

Date: 23/11/2016

To

✓ Additional Director (South)
Ministry of Environment & Forest
Regional Office (Southern Zone)
Kandriya Sadan, IVth Floor, E & F Wings,
17th Main Road, II Block Koramangala,
Bangalore-560 034

Subject: 'Six Monthly Compliance Report of Orasso Dongor Iron Ore Mine (T. C. No. 76/1952), Goa' for the period of April 2016 to September 2016

Respected Sir,

We are herewith submitting the condition wise compliance report & corresponding annexures and CD as per the conditions and their corresponding annexures laid down in the Environmental Clearance J-11015/70/2006-IA.II (M) dated 18/04/2007 for "Orasso Dongor Iron Ore Mine (T.C.No.76/1952)" for the period **April 2016 to September 2016**.

Thanking You

Yours faithfully,

For Vedanta Limited


Irshad Mamlekar
Mines Manager
OD Mine

Enclosures: Six monthly compliance report & corresponding annexures and CD of Orasso Dongor Iron Ore Mine for the period of **April 2016 to September 2016**

**C.C – Member Secretary, Goa State Pollution Control Board
-- CGWB**

**Compliance report to conditions of environmental clearance issued by
Ministry of Environment & Forests, Govt. of India for
Orasso Dongor Mines (T.C. No. 76 of 1952)
Letter no. J-11015/70/2006-IA.II(M)
Period April 2016 to September 2016**

Sr. No.	Condition of clearance	Status of compliance	Remarks
A.	Specific conditions		
(i)	Topsoil, if any shall be stacked properly with proper slope with adequate safeguards and should be used for reclamation and rehabilitation on mined out areas.	There is no topsoil encountered in the mining lease area as operations are taken up in already broken up area. If any topsoil encountered in mere future it will be stacked separately and utilized for reclamation activity.	
(ii)	Overburden shall be stacked at enmarked dump site(s) and shall not be kept active for long period. The maximum height of the dump shall not exceed 30m each stage shall preferably be of 10m. And over all slopes of the dumps shall not exceed 28°. In critical areas use of geotextiles shall be undertaken for stabilisation of the dumps. Back filling	Overburden is stacked/dumped at ear marked site as per approved Mining Plan. The overall slope of the dumps does not exceed 28°. Backfilling will be done as per approved mining plan. The finalized areas / dump slopes are covered with geo-textiles and subsequently taken up for plantation of native species as	

	<p>start concurrently. The OB dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface runoff. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on six monthly basis.</p>	<p>well as fast growing species. Necessary aftercare like irrigation, manuring, weeding etc is provided to plants. Compliance reports are submitted to MoEF regularly every six months.</p>	
(iii)	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working and mineral dump. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly. Garland drain (size, gradient and length) shall be constructed for both mine pit and for waste dump and dump capacity should be</p>	<p>All the mine runoff water is channelized in to mining pits & settling ponds through trenches and electrical resistant welding (erw) pipes of 600mm diameter for a length of 250m. Catch drain with dimension of around 1500m × 1m × 0.5m are constructed and series of five settling ponds with a combined capacity of 10000m³ are provided at the toe of the dumps. The settling ponds are desilted every year before monsoon. Garland drains are constructed all along the mine and dump</p>	<p>However, There were no Operations during the said period (April 2016 to September 2016).</p>

	<p>designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 yrs data) and maximum discharge in the area adjoining the mine site, sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	<p>stages to channelize the water.</p>	
(iv)	<p>Dimension of the retaining wall at the toe of dump and overburden benches within the mine to check runoff and siltation shall be based on the rain fall data.</p>	<p>Depending upon the highest rainfall the area has received, rock wall/retaining wall (dimension around 110m × 2.5m × 1m is provided) and check dams are constructed at the toe of the dump to prevent the silt flow. Stone pitching of around 200m² area is carried out at the toe of the dump.</p> <p>Garland drains are constructed all along the mine and dump stages to channelize the water. Series of five settling ponds are constructed at the toe of</p>	

		dump with a combined capacity of 10000 m3.	
(v)	Drilling & blasting shall not be undertaken	No drilling & blasting is carried out in the Mine. Ripper dozers are used for breaking the hard material.	
(vi)	Plantation shall be raised in an area of 68.8342Ha. Including green belt of adequate width by planting the native species around the ML area, roads, OB dump sites etc. In consultation with the local DFO/ Agriculture Department. The density of the trees should be around 2500 plants per Ha.	Plantation is carried out on dead dumps on all stages and alongside of the roads. Native plant species like cashew is used along with fast growing species for stabilization of the dumps in consultation with the Forest / Agriculture Dept.	
(vii)	The project authority shall implement suitable consevation measures to augment ground water resources in area in consultation with the Regional Director, Cental Ground water Board.	Rainwater is channelized in the mine pits and settling ponds which acts a reservoir and helps in recharging ground water.	

(viii)	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and construction of new piezometers at suitable locations in project area. The frequency of monitoring should be minimum four times in a year -January, Pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) Data thus collected may be sent regularly to MOEF, Central Ground Water Authority and Regional Director Central Ground Water Board.	Three existing open wells around the mine are monitored for Quality & water level regularly.	
(ix)	Prior permission from the competent authority should be obtained for drawal of groud water if any.	No Ground water is utilized for the mining operation.	Permission from Ground Water cell of Water Resource Department have been taken vide letter no. MIN/8/2015 dated 11/08/2015
(x)	Vehicular emission shall be kept under control and	Regular maintenance of vehicles is carried out to	However, There were no Operations during

	regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportations of minerals. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	ensure emission levels within the limit. PUC checks of all the vehicles are carried out periodically and records maintained. All the ore carrying trucks are covered with tarpaulin before leaving the mining premises. Free board is provided to avoid spillage. No over loading is ensured.	the said period (April 2016 to September 2016).
(xi)	Sewage treatment plant shall be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	There are no colonies and work shop within the mining lease. Vehicle maintenance is carried out outside the mine.	
(xii)	A Final Mine Closure Plan, along with details of Corpus Fund, should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval	Final mine closure plan approved by IBM would be submitted to MOEF in due course of time in accordance with Rule 23(c) of MCDR 1988	
B.	General Conditions:		
i)	No change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment & Forest	Mining is being carried out as per mining plan approved by Indian Bureau of Mines.	However, There were no Operations during the said period (April 2016 to September 2016).

ii)	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made	Production & waste generation is being carried out in accordance with Mining plan approved by Indian Bureau of Mines	
iii)	Conservation measures for protection of flora and fauna in the core and buffer zone should be drawn up in consultation with local forest and wildlife department.	The study of flora and fauna was undertaken in association Botany Department, Goa University. Accordingly local species are utilized for mine reclamation.	A detailed biodiversity management plan is being prepared in association with CEE. The study period is one year and final report awaited
iv)	Four ambient air quality-monitoring stations shall be established in core zone as well as buffer zone for RPM, SPM, SO ₂ , Nox monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board	Ambient air monitoring is conducted as per NAAQS in buffer zone (two locations)and Mine Specific Standard in core zone (one location). Monitoring is carried out by MoEF accredited lab .Reports submitted to State Pollution Control Board.	However, There were no Operations during the said period (April 2016 to September 2016).
v)	Data on ambient air quality (RPM, SPM, SO ₂ , Nox) should be regularly submitted to the ministry	Ambient air quality monitoring is carried out for (RPM, SPM, SO _x , Nox) regularly and reports are	However, There were no Operations during the said period (April 2016 to September

	including its Regional office located at Bangalore and the State Pollution Control Board/ Central Pollution Board once in six months.	submitted to the State Pollution Control Board every month and to MOEF Regional office every six months.	2016).
vi)	Fugitive dust emission from all the sources shall be controlled regularly. Water spraying arrangement on haul road, loading and unloading and at transfer points shall be provided and properly maintained.	Water sprinkling is carried out on haul roads to prevent the fugitive dust emission. Ore carrying trucks plying on the public roads are covered with tarpaulin & free boards is provided to prevent the spillage.	However the Mine was not in operation the said reporting time period (Apr 2016 to Sep 2016)
vii)	Measures shall be taken for control of noise levels below 85 dBA in work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs.	Mining machinery is regularly maintained to ensure noise levels within the permissible limits. Personnel working on the mines are provided with necessary Personal Protective Equipment's like mask, ear plugs, safety goggles, etc. and usage ensured.	
viii)	Industrial waste water (workshop and waste from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSP 422 (E) dated 19th May, 1993 and 31st December, 1993 or	There is no work shop within the Mine lease area, hence there is no any discharge of wastewater. The details of mine run off is detailed in item no. iii of specific conditions.	

	as amended from time to time. Oil and greases trap should be installed before discharge of workshop effluents.		
ix)	Personal working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.	Dust mask are provided to all the personnel within the mine. Training is provided to all employees on safety and health aspects.	However the Mine was not in operation the said reporting time period (Apr 2016 to Sep 2016)
x)	Occupational health surveillance program of workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Health surveillance programme of all employees is undertaken periodically by our company's Doctor as per DGMS requirements/guidelines. No adverse impact has been observed so far.	
xi)	A separate environmental management cell with suitable qualified personnel should be set-up under the control of Senior Executive, who will report directly to the Head of the Organization	Environment management cell consists of multidisciplinary qualified personnel. The department reports to the head of the organization.	Chief Executive Officer (CEO) ↓ Krishna Kulkarni (Head HSE) ↓ Jagdish Desai ↓ Vandita

xii)	The project authorities shall inform to the Regional Office located at Bangalore regarding date of financial closure and final approval of the project by the concerned authorities and the date of start of land development work.	Regional office, Bangalore is kept informed regarding date of final closure and final approval of the project by the concerned authorities.	
xiii)	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bangalore	Funds are separately earmarked/budgeted under various heads like mine reclamation, erosion control, environment monitoring, water treatment, dust suppression etc.	
xiv)	The regional office of the Ministry located at Bangalore shall monitor compliance of the stipulated conditions. The project authorities should extend full co-operation to the officer (s) of the Regional Office by furnishing the requisite data/information / monitoring reports	Necessary cooperation will be provided to officer (s) of the Regional Office by furnishing the requisite data/information/monitoring reports.	

xv)	A copy of clearance letter will be marked to concerned Panchayat /local NGO, if any, from whom and suggestion/ representation has been received while processing the proposal	Copy of the environmental clearance letter was submitted to local Panchayat after grant of EC.	
xvi)	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and collector's office/ Tehsildar's office for 30 days		
xvii)	The project authorities should advertise at least in two local newspapers widely circulated, one which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forest at http://envfor.nic.in	Is complied with. Published on local daily named 'TARUN BHARAT' and 'THE NAVHIND TIMES' dated 10/05/2012	

	and a copy of the same should be forwarded to the Regional Office.		
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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 12th January 2015 , Valid up to 11.01.2020

* Certified by ISO 9001: 2008, ISO 14001:2004 and OHSAS 18001:2007

Well water level Report

Mine Name: Orraso Dongor 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
			22/04/2016	
1	Panchayat well	8.7	6.05	2.65
2	Vatu shetye Well	6.85	3.35	3.5
3	Health Centre well	9.5	6.4	3.1


Govt Analyst




Laboratory Incharge

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Well water level Report

Mine Name: Orraso Dongor 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
			18.05.2016	
1	Panchayat well	8.7	6.55	2.15
2	Vatu shetye Well	6.85	3.85	3
3	Health Centre well	9.5	6.7	2.8


Govt Analyst




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Well water level Report

Mine Name: Orraso Dongor 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
			20.06.2016	
1	Panchayat well	8.7	6.1	2.6
2	Vatu shetye Well	6.85	3.3	3.55
3	Health Centre well	9.5	6.1	3.4


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Well water level Report

Mine Name: Orraso Dongor 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
			25.07.2016	
1	Panchayat well	8.7	4.2	4.5
2	Vatu shetye Well	6.85	1.4	5.45
3	Health Centre well	9.5	4.2	5.3


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Well water level Report


Mine Name: Orasso Dongor 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
			23.08.2016	
1	Panchayat well	8.7	4.5	4.2
2	Vatu shetye Well	6.85	3.4	3.45
3	Health Centre well	9.5	5.7	3.8


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Well water level Report

Mine Name: Orasso Dongor 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
			26.09.2016	
1	Panchayat well	8.7	5.3	3.4
2	Vatu shetye Well	6.85	3.4	3.45
3	Health Centre well	9.5	5.7	3.8


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Well Water Analysis Report

Mine Name: OD Mine

Date of Sample collection :25.07.2016

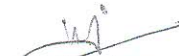
Standard method used for analysis: APHA Standard

Date of Receipt of sample: 25.07.2016

Analysis completion date: 30.07.2016

Parameter	Unit	Permissible Limit	Location		
			Health Center Well	Panchayat Well	Vatu Shetye Well
Colour	Hazen	<5.0	<5	<5	<5
pH	-	6.5-8.5	5.5	6.24	5.73
Turbidity	NTU	5	1.1	1.8	1.7
Conductivity	µs/cm	-	62.4	48	31.5
Dissolved Solids	mg/lit	500	31.2	24	15.6
Suspended Solids	mg/lit	-	1	2	2
Chloride	mg/lit	250	6.9	5.9	4.9
Total Hardness as CaCO ₃	mg/lit	200	24.2	18.2	10.1
Calcium as Ca ⁺⁺	mg/lit	75	6.5	4.0	2.4
Magnesium as mg ⁺⁺	mg/lit	30	2.0	2.0	1.0
Sulphate as SO ₄	mg/lit	200	2.0	1.0	0.8
Nitrate as NO ₃	mg/lit	45	0.1	0.1	BDL
Alkalinity	mg/lit	200	20	30	15
Iron as Fe	mg/lit	0.3	BDL	BDL	BDL
Manganese as Mn	mg/lit	0.1	0.03	0.01	BDL
MPN/100ml	-	Absent	10	15	21

BDL- Below Detection Limit


Govt. Analyst




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Surface Water Analysis Report for the Month of June 2016

Mine Name: OD Mine

Date of Sample collection: 20/06/2016

Standard method used for analysis: APHA Standard

Date of Receipt of sample: 20.06.2016

Analysis completion date: 27.06.2016

Parameter	Unit	Location	
		Permissible limits	face 1- check dam
Colour	Hazen	----	23
pH	----	5.5 to 9.0	6.07
Turbidity	NTU	----	8.4
Dissolved Solids	mg/lit	----	15.4
Conductivity	μ S/cm	----	30.8
Suspended Solids	mg/lit	100	3
Chlorides	mg/lit	----	7.7
Total Hardness as CaCO ₃	mg/lit	----	8.2
Calcium as Ca ⁺⁺	mg/lit	----	2.5
Magnesium as Mg ⁺⁺	mg/lit	----	0.5
Sulphate as SO ₄	mg/lit	----	3.2
Phosphate as PO ₄	mg/lit	5	BDL
Nitrate as NO ₃	mg/lit	10	0.1
B.O.D (3days, 27°C)	mg/lit	30	<3
C.O.D	mg/lit	250	<10
Total Iron	mg/lit	3	0.06
Manganese as Mn	mg/lit	2	0.01
D.O	mg/lit	----	5
Oil & Grease	mg/lit	10	Nil

BDL- Below Detection Limit


Govt. Analyst




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Surface Water Analysis Report for the Month of September 2016

Mine Name: Orasso Dongor Mine

Date of Receipt of sample: 26.09.2016

Date of Sample collection: 26/09/2016

Analysis completion date: 30.09.2016

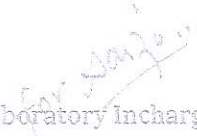
Standard method used for analysis: APHA Standard

Test Report No: 167

Parameter	Unit	Location	
		Permissible limits	face 1- check dam
Colour	Hazen	----	7
pH	----	5.5 to 9.0	6.07
Turbidity	NTU	----	1.6
Dissolved Solids	mg/lit	----	15
Conductivity	μ S/cm	----	30
Suspended Solids	mg/lit	100	3
Chlorides	mg/lit	----	5.0
Total Hardness as CaCO ₃	mg/lit	----	12.0
Calcium as Ca ⁺⁺	mg/lit	----	2.4
Magnesium as Mg ⁺⁺	mg/lit	----	1.5
Sulphate as SO ₄	mg/lit	----	1.2
Phosphate as PO ₄	mg/lit	5	BDL
Nitrate as NO ₃	mg/lit	10	0.1
B.O.D (3days, 27°C)	mg/lit	30	<3
C.O.D	mg/lit	250	<10
Total Iron	mg/lit	3	0.03
Manganese as Mn	mg/lit	2	BDL
D.O	mg/lit	----	6.9
Oil & Grease	mg/lit	10	Nil

BDL- Below Detection Limit


Govt. Analyst


Laboratory Incharge

