

Draft

Environmental Monitoring & Management Report



Project Name & Site: Siddhirganj 335MW Combined Cycle
Power Plant Project, Siddhirganj, Narayanganj
Period: 1st (July-Sept, 2014), 2nd Quarter (Oct-Dec, 2014) &
3rd (January - March, 2015)
Monitoring parameters: Noise, Ambient Air, Water Quality

ELECTRICITY GENERATION COMPANY OF BANGLADESH (EGCB) LTD

**BTMC Building Level-8,
7-9 Kawran Bazar, Dhaka-1215**

May 2015

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1.0 Introduction

The construction of power plant falls under the Red category of ECR 1997, subsequently A category project under World Bank Guidelines which requires full scale EIA and SIA along with EMP for the construction of this project. According to the EMP outlined in EIA EGCB is complying the environmental monitoring regularly for Siddhirganj 335MW CC Power Project at Siddhirganj, Narayanganj. The management and monitoring are being monitored as the environmental impacts were indentified earlier during the EIA study for this project in order to reduce adverse impacts and enhance positive impacts from specific project activities during construction phase. Besides, it would also address any unexpected or unforeseen environmental impacts that may arise during construction and operation phases of the project.

The EMP clearly layout: (i) the measures to be taken during both construction and operation phases of the project to eliminate or offset adverse environmental impacts, or reduce them to acceptable levels; (ii) the actions needed to implement these measures; and (iii) a monitoring plan to assess the effectiveness of the mitigation measures employed. Environmental management and monitoring activities for the under construction power plant project could be monitoring and management during: (a) construction phase, and (b) operation phase. Presently EGCB Ltd is complying the monitoring and management of environmental parameters set out in EMP of EIA for Siddhirganj 335MW CCP project.

1.1 Location of the project

The Siddhirganj 335 MW CCPP power generation complex is located on the western bank of Sitalakhya river, just outside and to the East of metropolitan Dhaka, and North of Narayanganj. The power plant is located at Siddhirganj Pourashava under Narayanganj Sadar Upazila within Latitude 23°41'14" to 23°40'45" North and Longitude 90°30'50" to 90°31'47" East.

1.2 Components of project

General components of the proposed CCPP project include the following: (i) 218 MW Gas turbine unit complete with necessary auxiliaries including air intake filtration facilities, inlet and exhaust silencers, control systems, by pass stack with delivery damper, gas fuel treatment system, oil cooling system; (ii) Power generator for the gas turbine unit with all auxiliaries including cooling system, control system, excitation system; (iii) 117MW Steam turbine unit complete with necessary auxiliaries including heater, pumps, steam turbine bypass, control systems; (iv) Power generator for the steam turbine unit with all auxiliaries including cooling system, control system; (v) Heat Recovery Steam Generating system with auxiliaries including de-aerators, pumps, exhaust stack, control system; (vi) Gas booster compressor system with all auxiliaries and control system; (vii) Cooling towers including motors, wet pond, fans; (viii) Di-mineralized water system complete with pumps, tanks, control system (ix) Water treatment system with all auxiliaries including storage tanks, settling basins, pumps, chemical dosing system, control system; (x) Effluent treatment system with all auxiliaries including, chemical dosing systems, settling units, control system, pumps; (xi) Other essential plant equipment including air compressor, natural gas supply system, circulating water system, raw water intake structure, condensate system; (xii) Construction of internal roads.

2.0 Environmental Monitoring Requirement & Parameters

The project is committed to monitor and manage its surrounding environment so as to reduce the negative impacts which may arise from the project activities. To control the adverse impacts on ambient air, water, noise and safe environmental management, the EGCB Ltd is regularly monitoring and managing its construction site through EPC and owner engineers. The quarterly monitoring reports from July 2014 to date have been forwarded to WB. Precisely the following pre-determined parameters as indicated below are being regularly monitored subsequent management program has also taken under consideration for successful completion of the project.

- (a) Air Quality: SPM, PM₁₀, PM_{2.5}, NO_x, SO₂, and CO
- (b) Ambient noise level
- (c) Surface water: Temperature, DO, BOD₅, COD, and Oil and Grease,
- (d) Ambient Noise Level
- (e) Ground water and
- (f) Occupational Health and Safety

2.1 Environmental Monitoring during Construction Phase

According to environmental monitoring, during the assignment the main work was to collect the ambient air samples to measure air pollutants and noise level data from the project area. For river water analysis the water sample was collected from the nearby Shitalakhya River.

Monitoring and Management Parameters (Construction Phase)	1 st , 2 nd and 3 rd Quarter (July, 2014 -Mar 2015)
Ambient Air Quality	Done with measurement
Noise Level	Done with measurement
River water	Done with measurement
Ground water Level	Done with measurement
Soil quality	-
Process waste	Done
Occupational Health and Safety (OHS)	Done

2.2 Project Environmental key personnel;

Sl. No.	Project Key personnel	Name of Key personnel	Telephone No.
01	Environment Management Specialist, (Manager, Environment), EGCB Ltd.	Dr Kazi Muhammad Humayun Kabir	01713303349
02	Environmental Specialist (Owner Engineers, Fichtner)	Dr Jagadish Chandra Saha	01713117822

Presently EGCB has not yet formed Environment Management Unit (EMU). So for the temporary arrangement a committee will correspond the donors and the concerns for environmental monitoring which are as follows.

SI.No.	Position of the Personnel	Name of Personnel	Telephone No.
01	Environment Management Specialist, (Manager, Environment), EGCB Ltd.	Dr Kazi Muhammad Humayun Kabir	01713303349
02	Chemist (Assistant Manager)	Md. Emdadul Haq	01673841671
03	Environmental Specialist (Owner Engineers, Fichtner)	Dr. Jagadish Chandra Saha	01713117822

3.0 Impact on Environmental Parameters during construction phase

3.1 Air Quality

During the construction phase vehicles are carrying construction materials to the site and taking construction debris out of the site maintaining proper cover on its carrier to minimize the dispersion of dusts. Construction equipment, such as stone (aggregate) crushers is not being used at the site which could create significant emission of particulate matters. Since construction of the proposed power plant project would most likely involve significant earth works, increase in particulate matter in the air from wind-blown dust is also a concern, especially considering the close proximity of the high school (and also the residential area) to the project site. Ambient Air Quality was monitoring from two different places at Siddhirganj 335MW Combined Cycle power plant project such as North side and south side of the plant is shown in Photo 1. Test Results of Ambient Air Quality from these different places are presented in Table 1. All the last test reports from the laboratories are shown in main report.

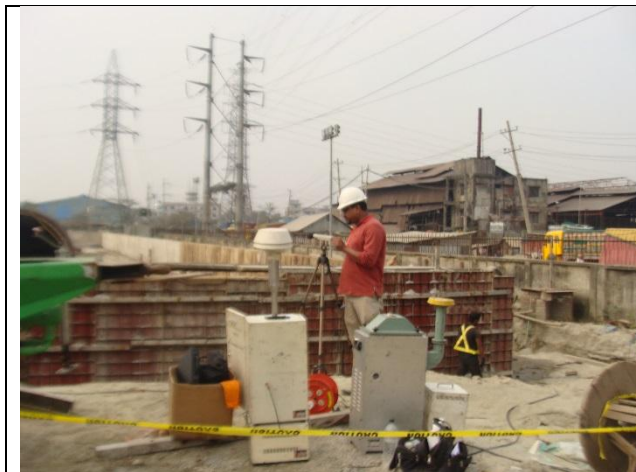


Photo: Ambient air quality at Northern Side of the 335MW CCPP



Photo: Ambient air quality at Southern Side of 335MW CCPP

Photo 1. Ambient Air Sampling inside Siddhirganj 335 MW Combined Cycle Power Plant Project

Table 1. Ambient Air Quality analysis

SN	Sampling Date for 3rd Quarter ; 28 March, 2015	Ambient Air Pollutants Concentration in $\mu\text{g}/\text{m}^3$					CO mg/m^3
		SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x	
Location							
01	Northern Side of 335MW CCPP	314.81	135.85	51.52	39.22	95.39	Nil

02	Southern Side of 335MW CAPP	345.92	123.16	49.89	41.84	90.67	Nil
	Sampling Date for 1st and 2nd Quarter; December 2014						
01	Northern side of the 335MW CAPP	399.26	169.20	102.86	40.13	126.28	Nil
02	Southern Side of 335MW CAPP	572.09	200	188.99	26.75	123.29	Nil
Duration (hrs)		8	8	8	8	8	N/A
ECR 1997; DoE (Bangladesh) Standard for Industrial and Mixed Zone(Schedule-2)		200	150	65	365	100	10
Method of Analysis		Gravimetric	Gravimetric	Gravimetric	West-Geake	Jacob & Hochheiser	CO Meter
Instruments Used		Respirable Dust Sampler Envirotech APM 460NL	Respirable Dust Sampler Envirotech APM 460NL	Fine Particulate Sampler Envirotech APM460NL	Gaseous Sampling Attachment Envirotech APM 411TE	Gaseous Sampling Attachment Envirotech APM 411TE	Digital Instrument AE.14343 Taiwan

Note:-

- 1 PM₁₀ - Respirable Dust Content
- 2 PM_{2.5} - Respirable Dust Content
- 3 SPM - Suspended Particulate Matter
- 4 NO_x - Oxides of Nitrogen
- 5 SO₂ - Sulphur Di-Oxide

The result for ambient air quality monitoring shows the PM₁₀, SPM, SO₂, & NO_x concentrations of the ambient air. In the 3rd quarterly monitoring it is observed that only the concentration of SPM is slightly above from the allowable limit which may have interference of activities from outside project as the project is close the main road surrounded by few industries which also produces dusts. Diesel vehicles were moving around including three to four cranes were also under operation at project site. The measured NO_x level is closer to the standard level. PM_{2.5} is composed of a mixture of primary and secondary particles, Primary particles are emitted directly into the atmosphere and include soil-related particles and carbon particles from fossil fuel combustion, and secondary particles are Sulphate, nitrate, organic and elemental carbon, trace elements, ammonium etc.

3.2 Impact on Water Quality

The surface water sample was collected from the Shitalakhya River 500 m East i.e. near the shoreline of the project site (Photograph-2). The tested results are presented in Table-2. The Shitalakhya River passes through North to South near the project area and there are many industries at the both banks of this river. The DO level of this water is only 0.14 mg/l which is far below from the DoE standard. The BOD₅ is also higher level than DoE standards. Generated waste water from human wastes may create nuisance to the surrounding water bodies including ground water (Table-3).



Photograph-2 : River Water Quality Sampling at Sitalakhya River

Table: 2 River Water Quality

SN	Sampling Date for 3rd Quarter ; 28 March, 2015	Unit	Concentration of Surface Water	Bangladesh (DoE) Standard for Surface Water (Schedule-3)
	Parameter tested			
01	Temperature	°C	31.2	NYS
02	DO	mg/l	0.14	≥5
03	BOD ₅	mg/l	28.2	≤10
04	Oil and Grease	mg/l	27.5	NYS
05	COD	mg/l	80	NYS
	Sampling date for 1st and 2nd Quarter: 31st December 2014			
01	Temperature	°C	27	NYS
02	DO	mg/l	1.21	≥5
03	BOD ₅	mg/l	12.36	≤10
04	Oil and Grease	mg/l	23	NYS
05	COD	mg/l	38.8	NYS
	Chromium (Cr)	mg/l	0.003	NYS
	Lead (Pb)	mg/l	0.00424	NYS
	Cadmium (Cd)	mg/l	<LOQ	NYS

NYS: Not Yet Set

LOQ- Limit of Quantification

LOQ of Cd 0.00015 mg/l

LOQ of Pb 0.002 mg/l

LOQ of Cr 0.0003 mg/l

Table: 3 Ground Water Quality

SN	Sampling Date for 3rd Quarter ; 28 March, 2015	Unit	Concentration of Ground Water	Bangladesh (DoE) Standard for Ground Water (Schedule-3)
	Parameter tested			
01	pH		7.38	6.5 – 8.5
02	DO	mg/l	6.32	6
03	TDS	mg/l	276	1000
04	EC	μS/cm	578	NYS
05	Iron	mg/l	<LOD	0.3-1.0
06	Arsenic	mg/l	<LOD	0.05

Note:

NYS - Not Yet Set
 LOD - Limit of Detection
 LOD of Fe 0.01 mg/l
 LOD of As 0.001 mg/l

The ground water sample was collected from a deep tube well which is near the project. All the parameters of the ground water found satisfactory.

3.3 Impact on Noise

During construction stage major source of noise is expected to be generated from transport vehicles which include cranes excavator, trucks etc. Also noise is expected to be produced from plant construction activities. The construction phase may be broadly classified in to following groups (Table-4):

- General Site and Plant Construction,
- Water and Effluent Treatment Plant construction, and
- Access Road Construction.

Table: 4. Noise Level Monitoring during 3rd Quarter

SN	Sampling Date for 3rd Quarter ; 28 March, 2015	GPS Locations	Time of Noise level Monitoring	Results in dB-A (Leq)	DoE (Bangladesh) Noise Standard for Industrial area and Silent Zone Schedule-1
				Day (12:00 AM – 7:00 PM)	Day Time (6 am-9 pm)
	Sampling locations				
01	East of 335MW CCPP	N 23 ^o 41'5.19" E 90 ^o 30'59.4"	1:40:55 PM- 2:41:25 PM	68.32	75
02	South (Near Primary School)	N 23 ^o 41'01.1" E 90 ^o 31'02.3"	2:57:15 PM- 3:30:57 PM	64.08	50
03	North (Main	N 23 ^o 41'08.4"	3:37:33 PM	64.83	75

	Gate)	E 90°30'59.4"	4:37:03 PM		
04	Middle of Project Area	N 23°41'03.3" E 90°30'59.2"	4:50:21 PM 5:50:21 PM	70.44	75
05	West side of 335MW CCPP	N 23°41'03.5" E 90°30'56.1"	6:02:45 PM- 7:03:15 PM	73.02	75
1st and 2nd Quarter Sampling Date; 31st December 2014					
Sampling Locations					
01	East of 335MW CCPP	N 23°41'5.19" E 90°30'59.4"	1:40:55 PM- 2:41:25 PM	65.76	75
02	South (Near Primary School)	N 23°41'01.1" E 90°31'02.3"	2:57:15 PM- 3:30:57 PM	69.26	50
03	North (Main Gate)	N 23°41'08.4" E 90°30'59.4"	3:37:33 PM 4:37:03 PM	60.18	75
04	Middle of Project Area	N 23°41'03.3" E 90°30'59.2"	4:50:21 PM 5:50:21 PM	69.76	75
05	West side of 335MW CCPP	N 23°41'03.5" E 90°30'56.1"	6:02:45 PM- 7:03:15 PM	72.98	75
Methods/Instruments				Sound Level Meter Model: SL - 4033SD	

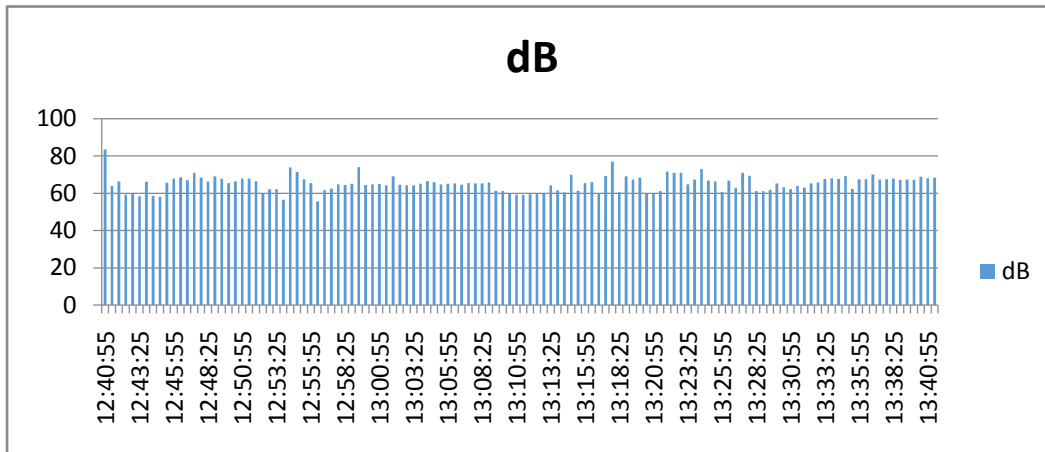
To assess the noise generated by different activities and equipment to be used at various stages of the construction work without proper measures the workers and officers may face partial or permanent hearing loss. The photograph-3 is showing the noise measuring activities at different places at construction site. The graphical presentation of noise is depicted in the following pages of report (Figure-1, 2, 3, 4 & 5 of 4.1a and 4.1b).



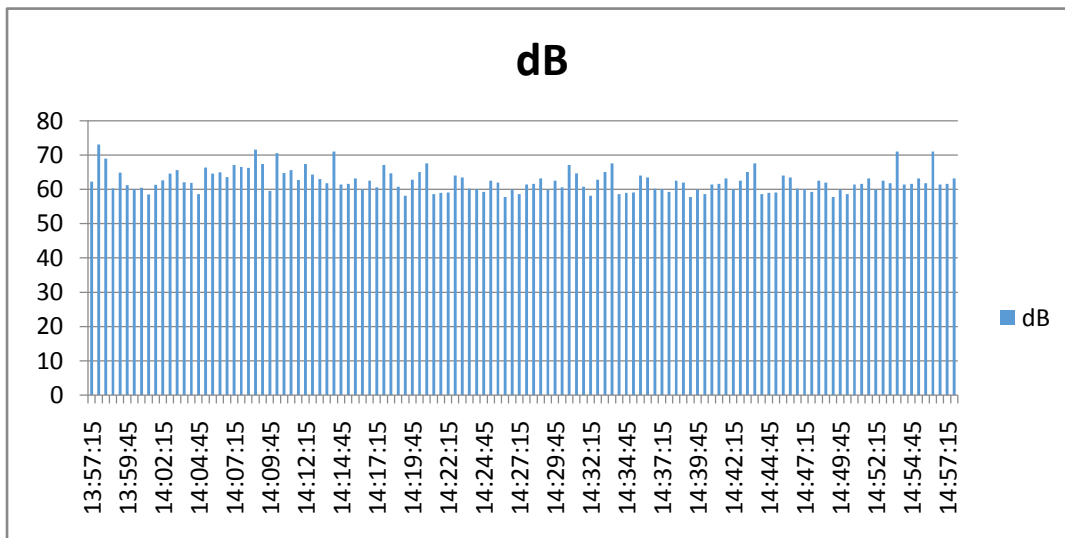
Photograph- 3: Noise Level Monitoring at Southern Side of Siddhirganj 335 MW Combined Cycle Power Plant Project

3rd Quarter Monitoring data (sampling date; 31st December, 2014)

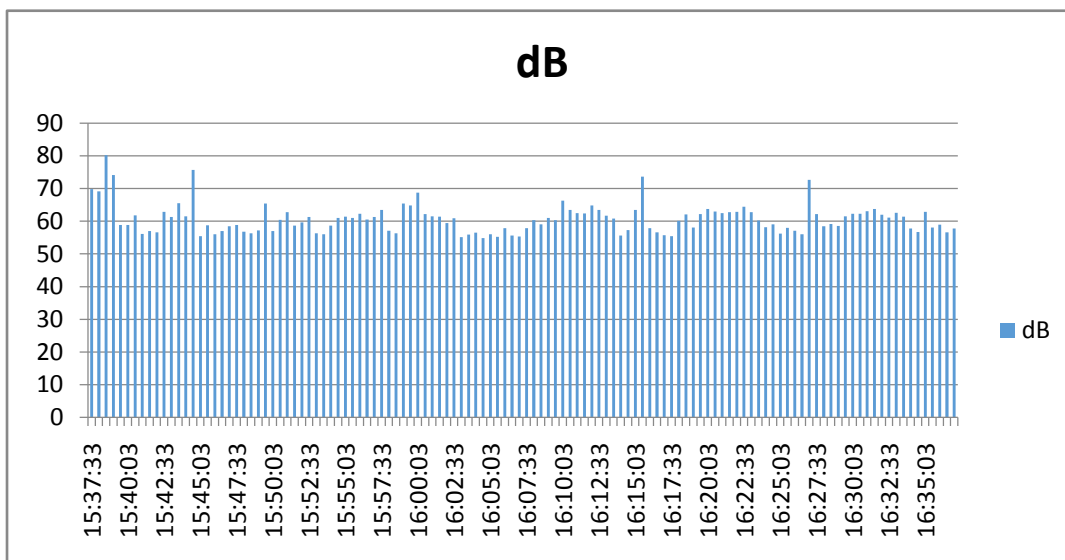
The graphical trends of noise level of five locations for one hour are presented below (Figure -1); East Side



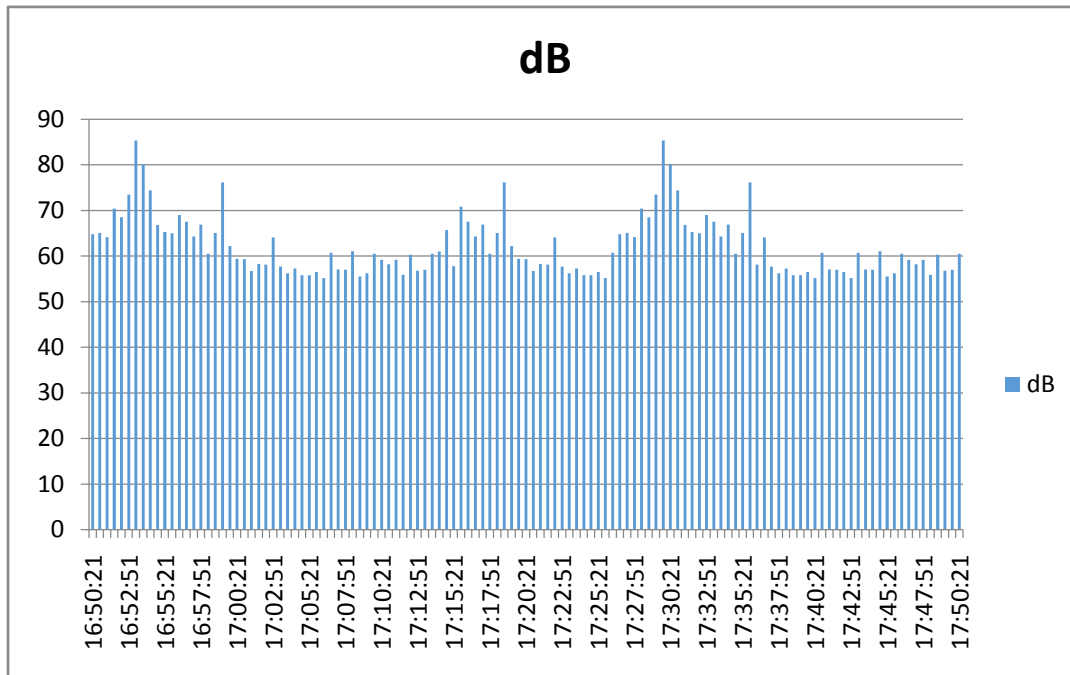
(Figure -2); South Side (Near Primary School)



(Figure -3); North Side (Main Gate)



(Figure -4); Middle of the Project



(Figure -5); West Side

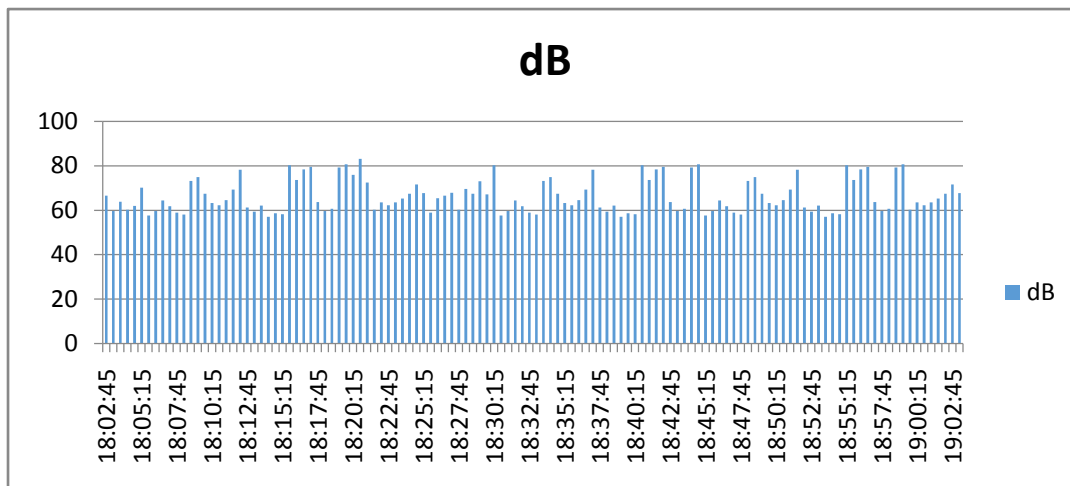
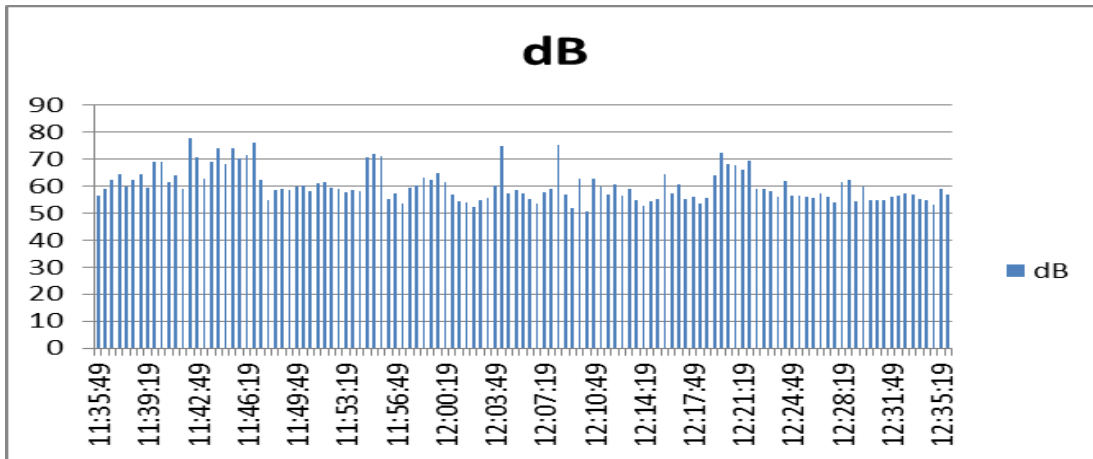


Figure -1-5: Graphical presentation of Noise data

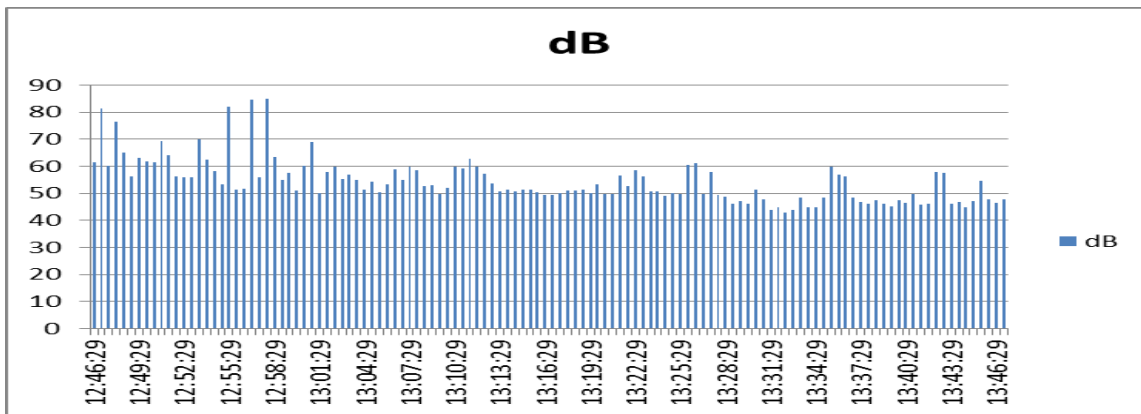
(North, south, East and West and Middle; Sampling Date for 3rd Quarter; 28 March, 2015)

Monitoring data for 1st and 2nd Quarter (Sampling Date: 31st December 2014):

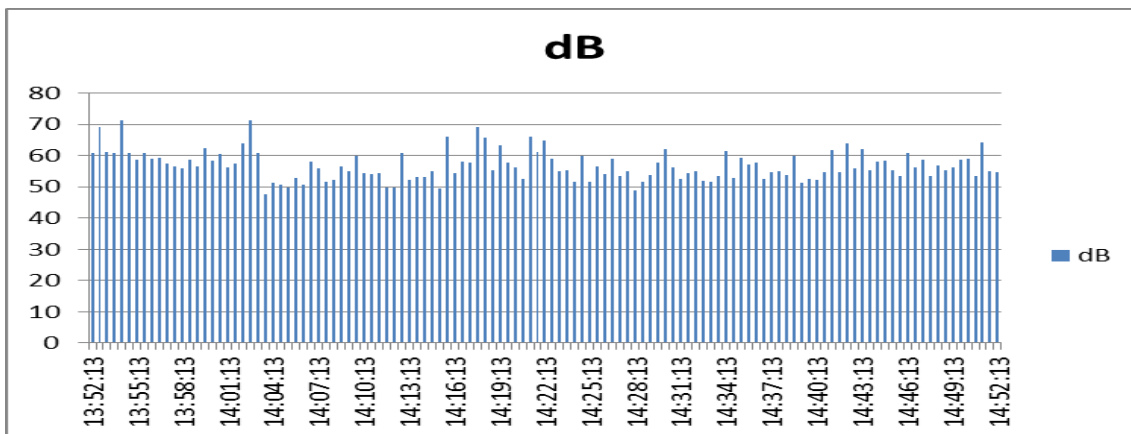
North Side (Main Gate)



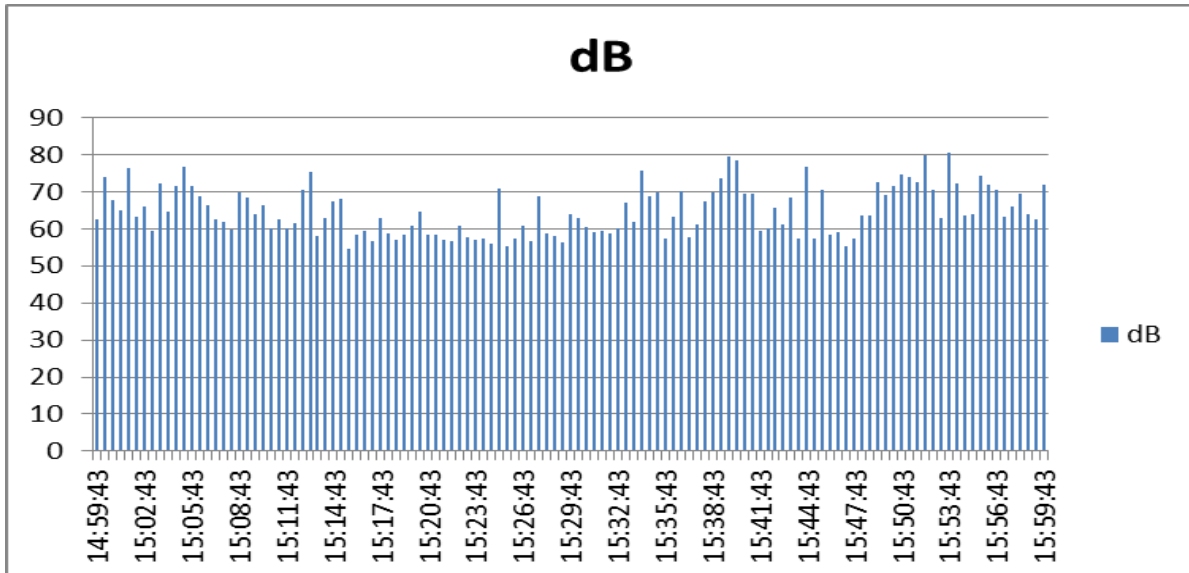
Middle



South Side (Near Primary School)



West Side



East Side

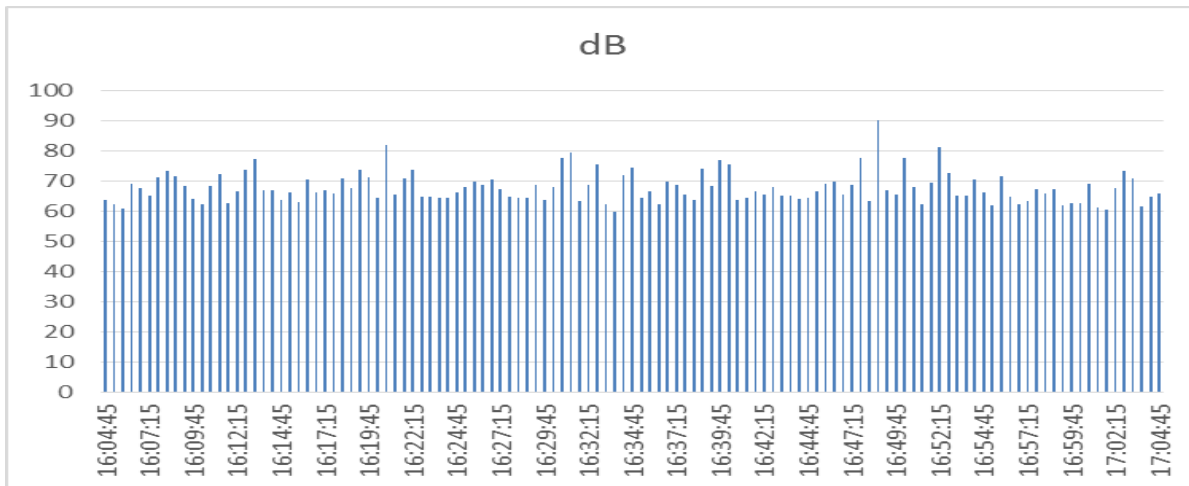
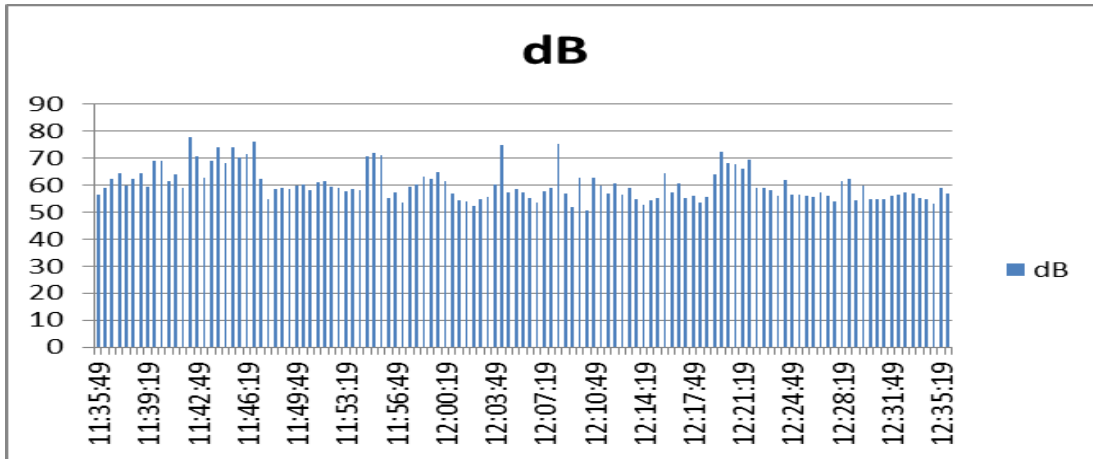


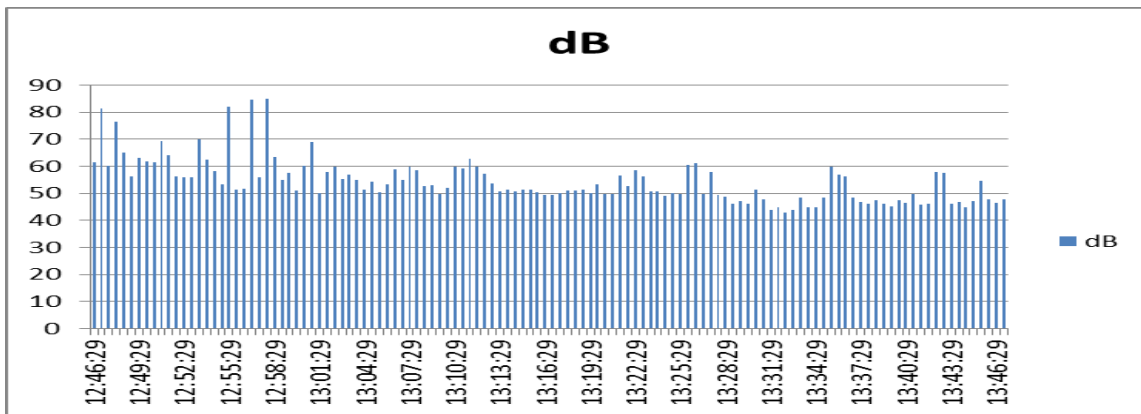
Figure 4.1a: Graphical presentation of Noise data (North, south, East and West and Middle)

The graphical trends of noise level of five locations for one hour are presented below. In Figure 4.1b

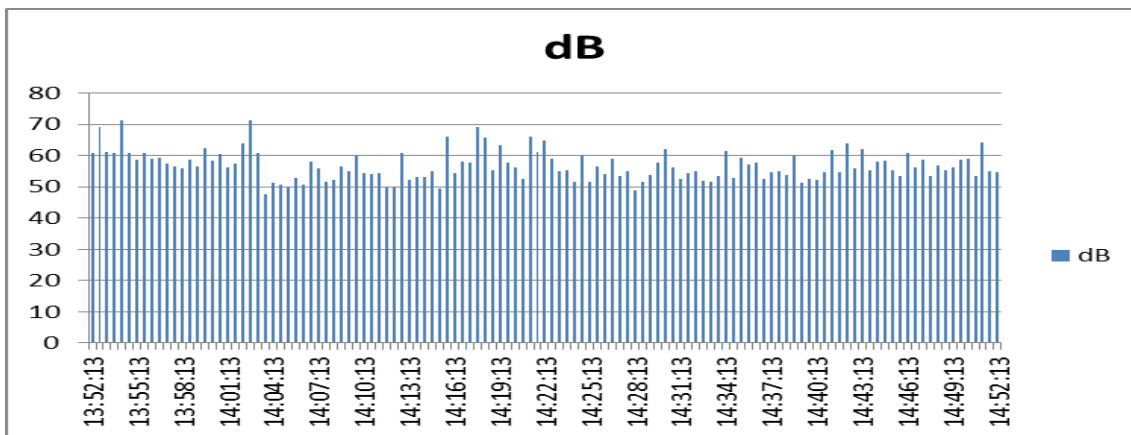
North Side (Main Gate)



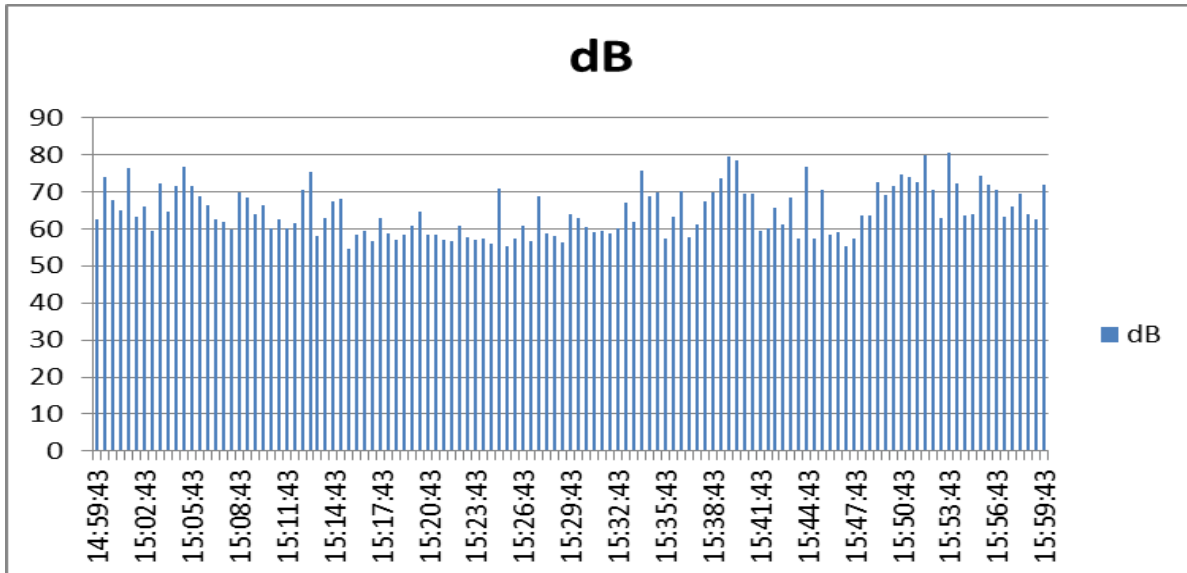
Middle



South Side (Near Primary School)



West Side



East Side

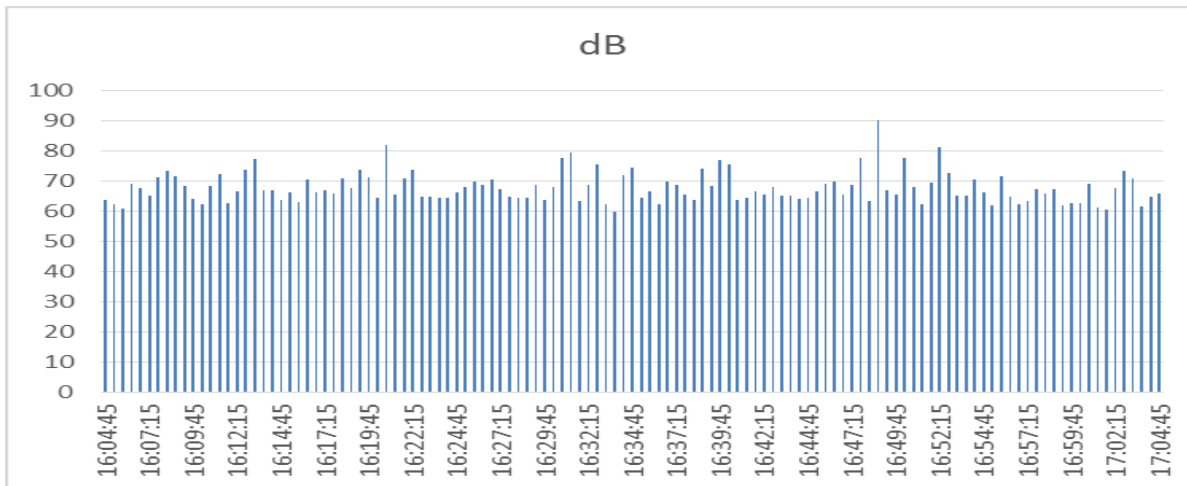


Figure 4.1b: Graphical presentation of Noise data (North, south, East and West and Middle)

3.4 Impact of OHS at project site

Personal Safety Equipment (PSE): During construction phase the workers may face minor injuries due to accidental negligence. The regular provided services are depicted in the following table-5.

Table-5: Monthly Occupational Health and Safety measure recorded at project site

Safety Statistics	Dec 14	Jan 15	Feb 15
Frequency Indices	0	0	0
Seriousness index	0	0	0
Number of days since last accident	827	858	886
Number of preventive open observations	35	41	19
Overdue preventive open observations	23	21	08

Mean closing time of preventive observations	1 day	1 day	1 day
HS resources / total hours	900	840	750

Source: ISOLUX Monthly Progress Report

4.0 Mitigation measures

4.1 Air Quality

To reduce the generation of dust owing to movement of construction materials including vehicles, regular water spray are being accomplished at construction site. Movement of construction debris are being covered while hauled and stored, roads properly cleaned and water sprayed in order to minimize dust in air. To reduce generation of dust the stone crusher has not been allowed at construction site.

4.2 Water Quality

The human waste from the labour camp has been appropriately disposed off through construction of sanitary latrines connected to appropriately designed septic tank system (consisting of septic tank and soakage pit). The labour camp is outside the project boundary and from that place possible management has been ensured to avoid any contamination of any sort around the project boundary. During the day time small quantity of wastewater generate (approximately 20 liters) per day.

4.3 Noise Level

- Use equipment i.e., designed with noise-control provision;
- Route truck traffic away from noise-sensitive areas, where feasible;
- Unnecessary vehicle movement has been avoided at project site;
- Switch off the engines while remain unused.

4.4 OHS at project site

Personal Safety Equipment (PSE): Use appropriate personal protection equipment, such as safety boots, helmets, gloves, protective clothing, goggles and ear protection to comply HSE obligation during construction phase.

4.5 Solid and Hazardous Waste

The solid wastes of domestic nature generated mainly in the labor sheds are regularly being collected in a separate bins and being disposed through municipal cleaners and being dumping in a designated municipal dumping place. The labor camp/sheds at outside the project boundary. In addition a small amount of solid kitchen wastes generate during day time which are also being disposed in methodic way through municipal cleaner.

Construction waste, like debris, waste scrap iron, rod etc. are collected weekly basis and stored at designated place and disposed of to the municipal disposal site. Hazardous i.e., welding electrode, chemical drums are being collected and stored in safe place before final disposal.

5.0 Regulatory Compliance progress

For carrying out the production, the standard for air and noise quality of the environment shall be determined in accordance with the standard specified in Schedule 2 and Schedule 4 in the Environment Conservation Rules 1997, compiled by DoE, Ministry of Environment and Forest, GoB. Schedule 2 and 4 are presented in the Table-6 and Table-7. The revised National Ambient Air Quality Standards Published in the Bangladesh Gazette (19 July 2005) and Noise Level Standard Published in the Bangladesh Gazette (7 September 2006) is shown in Table-8 and Table-9 respectively.

Table-6: Bangladesh Standards for Ambient Air

Location	Unit	SPM (Suspended particulate matters)	SO ₂ (Sulphur di-oxide)	NO _x (Oxide of Nitrogen)
Industrial and mix area	mg/m ³	500	120	100
Commercial and mix area	mg/m ³	400	100	100
Residential and Rural area	mg/m ³	200	80	80
Sensitive area	mg/m ³	100	30	30

*Source: (Schedule-2, Rule 12, Environment Conservation Rules 1997

Notes:

- Sensitive area includes national monuments, health resorts, hospital, archaeological sites, educational institutions and other government designated area (If any).
- Any industrial unit located not in a designated industrial area will not discharge such pollutants, which may contribute exceed the ambient air quality above in the surrounding areas of residential and sensitive areas.
- Suspended particulate matters mean airborne particles of diameters of 10 micron or less.

Table-7: Bangladesh Standards for Noise

Location Category	Standards determined at dB(A) unit	
	Day	Night
Silent Zone	50	40
Residential Area	55	45
Mixed Area (basically residential and together used for commercial and Industrial purposes)	60	50
Commercial area	70	60
Industrial area	75	70

*Source: ECR Schedule 4, A Compilation of Environmental Laws, DoE

Notes:

- Limits presented are one-hour energy equivalent sound exposure limits;
- 'Daytime' is 06.00 to 21.00 hours, 'nighttime' is 21.00 to 06.00 hour; and
- Sound exposure at a receptor resulting solely from the facility, irrespective of ambient sound levels, should not exceed the presented limits.

Table-8: Bangladesh Standards for Ambient Air (Revised 19th July in 2005)

Pollutant	Standards	Averaging Time
-----------	-----------	----------------

PM _{2.5}	15 µg /m ³	Annual (f)
	65 µg /m ³	24-hour (h)
PM ₁₀	50 µg /m ³	Annual (b)
	150 µg /m ³	24-hours(g)
SPM	200 µg /m ³	8-hours
SO ₂	80 µg /m ³ ; (0.03 ppm)	Annual
	365 µg / m ³ ; (0.14 ppm)	24-hour (a)
NO _x	100 µg /m ³ ; (0.053 ppm)	Annual
CO	10mg/m ³ ; (9 ppm) (a)	8-hours (a)
	40mg/m ³ ; (35 ppm) (a)	1-hour (a)
Lead	0.5 µg/m ³	Annual (i)
Ozone	157 µg /m ³ ; (0.08 ppm)	8-hour (e)
	235 µg /m ³ ; (0.12 ppm)	1-hour(d)

Notes:

- a) Not to be exceeded more than once per year
- b) The objective is attained when the annual arithmetic mean is less than or equal to 50µg/m³.
- c) The objective is attained when the expected number of days per calendar year with a 24-hour average of 150µg/m³ is equal to or less than 1.
- d) The objective is attained when the expected number of days per calendar year with the maximum hourly average of 0.12 ppm is equal to or less than 1.
- e) 3-year average of annual 4th highest concentration
- f) Spatially averaged over designated monitors
- g) The from the 99th percentile.
- h) The from is the 98th percentile
- i) Annual arithmetic average based on lead analysis of TSP samples operated on an every 6th day schedule.

Table-9: Bangladesh Standards for Noise (Revised 7th September in 2006)

Schedule -1

Rules 5(2) (Area Based Noise level value)

Location Category	Standards determined at dB(A) Leq unit	
	Day	Night
Silent Zone	50	40
Residential Area	55	45
Mixed Area (basically residential and together used for commercial and Industrial purposes)	60	50
Commercial area	70	60
Industrial area	75	70

*Source: ECR Schedule 1 (Revised 7th September 2006), A Compilation of Environmental Laws, DoE**5.1 Progress of Environmental Monitoring**

Ambient air quality monitoring: Last measurements of selected air quality parameters for SO₂, NO₂, CO, and PM_{2.5}, PM₁₀ have been carried out (January - March 2015) during the construction period. Air samples were collected for measurements of selected

air quality parameters for SO₂, NO₂, CO, and PM_{2.5}, PM₁₀. Test report also shown in main text.

River water monitoring: Last water sample was collected from Sitalakhya River in January - March for analyzing dissolved oxygen (DO) along with BOD₅, COD, Oil and Grease, Test results have been incorporated in the report.

Noise level monitoring: Last noise level monitoring is also necessary during construction period, because use of heavy construction equipment may increase the noise level at the work location as well as near the school and residential buildings adjacent to the project site. So keep noise pollution at ≤ 60 dB (Bangladesh standard) levels at mosque, school, populated area and other sensitive sites by erection of temporary baffles. Noise level data were collected from selected 5 locations for one hour duration with 30 sec interval. Test report also incorporated in the main report.

Waste management and process waste monitoring: Disposal of construction debris away the site and their appropriate disposal sanitary landfill are ongoing. Hazardous waste and non-hazardous waste are also disposing in a regular manner.

5.2 Environmental Clearance Certificate /Renewal of Environment Clearance

EGCB received the EIA approval letter from the DoE on 13.12.2012. Based on the EIA approval letter from DoE, EGCB has started construction work. After completion of construction of work EGCB will apply for environmental clearance certificate for operation of the plant.

6.0 Conclusions

At present Dr Kazi Muhammad Humayun Kabir, Environment Management Specialist, (Manager, Environment), EGCB Ltd. is posted at corporate office and looking after environmental issues of all projects of EGCB Ltd including Siddhirganj 335 MW CCPP's environmental issues. The recent environmental monitoring Management report (January-March, 2015) has been prepared on the basis of monitoring through third party in the field and supported by laboratory report.

Quarterly environmental monitoring of ambient air, noise and water quality parameters has been performed in since December 2014 to onward. The recent monitoring was accomplished on March 2015 by third party for the period of January- March 2015 as third quarter. Ambient air quality parameters were determined in the site with the help of respirable fine dust sampler, high volume sampler and noise quality was done by noise level meter. Water quality parameters were analyzed in the Enviro Quality Laboratory (EQL) and the laboratory test results is provided in the main report and found to be within acceptable limit as outlined in ECR 1997 except SPM.

Noise level quality of Siddhirganj CCPP has also been measured around the plant area found within the allowable limit of Industrial zone both the day and also at night time except south side near the school. The standard of Noise level at the School considered as silent zone and the values is 50 dB and 40 dB at day and night time respectively.

The BOD₅ of the Sitalakhya river is recorded to be higher than the DoE standard. Spill was not detected next to riverbeds around the worksite (oils, concrete waste or conglomerate asphalt, any colour changes of the water, etc.). Groundwater quality parameter at project site

tube well was performed to evaluate the existing ground water condition. From the lab test analysis it is found that all the parameters were within DoE standards.

House-keeping is also being maintained at the plant site. Segregated solid, liquid and hazardous waste are being monitored and managed at a designated place in coordinated manner. A temporary health care facility has been provided with qualified doctor and nurses to provide medical assistance to the workers and officers working at site. In case of serious accident and emergency an on call ambulance and subsequent clinical facilities has been ensured by the EPC management at site. Overall the environmental team is regularly accomplishing the monitoring and management of required environmental parameters under construction phase for 335MW CCPP and subsequently the monitoring reports are being sent all concern including World Bank, Dhaka office.

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