ENVIRONMENT DATA

GROUNDWATER DEPTH LEVEL

(April-2014 - September-2014)

WELL	DEPTH TO WATER LEVEL DATA IN DIFFERENT SEASONS (in m) (in m)		
	April-2014	September-2014	
Dug well at Village Babu Khinda (500 m from mine site)	2.8	1.8	
Dug well at Village Khinda (400 m from mine site)	5.9	4.1	
Dug well - E of Village Khinda (100 m from mine site)	3.36	2.15	
Dug well at village Bheramunda (50 m from mine site)		3.1	
Dug well at Village Matulu Camp (150 M from Mine site)		3.25	
Dug well at Village Khinda (80 m from mine site)	7.7	4.6	

Annexure-II (April-2014 to September-2014)

PARTICULATE MATTER (PM₁₀) : Limit : 100.00 μ / m³

Location	April-2014	May-2014	June-2014	July-2014	Aug-2014	Sept-2014
Khinda Village	55.6	57.3	52.6	55.2	58.4	62.2
Babu Khinda Village	46.2	45.5	43.0	40.2	43.5	51.3
Rest Shelter	79.2	82.3	78.2	75.5	77.1	80.3
R & R Colony	61.3	63.5	58.3	56.2	59.5	65.5

PARTICULATE MATTER (PM2.5) : Limit : 60.00 µ / m³

Location	April-2014	May-2014	June-2014	July-2014	Aug-2014	Sept-2014
Khinda Village	33.3	34.1	30.8	31.8	32.8	37.5
Babu Khinda Village	28.1	27.7	25.5	25.7	27.1	29.2
Rest Shelter	47.1	47.7	43.1	42.6	44.5	48.2
R & R Colony	36.4	35.8	32.6	33.4	35.2	41.2

SULPHUR DI-OXIDE (SO₂) :

Limit : 80.00 µ / m³

Location	April-2014	May-2014	June-2014	July-2014	Aug-2014	Sept-2014
Khinda Village	8.5	12.0	10.0	9.2	10.8	11.5
Babu Khinda Village	8.0	9.5	9.0	8.0	9.1	8.7

Rest Shelter	11.0	13.0	12.0	11.0	12.5	13.4
R & R Colony	9.0	10.0	12.0	13.5	14.7	12.2

NITROGEN OXIDE (NOx) : Limit : 80.00 μ / m³

Location	April-2014	May-2014	June-2014	July-2014	Aug-2014	Sept-2014
Khinda Village	6.5	13.5	11.0	12.5	13.6	10.2
Babu Khinda Village	6.5	9.0	10.0	10.5	11.4	7.3
Rest Shelter	7.5	12.5	14.0	13.5	14.3	15.7
R & R Colony	7.0	9.0	14.0	15.0	16.4	11.5

CARBON MONOXIDE (CO) : Limit : 2000.00 µ / m³

Location	April-2014	May-2014	June-2014	July-2014	Aug-2014	Sept-2014
Khinda Village	110.10	120.0	115.0	120.0	124.0	120.0
Babu Khinda Village	90.15	100.5	125.0	110.0	101.0	103.0
Rest Shelter	395.25	420.5	445.0	380.0	375.0	360.0
R & R Colony	190.30	195.50	225.0	245.0	255.0	270.0

Annexure-III

Surface Water Analysis Report

Parameter	Unit	Standard	SW
РН		5.5-8.5	6.8
Colour		Colourless	Colourless
Suspended Solid	mg/l	100	34.5
Odour		Odourless	Odourless
Taste		Agreeable	Agreeable
Turbidity N.T.U (MAX)	N.T.U	5.0	3.05
Total dissolved solids	mg/l	2100	275.30
Total Hardness as CaCO3	mg/l	\$	90.25
Chlorides as Cl.	mg/l	1000	25.25
Sulphate as SO ₄	mg/l	1000	16.20
Free residual	mg/l	\$	ND
Chlorine			
Total Alkalinity	mg/l	\$	25.25
Iron as Fe	mg/l	3	0.80
Fluoride as F	mg/l	2	0.35
Calcium as Ca	mg/l	-	18.25
Manganese as Mn	mg/l	\$	0.010
Mineral oil	mg/l	10	1.30
Cadmium as Cd	mg/l	2	ND
Zinc as Zn	mg/l	5	ND
Selenium as Se	mg/l	0.05	ND
Nitrate as NO3	mg/l	50	0.080
Phenolic	mg/l	\$	ND
compound as C ₆ H ₅ OH			
Aluminium as Al	mg/l	\$	0.0075
Arsenic as As	mg/l	0.2	ND

Date of sampling: 22.05.2014 Project: Hinldal Co. Ind Ltd., Talabira-I, Coal Project

Boron as B	mg/l	20	ND
BOD 27 °C 3 days	mg/l	30	1.70
COD	mg/l	250	2.75
Mercury as Hg	mg/l	0.001	ND

SW: Mines Pond water

\$ - No limit has been specified.

Standards as per Government notification dt. 19th May' 93 Sampling & testing has been done as per IS 3025.

Ground Water Analysis Report

Date of sampling: 22.05.2014

Project: Hinldal Co. Ind Ltd. Talabira-I, Coal Project

Parameter	Unit	Standard	GW1
PH		6.5-8.5	7.30
Colour	Hazen	Colourless	Colourless
Suspended Solid	mg/l	\$	1.25
Odour		Odourless	Odourless
Taste		Agreeable	Agreeable
Turbidity N.T.U	N.T.U	5.0	1.75
(MAX)			
Total dissolved solids	mg/l	500	72.50
Total Hardness as	mg/l	300	58.80
CaCO3			
Chlorides as Cl.	mg/l	250	5.00
Sulphate as SO ₄	mg/l	200	2.0
Free residual Chlorine	mg/l	\$	ND
Total Alkalinity	mg/l	\$	70.45
Iron as Fe	mg/l	0.3	0.010
Fluoride as F	mg/l	1.0	0.08
Calcium as Ca	mg/l	75	5.50
Manganese as Mn	mg/l	0.1	ND
Mineral oil	mg/l	\$	0.35
Cadmium as Cd	mg/l	0.01	ND
Zinc as Zn	mg/l	5.0	ND
Selenium as Se	mg/l	0.05	ND
Nitrate as NO3	mg/l	50	0.010
Phenolic compound as	mg/l	0.001	ND
C ₆ H ₅ OH			
Aluminium as Al	mg/l	0.03	ND
Arsenic as As	mg/l	0.05	ND
Boron as B	mg/l	1	ND
BOD 27 °C 3 days	mg/l	3.0	1.10
COD	mg/l	\$	2.60
Mercury as Hg	mg/l	0.001	ND

GW1:Office Site Borewell

ND – Not Detectable.

Standards as per Government notification dt. 19th May' 93 Sampling & testing has been done as per IS 3025.

Ground Water Analysis Report

Date of sampling: 22.05.2014 Project: Hinldal Co. Ind Ltd., Talabira-I, Coal Project GW2 Unit Standard Parameter PH 7.30 6.5-8.5 Colour Colourless Colourless Hazen Suspended Solid mg/l \$ 8.12 Odour Odourless Odourless Agreeable Taste Agreeable Turbidity N.T.U N.T.U 5.0 2.50 (MAX) Total dissolved 500 210.20 mg/l solids Total Hardness as mg/l 300 95.20 CaCO3 Chlorides as Cl. 250 17.30 mg/l Sulphate as SO₄ mg/l 200 5.50 Free residual mg/l \$ ND Chlorine Total Alkalinity mg/l \$ 60.50 Iron as Fe mg/l 0.3 0.40 Fluoride as F 1.0 0.30 mg/l Calcium as Ca 75 11.00 mg/l Manganese as Mn mg/l 0.1 ND Mineral oil mg/l \$ 0.012 Cadmium as Cd mg/l ND 0.01 Zinc as Zn 5.0 ND mg/l Selenium as Se 0.05 mg/l ND Nitrate as NO3 mg/l 50 0.15 Phenolic 0.001 ND mg/l compound as C₆H₅OH Aluminium as Al mg/l 0.03 ND Arsenic as As 0.05 ND mg/l Boron as B mg/l ND 1 BOD 27 °C 3 days mg/l 3.0 2.2

COD	mg/l	\$	5.5
Mercury as Hg	mg/l	0.001	ND

GW2: Khinda village Dug well

ND – Not Detectable.

Standards as per Government notification dt. 19th May' 93 Sampling & testing has been done as per IS 3025.

Surface Water Analysis Report

Date of sampling: 22.08.2014	Project: Hinldal Co. Ind Ltd.,
	Talabira-I, Coal Project

Parameter	Unit	Standard	SW
PH		5.5-8.5	6.9
Colour		Colourless	Colourless
Suspended Solid	mg/l	100	35.2
Odour		Odourless	Odourless
Taste		Agreeable	Agreeable
Turbidity N.T.U (MAX)	N.T.U	5.0	3.9
Total dissolved solids	mg/l	2100	310.11
Total Hardness as CaCO ₃	mg/l	\$	110.5
Chlorides as Cl.	mg/l	1000	23.45
Sulphate as SO ₄	mg/l	1000	14.35
Free residual	mg/l	\$	ND
Chlorine			
Total Alkalinity	mg/l	\$	22.6
Iron as Fe	mg/l	3	0.65
Fluoride as F	mg/l	2	0.30
Calcium as Ca	mg/l	-	17.2
Manganese as Mn	mg/l	\$	0.015
Mineral oil	mg/l	10	0.9
Cadmium as Cd	mg/l	2	ND
Zinc as Zn	mg/l	5	ND
Selenium as Se	mg/l	0.05	ND
Nitrate as NO ₃	mg/l	50	0.070
Phenolic	mg/l	\$	ND
compound as			
C ₆ H ₅ OH			
Aluminium as Al	mg/l	\$	0.11
Arsenic as As	mg/l	0.2	ND
Boron as B	mg/l	20	ND
BOD 27 °C 3 days	mg/l	30	1.55

COD	mg/l	250	4.10
Mercury as Hg	mg/l	0.001	ND

SW: Mines Pond water

\$ - No limit has been specified.

Standards as per Government notification dt. 19th May' 93 Sampling & testing has been done as per IS 3025.

Ground Water Analysis Report

Date of sampling: 22.08.2014

Project: Hinldal Co. Ind Ltd. Talabira-I, Coal Project

	1	1	-
Parameter	Unit	Standard	GW1
PH		6.5-8.5	7.11
Colour	Hazen	Colourless	Colourless
Suspended Solid	mg/l	\$	2.01
Odour		Odourless	Odourless
Taste		Agreeable	Agreeable
Turbidity N.T.U (MAX)	N.T.U	5.0	1.1
Total dissolved solids	mg/l	500	60.45
Total Hardness as CaCO ₃	mg/l	300	55.35
Chlorides as Cl.	mg/l	250	9.00
Sulphate as SO ₄	mg/l	200	1.5
Free residual Chlorine	mg/l	\$	ND
Total Alkalinity	mg/l	\$	65.20
Iron as Fe	mg/l	0.3	0.013
Fluoride as F	mg/l	1.0	0.25
Calcium as Ca	mg/l	75	7.10
Manganese as Mn	mg/l	0.1	ND
Mineral oil	mg/l	\$	0.28
Cadmium as Cd	mg/l	0.01	ND
Zinc as Zn	mg/l	5.0	ND
Selenium as Se	mg/l	0.05	ND
Nitrate as NO3	mg/l	50	0.014
Phenolic compound as C_6H_5OH	mg/l	0.001	ND
Aluminium as Al	mg/l	0.03	ND
Arsenic as As	mg/l	0.05	ND
Boron as B	mg/l	1	ND
BOD 27 °C 3 days	mg/l	3.0	1.50
COD	mg/l	\$	3.85
Mercury as Hg	mg/l	0.001	ND

GW1:Office Site Borewell

ND – Not Detectable.

Standards as per Government notification dt. 19th May' 93 Sampling & testing has been done as per IS 3025.

Ground Water Analysis Report

Date of sampling: 22.08.2014

Project: Hinldal Co. Ind Ltd., Talabira-I, Coal Project

Parameter	Unit	Standard	GW2
РН		6.5-8.5	7.5
Colour	Hazen	Colourless	Colourless
Suspended Solid	mg/l	\$	9.80
Odour		Odourless	Odourless
Taste		Agreeable	Agreeable
Turbidity N.T.U	N.T.U	5.0	2.60
(MAX)			
Total dissolved	mg/l	500	200.15
solids			
Total Hardness as	mg/l	300	87.30
CaCO ₃			
Chlorides as Cl.	mg/l	250	14.15
Sulphate as SO ₄	mg/l	200	2.70
Free residual	mg/l	\$	ND
Chlorine			
Total Alkalinity	mg/l	\$	80.20
Iron as Fe	mg/l	0.3	0.22
Fluoride as F	mg/l	1.0	0.30
Calcium as Ca	mg/l	75	10.00
Manganese as Mn	mg/l	0.1	ND
Mineral oil	mg/l	\$	0.01
Cadmium as Cd	mg/l	0.01	ND
Zinc as Zn	mg/l	5.0	ND
Selenium as Se	mg/l	0.05	ND
Nitrate as NO ₃	mg/l	50	0.19
Phenolic	mg/l	0.001	ND
compound as			
C ₆ H ₅ OH			
Aluminium as Al	mg/l	0.03	ND
Arsenic as As	mg/l	0.05	ND
Boron as B	mg/l	1	ND
BOD 27 °C 3 days	mg/l	3.0	2.1
COD	mg/l	\$	6.0
Mercury as Hg	mg/l	0.001	ND

Location:GW2: Khinda village Dug well

ND – Not Detectable.

Standards as per Government notification dt. 19th May' 93 Sampling & testing has been done as per IS 3025.

Annexure-IV

NOISE LEVEL MONITORING RESULT IN dBA PROJECT: HINDALCO IND LTD., TALABIRA COAL MINES

Date of Monitoring: 22/23.05.2014

Time	Station: Khinda	Station: R &R	Station: Rest Selter
06.00	Village 42.3	Colony 43.3	46.7
07.00	42.3	43.5	51.8
08.00	48.5	45.9	55.3
09.00	50.9	43.9	55.5
10.00	52.8	50.6	58.4
11.00	52.5	50.5	60.2
12.00	52.9	50.7	62.3
13.00	52.4	50.6	65.9
14.00	48.5	50.5	64.5
15.00	46.7	50.9	60.6
16.00	48.4	50.5	59.7
17.00	45.5	50.7	59.7
18.00	44.9	50.5	58.2
19.00	42.6	48.5	55.3
20.00	38.8	47.3	53.5
21.00	40.6	48.5	52.8
22.00	40.5	46.6	50.8
23.00	39.9	40.8	50.5
00.00	39.6	38.7	49.7
01.00	38.2	37.7	48.6
02.00	35.5	35.5	48.4
03.00	37.3	33.3	45.3
04.00	37.4	34.7	44.4
05.00	36.5	35.6	43.5
Day Max:	56.9	50.9	65.9
Day Min:	40.5	43.3	46.7
Night Max:	39.9	40.8	50.5
Night Min:	35.5	33.3	43.5

Noise Level Data in dBA

Time	Station: Khinda	Station: R &R	Station: Rest Selter
	Village	Colony	
06.00	41.5	44.8	47.3
07.00	44.3	45.5	50.7
08.00	46.7	46.3	51.6
09.00	49.8	47.5	52.1
10.00	51.5	49.7	54.2
11.00	53.6	52.8	56.3
12.00	54.3	53.8	58.9
13.00	52.8	54.8	61.8
14.00	49.7	52.7	63.5
15.00	47.6	51.3	57.8
16.00	49.5	52.7	60.6
17.00	44.3	52.8	58.3
18.00	45.8	51.5	623.
19.00	44.7	50.8	59.5
20.00	40.6	48.5	56.8
21.00	40.4	47.3	53.4
22.00	39.5	45.4	51.7
23.00	38.6	43.7	49.9
00.00	38.9	42.3	48.8
01.00	38.8	41.4	45.3
02.00	37.3	42.7	45.7
03.00	38.4	40.5	43.6
04.00	38.5	41.3	44.9
05.00	38.7	41.7	45.7
Day Max:	54.3	54.8	63.5
Day Min:	40.6	44.8	47.3
Night Max:	37.3	43.7	49.9
Night Min:	37.3	40.5	43.6

Date of Monitoring: 25/26.06.2014

Noise Level Data in dBA

Date of Monitoring: 21/22.08.2014

Time	Station: Khinda	Station: R &R	Station: Rest Selter
	Village	Colony	

06.00	41.8	42.8	47.1
07.00	43.2	44.4	48.8
08.00	45.6	45.7	50.2
09.00	48.1	48.9	51.6
10.00	51.2	50.8	52.4
11.00	52.3	51.5	54.6
12.00	54.4	52.8	58.2
13.00	54.9	56.2	60.1
14.00	51.3	55.1	57.3
15.00	50.2	50.2	57.1
16.00	50.1	49.9	55.4
17.00	49.7	49.8	55.2
18.00	48.3	47.6	54.8
19.00	46.4	47.2	54.6
20.00	43.2	45.8	51.3
21.00	41.4	43.2	50.9
22.00	38.6	41.9	50.3
23.00	37.8	41.3	48.6
00.00	37.2	40.7	47.9
01.00	35.1	39.3	44.5
02.00	34.8	38.7	42.8
03.00	34.5	36.6	42.4
04.00	33.9	35.2	41.7
05.00	33.3	34.3	38.6
Day Max:	54.9	56.2	60.1
Day Min:	41.8	42.8	47.1
Night Max:	41.4	43.2	50.9
Night Min:	33.3	34.3	38.6

Annexure-V

DISASTER MANAGEMENT PLAN FOR TALABIRA-1 COAL MINE

APPLICABILITY

This Disaster Management plan will be applicable to Talabira-1 coal mine of M/s Hindalco Industries Ltd. situated in the lb valley coalfield in the district of Sambalpur (Orissa).

PURPOSE

IT is the sign of good governance and sound management practice to have emergency response plan in place so that in the event of any incident/accident/disaster, management personnel entrusted to undertake rescue and recovery work do not suffer panic and confusion and precious time is not lost in bringing the situation in order and rescue/recovery/rehabilitation work is started at the earliest without further loss of life and damage to the property.

OCCURRENCE

Any person present in the mine, if he notices any thing abnormal in relation to the mine operation like inrush of water, abnormal rise in the level of water in the reservoir, smoke, fire, or incident/accident/disaster which is likely to cause loss of life and damage to the property which is not normal in nature; will immediately inform the telephone operator of the mine office present at the duty at the surface. He will also inform the occurrence to the mine official like Asstt. Manager, overman, mining sirdar, engineer present in the duty in the mine.

DUTY OF OFFICIAL AT THE DUTY

The official present at the mine or district shall summon all the persons in the mine and apprise them about the emergency and arrange to bring them to collect at a safe place in the mine or outside of the mine. HE shall arrange to prevent any unauthorized entry of the person in the mine.

DUTY OF ATTENDANCE CLERK

On receiving information about a serious occurrence/ disaster in the mine and on having obtained authorization from the manager or in his absence from the senior most official present at the surface, the attendance clerk shall blow the siren/hooter of 12 blows thereby declaring STATE OF EMERGENCY at the mine. This standing order shall come into force when the manager / senior official present at the surface, after confirmation of the report of the emergency, orders the sounding of siren at various pitch for 12 blows. After hearing the warning siren every official shall post himself at this appointed place and shall discharge his duties as per his duty card. The colliery shall observe rehearsal once in every

three month for prompt action in case of emergency and cause the official to be conversant about their duty. which shall be responsible for over all direction of all operation connected with emergency and shall have following members-

- 01. Agent and head of Hirakud Complex
- 02. Manager
- 03. Asstt.Manager
- 04. Safety officer
- 05. Director of mines safety/Dy.Director of mines safety
- 06. Colliery Engineer
- 07. Pit safety committee members/ trade union representatives
- 08. Colliery doctor
- 09. Security officer
- 10. Chief Representative of outsourcing agency.

All the above persons shall be summoned to the colliery under the emergency response scheme and they will sign a log book in the operation control room.

DUTSES OF THE OFFICIAL DESIGNATED TO CONTROL THE OPERATION

Colliery safety officer will be the official designated to control the operation. His principal duty will be to check the missing men if any. He will make earliest check to account for all the persons who were there in the mine prior to the occurrence and find out the details of casualty if any.

DUTY ROSTER

In order to provide adequate supervision and control at all the time he shall prepare a duty roster for 24 hours in order to ensure continuity of control room operation.

ADDITIONAL RESCUE TEAM

If it is felt necessary additional rescue team shall be called from nearby colliery of Mahanadi coalfield/Hirakud plant. The duty roster of the team so requisitioned shall be drawn for prolonged operation.

LIST OF OFFICIAL AND OTHER TO BE SUMMONED TO THE MINE IN CASE OF STATE OF EMERGENCY

Following officials shall be immediately called to the mine either by telephone or by special messenger so as to reach the mine site without delay in the event of emergency.

ON MESSAGE

When a siren is sounded at the surface declaring state of^A emergency, the telephone attendant at the surface shall contact the manager or in his absence the senior most official present at the mine. After being advised he will flash the

action message produced below to all the following personals.

AN EMERGENCY HAS OCCURRED AT TALABIRA-1 COAL MINE ON...AT... DUE TO INNUNDATION / (FIRE etc.).

The telephone attendant must give the above message clearly and precisely and shall not spend time in unnecessary discussion and argument. He shall record all the phone calls in the telephone logbook supplied to him.

KEY PERSONNEL TO BE INFORMED

- 1. Agent.
- 2. Mine Manager/Asstt. Manager
- 3. Safety officer
- 4. Mines rescue station
- 5. Director of mine safety
- 6. Dy. Director of mines safety
- 7. Colliery Doctor
- 8. Head of outsourcing agency posted in the mine
- 9. Colliery engineer.
- 10. Local scientific laboratory
- 11. First aid personnel
- 12. Neighbouring mine official

Special messengers to be deployed for sending messages to those conveyed message over telephone.

OPERATION CONTROL ROOM

In an emergency it is necessary to bring together senior key officials to assist the manager in planning recovery operation. A surface control committee shall be established consisting of key personnel concerned. The manager or in his absence his senior most assistant shall act as executive official in carrying out decision made in surface control committee. The room from which all the activities in an emergency are being controlled and co-ordinated is called ⁴ control Room'. Pit top manager's office is most suited for this purpose. Surface control committee will be constituted

- 01. Mines manager
- 02. Safety officer
- 03. All the assistant managers
- 04. Colliery Engineer
- 05. Colliery doctor
- 06. Chiefrepresentative of outsourcing agency
- 07. Security Officer

EMERGENCY TELEPHONE NUMBERS

Designation	Mobile No.
Manager-Mines	9937894759
Safety Officer	9937096450
Asst. Manager-Mining	9583405451
Surveyor	9583157347
Medical Officer	9090090091
DGM-Maint.	9437579513
Dy. Manager-HR	9090079519
Dy. Manager-HR	9437057388
Security Officer	9776420631
Director of Mines Safety	0674-2302561

Dy. Director General of Mines	0651-2341407
Safety	
Directorate General of Mines	0326 2221002
Safety	0326 2221003

Annexure-VII

CSR EXPENSES - (April-2014 to September-2014)

Area of Intervention	Amount Spent by unit (Rs. in Lakhs)	Amount spent by Govt & other Sources (Rs. in Lakhs)	Total Expenses (Rs. in Lakhs
Education	0.58	0.09	0.67
Health & Hygiene	22.36	3.04	25.40
Sustainable Livelihood & Agriculture	6.12	4.28	10.40
Infrastructure Development	10.32	0.8	11.12
Social Causes & Awareness	6.05	2.85	8.90
TOTAL	45.43	11.06	56.49