ENVIRONMENTAL STATEMENT

OF

KONAR OCP

FOR

2013-14

CENTRAL COALFIELDS LIMITED

EXECUTIVE SUMMARY

E-1. This Annual Environmental Statement has been prepared as per the Gazette Notification No. G.S.R. 329 (E) dated 13th March, 1992, the Ministry of Environment & Forests, Government of India.

E-2. The Konar OCP falls in B & K of Central Coalfields Limited and is situated in the Bokaro District of JHARKHAND state. The location of Konar OCP & other surface features are given in the surface plan as Annexure .

E-3. Planned capacity of Konar OCP is 3.5 Million Tonne/Year and present production of coal for the year 2013-14 is Nil .

E-4. The Environmental monitoring was carried out quarterly as per the guide lines of Ministry of Environment & Forests (MOEF). The Environmental Monitoring results for four quarter are appended as Annexures .

E-5. Ambient air quality is monitored to study the level of air pollution. The main pollutant is suspended particulate matter (SPM). It is difficult to quantify the amount of air pollutants generated due to opencast mining.

E-6. Water is not directly used during mining for coal production. It percolate into working area during mining operation. However, water is consumed for other purposes, mainly for industrial supply (workshop, haul road dust suppression, etc.).

E-7. The noise levels recorded are generally below permissible limits prescribed by Ministry of Environment & Forests (MOEF). There is no continuous high level sound frequency of impulsive nature.

E-8. Hazardous wastes is not being produced either from mining operation or from any pollution control facilities. Solid waste produced from the mining activities is overburden (OB) material and top soil. During 2013-14, 0.26 Million Cubic Metre of O.B .was excavated.

E-9. Regular Measures are being taken to control air, water and noise pollutions discussed in detail in part G, H & I of statement form.

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CHAPTER-I

PROJECT DESCRIPTION

1.0 INTRODUCTION

Konar OCP of Central Coalfield Ltd. is located at Konar, P.O. Sunday Bazar, District Bokaro in the East Bokaro Coalfield of JHARKHAND. It is situated on the Northern Bank of Konar river and North-West of Bokaro Colliery and comes under Bokaro & Kargali Area of CCL. Konar OCP mine designed at a rated capacity of 3.5 Million Tonnes (MT) of Coal per annum. The total mineable reserve of the mine is 88.23 MT of coal with corresponding overburden volume of 74.53Million cubic Metre. The life of the project is estimated 28 years. The average stripping ratio is 0.84 Cu.M/tonnes. Here grade of coal is GR`-G-7&W-IV. The mining Schemes comprises drilling and blasting operation for loosening of over-burden and coal before excavation. HEMMs (Heavy Earth Moving Machineries) has been engaged for coal production and over-burden removal.

This block is very rugged and has many hills and valleys. The height of the hills varies from 20 m to 60 m. The general elevation of the region varies from 213 m near the Konar river in the South-West to around 341 m in the north -west. the hills are separated from each other by deep Valleys. These valleys mostly are in north-south direction. The general shape of the ground is towards south. The Konar block lies in the catchment of river. Damodar. The Godonala, a tributory of the Damodar river drains the north-eastern part of the Konar block. Water sump in the mine does not exist as because the working quarry is on the higher topography. Rain water slides from the mine and joins Konar river after travelling a distance of about 2 KM.

1.1. COMMUNICATION

The block is connected well by rail and road. The Gomoh-Barkakana loop line of Eastern Railway separates the block from Bokaro and DVC collieries. The nearest railway station is Bokaro Thermal Power Railway Station. The Hazaribagh-Bermo road passes through the northern part of the block. The block is connected with Kathara and Swang collieries through a barrage road over Konar river. The block is situated at a distance of about 130 KM from Ranchi via Tenughat Dam.

1.2.DESCRIPTION OF THE PROJECT

Mineable coal reserve has been estimated 88.23 MT with corresponding over-burden volume of 74.53 M.Cu.M. This gives average stripping ratio of 0.84Cubic Meter per tonne. The estimated life of the project is 28 years.

There are altogether eleven Karo group of Coal Seams out of which Seams - X to III are present in the area. Out of these, only the Karo Special Seam (Seam-III) contains Coal suitable for metallurgical purpose, the remaining coal seams contain inferior quality coals, mainly because of the highly interbanded and intergrown nature of dirts. Among these inferior quality coal seams, the Karo upper Major, Karo Lower Major and VII and VI are thick seams. (Seam-VIII) is comparatively thick seam. The mine is producing over-burden. Present production of Coal during 2013-14 is Nil with 0.26 Million cubic metre of O.B.

Coal of this project is linked to Jarangdih Railway siding to feed power houses. O.B. dumps can be seen around the Quarry in the surface plan enclosed. Active O.B. dump is located in Khasmahal quarry. Present working is on the Northern part of the quarry. Volume of total O.B. to be generated during the life span of the mine is 74.53 Million m^3. Slope of the O.B. dumps confirm to natural angle of repose.

Working collieries surrounding the Project are - Bokaro colliery, KSP / Khasmahal OCP. Coal mining is the prime industry of the region. These developments has influenced various environmental attribute e.g. air and water quality, noise level, socio-economic profile, land use pattern etc.

1.3. **ENVIRONMENT MONITORING & RESULTS**

To assess the present status in respect of air, water, noise etc. of the region, an Environmental Quality Monitoring work was undertaken by C.M.P.D.I. as per work order awarded by C.C.L.

The relevant parameters of air - water - noise pollution were studied and the observations were as follows :-

i) The air quality analysis results are within prescribed limits.

ii) Water Quality Reports shows results within permissible limits.

iii) Noise level reading (LEQ) were within limit.

CHAPTER -II
ENVIRONMENTAL STATEMENT FOR KONAR OCP, C.C.LTD.
FOR THE YEAR 2013-14
P A R T -A

I. **Name and Address of the Mine**

NAME : Konar OCP

PLACE : Konar,

P.O.Sunday Bazar,

Distt: Bokaro

PHONE : NIL

TELEX : NIL

II. **INDUSTRY CATEGORY - PRIMARY**

III.**Date of last Environmental Audit Report submitted**

- This mine has been started since 12th Jan'14. This report is submitted first time.

IV **PRODUCTION CAPACITY:**

Planned capacity of Konar OCP is 3.5 Million Tonne/Year and present production of coal for the year 2013-14 is Nil.

PART - B

WATER AND RAW MATERIAL CONSUMPTION

I. WATER CONSUMPTION (M^3/ day)

1. Mining -
   - i. Haul road dust suppression : 180
   - ii. Workshop : 30
   - iii. Fire fighting : NIL
   - iv. Others(service building etc) : NIL

   b. Cooling : NIL

   c. Domestic : NIL

Name of raw material	Name of products	Consumption of raw materials (per unit of output)	
			During financial year (2012-13)
		NIL	

However the following materials are being consumed for OB removal and coal production:

Financial Year	Coal Production	OB Removal	Materials consumed		
			Explosive	POL	HS Diesel
2013-14	0.00	0.26M cum	28.526Te.	5991 Ltr.	122976 Ltr.

PART - C

POLLUTION GENERATED

(PARAMETERS SPECIFIED IN THE CONSENT ISSUED)

Pollutions	Quantity of pollution generated	Percentage variation from prescribed standards with reasons
Water	Water quality results are appended as Annexure	The analysis report reveals that parameters are within permissible limits.
Air	Konar OCP having opencast mines, the quantity of air coming out from the mine cannot be worked out. The ambient air quality results are appended as Annexure .	The analysis report reveals that parameters S.P.M., SO_X , No_X are within permissible limits.
Noise	Noise generation is because of mining operation, operation of HEMMs , transportation of coal etc .Recorded noise level are are placed as Annexure .	The noise level in and around the project is under the prescribed limits.

PART - D

HAZARDOUS WASTES

(As specified under Hazardous Waste Management and Handling Rules (1989)

Hazardous Waste	Total Quantity	
	During financial year(2013-14)	During financial year (2012-13)
(a) From process	Nil	Nil
(b) From pollution control facilities	Nil	Nil

Note - The entire process of coal mining, handling and despatch do not give rise to production of any hazardous waste.

PART -E

SOLID WASTES

	Total Quantity in million cubic metre.	
	During financial year (2012-13)	During financial year (2013-14)
(a) From process (Mining) Overburden	Nil	0.26Mm^3
(b) From pollution control facilities	Nil	Nil
(c) Quantity recycled or reutilised	The overburden removed from the quarry is presently accommodated in the voids of the Khasmahal quarry.	

PART -F

PLEASE SPECIFY THE CHARACTERISTICS IN TERMS OF CONCENTRATION AND QUANTITY OF HAZARDOUS AS WELL AS SOLID WASTE AND INDICATE, DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTES

1. As already mentioned at PART-D above that the entire process of Coal mining, handling and despatch do not give rise to production of any hazardous wastes.

Coal and over-burden are excavated from the mine by drilling and blasting, out of which coal is dispatched directly Jarangdih railway siding while the over-burden forms rejects are accommodated in and around the Khasmahal dumps. To safeguard against any possible slope failures arising out of the high rising dumps as well as to safeguard against air-water pollutions and soil wash-off these dumps are given desireable shapes. All these dumps are located adjacent to the quarry as shown in the surface plan.

2. In the year 2013-14, a total zero quantity of coal was produced from opencast mine alongwith 0.26 M m^3 of over burden removal.

3. Over-burden disposal Practice :

(a) As such O.B. is being dumped externally in the quarry of Khasmahal.

The O.B. generated presently is being dumped externally.

P A R T - G

IMPACT OF POLLUTION CONTROL MEASURES ON CONSERVATION OF NATIONAL RESOURCE AND CONSEQUENTLY ON COST OF PRODUCTION

In order to carry out mining operation in an eco-friendly manner the following pollution control measures have been adopted and proposed :

a. Air Pollution Control Measures :

i. Regular sprinkling of water on haul road and other roads.
ii. Blasting operations are carried out during congenial weather conditions e.g. avoiding temperature inversion preferably the wind velocity is high.
iii. Dust suppression system at all transfer points.
iv. Vegetation on external O.B. dumps immediately after it is completely formed.
v. Plantation in all available open spaces in lease hold around the mine pit, along roads, around coal handling plant and around colony.

b. Water Pollution Control Measures :

i. The general elevation of the region varies from 213 metre near the Konar river in the South-West to around 341 metre in the north-west. The hills are separated from each other by deep valleys. These valleys mostly are in north-south direction. The general dip of the ground is towards south. The Konar block lies in the catchment area of Konar river. This river is a tributory to river Damodar. The Godonala, a tributory to river Damodar river drains the north-eastern part of the Konar block. Water sump in the mine does not exist as because working quarry is on the higher topography. Rain water slides from the mine and join Konar river after travelling a distance of about 2 K.M.

(c) Noise Pollution Control :

It has been observed that most of the high level noise generated in the project area is equipment originated. Moreover, there is no problem of noise pollution is confined to quarry areas where HEMM, particularly drill, shovel and dumper operates. The following control measures are followed and proposed-

i. HEMMs should be provided with sound proof cabin so that operators are not subjected to high noise levels.

ii. Ear muffs are to be provided to each worker exposed to high noise levels.

iii. Plantation/Vegetative barriers have been developed around noise prone areas as well as residential location.

iv. Efforts are being made to produce least noise levels.

(d) Solid Waste Management :

The only solid waste produced in the Mining process at Konar OCP is the over-burden. These over-burdens are dumped in the quarry of Khasmahal. The O.B. dump confirm to natural angle of repose.

IMPACT OF POLLUTION CONTROL MEASURES ON COST OF PRODUCTION
COST OF ENVIRONMENTAL MANAGEMENT DURING 2010-11

Consent fee ,water cess etc. are regularly deposited. Expenditure is incurred on monitoring and other pollution control measures.

P A R T - H
ADDITIONAL INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION

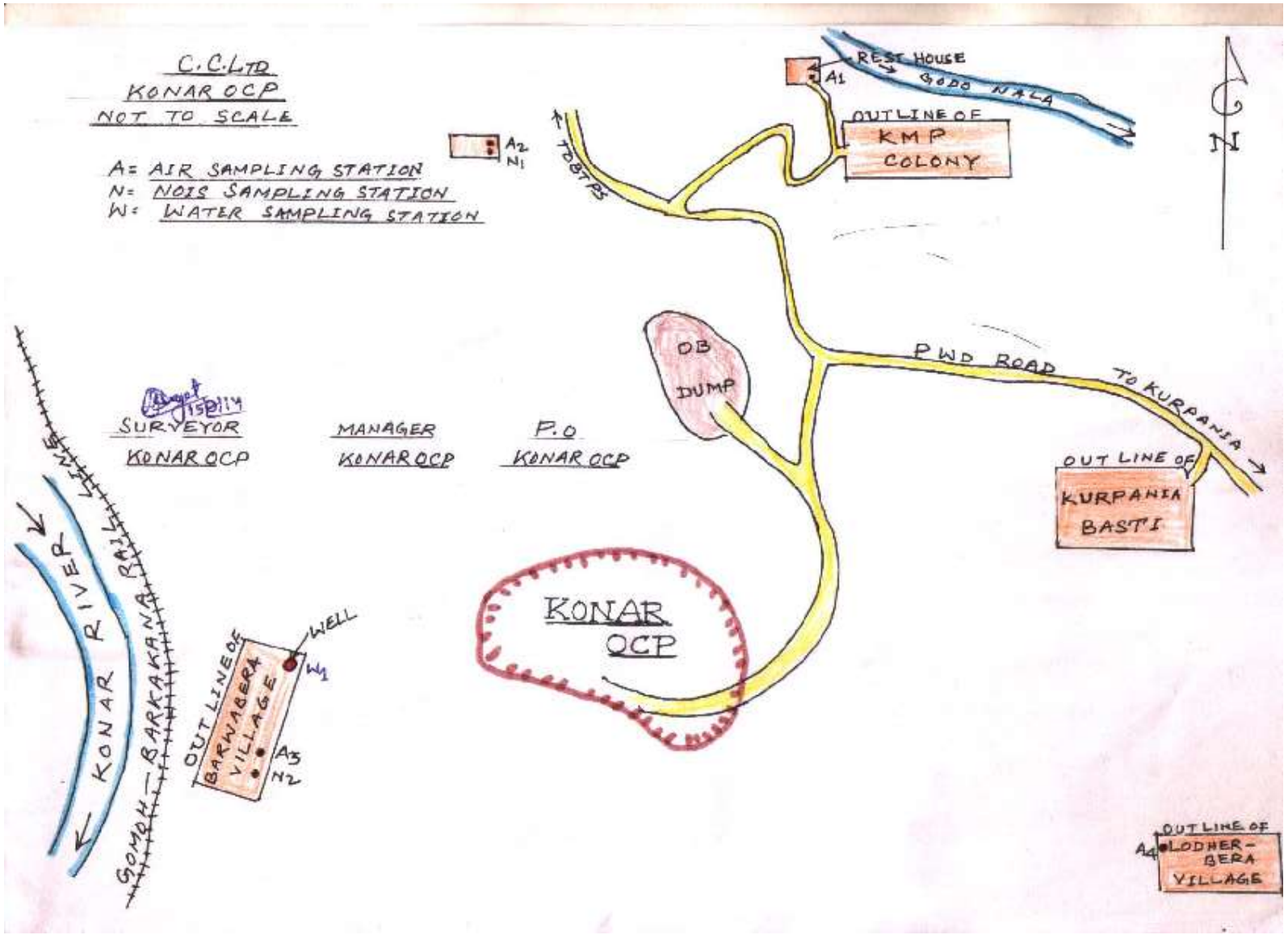
Additional investment proposal has not been finalised yet. However, it is proposed to install an effluent treatment plant for workshop effluent. Plantation work is to be taken up as soon as the O.B. dumps are completed. The residential location and quarry are to be provided with green barriers which will serve as dust filters and noise arrestors.

P A R T -I
ANY OTHER PARTICULARS IN RESPECT OF ENVIRONMENTAL PROTECTION AND ABATEMENT OF POLLUTION.

The major problems of environmental control at Konar OCP are:

* Management of solid wastes in form of over-burden dumps.
* Treatment and disposal of mine effluents.
* Creation of green cover over O.B. dumps and around residential area. As stated earlier out of the aforesaid issues only the green cover - plantation work can only be taken-up after completion of dumps. Remaining items can be dealt through out the operational period of the mine. However, greening of the old O.B. dumps can be taken up.

* A comprehensive Environmental Management Plan(EMP) for this project (35 MTY), formulated by RI-III of CMPDI, was approved by the MOEF vide letter No. J -11015/337/2005-IA,II(M) dated 02.02.2006.


C.C.LTD
KONAR OCP
NOT TO SCALE
A= AIR SAMPLING STATION
N= NOIS SAMPLING STATION
W= WATER SAMPLING STATION
A2
N1
REST HOUSE
A1
GODO NALA
OUTLINE OF
KMP
COLONY
TO BTPS
N
OB
DUMP
PWD ROAD
TO KURPANIA
OUT LINE OF
KURPANIA
BASTI
SURVEYOR
KONAR OCP
MANAGER
KONAR OCP
P.O
KONAR OCP
KONAR
OCP
KONAR RIVER
GOMOH-BARKAKANA RAILWAYS
OUT LINE OF
BARNAGERA
VILLAGE
WELL
W1
A3
N2
OUT LINE OF
LODHER-
BERA
VILLAGE
A4

TEST REPORT

Job No. : 094313025 Date of Issue: 17/01/14
Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/DGM-HOD(E&F)/2013/1570 Dt. 22/11/13
Sample Description : Air
Product Specification (BIS) : Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000
Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000
Date of receipt of sample : 02/01/14 Date of performance of Test: 02/01/14 to 17/01/14

TEST RESULT

The sample has been tested with the following results:-

Area : **B & K** **Year** 2013
Project : **Konar OCP** **Quarter Ending Dec. '2013**

All parameters are in µg/m^3

Name of the Sampling Station *Rest House*

Date of Sampling	SPM	RPM	SO2	NOx	Remarks
30/12/2013 - 31/12/2013	93	44	<25	21	

Name of the Sampling Station P.O.Office

Date of Sampling	SPM	RPM	SO2	NOx	Remarks
30/12/2013 - 31/12/2013	131	106	<25	22	

Name of the Sampling Station Lodherbera Village

Date of Sampling	SPM	RPM	SO2	NOx	Remarks
30/12/2013 - 31/12/2013	194	84	<25	23	

Name of the Sampling Station Barwabera Village

Date of Sampling	SPM	RPM	SO2	NOx	Remarks
30/12/2013 - 31/12/2013	422	249	<25	20	

Analysed By **Checked By** **G.M (Chemist)**
Env. Lab, CMPDI(HQ)
B&K – 26 **(Authorized Signatory)**

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TEST REPORT

Job No. : 094313025 Date of Issue: 02/01/14
Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/DGM-HOD(E&F)/2013/1570 Dt. 22/11/13
Sample Description : Noise
Product Specification (BIS) : Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000
Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000
Date of receipt of sample : 02/01/14 Date of performance of Test: -

TEST RESULT

The sample has been tested with the following results:-

Area : **B & K** **Year** 2013
Project : **Konar OCP** **Quarter Ending Dec. '2013**

Sampling Stations
1 P.O.Office
2 Barwabera Village

Station Name	Date of Sampling	Noise Level
P.O.Office	31/12/2013	48.7
Barwabera Village	31/12/2013	46.5

Permissible Limit of Noise Level vide Gazette Notification G.S.R. 742(E) Dt. 25th Sep '2K

	6.00 AM to 10.00 PM	*10.00 PM to 6.00 AM*
Noise Level	*Leq 75 dB(A)*	*Leq 70 dB(A)*

Checked By

G.M (Chemist)
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

B&K – 27

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TEST REPORT

Job No. : 094313025 Date of Issue: 10/01/14
Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/DGM-HOD(E&F)/2013/1570 Dt. 22/11/13
Sample Description : Effluent Water
Product Specification (BIS) : MoEF Sch VI Class 'a' std.
Test Required : 27 items as per MoEF Sch VI Class 'a' std.
Date of receipt of sample : 02/01/14 Date of performance of Test: 02/01/14 to 10/01/14

TEST RESULT

The sample has been tested with the following results:-

Area : **B & K** **Year** 2013
Project : **Konar OCP** **Quarter Ending Dec.** **'2013**

Sampling Stations 1 Lagoon Konar OCP 31-Dec-13

All parameter are in mg/l unless specified *BDL - Below Detectable Limit*

Sl.No	Parameter	Sampling Stations			Below Detection Limit	MOEF -SCH-VI STANDARDS	BIS Standard	Method
		1	2	3				
1	Colour & Odour	Acceptable			5.0 Cannot be quantified	Acceptable	APHA, 22nd Edition IS 3025 /05:1983	Pt.Cobalt Physical, Qualitative
2	Total Suspended Solids	58			25.00	100.0	IS-3025/17:1984	Gravimetric
3	pH value	8.07			0.01	5.5 to 9.0	IS-3025/11:1983	Electrometric
4	Temperature (^{o}C)	18.9			5.0	Shall not exceed 5 C above the receiving temp.	IS-3025/09:1984	Thermometeric
5	Oil & Grease	BDL			2.00	10.0	IS-3025/39:1991	Partition Gravimetric
6	Total Residual Chlorine	BDL			0.02	1.0	APHA, 22nd Edition	DPD
7	Ammonical Nitrogen	0.32			0.01	50.0	IS:3025/34:1988	Nesseler's
8	Total Kjeldahl Nitrogen	2.60			1.00	100.0	IS:3025/34:1988	Nesseler's
9	Free Ammonia	BDL			0.01	5.0	IS:3025/34:1988	Nesseler's
10	B.O.D (3 days 27^{o}C)	2.00			2.00	30.0	IS-3025/44:1993	3 day incubation at 27°C
11	COD	65			4.00	250.0	IS-3025/58:2006	Titration
12	Arsenic	BDL			0.005	0.2	APHA, 22nd Edition	AAS-GTA
13	Lead	BDL			0.005	0.1	APHA, 22nd Edition	AAS-GTA
14	Cadmium	BDL			0.0005	2.0	APHA, 22nd Edition	AAS-GTA
15	Hexavalent Chromium	BDL			0.01	0.1	APHA, 22nd Edition	Diphenylcarbohydrazide
16	Total Chromium	BDL			0.06	2.0	IS-3025/52:2003	AAS-Flame
17	Copper	BDL			0.03	3.0	IS-3025/42:1992	AAS-Flame
18	Zinc	BDL			0.01	5.0	IS-3025/49:1994	AAS-Flame
19	Selenium	BDL			0.005	0.05	APHA, 22nd Edition	AAS-GTA
20	Nickel	BDL			0.10	3.0	IS-3025/54:2003	AAS-Flame
21	Fluoride	0.37			0.02	2.0	APHA, 22nd Edition	SPADNS
22	Dissolved Phosphate	BDL			0.30	5.0	APHA, 22nd Edition	Molybdovanadate
23	Sulphide	BDL			0.005	2.0	APHA, 22nd Edition	Methylene Blue
24	Phenolic Compounds	BDL			0.002	1.0	APHA, 22nd Edition	4-Amino Antipyrine
25	Manganese	BDL			0.02	2.0	APHA, 22nd Edition	AAS-Flame
26	Iron	BDL			0.06	3.0	IS-3025/53:2003	AAS-Flame
27	Nitrate Nitrogen	1.7			0.50	10.0	APHA, 22nd Edition	UV Spectrphotometric

Analysed By **Checked By** **G.M (Chemist)**
Env. Lab, CMPDI(HQ)
B&K – 28 **(Authorized Signator)**

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TEST REPORT

Job No. : 094313025 Date of Issue: 10/01/14
Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/DGM-HOD(E&F)/2013/1570 Dt. 22/11/13
Sample Description : Surface Water
Product Specification (BIS) : IS: 2296 Inland Surface Water Class 'C'
Test Required : 19 items as per IS: 2296
Date of receipt of sample : 02/01/14 Date of performance of Test: 02/01/14 to 10/01/14

TEST RESULT

The sample has been tested with the following results:-

Area : **B & K** **Year** 2013
Project : **Konar OCP** **Quarter Ending Dec.** **'2013**

Sampling Stations 1 Upstream of Konar River 31-Dec-13
2 Downstream of Konar River 31-Dec-13

All parameter are in mg/l unless specified *BDL - Below Detectable*

Sl.No.	Parameter	Sampling Stations			Below Detection Limit	IS : 2296 INLAND SURFACE WATER [1982] Class 'C'	BIS Standard	Method
		1	2	3				
1	Colour, Hazen unit,Max	18	20		5.0	300	APHA, 22nd Edition	Platinum Cobalt
2	Total Suspended Solids	44	58		25.00	$	IS-3025/17:1984	Gravimetric
3	Disolved Oxygen	5.40	5.20		0.10	4	IS-3025/38:1989	Winkler Azide
4	pH value	8.10	8.14		0.01	6.5-8.5	IS-3025/11:1983	Electrometric
5	Iron	BDL	BDL		0.06	5	IS-3025/53:2003	AAS-Flame
6	Chlorides	22	24		2.00	600	IS-3025/32:1988	Argentometric
7	BOD (3 days 27°C)	2.60	2.80		2.00	3	IS-3025/44:1993	3 day incubation at 27°C
8	Total Dissolved Solids	188	194		25.00	1500	IS-3025/16:1984	Gravimetric
9	Copper	BDL	BDL		0.03	1.5	IS-3025/42:1992	AAS-Flame
10	Sulphate	20	22		2.00	400	APHA, 22nd Edition	Turbidity
11	Nitrate	6.20	6.64		0.50	50	IS-3025/34:1988	Nesseler's
12	Fluoride	0.38	0.42		0.02	1.5	APHA, 22nd Edition	SPADNS
13	Cadmium	BDL	BDL		0.0005	0.01	APHA, 22nd Edition	AAS-GTA
14	Selenium	BDL	BDL		0.005	0.05	APHA, 22nd Edition	AAS-GTA
15	Arsenic	BDL	BDL		0.005	0.2	APHA, 22nd Edition	AAS-GTA
16	Lead	BDL	BDL		0.005	0.1	APHA, 22nd Edition	AAS-GTA
17	Zinc	BDL	BDL		0.01	15	IS-3025/49:1994	AAS-Flame
18	Hexavalent Chromium	BDL	BDL		0.01	0.05	APHA, 22nd Edition	Diphenylcarbohydrazide
19	Phenolics	BDL	BDL		0.002	0.005	APHA, 22nd Edition	4-Amino Antipyrine

Class-C: Tolerance Limit for surface water used for drinking water source with conventional treatment followed by disinfection
$ represents limits not specified

Analysed By **Checked By** **G.M (Chemist)**
Env. Lab, CMPDI(HQ)
B&K – 29 **(Authorized Signatory)**

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TEST REPORT

Job No. : 094313025 Date of Issue: 10/01/14
Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/DGM-HOD(E&F)/2013/1570 Dt. 22/11/13
Sample Description : Drinking Water
Product Specification (BIS) : IS: 10500 Drinking Water Standards
Test Required : 24 items as per IS: 10500
Date of receipt of sample : 02/01/14 Date of performance of Test: 02/01/14 to 10/01/14

TEST RESULT

The sample has been tested with the following results:-

Area : **B & K** **Year** 2013
Project : **Konar OCP** **Quarter Ending Dec.** **'2013**

Sampling Stations 1 Well at Barwabera Village 31-Dec-13

All Parameters are in mg/l unless specified *BDL- Below Detectable Limit*

Sl.No	Parameter	Sampling Stations			Below Detection Limit	IS:10500 Drinking Water Standards	BIS Standard	Method
		1	2	3				
1	Colour, Hazen unit.Min.	6			5.0	5	APHA, 22nd Edition	Platinum Cobalt
2	Odour	Unobj.			--	Unobj.	IS 3025 /05:1983	Physical, Qualitative
3	Turbidity, NTU, Max	7			1.0	5	IS-3025/10:1984	Nephelometric
4	pH value	8.05			0.01	6.5-8.5	IS-3025/11:1983	Electrometric
5	Alkalinity	88			4.00	200	IS-3025/23:1986	Titration
6	Total Hardness (c_aco_3)	92			4.00	300	IS-3025/21:1983	EDTA
7	Iron	BDL			0.06	0.3	IS-3025/53:2003	AAS-Flame
8	Chlorides	24			2.00	250	IS-3025/32:1988	Argentometric
9	Residual Free chlorine, Min.	0.12			0.02	0.2	APHA, 22nd Edition	DPD
10	Total Dissolved Solids	194			25.00	500	IS-3025/16:1984	Gravimetric
11	Calcium	24			1.60	75	IS-3025/40:1991	EDTA
12	Copper	BDL			0.03	0.05	IS-3025/42:1992	AAS-Flame
13	Manganese	BDL			0.02	0.1	APHA, 22nd Edition	AAS-Flame
14	Sulphate	14			2.00	200	APHA, 22nd Edition	Turbidity
15	Nitrate	3.54			0.5	45	IS-3025/34:1988	Nesseler's
16	Fluoride	0.42			0.02	1.0	APHA, 22nd Edition	SPADNS
17	Cadmium	BDL			0.0005	0.01	APHA, 22nd Edition	AAS-GTA
18	Selenium	BDL			0.005	0.01	APHA, 22nd Edition	AAS-GTA
19	Arsenic	BDL			0.005	0.05	APHA, 22nd Edition	AAS-GTA
20	Lead	BDL			0.005	0.05	APHA, 22nd Edition	AAS-GTA
21	Zinc	BDL			0.01	5	IS-3025/49:1994	AAS-Flame
22	Hexavalent Chromium	BDL			0.01	0.05	APHA, 22nd Edition	Diphenylcarbohydrazide
23	Boron	BDL			0.20	1.0	APHA, 22nd Edition	Carmine
24	Phenolics	BDL			0.002	0.001	APHA, 22nd Edition	4-Amino Autipyrine

Analysed By **Checked By** **G.M (Chemist)**
Env. Lab, CMPDI(HQ)
B&K –30 **(Authorized Signatory)**

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TEST REPORT

Lab No. T-2187	**Job No. 094313025**	**Year**	**2013-14**
Type of Sample:	Ambient Air	Quarter Ending	March '14
Customer / W. O. no. & Date:	CCL/DGM-HOD (E&F)/2013/ 1570 Dt. 22/11/13	Date of Receipt of Sample:	03.04.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	03.04.14-17.04.14
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution	Date of Reporting:	17.04.14
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000		
Remarks & Observation:	All samplers placed 1.5 m above ground level		

TEST RESULT

The sample has been tested with the following results:-

Area : **B&K** **Project:** **Konar OCP**

Stations: **Date of Sampling:**

1. Rest House 31-31/03/2014
2. P.O.Office 31-31/03/2014
3. Barwabera Village 31-31/03/2014
4. Lodherbera Village 29-29/03/2014

S.No	**Test Parameters**	**Units**	**Test Method**	**TEST RESULT**			
Stations:				**1**	**2**	**3**	**4**
1	Total Particulate Matter (PM_{10}+ >PM_{10})	µg/m^3	Lab.SOP 4 based on – IS: 5182/23, 2006	641	356	404	573
2	Particulate Matter (PM_{10})	µg/m^3	IS: 5182/23 2006	524	278	178	410
3	Sulphur Dioxide (SO_2)	µg/m^3	IS: 5182 /02 2001 R-2006	<25	<25	<25	<25
4	Nitrogen Oxides (as NO_x)	µg/m^3	IS: 5182 /02 1975 R-1998	22	21	19	19

Note: Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000 is enclosed along for reference

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Env. Lab, CMPDI(HQ)
B&K – 26 **(Authorized Signatory)**

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TEST REPORT

Lab No. T-2187	**Job No. 094313025**	**Year**	**2013-14**
Type of Sample:	Noise	Quarter Ending	March '14
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2013/ 1570 Dt. 22/11/13	Date of Receipt of Sample:	03.04.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	-
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25th Sept.'2000	Date of Reporting:	-
Remarks:			

TEST RESULT

The sample has been tested with the following results:-

Area : **B&K** **Project:** **Konar OCP**

Stations:

1. P.O.Office
2. Barwabera Village
3.
4.

Station Name	**Date of Sampling**	**Noise Level**
P.O.Office	31/03/2014	48.2
Barwabera Village	31/03/2014	48.3

Permissible Limit of Noise Level vide Gazette Notification G.S.R. 742(E) Dt. 25th Sep '2K

	6.00 AM to 10.00 PM	*10.00 PM to 6.00 AM*
Noise Level	*Leq 75 dB(A)*	*Leq 70 dB(A)*

Checked By

B&K – 27

G.M (Chemist)
Env. Lab, CMPDI(HQ)
(Authorized Signatory)

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TEST REPORT

Lab No. T-2187	**Job No. 094313025**	**Year - 2013-14**	**2013-14**
Type of Sample:	**Effluent Water**	Quarter Ending	**March '14**
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2013/ 1570 Dt. 22/11/13	Date of Receipt of Sample:	03.04.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	03.04.14-14.04.14
Testing Protocol:	**MOEF -SCH-VI STANDARDS, Class 'A'**	Date of Reporting:	14.04.14
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane,		
	Colour as observed is transparent		

TEST RESULT

The sample has been tested with the following results:-

Area : **B&K** **Project:** **Konar OCP**

Stations:

1. Lagoon Konar OCP
2.
3.

Date of Sampling: 31/03/2014

Sl.No.	Parameter	Sampling Stations			Desirable Limits	MOEF -SCH-VI STANDARDS Class 'A'	BIS Standard & Method
		1	2	3			
1	Total Suspended Solids, mg/l, Max	54			25.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
2	pH value	8.05			0.01	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
3	Temperature (^{o}C)	25.0			5.0	Shall not exceed 5 C above the receiving temp.	IS-3025/09:1984, Thermometeric
4	Oil & Grease, mg/l, Max	2.00			2.00	10.0	IS 3025/39:1991, R : 2003, Partition Gravimetric
5	Total Residual Chlorine, mg/l, Max	<0.02			0.02	1.0	APHA, 22nd Edition, DPD
6	Ammonical Nitrogen, mg/l, Max	0.12			0.01	50.0	IS 3025/34:1988, R : 2009, Nessler's
7	Total Kjeldahl Nitrogen, mg/l, Max	1.15			1.00	100.0	IS:3025/34:1988, Nesseler's
8	Free Ammonia, mg/l, Max	<0.01			0.01	5.0	IS:3025/34:1988, Nesseler's
9	B.O.D (3 days 27^{o}C), mg/l, Max	2.00			2.00	30.0	IS 3025 /44:1993,R:2003 3 day incubation at 27°C
10	COD, mg/l, Max	64			4.00	250.0	APHA, 22nd Edition, Closed Reflux, Titrimetric
11	Arsenic, mg/l, Max	<0.005			0.005	0.2	IS 3025/37:1988 R : 2003, AAS-VGA
12	Lead, mg/l, Max	0.02			0.005	0.1	APHA, 22nd Edition, AAS-GTA
13	Cadmium, mg/l, Max	<0.0005			0.0005	2.0	APHA, 22nd Edition, AAS-GTA
14	Hexavalent Chromium, mg/l, Max	<0.01			0.01	0.1	APHA, 22nd Edition, Diphenylcarbohydrazide
15	Total Chromium, mg/l, Max	<0.06			0.06	2.0	IS-3025/52:2003, AAS-Flame
16	Copper, mg/l, Max	<0.03			0.03	3.0	IS 3025/42: 1992 R : 2009, AAS-Flame
17	Zinc, mg/l, Max	<0.01			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame
18	Selenium, mg/l, Max	<0.005			0.005	0.05	APHA, 22nd Edition, AAS-GTA
19	Nickel, mg/l, Max	<0.10			0.10	3.0	IS-3025/54:2003, AAS-Flame
20	Fluoride, mg/l, Max	0.38			0.02	2.0	APHA, 22nd Edition, SPADNS
21	Dissolved Phosphate, mg/l, Max	<0.30			0.30	5.0	APHA, 22nd Edition Molybdovanadate
22	Sulphide, mg/l, Max	<0.005			0.005	2.0	APHA, 22nd Edition, Methylene Blue
23	Phenolic Compounds, mg/l, Max	<0.002			0.002	1.0	APHA, 22nd Edition 4-Amino Antipyrine
24	Manganese, mg/l, Max	<0.02			0.02	2.0	IS-3025/59:2006, AAS-Flame
25	Iron, mg/l, Max	<0.06			0.06	3.0	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
26	Nitrate Nitrogen, mg/l, Max	1.4			0.50	10.0	APHA, 22nd Edition, UV-Spectrphotometric

Analysed By **Checked By**

G.M (Chemist)
Env. Lab, CMPDI(HQ)
(Authorized Signator)

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TEST REPORT

Lab No. T-2187	**Job No. 094313025**	**Year - 2013-14**	**2013-14**
Type of Sample:	**Surface Water**	Quarter Ending	March '14
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2013/ 1570 Dt. 22/11/13	Date of Receipt of Sample:	03.04.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	03.04.14-14.04.14
Testing Protocol:	-	Date of Reporting:	14.04.14
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane,		
	Colour as observed is transparent		

TEST RESULT

The sample has been tested with the following results:-

Area : **B&K** **Project:** **Konar OCP**

Stations:

1. Upstream of Konar River — **Date of Sampling:** 31/03/2014
2. Downstream of Konar River — 31/03/2014
3.
4.

Sl. No	Parameter	Sampling Stations				Desirable Limits	BIS Standard & Method
		1	2	3	4		
1	Total Suspended Solids, mg/l, Max	48	54			25.00	IS 3025 /17:1984, R :1996, Gravimetric
2	Disolved Oxygen, min.	5.40	5.10			0.10	IS 3025/381989, R : 2003, Winkler Azide
3	pH value	8.10	8.15			0.01	IS-3025/11:1983, R-1996, Electrometric
4	Iron, mg/l, Max	<0.06	<0.06			0.06	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
5	Chlorides, mg/l, Max	22	24			2.00	IS-3025/32:1988, R-2007, Argentometric
6	BOD (3 days 27^{o}C), mg/l, Max	2.40	2.80			2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
7	Dissolved Solids, mg/l, Max	174	188			25.00	IS 3025 /16:1984 R : 2006, Gravimetric
8	Copper, mg/l, Max	<0.03	<0.03			0.03	IS 3025 /42 : 1992 R : 2009, AAS-Flame
9	Sulphate, mg/l, Max	24	26			2.00	APHA, 22nd Edition Turbidity
10	Nitrate , mg/l, Max	6.64	7.08			0.50	APHA, 22nd Edition, UV-Spectrphotometric
11	Fluoride, mg/l, Max	0.55	0.62			0.02	APHA, 22nd Edition SPADNS
12	Cadmium, mg/l, Max	0.002	0.001			0.0005	APHA, 22nd Edition AAS-GTA
13	Selenium, mg/l, Max	<0.005	<0.005			0.005	APHA, 22nd Edition AAS-GTA
14	Arsenic, mg/l, Max	<0.005	<0.005			0.005	IS 3025/37:1988 R : 2003, AAS-VGA
15	Lead, mg/l, Max	0.02	0.01			0.005	APHA, 22nd Edition AAS-GTA
16	Zinc, mg/l, Max	<0.01	<0.01			0.01	IS 3025 /49 : 1994, R : 2009, AAS-Flame
17	Hexavalent Chromium, mg/l, Max	<0.01	<0.01			0.01	APHA, 22nd Edition, 1,5 - Diphenylcarbohydrazide
18	Phenolics, mg/l, Max	<0.002	<0.002			0.002	APHA, 22nd Edition 4-Amino Antipyrine

Analysed By **Checked By** **G.M (Chemist)**
Env. Lab, CMPDI(HQ)
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TEST REPORT

Lab No. T-2187	**Job No. 094313025**	**Year**	**2013-14**
Type of Sample:	**Drinking Water**	Quarter Ending	March '14
Customer / W. O. no. & Date:	CCL/DGM-HOD(E&F)/2013/ 1570 Dt. 22/11/13	Date of Receipt of Sample:	03.04.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	03.04.14-14.04.14
Testing Protocol:	**IS:10500 Drinking Water Standards**	Date of Reporting:	14.04.14
Remarks & Observation:	Samples received in 2 ltr plastic Jerri cane,		
	Colour as observed is transparent		

TEST RESULT

The sample has been tested with the following results:-

Area : **B&K** **Project:** **Konar OCP**

Stations:
1. Well at Barwabera Village
2.
3.

Date of Sampling: 31/03/2014

Sl.No	Parameter	Sampling Stations			Desirable Limits	IS:10500 Drinking Water Standards	Standard / Test Method
		1	2	3			
1	Odour	Agree.			--	Agreeable	IS 3025 /05:1983, R-2012, Qualitative
2	Turbidity, NTU, Max	5			1.0	1	IS-3025/10:1984 R-1996, Nephelometric
3	pH value	8.10			0.01	6.5 to 8.5	IS-3025/11:1983, R-1996, Electrometric
4	Alkalinity, mg/l, Max	48			4.00	200	IS-3025/23:1986,Titration
5	Total Hardness (c_aco_3), mg/l, Max	92			4.00	200	IS-3025/21:1983, R-2002, EDTA
6	Iron (as Fe), mg/l, Max	<0.06			0.06	0.3	IS 3025 /53 : 2003, R : 2009 , AAS-Flame
7	Chlorides (as Cl), mg/l, Max	24			2.00	250	IS-3025/32:1988, R-2007, Argentometric
8	Residual Free chlorine, Min.	0.10			0.02	0.2	APHA 22nd Edition, DPD
9	Total Dissolved Solids, mg/l, Max	184			25.00	500	IS 3025 /16:1984 R : 2006, Gravimetric
10	Calcium(as Ca), mg/l, Max	24			1.60	75	IS-3025/40:1991,EDTA
11	Copper (as Cu), mg/l, Max	<0.03			0.03	0.05	IS 3025/42 : 1992 R : 2009, AAS-Flame
12	Manganese (as Mn), mg/l, Max	<0.02			0.02	0.1	IS-3025/59:2006,AAS-Flame
13	Sulphate (as SO_4), mg/l, Max	26			2.00	200	APHA 22nd Edition. Turbidity
14	Nitrate (as NO_3), mg/l, Max	4.43			0.5	45	APHA, 22nd Edition, UV-Spectrphotometric
15	Fluoride (as F), mg/l, Max	0.44			0.02	1.0	APHA 22nd Edition , SPADNS
16	Cadmium (as Cd), µg/l, Max	0.001			0.0005	0.003	APHA 22nd Edition, AAS-GTA
17	Selenium (as Se), mg/l, Max	<0.005			0.005	0.01	APHA, 22nd Edition, AAS-GTA
18	Arsenic (as As), µg/l, Max	<0.005			0.005	0.01	IS 3025/ 37:1988 R : 2003, AAS-VGA
19	Lead (as Pb), mg/l, Max	0.03			0.005	0.01	APHA 22nd Edition, AAS-GTA
20	Zinc (as Zn), mg/l, Max	<0.01			0.01	5.0	IS 3025/ 49 : 1994, R : 2009, AAS-Flame
21	Hexavalent Chromium, mg/l, Max,	<0.01			0.01	-	APHA 22nd Edition, Diphenylcarbohydrazide
22	Boron (as B), mg/l, Max	<0.20			0.20	0.5	APHA 22nd Edition Carmine
23	Phenolics, mg/l, Max	<0.002			0.002	0.001	APHA 22nd Edition,4-Amino Autipyrine

Analysed By **Checked By** **G.M (Chemist)**
Env. Lab, CMPDI(HQ)
B&K –30 **(Authorized Signatory)**

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