



Date: 13/01/2017

To,  
The Member Secretary  
Goa State Pollution Control Board  
EDC, Patto Plaza  
Panjim, Goa -403001

**Subject:** Compliance of Consent conditions of Bicholim Iron Ore Mine, T.C. Nos: 11/1941, 12/1941, 13/1941, 14/1941 & 15/1941, Village Mayem, Lamgao, Bordem, Mulgao & Shirgao of Bicholim Taluka for the month of December 2016.

**Ref:** Consent to Operate No. 5/2569/15-PCB/CI-554 dated 07/09/2015

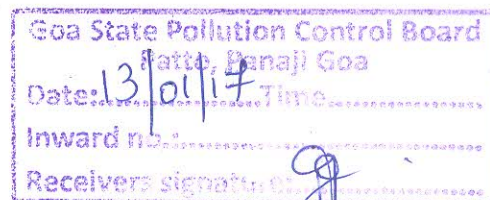
With reference to the condition in Consent to Operate and Authorization granted to Bicholim Iron Ore Mine, we have enclosed herewith the Air and Water Analysis Report for the Month of **December 2016**.

Thanking you,

Yours faithfully,

**For Sesa Mining Corporation Limited,**

  
**Jagdish Desai**  
Manager-Environment



Sesa Mining Corporation Limited: Bicholim Iron Ore Mine, Dhabdhaba, Bicholim (Goa) 403 504 India  
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Registered Office: Sesa Ghor, 20 EDC Complex, Patto, Panaji (Goa) - 403 001 India  
CIN: U13209GA1969PLC000091

**M/s Sesa Environment Laboratory**

Vedanta Limited ,Mining Division ,Codli Mines,P.O. Kirlapale ,Goa-403727

Recognised by Ministry of Environment, Forests and Climate change, Govt. of India Vide Notification .S.O.137(E).

dated 12<sup>th</sup> January 2015 , Valid up to 11.01.2020

\* Certified by ISO 9001:2008 and OHSAS 18001:2007

**Ambient Air Quality Monitoring Report**

Mine Name: Bicholim Mine

Instruments used: Respirable Dust Sampler 460BL

Calibration date: 28.09.2016

Validity of calibration :27.09.2017

Standard method used for analysis: Particulate Matter -Gravimetric method

Monitoring Date	Particulate Matter (24 hourly)				Emission Standards
	2 TOP Mine Face	1 Top Weigh Bridge Service Road	5TOP Ore storage/Loading	NSP (Dry screening Plant)	
12.12.2016	427	421	386	324	1200 µg/m3
15.12.2016	209	275	237	209	
19.12.2016	287	140	198	287	
22.12.2016	211	123	192	211	
29.12.2016	143	116	153	181	
30.12.2016	373	124	206	373	

  
Govt. Analyst



  
Laboratory Incharge

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Ambient Air Quality Monitoring Report

**Mine Name: Bicholim Mine**

**Instruments used:** Fine Particulate Sampler APM550 MFC, Respirable Dust Sampler 460 NL, Gaseous Pollutant Sampler

**Calibration date: 28.09.2016**

**Validity of calibration :27.09.2016**

**Standard method used for analysis:** PM10 & PM2.5 - Gravimetric method

SO2 - Improved west & Gaeke

NOx - Modified Jacob & Hoccheiser

Location Name :Ladfem Village					Location Name : Sarvan village			
Monitoring Date	PM <sub>2.5</sub> in µg/m <sup>3</sup>	PM <sub>10</sub> in µg/m <sup>3</sup>	SO <sub>2</sub> in µg/m <sup>3</sup>	NOx in µg/m <sup>3</sup>	PM <sub>2.5</sub> in µg/m <sup>3</sup>	PM <sub>10</sub> in µg/m <sup>3</sup>	SO <sub>2</sub> in µg/m <sup>3</sup>	NOx in µg/m <sup>3</sup>
12.12.2016	33	42	10	18	25	29	8	12
15.12.2016	38	71	8	20	42	17	6	10
19.12.2016	50	92	10	18	50	46	4	11
22.12.2016	48	86	8	7	44	42	3	8
29.12.2016	42	50	10	10	38	67	4	10
30.12.2016	33	50	11	8	21	12	6	9

Location Name : C S Pilgao Village					Location Name : Sirsaim Village			
12.12.2016	38	17	12	16	41	68	10	16
15.12.2016	37	50	10	12	36	52	8	12
19.12.2016	33	67	10	12	29	41	8	10
22.12.2016	34	65	10	16	21	58	10	12
29.12.2016	42	58	10	12	10	45	8	10
30.12.2016	21	26	9	10	29	38	6	8

NAAQS Limits: PM<sub>2.5</sub>.60 µg/m<sup>3</sup> PM<sub>10</sub> 100 µg/m<sup>3</sup> SO<sub>2</sub>.80 µg/m<sup>3</sup> NO<sub>x</sub>.80 µg/m<sup>3</sup> PM<sub>2.5</sub> in µg/m<sup>3</sup> PM<sub>10</sub> 100 µg/m<sup>3</sup> SO<sub>2</sub>.80 µg/m<sup>3</sup> NO<sub>x</sub>.80 µg/m<sup>3</sup>

  
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**Surface Water Analysis Report for the Month of December 2016**

Mine Name: Bicholim Mine

Date of Sample collection : 23.12.2016

Standard method used for analysis: APHA Standard

Test Report No: 209

Date of Receipt of sample: 23.12.2016

Analysis completion date: 27.12.2016

Parameter	Unit	Permissible limits	Location						
			1Top settling pond (Vagachiper lease Discharge)	2Top settling pond (Lamgao lease Discharge)	3Top settling pond (Totichomordongor lease Discharge)	Upstream River Assanora	Downstream River Assanora	Upstream River Bicholim	Downstream River Bicholim
Colour	Hazen	----	<5	<5	<5	<5	<5	<5	<5
pH	----	5.5 to 9.0	6.98	6.13	6.02	6.8	6.86	6.9	7.02
Turbidity	NTU	----	1	0.9	1.0	1.3	1.6	1.4	1.5
Dissolved Solids	mg/lit	----	50	21	22	460	486	72	76
Conductivity	µS/cm	----	100	44	44	920	972	144	151
Suspended Solids	mg/lit	100	2	2	2	2	2	2	2
Chlorides	mg/lit	----	15	7	7	215	235	19	23
Total Hardness as CaCO <sub>3</sub>	mg/lit	----	34	12	10	100	120	46	50
Calcium as Ca <sup>++</sup>	mg/lit	----	6.4	2.4	1.6	16.0	24.1	10.4	10.4
Magnesium as Mg <sup>++</sup>	mg/lit	----	4.4	1.5	1.5	14.6	14.6	4.9	5.8
Sulphate as SO <sub>4</sub>	mg/lit	----	1.6	1.0	2.0	63	72	4	2.7
Phosphate as PO <sub>4</sub>	mg/lit	5	BDL	0.1	0.1	0.2	0.1	0.1	0.1
Nitrate as NO <sub>3</sub>	mg/lit	10	0.1	0.1	0.1	0.4	0.6	0.1	0.1
B.O.D (3days, 27°C)	mg/lit	30	<3	<3	<3	<3	<3	<3	<3
C.O.D	mg/lit	250	<10	<10	<10	18	18	<10	<10
Total Iron	mg/lit	3	0.1	0.13	0.06	0.09	0.08	0.08	BDL
Manganese as Mn	mg/lit	2	0.0	0.09	BDL	0.06	0.06	0.03	BDL
D.O	mg/lit	----	7.0	7	6.9	6.3	6.5	7	7
Oil & Grease	mg/lit	10	Nil	Nil	Nil	<1	1	<1	<1

BDL- Below Detection Limit



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### Well water level Report

Mine Name: Bicholim Mine

Instrument Used: Well water tape

Sr.No	Location	Total Depth of well in mtr	Depth of Water level from the reference point in mtr	Water Column in mtr
			23.12.2016	
1	Mulgao Village Well	7.1	5.3	1.8
2	Lamgao Village Well-Santosh	5.4	3.9	1.5
3	Pilgao Village Well- Ratur	5.75	3.8	1.95
4	Mayem Village-Mohan	9.25	8.1	1.15

  
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Date of Sample collection :23.12.2016

Standard method used for analysis: APHA Standard


Test Report No: 210

Date of Receipt of sample:23.12.2016

Analysis completion date:27.12.2016

Parameter	Unit	Permissible Limit	Location			
			Mayem Village Well	Pilgaon Village Well	Mulgao Well	Lamgao Well
Colour	Hazen	<5.0	<5	<5	<5	<5
pH	-	6.5-8.5	6.53	6.51	6.18	6.47
Turbidity	NTU	5	2.2	0.8	1.0	0.8
Conductivity	µs/cm	-	44	37	67	99
Dissolved Solids	mg/lit	500	22	19	33	50
Suspended Solids	mg/lit	-	2	1	2	1
Chloride	mg/lit	250	10	7	11	18
Total Hardness as CaCO <sub>3</sub>	mg/lit	200	12	10	14	26
Calcium as Ca <sup>++</sup>	mg/lit	75	2.4	1.6	2.4	5.6
Magnesium as mg <sup>++</sup>	mg/lit	30	1.5	1.5	1.9	2.9
Sulphate as SO <sub>4</sub>	mg/lit	200	1.0	1.3	3.7	7.3
Nitrate as NO <sub>3</sub>	mg/lit	45	0.1	0.1	0.1	0.1
Alkalinity	mg/lit	200	20	19	20	26
Iron as Fe	mg/lit	0.3	0.09	0.08	0.06	0.04
Manganese as Mn	mg/lit	0.1	0.02	BDL	0.02	BDL
MPN/100ml	-	Absent	17	25	13	12

BDL- Below Detection Limit

  
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