

**Ref: SRL/2016/CU-ECC-1**

**Date: 24.05.2016**

To,  
The Additional Director (South)  
Ministry of Environment and Forest  
Regional Office (Southern Zone)  
Kendriya Sadan, IVth Floor, E & F Wings  
17<sup>th</sup> Main Road, II Block, Kormangala  
Bangalore – 560 034

**Sub: Six monthly compliance report of Curpem Iron Ore Mine (T.C. No. 3 Of 1951 & 40 of 1954),  
Goa for the period October 2015 to March 2016.**

Respected Sir,

We are herewith submitting the condition wise compliance report as per the conditions laid down in the Environmental Clearance Letter No. J-11015/155 /2005-IA-II (M) dated 17/11/2005 for the period **October 2015 to March 2016.**

Thanking you,  
Yours faithfully,



**Mr. Prakash Chandra**  
**Mines Manager**

**Enclosed:** Six monthly compliance report of Curpem Iron Ore Mine for the period October 2015 to March 2016.

**C.C:** 1. Member Secretary, Goa State Pollution Control Board  
2. CGWB

**Sesa Resources Ltd.**

T +91-832 246 0600 F +91-832 246 0690 | Website: [www.vedantalimited.com](http://www.vedantalimited.com)  
Registered Office: Sesa Ghor, 20 EDC Complex, Patto, Panaji (Goa) - 403 001  
CIN No.: U13209GA1965PLC000030

**Compliance report to conditions of environmental clearance issued by**

**Ministry of Environment & Forests, Govt. of India, for Curpem Iron Ore Mine (T.C. No. 3 of 1951 & 40 of 1954)**

**Letter No. J-11015/155/2005-IA.II(M)**

**Production: 0.2 MTPA as per Environment clearance, however the current production limit is 0.09 MTPA as per capping imposed by state govt.**

**Period - October 2015- March 2016**

S. No	Condition of clearance	Status of compliance	Remarks
A.	<b>Specific Conditions</b>		
(i)	The environmental clearance is accorded only for two years during which period detailed hydrogeological study (quality and quantity) on impact of mining on hydrogeology (pre-monsoon, monsoon and post-monsoon) shall be carried out and the report submitted to Ministry.	Hydro geological report was prepared and submitted to MoEF and based on the same extension of validity EC was granted vide letter No. J-11015/155/2005-IA-II(M) dated 02.01.2008	
(ii)	Prior approval of the Chief Wildlife Warden, Government of Goa shall be obtained for mining at distance of 3 km from Netravali Wildlife Sanctuary.	CWLW permission for both leases was granted on 24/02/2006 vide letter No. 6-13-(3)-89-FD/ 5101 which was valid for 2 years.  Renewal of CWLW for T.C No. 3/51 was obtained vide letter No. 6-13-(3)-89-FD/ 4241 dated 18/11/2009. Renewal of CWLW for T.C No. 4/54 was obtained vide letter No. 6-13-(3)-2007-FD/ 6535 dated 22/03/2011.	

(iii)	No dumping of OB where natural slopes already exceeding 28° angle.	Dumping is not carried out on land having natural slope exceeding 28°. Dumping is carried out as per the IBM approved Mining Plan. There is only one dump covering an area of 12.1 ha area; out of which 2.3 ha is afforested. The average height of dump is around 20m (2 steps)	Mining operations have not resumed.
(iv)	Top soil should be stacked properly with adequate measures at earmarked sites. It should be used for reclamation and rehabilitation of the mined out areas.	The mine lease is situated on a laterite plateau and there is no top soil available with the current working area. However any top soil encountered during future working/ development will be preserved and used for reclamation and rehabilitation.	
(v)	OB and other wastes should be stacked at earmarked sites only and should not be kept active for long periods of time. Plantation should be taken up for soil stabilization along the slopes of the dump and terraced after every 5-6 m of height and overall slope angle shall be maintained not exceeding 28°. Sedimentation pits shall be constructed at the corners of the garland drains. Retention/Toe walls shall be provided at the base of the dumps.	OB and other waste are stacked at the earmarked site as per approved mining plan. Step dumping method is adopted. Finalized portions of the dump slopes are covered with geotextiles and then afforested. Garland drains are provided to channelize the water in the mine pit. All the mine-runoff water is channelized through garland drains and pipes into the mine pit. Rock walls and settling ponds are constructed at the toe of the dump. Rainfall data is considered while designing and constructing settling ponds. The settling ponds are desilted every year before the onset of monsoons.	Mining operations have not resumed.



(vi)	Use of geotextiles for dump stabilization shall be taken up in the critical areas.	Geotextiles are used for erosion control and stabilizing the dump slopes.	
(vii)	<p>Catch drains, and siltation ponds of appropriate size, gully plugs and check dams should be constructed to arrest silt and sediment flows from the mining operations, Desilting operations shall be undertaken regularly and particularly after very monsoon.</p> <p>Garland drain (size, gradient &amp; length) shall be constructed for both mine pit and for the waste dump. Sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall 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.</p> <p>Desilting operations shall be undertaken after very monsoon.</p>	<p>Rock walls and settling ponds are constructed at the toe of the dump. Environment protective measures like de-silting of settling ponds and drains are carried out before the onset of monsoon. Laterite boulder check dams are constructed across trenches to arrest silt flow. All the mine run-off water is channelized through garland drains and pipes in to the mine pit. If required the pit water is treated with flocculent and lime and clean water is pumped out.</p>	
(viii)	Drills should be wet operated or with dust extractors.	No drilling and blasting is carried out at Curpem mines	
(ix)	Measures shall be taken for proper maintenance of vehicles used in mining operations and in transportation of mineral ore and in ensuring that emissions are within prescribed norms. The vehicles should be covered with tarpaulin and should not be overloaded.	<p>Preventive maintenance is carried out at regular intervals for all the vehicles used for the mining operations:</p> <p>Pollution Under Check (PUC) check is carried out and certificates maintained for all the truck plying for the transportation of the ore.</p> <p>All the ore carrying trucks are covered with tarpaulin before leaving the mining premises. Free board is provided &amp; load is kept within the limits.</p>	<p>Mining operations have not resumed.</p>

(x)	Plantation shall be done which includes a green belt of adequate width around the ML area, along roads, OB dumps and non mineralized areas identified for plantation by planting suitable native species in consultation with the local DFO/Agriculture Department. The density of trees should be around 2500 plants per hectare. Substantial allocation of funds shall be made for afforestation and reclamation and details furnished to the Ministry and to the MOEF RO, Bangalore.	Natural green belt exists around the lease area. Finalized areas on mines such as dump slopes, road sides, embankments etc are taken up for plantation native as well as fast growing species. Spacing of around 2m*2m is maintained. Saplings required for plantation are taken from forest/ agriculture department nurseries. Details of the afforestation are submitted to MoEF on six monthly basis. The necessary provisions of funds are made in our annual operational budget.	125 saplings of gap filling plantation comprising of Native species were carried out for the year 2015-2016.
(xi)	A Progressive Mine closure plan clearly indicating the year of backfilling, area to be backfilled, quantum of OB to be backfilled and area to be reclaimed with plantation shall be prepared and implemented.	A Progressive Mine Closure Plan is approved by IBM as part of mining Plan.  The status of the same is submitted to IBM annually.	
(xii)	Mine water discharged from the lease shall be treated to prescribed standards and to ensure that there is no adverse impacts on River Kushavati.	The rain water falling within the mining lease area is channelized in to the mine pit, treated if required with lime and flocculent and discharged only when required. Regular water monitoring is carried out to check whether the discharge water meets the prescribed limits. The results are submitted to MOEF and SPCB.	
(xiii)	Water harvesting measures should be taken up in and around mine site. Further, desiltation shall be done every year before the onset of monsoon.	All the mine run-off water is channelized in to mining pit. This harvested rain water is later used for dust suppression activities. The settling ponds constructed at dump toe also acts as means to harvest rain water. The settling ponds are de-silted every	



		year before the onset of monsoon.	
(xiv)	No additional groundwater shall be used for mining operations. Prior approval of the MOEF and CGWA shall be obtained for using groundwater for mining operations. Additional water requirement, if any, shall be met from recycling of water from mining/processing operations and from water harvesting measures.	No groundwater is used for mining purpose.	Permission from WRD for pumping water from Mine pit is obtained for Curpem Mine via registration certificate No. WRD/WDXIII/miningpit/100/15-16/728 dated 19/08/2015.
(xv)	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers at suitable locations in project area. The frequency of monitoring should be minimum four times a year – January, pre monsoon (April/May), monsoon (August), post monsoon (November), and winter (January) seasons for groundwater level and in May for quality, particularly for heavy metals. Data generated from groundwater regime monitoring will be submitted to CGWB, Regional office on an annual basis. The monitoring shall include levels of heavy metals including iron.	Regular monitoring of ground water level and quality is carried out by monitoring open wells surrounding our mining operations. Frequency of monitoring is followed as prescribed. The monitoring includes levels of heavy metals and iron.	Monitoring will be resumed once mining operations start.
(xvi)	A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 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.	

(xvii)	Consent to Operate shall be obtained from the SPCB for expansion of mining operations.	Consent to operate from GSPCB is granted on 07/09/2015 vide letter No. 5/5001/15-PCB/CI-581 and is valid till 20/05/2017.	Mining operations have not resumed.
(xviii)	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation vs Union of India in Civil Writ Petition No. 460 of 2004, as may be applicable to this project.	Noted	
(xix)	Adequate measures for soil erosion, prevention and control shall be undertaken. Details of implementation on the same shall be submitted to the regional Office of the Ministry within 6 months.	The finalized areas on dump sloped are covered with geotextiles to prevent erosion. Garland drains, boulder walls and settling ponds are constructed at the toe of dump. The status of the same is submitted to Ministry regional office.	
(xx)	Harvesting of mine pit discharge and rain water to recharge the aquifers shall be undertaken. Implementation details on the same shall be submitted to the regional office of the Ministry within six months. The result of such harvesting scheme shall be periodically submitted to the Ministry.	All the mine run-off water is channelized in to mining pit. This harvested rain water is later used for dust suppression activities. The settling ponds constructed at dump toe also acts as means to harvest rain water. The settling ponds are de-silted every year before the onset of monsoon	

<b>B.</b>	<b>General Conditions</b>		
<b>S. No</b>	<b>Condition of clearance</b>	<b>Status of compliance</b>	<b>Remarks</b>
(i)	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Mining is being carried out as per mining plan approved by Indian Bureau of Mines	Mining operations have not resumed.
(ii)	No change in the calendar plan including excavation, quantum of iron ore, waste dumps should be made.	Mining is being carried out as per mining plan approved by Indian Bureau of Mines.	Mining operations have not resumed.
(iii)	Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for monitoring RPM, SPM, NOX and SO <sub>2</sub> . Location of the ambient air quality stations should be decided based on meteorological data, topographical features and environmentally and ecologically sensitive targets and the frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Air Monitoring is carried in core zone as well as buffer zone .Monitoring is conducted by MoEF approved Laboratory and reports submitted regularly to MoEF.	Mining operations have not resumed.
(iv)	Data on environmental quality should be regularly submitted to the Ministry including its Regional Office at Bangalore and the State Pollution Control Board/Central Pollution Control Board once in six months.	Environment quality data is Submitted to Goa State Pollution Control Board and Regional Office of MOEF on six monthly basis and same is maintained at the site.	It will be submitted once mining operations resume.



(v)	Adequate measures for control of fugitive emissions should be taken during drilling & blasting operations, loading and transportation of mineral, etc. Fugitive dust emission should be regularly monitored and data recorded properly. Water spraying arrangement over haul roads, loading and unloading points and transportation of minerals, etc. should be provided and properly maintained.	For the control of the fugitive dust, various possible measures are adopted some of which are as below: (a) Water sprinkling on haul roads, loading and unloading points (b) Ore carrying trucks are covered with tarpaulin & free board is provided to prevent the spillage. (c) No blasting operations are carried out. (d) dump slopes are covered with geotextiles	
(vi)	Adequate measures should be taken for control of noise levels below 85 db A in the work environment. Workers engaged in blasting and drilling operations, operations of HEMM, etc., should be provided with ear plugs / muffs.	Adequate measures for control of noise levels like: Regular maintenance of Hired mining machineries and vehicles, regular monitoring of noise levels. PPE's are provided to all workmen.	
(vii)	Industrial waste water (workshop and wastewater from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time. Oil and grease trap should be installed in the mine for treatment before discharge of effluents from the workshop. There shall be no discharge of wastewater from the mine site even during peak monsoon season.	There is no work shop within the mining lease, hence there is no industrial waste water generation or discharge. Soak pits are constructed for Domestic waste water.	
(viii)	Personnel 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. Occupational health surveillance programme of the workers should be undertaken periodically and corrective measures	All the workmen and staff working in mines are provided with PPE's .Training and information on safety and health aspects is imparted periodically. Health surveillance programme of workers is undertaken Mobile Health Unit along with the Medical Staff	

	taken, if required.	visits twice a week to the Mine.	
(ix)	The data on environmental quality should be collected and analysed either through an in-house environmental laboratory established with adequate number and type of pollution monitoring and analysis equipment or got analyzed through an approved laboratory under the Environment (Protection) Rules, 1986 in consultation with the State Pollution Control Board.	Data of environment quality is collected and analyzed by an approved Laboratory under Environment (Protection) Rules, 1986. The reports are submitted to MoEF and SPCB on six monthly basis.	
(x)	A separate environmental management cell with suitable qualified personnel should be set up under the control of a senior executive who will report directly to the head of the organization.	<p>There is an Environment Management Cell with multidisciplinary staff suitably qualified in occupational health, safety and environment headed by Head-HSE who reports to CEO of the company.</p> <p>Mr.K.V.Kulkarni: Head HSE; M.Tech – Environment</p> <p>Jagdish Desai: M.Sc( Agri), M.Sc( Eco and Envnt).</p> <p>Sharon Dsouza: M.Tech- Environment Engg.</p> <p>Dr. Sunil: ( M.B.B.S) Occupational Health Specialist</p>	



(xi)	The funds earmarked for environmental protection measures should be kept in separate account and not diverted for any other purpose. Year-wise expenditure should be reported to the Ministry of Environment & Forests.	Environment budget is prepared and funds are earmarked under various heads like Mine reclamation, Erosion Control, Dust Suppression, Water Treatment and . Environment Monitoring.	The expenditure incurred on environment management FY: 2015-16 is Rs.48944.8.
(xii)	The project authorities should inform to the Regional Office located at Bangalore regarding date of financial closures and final approval of the project by the concerned authorities, and the date of start of land development work.	This is an ongoing mining project.	
(xiii)	The Regional Office of this Ministry located at Bangalore shall monitor compliance of the stipulated environmental conditions. The project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports.	Necessary support will be provided to the regional officer for the visit, furnishing requisite data etc.	
(xiv)	A copy of the clearance letter should be market to concerned Panchayat/local NGO, if any, from whom any suggestion/ representation has been received while processing the proposal.	Clearance Letter has been already given to Local Panchayat/ SPCB.	
(xv)	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the collector's/Tehsildar's Office for 30 days.	--	

(xvi)	The project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within 7 days of issuance 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 may also be seen at web site of the Ministry of Environment and forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> .	The issuance of EC was advertised in Dailies namely NavHind Times and Lokmat on 22/11/2005	
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