG Infra and VI Pandya). From the documentation provided each contractors performed water test analyses for their area but in some cases there is no indication of where and how the samples were collected. The Project should better document drinking test results at Bhogat Terminal. Few samples showed minor exceedances against the IS:15000 (Indian Standard Specifications for Drinking Water) although some samples indicated the presence of coliforms, which should be absent according to the World Health Organization Guidelines for Drinking Water Quality. Following ECMG recommendations, the Project is now collecting samples from many point sources and will provide brief information on the sample locations. The Project should ensure that all drinking water analytes are within the drinking water parameters and any excursion, in particular with respect to coliforms, should be quickly investigated and mitigations implemented.

Top soil monitoring has been performed at the Bhogat Terminal during the November - December 2010 period with samples collected from the Bhogat Terminal greenbelt area, CEIL camp, PLL Batching plant, and PLL labor camp. Samples were tested for pH, electrical conductivity, particle size distribution, texture, alkalinity, water holding capacity and porosity. One more soil sample, collected at the IOTL site, was tested for moisture, organic matter, pH, electrical conductivity, nitrogen, phosphorus, potassium, boron,

iron and zinc. According to the field information, a second top soil monitoring campaign will be performed at the end of the construction phase to verify if activities have impacted the soil in the area.

#### Salaya - Bhogat Pipeline

Noise monitoring summaries tables, not indicating the date when the monitoring took place, have been provided by L&T. Two sampling location were selected for the monitoring campaign: at L&T camp in Khambaliya and, following ECMG recommendations, at a school near the L&T camp. However, no monitoring results at the working sites along the pipeline corridor have been provided. The Project should consider establishing monitoring locations at those locations (AGIs) along the pipeline corridor where workers may be exposed to noise. Noise monitoring has been performed on a 24 hours period with ten measurements taken every hour so that an average value could be calculated. As mentioned above, the Project may consider extending the noise monitoring period to 48 hours with continuously or hourly data logging instrumentation, as per IFC requirements. Overall, no exceedances were reported for the L&T camp (average values below the IFC limit of 70 dBA for industrial sites during daytime and night time) or for the school near the L&T camp (average values below the IFC limit of 55 dBA for residential/institutional/educational sites during the daytime – night time measures not performed near the school).

Monthly STP's wastewater monitoring tests at the Khambaliya Camp were provided for the period from October to December 2010. Four effluent samples were analyzed for Suspended Solids, COD, BOD, Oil and Grease, pH, odour, and colour (Total Bacteria Count was monitored in the last test result). Overall, the analyzed parameters are in line with IFC requirements, apart from an exceedance for BOD (57 mg/l in October 2010 against the IFC limit of 30 mg/l) and for Suspended Solids (65 mg/l in November 2010 against the IFC limit of 50 mg/l). It should be noted that, since discharge of treated wastewater in water bodies is not foreseen, eutrophication will not be an issues. In addition, the presence of nitrogen and phosphorus is also desirable given that treated wastewater is used for greenbelt development. However, if discharge of treated wastewater in water bodies occurs, the Project should also include in their analysis Total Nitrogen and Total Phosphorus, as required by IFC standards.

Drinking water monitoring tests have been conducted for the RO plant at Khambaliya Camp with samples collected before and after treatment. Two samples were tested in December 2010 for chemical and biological (coliforms content) characteristics. Test results show that the water from the RO plant in Khambaliya is suitable for potable use. One more monitoring test was provided from L&T for October 2010 (location not specified) also showing that the water tested complies with drinking water parameters.

Top soil testing along the RoU was carried out in December 2010 with the collection of samples at several locations along the pipeline corridor (KPs 16, 17, 38, and 40) where construction activities were on-going. Tested parameters included pH, electrical conductivity, particle size distribution, texture, alkalinity, water holding capacity and porosity. According to the field information, a second soil monitoring campaign will be performed at the end of the construction phase to verify if activities have impacted the soil in the area.

#### Off-shore

Noise monitoring summaries tables, not indicating the date of the sampling, have been provided by Leighton for its site. Four sampling locations were selected for the monitoring campaign: Leighton Camp (entrance gate), stringing yard, and site office. An additional monitoring station was set up at the DISC camp (near the camp DG unit). Noise monitoring was performed on a 24 hours period taking ten readings each hour so that an average value could be calculated. As mentioned above, the Project may consider extending the noise monitoring period to 48 hours with continuously or hourly data logging instrumentation, as per IFC requirements. Overall, no exceedances were reported for the Leighton site (average values below the IFC limit of 70 dBA for industrial sites during daytime and night time).

Wastewater monitoring results were provided by the Project for Leighton's outlet STP for the months of October and November 2010 and for the STP at DISC camp for December 2010 (both inlet and outlet). Tested parameters included colour, odour, pH, BOD, COD, Total Suspended Solids, oil and grease, and Total Bacteria. As mentioned above, if discharge of treated wastewater in water bodies occurs, the Project should also include in their analysis Total Nitrogen and Total Phosphorus, as required by IFC standards. The only outlet exceedances were recorded in the October 2010 tests where high vales of BOD (100 mg/l against the IFC limit of 30 mg/l), COD (310 mg/l against the IFC limit of 125 mg/l) and Suspend Solids

(220 mg/l against the IFC limit of 50 mg/l) were detected. The Project should consider testing the STP outlet at Project sites twice a month to check regularly the efficiency of the wastewater treatment.

Monthly drinking water monitoring test results were provided for the Leighton site covering the period September-December 2010. Tested parameters included colour, odour, taste, turbidity, pH, Total Suspended Solids, alkalinity, calcium, magnesium, iron, manganese, chlorides, sulphates, yeast and mold, E. Coli, Coliform Bacteria, *Pseudomonas Aureginos* and Sulphide Reducing Anaerobs. Monitoring results show that water samples comply with the drinking water parameters. The Project also conducted a biochemical test (December 2010) on water used for general purposes at the Leighton site.

No top soil monitoring was performed at the marine site.

Leighton also carried out an inception report on sea water and sediment quality monitoring during the dredging operations that included monitoring of physical, chemical and biological characteristics. Four off-shore locations were monitored for the sea water quality (temperature, salinity, density, pH, TSS, dissolved oxygen, nitrate, nitrite, phosphate, silicate, ammoniacal nitrogen, TOC, Total PAH, HC, As, Ba, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Phytoplankton, Zooplankton and Chlorophyll-a) and for sediment quality (Appearance, Grain size, pH, Eh, Total organic nitrogen, TOC, TPH, Total PAH, Fe, Mn, Zn, Ba, Cd, As, Pb, Cu, Ni, Hg, Cr and Benthic fauna). The methodology for testing the several parameters is described but results are not included in the inception report.

*IFC Policy and/or EIA/ESMP Action Items*

- |       |  |
|-------|--|
| M1.18 | Comprehensive monitoring reports should be developed by the Project providing details on the monitoring campaigns (e.g. methodology, location of samples, results, applicable standards, etc.) and discussing any anomalous results ( <b>On-going</b> ). |
| M2.6  | The Project should include IFC limits to the results to enable comparison with international standards.  |
| M2.7  | The Project should consider establishing monitoring points at those locations (AGIs) along the pipeline corridor where workers may be exposed to noise.  |
| M2.8  | The Project should ensure that all drinking water analytes are within the drinking water parameters and any excursion, in particular with respect to coliforms, should be quickly investigated and mitigations implemented.                              |

*Recommendations for Improvement:*

- The Project may consider locating noise measurement stations in proximity of residential, institutional and/or educational areas, if any, outside the Bhogat Terminal area;
- The Project should ensure that coliforms concentrations in STP effluent water is quantified and is below 400 MPN/100ml;
- The Project should better document drinking test results at Bhogat Terminal;
- Testing of drinking water wherever bottled water is not being supplied should be done on a more frequent basis (e.g. once per week) and water dispensers, in particular at labor camps, should be regularly tested to ensure they comply with hygiene standards;
- The Project may consider extending the noise monitoring period to 48 hours with continuously or hourly data logging instrumentation, as per IFC requirements;
- The project should clearly indicate coliform concentration in the wastewater test monitoring results; and
- If discharge of treated wastewater in water bodies occurs, the Project should also include in their analysis of wastewater those parameters Total Nitrogen and Total Phosphorus, as required by IFC standards; and



- h. The Project should consider testing the STP outlet at Project sites twice a month to check regularly the efficiency of the wastewater treatment.

### 3.6 RECLAMATION, REVEGETATION, AND TOPSOIL MANAGEMENT

#### *Project Strategy:*

The Project EIA foresees impacts on the land environment during the construction phase. According to the EIA, physico-chemical changes in soil quality may occur during construction mainly due to clearing of vegetative cover along the pipeline route and at the crude oil terminal sites causing temporary soil erosion resulting in turbidity in surface run-off. Furthermore, as a result of construction activity, the vegetation covers (i.e. forest, avenue trees and agricultural land) are likely to be affected in a narrow strip along the pipeline RoU through forest and crop land. However, this impact will be of temporary in nature. The Project is committed to restore back the land to the original use for the agricultural activities.

According to the ESMP, the Project is committed to use any surplus rock, as a result of pipe laying activities, for social causes (e.g. embankment of water bodies, bounding/fencing of agricultural farms, disposal in low lying area) prior the necessary no-objection certificate and authorization from the competent agency(es) have been obtained.

The Project EIA and ESMP also define general measures to prevent or mitigate the impacts on soil resources. Potential impacts of concern include reduction of topsoil fertility and increased erosion due to surface disturbance, vegetation removal, and inadequate reclamation. CEIL is committed to implement measures for the protection and preservation of topsoil in the RoU along the pipeline and at road crossing sites. In addition, Contractors' EMPs define procedures for sourcing of earth material requiring that quarry material comes from government approved quarry areas while illegal mining is not permitted.

#### *Observations:*

As described in Section 3.5, the Project conducted pre-construction soil fertility testing along the RoU (KPs 16-17 and 38-40) and at the Bhogat Terminal. The Project will conduct a second top soil monitoring campaign at the end of the construction phase to verify if activities have impacted the soil in the areas. At working sites along the RoU, the Project started to strip and stockpile the soil and, as observed by ECMG, these operations have been carried out with good care.

L&T developed a brief procedure for the sourcing of padding material and disposal of surplus excavated soil/rocks. This procedure outlines Project commitments in identifying suitable locations for padding material sourcing, disposal of excess excavated rocky material, obtaining all necessary legal permission from private landowners, and material tracking including sourcing and disposal locations, quantities, approvals, and use at KPs along the RoU. In particular, the Project contractors are committed to develop brief Environment and Social Impact Assessments (along with photographs) for each padding material sourcing location and submit these to Cairn for approval.

According to field personnel, a detailed rock disposal plan is under development by the Project. Such a plan will define all the procedures to be followed for disposing rock material coming from trenching activities along the RoU. The Project should finalize the Rock Disposal Plan and identify proper disposal quarries and/or document any agreement with local end users. Furthermore, the environmental team should act in concert with the CSR team for addressing any issue arising from rock disposal management with the local communities.

Quarry material for construction (sand, gravel, etc.) is reportedly sourced from authorized private and government quarries. The Project is now recording and tracking all quarry material used for construction. Following ECMG recommendations, tracking sheets providing information on location of quarries, dates, quantities of material sourced, and final use are now being kept by the Project. CEIL also provided L&T tracking sheet for disposal of surplus excavated earth material that provides information on the location where it is generated, the volume, the type, the management, and the permitting authority for final disposal. According to this information, 138 m<sup>3</sup> of excavated rock have been generated at KP 16-17 with the surplus earth material given to farmer, to whom the land where the material was excavated belong to for his own use.

Following ECMG recommendations, the Project finalized a Greenbelt Development Plan identifying future areas for greenbelt plantation (AGIs and Bhogat Terminal) and selected plant species to be used according



to Gujarat Pollution Control Board guidelines and EIA recommendations. According to this plan, the Project will ensure that the areas assigned to the greenbelt are not used for any temporary purpose during the Project's construction phase. However, in case of unavoidable circumstances, top soil will be stripped and stocked properly to prevent contamination and then the area restored right after use. Training will be provided to all relevant Project personnel for management of the greenbelt areas and for proper preservation of top soil. In addition, tool box talks will be conducted at those sites where grading and filling activities are performed.

The Project is tallying all trees cutting along the RoU. The information is logged in a *Tree Cutting and Plantation Data Sheet* where the total number of trees identified during survey and the number of trees cut and saved is reported. To date, only nine trees have been counted at KP 16-17 during the survey and seven of them were cut. At eight road/railway crossings and at KP 38-40 no trees have been counted during the survey while at three river crossings identification is on-going.

*IFC Policy and/or EIA/ESMP Action Items*

M2.9 The Project should finalize the Rock Disposal Plan and identify proper disposal quarries and/or document any agreement with local end users.

*Recommendations for Improvement:*

- a. The environmental team should act in concert with the CSR team for addressing any issue arising from rock disposal management with the local communities.

### **3.7 BARMER – SALAYA CONSTRUCTION PHASE CLOSURE**

The Barmer – Salaya Project construction has been completed and is now in the operational phase. In concert with CEIL and the Lenders, tracking of some late construction activities (final closure of some yards and the spur line from Viramgam terminal to Oil India Terminal) has been shifted to the Salaya – Bhogat Crude Projects Oil Pipeline Extension Project.

*Project Strategy:*

The Project philosophy on reinstatement is clearly outlined in both Upstream and Midstream ESIA documents and in CEIL Site Restoration Guidelines document. Project development will be done with due regard for local development plans and compatible with the surrounding land use. Restoration will be carried out so that the site will be returned to near original conditions. As part of the reinstatement process, the Project recognizes the importance of the correct management and preservation of topsoil during construction activities. Topsoil stripped during site clearance should be properly stored to preserve its physical-chemical characteristics and to avoid loss due to erosion.

*Observations:*

Viramgam Spur Line

The construction of a short 10 inch, 2.5 km spur line, connecting the Viramgam Terminal to a nearby Indian Oil Terminal, has started in late November 2010 and is expected to be completed by May 2011. It should be noted that only a 1.2 km section of this spur line lay outside the terminals' boundaries. This short section is on bare land already owned by Indian Oil Corporation Limited and no land acquisition had to be carried out and, therefore, reinstatement after construction is expected to be straight forward. Furthermore, the spur line construction does not present particularly challenging and/or sensitive EHS issues and current management and supervision of field activities, as observed by ECMG during the field visit, appear to be sufficient to ensure that Project EHS standards and procedures are properly followed. In concert with Lenders and CEIL, the spur line construction and closure will be monitored under the Salaya – Bhogat Project audit reports. Under this agreement, CEIL commits to submit monthly reports to the ECMG. Upon construction completion, the construction manager will submit a report detailing restoration activities, waste disposal, and other relevant EHS information, and an EHS corporate representative will

inspect the restored site to document proper closure. These two reports will be submitted to the ECMG for review.

#### Reinstatement of Yards

Yards that are in the final stage of demobilization include the Kazstroy Service yard at Dhrol, the L&T yard at Sachana, located near the Viramgam terminal, and their Wankaner pipe yard. At the Dhrol yard, all equipment has been removed and only minor reinstatement is needed (remove of some left over debris and ground grading). According to field personnel, final reinstatement should be completed by the end of January 2011. The L&T yard at Sachana was under full demobilization when visited by the ECMG team. Material and equipment is reported to be moved to other L&T locations but some will be relocated to a Gujarat Industrial Developing Corporation site, located nearby, to support the construction activities of the Viramgam spur line. The expected date of decommissioning of the Sachana yard is the end of January 2011. It should be noted that this site is in an industrial area; therefore, reinstatement will be limited to clearance of the site from all debris. The Wankaner pipe yard is in the final stages of demobilization as material and equipment is moved to the Bhogat Project area. As for the other yards, the expected decommissioning date is the end of January. The yard was mainly used as a pipe storage area during the construction phase with limited equipment, mainly lifting cranes, operated on site for loading and unloading operations. The site does not present any major EHS issues with respect to the reinstatement once all debris is cleared, grounds graded, and topsoil restored. This last element is probably the most critical since the area may be used as agricultural land by the landowner(s). However, final closure activities do not present particularly challenging and/or sensitive EHS issues and current management and supervision, as observed by ECMG during the field visit, appear to be sufficient to ensure that Project EHS final closure standards and procedures are properly followed. As for the Viramgam spur line construction, and in concert with Lenders and CEIL, the final closure of the above yards (the Kazstroy Service yard at Dhrol, the L&T yard at Sachana, and the Wankaner pipe yard) will be monitored under the Salaya – Bhogat Project Audit reports. Under this agreement CEIL will ensure that contractors carry out the clean up and restoration according to Project standards. A CEIL corporate EHS representative will inspect the restored sites and closure reports will be review by the Salaya – Bhogat construction manager and declarations of completion will be submitted to IFC and ECMG. Closure activities are expected to be fully by the end of March 2011 but, pending documental review of closure activities, ECMG may request to visit the sites before final closure is granted.

### **3.8 WASTE MANAGEMENT**

#### *Project Strategy:*

Site specific Waste Management Plans/Procedures (WMPs) have been developed at the corporate level by CEIL and the main contractors currently working on the Project. Such plans/procedures provide general requirements for waste identification, segregation and storage, record keeping, and final disposal. A general action plan with activities, waste generation locations, actions to be undertaken, and responsibilities/accountabilities for final disposal are included in the documents.

In particular, the WMPs adopted by CEIL and its main contractors foresee that in the absence of adequate waste treatment and/or disposal facilities in the Project area, appropriate infrastructure will be established and maintained until Project completion and that all off-site waste handling facilities will be audited before contracts are awarded.

The Waste Management Procedure adopted by CEIL and L&T classifies waste into recyclable general waste, non-recyclable general waste, hazardous, and biomedical waste. The non-recyclable fraction includes used light bulbs, glass, food waste, septic tank waste, leather, PVC/HDPE/LDPE, and concrete debris. The WMPs developed by other contractors, together with CEIL, do not adopt such a classification; however, they do consider a non-recyclable fraction in their plans/procedures.

The Project intends to identify waste streams, their sources, estimated daily quantities generated, waste characteristics, and re-use/recycle. This information, in addition to treatment and disposal plans, should be recorded in a waste Management Tracking Sheet. Furthermore, according to the Corporate Environmental and Social Management Plan (ESMP) adopted by CEIL, the Project will collect, segregate and recycle to the maximum extent possible all the waste generated at offshore/onshore/pipe laying facilities and labour camps. The Project strategy for all domestic wastewater, as reported in the ESMP, is to treat it with on-site STPs or to process it via septic tanks and soak pit systems.

*Observation:*

Waste stream data for the October-December 2010 period have been provided by the Project for the Bhogat Terminal, L&T, and Leighton sites in the form of summary tables for hazardous and non-hazardous waste. Waste tracking sheets, giving information on the type and quantity of waste generated, generation frequency, collection, and storage, and kind of treatment/reuse/disposal are used throughout the Project areas.

At the time of the site visit, field personnel informed the ECMG team that two municipal dump sites, located in the towns of Khambaliya and Dwarka, were currently being used by the Project for small quantities of mixed waste coming from surplus of waste segregation. Only L&T provided information on quantities of waste sent to municipal dump sites that amounted to approximately 60 kg per month. During the site visit, the ECMG team visited these locations and found them to be unmanned areas where waste is dumped directly on the land with no access control. These facilities are not in compliance with IFC standards and, as already highlighted in the October 2010 report, the Project should ensure that no waste is disposed in an uncontrolled or improperly engineered landfill, in particular when CEIL has constructed its own engineered landfill with hazardous and non-hazardous cells. All disposal/recycling facilities used by the Project should be audited to verify they comply with Project and IFC standards before they are used or contract awarded.

Dedicated receptacles (separate food waste and solid waste bins) for non-hazardous waste have been observed to be present and well maintained at all Project sites visited. When full, the receptacles are carried to non-hazardous waste accumulation areas to be emptied and waste types are manually segregated. Following ECMG recommendations, most waste facilities are provided with permanently signs. However, individual waste receptacles were observed to be provided with temporary paper signs written in English only and attached with tape. Only at the IOTL site, the waste accumulation area was observed to be labeled in local language. The Project should use permanent labels, in English and local languages, for all recycling bins and waste facilities.

Non-hazardous waste

Central accumulation areas for non-hazardous waste are in place and in use at all visited sites.

At the Bhogat Terminal, non-hazardous waste is being collected at three central accumulation areas, one for each of the main Contractors currently working at the Terminal. Storage areas for non-hazardous waste have been completed and are operational at PLL and IOTL sites. Such facilities, built in cement, are properly constructed and with sufficient capacity to store paper, plastic, and wood in separate sections. The Project plans to cover the non-hazardous waste accumulation areas before the monsoon season to provide additional shelter from wind and rain. Metal scrap at the Bhogat Terminal is segregated in delineated areas near construction sites. It should be noted that DG Infra does not segregate its non-hazardous waste that are accumulated directly on the ground in a delimited area near construction works which lacks any pavement and fencing. DG Infra should construct a proper waste accumulation area where non-hazardous waste (paper, plastic, wood, etc.) is kept segregated. Non-hazardous waste from the Bhogat Terminal is sent to the Uday Plastic Recycler facility located in the Bhatiya Village. This facility has been audited by the CEIL and found to be operating along Project required standards. From there the segregated waste is finally sent to different industries for recycling (Salavi Paper Mills for paper, Panama Paper Mills for paper cartoons, Preet Plastic Pvt., for plastic bottles and other plastic, Vijay Paper Mills and Boards for fruit juice packets).

As part of the tank construction, sand blasting operations, for cleaning of corroded steel surfaces, are carried out at the Bhogat Terminal with sand reported to be reused to the maximum extent. According to the SOP on Grit Blasting and Painting provided, grit dust is collected in dust bins then transferred to gunny bags and waste materials stored in a waste storage room. Finally, the grit dust will be disposed in a non-hazardous municipal landfill (reportedly at Ahmedabad, Gujarat). The Project should ensure the grit dust is non-hazardous and verify the possibility to reuse this waste (e.g. asphalt concrete production) given that spent sandblasting grit has a high content of iron and may become an environmental concern in landfill leachate.

Non-hazardous waste produced along the Salaya – Bhogat pipeline and at the Khambaliya camp is transported and collected at a central accumulation area built within the Khambaliya Camp area. This waste accumulation area, built in cement, appears to be properly constructed and with sufficient capacity to

store paper, plastic, and wood in separate sections. Following ECMG recommendations, the Project has roofed this area. Non-hazardous waste is sent to two registered facilities, Mehul Enterprises and Indian Scrap Suppliers, located in the Khambaliya town. It should be noted that these two facilities have been audited by CEIL and found to operate according to Project standards with waste segregated and stored before being sent to registered recyclers in different regions of Gujarat for further recycling (nearest recyclers are available in the Rajkot and Bhavnagar Districts of Gujarat).

At the Leighton site, the waste accumulation area for non-hazardous material is built in cement and provided with a roof cover. This facility is now used to store only paper and plastic and its capacity appears sufficient to cover current operations. In addition, the non-hazardous waste is now reported to be removed on a daily basis. Metal scrap is accumulated in a designated area located near the construction activities. DISC camp has a separate accumulation area for non-hazardous waste inside its camp. Paper and plastic waste from Leighton and DISC camps is sent to Julani Scraps, a registered non-hazardous solid waste recycling facility in the town of Dwarka, where waste is segregated and stored. The segregated waste is finally sent to Gujarat Traders at Rajkot for further recycling at different industries in Rajkot. Waste from the marine vessels working off-shore is sent to Harish A Pandya, located in Ghandhidham, Gujarat. This enterprise is a registered facility for the collection of all type of garbage/waste, except hazardous waste, generated from ships. The segregated waste is finally sent to government registered recycling facilities for further recycling and treatment (nearest recyclers are available in the Rajkot and Bhavnagar Districts of Gujarat).

#### Food waste

At all Project sites, food/organic waste generated by the Project is collected in dedicated bins that are regularly emptied by the appointed contractor and transported to two municipal composting facilities: the Khambhaliya Nagarpalika and the Dwarka Nagarpalika Vermi-compost plants. The first facility receives the organic waste from the Khambhaliya Camp while the other facility receives the organic waste from the Leighton camp and the Bhogat Terminal. Both facilities have been audited by the CEIL and have been found suitable for the processing of organic waste. These facilities have been also visited by the ECMG team and found to be in line with current practices in India. However, workers were observed lacking basic PPEs and, as has highlighted in the October 2010 report, the Project should consider providing personnel at these composting facilities with basic PPE (e.g. gloves and masks) and, if necessary, provide training and capacity building programs for proper waste handling. In addition, regular monitoring of the composting facilities is recommended to ensure the good state and housekeeping of the facilities.

#### Hazardous waste

Hazardous waste generated by the Project (waste oil, empty chemical drum, paint drum, incinerable waste) is sent to Reliance Barrel Supply Co., a hazardous waste recycler and disposal facility located in Ahmedabad, Gujarat. This facility has been audited by CEIL and was found suitable for the disposal of hazardous waste. However, the Project should conduct audits at least once per year to ensure that facilities/contractors are still operating within Project standards/requirements.

At the Bhogat Terminal, PLL is collecting hazardous waste at a central accumulation area provided with a concrete floor, bermed, locked, and covered. IOTL has yet to establish a hazardous waste storage area since hazardous material is not being used in their current construction activities. However, they plan to construct such an area if and when hazardous material will be used in construction activities. Hazardous waste produced by the Salaya – Bhogat pipeline sub-project is collected at a central accumulation area built at the L&T yard, in a delimited and isolated area that is bermed and covered. The facility has been observed to be properly built and well ventilated. At the Leighton site, the hazardous waste accumulation area has been now completed. It appeared to be in good conditions, properly located in a delimited and isolated area, bermed and covered.

#### Biomedical waste

Dedicated bins for biomedical waste segregation are present at medical facilities throughout the Project sites. DEV Biomedical Waste Management Services, a biomedical waste treatment facility located near Jamnagar and authorized by the Gujarat Pollution Control Board, is used by the Project to dispose the biomedical waste generated from all contractors' medical facilities. Following ECMG recommendation, this facility was audited by CEIL and was found suitable for being used by the Project.

### Wastewater

At the Bhogat Terminal, wastewater is treated at two on-site STPs: one located at the PLL labor camp and the other at the PLL work site within the Bhogat Terminal. As mentioned in Section 3.5, outlet monitoring results from these two STPs for December 2010 show some exceedances in terms of BOD, COD, Nitrogen, Phosphorus and Total Suspended Solids concentrations. The STP unit at the PLL labor camp is also receiving wastewater from the nearby CEIL construction staff camp via an underground pipe that is buried under an agricultural field at a depth, according to field personnel, of 70 to 100 cm, well below tillage depth.

At the Khambaliya camp, along the Salaya-Bhogat pipeline, wastewater is treated by a Fluidized Aerobic Bioreactor (FAB) that is operational since October 2010. Test analyses (see Section 3.5) for the October-December 2010 period indicated that tested parameters (Suspended Solids, COD, BOD, Oil and Grease, pH, odour and colour) for this STP are below IFC limits with minor exceptions. According to the information provided, the sludge from the FAB tube settler is currently entirely re-circulated. Depending on the efficiency of the process, some sludge may need to be removed once a year. The Project plans to compost this sludge and re-use the greenbelt development. At the Essar labor camp (now closed), septic tanks were reportedly provided with soak pit and then disposed off in the municipal sewage network.

At the Leighton site, a Sintex decentralized wastewater treatment system is operational. A second STP is also present at the DISC Camp. Test analyses (see Section 3.5) show that all parameters concentrations fall below required Project/IFC limits with the exception of few minor exceedances recorded in October 2010 for the Leighton STP. According to the information provided, the STP at the DISC camp is undersized and excess sewage is routinely sent to the composting facility in Dwarka where it is sprinkled on the compost piles. However, this solution is considered not adequate as the effluent of the STP also contains some not biodegradable pollutants like detergents from the on-site cloth washing facility that could negatively affect the composting process. Therefore, the Project should consider using the Leighton STP to process the excess of sewage from DISC camp and discontinue the practice of sending it to the composting facility in Dwarka. In addition, the surplus of treated wastewater from the DISC's STP not used for gardening is currently being discharged in a municipal field outside the camp. The Project should ensure that the pollutants concentrations are below the IFC limit before discharge treated wastewater into the environment.

Detailed start-up and final tests of wastewater, showing the STPs systems are operating properly, were never provided for review. The Project should consider implementing detailed start-up and final tests for any new STPs units built in the field to ensure that optimal system conditions are reached before they become fully operational. Monitoring reports should also include the results of the test conducted during start-up in addition to those referred to full operation to help identifying problems and treatment deficiencies, if any.

The Project should provide toilets at all work sites (separate female facilities when necessary) and along the pipeline RoU sections when workforce is present. According to information provided, wastewater from portable toilets is collected in septic tanks, hauled by vacuuming trucks, processed through the STPs present at Project sites, and after treatment sent to a Dwarka pollution control facility for final disposal.



*IFC Policy and/or EIA/ESMP Action Items*

- |       |   |
|-------|---|
| M1.28 | The Project should ensure that no waste is disposed in an uncontrolled or properly engineered landfill, in particular when CEIL, as an option, could use its own engineered landfill located in the Barmer area.                    |
| M1.29 | The Project should consider implementing detailed start-up and final tests for any new STPs units built in the field to ensure that optimal system conditions are reached before they become fully operational ( <b>Modified</b> ). |
| M1.32 | The Project should provide toilets at all work sites (separate female facilities when necessary) and along the pipeline RoU sections when workforce is present.   |
| M2.10 | DG Infra should construct a proper waste accumulation area where non-hazardous waste (paper, plastic, wood, etc.) is kept segregated.   |
| M2.11 | CEIL should consider providing personnel at the composting facilities used by the Project with basic PPE (e.g. gloves and masks) and, if necessary, provide training and capacity building programs for proper waste handling.      |
| M2.12 | The Project should consider using the Leighton STP to process the excess of sewage from DISC camp instead of sending it to the composting facility in Dwarka  |

*Recommendations for Improvement:*

- The Project should audit all disposal/recycling facilities to verify they comply with Project and IFC standards before they are used or contract awarded;
- The Project should use permanent labels, in English and local languages, for all recycle bins and waste facilities;
- The Project should ensure the grit dust is non-hazardous and verify the possibility to reuse this waste (e.g. asphalt concrete production) given that spent sandblasting grit has a high content of iron and may become an environmental concern in landfill leachate;
- Monitoring regularly the composting facilities is recommended to ensure the good state and housekeeping of the sites;
- The Project should conduct audits at least once per year to ensure that hazardous waste facilities/contractors continue to operate within Project standards/requirements;
- The Project should ensure that the pollutants concentrations are below the IFC limit before discharge treated wastewater into the environment; and
- STP monitoring reports should include the results of the test conducted during start-up in addition to those referred to full operation to help identifying problems and treatment deficiencies, if any.

**3.9 HAZARDOUS MATERIALS MANAGEMENT AND POLLUTION PREVENTION***Project Strategy:*

The Project strategy for the management of hazardous materials is outlined in the relevant EIA and ESMP. Storage areas for paint and similar materials, diesel generators locations, and fuel and oil storage areas should be underlined by an impervious surface and be surrounded by berms to contain accidental spills.

Hazardous materials are to be stored in secure and well ventilated facilities. In particular, Contractors' Plans for Hazardous Material Management state that ventilation should be guaranteed in enclosed storage areas by opened windows and fans. Spill kits should be available where hazardous materials are stored. Workers should also be trained in the proper handling and storage of hazardous materials.



According to Project ESMP, all the facilities having potential to contaminate like maintenance yards, DG sets, diesel storage yards, chemical/oil storage area, and hazardous waste storage area, should be provided with paved/impervious concrete floor, bunding and secondary containment to avoid oil spillage to soil.

#### *Observations*

Overall, hazardous materials were observed to be properly segregated throughout the Project sites.

Along the Salaya-Bhogat pipeline hazardous materials are stored in an appointed roofed facility at the L&T pipe yard. This facility was observed to be well ventilated with silled concrete floor, in an area separate from other materials, and with drums covered by plastic sheets. Not open drums of foaming material used for isolating the pipeline were observed to be kept inside locked containers. Oil drums are also stored in a properly silled area. The L&T pipe yard is also equipped with a maintenance area that was observed to be provided with the necessary secondary containments.

At the Bhogat Terminal, hazardous materials being used by PLL are stored in a locked space, located in an isolated area away from workers, provided with concrete floor. As mentioned above, IOTL is not using any hazardous material during its current work activities and, according to information provided, a hazardous material storage area will be constructed if and when such materials will be used. A storage area for cement bags was also visited by the ECMG team at a batching plant that is being constructed at the PLL working site. At this facility, even if the dirty floor was observed to be a potential issue for dust generation, the workers' area was located near a dust extraction fan and a door was reportedly to stay open during loading and unloading activities to reduce dust accumulation within the room. However, the Project should ensure that during operations the cement storage area is kept well ventilated and workers use dust masks.

At the Leighton on-shore camp, drums containing chemical material are stored inside a locked container equipped with a fan to evacuate potential fumes that appeared to be adequate for providing sufficient ventilation. Other unopened drums of chemicals are stored in an open yard together with other non-hazardous material. This area was observed not to be provided with a concrete floor; however, given the temporary nature of this storage area and that all drums were closed and protected with plastic, the absence of a concrete floor is not a critical issue. Oil drums were observed to be kept in an isolated roofed area provided with metal pan for secondary containment.

ECMG visited the DISC dredging barge and Leighton work barge as they operated off-shore of the landfall point. Overall, both barges are well run and managed with respect to EHS issues. At the Leighton work barge an extra area dedicated to the storage of hazardous material, mainly motor oil, was observed not to be provided with secondary containment but the vessel EHS manager reported that a work order has already been approved for its construction. In addition, ventilation in the barge paint storage room was not adequate for the amount of open paint being stored as indicated by very strong fumes present in and nearby the storage room. Since increasing the ventilation is not currently possible, the contractor should implement site-specific safety mitigation measures (designate specific personnel to enter the room and brief them on the potential HS issues, use a body system when accessing the room, etc.).

At all working areas gas cylinders were observed to be properly stored and, when full, locked. Furthermore, at all Project sites, spill kits were observed to be present where hazardous material is stored along with fire extinguishers. Following ECMG recommendations, the extinguishers were properly stored in highly visible locations not immediately adjacent to flammable materials.

According to field observation, permanent DGs at all working sites were properly provided with secondary containment and were observed to be in good working conditions. In addition, the ECMG team positively acknowledges that some temporary DGs, even if used at site for short periods, are placed on plastic sheets in order to contain any spill that may occur during refueling operations. The Project may consider providing plastic underlayment at all temporary DGs in order to decrease the risk of spill during the daily refueling operations.

A fuel and chemical storage inventory, recording amounts of hazardous material being stored at Bhogat Terminal (PLL site), has been provided for review by the Project. It provides information on the location, type, quantity, condition of storage, spill occurred and prevention measures adopted. Similar hazardous material tracking sheets should be kept by all other contractors.

It should be noted that right before the ECMG site visit to the marine area, an accident occurred at the landfall point during trenching operations. An extended turret excavator working off-shore (approximately

50 m from the shore line) turned over into the sea during dredging operations. No injuries to the operator or any other worker were recorded. The excavator was equipped with a 170 gallons oil tank that, at the time of the incident, was reportedly not completely full. According to the information provided, no fuel leaked into the environment occurred because the excavator is designed to work into the water. The Project, implemented all required oil spill response procedures, by delimiting the area with booms that were brought on-shore from the Leighton working barge stationed off-shore. Three boats, some hired from the nearby fishermen village, were deployed to patrol the area and keep guard on the site. Because of this incident, the working barge was temporally left without booms although, according to Leighton personnel, replacement oil spill kits were just received and on their way to the barge. The Project should have enough oil spill emergency response equipment to cover all its onshore and offshore operations.

*IFC Policy and/or EIA/ESMP Action Items*

- |       |   |
|-------|---|
| M2.13 | The Project should keep enough oil spill emergency response equipment to cover all its on-shore and off-shore operations.                                   |
| M2.14 | Ventilation in the Leighton work barge paint storage room was not adequate; therefore, the contractor should implement specific safety mitigation measures. |

*Recommendations for Improvement:*

- a. The Project should ensure that during operations the cement storage area is kept well ventilated and workers are using nose masks;
- b. The Project may consider providing plastic underlayment at all temporary DGs in order to decrease the risk of spill during the daily refueling operations; and
- c. Hazardous material tracking sheets should be kept by all other Contractors.

## 4 ROU MANAGEMENT

### *Project Strategy:*

Activities along the RoU include survey and clearance, pipe laying, stringing, welding, trenching and backfilling operations. Potential EHS issues associated with these activities include safety (e.g. stringed pipe, open trench sections), crossing of the pipeline or trench, length and timing of any open trench sections, and crowd control during working activities.

The Project EIA (Section 6.5.4) outlines a Code of Environmental Practice that describes basic commitments for the Project with respect to onshore pipeline construction. In addition, the EIA (Section 7.6.2.1) provides an overview measures to mitigate pipeline hazards detailing safety aspects to be considered by the Project.

### *Observations:*

Work activities along the pipeline route have started but actual pipeline construction is still in the early stages. As outlined in Section 1, clearing and grading activities have been completed for 5.5 km, a total of 2.5 km of trench has been excavated, and pipe welding completed for a total of 1.7 km. Six out of eighteen road crossings, one out of three railway crossings and two out of four river crossings are currently under construction.

Given that the pipeline is in the early stages of construction, the length of open trench is reasonable. However, considering the probable increase in construction activities along the RoU in the incoming period, the Project should carefully plan trenching to avoid leaving long sections of excavated ditch open for extended periods of time. According to the information provided, blasting is carried out at river crossings and, as observed by ECMG, along some sections of the on-shore pipeline to facilitate trenching operations. No blasting is currently used or foreseen for any sections of the off-shore pipeline. At road and railroad crossings, micro-tunnelling technology is being used.

During the RoU visit, ECMG observed that sufficient passages for local people along the pipeline corridor were present and farmers irrigation pipes were kept operational and in good order at all the visited sites. However, the ECMG social team reported issues related to water flow and the size of the pipes, associated to the gravity type of irrigation. In addition, following ECMG recommendations, open ends of assembled pipe strings have been provided with end caps to prevent access by children or animals. However, fencing along open trenched sections was found to be missing at most sites. The Project should provide safety fences and/or other protective means to prevent people or animals from falling into the open trench at all working sites along the RoU.

All the visited working sites along the pipeline were found equipped with all the necessary EHS provisions like dust bins, drinking water dispenser, fire extinguishers, warning signs, first aid kits, apart from the Sinhan River crossing site where it was reportedly been stolen, oil spill kits, etc. In addition, The ECMG team positively acknowledges that protection cages are being used by workers during welding operation inside the trench. However, portable toilets were found to be missing along the RoU and at most road/river crossings while they were present at AGIs construction sites. The Project should ensure that portable toilets are provided along the RoU working sites.

#### *IFC Policy and/or EIA/ESMP Action Items*

M2.15 The Project should provide safety fences and/or other protective means to prevent people or animals from falling into the open trench at working sites along the RoU.

### *Recommendation for Improvement:*

- a. Considering the probable increasing in construction activities along the RoU in the coming period, the Project should carefully plan trenching to avoid leaving long sections of excavated ditch open for extended periods of time.

## 5 HEALTH AND SAFETY

### 5.1 HEALTH AND SAFETY MANAGEMENT AND OCCUPATIONAL HEALTH

#### *Project Strategy:*

CEIL has adopted a Corporate Responsibility Management System that incorporates health, safety, environment, security and corporate social responsibility. The system includes well defined performance standards, procedures and guidelines, and key performance indicators (lost time incidents, total recordable incidents, etc.), which are used to track compliance with annual HS targets.

Project specific HS plans are also required by CEIL to be developed and adopted by all main contractors. The contractors' HS plans include risk assessments, plans for safety management and supervision, initial induction and task specific training, PPE, hazard communication, first aid requirements, and accident reporting. In addition, contractors' HS plans provide recommendations for cement bags stocking areas (required training, use of PPE, adequate ventilation, etc.). Use of PPE for workers is also encouraged in the Project EIA and ESMP.

The Project EIA recognizes road safety as a major Project HS issue. In particular, the Project is committed to undertake a road safety awareness campaign to better inform the communities about safer road habits. The Project ESMP also recognizes that the construction phase of the Salaya - Bhogat pipeline is expected to have an impact on local infrastructure such as roads. The Project is therefore committed to avoid using village infrastructure, such as roads, and wherever possible and feasible, construct and use alternate roads. In case the above is not feasible, the Project should upgrade existing roads before use and restore roads to improved quality levels after Project completion.

#### *Observations:*

Project specific HS plans, which include Emergency Disaster Response Management Procedures, have been developed by CEIL and adopted by most subcontractors (L&T, Leighton, PLL, IOTL and VI Pandya). However, to date, DG Infra has not submitted their HS plans. The plans outline the policies and strategies, the organization, the resources and documentation required as well as the HS risk management principles and the reporting requirements. Task specific safety procedures are discussed, although specific attention to road safety for personnel, equipment, and material transport was provided only by L&T, PLL, and IOTL that also make references to CEIL road safety policy. Safety measures discussed by L&T and PLL include, among other issues, vehicle inspections, use of seat belts, adherence to speed and traffic regulations, and securing of loads. Leighton's EHS Plan mentions road transport safety only briefly and without giving any specific detail. As recommended during the October 2010 report, all contractors' EHS plans should include specific road safety sections, pertinent to their specific work assignments, rather than just referring to CEIL requirements.

During the site visit, the ECMG team observed that dangerous road and/or traffic conditions are still present in some areas. Of particular concern is the one lane road running from Bhatiya to Bhogat. It should be noted that the Project applied to the Local Authority on the 2<sup>nd</sup> of January 2011 for installing speed breakers on this road stretch as a safety measure to control vehicles' speed. At the time of the ECMG visit, the Project was waiting for a response from the Local Authority, which is not likely to be taken quickly. Therefore, the Project should seriously consider and quickly implement all feasible measures to improve road and traffic safety. These could include driver training, use of GPS devices or speed bumps to record or reduce speed, control of material delivery schedules with the possibility of organizing convoys of large trucks, road improvements (e.g. road shoulder and potholes repairs), construction of sidewalks or other pathways in particular along those sections close to schools or other public areas, and increased community awareness programs in schools and nearby villages. Following ECMG recommendations, the unpaved access road to the marine landing had been repaired by the Project. However, after the repairs took place, it became apparent that speeding by locals was an issue; therefore, the Project decided to make the road uneven so that speeding would not be possible but trucks and vehicles could continue to use it safely at reduced speed.

Medical facilities have been observed to be present at most Project sites. ECMG visited medical rooms at the Bhogat Terminal (PLL and IOTL facilities), at Khambaliya camp (servicing the Salaya – Bhogat pipeline area), and at the marine site (IOTL and DISC facilities). At the Bhogat Terminal, the PLL facility is manned by one paramedic and one doctor (from Bhatiya) working in shifts while the IOTL site has two

paramedics, working in shifts, with one doctor from Khambaliya visiting the facility every four days. A dedicated patient transfer vehicle is present at each facility. Both facilities keep a log register (no major injuries reported) and are provided with some medicine supplies. However, these medical facilities have been found inadequate for the workforce currently present on-site (about 600 people) and considering that the nearest hospital is located in Jamnagar, about one and a half hour drive from the Bhogat Terminal. Medical facilities at Bhogat Terminal should be equipped with all the necessary medical supplies and provided with ambulances.

L&T is provided with a medical facility, manned by paramedic staff, stocked with sufficient medical supplies. At the marine site, two medical facilities are present, one for Leighton and another for DISC. Both facilities were found to have all the necessary equipment to handle major problems. In particular, DISC's medical facility, managed by International SOS, was equipped with advanced equipment including a defibrillator. A paramedic is permanently based at the camp with a doctor present during the day and on call during the night. No major injuries have been reported to date and weekly and monthly reports are kept on site as well as specific forms for each patient. Well equipped ambulances are present at site.

First aid kits were present and found adequate at all Project sites. Following ECMG recommendations, first aid supplies are now checked weekly at all working sites. Furthermore, emergency contact numbers were posted in English but not in local languages, at all visited camps. Emergency contact information should be also posted in the prevailing local language(s) at all sites. Overall, HS warning signs at working sites were found to be sufficient and effective as they were written in both English and local language.

According to information provided, an Emergency Mock Drill and a Fire Demonstration Drill were performed respectively in September and October 2010 at the Salaya-Bhogat pipeline sub-project (L&T). The Project should perform periodic emergency drills at all sub-project locations involving all working contractors. Furthermore, the Project should conduct at least one major emergency response drill in cooperation with local authorities and municipal response teams (e.g. local fire fighting brigade, local hospitals etc.)

The use of PPEs is widespread throughout the Project working sites, with few exceptions. In particular, the ECMG team positively acknowledges that use of gloves is now extensive at all Project sites. However, DG Infra workers have been found not using even basic PPEs (gloves and safety shoes). The Project should encourage the use of PPE, including gloves, safety shoes, and dust masks for some contractors' workforce.

During the visit, the ECMG team visited the labor/staff camps present at Project sites. In particular, camps belonging to L&T, PLL, CEIL, Leighton and DISC camps (IOTL camp is still under construction) were visited. Overall, camps were found in good conditions and well maintained. However, at the PLL labor camp, smoke detectors were found missing inside the rooms. Therefore, the Project should install smoke detectors in bedrooms and sleeping quarters at all camps. In addition, plumbing traps in sewage piping to prevent unpleasant smell and flammable sewer gas from coming out of drains were not observed in any of the camp washrooms or kitchens (smell was detected at PLL toilets inside the camp), although it was reported that gas traps were present in sewage piping beneath structures at the Leighton labor camp. Sewer gas traps should be used and should also be made accessible for inspection and maintenance.

Fencing is generally present at Project sites and access to work sites is restricted by entrance gates and security personnel. At the Bhogat Terminal, even if boundary wall construction has yet to start, fencing is present around the terminal boundaries. However, as mentioned in Section 4 of this report, fencing is missing at most locations along the trenched pipeline creating a potential hazard for the local population or animals.

Housekeeping was found to be generally good at the time of the site visit. At all Project sites visited, material and equipment was found to be neatly staged in appointed areas and waste was not observed to be accumulated outside the appointed accumulation areas.



*IFC Policy and/or EIA/ESMP Action Items*

- |       |   |
|-------|---|
| M1.37 | All Contractor EHS Plans should include specific road safety sections, pertinent to their specific work assignments, rather than just referring to CEIL requirements <b>(Modified)</b> .              |
| M1.42 | Sewer gas traps should be used and should also made be accessible for inspection and maintenance.   |
| M1.43 | Install smoke detectors in bedrooms and sleeping quarters at all camps.   |
| M1.44 | Encourage the use of PPE, including gloves, safety shoes, and dust masks for some contractors' workforce <b>(Modified)</b> .  |
| M1.45 | Emergency contact information should be posted also in the prevailing local language(s) and not only in English.  |
| M1.48 | The Project should consider and quickly implement all feasible measures to improve road and traffic safety along the one lane road connecting Bhatiya to Bhogat – <i>Repeated</i> <b>(Modified)</b> . |
| M2.16 | DG Infra should submit as soon as possible its own Health and Safety plans.   |
| M2.17 | Medical facilities at Bhogat Terminal should be equipped with all the necessary medical supplies and provided with well equipped ambulances.  |
| M2.18 | The Project should perform periodically emergency drills at all sub-project locations involving all working contractors.  |
| M2.19 | The Project should conduct at least one major emergency response drill in cooperation with local authorities and municipal response teams (e.g. local fire fighting brigade, local hospitals etc.).   |

*Recommendations for Improvement:*

- a. The Project should seriously consider all feasible measures to improve road and traffic safety. These could include driver training, use of GPS devices or speed bumps to record or reduce speed, control of delivery schedules with consideration of concentrated convoys of large trucks, improvements (e.g. road shoulder and potholes repairs) or alternatives to roads – such as sidewalks or other pathways to schools or other public areas, and community awareness; and
- b. The Project should put on fast track actions to face the medical issue at the Bhogat Terminal providing the facilities with all necessary equipment, especially given the absence of a hospital nearby.



## 6 SECURITY

### *Project Strategy:*

Security is recognized by the Project EIA (Section 10.3) as an issue of concern. CEIL's Security Policy commits to provide security to everybody involved with Project activities and people who come into contact with Project operations. CEIL is therefore committed to provide a secure working environment and adopt appropriate international standards to protect employees and contractors, physical assets and operations against risks of injury, loss, damage or impairment from criminal, hostile or malicious acts. In addition, strong security presence/surveillance is required along the export pipeline and at all intermediate stations on the pipeline in order to manage the security issues of the facility and infrastructure.

CEIL has developed a draft corporate document, *HSE, Security & CSR Procedures E5 – Security guidelines*, specifically covering security issues. The document provides general security guidelines, policies, and procedures as a framework for the development of detailed security management plans for CEIL operations. No Project security plans drafted according to this framework were provided for review.

### *Observations:*

CEIL corporate draft document on security covers most of the principles and guidelines outlined in IFC PS4 and the United Nations Voluntary Principles on Security and Human Rights. However, the document should expand and better detail Section 14 (*Guards and Guard Management*) to incorporate CEIL policies and procedures when private and/or governmental security forces are directly hired by CEIL. In addition, CEIL should clearly specify what are the responsibilities of each party (CEIL, private or governmental agency) and outline the underlying principles, standards, and procedures that should regulate any agreement with private and/or governmental security forces. Furthermore, contrary to what stated in Section 15 (*Weapons/Firearms & Use of Force*), CEIL is ultimately responsible for the actions of security forces directly hired by the Company.

For the Salaya - Bhogat Project, CEIL is currently using security personnel at all working sites. During the site visit, public security force has been observed at Project sites. According to information provided, the Project hired twelve armed guards from the State Police Force. These guards are stationed at the Khambaliya Camp and are in charge of patrolling the pipeline RoU. No armed guards are reportedly present, nor observed during the ECMG visit at Leighton site and at the Bhogat Terminal. At these facilities, unarmed private security personnel are currently employed to patrol the Project areas. Information on security personnel field engaged in field patrolling, their number and roles was given only by IOTL.

An agreements between CEIL and government and private security forces was not submitted to ECMG for review. Such agreements should clearly outline roles and responsibilities, include CEIL and IFC standards and procedures for engagement and proportionality in the use of force, and outline training/briefing activities to ensure that security forces engaged in field activities are aware and knowledgeable of CEIL/IFC/UN principles and Human Rights.

Field documentation with respect to security was limited to three documents: CEIL's *Security Procedures for SBPL*, which outlines general security provisions for the pipeline and Bhogat Terminal areas, and two document developed by Leighton, the off-shore contractor, and IOTL. These procedures have not been developed within the general framework outlined by CEIL E5 draft document but appear to have been drafted as a response to field needs. Project specific security risk assessments and security plans consistent with identified threats should be developed along with strong contingency planning, emergency response plans and specific training/briefing of security and EHS field management and personnel.

A Cairn Security Organization Chart has been provided by the Project, showing the structure and line of communication at the management level. However, detailed information on security personnel currently deployed at each site has not been provided. Partial information on current security forces was provided only by IOTL field personnel reporting the presence of fifteen security guards who reported to four security officers that support one security manager.

*IFC Policy and/or EIA/ESMP Action Items*

- M2.20 CEIL draft corporate security document (E5) need to be expanded to better detail Section 14 (Guards and Guard Management) to incorporate CEIL policies and procedures when private and/or governmental security forces are directly hired by CEIL.
- M2.21 A Project specific security risk assessments and security plans consistent with identified threats should be developed along with strong contingency planning, emergency response plans, and specific training/briefing of security and EHS field management and personnel.

*Recommendations for Improvement:*

- a. Agreements between CEIL and government and private security forces were not submitted to ECMG for review. Such agreements should clearly outline roles and responsibilities, include CEIL and IFC standards and procedures for engagement and proportionality in the use of force, and outline training/briefing activities to ensure that security forces engaged in field activities are aware and knowledgeable of CEIL/IFC/UN principles and Human Rights;
- b. The Project should ensure that all CEIL and contractors' personnel are fully familiar with CEIL security policies and procedures. Procedures for identified security issues should be clearly communicated to all CEIL and contractors' personnel; and
- c. The Project should ensure that security roles and responsibilities are clearly understood and that line of communications and intervention are familiar to all key field personnel (CEIL and contractors).

## 7 SOCIAL ISSUES

### 7.1 SOCIAL MANAGEMENT

#### *Project Strategy:*

The social aspects of the whole Mangala Development Pipeline Project are managed by the Communication and Corporate Social Responsibility (CSR) department. The CSR is part of the general Cairn Corporate Responsibility Management Plan that includes also Environment, Health, Safety, and Security.

The CSR staff dedicated to the Mangala Pipeline Development Project includes a CSR manager, based in Gurgaon, and two field teams. One team is based in Barmer and oversees the Upstream Project in Rajasthan that includes the Mangala and Raageshwari terminals and the oil fields while the other team, involved in the Midstream (Pipeline) Project and the Salaya - Bhogat extension, includes six officers based in Santhore, Viramgam, Radhanpur, Rajkot, Jamnagar, and Khambaliya.

A Corporate Social Responsibility Policy was issued in January 2008. Before disclosure of the ESIA for the Barmer - Salaya Pipeline Project (March 2008), a corporate level Public Consultation and Disclosure Plan (PCDP) and a corporate level Land Acquisition and Compensation Plan (LACP) were prepared, followed by more specific PCDP and LACP for each of the States affected by the Project (Rajasthan and Gujarat). In June 2008, an Environmental and Social Management Plan for the Rajasthan operations was prepared and included the relevant PCDP and LACP documents.

An Environmental Impact and Risk Assessment (EIRA) for the proposed Oil Evacuation Pipeline with Associated Facilities was prepared in January 2009 for the Salaya-Bhogat extension of the pipeline, which includes a socio-economic survey of 16 villages and a study of the impacts on the socio-economic environment. An EIA was also prepared for the proposed SPM and associated activities in the Arabian Sea off the coast of Bhogat (marine EIA).

The need for a specific study on Project's impact on fisheries and the fishermen community was outlined in the October 2010 ECMG report.

According to an agreement with IFC, a "Community Development Strategy Framework Plan" for the Midstream Project was required by June 2008. During this last mission, ECMG received a draft of a comprehensive Community Development Framework for the Mangala Development Pipeline Project.

#### *Observations:*

The CSR staff operating on the Midstream project has not been increased by two staff members as planned, but one CSR officer was moved to Khambaliya, in the Bhogat-Salaya area, as suggested in the October 2010 ECMG report. The Project should monitor whether the number of CSR officers dedicated to the Salaya - Bhogat Project is sufficient for the construction phase, given the intense engagement with stakeholders and the start of new CSR activities.

CEIL has launched a study on the Project's impact on fisheries and the fishermen community requested in the October 2010 ECMG report. ECMG revised the scope of work that appears adequate but highlighted the importance of selecting the proper expertise needed to perform the tasks, which include both social and environmental issues.

ECMG reviewed the draft of the Community Development Framework for the Mangala Development Pipeline Project prepared for CEIL by a consultant. The document is a comprehensive scoping document that synthesizes most of CEIL policies and practices and gives sound recommendations, including better practices and methodologies. CEIL should extract from the consultant work a corporate document and disclose it as CEIL Community Development Strategy. ECMG and IFC's detailed comments and suggestions to achieve this goal have been provided to CEIL in a separate document. A specific CSR Action Plan for the Salaya - Bhogat project should be prepared.

*IFC Policy and/or EIA/ESMP Action Items*

- M1.50 Provide sufficient management sponsorship and human and financial resources on an ongoing basis to achieve effective and continuous good social performances.
- M1.51 A Community Development program (CSR Action Plan) dedicated to the Salaya-Bhogat extension should be included in the Community Development Framework currently under preparation.

*Recommendations for Improvement:*

- a. The Project should verify whether the number of CSR officers dedicated to the Salaya-Bhogat project is sufficient for the construction period.

**7.2 STAKEHOLDERS ENGAGEMENT IN UPSTREAM PROJECT***Project Strategy*Public Consultation and Communication

The communication program for the Salaya - Bhogat Project is implemented within the PCDP framework for Gujarat.

In the Salaya - Bhogat Project, the interactions with the communities and the stakeholders are carried out by three different teams, with different tasks. The CSR team, dealing mainly with development programs, includes one manager, who is based in Gurgaon but travels frequently to the area, and two officers based in Jamnagar and Khambaliya. The land team, which manages the land acquisition activities, includes one CEIL land acquisition manager overseeing land acquisition consultants and cooperating with the Competent Authority's staff. The Stakeholder Relations Team (SRT) includes five people for the Rajkot-Bhogat section who coordinates with CSR, land and security teams in order to manage stakeholders relations. The SRT responsibilities are midway between communication with stakeholders (both authorities and communities) and security. The Head-SRT gives overall direction to the consultation process and guides the teams in the implementation of the PCDP.

A baseline survey of 21 villages in two *taluka* (sub-District) was carried out in the Bhogat area (Jamnagar District), collecting data at sub-District and village level on demographic composition, health, education, infrastructures and economic activities. A participatory methodology was used so that villagers themselves could convey the conditions and needs of their own area. Separate meetings with women were held where necessary.

Development Programs

Since the end of 2009, the CSR team launched a number of programs targeted at communities, land contributors, and farmers along the Barmer-Salaya (Midstream) pipeline.

The Agricultural Information Program, based on Reuters Market Light, is a SMS-based information service for farmers developed by Thomson Reuters. CEIL finances free subscriptions for land-contributing farmers. The pilot phase of this program is on-going and is planned to cover two districts and about 4,000 farmers. Later, the program will be extended across the entire pipeline corridor. The service is customized by language and type of crop and includes a feedback toll-free service. The system is also used to complement the security system along the pipeline since farmers can send alerts directly to CEIL.

The Rural Facilitation Centers (Gramin Suvidha Kendra or G.S.K), or Agri Kiosk initiative, is a private-public partnership program developed by MCX (a multi-commodity exchange market based in Mumbai) in collaboration with the Indian public postal service. The program uses the ubiquitous network of post offices to offer crop price information and other agricultural input services to farmers. CEIL has supplied the equipment and the staff salary of three such Agri-Kiosks in sub-post offices as a pilot project and will apply the lessons learned to upgrade the program to 26 kiosks, each of which will reach out to approximately 70 branch post offices (village level).

Other community programs include Health Camps, which offer free of cost diagnostic health care and medicines, with the participation of specialized doctors in the areas of pediatrics, gynecology, orthopedic,

ophthalmology and other areas; and Mobile Health Van, which includes a doctor, a pharmacist and a social worker. Furthermore, awareness on water, sanitation, and health in village schools is carried out by the Non Government Organization (NGO) named SHARP and libraries for school is implemented by ILFS. Since mid-2009, a Maternal and Child Health program, implemented by the NGO Chetna in coordination with Government funded nutrition centers, is on-going in 42 villages of the Banaskantha District (Gujarat). CSR finances health awareness communication material and sponsor special events in schools.

Wherever active community involvement is ensured, the CSR team also responds to *ad-hoc* reasonable requests from communities (micro-projects) such as de-silting of village ponds and forestation programs with a social forestry component.

In Bhogat, the first CSR activities included support to Government health camps and supply of books in schools. Launching of other programs (such as Agri Kiosk for farmers, Mobile Health Van and Science Van for schools) were scheduled to start soon after the ECMG visit.

#### *Observations:*

The Project is confronted with a significant refusal by the land owners to give access to the land for the RoU (see also Section 7.4 below). Therefore, most human resources, including CSR staff and high level managers from Gurgaon, are currently mobilized to resolve this issue and the engagement with land owners and local stakeholders is very intense. The dialogue is carried out at all levels: individual land owners, associations of land owners, local authorities, local contractors, the Competent Authority (CA) for land acquisition, Gujarati, and central government.

In the discussions with the various stakeholders, the focus is obviously the negotiation on the compensation, on which the Competent Authority has the right to make the final decision. Nevertheless, other issues are also discussed that can facilitate the negotiation and improve the relationship with local stakeholders, such as local contracts and community development activities.

In light of the current situation, other CSR activities in the area of the Project have been limited because of the opposition of land owners and the CSR team's direct engagement in the meetings with land owners. Some activities in schools and on health have been carried out, and the Project has planned to start some economic development activities for farmers at one site, to be later expanded.

Some interactions with the fishermen community close to the marine facility have been initiated. The community received visits from the marine facility contractor (Leighton) liaison staff and CEIL CSR staff. Leighton organized distribution of medicines, started a free bus service to the main village (Bhogat), and hired some of the fishermen with their boats. The community also benefits from the maintenance of the local access road.

ECMG visited the fishermen community and found that, for the moment, the fishermen have not experienced any major negative impact or nuisance because of the Project's activities. However, the settlement is very close to the marine facilities and the community is expecting some benefits in terms of infrastructure from the Project's presence (electricity and road). Moreover, the fishermen expressed their concern regarding of wake waves and potential of their nets being "trapped" by the Project's vessels. ECMG's conclusion is that the scope of the ongoing study on fisheries and local fishermen remains valid, as the Project needs a baseline to fully understand the inherent risks of its activities and also to address any potential future claims or disputes. The study will form the basis of an action plan, which includes CSR activities and adequate communication to maintain good relations with this community.

According to construction camps' management, community liaison officers are established in camps to deal with possible incidents involving local population, such as road accidents, and to receive requests from local communities. They also interact with land owners and local contractors in coordination with CEIL staff.

Given the tense situation, the ECMG understanding is that the Project is aware of the importance of continuing engagement and opportune liaison network. The ECMG recommends that all interactions and meetings are recorded. The Project's stakeholder engagement and communication strategy should be presented in the updated version of the PCDP for Gujarat. In addition, a CSR Action Plan for the Bhogat Project should be prepared in the frame of the corporate Community Development Plan.



The ECMG understands that the Project priority is resolving the current situation with the reluctant land owners and commends the moderate and multi-stakeholders approach it is implementing. However, ECMG recommends that the stakeholders who do not represent (for the moment) a threat or a problem for the Project not be neglected. These include the fishermen and the land owners who accepted to give the land (see Section 7.4 for discussion of this issue).

*IFC Policy and/or EIA/ESMP Action Items*

- M1.55 A Public Consultation and Disclosure Plan (PCDP) for the Bhogat-Salaya project should be prepared. CEIL should brief project staff and contractors on the Plan.
- M2.22 Intensify engagement and improve grievance management for those land owners that have provided the project access to land.

*Recommendations for Improvement:*

- a. CEIL and contractors' liaison staff should record all interactions and meetings with stakeholders;
- b. CEIL should present the stakeholder engagement and communication strategy in the frame of the updated version of the PCDP for Gujarat; and
- c. CEIL should prepare a CSR Action Plan for the Bhogat project.

### **7.3 LAND ACQUISITION**

*Project Strategy:*

The Land Acquisition for the Salaya - Bhogat Project is being implemented according to the LACP framework and the specific Gujarat LACP used for the Midstream pipeline project.

According to national law and the Gujarat LACP, the land needed for temporary use (e.g. installation of the pipeline) is acquired through the provisions of the Petroleum and Minerals Pipelines Act and returned to the landowners after the pipeline is buried and the RoU restored. The annual lease rate for land (10% of the land value per year) is determined by a CA appointed by the Government and crops are compensated until the pipeline construction is completed and land reinstated for arable use. Trees, crops and other encumbrances are separately evaluated and compensated. Once the pipe is buried, some restrictions on the use of the RoU, like construction of structures and planting of trees, as directed by the Act will still remain. Following the LACP, opportunity cost for not being able to fully use the land and the disruption effect will be considered by the CA while finalizing the RoU compensation.

Land needed for all pipeline permanent infrastructures, including the Bhogat terminal, has been acquired through direct negotiation with the landowners on a "willing seller-willing buyer" basis.

According to the Petroleum and Minerals Pipelines Act, complaints are logged with the CA. Logs of complaints are filed and kept by the CA and CEIL. CEIL Land Acquisition team (12 people contracted plus one CEIL manager), CA staff, CSR, SRT, and construction contractors maintain interactions with land-losers. Cellular phone numbers of the CA and of CEIL Land Acquisition staff have been distributed to land-losers.

The Project prepared a revised Rajasthan Framework LACP including annexes (Grievance Handling Mechanism, Planned Entry in RoU, Emergency Entry in RoU, Procedure to conduct panchnama, and minutes of relative disclosure workshops).

*Observations:*

At the time of ECMG visit, the Project was experiencing difficulties with the land owners: only 18% of land titles could be acquired while most of the land owners have organized a common front asking for increased compensation. As mentioned in the previous section, the Project is putting a lot of efforts and human resources in the negotiation with land owners.



A Village Committee has been set up in the village of Bhogat and meets weekly with CEIL and contractors' management. The committee is composed mainly of influential local people who are landowners and/or are interested in obtaining contracts with the Project. According to Project team, the establishment of this committee is helping to solve many issues arising between the Project and the community, particularly land owners, mainly concerning the distribution of contracts and respect by local contractors of Project standard and policies, including health and safety and labour rules. It also allows maintaining a continuous channel of communication and avoiding misunderstandings. ECMG appreciates this initiative, and encourages the Project to make efforts in order to enlarge its representative base to all affected landowners.

According to the Project, the strategy to solve the issue includes: dialogue at all levels; employment and contracts opportunities at the local level, and particularly to land owners; establishment of the Bhogat Village Committee with regular meetings; select CSR activities; improve security; negotiations with individual land owners to access crossings and start works there. The final decision on compensation is the sole jurisdiction of the CA as Government's authority. According to the Project's team, the CA will exercise the maximum flexibility to accommodate genuine issues, in the spirit of the LACP, as done in the upper part of the pipeline.

The ECMG team visited some landowners who accepted to let their land to the Project. Apparently, the engagement with these farmers and the grievance mechanism were not properly functioning, as some issues (mainly concerning irrigation pipelines, see Section 4) have not been followed through by the Project's team. Moreover, probably because of a change in staff, the farmers were not properly briefed on who to contact and how. It is important that the Project keeps a good relationship with the land owners willing to collaborate. ECMG recommends that the Project ensures that all land owners have the relevant telephone numbers (CEIL land manager, contractor, Land Acquisition team) for immediate contact. Their complaints should be adequately and quickly settled and all grievances and interactions recorded and kept not only by the CA team but also by the CEIL team. The visits of the contractor's liaison person and CEIL staff should be frequent, even in the absence of complaints, in order to deal with any nuisance as well (one of the farmers has complained because of night noise).

The ECMG team discussed with the Project's team the case of some people demanding compensation for assets considered illegal such as bore wells in Government's land to be acquired by the Project. The Project has committed to investigate each case and to sort out genuine cases consistent with IFC's Performance Standards for compensation of structures on lands with no recognizable legal rights. The Project stressed the need of establishing a fair and transparent procedure to avoid complaints.

The updated LACP for the operations in the Gujarat portion of the Project (Pipeline or Midstream project), presented by the Project is overall adequate. It includes the Salaya - Bhogat portion of the pipeline and the document annexes describe the procedures for grievance and RoU entry, including the public workshop held in the upper part of the pipeline to disclose the procedures. ECMG recommends (i) completing this document by including the number of land owners affected by temporary and permanent land acquisition in Gujarat insofar (for the Barmer - Salaya and Salaya - Bhogat sections); and (ii) revising the title since the document does not include the Upstream (Rajasthan) project.

*IFC Policy and/or EIA/ESMP Action Items*

Nil

*Recommendations for Improvement:*

- a. The Project should improve the grievance procedure as follows: ensure that all land owners have the relevant contact numbers; make frequent visits; address the complaints in a timely manner; and keep records of all grievances status; and
- b. Include the number of land owners affected by temporary and permanent land acquisition in the Salaya - Bhogat section in the revised LACP.

## 7.4 COMMUNITY HEALTH, SAFETY AND SECURITY

### *Project Strategy:*

The EHS system is expected to prevent and minimize air and water pollution, noise and risks of accidents. The Project strategy is outlined in Section 5.1.

### *Observations:*

#### Road

The issue of the narrow road from Bhatiya to Bhogat has not yet been satisfactorily addressed. As highlighted in the October 2010 ECMG report, the road is intensively used by Project's vehicles (including trucks) and appears to be potentially very dangerous, considering the driving style of most drivers.

According to CEIL management, the Project contacted the local government for the widening of the road. Though commendable, this is a long-term solution, while the issue requires serious and immediate solutions, during the construction period. Speed-meters are reportedly used together with a sanction system for drivers who speed up. However, more short-term mitigation measures are urgently to be developed (see Section 5.1).

#### Public Health

No community health and safety campaign has been conducted insofar by the Project to mitigate construction works' impacts. In particular, the influx of workers from outside of the area demands the launch of a campaign on Sexually Transmitted Diseases (STD) and AIDS. The Project should establish the opportune link with the National AIDS Control Program at District level, and organize a campaign addressed to workers and local population.

#### *IFC Policy and/or EIA/ESMP Action Items*

- M1.57 Mitigate the community exposure to risks from transportation of Project goods on public roads.
- M1.58 Develop public awareness campaign on HS issues.

### *Recommendations for Improvement:*

- a. The Project should make the opportune link with the National AIDS Control Program at District level and organize an awareness campaign on STD addressed to workers and local population.

## 7.5 LABOR AND WORKING CONDITIONS

### *Project Strategy:*

Cairn has a human resources policy, which is in compliance with Indian law, core International Labor Organization conventions, and IFC PS2. Employment conditions are communicated to employees verbally during recruitment. Wages and other conditions are posted on site in local languages.

Construction work is awarded to several contractors who have an agreement with CEIL to recruit 70 to 80% of the local workforce for unskilled tasks if available, and to make best efforts to source skilled workers directly from Gujarat. Among local candidates, members of land-losers families are prioritized.

CEIL is developing a number of initiatives to ensure that its operations offer the maximum benefit to the local population in terms of contracts and employment. A Local Content Policy has been issued in August 2010. The policy mandates the engagement of minimum 60% locals (i.e. from local Districts), when available, with priority to land-losers and long term residents. CEIL has defined a monthly report to track local employment commitment and actual engagement and imposed a financial deterrent (5% of contract value withholding of bank guarantee or final payment) to ensure compliance with the original commitment and that reporting requirements are fulfilled. To guarantee that all upcoming contracts comply with the policy, the Project has introduced the local content policy to contractors at the pre-bid phase.

Wages for unskilled workers are calculated on the basis of national and State minimum wages, which are modified by central authorities periodically. Wages are given each month in the presence of a CEIL administrative personnel.

Workers who come to the Project sites from distant locations are accommodated either in labor camps or in rented houses in the villages around the Project areas. The contractors have also to comply with Cairn guidelines for workers' accommodation.

*Observations:*

At the time of the ECMG visit, around 1,700 workers in total were reportedly mobilized for the Project: 517 by L&T, which is working on the pipeline; 592 by various contractors, including PLL and IOTL, working at the Bhogat terminal; and 600 by Leighton and DISC at marine terminal (onshore and offshore). Approximately 180 L&T workers live in the Khambaliya camp while, according to L&T personnel, the rest of the workers come from neighboring villages and live in their own houses. In Bhogat, 180 workers live in PLL labor camp (430 are expected at full capacity in March-April 2011) while the IOTL labor camp, to accommodate about 300 workers, is under construction. At the marine facilities, Leighton and DISC (offshore contractor) labor camps accommodate around 240 workers while about 55 unskilled workers come from the surrounding villages.

Three labor camps are currently operational and were visited by the ECMG team. The camps are not yet at full capacity, as more workers are expected. Leighton and DISC camps are of high standard. However, the ECMG recommends establishing a more formal grievance procedure for workers and a better system to record complaints.

PLL labor camp is overall adequate but needs improvements in some areas: the gravel outdoor area should be paved; the health center ward toilet is not provided with a water sink; and the toilets system should be equipped with siphons to control odors. Workers' grievance committee and grievances' records are properly established at the camp.

As recommended in the previous section, STD awareness program for workers should be launched in collaboration with Government schemes (for ex., National AIDS Control Program).

Of note is that in the frame of the Bhogat Village Committee meetings, CEIL management takes the opportunity of stressing the importance for the local contractors to follow CEIL policies and guidelines in term of health and safety and labor regulations.

*IFC Policy and/or EIA/ESMP Action Items*

Nil

*Recommendations for Improvement:*

- a. PLL should improve the labor camp on the following: more adequate floor; a water sink in the ward of the health center and check the toilet system to control odors;
- b. Leighton and DISC should formalize the workers' grievance committee and record meetings and complaints;
- c. The Project should launch STD and AIDS awareness campaign for workers; and
- d. The Project should keep records of all local workers.

**ANNEX A**

**TRIP SUMMARY- 2<sup>ND</sup> MISSION BY D'APPOLONIA FOR THE  
SALAYA – BHOGAT CRUDE OIL PIPELINE EXTENSION PROJECT,  
JANUARY 2011**

For the second mission, three members for the environmental team and one for the social team visited the Salaya - Bhogat crude oil pipeline extension project, and associated facilities. The Project is currently in the early construction phase.

**Salaya-Bhogat Project:**

January 9 – Mumbai. The team arrives in Mumbai.

January 10 – Jamnagar. In the morning, the team traveled to Jamnagar and attended a kick-off meeting. In the afternoon CEIL presented the current status of the Salaya-Bhogat Project. The social team met with CSR team.

January 11 – Jamnagar. The EHS team visited the Salaya-Bhogat Pipeline. In particular, the team visited Road Crossings 178, 180 and 183, Sinhan River Crossing, Ghi River crossing, Pipeline corridor at KP 16 and 38 and , AGIs 34 and 35, Vermin-composting facility near Khambalyia, Municipal Dump of Khambalyia Town, Khambalyia Base Camp, two pipe yards near Khambalyia Camp.

The social team met with RoU land owners of Sodasla village, then held a meeting with the CSR, SRT and land team. In the afternoon, the social team visited the Khambalyia accommodation camp and health center and met the L&T site manager and Industrial Relations officer. Later the social team met RoU land owners in Bhatel.

January 12 – Jamnagar. The EHS team visited the Bhogat Terminal. In particular, the team visited: AGI 36 and road crossing 191, Bhogat Terminal (PLL, IOTL, DG Infra working areas), Cairn Staff Camp, PLL labor camp, IOTL camp, Harion Batching Plant. In the morning the social team met a land owner who refused to give access to his land in Bhogat and had a meeting with the General Manager for Land Acquisition at Bhogat camp. In the afternoon the social team visited the PL labor camp, met the PL camp manager and Industrial Relations officer and visited a school close to the Bhogat camp.

January 13 – Jamnagar. The EHS team visited the Marine off-shore works. In particular the team visited: the Leighton working site, Leighton camp, DISC camp, off-shore vessels, landfall point. In the morning, the social team visited the Marine labour camps managed by Leighton and SINC and met with Leighton Human Resources and Community Liaison officers and SINC camp manager. In the afternoon, the social team visited the fishermen settlement near the site. An informal close-out meeting was held at the marine facility.

January 14 – Jamnagar. The ECMG team held an informal close-out meeting with the Salaya-Bhogat team.

**Cairn Offices in Gurgaon:**

January 19 – Gurgaon: The EHS and Social team reviewed available documents collected in the field, held meeting with key CEIL EHS management personnel, and prepared the close out meeting

January 20 – Gurgaon: In the afternoon, a close out presentation was held by the ECMG at Cairn offices with the participation of Cairn management and high level staff.

January 21 – Gurgaon: The ECMG team departed from New Delhi.