Annual Environmental and Social Compliance Audit Report – Lakdhanavi Bangla Power Limited

Project Number: 42180-013
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BAN: Public-Private Infrastructure Development Facility (PPIDF)

Prepared by the Infrastructure Development Company Limited (IDCOL) for the People's Republic of Bangladesh and the Asian Development Bank

CURRENCY EQUIVALENTS
(as of 31 March 2016)

Currency unit	–	taka (Tk)
Tk1.00	=	$0.0127591707
$1.00	=	Tk78.375

NOTES

(i) The fiscal year (FY) of the Government of Bangladesh ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2016 ends on June 2016.

(ii) In this report, "$" refers to US dollars.

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Loan No. 3045-BAN-OCR

Public-Private Infrastructure Development Facility-II

ANNUAL ENVIRONMENTAL AND SOCIAL COMPLIANCE AUDIT REPORT

52 MW Power Plant at Jangalia, Comilla

Lakdhanavi Bangla Power Limited

March, 2016

Prepared by

INFRASTRUCTURE DEVELOPMENT COMPANY LIMITED

DHAKA, BANGLADESH

www.idcol.org

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List of Abbreviations

ADB	Asian Development Bank
BPDB	Bangladesh Power Development Board
BPC	Bangladesh Petroleum Corporation
DOE	Department of Environment
ECR	Environment Conservation Rules
EHS	Environment and Health Safety
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
FGD	Focus Group Discussion
HRSG	Heat Recovery Steam Generator
HSD	High Sulfur Diesel
IDCOL	Infrastructure Development Company Limited
PPE	Personal Protective Equipment
LBPL	Lakdhanavi Bangla Power Limited
SPS	Safeguards Policy Statement

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EXECUTIVE SUMMARY

Background

Lakdhanavi Bangla Power Limited (LBPL) has been awarded to develop and operate an independent power plant project through a competitive bidding process. The power plant will be a dual fuel internal combustion based technology with capacity of about 52 MW. The project site is located at Ward no. 22 of Comilla City Corporation under Jangalia Mouza[1]. For financial assistance LBPL has approached to a number of financial institutions including Infrastructure Development Company Limited (IDCOL), Bangladesh. Considering the importance of the Project to meet the national power demand, IDCOL has provided a term loan facility of USD 15 million in favour of the Project, which has been allocated from as ordinary capital resources (OCR) for large infrastructure projects under Public-Private Infrastructure Development Facility (PPIDF)-II of Asian Development Bank (ADB).

According to the Environment Conservation Rules, 1997 of Bangladesh Government, industrial projects have been categorized into four classes—Green, Orange A, Orange B and Red. Considering the magnitude of environmental impacts, power plant projects have been classified as Red Category projects. So, LBPL project has fallen into **Red Category**. According to the ADB guidelines, small power plant projects like the 52 MW project of LBPL is likely to be fallen into **B Category**, as the environmental impacts of these type of projects are mostly project site specific2. As the project site is leased land of Bangladesh Power Development Board, there is no issue of land acquisition In addition. In addition, the issue of adversely affecting indigenous settlement is not applicable for this project. So, in regard of IP and IR aspects, the project is of **C Category**. According to the environmental and social safeguards framework (ESSF) of IDCOL, it is a **Moderate Risk Project**.

To assess the actual implementation of environmental management plan and social safeguards, respective IDCOL official visited the project site during construction and operation phases. According to the ESIA, there is requirement of IDCOL to submit annual Environmental and Social Compliance Audit Report of this project to ADB. Accordingly, this audit report has been submitted to ADB by IDCOL.

Audit overview and findings

The respective IDCOL official has visited the project during the audit period (March 2015 to February 2016). He has also reviewed the available relevant documents and clearances. In addition, there was consultation with representatives of adjacent neighborhood. While audit, it has been observed that LBPL is satisfactorily responsive about complying environmental management plan and social safeguards including grievance redress and continuous public consultation.

[1] **Mouza** is a type of administrative district, corresponding to a specific land area within which there may be one or more settlements.

[2]Based on the information as has been found in www.adb.org/documents/guidelines/environmental_assessment/environmental_categorization.pdf).

1.0 INTRODUCTION

1.1 PROJECT PROPONENT

The proposed Project involves the development and operation of a 52.2 MW Dual Fuel (HFO/Gas) based power plant at Jangalia, Comilla by Lakdhanavi Bangla Power Limited (LBPL). The generated electricity of the Project will be sold to Bangladesh Power Development Board (BPDB) under a 15-year Power Purchase Agreement. The following table shows key project information:

Table 1.1: Key project information

Project Company	Lakdhanavi Bangla Power Limited
Date of Incorporation	11 December 2011
Registration Number	C-97594/11
Registered Address	No: 37/A, (9th Floor), Kakrail, VIP Road, Dhaka-1000, Bangladesh
Type of Business	Power Generation
Project Location	Jangalia, Comilla
Capacity	52.2 MW
Fuel Type	HFO/Natural Gas
GenSet Supplier	Wartsila Finland, OY
Engine model	6 x 20V32 GD
Off-taker	BPDB
Project Tenure	15 Years
Project Type	Dual Fuel power plant to be developed on BOO basis as an Independent Power Producer (IPP)
Land Area	3 acres

1.2 AREA AND LOCATION OF PROJECT SITE

It is said that the project site is located at 22 no. Ward of Comilla City Corporation (CCC) with the geographical location 91°25′73″ E longitude and 23°25′27″ N latitude. Locally the project area is known as Jangalia. The site is adjacent to the sub-station of PGCB. It is about 3 km from the CCC. The site is approximately 145 km from Chittagong City and approximately 105 km from capital Dhaka. The area of project site is 3 acres. The required natural gas and furnace iil will be served by Bakhgrabad gas field and Bangladesh Petroleum Corporation (BPC) respectively. The gas field is about 20 km away from the site. Railway line, 100m wide pacca road, commercial establishment and some settlements are on the eastern side of the site, whereas sub-station of PGCB is on the southern side. Agricultural land, wetland and some settlements have been observed both in both northern and western sides.

Figure 1.1: Location of the project site in respect of Comilla Sadar Upazila

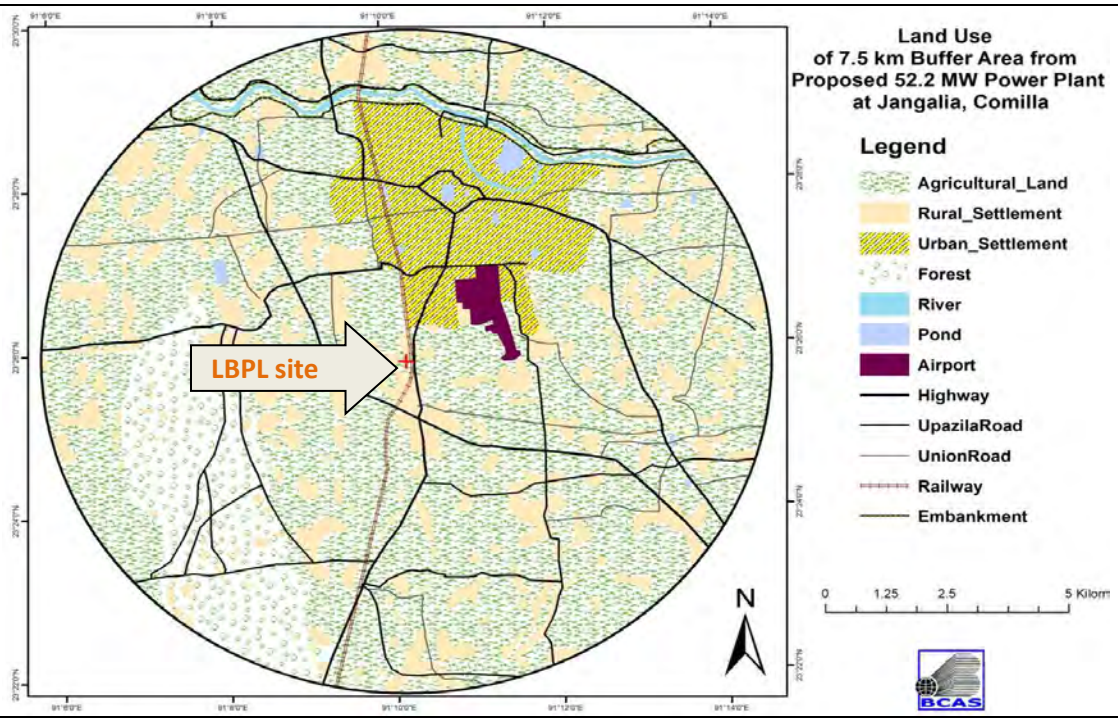


Figure 1.2: Current landuse pattern of the project area

1.3 THE PROJECT IN BRIEF

The power plant has can operate by either HFO or natural gas. There are six (6) numbers of Wartsila made 20V32GD engines, each coupled with ABB made AMG 1210M (or equivalent) of 11.155MVA (8.9 MW) generators. Electrical power is generated at 11 kV. 6 internal combustion engines with a combined gross capacity of average Engine generator units are connected to 11kV Bus and is fed to a 70MVA 132/11kV generator step up transformer. The engine is the four strokes, lean burn, pre chamber, spark ignited, port injected, trunk piston, turbocharged and intercooled design. The engine has a fully microprocessor based control system.

The capacity of the plant is 52 MW. Currently due to the unavailability of gas, the plant is operated by HFO. Radiator cooling system has been installed and therefore there is no need to extract cooling water from surface water. The stack height has been determined as 42 meter through US EPA approved ISC3P Model. The detailed technical specifications of the machinery and equipment, and some major features are depicted in the following Table 1.2 and 1.3 respectively.

Table 1.2: List of machineries with country of origin and model

Component	Manufacturer/ Country	Model / type
Reciprocating Engine	WARTSILA / FINLAND	W20V32GD
Control system	WARTSILA / FINLAND	WOIS
Main Step-up Transformer	4 JSHP / INDIA (or Equivalent)	Oil Immersed ONAF
Station Transformer	LTL / Sri Lanka	Oil Immersed ONAN
HV Switchgear	ABB / India (or Equivalent)	Outdoor
Medium Voltage Switchgear	ABB / Czech republic (or Equivalent)	Uni Gear ZS1
Low Voltage Switchgear	KIK8 / Sri Lanka (or Equivalent)	Indoor
Rectifiers	Reputed supplier from China / India	Indoor
Battery system	Reputed supplier from China/India	Lead acid
Power Cables	Reputed supplier from Srilanka/China	XLPE/PVC insulated
Air compressors	Dalgakiran/Turkey (for equivalent)	Reciprocating & Screw Type
Fuel Treatment Plant	Westphalia/Germany (or Equivalent)	Centrifugal Separators
EOT Cranes	DEMAG/Germany (or equivalent)	Centrifugal Separators
Aux & Ex gas Boiler	Aalborg/Finland	Overhead Crane(Electric)

Table 1.3: Technical specification of some major parameters

Parameter	Technical specification
Stack Height	42 meter
Effective Stack Height	30 meter
Design Stack diameter	1.1m each
Fuel consumption per unit power production	8850.58 BTU/KWH
Mass of pollutant emission per unit power production	47.37 g/KWH
Mass of pollutant emission per unit time g/sec	NOx: 260grams/second, SOx 401.92 grams/second and, CO: 18.40 grams/second
Capacity of ventilation fan	222 m^3/s (air)
Height of air exhaust	13 m
Fuel storage Tank	There will be two HFO storage tanks with capacity of 25000 m^3 each. In addition, there will be one HFO buffer tank and HFO day tank with capacity of 55 and 100 m^3 respectively.
Fuel Treatment Plant	Fuel treatment system consists of 2 centrifuge type separators with capacity 15,400 Litres/hour each designed for treatment of HFO with maximum density 1010 kg/m3 (at 15°C) and Heavier solids content than oil up to max. 4%.

Bangladesh Petroleum Corporation (BPC) supplies HFO in the power plant with the technical specification as mentioned in Table 1.4.

Table 1.4: Specification of HFO

Tests	Method	Limit
Density a 15^{0}C, kg/L	ASTM D 1298	0.925
Flash point PM (cc), ^{0}C	ASTM D 93	Min. 66
Sediment, % mass	ASTM D 473	Max. 0.25
Water Content, % vol	ASTM D 95	Max. 0.5
Kinematic viscosity at 50^{0}C, cSt	ASTM D 445	Min. 45 and Max. 180
Pour point, ^{0}C	ASTM D 97	Max. 33
Sulphur Content, % mass	ASTM D 1552	Max. 3.5
Carbon Residue (Conradson), % mass	ASTM D 189	Max. 10
Calorific value, Gross, BTU/lb	ASTM D 240	Max. 18424

The project has started commercial operation on 28 December 2014.

1.4 OBJECTIVES OF THE ENVIRONMENTAL AND SOCIAL COMPLIANCE AUDIT

The audit has been conducted with the aim to assess the project's compliance with-

(i) Environment Conservation Rules (ECR)1997 of GOB;

(ii) Environmental and social safeguards according to the Environmental and Social Safeguards Framework (ESSF) of IDCOL;

(iii) Environmental and social safeguards according the Safeguards Policy Statement (SPS), 2009 and other relevant standards and guidelines of the ADB;

(iv) Proposed mitigation measures and monitoring procedures according to the environmental management plan (EMP), resettlement action plan (RAP) as are applicable.

1.5 METHODOLOGY

The audit includes the following steps:

(i) Visit the project site and consult with stakeholders especially local people;

(ii) Review the environmental and social safeguards documents including environmental impact assessment report, EMP and Resettlement Action Plan, Stakeholder Engagement Plan (as are relevant) ;

(iii) Assess actual implementation of the guidelines/action plan of the safeguard related documents.

1.6 REPORTING PERIOD

The reporting period of this Environmental and Social Compliance Audit Report is March 2015 to February 2016.

1.7 CHANGES IN PROJECT SCOPE

There is no change in the technology and operational process as have been declared by the respective government and accepted by LBPL. So, it can be said that the EMP of ADB approved Initial Environmental Examination (IEE) is fully applicable during the reporting period as well.

1.8 ENVIRONMENTAL MONITORING

The parameter, frequency and methodology of environmental monitoring are in accordance with EMP of ADB approved IEE, as has been detailed in chapter 3 of this audit report.

2.0 REGULATORY REQUIREMENTS

2.1 ENVIRONMENT CONSERVATION RULES, 1997 OF BANGLADESH

The project has to comply with the Environment Conservation Rules (ECR), 1997. According to the categorization of ECR, 1997, the project has been categorised as **Red**[3] meaning that it has significant adverse environmental impacts, which are to be mitigated with proper mitigation measures.

2.2 ENVIRONMENTAL AND SOCIAL COMPLIANCE RELATED STANDARDS AND GUIDELINES OF ASIAN DEVELOPMENT BANK

The project has to comply with the Safeguards Policy Statement (SPS), 2009 and Operational Manual F1 (2010). The IEE of the Project has been approved by the ADB. Considering the adversity of environmental impacts, it has been categorized as **B**. As there is no record of any indigenous habitat in Comilla City Corporation, the project has been categorised as **C** in respect of Indigenous People (IP). In addition, as the required land for the project site has been leased from BPDB, there is no issue of involuntary resettlement (IR). So, from IR point of view, the project has been categorised as **C.**

2.3 ENVIRONMENTAL AND SOCIAL SAFEGUARDS FRAMEWORK OF IDCOL

IDCOL has adopted an Environmental and Social Safeguards Framework (ESSF) in 2011, which is to be complied with all infrastructure projects as are funded IDCOL. According to the environmental categorization of ESSF (Annex-5), the project has been categorised as **Moderate Risk**[4] project requiring significant compliance safeguards including comprehensive environmental impact assessment and regular monitoring. But from Social categorization, the project has been categorised as **Low Risk** both for IP and IR perspectives. So, there is no requirement of adopting indigenous peoples development framework (IPDF), indigenous peoples development plan (IPDP), resettlement framework (RF) and resettlement plan (RP).

[3] Schedule-1 of ECR (project no. 6 of Red category), 1997

[4] The project risk screening checklist of ESSF, IDCOL is provided in Annex-3

3.0 IMPLEMENTATION OF ENVIRONMENTAL SAFEGUARDS

3.1 COMPLIANCE WITH ENVIRONMENT CONSERVATION RULES, 1997

LBPL has to comply with the requirement of ECR, 1997 of the DOE. In the following Table 3.1, the compliance status of LBPL, in regard of major milestones of ECR, 1997 is depicted. The Environmental Clearance Certificate is provided in Annex-1.

Table 3.1: Compliance with the requirement of ECR, 1997

Basic Requirement	Compliance Status
Award Site Clearance Certificate	Fully complied
Award EIA approval	Fully complied
Award Environmental Clearance Certificate	Fully complied

3.2 COMPLIANCE WITH ENVIRONMENTAL MANAGEMENT PLAN

a. Institutional arrangement

For ensuring proper safeguards compliance, LBPL has formed an EHS Team which is headed by Rakesh Chandra Ghosh, Plant Manager. He is Chairman of EHS Team, who is supported by some competent members. The detail of EHS Team composition is mentioned in Table 3.2.

Table 3.2: The composition of EHS Team

Name	Designation	Position in EHS Team
Rakesh Chandra Ghosh	Plant Manager	Chairman
Mizanur Rahman	Mechanical engineer	Member
Ishtiak Karim	Shift-in-charge	Member
Delwar Hossain	Shift-in-charge	Member
Sohel Pervez	Shift-in-charge	Member
Azad Poddar	Shift-in-charge	Member
Salah Uddin	Engineer	Member
Rustom Ali	Engineer	Member

b. Compliance status

In the IEE, a number of activities having potential adverse environmental impacts and occupational health safety aspects during operation phase have been identified. In the following Table 3.3, suitable mitigation measures to address these impacts according to the EMP and actual responses by LBPL has been discussed.

Table 3.3: Response of LBPLon project activities and mitigation measures during operation phase

Project Activity	Potential Impacts	Mitigation Measures	Actual Implementation	Compliance status
Air emission, noise generation	Emission from the power plant	▪ Install stack emission monitoring equipment for major pollutants; ▪ Plant indigenous trees around the Project site	Trees have been planted and quarterly air quality is monitored	Fully complied
	Generation of noise from generators and associated sub-stations , which could exceed 70 dB(A) at site boundary	▪ Locate facility 70–100 m from nearest receptor; ▪ Use walls, fencing, and/or greenbelt to provide partial noise barrier ▪ Provision of critical silencers or generators (if need arises) ▪ Use of ear-muffs and ear-plugs by plant personnel working in the generator and turbine facilities of the plant	Through using new generators and ensuring proper application of walls, fencing and green belt, noise level is within the acceptable limit.	Fully complied
	Suspended particulate matter (SPM) and $PM_{2.5}$, $PM_{10,}$ NOx, CO, VOC generation from the engine, which can adversely affect health	▪ Good combustion control, required stack height should also be maintained properly	42m high stack has been introduced, which has sufficiently addressed the air emission including SPM and others.	Fully complied
Occupational Health and safety	Solid wastes	▪ Apply the waste hierarchy and reduce, reuse or recycle wastes wherever possible; ▪ Segregate wastes by types and provide appropriate waste containers for the storage of all waste streams;	Proper waste management has been observed, which includes segregation of wastes at source.	Fully complied
	Hazardous Materials Management	▪ Refueling, washing and maintenance of plant and vehicles will be prohibited in the vicinity of water bodies; ▪ Spill kits will be available to contain any accidental release of hazardous materials; ▪ All hazardous materials will be provided with secondary containment.	Spill kits were found to wash with due attention.	Fully complied

Project Activity	Potential Impacts	Mitigation Measures	Actual Implementation	Compliance status
	Application of PPE	▪ Ensure satisfactory PPE for workers, officials and visitors	There are satisfactory use of PPE	Fully complied
Disaster Management, Fires, explosion and other accidents	Emergency Response (i.e. Fire, Earthquake, Flood etc.)	▪ Use of personal protective equipments during operation and maintenance. ▪ Prepare and implement safety and emergency manual. ▪ Regular inspection of lines for faults prone to accidents. ▪ Provision of fire protection equipments. ▪ Provision of Lightening arrestors	There are application of different types of fire extinguishers, fire hydrant and regular training arrangement	Fully complied
Domestic wastewater, sewage and sanitary waste	BOD, fecal coliform contamination in groundwater and surface water	▪ Need to provide septic tank with soak pit for treatment of sewage. ▪ Provision of an appropriate number of toilets and hand-washing points. ▪ Provision of on-site treatment of sanitary wastes. ▪ Training on sanitation practices.	There is adequate number of toilets with septic tank facility.	Fully complied
Wastes oil from Plant (scrap metal, waste, lube oils, spill oil etc)	Potential soil and groundwater contamination	▪ Secure on-site storage, waste sell to the DOE authorized vendor for discharge in a safe place.	The waste lube oil and spill oil are sold to DOE authorized vendor.	Fully complied
Public Relations & Stakeholder Engagement	Emergence of grievance	▪ Conduct proactive public relations (PR) exercises consisting of news/information dissemination to increase understanding of the project.	LBPL communicates with society occasionally	Partially complied

c. Environmental monitoring

I. Technical approach of environmental monitoring

In the EMP of the ESIA, environmental monitoring has been required during operation phase. The air, water and noise quality monitoring schedule are depicted in Table 3.4.

Table 3.4: Monitoring parameters and frequency of monitoring during operation phase

Env. aspect	Monitoring parameter	Frequency
Ambient Air Quality	SPM, PM10, PM 2.5, SOx, NOx and CO	Quarterly (routine) analysis
Surface water	pH, Temperature, DO, BOD, COD, TDS,TSS, Oil and grease	Bi-annual basis in each year (pre-monsoon and post-monsoon)
Surface water	pH, Temperature, DO, BOD, COD, TDS,TSS, Oil and grease	Bi-annual basis in each year (pre-monsoon and post-monsoon)
Noise	Hourly basis for 24 hours during trial run	Quarterly (routine) analysis

Table 3.5: Ambient air quality at project site in 15 September 2015

Parameter	Concentration (µg/m^3)	DOE standard (µg/m^3)
SPM	79	200
SO_2	27	365
NOx	39	100

Source: LBPL

Table 3.6: Surface water quality near site in 6 September 2015

Parameter	Test Result	DOE Standard
pH	5.30 at 25°C	6-9
Temperature	23°C	40°C (Summer) and 45°C (Winter)
DO	6.8mg/l	4.5-8mg/l
BOD	3.0 mg/l	100 mg/l
COD	8.0 mg/l	400 mg/l
TDS	30.0 mg/l	2100 mg/l
Oil and grease	Not detected	10 mg/l

Source: LBPL

Table 3.7: Ground water quality near project site on 15 September 2015

Parameter	Test Result	DOE Standard
pH	7.6	6.5-8.5
Temperature	23°C	40°C (Summer) and 45°C (Winter)
DO	4.2mg/l	4.5-8mg/l
BOD	Not detected	Below 100 mg/l
COD	Not detected	Below 400 mg/l
TDS	1214 mg/l	Below 2100 mg/l
Oil and grease	Not detected	Below 10 mg/l

Source: LBPL

Table 3.8: Ambient noise level at project site on 15 September 2015

Monitoring point	Day (6.00 am to 9.00 pm)	Night (9.00 pm to 6.00 am)
Near generator room	73.5	69.0
Near fuel storage tank	72.7	67.5
Near assembling area	73.4	68.5
Near entrance	72.6	67.0

Source: LBPL

II. Result of environmental monitoring

During operation phase, the ambient air and noise quality have been found to comply with the acceptable limit of DOE standard.

III. Disclosure of environmental monitoring

As disclosure of environmental monitoring, LBPL has kept the copy of monitoring result available at project site. So, any stakeholder feeling interested may easily access these monitoring report.

IV. Monitoring adjustment measure

Based on the result of air, water and noise monitoring, it can be concluded that that there is no requirement of adjustment measure.

3.3 COMPLIANCE WITH SAFEGUARDS POLICY STATEMENT, 2009 OF ADB

It is already said that the LBPL project has to comply with the requirement of SPS, 2009 of ADB. Accordingly, the compliance status of this project in regard of major EHS requirement are mentioned in Table 3.9.

Table 3.9: Compliance with important EHS aspects during operation phase

ADB Requirements	Issue and Description of Observation	Status of compliance
Environment Assessment requirements for various financing modalities	LBPL has adopted a number of guidelines in relevant to E&S safeguards, to ensure the full compliance of the respective statutory and institutional requirements.	Fully complied
Occupational and Community Health and safety	LBPL has ensured the satisfactory application of PPE.	Fully complied
	There is satisfactory evidence of fire drill.	Fully complied
Biodiversity conservation and sustainable natural resource management	The activities in relevant to operation phase seems to have scope to adversely affect the biodiversity and natural resource management in the project area to a greater extent. But it is believed that if LBPL shows the similar type of commitment in regard of E&S compliance, there is no risk of any undesired situation.	Fully complied
Pollution prevention and abatement	LBPL has conducted air, water and noise quality monitoring during operation phase.	Fully complied
Physical Cultural resources	Due to the unavailability of physical cultural resources within the range of close distance, the issue of adversely affecting the physical cultural property seems not to be relevant with the project.	Fully complied

4.0 IMPLEMENTATION OF SOCIAL SAFEGUARDS

4.1 IMPACT ON RESETTLEMENT OF THE PROJECT AFFECTED PEOPLE AND LIVELIHOOD

It is already said that the project site has been leased from BPDB. BPDB did not allow developing any settlement in this area. In addition, it strictly restricted to use the site for any type of economic activity including agriculture by any third party. So, there is no issue of involuntary resettlement (IR).

4.2 INSTITUTIONAL ARRANGEMENT AND GRIEVANCE REDRESS MECHANISM

The EHS Team has been empowered with the responsibility of complying with social safeguards. A grievance readdress procedure has been developed for taking into account the grievances due to the projects intervention, raised by various stakeholder and local neighbours. At corporate level, Mr. Kamal Nisantha takes care of the grievances. While audit the plant by respective IDCOL official, a Grievance Log Book has been found at main entrance, which seems to be easily accessible to the adjacent people and the project's stakeholders for lodging their comments, suggestions or complaints. LBPL is committed to resolve of any grievance within 15 days of receiving the grievance. However, based on the discussion with villagers, it has been assumed that there is no issue of grievances. Because the workers coming from the local community are given priority to work in the project.

4.3 IMPACT ON INDIGENOUS PEOPLE

Based on the primary observation during site visit and secondary sources including BBS[5] Census 2011, no habitat of any indigenous community has been reported at Comilla City. So, the project has been categorized as **C** for Indigenous Peoples (IP) safeguards concluding that there is no issue about adversely affecting IP neither in construction phase nor in operation phase. However, LBPL has conveyed that they are gender and caste neutral. So, any qualified person coming from the indigenous community will be equally treated during the recruitment process, and will be given the same benefits as like as other personnel.

4.4 CHILD LABOUR

The Bangladesh Labour Act 2006 (Act XLII of 2006) also defines the "child" and the "adolescent" on the basis of age. As per section 2(8) of the Act, a person who has attained the age of 14 but below the age of 18 is considered to be an „adolescent" and as per section 2(63), a person not attaining the age of 14 is defined as a "child". According to The National Child Labour Elimination Policy 2010, following rights are to be complied with, in regard of addressing child labour Issue:

[5] BBS stands for Bangladesh Bureau of Statistics

- Employing children according to the age determined by the Acts and not to employ children below 14 years as a regular employee;
- Ensuring the children at domestic work not to perform any hazardous work and providing them with proper food and accommodation, education, recreation since they work full time; and
- Refraining child workers from physical, mental, sexual persecution and abuse.

LBPL has been found to be careful about the child labour issue. So, no child has been found to be engaged in the project activities.

4.5 PUBLIC CONSULTATION AND DISCLOSURE OF INFORMATION

I. Public Consultation

As part of environmental and social compliance audit, on 11 February 2016, IDCOL official consulted with some local respondents comprising of various age group and professions. The list of respondents and photograph of consultation have been provided in Annex18 and 19.

II. Major findings

The major findings of public consultation are as follows:

- People are in general aware about the project and they are supportive to the project due to importance of power national development.
- The crop production has been significantly declined at crop field locating near the power plant. The villagers are not sure whether there is any direct relationship between the adverse impact due to power plant and production of crops.
- There is considerable period of load shedding

III. Response from LBPL

Regarding load shedding, LBPL has nothing to respond because it is matter of government decision about load shedding and power transmission and distribution management. Although, LBPL officials has in general opined that there is no direct relationship about crop production and plant operation, they will discuss with villagers in a more comprehensive manner and try to emphasize.

IV. Disclosure

While audit, no record of grievances was being observed neither in the Grievance Log Book. In responding the issue of disclosure, LBPL has informed that they are adequately responsive to any stakeholders requesting to disclose any environmental, and social safeguards related document, information and monitoring result.

5.0 CORRECTIVE ACTION PLAN

5.1 CORRECTIVE ACTION PLAN IN REGARD OF ENVIRONMENTAL AND SOCIAL SAFEGUARDS

LBPL has been found to be adequately responsive on environmental and social safeguards. They have duly monitored the air, water and noise quality according to the requirement of EMP. The monitoring results have been found to be within the acceptable limit requiring no corrective measures.

Although there is no issue of involuntary resettlement and adversely affecting livelihood; and indigenous peoples issue, LBPL could emphasize on regular consultation with local community.

So, it is felt that LBPL does not require any corrective measure as there is no significant observation of non-compliance in regard of E&S safeguards.

6.0 CONCLUSION

Based on the findings of environmental and social compliance audit, it can be concluded that LBPL is satisfactorily responsive in regard of complying with environmental and social safeguards during construction phase as well as operation phase. And there is no requirement of corrective action plan.

Annex 01: Environmental Clearance by the DOE

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার

নম্বর - ২২

পরিবেশ অধিদপ্তর, কুমিল্লা জেলা কার্যালয়

প্লট-১, ব্লক-জি, সেক্টর-২, হাউজিং এস্টেট, কুমিল্লা।

comilla@doe-bd-org

স্মারক নম্বরঃ পঅ/কুজেকা/ছাড়পত্র-১২১৪/২০১৩/ ২২

তারিখঃ ২৭/১০/১৪২১ বঙ্গাব্দ
২১/০২/২০১৫ খ্রিষ্টাব্দ

বিষয়ঃ Lakdhanavi Bangla Power Limited **নামক ৫২.২ মেঃওঃ বিদ্যুৎ উৎপাদন কেন্দ্রের অনুকূলে পরিবেশগত ছাড়পত্র প্রদান।**

পরিবেশ অধিদপ্তর, সদর দপ্তর, ঢাকার ০৩/০২/২০১৫ তারিখের পরিবেশগত ছাড়পত্র বিষয়ক কমিটির ৩৮২ তম সভার কার্যবিবরণীর ক- ০৬ নং ক্রমিকের সিদ্ধান্ত মোতাবেক পরিবেশ সংরক্ষণ বিধিমালা, ১৯৯৭ অনুযায়ী "লাল" শ্রেণীভুক্ত বিবেচনায় সাং-দৈয়ারা, ডাক-আহম্মদ নগর, থানা-সদর দক্ষিণ, জেলাঃ-কুমিল্লাস্থ-এ অবস্থিত "Lakdhanavi Bangla Power Limited" নামক ৫২.২ মেঃওঃ বিদ্যুৎ উৎপাদন কেন্দ্রের অনুকূলে নিম্নবর্ণিত শর্তে পরিবেশগত ছাড়পত্র প্রদান করা হলো।

শর্তাবলী ঃ

১. বিদ্যুৎ উৎপাদন কেন্দ্রের কর্মকান্ড দ্বারা কোন ভাবেই পরিবেশ (মাটি, পানি, বায়ু ও শব্দ) দূষণ করা যাবে না।

২. এ ছাড়পত্র ৫২.২ মেগাওয়াট বিদ্যুৎ উৎপাদনের জন্য প্রযোজ্য। প্রকল্পের উৎপাদন বৃদ্ধি, জায়গা সম্প্রসারণ, উৎপাদন প্রক্রিয়া বা তৎসংশিষ্ট কোন প্রকার পরিবর্তনের জন্য পরিবেশ অধিদপ্তরের পূর্বানুমতি/ছাড়পত্রের প্রয়োজন হবে।

৩. বিদ্যুৎ কেন্দ্র হতে গ্যাসীয় পদার্থের নিঃসরণ (SOx, NOx, CO ইত্যাদি) এবং বস্তুকণার (Particulate Matters) নির্গমন পরিবেশ সংরক্ষণ বিধিমালা, ১৯৯৭-এ উল্লিখিত মানমাত্রার মধ্যে হতে হবে। যে কোন সময় কাঙ্ক্ষিত সংগৃহীত নমুনায় এই মানমাত্রা অতিক্রম হতে পারবে না। কোন সময় দূষণ নিয়ন্ত্রণ ব্যবস্থা অকার্যকর হলে সাথে সাথে সংশিষ্ট উৎপাদন ইউনিট বন্ধ করতে হবে। দূষণ নিয়ন্ত্রণ ব্যবস্থা সংস্কার করে বিধিবদ্ধ মানমাত্রা নিশ্চিতকরণ সাপেক্ষে বন্ধ ইউনিট পুনরায় চালু করা যাবে।

৪. এ ছাড়পত্র জারীর তিন মাসের মধ্যে বিদ্যুৎ কেন্দ্রের Down wind direction এবং যেসব জায়গায় Ground Level Concentration সবচেয়ে বেশি বলে অনুমিত হয় সেসব জায়গায় পরিবেষ্টক বায়ুর গুনগতমান(SOx, NOx, CO) এবং শব্দের তনগত পরীক্ষাপূর্বক অত্র দপ্তরে দাখিল করতে হবে। বিশ্লেষিত ফলাফল পরিবেশ সংরক্ষণ বিধিমালা,১৯৯৭ এ উল্লেখিত মানমাত্রার বর্হিভূত হলে এ ছাড়পত্র বাতিল বলে গণ্য হবে।

৫. কুলিং ওয়াটার পুনঃব্যবহারের জন্য স্থাপিত সকল ব্যবস্থাদি যথাযথভাবে কার্যক্ষম রাখতে হবে।

৬. বায়বীয় বর্জ্য নির্গমনের জন্য স্থাপিত Exhaust চিমনীসমূহ সার্বক্ষণিক কার্যক্ষম রাখতে হবে।

৭. Spent Lubricating Oil এবং Oil Filter পরিবেশ অধিদপ্তরের ছাড়পত্র গ্রহণকারী প্রতিষ্ঠান ব্যতিরেকে অন্য কোন Vendor এর কাছে বিক্রয় করা যাবে না।

৮. বিদ্যুৎ কেন্দ্র সৃষ্ট Residual Filtrate অথবা তৈল মিশ্রিত বর্জ্য কোন জলাশয়ে ফেলা যাবে না।

৯. ইআইএ প্রতিবেদনে উল্লিখিত সকল Mitigation Measures সার্বক্ষণিক কার্যকরীভাবে চালু রাখতে হবে।

১০. বিদ্যুৎ কেন্দ্রের চত্তরে নূন্যতম ৩৩% জায়গা উপযুক্ত প্রজাতির ফলজ ও বনজ গাছ লাগিয়ে সবুজায়ন করতে হবে।

১১. Down Wind Direction এবং যেসব জায়গায় Ground Level Concentration সবচেয়ে বেশী বলে অনুমিত হয় সেসব জায়গায় পরিবেষ্টক বায়ুর গুণগতমান (SPM, SOx, NOx & CO) নিয়মিত মনিটর করতে হবে এবং মনিটরিং ফলাফল প্রতি ০৩(তিন) মাস অন্তর অন্তর পরিবেশ অধিদপ্তরে দাখিল করতে হবে।

১২. প্রকল্পে পরিবেশগত ব্যবস্থাপনার জন্য প্রশিক্ষিত জনবল রাখতে হবে। কারখানার/প্রতিষ্ঠানের বর্জ্য ব্যবস্থাপনা সম্পর্কে দৈনিক ভিত্তিতে রেকর্ড সংরক্ষণ করতে হবে। প্রতি ০৩(তিন) মাস অন্তর অন্তর সংরক্ষিত রেকর্ডের সার-সংক্ষেপ রিপোর্ট আকারে পরিবেশ অধিদপ্তরে দাখিল করতে হবে।

১৩. পেশাগত স্বাস্থ্য রক্ষার্থে সকল ব্যবস্থা সার্বক্ষণিক চালু রাখতে হবে। শ্রমিকদের নিয়মিত স্বাস্থ্য পরীক্ষা করতে হবে এবং এতদসংক্রান্ত রেকর্ড সংরক্ষণ করতে হবে।

১৪. অগ্নি নির্বাপনকল্পে প্লান্টে যথোপযুক্ত ব্যবস্থাদি যথাঃ ফায়ার এক্সিট, ফোমিং কম্পাউন্ডসহ ফায়ার হাইড্রেন্ট, ইমারজেন্সি লাইট স্থাপন, ভূ-গর্ভস্থ বা ভূ-উপরিস্থ জলাধারে সর্বদা পর্যাপ্ত পানি সংরক্ষণ ইত্যাদি ব্যবস্থাদি সার্বক্ষণিক কার্যকরী রাখতে হবে।

১৫. প্রকল্পে শব্দ এবং তরল/বায়বীয় বর্জ্যের নিঃসরণ/নির্গমন মাত্রা যথাক্রমে শব্দ দূষণ (নিয়ন্ত্রণ) বিধিমালা, ২০০৬ এবং পরিবেশ সংরক্ষণ বিধিমালা, ১৯৯৭-এ বর্ণিত মানমাত্রার মধ্যে হতে হবে।

১৬. উপরোক্ত শর্তসমূহ যথাযথভাবে বাস্তবায়িত/প্রতিপালিত না হলে পরিবেশগত ছাড়পত্র বাতিল করা হতে পারে।

১৭. বাংলাদেশ পরিবেশ সংরক্ষণ আইন, ১৯৯৫, পরিবেশ সংরক্ষণ বিধিমালা, ১৯৯৭ এ প্রদত্ত ক্ষমতা বলে উপরিউল্লিখিত শর্তসমূহ এনফোর্স করা হবে।

১৮. এ ছাড়পত্র কোন অবস্থাতেই হস্তান্তর যোগ্য নয়।

১৯. পরিবেশগত ছাড়পত্রের মূলকপি বিদ্যুৎ কেন্দ্রে সংরক্ষণ করতে হবে। পরিবেশ অধিদপ্তরের এনফোর্সমেন্ট টীম, পরিদর্শক ও পরিদর্শনের ক্ষমতাপ্রাপ্ত অন্যান্য কর্মকর্তাগণ প্লান্ট পরিদর্শনকালে ছাড়পত্র প্রদর্শন এবং প্লান্টের কার্যক্রম পরিদর্শনে সহযোগিতা প্রদান করতে হবে।

২০. ছাড়পত্র ইস্যুর তারিখ হতে আগামী ০১(এক) বছর পর্যন্ত বহাল থাকবে এবং মেয়াদ শেষ হওয়ার অন্ততঃ ৩০(ত্রিশ) দিন পূর্বে নবায়নের জন্য আবেদন করতে হবে।

২১. উপর্যুক্ত ১-২০ অনুচ্ছেদে বর্ণিত যে কোন শর্ত ভংগ করলে এ ছাড়পত্র বাতিল বলে গণ্য হবে এবং আপনার/আপনার প্রতিষ্ঠানের বিরুদ্ধে বাংলাদেশ পরিবেশ সংরক্ষণ আইন, ১৯৯৫; পরিবেশ সংরক্ষণ বিধিমালা, ১৯৯৭ এবং শব্দ দূষণ (নিয়ন্ত্রণ) বিধিমালা, ২০০৬ অনুসারে আইনগত ব্যবস্থা গ্রহণ করা হবে।

২১.০২.১৫

(জমির উদ্দিন)
সিনিয়র কেমিস্ট
ফোনঃ ০৮১-৬৬৯০৬

ব্যবস্থাপনা পরিচালক
Lakdhanavi Bangla Power Limited
২৭, দিলকুশা বা/এ, ঢাকা-১০০০।

Annex 02: Integrated ISO Certification (EMS, OHSAS and Quality)

BUREAU VERITAS
Certification

Lakdhanavi Bangla Power Limited

LAKDHANAVI BANGLA POWER LIMITED

Jangalia, Comilla

Bureau Veritas Certification Holding SAS – UK Branch certify that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the management system standards detailed below

Standards

ISO 9001:2008, ISO 14001:2004 & BS OHSAS 18001:2007

Scope of certification

Generation of electrical power and supply to National Grid by 52.2MW Duel Fuel (HFO/GAS) Fired power plant

Certification cycle start date: **05 January 2016**

Subject to the continued satisfactory operation of the organization's Management System, this certificate expires on:

For QMS & EMS: **14 September 2018**

For OHSAS: **04 January 2019**

Original certification date: **05 January 2016**

Certificate No. **IND16.8003/U** Version : 1 Revision date: **20 January 2016**

Signed on behalf of BVCH SAS UK Branch
Ramesh KOREGAVE
General Manager, CERTIFICATION
South Asia Region

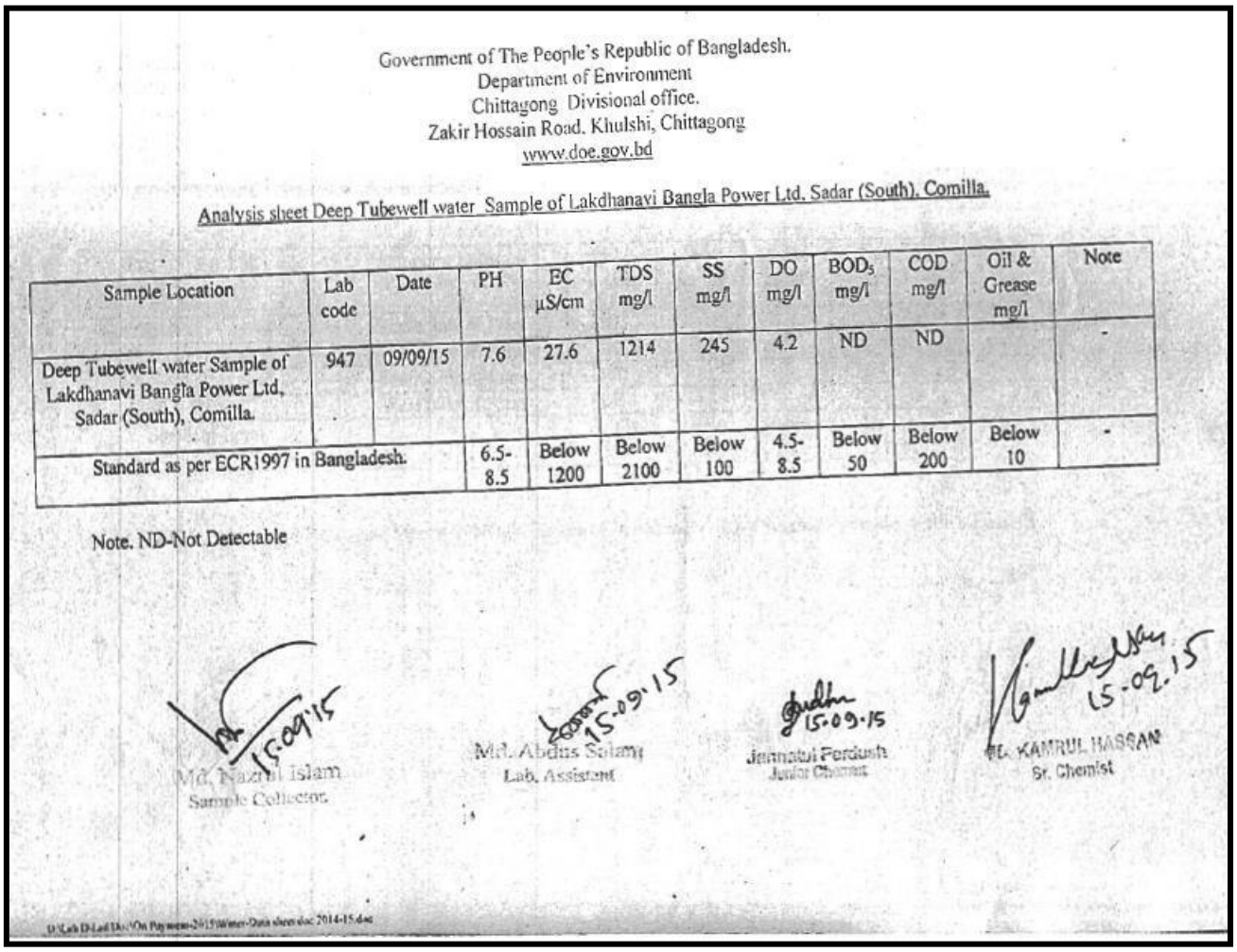
UKAS
008

Certification body address: *5th Floor, 66 Prescot Street, London, E1 8HG, United Kingdom.*

Local office: *"Marwah Centre" 6th Floor, Krishanlal Marwah Marg, Opp. Ansa Industrial Estate, Off Saki Vihar Road, Andheri (East), Mumbai – 400 072, India.*

Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organization. To check this certificate validity please call **+91 22 6655 6300.**

Annex 03: Ground water quality monitoring by DOE



Government of The People's Republic of Bangladesh.
Department of Environment
Chittagong Divisional office.
Zakir Hossain Road. Khulshi, Chittagong
www.doe.gov.bd

Analysis sheet Deep Tubewell water Sample of Lakdhanavi Bangla Power Ltd. Sadar (South), Comilla.

Sample Location	Lab code	Date	PH	EC µS/cm	TDS mg/l	SS mg/l	DO mg/l	BOD_5 mg/l	COD mg/l	Oil & Grease mg/l	Note
Deep Tubewell water Sample of Lakdhanavi Bangla Power Ltd, Sadar (South), Comilla.	947	09/09/15	7.6	27.6	1214	245	4.2	ND	ND		-
Standard as per ECR1997 in Bangladesh.			6.5-8.5	Below 1200	Below 2100	Below 100	4.5-8.5	Below 50	Below 200	Below 10	-

Note. ND-Not Detectable

15.09.15
Md. Nazrul Islam
Sample Collector

15.09.15
Md. Abdus Salam
Lab. Assistant

15.09.15
Jannatul Ferdush
Junior Chemist

15.09.15
Md. KAMRUL HASSAN
Sr. Chemist

D:\Lab D-Lad\Bill\On Payment-2015\Water-Data sheet.doc 2014-15.doc

Annex 04: Air quality and noise level monitoring by DOE

Government of The People's Republic of Bangladesh.
Department of Environment
Chittagong Divisional office.
Zakir Hossain Road, Khulshi, Chittagong
www.doe.gov.bd

Analysis Sheet of Ambient Air & Sound Monitoring Sample of Lakdhanavi Bangla Power Ltd, Sadar (South), Comilla.

Date	Lab Code	Sampling Location	SPM $\mu g/m^3$	SOx $\mu g/m^3$	NOx $\mu g/m^3$	Sound Level	Remarks
9/09/2015	948	North Side of Plant	162	-	-	73.5 dBa	-
"	"	East Side of Plant	164	-	-	72.7 dBa	-
"	"	South Side of Plant	170	-	-	73.4 dBa	-
"	"	West Side of Plant	165	-	-	72.6 dBa	-
Standard Limit.		-	Below 200	Below 80	Below 100	Below 75 dBa	-

Note:-1. SPM – Suspended Particulate Matter. 2. NO_X – Oxides of Nitrogen., 3. SO_X – Sulphur-di-Oxide. 4.dBa – Desible.

15.09.15
Md. Abdus Salam
Lab. Assistant
15.09.15
Jannatul Ferdusi
Junior Chemist
15.09.15
M. KAMRUL HASSAN
Sr. Chemist

Annex 05: Project risk screening checklist of ESSF, IDCOL

Sl. no	Env. and scl. risks rating criteria	Response		Remarks
		Yes	No	
01	For new projects, does the project have any pending compliance such as Location and Environmental Clearance based on its category (Red, Orange-A, Orange-B and Green), from the DOE?			
02	Is the project located in the immediate vicinity (likely to adverse impact) of environmentally critical areas (national wetlands, wildlife habitats, important bird areas, and protected areas)			
03	Does the project construction and/or operation lead to environmental impacts that are diverse, irreversible and/or unprecedented in nature?			
04	Does the project require involuntary resettlement that results in loss of land or livelihoods or physically displaces more than 200 persons?			
05	Is the project site on or in immediate vicinity of socially vulnerable or Indigenous People IP) owned or occupied land and has the potential to cause an adverse impact on their culture and identity?			
06	Is the project vulnerable to climate change related impacts?			
07	Does the Borrower have a documented Policy on E&S Performance?			
08	Does the Borrower have dedicated human resources to address E&S performance?			
09	Has the Borrower established and implemented Environmental, Health & Safety Management Systems and Social Accountability Systems for the Project SPV or in the parent company?			

Annex 06: Fire-fighting arrangement

Photograph: Different types of fire-fighting arrangement

Annex 07: PPE arrangement

Photograph: Arrangement of PPE

Annex 08: Landscaping

Photographs: Different types of landscaping

Annex 09: Safety measures around fuel storage tanks

Photograph: Safety bund around fuel storage tanks

Annex 10: Fuel treatment process

Photographs: Fuel Treatment Plant

Annex 11: Stack

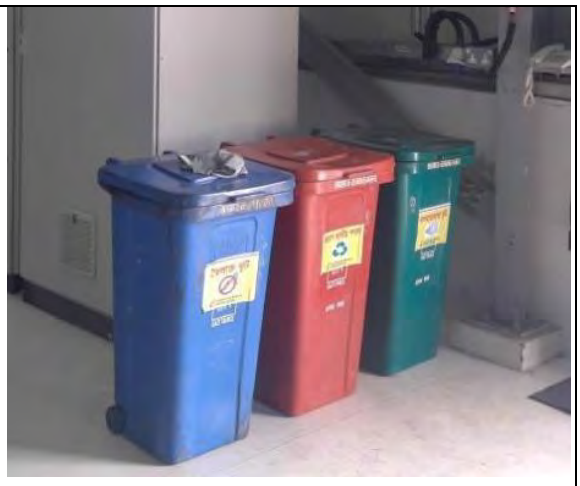
Photograph: Close view of a stack (42 m height) and stack base

Annex 12: Current status of project

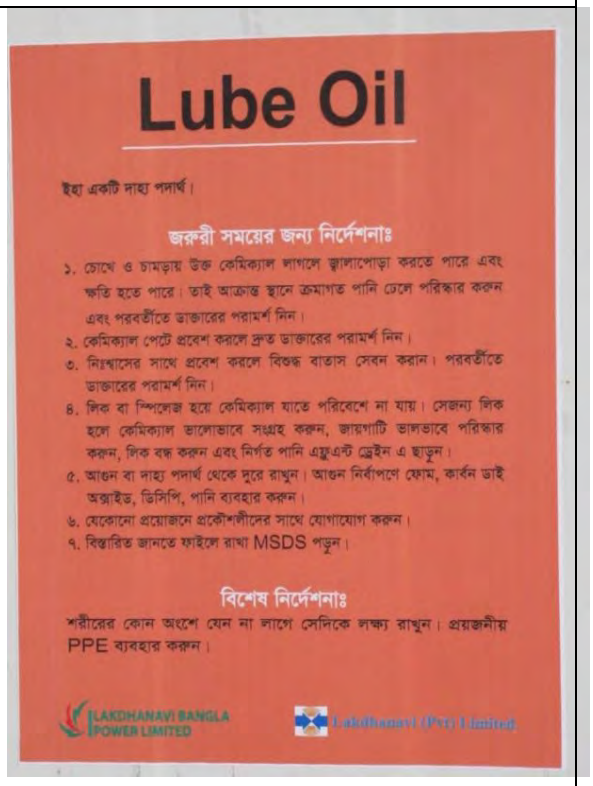
Photograph: External view of the plant (partial)

Photograph: Internal view of the plant (partial)

Annex 13: Waste management (solid and liquid)



Photograph: Application of different types of dustbin



Photograph: Spill kit and lube oil management guidelines

Annex 14: House keeping

Photograph: External housekeeping

Photographs: Internal housekeeping

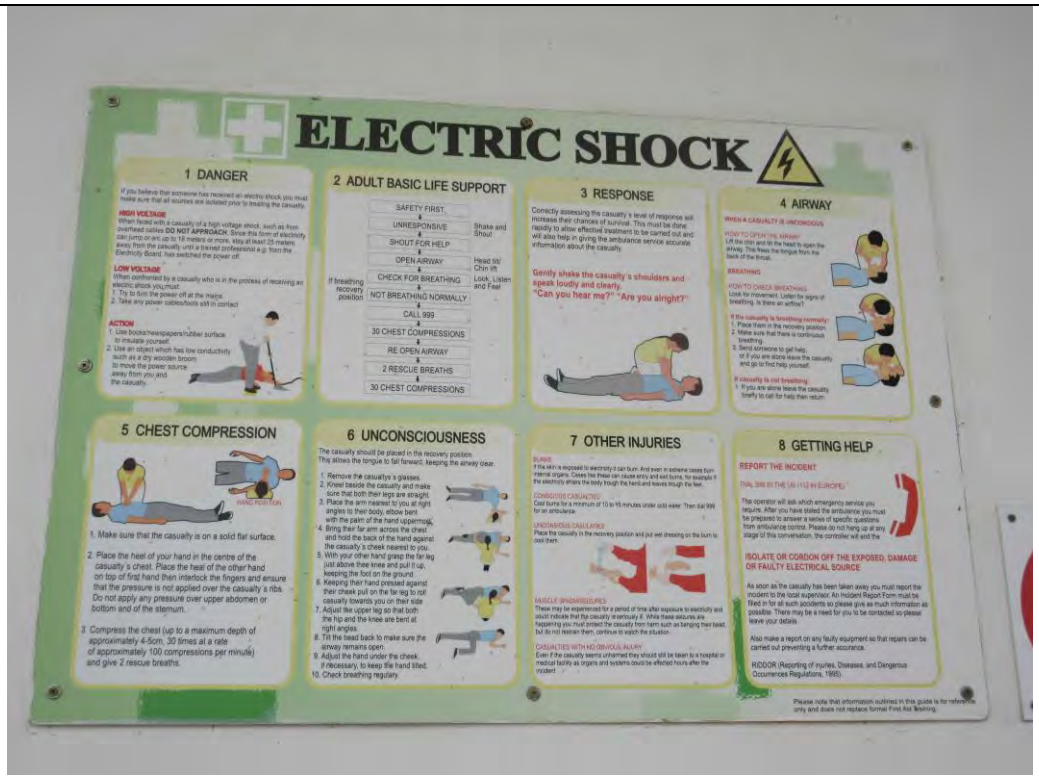
Annex 15: Noise level monitoring points

Photograph: Noise monitoring points at LBPL site

Annex 16: Designated smoking zone

Photograph: Smoking zone is in practice

Annex 17: Safety signage



Photograph: Different types of safety signage

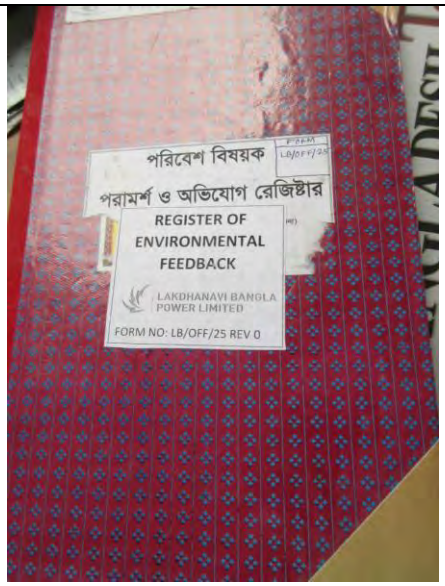
Annex 18: Consultation with local community by IDCOL official 11 February 2016

Photograph: Consultation with local community by IDCOL official

Annex 19: Respondents as consulted with IDCOL official on 11 February 2016

Name	Father's name	Cell phone
Abdul Mazid	Late Suruz Ali	01829528284
Zakir Hossain	Late Asmat Ali	001913257383
Farid Uddin	Babul Mia	01677425579
Jamal Hossain	Sirajul islam	01674629659
Hazi Mohammad Abdur Razzak	Late Aftab Uddin	-

Annex 20: Grievance redress mechanism



Photograph: Grievance Log Book