

# **ENVIRONMENTAL STATEMENT**

**OF**

**RAY - BACHRA UGP**

**FOR**

**2013-14**



**CENTRAL COALFIELDS LIMITED**

**AUGUST, 2014**

**ENVIRONMENT DIVISION  
CCL, RANCHI**

## EXECUTIVE SUMMARY

E.1.0 This Environment Statement Report has been prepared as per gazette notification no. G.S.R. 329(E) dated 13 th March,1992 laid down by Ministry of Environment and Forest. The 'Environment Audit' has been subsequently renamed to '**Environment Statement**' vide MoEF gazette notification No. G.S.R. 386(E) dated 22nd April,1993.

E.2.0 Ray - Bachra Underground Mine of Central Coalfield Ltd. is situated in south eastern side of North Karanpura Coalfield, which lies in Chatra District of Jharkhand State.

E.3.0 The planned production capacity of Ray - Bachra Underground Mine is 0.30 MTY. The Ministry of Environment & Forest, Govt. of India vide No. J-11015/421/2008-IA.II (M) dt: 15 February, 2013 has granted Environmental Clearance to the Underground Mine. The project produced 0.065 MT of coal during the year 2013-14. The project consists of two underground mines namely Ray and Bachra. The Saphi river divides these two mines in Ray and Bachra block.

E.4.0 Quarterly environmental monitoring has been carried out by CMPDI for air, water and noise parameters. The results of the four quarter of 2013-14 are enclosed.

E.5.0 Environmental Statement report reveals the following facts regarding environmental aspect of this project:

E.5.1 The concentration of SO<sub>2</sub>, NO<sub>x</sub> in ambient air in core zone is well within the permissible limits.

E.5.2 The quality of sump water at the disposal point is meeting the prescribed standards with respect to all parameters.

E.5.4 The noise level in the core and buffer zone is not crossing the threshold value of 85dB (A).

E.5.5 No solid waste material is generated from the mine.

E.5.6 No hazardous waste material is being produced either from any process or any pollution control facilities.

## CHAPTER - I

### ENVIRONMENTAL STATEMENT FOR COAL MINING PROJECT

Environmental Statement for the financial year ending 31st March 2014

#### PART - A

i. Name and Address of the Mine : **Ray - Bachra Underground Project.**

P.O. : Bachra

Distt. : Chatra.

ii. Industry Category : Primary

iii. Production Capacity : **0.30 MTY.**

iii. Date of the last environmental :

Statement report submitted. Sept.'2013.

#### PART - B

##### WATER AND RAW MATERIAL CONSUMPTION

1. Water Consumption M<sup>3</sup>/ day

1(a). Mining

i. Fire fighting : NIL m<sup>3</sup>/ day

ii. Cooling : NIL

iii. Service building : NIL m<sup>3</sup>/ day

iv. Others (Service Building) : 6 m<sup>3</sup>/ day

1(b). Domestic : 675 m<sup>3</sup>/ day

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Year	Name of Product	Water Consumption per unit of product	
		Industrial	Domestic
1. 2013-14	0.065 MT of ROM Coal	0.00009 M <sup>3</sup> /te	0.011 M <sup>3</sup> /te
2. 2012-13	0.061 MT of ROM Coal	0.0001 M <sup>3</sup> /te	0.010 M <sup>3</sup> /te

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Industrial water consumption is mainly due to fire fighting and miscellaneous operations and not directly linked with production. Similarly the domestic water requirement also does not vary much from year to year, as it is dependent upon population of the colony. Hence, water consumption per unit of product does have much significance in this case.

**RAW MATERIAL CONSUMPTION**

Name of raw material	Consumption of raw material ( per unit of output)	
	During 2013-14	During 2012-13
No raw material is used for Coal Production.	Nil	Nil

However Explosive –23049 Kg (0.351 kg /Te. ) & POL - 31753 Lt. ( 0.484 Lt. /Te. ) has been used in the year 2013-14 for coal production.

**PART – C**

**POLLUTION DISCHARGED TO ENVIRONMENT / UNIT OF OUTPUT**  
**(PARAMETERS SPECIFIED IN THE CONSENT ISSUED)**

Pollutants	Quantity of pollution generated	Percentage of variation from prescribed standards with reasons.
a) Water:		
i) Mine Discharge	Nil	
ii) Colony	Nil	
1	2	3

b) AIR

The air pollutants generated due to U/G mining are SPM, SOx, NOx and CO. The SPM is the main pollutant.	It is difficult to quantify the amount of pollutants generated due to underground mining.	The ambient air quality results shows that SO2, NOX and CO concentration are well within the prescribed values.
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## **PART - D**

### **HAZARDOUS WASTES**

(as specified under Hazardous Waste/Management and Handling Rules, 1989)

Hazardous Wastes	Total quantity	
	During the (2013-14)	During the (2012-13 )
a) From process	NIL	NIL
b) From pollution control facilities	NIL	NIL

## **PART – E**

### **SOLID WASTES**

	Total Quantity ( in m <sup>3</sup> )	
	During the financial year (2013-14 )	During the financial year (2012-13)
<b>a) From process (Mining)</b>		
i. Overburden	NIL	NIL
ii. Top Soil	NIL	NIL
<b>b) From pollution control facilities</b>	NIL	NIL
<b>c) Quantity recycled or reutilised</b>	Not applicable in case of U/G mine	

## **PART - F**

### **PLEASE SPECIFY THE CHARACTERISTICS (IN TERMS OF CONCEN AND QUANTUM) OF HAZARDOUS AS WELL AS SOLID WASTES AND INDICATE THE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTES**

Hazardous wastes is not being produced either from mining operation or from any pollution control facilities.

It is an Underground mine, only coal is extracted by Bord and Pillar method and no solid waste material is generated during mining operation.

## **PART – G**

### **IMPACT OF POLLUTION CONTROL MEASURES ON CONSERVATION OF NATURAL RESOURCES AND CONSEQUENTLY ON COST OF PRODUCTION**

In order to carry out mining in an eco-friendly manner, following pollution control measures have been implemented.

#### **1.0 ANTI AIR POLLUTION MEASURES**

The following measures are being taken to control air pollution:

- i) At present, 9000 m<sup>3</sup>/ min of fresh air is circulated in the mine.
- ii) Plantation has been done within the mine leasehold area.
- iii) Water spraying over coal stock is practised.

#### **2.0 ANTI WATER POLLUTION MEASURES**

The following measures are taken to control water pollution from the mine:

- i) Mine water is collected in the underground sump and pumped to a settling pond.
- ii) Each house in the colony has been provided with a septic - tank with soak pit arrangement.

#### **3.0. ANTI NOISE POLLUTION MEASURES**

Tree plantation has been done in the core zone for noise attenuation.

Result of noise monitoring reveals that the noise level is well below the prescribed limit.

## **PART - H**

### **ADDITIONAL INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION**

During 2014 monsoon , it has been proposed that plantation will be done over the vacant land within the mine leasehold boundary.

## **PART - I**

### **ANY OTHER PARTICULARS IN RESPECT OF ENVIRONMENTAL PROTECTION AND ABATEMENT OF POLLUTION**

The regular monitoring of the ambient air and water quality is being done in and around core zone and the quarterly monitoring report is submitted to the Jharkhand State Pollution Control Board, Ranchi and the Ministry Of Environment and Forest, New Delhi.

PROJECT OFFICER  
RAY BACHRA U/G.

## TEST REPORT

Job No. : 094313025 Date of Issue: 14/05/13  
 Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13

Sample Description : Air  
 Product Specification (BIS) : Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Date of receipt of sample : 02/05/13 Date of performance of Test: 02/05/13 to 14/5/13

### TEST RESULT

The sample has been tested with the following results:-

**Area** : *Piparwar* **Year** 2013  
**Project** : *Ray-Bachra* **Quarter Ending June** '2013

**Name of the Sampling Station** *Guest House*

Date of Sampling	SPM	RPM	SO <sub>2</sub>	NO <sub>x</sub>	Remarks
24/04/2013 - 25/04/2013	149	101	10	39	

**Name of the Sampling Station** *Middle School*

Date of Sampling	SPM	RPM	SO <sub>2</sub>	NO <sub>x</sub>	Remarks
24/04/2013 - 25/04/2013	133	51	10	40	

**Analysed By**

**Checked By**

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

- Note:
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  - 3) Liability for return of samples ceases as samples cannot be retained for retests.

## TEST REPORT

Job No. : 094313025 Date of Issue: 02/05/13  
 Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13

Sample Description : Noise  
 Product Specification (BIS) : Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Date of receipt of sample : 02/05/13 Date of performance of Test: -

### TEST RESULT

The sample has been tested with the following results:-

**Area** : *Piparwar* **Year** 2013  
**Project** : *Ray-Bachra* **Quarter Ending June** '2013

**Sampling Stations**

- 1 Guest House
- 2 Middle School

Station Name	Date of Sampling	Noise Level
Guest House	24/04/2013	46.5
Middle School	24/04/2013	48.7

*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)

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## TEST REPORT

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Job No. : 094313025 Date of Issue: 16/05/13  
 Name of the Customer : CCL  
 Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13  
 Sample Description : Effluent Water  
 Product Specification (BIS) : MoEF Sch VI Class 'a' std.  
 Test Required : 26 items as per MoEF Sch VI Class 'a' std.  
 Date of receipt of sample : 02/05/13 Date of performance of Test: 02/05/13 to 16/5/13

**TEST RESULT**

The sample has been tested with the following results:-

**Area** : *Piparwar* **Year** 2013  
**Project** : *Ray-Bachra* **Quarter Ending June** '2013

**Sampling Stations** 1 Mine Water 29-April-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	Remarks
		1	2	3			
1	Colour & Odour	Acceptable			-	Acceptable	
2	Total Suspended Solids	32			5.00	100.0	
3	pH value	8.04			0.01	5.5 to 9.0	
4	Temperature (°C)	29.2			-	Shall not exceed 5 C above the receiving temp.	
5	Oil & Grease	BDL			1.00	10.0	
6	Total Residual Chlorine	BDL			0.04	1.0	
7	Ammonical Nitrogen	0.17			0.02	50.0	
8	Total Kjeldahl Nitrogen	2.35			0.02	100.0	
9	Free Ammonia	BDL			0.02	5.0	
10	B.O.D (3 days 27°C)	1.00			1.00	30.0	
11	COD	45			5.00	250.0	
12	Arsenic	BDL			0.01	0.2	
13	Lead	BDL			0.05	0.1	
14	Hexavalent Chromium	BDL			0.01	0.1	
15	Total Chromium	BDL			0.10	2.0	
16	Copper	BDL			0.02	3.0	
17	Zinc	BDL			0.02	5.0	
18	Selenium	BDL			0.01	0.05	
19	Nickel	BDL			0.10	3.0	
20	Fluoride	0.45			0.05	2.0	
21	Dissolved Phosphate	0.12			0.01	5.0	
22	Sulphide	0.03			0.01	2.0	
23	Phenolic Compounds	BDL			0.001	1.0	
24	Manganese	0.04			0.05	2.0	
25	Iron	0.05			0.05	3.0	
26	Nitrate Nitrogen	1.4			0.01	10.0	

**Analysed By**

**Checked By**

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

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**TEST REPORT**

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Job No. : 094313025  
 Name of the Customer : CCL

Date of Issue: 16/05/13

Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13

Sample Description : Surface Water

Product Specification (BIS) : IS: 2296 Inland Surface Water Class 'C'

Test Required : 18 items as per IS: 2296

Date of receipt of sample : 02/05/13 Date of performance of Test: 02/05/13 to 16/5/13

**TEST RESULT**

The sample has been tested with the following results:-

**Area** : *Piparwar* **Year** : 2013  
**Project** : *Ray-Bachra* **Quarter Ending June** : '2013

**Sampling Stations** 1 Saphi River before conf. With Damodar 29-April-13  
 2 Saphi River near Bachra Colony Bridge 29-April-13

*All parameter are in mg/l unless specified*

*BDL - Below Detectable Limit*

Sl.No.	Parameter	Sampling Stations			Below Detection Limit	IS : 2296 INLAND SURFACE WATER [1982] Class 'C'	Remarks
		1	2	3			
1	Colour, Hazen unit,Max	28	18		1.00	300	
2	Total Suspended Solids	64	44		5.00	\$	
3	Disolved Oxygen	4.60	4.90		0.10	4	
4	pH value	8.07	8.12		0.01	6.5-8.5	
5	Iron	0.06	0.12		0.05	5	
6	Chlorides	14	16		0.25	600	
7	BOD (3 days 27°C)	2.50	2.30		1.00	3	
8	Total Dissolved Solids	112	118		1.00	1500	
9	Copper	BDL	BDL		0.02	1.5	
10	Sulphate	20	22		1.00	400	
11	Nitrate	3.54	3.98		0.01	50	
12	Fluoride	0.37	0.50		0.05	1.5	
13	Selenium	BDL	BDL		0.01	0.05	
14	Arsenic	BDL	BDL		0.01	0.2	
15	Lead	BDL	BDL		0.05	0.1	
16	Zinc	BDL	BDL		0.02	15	
17	Hexavalent Chromium	BDL	BDL		0.01	0.05	
18	Phenolics	BDL	BDL		0.001	0.005	

*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)  
 (Authorized Signatory)**

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## TEST REPORT

Job No. : 094313025 Date of Issue: 08/08/13  
 Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13  
 Sample Description : Air  
 Product Specification (BIS) : Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Date of receipt of sample : 31/07/13 Date of performance of Test: 31/07/13 to 08/08/13

### TEST RESULT

The sample has been tested with the following results:-

Area : *Piparwar* Year 2013  
 Project : *Ray-Bachra* Quarter Ending Sept. '2013

**Name of the Sampling Station** *Guest House*

Date of Sampling	SPM	RPM	SO <sub>2</sub>	NO <sub>x</sub>	Remarks
24/07/2013 - 25/07/2013	62	43	<25	20	

**Name of the Sampling Station** *Middle School*

Date of Sampling	SPM	RPM	SO <sub>2</sub>	NO <sub>x</sub>	Remarks
24/07/2013 - 25/07/2013	101	65	<25	21	

Analysed By

Checked By

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

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## TEST REPORT

Job No. : 094313025 Date of Issue: 31/07/13  
 Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13  
 Sample Description : Noise  
 Product Specification (BIS) : Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Date of receipt of sample : 31/07/13 Date of performance of Test: -

### TEST RESULT

The sample has been tested with the following results:-

Area : *Piparwar* Year 2013  
 Project : *Ray-Bachra* Quarter Ending Sept. '2013

Sampling Stations  
 1 Guest House  
 2 Middle School

Station Name	Date of Sampling	Noise Level
Guest House	24/07/2013	49.7
Middle School	24/07/2013	48.5

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

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

Checked By

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

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## TEST REPORT

Job No. : 094313025  
 Name of the Customer : CCL

Date of Issue: 12/08/13

Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13

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 : 31/07/13 Date of performance of Test: 31/07/13 to 12/08/13

### TEST RESULT

The sample has been tested with the following results:-

**Area** : *Piparwar*  
**Project** : *Ray-Bachra*

**Year** : 2013  
**Quarter Ending Sept.** : '2013

Sampling Stations 1 Mine Water

29-Jul-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	Remarks
		1	2	3			
1	Colour & Odour	Acceptable			5.0 Cannot be quantified	Acceptable	
2	Total Suspended Solids	36			25.00	100.0	
3	pH value	7.88			0.01	5.5 to 9.0	
4	Temperature (°C)	26.7			-	Shall not exceed 5 C above the receiving temp.	
5	Oil & Grease	2.00			2.00	10.0	
6	Total Residual Chlorine	BDL			0.02	1.0	
7	Ammonical Nitrogen	0.17			0.01	50.0	
8	Total Kjeldahl Nitrogen	2.48			1.00	100.0	
9	Free Ammonia	BDL			0.01	5.0	
10	B.O.D (3 days 27°C)	2.00			2.00	30.0	
11	COD	45			4.00	250.0	
12	Arsenic	BDL			0.005	0.2	
13	Lead	BDL			0.005	0.1	
14	Cadmium	BDL			0.0005	2.0	
15	Hexavalent Chromium	BDL			0.01	0.1	
16	Total Chromium	BDL			0.06	2.0	
17	Copper	BDL			0.03	3.0	
18	Zinc	0.03			0.01	5.0	
19	Selenium	BDL			0.005	0.05	
20	Nickel	BDL			0.10	3.0	
21	Fluoride	0.33			0.02	2.0	
22	Dissolved Phosphate	0.18			0.30	5.0	
23	Sulphide	BDL			0.005	2.0	
24	Phenolic Compounds	BDL			0.002	1.0	
25	Manganese	BDL			0.02	2.0	
26	Iron	BDL			0.06	3.0	
27	Nitrate Nitrogen	1.6			0.50	10.0	

Analysed By

Checked By

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

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## TEST REPORT

Job No. : 094313025 Date of Issue: 12/08/13  
 Name of the Customer : CCL

Customer Letter Ref. No. (if any): CCL/Env-Monitoring/13-14/ 2013/823-828 dt. 16/05/13  
 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 : 31/07/13 Date of performance of Test: 31/07/13 to 12/08/13

### TEST RESULT

The sample has been tested with the following results:-

**Area** : *Piparwar* **Year** 2013  
**Project** : *Ray-Bachra* **Quarter Ending Sept.** '2013  
**Sampling Stations** 1 Saphi River before conf. With Damodar 29-Jul-13  
 2 Saphi River near Bachra Colony Bridge 29-Jul-13

*All parameter are in mg/l unless specified*

*BDL - Below Detectable Limit*

Sl.No.	Parameter	Sampling Stations			Below Detection Limit	IS : 2296 INLAND SURFACE WATER [1982] Class 'C'	Remarks
		1	2	3			
1	Colour, Hazen unit,Max	22	16		5.0	300	
2	Total Suspended Solids	58	42		25.00	\$	
3	Disolved Oxygen	4.90	5.00		0.10	4	
4	pH value	7.85	7.84		0.01	6.5-8.5	
5	Iron	0.78	0.76		0.06	5	
6	Chlorides	16	20		2.00	600	
7	BOD (3 days 27°C)	2.60	2.80		2.00	3	
8	Total Dissolved Solids	118	120		25.00	1500	
9	Copper	BDL	BDL		0.03	1.5	
10	Sulphate	18	24		2.00	400	
11	Nitrate	7.53	7.97		0.50	50	
12	Fluoride	0.40	0.35		0.02	1.5	
13	Cadmium	BDL	BDL		0.0005	0.01	
14	Selenium	BDL	BDL		0.005	0.05	
15	Arsenic	BDL	BDL		0.005	0.2	
16	Lead	BDL	BDL		5.00	0.1	
17	Zinc	0.15	0.05		0.01	15	
18	Hexavalent Chromium	BDL	BDL		0.01	0.05	
19	Phenolics	BDL	BDL		0.002	0.005	

*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)**  
**(Authorized Signatory)**

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## TEST REPORT

Job No. : 094313025 Date of Issue: 22/11/13  
 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.25<sup>th</sup> Sept.'2000  
 Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Date of receipt of sample : 14/11/13 Date of performance of Test: 14/11/13 to 22/11/13

### TEST RESULT

The sample has been tested with the following results:-

Area : *Piparwar* Year 2013  
 Project : *Ray-Bachra* Quarter Ending Dec. '2013

All parameters are in  $\mu\text{g}/\text{m}^3$

#### Name of the Sampling Station *Guest House*

Date of Sampling	SPM	RPM	SO2	NOx	Remarks
05/11/2013 - 06/11/2013	100	67	<25	22	

#### Name of the Sampling Station *Middle School*

Date of Sampling	SPM	RPM	SO2	NOx	Remarks
06/11/2013 - 07/11/2013	97	61	<25	20	

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## TEST REPORT

Job No. : 094313025 Date of Issue: 14/11/13  
 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.25<sup>th</sup> Sept.'2000  
 Test Required : As per Gazette Notification no. G.S.R 742(E) dt.25<sup>th</sup> Sept.'2000  
 Date of receipt of sample : 14/11/13 Date of performance of Test: -

### TEST RESULT

The sample has been tested with the following results:-

**Area** : *Piparwar* **Year** 2013  
**Project** : *Ray-Bachra* **Quarter Ending Dec.** '2013

**Sampling Stations**  
 1 Guest House  
 2 Middle School

Station Name	Date of Sampling	Noise Level
Guest House	05/11/2013	49.2
Middle School	06/11/2013	48.5

*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)

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## TEST REPORT

Job No. : 094313025 Date of Issue: 26/11/13  
 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 : 14/11/13 Date of performance of Test: 14/11/13 to 26/11/13

### TEST RESULT

The sample has been tested with the following results:-

**Area** : *Piparwar* **Year** 2013  
**Project** : *Ray-Bachra* **Quarter Ending Dec.** '2013  
**Sampling Stations** 1 Mine Water 12-Nov-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, 22 <sup>nd</sup> Edition IS 3025/05:1983	Pt.Cobalt Physical, Qualitative
2	Total Suspended Solids	42			25.00	100.0	IS-3025/17:1984	Gravimetric
3	pH value	8.08			0.01	5.5 to 9.0	IS-3025/11:1983	Electrometric
4	Temperature (°C)	20.8			0.5	Shall not exceed 5 C above the receiving temp.	IS-3025/09:1984	Thermometric
5	Oil & Grease	2.00			2.00	10.0	IS-3025/39:1991	Partition Gravimetric
6	Total Residual Chlorine	0.02			0.02	1.0	APHA, 22 <sup>nd</sup> Edition	DPD
7	Ammonical Nitrogen	0.30			0.01	50.0	IS:3025/34:1988	Nessler's
8	Total Kjeldahl Nitrogen	2.35			1.00	100.0	IS:3025/34:1988	Nessler's
9	Free Ammonia	0.01			0.01	5.0	IS:3025/34:1988	Nessler's
10	B.O.D (3 days 27°C)	2.00			2.00	30.0	IS-3025/44:1993	3 day incubation at 27°C
11	COD	50			4.00	250.0	IS-3025/58:2006	Titration
12	Arsenic	BDL			0.005	0.2	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
13	Lead	BDL			0.005	0.1	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
14	Cadmium	BDL			0.0005	2.0	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
15	Hexavalent Chromium	0.01			0.01	0.1	APHA, 22 <sup>nd</sup> 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	0.02			0.01	5.0	IS-3025/49:1994	AAS-Flame
19	Selenium	BDL			0.005	0.05	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
20	Nickel	BDL			0.10	3.0	IS-3025/54:2003	AAS-Flame
21	Fluoride	0.40			0.02	2.0	APHA, 22 <sup>nd</sup> Edition	SPADNS
22	Dissolved Phosphate	0.25			0.30	5.0	APHA, 22 <sup>nd</sup> Edition	Molybdovanadate
23	Sulphide	BDL			0.005	2.0	APHA, 22 <sup>nd</sup> Edition	Methylene Blue
24	Phenolic Compounds	0.002			0.002	1.0	APHA, 22 <sup>nd</sup> Edition	4-Amino Antipyrine
25	Manganese	0.02			0.02	2.0	APHA, 22 <sup>nd</sup> Edition	AAS-Flame
26	Iron	BDL			0.06	3.0	IS-3025/53:2003	AAS-Flame
27	Nitrate Nitrogen	2.2			0.50	10.0	APHA, 22 <sup>nd</sup> Edition	UV Spectrophotometric

**Analysed By**

**Checked By**

**G.M (Chemist)**  
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## TEST REPORT

Job No. : 094313025  
 Name of the Customer : CCL

Date of Issue: 26/11/13

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 : 14/11/13 Date of performance of Test: 14/11/13 to 26/11/13

### TEST RESULT

The sample has been tested with the following results:-

**Area** : *Piparwar*  
**Project** : *Ray-Bachra*

**Year** : 2013  
**Quarter Ending Dec.** : **2013**

**Sampling Stations** 1 Saphi River before conf. With Damodar  
 2 Saphi River near Bachra Colony Bridge

12-Nov-13  
 12-Nov-13

*All parameter are in mg/l unless specified*

*BDL - Below Detectable Limit*

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	20	22		5.0	300	APHA, 22 <sup>nd</sup> Edition	Platinum Cobalt
2	Total Suspended Solids	64	54		25.00	\$	IS-3025/17:1984	Gravimetric
3	Disolved Oxygen	5.40	4.80		0.10	4	IS-3025/38:1989	Winkler Azide
4	pH value	8.12	8.15		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	16	16		2.00	600	IS-3025/32:1988	Argentometric
7	BOD (3 days 27°C)	2.80	2.40		2.00	3	IS-3025/44:1993	3 day incubation at 27°C
8	Total Dissolved Solids	124	128		25.00	1500	IS-3025/16:1984	Gravimetric
9	Copper	BDL	BDL		0.03	1.5	IS-3025/42:1992	AAS-Flame
10	Sulphate	14	22		2.00	400	APHA, 22 <sup>nd</sup> Edition	Turbidity
11	Nitrate	7.08	7.97		0.50	50	IS-3025/34:1988	Nessler's
12	Fluoride	0.42	0.40		0.02	1.5	APHA, 22 <sup>nd</sup> Edition	SPADNS
13	Cadmium	BDL	BDL		0.0005	0.01	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
14	Selenium	BDL	BDL		0.005	0.05	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
15	Arsenic	BDL	BDL		0.005	0.2	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
16	Lead	BDL	BDL		0.005	0.1	APHA, 22 <sup>nd</sup> Edition	AAS-GTA
17	Zinc	0.06	BDL		0.01	15	IS-3025/49:1994	AAS-Flame
18	Hexavalent Chromium	0.01	0.01		0.01	0.05	APHA, 22 <sup>nd</sup> Edition	Diphenylcarbohydr azide
19	Phenolics	0.002	0.002		0.002	0.005	APHA, 22 <sup>nd</sup> 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*

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## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094313025</b>	<b>Year</b>	<b>2013-14</b>
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:	01.04.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	01.04.14-10.04.14
Sampling Protocol:	IS 5182 (part 14): 2000 ,R -2010, Methods for Measurement of Air Pollution	Date of Reporting:	10.04.14
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25 <sup>th</sup> 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 :** **Piparwar** **Project:** **Ray-Bachra**

**Stations:**

1. Guest House
2. Middle School
- 3.
- 4.

**Date of Sampling:**  
21-22/03/2014  
21-22/03/2014

S.No	Test Parameters	Units	Test Method	TEST RESULT			
				1	2	3	4
Stations:							
5.	Total Particulate Matter (PM <sub>10</sub> + >PM <sub>10</sub> )	µg/m <sup>3</sup>	Lab.SOP 4 based on – IS: 5182/23, 2006	541	307		
6.	Particulate Matter (PM <sub>10</sub> )	µg/m <sup>3</sup>	IS: 5182/23 2006	270	200		
7.	Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	IS: 5182 /02 2001 R-2006	<25	<25		
8.	Nitrogen Oxides (as NO <sub>x</sub> )	µg/m <sup>3</sup>	IS: 5182 /02 1975 R-1998	22	20		

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

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## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094313025</b>	<b>Year</b>	<b>2013-14</b>
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:	01.04.14
Mode of Receipt of Sample:	Jointly sampling with customer	Date of Analysis:	-
Testing Protocol:	Gazette Notification no. G.S.R 742(E) dt.25 <sup>th</sup> Sept.'2000	Date of Reporting:	-
Remarks:			

### TEST RESULT

The sample has been tested with the following results:-

**Area :** **Piparwar** **Project:** **Ray-Bachra**

**Stations:**

1. Guest House
2. Middle School
- 3.
- 4.

Station Name	Date of Sampling	Noise Level
Guest House	21/03/2014	50.4
Middle School	21/03/2014	48.9

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

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

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## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094313025</b>	<b>Year - 2013-14</b>	<b>2013-14</b>
Type of Sample:	<b>Effluent Water</b>	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:	01.04.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	01.04.14-12.04.14
Testing Protocol:	<b>MOEF -SCH-VI STANDARDS, Class 'A'</b>	Date of Reporting:	12.04.14
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:-

<b>Area :</b>	<b>Piparwar</b>	<b>Project:</b>	<b>Ray-Bachra</b>
<b>Stations:</b>	1. Mine Water 2. 3.		<b>Date of Sampling:</b> 25/03/2014

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	38			25.00	100.0	IS 3025/17:1984, R :1996, Gravimetric
2	pH value	8.08			0.01	5.5 to 9.0	IS-3025/11:1983, R-1996, Electrometric
3	Temperature (°C)	24.7			5.0	Shall not exceed 5 C above the receiving temp.	IS-3025/09:1984, Thermometric
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, 22 <sup>nd</sup> 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	1.20			1.00	100.0	IS:3025/34:1988, Nessler's
8	Free Ammonia, mg/l, Max	<0.01			0.01	5.0	IS:3025/34:1988, Nessler's
9	B.O.D (3 days 27°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	44			4.00	250.0	APHA, 22 <sup>nd</sup> 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	<0.005			0.005	0.1	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
13	Cadmium, mg/l, Max	<0.0005			0.0005	2.0	APHA, 22 <sup>nd</sup> Edition, AAS-GTA
14	Hexavalent Chromium, mg/l, Max	<0.01			<0.01	0.1	APHA, 22 <sup>nd</sup> 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	0.13			0.01	5.0	IS 3025 /49 : 1994, R : 2009, AAS-Flame
18	Selenium, mg/l, Max	<0.005			0.005	0.05	APHA, 22 <sup>nd</sup> 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	0.66			0.02	2.0	APHA, 22 <sup>nd</sup> Edition, SPADNS
21	Dissolved Phosphate, mg/l, Max	0.34			0.30	5.0	APHA, 22 <sup>nd</sup> Edition Molybdovanadate
22	Sulphide, mg/l, Max	0.005			0.005	2.0	APHA, 22 <sup>nd</sup> Edition, Methylene Blue
23	Phenolic Compounds, mg/l, Max	<0.002			0.002	1.0	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine
24	Manganese, mg/l, Max	1.04			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	2.4			0.50	10.0	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric

**Analysed By**

**Checked By**

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## TEST REPORT

<b>Lab No. T-2187</b>	<b>Job No. 094313025</b>	<b>Year - 2013-14</b>	<b>2013-14</b>
Type of Sample:	<b>Surface Water</b>	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:	01.04.14
Mode of Receipt of Sample:	Picked up sample by laboratory	Date of Analysis:	01.04.14-12.04.14
Testing Protocol:	IS: 2296 Inland Surface Water Class 'C'	Date of Reporting:	12.04.14
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 :** **Piparwar** **Project:** **Ray-Bachra**

**Stations:** **1. Saphi River before conf. With Damodar** **Date of Sampling:** **25/03/2014**  
**2. Saphi River near Bachra Colony Bridge** **25/03/2014**  
**3.**

Sl. No	Parameter	Sampling Stations				Desirable Limits	BIS Standard & Method
		1	2	3	4		
1	Total Suspended Solids, mg/l, Max	52	42			25.00	IS 3025 /17:1984, R :1996, Gravimetric
2	Disolved Oxygen, min.	5.80	6.20			0.10	IS 3025/381989, R : 2003, Winkler Azide
3	pH value	7.95	7.98			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	14	18			2.00	IS-3025/32:1988, R-2007, Argentometric
6	BOD (3 days 27°C), mg/l, Max	2.80	2.00			2.00	IS 3025 /44: 1993, R : 2003 3 day incubation at 27°C
7	Dissolved Solids, mg/l, Max	114	128			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	16	14			2.00	APHA, 22 <sup>nd</sup> Edition Turbidity
10	Nitrate , mg/l, Max	7.53	7.97			0.50	APHA, 22 <sup>nd</sup> Edition, UV-Spectrophotometric
11	Fluoride, mg/l, Max	0.60	0.48			0.02	APHA, 22 <sup>nd</sup> Edition SPADNS
12	Cadmium, mg/l, Max	<0.0005	<0.0005			0.0005	APHA, 22 <sup>nd</sup> Edition AAS-GTA
13	Selenium, mg/l, Max	<0.005	<0.005			0.005	APHA, 22 <sup>nd</sup> 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	<0.005	<0.005			0.005	APHA, 22 <sup>nd</sup> 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, 22 <sup>nd</sup> Edition, 1,5 - Diphenylcarbohydrazide
18	Phenolics, mg/l, Max	<0.002	<0.002			0.002	APHA, 22 <sup>nd</sup> Edition 4-Amino Antipyrine

**Analysed By**

**Checked By**

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