



Director (S)
Ministry of Environment and Forests
Eastern Regional Office,
A/3, Chandrasekharpur
Bhubaneswar- 751023

Ref No: SCM/ ENV/ 012/ 107/ 15
Date: 30.11.215

Sub: Submission of Six monthly compliance report on implementation of environmental safeguards of Sukinda Chromite Mine, for the period from April' 15 to Sept'15.

Ref: Ministry of Environment and Forests Letter No: J-11015/96/2011-IA.II(M) dated 06.09.2013

Dear Sir,

We are herewith submitting the six monthly compliance report in respect of the stipulated environmental clearance conditions of Sukinda Chromite Mine for the period from April'15 to Sept' 15 as per EIA Notification, 2006.

We are also sending you the soft copy of the report to your good office on email: mef.or@nic.in for your ready reference.

We trust that the measures taken towards environmental safeguards comply with the stipulated environmental conditions. We look forward to your further guidance which shall certainly help us in our endeavor for further improve upon our Environmental Management practices.

Thanking you,

Yours faithfully,

Manager
Sukinda Chromite Mine
M/s Tata Steel Limited

Encl: As above

CC: MoEF, New Delhi
CPCB, Zonal office Kolkata
OSPCB, Bhubaneswar
OSPCB, Regional office Kalinganagar

TATA STEEL LIMITED

Sukinda Chromite Mine PO Kalarangiatta Dist Jajpur Odisha 755028
Phone no 91 6726 268763 Fax 91 6726 268734
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India
Tel 91 22 6665 8282 Fax 91 22 66657724
Corporate Identity Number I 27100MH1907PI C000260 Website www.tatasteel.com



Compliance
to
Environmental Clearance Conditions
of
Sukinda Chromite Mine
M/s. Tata Steel Limited
For the period: April'2015 – September'2015

(MoEF Letter Ref No: J-11015/96/2011-IA.II (M), dated 06.09.2013)

Compliance to the Environment Clearance Letter No: J-11015/96/2011-IA.II (M), dated 06.09.2013 in respect of Sukinda Chromite Mine for Mining Lease renewal, increase in production for Chrome Ore (ROM): 2.40 MTPA, Pyroxenite Ore (ROM): 0.50 MTPA, Chrome Concentrate: 0.65 MTPA, Change in mining technology to opencast & underground mining, change in beneficiation technology and increase in project area.

A. Specific Condition:

Sl	Condition	Compliance
I	No mining activities will be allowed in forest area for which the Forest Clearance is not available	<p>No mining is being carried out beyond any forest area other than the forest area over 73.697 ha for which the Forest Clearance/ TWP is available.</p> <p>The mine was granted a single window Forest-cum-Environmental clearance vide letter no. vide letter No. 8-78/96-FC dated 27.01.1998. As the lease renewal was due on 12.01.2013, renewal forest diversion proposal was applied and Stage-I FC along with one year temporary working permission was obtained from MoEF & CC vide letter no. 8-78/1996-FC (pt-I), dated 03.11.2014.</p> <p>Subsequent to endorsement of the MMDR Amendment Act, 2015, the Govt. of Odisha extended the mining lease from 12.01.2013 to 31.03.2020 for which the supplementary lease deed was executed on 24.08.2015 and registered on 26.08.2015. In accordance to the MoEF & CC Circular No. F.No.11-51/2015-FC, dated.01.04.2015, the forest clearance dated 27.01.1998 got extended till 31.03.2020</p> <p>Further, in accordance to the MoEF & CC Circular dated F.No.8-78/1996-FC, dated.10.03.2015, the forest area as on 25.10.1980 (i.e Sabik Settlement) 404.669 ha. within the mining lease of 406 ha is now termed as forest land. Hence, fresh forest diversion proposal over an area of 330.972 ha (404.669 ha - already diverted area of 73.697 ha) has been applied on 02.11.2015.</p>
II	The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide there letter F. No. 11-362/ 2012-FC, failing which the mining lease area will be reduced to the non-forest area plus the forest area for which the project proponent has been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.	<p>Renewal Forest Diversion Proposal for entire forest land of 73.697 ha within the Mining Lease area has been applied in time. The FDP has been duly recommended by the F&E department, Govt. of Odisha to the Ministry of Environment & Forests, Govt. of India for onward consideration for grant of Forest Clearance. MoEF, Govt. Of India has granted Stage-I Forest Clearance with one year working permission vide its letter no. 8-78/1996-FC (pt-I), dated 03.11.2014. Copy of the letter enclosed as Annexure-I.</p> <p>Subsequent to endorsement of the MMDR Amendment Act, 2015, the Govt. of Odisha extended the mining lease from 12.01.2013 to 31.03.2020 for which the supplementary lease deed was executed on 24.08.2015 and registered on 26.08.2015. In accordance to the MoEF & CC Circular No. F.No.11-51/2015-FC, dated.01.04.2015, the forest clearance dated 27.01.1998 got extended till 31.03.2020</p> <p>Further, in accordance to the MoEF & CC Circular dated F.No.8-78/1996-FC, dated.10.03.2015, the forest area as on 25.10.1980 (i.e Sabik Settlement) 404.669 ha. within the mining lease of 406 ha is now termed as forest land. Hence, fresh forest diversion proposal over an area of 330.972 ha (404.669 ha - already</p>

Sl	Condition	Compliance
		diverted area of 73.697 ha) has been applied on 02.11.2015.
III	Till all the clearances are obtained for the proposed tailing pond/dam the project would only use existing tailing dam.	<p>The Forest Diversion proposal for 8.370 ha of forest land involved in the proposed area for dry tailing disposal is under active consideration of State Forest Dept. For the non-forest part i.e. 65.315 ha land lease proposal is in the preview of Odisha State Land Settlement and it is now under process. Till the time the above clearances are not obtained, the tailing is being disposed within the existing tailing dam.</p> <p>This proposal is on hold at present in accordance to the verdict passed by Hon'ble Supreme court of India on disposal of WP(Civil) No. 435 of 2012 (Goa Foundation vs Unioin of India). Further, this proposal shall be pursued after further favourable order ascends in due course.</p>
IV	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the Standing Committee of National Board for Wildlife, as may be applicable to this project.	There is no Wild Life sanctuary, National Park, Biosphere reserves or other Eco sensitive zone located within 10 km from the mining lease boundary. Hence, clearance under the Wildlife (Protection) Act, 1972 from the Standing Committee of National Board for Wildlife is not applicable.
V	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.	The Consent to Establish has been already obtained from Odisha State Pollution Control Board vide letter no. 17750/IND-II-NOC-5664 dated 30.09.2013. Consent to Operate would be applied and obtained before the proposed expansion activity for increase in production starts. The condition stipulated in the Consent to Establish and Consent to Operate is being effectively implemented.
VI	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 Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.	As per Ministry of Environment Notification and local forest notification, there are no wildlife sanctuaries, national park/ biosphere reserve or any other sensitive zones located within 10 Km radius from the mining lease boundary.
VII	As part of ambient air quality monitoring during operational phase of the project, the air samples shall also be analysed for their mineralogical composition as may be so prescribed or notified by this Ministry and records maintained.	<p>The ambient air quality is being monitored twice a week at six locations within the Core Zone. Personal dust sampling is also being carried out. The mineralogical composition has been done and result thereof has been enclosed as Annexure-II.</p> <p>The analysis report for personal dust sampling the taken in month of Jun'15 and Jul'15 is enclosed as Annexure-III.</p>
VIII	The ores and minerals shall be covered by tarpaulin or by such other means when transported out of the mine by road. The vehicles shall not be overloaded.	Mineral and ores which is transported out of the mine lease boundary to the various destinations using the outside trucks is being completely covered by tarpaulin and is secured in position by plastic straps. All the vehicles are weighed with help of four Weigh Bridges located within the mining lease boundary to ensure that vehicle is not overloaded. Photograph showing the same is enclosed as Annexure-IV .
IX	Effective safeguard measures such as conditioning of ore with water, regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	To limit the fugitive emissions, various control measures like water sprinkling on haul road, transfer points, Ore stack yard, etc is being done. Four graders have been deployed for grading all the haul roads to remove the accumulated muck. Ten water sprinklers (two of 28 KL, four of 25 KL, and four 8 KL) have been deployed in the mine area for dust suppression on haul road and at mineral storage yards. The main haul roads and areas in maintenance, stack yard and chrome ore beneficiation plant have been concreted and stationary water sprinkler have also been installed to control dust dust in these permanent haulage roads. Plantation of 5-20 m width has also been raised in between colony and mines to minimize any air borne problems to the

Sl	Condition	Compliance																																	
		<p>inhabitants.</p> <p>Stationary water sprinklers have been installed in roads within COB Plant and Workshop also. Water spraying is done through pressure water jets at feed hopper, transfer points, discharge chute to prevent dust generation. The process at COB Plant is totally wet and eliminates the chance of any dust generation. The concentrate stacks are now being covered using tarpaulin sheets to prevent finer concrete particle from getting air borne. Successful trials have also been conducted by using Dustex chemical (a lignosulphonate product derived from the wood pulping process and developed specially for road stabilization and dust control) during water sprinkling for effective dust suppression and less consumption of water. It is nontoxic, easy to handle and satisfies all environmental requirements. Photographs showing measures taken to control dust are attached in Annexure-V.</p> <p>The details of concrete road including provision of fixed water sprinkler are as follows:</p> <p style="text-align: center;">Table I: Concrete and Fixed Water Sprinkler Details</p> <table border="1" data-bbox="751 853 1506 1178"> <thead> <tr> <th>Particulars</th> <th>Location</th> <th>Length(m)</th> <th>Width(m)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Concrete road</td> <td>Main Haulage road</td> <td>1000</td> <td>13</td> </tr> <tr> <td>COB Plant</td> <td>100</td> <td>10</td> </tr> <tr> <td>LOP Plant</td> <td>200</td> <td>06</td> </tr> <tr> <td>Workshop</td> <td>200</td> <td>06</td> </tr> <tr> <td rowspan="5">Fixed water sprinkling system</td> <td>Main Haulage road</td> <td>1000</td> <td>-</td> </tr> <tr> <td>COB Plant</td> <td>100</td> <td>-</td> </tr> <tr> <td>LOP Plant</td> <td>200</td> <td>-</td> </tr> <tr> <td>Workshop</td> <td>100</td> <td>-</td> </tr> <tr> <td>Mining Road</td> <td>1500</td> <td>11</td> </tr> </tbody> </table> <p>All these majors are being successfully implemented to maintain Ambient Air Quality. The ambient air quality monitoring report is for period of Apr'15 to Sep'15 is attached in Annexure VI.</p>	Particulars	Location	Length(m)	Width(m)	Concrete road	Main Haulage road	1000	13	COB Plant	100	10	LOP Plant	200	06	Workshop	200	06	Fixed water sprinkling system	Main Haulage road	1000	-	COB Plant	100	-	LOP Plant	200	-	Workshop	100	-	Mining Road	1500	11
Particulars	Location	Length(m)	Width(m)																																
Concrete road	Main Haulage road	1000	13																																
	COB Plant	100	10																																
	LOP Plant	200	06																																
	Workshop	200	06																																
Fixed water sprinkling system	Main Haulage road	1000	-																																
	COB Plant	100	-																																
	LOP Plant	200	-																																
	Workshop	100	-																																
	Mining Road	1500	11																																
X	<p>The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</p>	<p>Rain water harvesting proposal has already been submitted to the Regional Ground Water Board, Bhubaneswar. The final approval is awaited. However, we now have a fully functional roof top rain water harvesting project operating at the Administrative office inaugurated in Oct 2014. Photograph showing the same is enclosed as Annexure-VII.</p> <p>Further, feasibility study was conducted through KRG Foundation to explore the possibility of water harvesting in the nearby villages located in the mine periphery. Recommendations thereof shall be implemented in phased manner.</p>																																	
XI	<p>Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year pre monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry</p>	<p>Presently there are 10 nos. of piezometers installed in the periphery of the quarry. We have plans to install further 6 nos. of piezometers during 2015-16. Till that time, we are conducting regular monitoring of ground water of the open wells/ dug wells located around the nearby villages on monthly basis and all the data are being submitted to OSPCB on monthly basis along with the Form-1 of Water Cess Return. The data so collected is sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. The ground water quality and level recorded in nearby villages is enclosed as Annexure-VIII.</p>																																	

Sl	Condition	Compliance
	of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	
XII	The maximum height of the overburden dumps from its toe to the top of the dump on sloping ground shall not be more than 110 m. The dump slope shall be suitably terraced by leaving berms of adequate width in between lifts such that the overall slope angle (i.e. angle between the line joining the crest to the toe of the dump and across all such lifts with the horizontal) does not exceed 28 degrees.	<p>The maximum height of the overburden dumps from its toe to the top of the dump on sloping ground is being maintained within 110 m.</p> <p>Dump Stability Study was taken up in 2010-11 with IIT, Kharagpur as per advice of the Regional Office of the MoEF, Bhubaneswar, for assessing long term dump stability requirements. As per the Report of May'2011, dumps up to 110m height are stable. The topography of the present dumping area is undulated and hilly ranging from 140 mRL to 200 mRL. There is another hillock in front of the present dumping area which is an advantage to keep the slope more stable and safe. Benched have been provided and overall slope of these benched dumps are less than 28°.</p> <p>To gain further confidence, another study was conducted in association with CIMFR, Nagpur to assess the in-situ stress of foundation and dump slope and to get a clue of various geotechnical techniques for stabilisation of dump. As per the Final report the dump is found to be stable at a height of 110m. Further, recommendations as per final report shall be implemented.</p> <p>Presently, backfilling of OB-II quarry is going on since April' 2014. Photograph showing the same is enclosed as Annexure-XXI.</p>
XIII	The individual slopes and berms of each lift or bench of the overburden dump when completed shall be provided with adequate drainage arrangements or shall be suitably stabilized by such other means to prevent erosion due to surface run-offs.	<p>Each level of dump is provided with garland drain and water from upper level flow to next level via concrete patch path (channel) provided for same purpose at areas were feasible. The concrete patch path ensures less soil erosion and flow of water from designated path. Further, coir matting has been done on the dump slopes to prevent wash off during the monsoon. Garland drains with 10 nos. of settling pits for silt collection of 1.5 m-2m width and 1m-1.5m deep have been constructed on the toe of all the OB dumps to collect the surface run-off during rainy season. The collected run-off was being treated in newly installed ETP and then discharged beyond the lease boundary.</p> <p>The garland drains and settling pits are being cleaned before the onset of rainy season for efficient and better management of surface run off in the lease area.</p>
XIV	Adequate precautionary measures shall be taken for strengthening the dump foundation. Particularly while dumping over soft ground, the toe region all along the extremities of such dumps shall be suitably buttressed with hard rocky boulders after excavating the topsoil and soft ground. Dumping operations shall commence only after such preparatory work for the dump foundation is completed in order to prevent its failure, which may trigger a slide of the entire dump.	<p>Dump Stability Study was taken up in 2010-11 with IIT, Kharagpur as per advice of the Regional Office of the MoEF, Bhubaneswar, for assessing long term dump stability requirements. As per the Report of May'2011, dumps upto 110m height are stable. The topography of the present dumping area is undulated and hilly ranging from 140 mRL to 200 mRL. There is another hillock in front of the present dumping area which is an advantage to keep the slope more stable and safe. Benched have been provided and overall slope of these benched dumps are less than 28°.</p> <p>To gain further confidence, as per the advice of EAC members</p>

Sl	Condition	Compliance
		<p>another study was conducted in association with CIMFR, Nagpur to assess the in-situ stress of foundation and dump slope and to suggest various geotechnical techniques including buttressing etc for stabilisation of dump. As per the Final report of March'2013 the dump is found to be stable.</p> <p>However as a precautionary measure, present dump have been made with bench height of 10-15m with adequate berm width to maintain overall slope angle less than 28 degree. Each level of bench is provided with garland drain and water from each level flow to next level via concrete patch path provided for same purpose. The concrete patch path (channel) ensures less soil erosion and flow of water from designated path. Garland drains with 10 nos. of settling pits for silt collection of 1.5 m-2m width and 1m-1.5m deep have been constructed so that water do not get stagnant at one place which may increase chances of failure. Similarly toe wall along with garland drain is constructed all around dump photograph attached in Annexure-IX.</p> <p>Practice like coir matting and Vetiver Plantation along with dump plantation is also followed to stabiles dump. Photograph attached in Annexure-X.</p>
XV	All external over burden dumps at the end of the mine life shall be reclaimed and rehabilitated by afforestation. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	As per the approved Mining Plan & Progressive Mine Closure Plan, all the external overburden dumps at the end of life shall be reclaimed and rehabilitated through plantation in time bound phased manner. The compliance report of the same shall also be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar. The year wise target of plantation as per Mining Plan/ Scheme of Mining and actual achieved is enclosed as Annexure-XXII
XVI	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and OB dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 20 years 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 shall be constructed at the corners of the garland drains and desilted at regular intervals.	<p>Garland drains with 10 nos. of settling pits for silt collection of 1.5 m-2m width and 1m-1.5m deep have been constructed on the toe of all the OB dumps to collect the surface run-off during rainy season. The collected run-off is being treated newly installed ETP and then discharged beyond the lease boundary. The garland drains and settling pits are being cleaned before the onset of monsoon for efficient and better management of surface run off in the lease area. Two collection tanks have been provided having capacity of 5332 KL and 6500 KL respectively.</p> <p>The garland drains have also been designed considering the waterfall data of the region. In order to assess the adequacy of the surface runoff management, discussion has been made with NIT, Rourkela to conduct the study. Upon completion of the study the recommendation shall be suitably implemented.</p>
XVII	Retaining wall having adequate dimensions shall be constructed at the toe of the over burden dumps to check run-off and siltation.	Toe wall along with garland drain having cross section of 1.5m *1.5m have been constructed all around dump photograph of same is attached in Annexure-IX .

Sl	Condition	Compliance
XVII I	Plantation shall be raised in an area of 384.44 ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of excavated void etc. after the completion of opencast mining activity by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.	<p>The plantation programme is being carried out as per the approved Mining Plan & Progressive Mine Closure Plan same as that was envisaged in the EIA report.</p> <p>During 2015-16 total 67,473 no. of saplings were planted over 9 ha (1 ha of area within the Mining lease and 8 ha in the Additional area of 100 ha allotted for overburden dumping). The density of tree more than 2500 trees per ha is being maintained. Further to above, company had taken up plantation programme in the nearby villages through TSRDS (Tata Steel rural Development Society). Further, 15300 nos. of fruit bearing sapling were distributed to the interested villagers nearby.</p> <p>After the completion of opencast mining a 7.5m wide greenbelt in the safety zone around the mining lease, backfilled and reclaimed area shall be maintained.</p>
XIX	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard	<p>To limit the fugitive emissions, various control measures like water sprinkling on haul road, transfer points, Ore stack yard, etc is being done. Four graders have been procured for grading all the haul roads to remove the accumulated muck. Nine water sprinklers (two of 28 KL, four of 20 KL, one 12 KL, one 10 KL and one 8 KL) have been deployed in the mine area for dust suppression on haul road and at mineral storage yards. The main haul road and areas in maintenance stack yard and chrome ore beneficiation plant has been concreted. Stationary water sprinkler has also been installed in these permanent haulage roads. This year we have installed fixed sprinkler, about a length of 1.5 Km, in mining road. Photograph showing the already installed stationary water sprinkling system is enclosed as Annexure-V.</p> <p>Stationary water sprinklers have been installed in roads within COB Plant and Workshop also. Water spraying is done through pressure water jets at feed hopper, transfer points, discharge chute to prevent dust generation. The process at COB Plant is totally wet and eliminates the chance of any dust generation. The concentrate stacks are now being covered using tarpaulin sheets to prevent finer concrete particle being getting air borne. Plantation of 5-20 m width has also been raised in between colony and mines to minimize any air borne problems to the inhabitants. Successful trials have also been conducted by using Dustex chemical (a lignosulphonate product derived from the wood pulping process and developed specially for road stabilization and dust control) during water sprinkling for effective dust suppression and less consumption of water. It is nontoxic, easy to handle and satisfies all environmental requirements. All parameter w.r.t ambient air quality is complying with the prescribed limit Annexure-VI.</p>
XX	Mine water discharge and/or any waste water shall be properly treated in an ETP/s for the removal of hexavalent chromium and to meet the prescribed standards before reuse/discharge. The run off from OB dumps and other surface run off shall be analyzed for hexavalent chrome and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.	During the compliance period, the mine had operated 3 ETPs to treat the mine discharge water and surface runoff. The mine discharge water was treated in the ETP-1 having ferrous sulphate dosing facility, mixing chamber, channels, roughing filters and de-sludging facility. Similarly, surface runoff was treated in the ETP-2 & ETP-3 having baffles and ferrous sulphate dosing facility and is located near Old Geological camp & near Jagannath temple respectively. Network of concrete drain. Garland drains have been made to channelize the surface runoff from stack-yard, OB dumps for its treatment in the ETP.

Sl	Condition	Compliance
		<p>Company has installed one sophisticated ETP automated dosing system, Clariflocculator, and flash mixture, dry sludge collection system, multi-bed filtration system etc to ensure more effective treatment of surface runoff and mine discharge water before it is let out of the lease boundary. Real time online monitoring system has been installed at outlet side of this new ETP. Real time online monitoring system has been installed at outlet side of this new ETP. It continuously monitor parameter like pH, TSS and Cr+6. Photographs showing the status of installation of new ETP are enclosed as Annexure-XI.</p> <p>Water samples are tested on hourly basis at old ETPs and by online monitoring system at new ETP for qualitative analysis using DPC and H₂SO₄ for immediate detection of Cr+6. Water samples are tested at our own laboratory on daily basis to monitor the presence of Cr+6. Further, water samples are drawn and tested at OPCB accredited 3rd party on weekly & monthly basis and records are maintained.</p> <p>Further, company has also commissioned one Herbal Treatment Plant in the COB Plant since 2007-08 for the online hexa-chrome treatment of the chrome concentrate. Some of its related processes have been patented and Company has also won DSIR National Award for the same. Photographs showing herbal treatment plant are attached as Annexure-XII.</p>
XXI	The decanted water from the beneficiation plant shall be re-circulated within the plant and there shall be zero discharge.	Tailings produced from the plant are fed to thickener. Thickener increases the settling rate of particles thus producing clarified water which is re-circulated to the plant. Thickener's discharge is fed to Tailings Dewatering Plant and Tailing pond. Clarified water from the tailing pond & clear water produced from the dewatering plant is re-circulated back to the COB plant ensuring zero discharge from the plant. Recently, company has installed one Tailing dewatering unit at the COB Plant to recover the water from the tailing and dispose in the form of dry cake for safe and environment friendly disposal. Photograph showing the same is enclosed as Annexure-XIII .
XXII	Regular monitoring of water quality upstream and downstream of Damsala Nallah shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	The water quality upstream and downstream of Damsala Nallah is being carried out once in a month and record of monitoring data is maintained and submitted to State Pollution Control Board on monthly basis. Analysis report for the period Apr'15 to Sept'15 is enclosed as Annexure-XIV
XXII I	Appropriate mitigative measures shall be taken to prevent pollution of Damsala Nallah, if any, in consultation with the State Pollution Control Board.	During the compliance period, the mine discharge water and surface run off water was treated in the ETPs before discharging it out of our lease. Further, the 1 st phase of new ETP with higher capacity is in operation having the facilities like, settling pit, flash mixture, clarri-focculator, automatic dosing system, dry sludge collection system, multi sand filters etc as per the Direction of State Pollution Control Board. The water so treated in the above ETPs shall continue to be analysed at regular interval to confirm the CPCB standards before releasing the same to outside. Real time online monitoring system has been installed at outlet side of this

Sl	Condition	Compliance
		new ETP. It continuously monitor parameter like pH, TSS and Cr+6
XXI V	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water for the project.	We have made necessary application for drawl of Surface water from Damsala nalla for domestic uses vide our letter no. FAMD/L&L/56-4/2012, dated 28.07.2012. Necessary Water Management Plan has also been submitted. The Proposal is now active consideration of the Water Resources dept. In accordance to our application, Executive Engineer, Jaraka Irrigation Division vide letter no. 5217/WE, dated 28.10.2015 requested us to execute an agreement for drawl of 2100 m ³ of water from Damsala Nalla-
XXV	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	Rainwater harvesting study was done and submitted to Eastern Regional Office, CGWB, Bhubaneswar and final approval is awaited. As per the report, one roof top rain water harvesting structure has already started at GM office building which is fully functional. Photograph showing the same is enclosed as Annexure-VII . Further, feasibility study has been carried out for possible water harvesting in the periphery through KRG Foundation which shall be implemented in future in phased manner.
XXV I	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall not be overloaded.	Vehicular emission is done on six monthly basis through a third party for the HEMMs used for Mining. The K factor for all the vehicle is found to be <0.33. Regular conditioning monitoring of the HEMMs is also being carried out to keep the vehicle in good condition. Transport vehicles are also allowed after they get necessary PUC from RTO office. It is ensured that the vehicles are not being overloaded.
XXV II	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	The blasting operation takes place only in day time. The timing of blasting is 1:30 PM to 2:30 PM. Practices like pre-wetting of blast area is used to control dust generation. Controlled blasting method like pre-splitting is being practiced here to reduce back break. Both, SME and NONEL blasting are being practiced to reduce huge inventory in the magazine house and control ground vibration, respectively. Further, Blast Vibration study is conducted through CIMFR, Dhanbad on quarterly basis and recommendation thereof is being strictly followed.
XXV III	Drills shall either be operated with dust extractors or equipped with water injection system.	In-built wet drilling facility exists in all the drilling machines to reduce dust generation. Most of the drill cabins have been made air conditioned. Apart from this, the drill operators as well as workmen working in the dust prone area of the mining area have also been provided with nose mask. Pre-wetting of blasting area is also a regular practice to control fly rocks and from the dust getting airborne. Both, SME and NONEL blasting are being practiced to control ground vibration and dust generation.
XXI X	Mineral handling plant shall be provided with either adequate number of high efficiency dust extraction system or water injection system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Roads in COB plant has been concreted and stationary water sprinklers have been installed in roads within COB Plant. Spraying by pressure water jets are done at feed hopper, transfer points, discharge chute to prevent dust generation. The process at COB Plant is totally wet and eliminates the chance of any dust generation.
XXX	Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine.	Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine as advised.
XXX I	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for	Domestic effluent of the township is treated at Sewage Treatment Plant constructed as per BIS standard and the treated water is

Sl	Condition	Compliance
	workshop and wastewater generated during mining operation.	<p>being reused for garden development. An oil and grease trap system has been provided in the workshop to remove oil and grease from the workshop effluents. Similar type oil and grease separation pit has also been provided at contractor workshop also. Photograph showing the STP & Oil and Grease trap is enclosed as Annexure-XV.</p> <p>The effluents free of oil and grease is again reused for washing of HEMMs and is an effort is being made towards recycling of process water to 100%. Centralized used oil collection system is place in workshop to arrest spillage of oil on shop floor.</p> <p>Similarly, mine water is also being treated in the ETP and is let out beyond the lease area which finds way into a small drain. This let out water is being used by the villagers for agriculture purpose only. From the inference of the recent data for the period Apr'15 to Sep'15 (Annexure-XVI), it is evident that the let out water quality confirms to the quality of effluents discharged to the mainland. The garland drains are now so connected that now surface runoff during the monsoon is being coursed to the New ETP where it is fully treated before discharge out from our leasehold. Garland drains have been provided to collect the surface runoff from the ore stock yards within the lease.</p> <p>Company has installed the 1st phase of new ETP with higher capacity is in operation having the facilities like, settling pit, flash mixture, clarri-focculator, automatic dosing system, dry sludge collection system, multi sand filters etc as per the Direction of State Pollution Control Board. The water so treated in the above ETP shall continue to be analysed at regular interval to confirm the CPCB standards before releasing the same to outside.</p> <p>An Herbal Treatment Plant is also there in COB Plant since 2007-08 for the online hexa-chrome treatment of the chrome concentrate. Photographs showing herbal treatment plant are attached as Annexure-XII. After settlement in the tailing pond, the clear water is recycled and used in the beneficiation plant.</p>
XXX II	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	Digital processing of the entire lease area using remote sensing technique was carried out for baseline information of land use pattern and was report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar in the Chapter-3 of the EIA report in year 2013. Next map along with the findings shall be submitted to the Ministry in due course of time.
XXX III	Regular monitoring of ambient air quality including free silica shall be carried out and records maintained.	Regular monitoring of ambient air quality including free silica shall be carried out and records maintained. The ambient air quality report is attached as Annexure-VI . The analysis report of free silica for the month of Jun'15 and Jul'15 is enclosed as Annexure-III . Report of mineralogical composition of particulate matter is attached as is Annexure-II
XXX IV	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	All the employees do undergo periodical medical examination (PME) in hospital every five years. However as per the recent notification, PME of all the employees shall be carried out once in three years for those employees who have reached 45 years of age or more. As of now, no occupational diseases have been reported till date. 285 nos. persons were covered under PME during year 2015-16. To improve the occupational health and removing the safety hazards at industrial workplace, 3 ACT (Advice, Connect & Transform) teams have been made under

Sl	Condition	Compliance
		Wellness@ Workplace programme. We have carried out the health surveillance program for both permanent and contractual employees for the period 2000 to 2011, in which 994 permanent and 744 contractual employees have been undergone. The chromium level in the blood samples of all the employees is found to be normal.
XXX V	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna such as elephant etc. spotted in the buffer zone of the mine and contribute towards the cost of implementation of the plan and/or Regional Wildlife Management Plan for conservation of flora and fauna so prepared by the State Forest and Wildlife Department. The amount so contributed shall be included in the project cost. A copy of action plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months	We have deposited Rs 81,20,000/- and Rs 24,36,000/- through DD No. DD no. 111682, dated 21.07.2009 and through RTGS mode on 07.03.2014 respectively in the State Specific CAMPA account towards the cost of Wildlife Management Plan @ Rs 26,000/- per ha of ML area for implementation of Regional Wildlife Management Plan. Further, Project specific Wild Life Conservation Plan has already been submitted to DFO, Cuttack vide our letter no. SCM/ ENV/091/13, dated 18.12.2013. Same was recommended by RCCF, Angul vide his letter no. 1197, dated 19.03.2015 and presentation before PCCF (WL), Odisha was made on 10.04.2015 and got approved vide letter no. 4895/1 WL-SSP-92/2015, dated 10.06.2015. All the precautionary measures stipulated by State Forest Department and laid down during the approval of Site Specific Wild Life Conservation Plan shall be adhered to.
XXX VI	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	At present Final Closure of the mine is not envisaged. However, as per Rule 23C of MCDR, 1988, Final Mine Closure Plan shall be submitted to IBM one year prior to such proposal for final closure of the mine and copy of the approved plan shall be provided to the Ministry of Environment & Forests.

B. General Conditions:

I	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	There is no change in mining technology and scope of working proposed be made beyond the scope of the present EC obtained. Prior approval from the Ministry would be sought in case of change in scope of working in future.																														
II	The calendar plan including excavation, quantum of chrome ore, beneficiated chrome concentrates, pyroxenite ore and waste shall not be exceeded.	<p>During the year 2015-16 (Apr'15 to Sept'15) total excavation, quantum of chrome ore, beneficiated chrome ore and waste (OB) has not exceeded the approved quantity granted in approved mining plan. Details are given in table below. There was no production from pyroxenite quarry.</p> <p style="text-align: center;">Table IV: Excavation Approved Quantity Vs. Actual</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: center;">Compliance for the year 2014-15</th> </tr> <tr> <th style="width: 70%;">Particulars</th> <th style="width: 15%;">Plan</th> <th style="width: 15%;">Actual</th> </tr> </thead> <tbody> <tr> <td>Total Excavation (Lakh cum)</td> <td style="text-align: center;">67.58</td> <td style="text-align: center;">11.22</td> </tr> <tr> <td>Chrome Ore ROM (MT)</td> <td style="text-align: center;">1846079</td> <td style="text-align: center;">319407</td> </tr> <tr> <td>Waste Generation (Lakh cum)</td> <td style="text-align: center;">67.2</td> <td style="text-align: center;">10.03</td> </tr> <tr> <td>Beneficiated chrome concentrate (MT)</td> <td style="text-align: center;">594944</td> <td style="text-align: center;">66056</td> </tr> <tr> <th colspan="3" style="text-align: center;">Underground Mining</th> </tr> <tr> <td>Total Excavation (Lakh Cum)</td> <td style="text-align: center;">2.73</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Chrome ore ROM (MT)</td> <td style="text-align: center;">105587</td> <td style="text-align: center;">0</td> </tr> <tr> <td>Waste Generation (Lakh Cum)</td> <td style="text-align: center;">2.27</td> <td style="text-align: center;">0</td> </tr> </tbody> </table> <p>* Target as per approved Mining Plan. The underground mining is yet to start</p>	Compliance for the year 2014-15			Particulars	Plan	Actual	Total Excavation (Lakh cum)	67.58	11.22	Chrome Ore ROM (MT)	1846079	319407	Waste Generation (Lakh cum)	67.2	10.03	Beneficiated chrome concentrate (MT)	594944	66056	Underground Mining			Total Excavation (Lakh Cum)	2.73	0	Chrome ore ROM (MT)	105587	0	Waste Generation (Lakh Cum)	2.27	0
Compliance for the year 2014-15																																
Particulars	Plan	Actual																														
Total Excavation (Lakh cum)	67.58	11.22																														
Chrome Ore ROM (MT)	1846079	319407																														
Waste Generation (Lakh cum)	67.2	10.03																														
Beneficiated chrome concentrate (MT)	594944	66056																														
Underground Mining																																
Total Excavation (Lakh Cum)	2.73	0																														
Chrome ore ROM (MT)	105587	0																														
Waste Generation (Lakh Cum)	2.27	0																														

Sl	Condition	Compliance
III	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and 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. The data so recorded should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	Six air quality monitoring stations (four in the work zone, one in residential area and one in hospital i.e. sensitive area) had been set up within the mine lease area. Monitoring of the air quality is being conducted twice in a week as per CPCB guide lines. Likewise quarterly monitoring is done in 10 buffer zone locations. PM10, PM2.5, SO2,NOx, CO, O3, Pb, NH3, Benzene, benzo(a) Pyrene, Arsenic & Nickel parameters in the air quality were being monitored. We have started ambient air quality monitoring as per recent Gazette Notification 826(E), dated 16.11.2009. The data on ambient air quality of core zone as well as buffer zone for the period Apr'15 to Sept'15 reveal that all the parameters are within the stipulated standards (Annexure-VI).
IV	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	Noise monitoring is being done once in a three months both in work zone and in ambient. The data on noise level for the period Apr'15 to Sept'15 indicate that the values of noise levels are within the prescribed limits. To limit exposure of noise level of 85 dBA, due precautions at source and at the receiver end are being taken adequately. Wherever possible the noise is controlled at the source by replacement of metallic screens by rubber screens & polyurethane panels etc at Chrome Ore Beneficiation and Lumpy Ore Processing plant. DG sets have also been provided with acoustic enclosures to prevent noise propagation. The operator's cabin of all the HEMM's including drills and dozers has been made air conditioned which serves as acoustic barriers. Controlled blasting technique like presplit blasting, use of Nonel and SME (Site Mixed Emulsion) is being followed as per CIMFR, Dhanbad's recommendation minimize noise pollution and fly rock generation. However, the people working in the noisy areas are provided with personal protective appliances to reduce exposure of high noise. Regular test of all the vehicles is being carried out to check whether the vehicles are meeting pollution under control (PUC) norms. The K factor for all the vehicles is <0.33. Noise monitoring for the period Apr'15 to Sept'15 is attached as Annexure-XVII .
V	There will be zero waste water discharge from the plant	Tailings produced from the plant are fed to thickener. Thickener increases the settling rate of particles thus producing clarified water which is re-circulated to the plant. Thickener's discharge is fed to Tailings Dewatering Plant and Tailing pond. Clarified water from the tailing pond & clear water produced from the dewatering plant is re-circulated to the COB plant. Photographs are attached in Annexure-XIII .
VI	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.	Persons working in comparatively dusty and noisy areas have been provided with dust mask and ear muffs approved by the DGMS. Regular training programme is conducted among the employees to bring awareness in respect to safety and health. Company has now tied up with M/s Dupont to drive its safety excellence journey.
VII	Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	All the employees do undergo periodical medical examination (PME) in hospital every five years. However as per the recent notification, PME of all the employees shall be carried out once in three years for those employees who have reached 45 years of age or more. As of now, no occupational diseases have been reported till date. 285 Nos. persons were covered under PME

Sl	Condition	Compliance																																																																																										
		<p>during year 2015-16. To improve the occupational health and removing the safety hazards at industrial workplace, 3 ACT (Advice, Connect & Transform) teams have been made under Wellness@ Workplace programme.</p> <p>We have carried out the health surveillance program for both permanent and contractual employees for the period 2000 to 2011, in which 994 permanent and 744 contractual employees have been undergone. The chromium level in the blood samples of all the employees is found to be normal.</p>																																																																																										
VIII	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.	The Environmental Management Cell is being headed by the Head (Mine and Production Planning) and is supported by Senior Manager(Mine Planning & Environment), Manager (Environment), Environmental Supervisor and Chemists. The Head (MPP) is directly reporting to the GM, Operations of the Division. Roles, responsibility and authorities of all members of environmental cell's employees have been defined in integrated management system and proper communication has been made.																																																																																										
IX	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 Bhubaneswar.	<p>Separate budgetary provisions are made for environmental protection measures every year. Funds earmarked for this purpose for the year 2015-16. Plan expenditure vs. actual expenditure done during the year 2014-15 is also given.</p> <table border="1"> <thead> <tr> <th>Sl no.</th> <th>Item/ Particulars</th> <th>Plan 2014-15</th> <th>Actual 2014-15</th> <th>Plan 2015-16</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Afforestation</td> <td>80</td> <td>98.5</td> <td>80</td> </tr> <tr> <td>2</td> <td>Dust suppression</td> <td>60</td> <td>55</td> <td>60</td> </tr> <tr> <td>3</td> <td>Treatment of mine</td> <td>60</td> <td>45</td> <td>60</td> </tr> <tr> <td>4</td> <td>Environment & weather , exhaust monitoring</td> <td>30</td> <td>39.8</td> <td>30</td> </tr> <tr> <td>5</td> <td>Horticulture</td> <td>54</td> <td>56.05</td> <td>54</td> </tr> <tr> <td>6</td> <td>Drinking water</td> <td>40</td> <td>35.5</td> <td>40</td> </tr> <tr> <td>7</td> <td>STP Operation &</td> <td>5</td> <td>7.25</td> <td>5</td> </tr> <tr> <td>8</td> <td>Sanitation</td> <td>60</td> <td>43.2</td> <td>60</td> </tr> <tr> <td>9</td> <td>Malaria eradication</td> <td>5</td> <td>5.46</td> <td>5</td> </tr> <tr> <td>10</td> <td>Garland drain&</td> <td>25</td> <td>54.82</td> <td>25</td> </tr> <tr> <td>11</td> <td>Family planning</td> <td>2</td> <td>1.3</td> <td>2</td> </tr> <tr> <td>12</td> <td>Slime dam</td> <td>80</td> <td>86.12</td> <td>80</td> </tr> <tr> <td>13</td> <td>Environment</td> <td>6</td> <td>6</td> <td>6</td> </tr> <tr> <td>14</td> <td>Community</td> <td>140</td> <td>249</td> <td>140</td> </tr> <tr> <td>15</td> <td>Hazardous waste</td> <td>6</td> <td>2.6</td> <td>6</td> </tr> <tr> <td>16</td> <td>Bio medical waste</td> <td>4</td> <td>2</td> <td>4</td> </tr> <tr> <td></td> <td>Total</td> <td>657</td> <td>787.6</td> <td>657</td> </tr> </tbody> </table>	Sl no.	Item/ Particulars	Plan 2014-15	Actual 2014-15	Plan 2015-16	1	Afforestation	80	98.5	80	2	Dust suppression	60	55	60	3	Treatment of mine	60	45	60	4	Environment & weather , exhaust monitoring	30	39.8	30	5	Horticulture	54	56.05	54	6	Drinking water	40	35.5	40	7	STP Operation &	5	7.25	5	8	Sanitation	60	43.2	60	9	Malaria eradication	5	5.46	5	10	Garland drain&	25	54.82	25	11	Family planning	2	1.3	2	12	Slime dam	80	86.12	80	13	Environment	6	6	6	14	Community	140	249	140	15	Hazardous waste	6	2.6	6	16	Bio medical waste	4	2	4		Total	657	787.6	657
Sl no.	Item/ Particulars	Plan 2014-15	Actual 2014-15	Plan 2015-16																																																																																								
1	Afforestation	80	98.5	80																																																																																								
2	Dust suppression	60	55	60																																																																																								
3	Treatment of mine	60	45	60																																																																																								
4	Environment & weather , exhaust monitoring	30	39.8	30																																																																																								
5	Horticulture	54	56.05	54																																																																																								
6	Drinking water	40	35.5	40																																																																																								
7	STP Operation &	5	7.25	5																																																																																								
8	Sanitation	60	43.2	60																																																																																								
9	Malaria eradication	5	5.46	5																																																																																								
10	Garland drain&	25	54.82	25																																																																																								
11	Family planning	2	1.3	2																																																																																								
12	Slime dam	80	86.12	80																																																																																								
13	Environment	6	6	6																																																																																								
14	Community	140	249	140																																																																																								
15	Hazardous waste	6	2.6	6																																																																																								
16	Bio medical waste	4	2	4																																																																																								
	Total	657	787.6	657																																																																																								
X	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	The Financial closure of the mine is not envisaged in near future. Necessary intimation to the Regional Office would be provided before commencement of land development activity.																																																																																										
XI	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s)	The mine management will always extend full cooperation to officer(s) of Regional office by furnishing the requisite data/ information/ monitoring report as and when required.																																																																																										

Sl	Condition	Compliance
	of the Regional Office by furnishing the requisite data/ information/ monitoring reports.	
XII	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	Six monthly reports on the status of compliance report of the stipulated environmental clearance conditions including results of monitored data is submitted to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board is submitted in both hard copy as well as soft copy. Last EC compliance was submitted vide letter no. SCM/ENV/012/051/15 dated 30.05.2015. We are also uploading the same in our website on our website www.tatasteelindia.com. The snapshot of the site is attached as Annexure-XVIII
XIII	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Environment Clearance letters were sent to concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and is attached in Annexure XIX . No suggestion was received. We have also uploaded the same in our website on our website www.tatasteelindia.com. The snapshot of the site is attached as Annexure-XVIII .
XIV	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days	Complied by the State Pollution Control Board
XV	The environmental statement for each financial year ending 31 st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	The Environment Statement in Form-V is being submitted before 30th Sept of every year and the same is also uploaded in the company website as shown in screenshot in Annexure-XVIII . Environment Statement for the year 2014-15 was submitted vide letter no. SCM / ENV/ 002 / 085 / 14 to the State Pollution Control Board and to the Regional Office of MoEF by e-mail
XVI	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of 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 Forests at http://envfor.nic.in and a copy of the same	The grant of Environmental Clearance was advertised in the Oriya daily " The Samaja " (date: 11.09.2013, page-5) and in English daily " The New Indian Express " (date: 11.09.2013, page-5). Copy of the above advertisement was also forwarded to the Eastern Regional Office of the MoEF vide letter no. SCM/ ENV/ 012/066/13, dated 18.06.2013. Copy of the letter is enclosed as Annexure-XX .

Sl	Condition	Compliance
	should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	

Date: 30th Nov'2015



**Manager
Sukinda Chromite Mine**

ANNEXURE I

F. No. 8-78/ 1996-FC (pt.-I)
Government of India
Ministry of Environment, Forests and Climate Change
(Forest Conservation Division)

Indira Paryavaran Bhawan
Aliganj, Jorbagh Road
New Delhi -110 003
Dated: 3rd November, 2014

To,
The Principal Secretary (Forests),
Government of Odisha,
Bhubaneswar.

Sub: Diversion of 73.697 hectares of forest land in Sukinda Chromite Mines of M/s. TATA Steel Ltd. In Jajpur district during 3rd Renewal of mining lease (RML) period.

Sir,

I am directed to refer to the Government of Odisha's letter No 10F (Cons) 73/ 2014-8679/ F &E dated 9th May 2014 on the above mentioned subject, seeking prior approval of the Central Government under Section 2 of the Forest (Conservation) Act, 1980, and to say that the said proposal has been examined by the Forest Advisory Committee constituted by the Central Government under section-3 of the aforesaid Act.

2. After careful consideration of the proposal of the State Government of Odisha and on the basis of the recommendations of the Forest Advisory Committee, the Central Government hereby agrees to accord **stage-I approval** for the diversion of 73.697 hectares of forest land in Sukinda Chromite Mines of M/s. TATA Steel Ltd. In Jajpur district during 3rd Renewal of mining lease (RML) period, subject to the following conditions:

- (i) Legal status of the diverted forest land shall remain unchanged;
- (ii) Following activities shall be undertaken by the user agency at the project cost:
 - (a) A plan containing appropriate mitigative measures to minimize soil erosion and choking of streams shall be prepared and implemented;
 - (b) Planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion;
 - (c) Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour;
 - (d) Stabilize the overburden dumps by appropriate grading/benching so as to ensure that that angles of repose at any given place is less than 28°; and
 - (e) Strict adherence to the prescribed top soil management.
- (iii) State Government shall charge the Net Present Value (NPV) of the forest area diverted under this proposal from the user agency as per the Orders of the Hon'ble

2 22/11/14

Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009 in this regard;

- (iv) At the time of payment of the Net Present Value (NPV) at the present rate, the user agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;
- (v) All the funds received from the User Agency under the project shall be transferred to Ad-hoc CAMPA in the concerned Saving Bank Account in Corporation Bank, Indl Road, New Delhi-110003;
- (vi) User agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986;
- (vii) User agency shall maintain 7.50 meters wide strip all along the periphery of the mining lease as safety zone. No mining activity shall be undertaken in the safety zone;
- (viii) State Government shall ascertain the status, as on 25th October 1980, of the area located in the mining lease which has been treated as 'non-forest' as per the Hal (present) record of rights and intimate the same to the Ministry of Environment and Forests, Government of India within a period of one month from the date of grant of stage-I approval;
- (ix) User agency shall prepare a schedule of the surrender of the fully(biologically) reclaimed mined out forest land and submit the same to the Ministry of Environment and Forests before grant to stage-II approval under the FC Act;
- (x) The User Agency shall pay the proportionate cost of implementation of Regional Wildlife Management Plan at revised cost; and
- (xi) The user agency shall pay towards the cost of site specific conservation plan to be approved by the CWLW, Odisha for its implementation in leasehold as well as surrounding area.
- (xii) User agency in consultation with the State Forest Department shall create and maintain alternate habitat/ home for the avifauna, whose nesting trees are to be cleared in this project. Bird nests artificially made out of eco-friendly materials shall be used in the area, including forest area and human settlements, adjoining the forest area being diverted for the project;
- (xiii) User agency either himself or through the State Forest Department shall undertake fencing, protection and afforestation of the safety zone area (7.5 meter strip all along the outer boundary of the area identified to undertake mining), at the project cost;

2
03/01/2007

- (xiv) User agency either himself or through the State Forest Department shall undertake afforestation on degraded forest land, one and half time in extent to the area used for safety zone;
- (xv) Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, and the Rules framed there-under, subject to a maximum period of 20 years;
- (xvi) User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.4), if any, located in the area within 100 meters from outer perimeter of the mining lease;
- (xvii) User agency shall undertake de-silting of the village tanks and other water bodies located within five km from the mine lease boundary so as to mitigate the impact of siltation of such tanks/water bodies, whenever required;
- (xviii) User agency shall undertake mining in a phased manner and take due care for reclamation of the mined over area. The concurrent reclamation plan shall be executed by the User Agency as per the approved mining plan/scheme and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, Government of Odisha and the Addl. Principal Chief Conservator of Forests (Central), Ministry of Environment & Forests, Regional Office (Eastern Zone), Bhubaneswar. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the user agency, the Nodal Officer or the Addl. Principal Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities are satisfactorily executed;
- (xix) No labour camp shall be established on the forest land;
- (xx) User agency shall provide firewood preferably alternate fuel to the labourers and the staff working at the site so as to avoid any damage and pressure on the adjacent forest areas;
- (xxi) Boundary of the mining lease and safety zone shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, forward and back bearing and distance from pillar to pillar;
- (xxii) Forest land shall not be used for any purpose other than that specified in the proposal;
- (xxiii) State Government shall complete settlement of rights, in term of the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if

03/11/2017

any, on the forest land to be diverted and submit the documentary evidence as prescribed by this Ministry in its letter No. 11-9/1998-FC (pt.) dated 3rd August 2009, in support thereof;

- (xxiv) Any other condition that the Regional Office (Eastern Zone), Bhubaneswar of this Ministry, Bhubaneswar may stipulate, from time to time, in the interest of conservation, protection and development of forests & wildlife; and
- (xxv) User agency and the State Government shall ensure compliance to provisions of the all Acts, Rules, Regulations and Guidelines, for the time being in force, as applicable to the project.

3. After receipt of the report on compliance to the conditions stipulated in the paragraph-2 above, from the Government of Odisha, final/ stage-II approval for diversion of the said forest under Section-2 of the Forest (Conservation) Act, 1980 will be issued by this Ministry. Transfer of the said forest land to the user agency shall not be affected by the Government of Odisha till final/ stage-II approval for its diversion is issued by this Ministry.

4. However, pending receipt of report on compliance to the conditions stipulated in paragraph-2 above and grant of final/ stage-II approval under the Forest (Conservation) Act, 1980 for diversion of the said forest land, State Government may allow the user agency to undertake mining, as per the approved mining plan, in the already broken up forest land being diverted for mining purposes (as per the approved land use plan), for a period not exceeding one year from the date of issue of this letter.

5. Stage-I approval and Working Permission for mining over already broken up area is subject to in-principle decision of the authority in the State Government in terms of section 8(3) of the Mines and minerals (Development and Regulation) Act, 1957 that in the interest of mineral development it is necessary to renew the lease.

Yours faithfully,

S/L

(H. C. Chaudhary)
Director

Copy to:

1. The Principal Chief Conservator of Forests, Government of Odisha, Bhubaneswar.
2. The Nodal Officer, the Forest (Conservation) Act, 1980, the Government of Odisha, Bhubaneswar.
3. The Addl. Principal Chief Conservator of Forests (Central), Regional Office (Eastern Zone), Bhubaneswar.
4. User Agency.
5. Monitoring Cell, FC Division, MoEF, New Delhi.
6. Guard File.

(H. C. Chaudhary)
Director

**ANNEXURE II
MINERALOGICAL COMPOSITION OF PARTICULATE MATTER**

Sl. No.	Location	Mineralogical Composition (%)						
		Cr ₂ O ₃	Fe ₂ O ₃	MnO ₂	SiO ₂	Al ₂ O ₃	MgO	CaO
1.	COB Plant	18.9	6.7	1.3	23.8	11.9	13.1	3.1
2.	Stack Yard	21.1	7.0	1.5	21.8	11.1	13.7	2.6
3.	Laboratory Top	18.1	7.0	1.2	24.9	11.1	13.1	2.9
4.	Hospital Top	15.1	6.6	1.0	23.5	11.0	12.3	2.5
5.	Mining Complex	21.5	7.3	1.7	24.9	10.5	11.9	3.2
6.	Tailing Pond	17.0	7.4	1.1	20.9	10.5	12.2	3.4
7.	Residential Colony (Qtr No.L2/R-73)	15.6	6.7	0.8	22.8	12.8	11.3	3.5

**ANNEXURE III
PERSONAL RESPIRABLE DUST**

Date	Sampler Attached to the Person	Personal Respirable Dust in µg/m ³	Respirable Free Silica (%)
09.06.2015	Mr. C.D Mahopatra	0.438	4.5
23.07.2015	Mr. Santosh Naik	0.443	4.2
22.07.2015	Mr. Salai Munda	0.465	4.4

**ANNEXURE IV
COVERING OF LOADED TRUCK BY TARPAULIN**



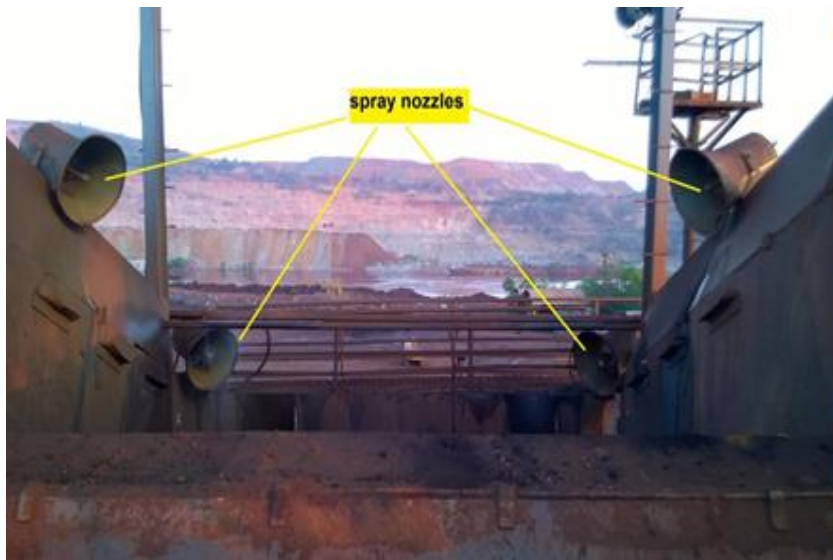
ANNEXURE V
DUST CONTROLLING MAJORS



Concrete Path



Stationary Water Sprinkler



Dust Suppression System at Hopper



Water Sprinkling



Concentrate Stack Covered With Tarpaulin



COVERING OF TRUCK BY TARPAULIN

Truck Covered With Tarpaulin

ANEXURE-VI
TATA STEEL LIMITED, SUKINDA CHROMITE MINE
AMBIENT AIR QUALITY PARAMETERS (April'15 to Sept'15)

Monthly Average	PM10 µg/m3						PM2.5µg/m3						SO2 µg/m3						NOX µg/m3						CO						O3					
	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T
Apr-15	56.25	60.38	51.25	43.75	47.38	39.63	31.86	31.86	29.35	26.21	27.34	39.63	4.40	4.78	4.20	<4	<4	<4	11.81	12.3	11.38	10.39	10.9	9.99	0.18	0.22	0.16	0.12	0.14	0.11	6.78	7.21	6.28	5.46	5.84	5.18
May-15	62.67	66.78	59.22	51.56	55.44	47.78	35.63	35.63	33.3	29.67	31.39	47.78	5.14	5.57	4.83	4.17	4.43	4.02	12.53	12.98	12.12	11.22	11.68	10.71	0.23	0.27	0.2	0.15	0.18	0.13	7.36	7.79	7	6.13	6.57	5.74
Jun-15	59.00	46.00	41.00	43.00	60.00	42.00	30.00	30.00	22.00	24.00	32.00	42.00	5.10	4.40	4.20	4.40	5.10	4.40	29.90	24.20	21.90	23.80	25.80	23.40	0.39	0.18	0.27	0.24	0.50	0.35	21.30	20.80	19.62	20.10	22.90	21.70
Jul-15	52.00	38.00	44.00	40.00	47.00	38.00	24.00	24.00	22.00	19.00	22.00	38.00	4.70	4.30	4.40	4.30	4.10	4.30	20.10	17.30	19.00	17.00	19.20	17.80	0.29	0.21	0.22	0.24	0.24	0.21	20.60	21.80	20.70	19.62	21.60	19.62
Aug-15	51.00	48.00	44.00	47.00	50.00	46.00	24.00	24.00	20.00	22.00	23.00	46.00	4.90	4.40	4.30	4.60	4.40	4.40	23.10	19.00	19.10	19.00	22.00	21.30	0.35	0.19	0.23	0.21	0.22	0.21	24.00	21.71	21.43	19.62	21.30	19.62
Sep-15	51.00	45.00	43.00	47.00	52.00	46.00	21.00	21.00	16.00	20.00	24.00	46.00	4.70	4.50	4.60	4.60	4.70	4.60	16.40	15.20	14.30	14.40	15.50	15.30	0.21	0.18	0.20	0.19	0.23	0.17	19.62	19.62	19.62	19.62	19.62	19.62
Monthly Average	Pb µg/m3						NH3 µg/m3						Benzene µg/m3						Benzo(a)Pyrene ng/m3						Arsenic ng/m3						Nickel ng/m3					
	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T	C	S	L	H	M	T
Apr-15	<.02	<.02	<.02	<.02	<.02	<.02	<10	<10	<10	<10	<10	BDL	0.73	0.79	0.68	0.56	0.63	0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00
May-15	<.02	<.02	<.02	<.02	<.02	<.02	<10	<10	<10	<10	<10	BDL	0.71	0.76	0.67	0.57	0.62	0.51	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<4.00	<4.00	<4.00	<4.00	<4.00	<4.00
Jun-15	0.02	0.02	0.02	0.02	0.02	0.02	14.80	12.10	12.50	11.00	15.60	12.00	2.08	2.08	2.08	2.08	2.08	2.08	0.40	0.40	0.40	0.40	0.40	0.40	1.00	1.00	1.00	1.00	1.00	1.00	4.0	4.00	4.00	4.00	6.10	4.00
Jul-15	0.02	0.02	0.02	0.02	0.02	0.02	14.60	11.30	12.70	10.00	11.20	10.00	2.08	2.08	2.08	2.08	2.08	2.08	0.40	0.40	0.40	0.40	0.40	0.40	1.00	1.00	1.00	1.00	1.00	1.00	6.40	4.30	4.00	4.00	7.06	4.00
Aug-15	0.02	0.02	0.02	0.02	0.02	0.02	20.80	10.00	10.00	11.00	10.00	10.00	2.08	2.08	2.08	2.08	2.08	2.08	0.40	0.40	0.40	0.40	0.40	0.40	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	4.00	4.00	4.00	4.00
Sep-15	0.02	0.02	0.02	0.02	0.02	0.02	10.60	10.00	10.00	11.30	10.00	10.00	2.08	2.08	2.08	2.08	2.08	2.08	0.40	0.40	0.40	0.40	0.40	0.40	1.00	1.00	1.00	1.00	1.00	1.00	4.00	4.00	4.00	4.00	4.00	4.00

C:COB Plant
S:Stackyard
M:Mining Complex
T: Tailing Dam

Residential Area: L: Laboratory Top
Sensitive Area : H: Hospital

BUFFER ZONE AAQ

ANNUAL AVERAGES

Sl.No	Location	PM 10 µgm/ m ³	PM 2.5 µgm/ m ³	SO2 µgm/ m ³	NOx µgm/ m ³	CO mg/ m ³	O3 µg/m ³	Pb µg/m ³	NH3 µg/m ³	Benzene µg/m ³	Benzo(a) Pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³
1	Birasa Birasal	40.50	17.00	4.90	17.75	0.24	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
2	Kanehipal	46.50	23.00	5.05	16.90	0.24	23.3	<0.02	<10.0	<2.08	<0.04	<1.0	8.5
3	Kalarangiatta	59.50	28.00	5.30	21.00	0.25	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	7.6
4	Kaliapani	48.50	20.50	4.95	16.45	0.21	23.3	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
5	Kakudia	42.50	20.00	4.75	17.70	0.25	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
6	Sendashara	42.50	15.50	4.20	13.50	0.18	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
7	Laxmidharpur	57.50	27.00	4.40	17.45	0.19	23.2	<0.02	<10.0	<2.08	<0.04	<1.0	5.6
8	Sukarangi	51.50	21.00	4.15	14.90	0.20	22.8	<0.02	<10.0	<2.08	<0.04	<1.0	4.2
9	Muruabil	62.00	29.50	5.10	13.75	0.23	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	5.6
10	Kharkhari	47.50	18.00	4.75	16.55	0.23	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	7.5

Annual Average Ambient Air Quality in Buffer Zone

Sl.No	Location	Month of Monitoring	PM10 µg/m ³	PM2.5 µg/m ³	SO2 µg/m ³	NOx µg/m ³	CO mg/m ³	O3 µg/m ³	Pb µg/m ³	NH3 µg/m ³	Benzene µg/m ³	Benzo(a)Pyrene ng/m ³	Arsenic ng/m ³	Nickel ng/m ³
1	Birasal	July'2015	36	16	5.2	20.2	0.29	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
		Sept'15	45	18	4.6	15.3	0.19	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
2	Kanehipal	July'2015	44	24	5.5	20.2	0.31	23.3	<0.02	16.2	<2.08	<0.4	<1.0	8.5
		Sept'15	49	22	4.6	13.6	0.16	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
3	Kalarangiatta	July'2015	68	35	5.6	20.5	0.27	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	7.6
		Sept'15	51	21	5.0	21.5	0.23	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0
4	Kaliapani	July'2015	55	23	5.6	15.5	0.23	23.3	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0
		Sept'15	42	18	4.3	17.4	0.18	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
5	Kakudia	July'2015	41	20	5.2	22.2	0.32	<19.62	<0.02	12.5	<2.08	<0.4	<1.0	<4.0
		Sept'15	44	20	4.3	13.2	0.18	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0
6	Sendashara	July'2015	38	15	4	12.2	0.21	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0
		Sept'15	47	16	4.4	14.8	0.15	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0
7	Laxmidharpur	July'2015	61	28	4	18.5	0.18	23.2	<0.02	<10.0	<2.08	<0.4	<1.0	5.6
		Sept'15	54	26	4.8	16.4	0.2	<19.62	<0.02	<10.0	<2.08	<0.04	<1.0	<4.0
8	Sukarangi	July'2015	55	23	4.3	15.2	0.24	22.8	<0.02	<10.0	<2.08	<0.4	<1.0	4.2
		Sept'15	48	19	4.0	14.6	0.15	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0
9	Muruabil	July'2015	66	34	5.2	13.3	0.27	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	5.6
		Sept'15	58	25	5.0	14.2	0.18	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0
10	Kharkhari	July'2015	56	22	5.3	20.2	0.33	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	7.5
		Sept'15	39	14	4.2	12.9	0.12	<19.62	<0.02	<10.0	<2.08	<0.4	<1.0	<4.0

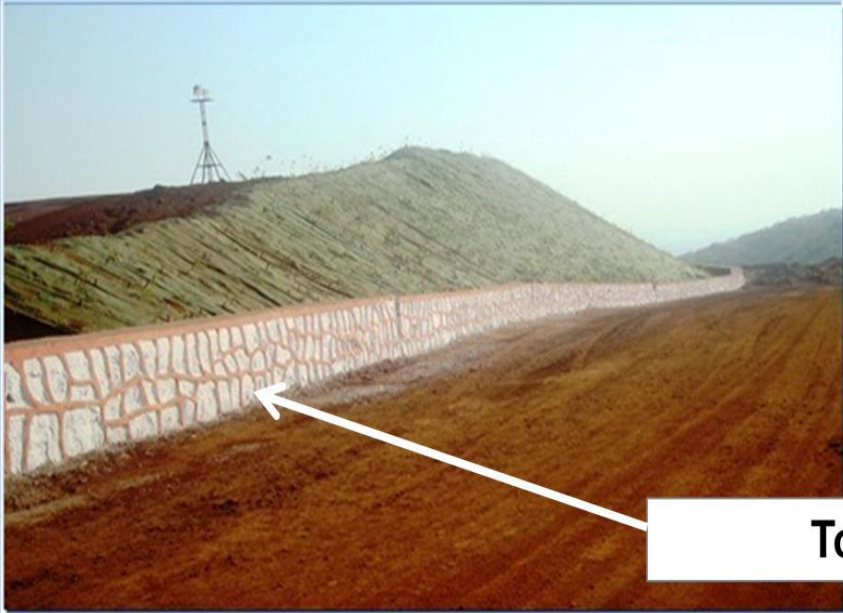
ANNEXURE VII- Roof Top Rain water Harvesting



ANEXURE-VIII
Ground Water Quality in Villages (April' 14 to September' 14)

S.No.	Parameter	Unit	IS-10500	Apr'15 (Village Karadagadia)	May'15 (Village Kaliapani)	Jun'15 (Village Kakudia)	Jul'15 (Village Maruabil)	Aug'15 (Village Chingadipal)	Sept'15 (Village Ragada)
1	Colour	Hazen	5	CL	CL	<1.0	<1.0	<1.0	<1.0
2	Odour	-	U/O	U/O	U/O	Agreeable	Agreeable	Agreeable	Agreeable
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU max	5	0.69	0.58	<1.0	<1.0	<1.0	<1.0
5	pH	-	6.5-8.5	7.1	7	7.2	7.1	7.3	7.5
6	Dissolved Oxygen	Mg /l	-	6.6	6.1	6.4	6.2	6.6	6.6
7	Total Hardness (as CaCO ₃)	Mg/l	300	44	53	38.8	154	76	110
8	Iron (as Fe)	Mg/l	0.3	0.14	0.13	0.19	0.22	0.12	0.16
9	Chloride (as Cl)	Mg/l	250	10.4	11.5	10.4	11,8	10.8	9.8
10	Rsidual free chlorine	Mg/l	0.2	ND	ND	<0.1	<0.1	<0.1	<0.1
11	Fluorides (as F)	Mg/l	1	0.04	0.041	0.06	0.04	0.06	0.04
12	Total Dissolved Solids	Mg/l	500	117	134	84	188	122	170
13	Calcium as Ca	Mg/l	75	9.3	9.4	10.9	44.35	17.6	31.68
14	Magnesium (as Mg)	Mg/l	30	5.9	7.2	2.8	10.45	7.68	7.58
15	Copper (as Cu)	Mg/l	0.05	BDL	BDL	<0.02	<0.02	<0.02	<0.02
16	Manganese (as Mn)	Mg/l	0.1	BDL	BDL	<0.02	<0.02	<0.02	<0.02
17	Sulphates (as SO ₄)	Mg/l	200	13.4	14.8	12.2	18.2	18.8	18
18	Nitrate (as NO ₃)	Mg/l	45	0.19	0.27	0.09	<0.05	<0.05	<0.05
19	Mercury (as Hg)	Mg/l	0.001	BDL	BDL	<0.001	<0.001	<0.001	<0.001
20	Cadmium (as Cd)	Mg/l	0.01	BDL	BDL	<0.002	<0.002	<0.002	<0.002
21	Selenium (as Se)	Mg/l	0.01	BDL	BDL	<0.005	<0.005	<0.005	<0.005
22	Arsenic (as As)	Mg/l	0.05	BDL	BDL	<0.01	<0.01	<0.01	<0.01
23	Cyanide (as CN)	Mg/l	0.05	BDL	BDL	<0.01	<0.01	<0.01	<0.01
24	Lead (as Pb)	Mg/l	0.05	BDL	BDL	<0.005	<0.005	<0.005	<0.005
25	Zinc (as Zn)	Mg/l	5	0.16	0.17	0.14	0.08	0.14	0.1
26	Chromium (as Cr ⁺⁶)	Mg/l	0.05	BDL	BDL	<0.01	<0.01	<0.01	<0.01
27	Mineral Oil	Mg/l	0.01	Nil	Nil	<0.01	<0.01	<0.01	<0.01
28	Alkalinity	Mg/l	200	34	28	18.88	32	48	34
29	Boron	Mg/l	1	BDL	BDL	<0.5	<0.5	<0.5	<0.5
30	Ground Water Level	m	-	14.2	15.9	11.8	2.4	2	3.8

ANEXURE-IX
Toe wall, Garland Drain and Surface Runoff Channel



Toe Wall



Toe Wall & garland drain



Surface runoff channel

ANEXURE-X
Coir Mating, Vetiver Plantation and Dump Plantation



Vetiver Plantation



ANNEXURE XI : New ETP



Clariflocculator of New ETP



flash Mix Chamber

ANEXURE-XII
Herbal Treatment Plant



ANEXURE-XIII
Recycling of Water At COB Plant



Thickener and Water Recirculation Arrangement



Tailing Dewatering Plant and Water Recirculation Arrangement

ANEXURE-XIV
Water Quality Report At Upstream and Downstream of Damsala Nallah

Hexavalent Chromiums Cr+6 mg/l	Apr'15	May'15	June'15	July'15	Aug'15	Sep'15
Location	Cr+6 mg/l	Cr+6 mg/l	Cr+6 mg/l	Cr+6 mg/l	Cr+6 mg/l	Cr+6 mg/l
MINE WATER of QUARRY No: O.B.- X	0.34	0.37	0.05	0.42	0.32	0.39
DAMSALA RIVER UPSTREAM	0.035	0.031	0.09	0.05	0.07	0.06
DAMSALA RIVER DOWNSTREAM	0.029	0.025	0.08	0.04	0.07	0.05

ANNEXURE XV : Oil Separation Pit



Sewage Treatment Plant



ANEXURE-XVI
Water Quality Report
TATA STEEL LIMITED
SUKINDA CHROMITE MINE
Water Quality Parameters of ETP Inlet (April'14 to Sept'15)

Sl. No	Parameter	Unit	Standards (In land Surface water)	Apr'15	May'15	June'15	July'15	Aug'15	Sep'15
				Inlet	Inlet	Inlet	Inlet	Inlet	Inlet
1	Colour & Odour	Hazan/-	5.0 / U/O	4 & U/O	3 & U/O	<0.1 & U/O	2.0 & U/O	<1.0 & U/O	<1.0 & Agreeabe
2	Suspended Solids	mg/ltr	100	51	47	<2.5	<2.5	35	34.2
3	Particular Size of Suspended Solids	μ(micron)	<850	<850	<850	<850	<850	<850	<850
4	PH	--	5.5-9.0	6.6	6.5	8.14	8.99	8.1	8.4
5	Temperature	°c.	Shall not exceed 5°C above the receiving water	25	25	2	2	2.5	2.5
6	Oil & Grease	mg/ltr	10	0.6	0.5	<1.4	<1.4	<1.4	<1.4
7	Total Residual Chlorine	mg/ltr	1	ND	ND	<0.1	<0.1	<0.1	<0.1
8	Amm. Nitrogen as N	mg/ltr	50	0.48	0.42	<0.1	0.4	<0.1	<0.1
9	Total Kjeldal Nitrogen as NH ₃	mg/ltr	100	1.36	1.22	<0.3	1.13	1	1.14
10	Free Ammonia as NH ₃	mg/ltr	5	0.002	0.002	<0.1	<0.1	<0.1	<0.1
11	BOD (3) days at 27°C.	mg/ltr	30	2.74	2.31	<2.0	<2.0	<2.0	<2.0
12	COD	mg/ltr	250	6.8	7.2	<4.0	<4.0	7.81	8.2
13	Arsenic as As	mg/ltr	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
14	Mercury as Hg	mg/ltr	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb	mg/ltr	0.1	<0.005	<0.005	0.04	<0.005	0.04	<0.005
16	Cadmium as Cd	mg/ltr	2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Hexa Chromium as Cr +6	mg/ltr	0.1	0.22	0.29	1.22	0.99	0.34	0.33
18	Total Chromium as Cr	mg/ltr	2	0.3	0.36	2.19	0.99	0.34	0.42
19	Copper as Cu	mg/ltr	3	<0.02	<0.02	<0.02	<0.02	0.03	<0.02
20	Zinc as Zn	mg/ltr	5	0.27	0.24	<0.02	<0.02	0.04	0.08
21	Selenium as Se	mg/ltr	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
22	Nickel as Ni	mg/ltr	3	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02
23	Cyanide as CN	mg/ltr	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Fluoride as F	mg/ltr	2	0.05	0.08	0.4	0.28	0.28	0.27
25	Diss. Phosphate as P	mg/ltr	5	<0.05	<0.05	0.04	<0.05	<0.05	<0.05
26	Sulphide as S	mg/ltr	2	ND	ND	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C ₆ H ₅ OH	mg/ltr	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
28	Bio-assay Test	--	90% survival of fish after 96 hours in 100% effluent	97%	97%	100%	100%	100%	100%
29	Manganese as Mn	mg/ltr	2	0.031	0.029	<0.02	<0.02	<0.02	<0.02
30	Iron as Fe	mg/ltr	3	0.52	0.38	0.28	<0.05	0.55	0.18
31	Vanadium as V	mg/ltr	0.2	BDL	BDL	<0.2	<0.2	<0.2	<0.2
32	Nitrate Nitrogen	mg/ltr	10	0.22	0.2	0.28	1.79	1.19	1.04
33	Pesticides (as Benzene hexa chloride), μg/l Max.	μg/l Max	10	Absent	Absent	0.00001	<0.00001	<0.00001	<0.00001

NB : C.L. Colourless, O.L – Odourless, ND- Not Detectable.

Water Quality Report
TATA STEEL LIMITED
SUKINDA CHROMITE MINE
Water Quality Parameters of ETP Outlet (April'14 to Sept'15)

Sl. No	Parameter	Unit	Standards (In land Surface water)	Apr'15	May'15	June'15	July'15	Aug'15	Sep'15
				Outlet	Outlet	Outlet	Outlet	Outlet	Outlet
2	Colour & Odour	Hazan/-	5.0 / U/O	2 & U/O	2 & U/O	<0.1 & U/O	<0.1 & U/O	<0.1 & U/O	<1.0 & Agreeabe
3	Suspended Solids	mg/ltr	100	33	29	89.6	43.9	25	29.6
4	Particular Size of Suspended Solids	μ(micron)	<850	<850	<850	<850	<850	<850	<850
5	PH	--	5.5-9.0	6.8	7.1	5.66	6.8	7.9	7.6
6	Temperature	°c.	Shall not exceed 5°C above the receiving water	25	25	2	2	2.5	2
7	Oil & Grease	mg/ltr	10	ND	ND	<1.4	<1.4	<1.4	<1.4
8	Total Residual Chlorine	mg/ltr	1.0	ND	ND	<0.1	<0.1	<0.1	<0.1
9	Amm. Nitrogen as N	mg/ltr	50	0.41	0.38	<0.1	<0.1	<0.1	<0.1
10	Total Kjeldal Nitrogen as NH ₃	mg/ltr	100	1.28	1.16	<0.3	<0.3	<0.3	<0.3
11	Free Ammonia as NH ₃	mg/ltr	5.0	0.003	0.002	<0.1	<0.1	<0.1	<0.1
12	BOD (3) days at 27°C.	mg/ltr	30	1.58	1.46	<2.0	<2.0	<2.0	<2.0
13	COD	mg/ltr	250	6.1	4.4	<4.0	<4.0	<4.0	<4.0
14	Arsenic as As	mg/ltr	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
15	Mercury as Hg	mg/ltr	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
16	Lead as Pb	mg/ltr	0.1	<0.005	<0.005	0.04	<0.005	<0.005	<0.005
17	Cadmium as Cd	mg/ltr	2.0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
18	Hexa Chromium as Cr ⁺⁶	mg/ltr	0.1	<0.01	<0.01	0.05	<0.01	0.34	0.04
19	Total Chromium as Cr	mg/ltr	2.0	0.33	0.31	1.097	0.3	0.34	0.37
20	Copper as Cu	mg/ltr	3.0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
21	Zinc as Zn	mg/ltr	5.0	0.22	0.19	<0.02	<0.02	0.03	0.07
22	Selenium as Se	mg/ltr	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
23	Nickel as Ni	mg/ltr	3.0	<0.02	<0.02	<0.01	0.02	<0.02	<0.02
24	Cyanide as CN	mg/ltr	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
25	Fluoride as F	mg/ltr	2.0	0.05	0.06	0.4	<0.1	<0.1	0.11
26	Diss. Phosphate as P	mg/ltr	5.0	<0.05	<0.05	0.04	0.05	<0.05	<0.05
27	Sulphide as S	mg/ltr	2.0	ND	ND	<0.1	<0.1	<0.1	<0.1
28	Phenolic Compounds as C ₆ H ₅ OH	mg/ltr	1.0	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
29	Bio-assay Test	--	90% survival of fish after 96 hours in 100% effluent	98%	98%	100%	100%	100%	100%
30	Manganese as Mn	mg/ltr	2.0	0.025	0.024	<0.02	<0.02	<0.02	<0.02
31	Iron as Fe	mg/ltr	3.0	0.44	0.42	0.17	0.4	0.48	0.58
32	Vanadium as V	mg/ltr	0.2	BDL	BDL	<0.2	<0.2	<0.2	<0.2
33	Nitrate Nitrogen	mg/ltr	10	0.19	0.16	0.22	0.55	1.14	0.42
34	Pesticides (as Benzene hexa chloride), μg/l Max.	μg/l Max	10	Absent	Absent	<0.00001	<0.00001	<0.00001	<0.00001

NB :C.L. Colourless, O.L – Odourless., ND- Not Detectable.

TATA STEEL LIMITED
SUKINDA CHROMITE MINE

Water Quality Parameters at Oil separation System - INLET (April'15 to Sept' 15)

Sl. No	Parameter	Unit	Standards	Apr'15	May'15	June'15	July'15	Aug'15	Sep'15
				Inlet	Inlet	Inlet	Inlet	Inlet	Inlet
1	Colour & Odour	--	5 & U/O	3 & U/O	2 & U/O	<0.1 & U/O	<0.1 & U/O	<0.1 & U/O	<0.1 & U/O
2	Suspended Solids	mg/l	100	56	55	15.3	57.6	48.2	60.5
3	Particular Size of S.S.	μ(micron)	<850	<850	<850	<850	<850	<850	<850
4	pH	--	5.5-9.0	7.4	7.3	7.82	6.94	7.1	7.3
5	Temperature	°C	Shall not exceed 5°C above the receiving water	25	25	2	2	3	2.5
6	Oil & Grease	mg/l	10	1.4	1.3	<1.4	<1.4	<1.4	<1.4
7	Total Residual Chlorine	mg/l	1	ND	ND	<0.1	<0.1	<0.1	<0.1
8	Amm. Nitrogen as N	mg/l	50	0.29	0.26	0.26	<0.1	<0.1	0.22
9	Total Kjeldal Nitrogen as NH ₃	mg/l	100	1.18	1.11	0.46	1.2	0.37	1.10
10	Free Ammonia as NH ₃	mg/l	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
11	BOD(3) days at 27°C	mg/l	30	1.22	1.19	<2.0	5.9	6.6	5.8
12	COD	mg/l	250	3.65	3.52	<4.0	39.22	23.42	20.2
13	Arsenic as As	mg/l	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
14	Mercury as Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb	mg/l	0.1	<0.005	<0.005	0.07	<0.005	<0.005	<0.005
16	Cadmium as Cd	mg/l	2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Hexa Chromium as Cr ⁺⁶	mg/l	0.1	<0.01	<0.01	0.51	<0.01	0.36	0.26
18	Total Chromium as Cr	mg/l	2	0.16	0.14	1.58	0.42	0.48	0.49
19	Copper as Cu	mg/l	3	<0.02	<0.02	<0.02	<0.02	0.09	<0.02
20	Zinc as Zn	mg/l	5	0.19	0.2	0.024	0.08	0.09	0.08
21	Selenium as Se	mg/l	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
22	Nickel as Ni	mg/l	3	<0.01	<0.01	<0.01	0.13	0.13	0.13
23	Cyanide	mg/l	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Fluoride as F	mg/l	2	0.06	0.06	0.28	0.32	0.3	0.37
25	Diss. Phosphate as P	mg/l	5	<0.05	<0.05	0.09	<0.05	<0.05	<0.05
26	Sulphide as S	mg/l	2	ND	ND	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C ₆ H ₅ OH	mg/l	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
28	Bio-assay Test,	%	90% survival of fish after 96 hours in 100% effluent	98%	98%	100%	100%	100%	100%
29	Manganese as Mn, mg/l	mg/l	2	0.019	0.021	0.1	0.45	0.34	0.38
30	Iron as Fe, mg/l	mg/l	3	0.39	0.48	0.83	0.52	0.55	0.47
31	Vanadium as V, mg/l	mg/l	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
32	Nitrate Nitrogen, mg/l	mg/l	10	0.28	0.25	0.28	<0.1	0.36	0.32
33	Pesticides (as Benzene hexa chloride)	μg/l	10	Absent	Absent	<0.00001	<0.00001	<0.00001	<0.00001

NB :C.L. Colourless, O.L - Odourless., ND- Not Detectable.

TATA STEEL LIMITED
SUKINDA CHROMITE MINE

Water Quality Parameters at Oil separation System - Outlet (April'15 to Sept' 15)

Sl. No	Parameter	Unit	Standards	Apr'15	May'15	June'15	July'15	Aug'15	Sep'15
				Outlet	Outlet	Outlet	Outlet	Outlet	Outlet
1	Colour & Odour	--	5 & U/O	CL & U/O	CL & U/O	<0.1 & U/O	<0.1 & U/O	<0.1 & U/O	<0.1 & U/O
2	Suspended Solids	mg/l	100	21	32	33	22.6	26.9	20
3	Particular Size of S.S.	μ(micro n)	<850	<850	<850	<850	<850	<850	<850
4	pH	--	5.5-9.0	7.2	7.1	7.67	7.08	7.2	7
5	Temperature	°C	Shall not exceed 5°C above the receiving water	25	25	2	2	3	3
6	Oil & Grease	mg/l	10	ND	ND	<1.4	<1.4	<1.4	<1.4
7	Total Residual Chlorine	mg/l	1	ND	ND	<0.1	<0.1	<0.1	<0.1
8	Amm. Nitrogen as N	mg/l	50	0.25	0.19	0.12	<0.1	<0.1	0.16
9	Total Kjeldal Nitrogen as NH ₃	mg/l	100	1.21	1.06	0.33	<0.3	0.32	0.55
10	Free Ammonia as NH ₃	mg/l	5	0.003	0.002	<0.1	<0.1	<0.1	<0.1
11	BOD(3) days at 27°C	mg/l	30	1.1	1.04	<2.0	2.4	2.38	<2
12	COD	mg/l	250	3.34	3.16	8	15.7	7.9	8
13	Arsenic as As	mg/l	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
14	Mercury as Hg	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
15	Lead as Pb	mg/l	0.1	<0.005	<0.005	0.06	<0.005	<0.005	<0.005
16	Cadmium as Cd	mg/l	2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Hexa Chromium as Cr ⁺⁶	mg/l	0.1	<0.01	<0.01	0.08	<0.01	0.05	0.03
18	Total Chromium as Cr	mg/l	2	0.21	0.13	1.07	0.38	0.24	0.21
19	Copper as Cu	mg/l	3	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Zinc as Zn	mg/l	5	0.22	0.17	<0.02	<0.02	0.08	0.08
21	Selenium as Se	mg/l	0.05	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
22	Nickel as Ni	mg/l	3	<0.01	<0.01	<0.01	0.07	0.11	0.04
23	Cyanide	mg/l	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Fluoride as F	mg/l	2	0.06	0.05	0.27	<0.05	0.17	0.22
25	Diss. Phosphate as P	mg/l	5	<0.05	<0.05	0.08	<0.05	<0.05	<0.05
26	Sulphide as S	mg/l	2	ND	ND	<0.1	<0.1	<0.1	<0.1
27	Phenolic Compounds as C ₆ H ₅ OH	mg/l	1	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
28	Bio-assay Test,	%	90% survival of fish after 96 hours in 100% effluent	98%	98%	100%	100%	100%	100%
29	Manganese as Mn, mg/l	mg/l	2	0.016	0.018	0.09	0.29	0.03	0.09
30	Iron as Fe, mg/l	mg/l	3	0.31	0.42	0.62	0.5	0.39	0.4
31	Vanadium as V, mg/l	mg/l	0.2	BDL	BDL	<0.2	<0.2	<0.2	<0.2
32	Nitrate Nitrogen, mg/l	mg/l	10	0.22	0.21	0.26	0.44	0.3	0.28
33	Pesticides (as Benzene hexa chloride)	μg/l	10	Absent	Absent	<0.00001	<0.00001	<0.00001	<0.00001

Annexure XVII

NOISE SURVEY REPORT AT COB PLANT, LOP PLANT OF SUKINDA CHROMITE MINE, TATA STEEL LTD.

SL.No.	LOCATION	July'15	Sep'15	AVERAGE
		Noise level in dB(A)	Noise level in dB(A)	
1	COB Plant Gate	59.8	62.8	61.3
2	Canteen	58.8	60.9	59.9
3	Work Shop	63.3	65.2	64.3
4	Office	56.7	59.4	58.1
5	D.G.Shed	69.7	63.6	66.7
6	MCC Room	64.4	66.2	65.3
7	Vibrating Screen	77.7	73.6	75.7
8	Scrubber	67.6	68.2	67.9
9	Control Room	58.6	60.3	59.5
10	Secondary Apron	68.5	69.3	68.9
11	Cone Crusher	81.1	66.8	74.0
12	DTJ Crusher	83.3	70.5	76.9
13	Concentrated Ore Loading	72.2	73.7	73.0
14	Wobbler area	67.6	65.9	66.8
15	Primary Apron feeder	72.2	68.7	70.5
16	C -1A	61.3	62.6	62.0
17	Shaking Table	66.5	64.8	65.7
18	Multiple Bin	70.3	69.5	69.9
19	H.T Room	60.6	63.6	62.1
20	Hydro Cyclone	62.2	64	63.1
21	Spirals	60.4	62.2	61.3
22	VS Ball Mill	79.9	77.6	78.8
23	C.6A	70.6	73.7	72.2
24	H.F Screen	74.4	70.6	72.5
25	Sieve band area	78.8	73.4	76.1
26	C3	78.2	74.1	76.2
27	C4	78.4	73.9	76.2
28	LOPP Sayaji Crusher	77.9	72.5	75.2
29	LOPP Screen	76.3	74.8	75.6
30	LOPP Control Room	67.8	64.4	66.1
31	LOPP Hopper	74.2	72.8	73.5

Ambient Noise Level Survey in Residential Areas of SCM, TSL from 6AM to 6AM (Next Day)

Sl.No	Time in Hrs.	Locations	July'15	Sep'15	AVERAGE
			Noise level in dB(A)	Noise level in dB(A)	
1	6.00	Main Gate	62.3	64.1	63.2
2	6.30	Market Complex	64.4	63.6	64.0
3	7.00	Hospital	52.2	46.9	49.6
4	7.30	Post Office	52.3	54.8	53.6
5	8.00	Study Center	48.8	52.2	50.5
6	8.30	Water treatment Plant (D.G was not in operation)	51.1	54.2	52.7
7	9.00	STP	48.9	52.2	50.6
8	9.30	Shishu Mandir	44.7	48.2	<40
9	10.00	Children's Park	52.2	56.1	54.2
10	10.30	3RSF Qtrs	51.1	53.2	52.2
11	11.00	L2R Qtrs	52.1	53.7	52.9
12	11.30	Recreation Club	49.4	52.3	50.9
13	12.00	B4-B6 Block Qtrs	53.2	54.0	53.6
14	12.30	B3-B4 Block Qtrs	54.9	52.8	53.9
15	13.00	Geological Camp	46.6	51.8	49.2
16	13.30	Babu Line	52.9	51.6	52.3
17	14.00	Guest House	53.6	52.8	53.2
18	14.30	3R Qtrs	54.4	53.3	53.9
19	15.00	VT Centre	52.1	54.4	53.3
20	15.30	SS High school	48.8	52.6	50.7
21	16.00	2RF Qtrs	49.7	52.8	51.3
22	16.30	CT Qtrs	43.2	49.3	<40
24	17.30	Police Out Post	57.5	55.2	56.4
25	18.00	Jagarnnath Temple	52.2	54.1	53.2
26	18.30	GM Banglow	48.3	49.4	48.9
28	19.30	Laboratory	47.5	52.7	50.1
29	20.00	Chrome Vally Club	54.4	51.8	53.1
30	20.30	Atwal's Camp	48.8	54.2	51.5
31	21.00	Duplex Qtrs	47.6	52.7	50.2
32	21.30	FootBall Ground	42.2	50.4	<40
35	23.00	5 Star Qtrs	49.3	53.8	51.6
36	23.30	Stewart School	46.2	51.5	<40
37	0.00	A9-A13 Qtrs	51.1	55.2	53.2
38	0.30	A14-A19 Qtrs	47.7	50.5	49.1
39	1.00	A-17 - A23 Qtrs	44.7	53.7	<40
40	1.30	B1-B3 Block	42.6	48.8	<40
41	2.00	Hospital	41.1	46.9	<40
42	2.30	SBI	56.6	59.4	<40
44	3.30	TSRDS	44.4	52.6	<40
46	4.30	Guest House Annexe	41.8	48.8	<40
47	5.00	Banabharati Dance School	44.3	51.7	<40

Ambient Noise Level Survey in Industrial Areas of SCM, TSL from 6AM to 6AM(Next Day) Dtd.14.06.2010.

Sl.No	Time in Hrs.	Location	July'15	Sep'15	AVERAGE
			Noise level in d B(A)	Noise level in d B(A)	
1	6.00	Canteen Gate	58.8	57.4	58.1
2	6.30	Quarry Pump House	63.3	60.4	61.9
3	7.00	Stack Yard	66.9	65.2	66.1
4	7.30	Lumpy Plot	58.9	61.7	60.3
5	8.00	40 t. Weigh Bridge	74.4	68.4	71.4
6	8.30	Concentrated Ore Stack Yard	67.2	68.4	67.8
7	9.00	OB Dump	72.1	70.2	71.2
8	9.30	OB IX Quarry	67.7	64.5	66.1
9	10.00	Atwal's Pyroxinate Crusher	58.8	62.7	60.8
10	10.30	Magazine	66.8	64.9	65.9
11	11.00	Pyroxinate Quarry	71.1	68.9	70.0
12	11.30	OB-II Quarry	73.3	68.9	71.1
13	12.00	OB Dump	68.9	65.3	67.1
14	12.30	Naresh Kumar Crusher	71.1	70.2	70.7
15	13.00	OB-X Quarry	68.3	66.9	67.6
16	13.30	Old ETP	58.9	59.3	59.1
17	14.00	Mining Complex	73.3	68.4	70.9
18	14.30	Slime Dam	72.2	68.5	70.4
20	15.30	Pyroxinate Plot	68.8	65.8	67.3
22	16.30	Temple Gate	76.6	70.4	73.5
23	17.00	Air Strip	73.8	71.5	72.7
24	17.30	Hauling Gate	71.6	68.4	70.0
25	18.00	Work Shop	70.6	72.6	71.6
26	18.30	New ETP	68.8	69.4	69.1
27	19.00	20T Weigh Bridge	74.2	71.6	72.9
28	19.30	Engg. Complex	72.9	68.8	70.9
29	20.00	Atwal's Chrome Crusher	70.3	72.6	71.5
30	20.30	New ETP	68.8	70.3	69.6
31	21.00	Canteen Gate	68.4	66.6	67.5
35	23.00	Petrol Pump	54.4	59.4	56.9
36	23.30	Quarry Pump House	56.3	67.4	61.9
37	0.00	Hospital Gate	46.2	49.3	47.8
38	0.30	OB X Quarry	63.2	62.5	62.9
40	1.30	Atwal's Garage	57.3	62.7	60.0
41	2.00	Old OK Line	44.8	51.4	48.1
44	3.30	40Ton Weigh Bridge	62.2	68.5	65.4
45	4.00	Naresh Kumar Crusher	66.4	69.3	67.9

NOISE LEVEL SURVEY AT GEOLOGICAL LABORATORY IN COB PLANT SCM TSL

Sl.No	Location	July'15		Sep'15		AVERAGES	
		Noise Level in dB(A)		Noise Level in dB(A)		Noise Level in dB(A)	
		Max	Min	Max	Min	Max	Min
1	Exhaust Fan	61.1	57.7	66.3	59.2	63.7	58.5
2	Dry Sieve Shaker Machine	68.8	56.6	69.2	56.3	69.0	56.5
3	Wet Sieve Shaker Machine	62.6	55.8	64.9	56	63.8	55.9
4	Manual sample preparation table	63.3	55.8	68.4	57.4	65.9	56.6

ANEXURE-XVIII

Uploaded EC, EC Status Condition and Annual Environment Statement

Tata Steel - Compliance Reports##### - Microsoft Internet Explorer provided by ITS, TATA STEEL

http://www.tatasteelindia.com/compliance-report.asp#

File Edit View Favorites Tools Help


Site Search Home Sitemap

TATA STEEL
Values stronger than steel

Corporate Global Network Products & Processes Corporate Citizen Investors Careers Media Contact

TATA

You are in: Home > Compliance Reports



Compliance Reports

▶ [Half Yearly Environment Compliance Reports](#)

- EC for Jamadoba Coal Washery
- EC for 6&7 Pits Colliery
- CRZ Clearance Gopalpur project
- [EC Compliance Sukinda Chromite Mines April 13 - September 13](#)
- Environment Statement of Sukinda Chromite Mines for 2012-13
- Environment Statement of Tiringpahar Manganese Mines for 2012-13
- [Environmental clearance to Sukinda chromite mine of Tata Steel limited](#)
- Environmental Clearance for Kotre Basantpur & Pachmo Opencast Coal mine, West Bokaro, Tata Steel Ltd.
- Six Monthly Compliance Report for Rebar Mill and Ferro Chrome Plant, Tata Steel Ltd.
- Six Monthly Compliance Report for Kalinganagar Project, Tata Steel Ltd.
- Environmental Statement for the year 2011-12, Kalinganagar Project, Tata Steel Ltd.
- Environmental Clearance to Bamebari Manganese Mine, Tata Steel Ltd.
- Environmental Clearance to Joda West Manganese Mine, Tata Steel Ltd.
- Environmental Clearance to Malda Manganese Mine, Tata Steel Ltd.
- Environmental Clearance to Manmora Manganese Mine, Tata Steel Ltd.
- Environmental Clearance to Tiringpahar Manganese Mine, Tata Steel Ltd.
- Environmental Clearance conditions of Noamundi Iron Mine, Tata Steel Ltd.
- Environmental Clearance conditions of Khondbond Iron & Manganese Mine, Tata Steel Ltd.
- Environmental Clearance conditions of Kalamati Iron Mine, Tata Steel Ltd.
- Environmental Clearance conditions of Joda East Iron Mine, Tata Steel Ltd.
- Environmental Clearance of West Bokaro Opencast Coal Mine, Tata Steel Ltd.

Uploaded EC, EC Status Condition

New Tab x Corporate Citizen | Enviro: x Arun

www.tatasteelindia.com/corporate-citizen/environment-compliance-reports.asp

- Half Yearly EC Compliance Report of Sumbalpur Manganese Mine (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Tingpahar Manganese Mine (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Manmora Manganese Mine (Oct'14 to Mar'15)
- Washery - III Production Data (Monthly Average) (June 2015)
- Compliance Status of Environmental Clearance of West Bokaro Opencast Coal Mine
- Washery - III Production Data (Monthly Average) (April - May 2015)
- Half Yearly EC Compliance Report of Sukinda Chromite Mine (Oct'14 to Mar'15)**
- Half Yearly EC Compliance Report of Kalimela Open Cast Project, Jamadoba Colliery, Dhanbad (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of 6&7 Pits Colliery, Dhanbad (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Mahal Sahajuni Bagula Sand Lease, Dhanbad (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Lagla Mahal Sand Lease, Dhanbad (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Digwadhi Colliery, Dhanbad (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Jamadoba Coal Washery, Dhanbad (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Joda East Iron Mine (Oct'14 to Mar'15)
- Half Yearly EC Compliance Report of Khondbond Iron & Manganese Mine (Oct'14 to Mar'15)

www.tatasteelindia.com/corporate-citizen/pdf/env-sukinda-16jun15.pdf

10:35 AM
11/13/2015

EC Compliance of Oct-14 to March-15

New Tab x Corporate Citizen | Enviro: X

www.tatasteelindia.com/corporate-citizen/environment-compliance-reports.asp

Environment
Infrastructure Development
Case Studies
Environment Compliance Reports
Events

Environment Compliance Reports

- Half Yearly Compliance Report (April 2015 to September 2015) for Environmental Clearance of the Plant at Gopalpur villages Chamakhandi, Sindhigaon and Jagannathpur, Tehsil Chhatrapur, District Ganjam, Odisha
- Half Yearly Compliance Report for CRZ Clearance of Gopalpur Plant, Odisha
- Environmental Statement : Joda West Manganese Mines - 2014-15
- Environmental Statement : Malda Manganese Mines - 2014-15
- Environmental Statement : Tiringpahar Manganese Mines - 2014-15
- Environmental Statement : Bamebari Manganese Mines - 2014-15
- Environmental Clearance for Tata Steel Residential Complex of M/s Tata Steel Ltd. for Tata Steel Plant located at Kalinganagar Industrial Complex at Khurunti & Gadapur
- Environmental Statement for the financial year 2014-2015 of 6.0 MTPA Steel Plant, Kalinganagar Project
- Environmental Clearance of Ferro Alloys Plant, Bamnipal
- Environmental Statement of Ferro Alloys Plant, Bamnipal, Keonjhar for the year 2014-2015
- Environment Statement for the financial year ending March 2015 for Sukinda Chromite Mine**
- Environment Statement for the financial year ending March 2015 for 6&7 PITS Colliery

www.tatasteelindia.com/corporate-citizen/pdf/s

10:41 AM
11/13/2015

Uploaded Environment Statement 2014-15

ANEXURE-XIX
Environment Clearance Intimation letters Panchayat, Zila Parisad



Ref: SCM/ENV/ 61 / 13
Date: 25/09/13

Mrs. Bhagabati Mohanta,
Chairman,
Panchayat Samiti, Sukinda Block,
Sukinda

Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sukinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrocorbix ore capacities and change of sintering & beneficiation technologies vide its letter no. J-11015/96/2011-GAII(M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully
E: Tata Steel Limited

Chief (Mining)
&
Manager Cum Agent
Sukinda Chromite Mine

Encl: As above

*Bhagabati Mohanta
Chairman
Sukinda*

TATA STEEL LIMITED

Sukinda Chromite Mine, P.O. Sukinda, Dist. Jajpur, Orissa
Phone: 067442 22661 Fax: 0674 226730
Regional Office, Bhubaneswar, Orissa, India. Email: smc@tatasteel.com
www.tatasteel.com



Ref: SCM/ENV/ 66 /13

Date: 25/9/13

Mr. Bidhyadhar Patra
Member,
Zila Parishad, Jaipur

Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sakinda Chromite Mine having Mining Lease area over 406 ha in Jaipur District.

Dear Sir,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sakinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chromite Ore Beneficiation plant and Pyrocentric ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2013-IA.II(M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully
P: Tata Steel Limited

Chief (Mining)
&
Manager Cum Agent
Sakinda Chromite Mine

End: As above

Bidhyadhar Patra
Bidhyadhar Patra 25/9/13
Zilaparisad Member
IT Zone, Sakinda, Jaipur

TATA STEEL LIMITED

Head Office: 100, Park Road, Jamshedpur (Jharkhand) - 831001
Phone No. 91-0656-2622001 to 2622007
Registered Office: Company House, 22, Market Street, Kolkata - 700017
www.tatasteel.com



Ref: SCM/ENV/ 21 / 13

Date: 25/09/13

Mrs. Jinita Manda,
Sarpanch,
Kaliapani Gram Panchayat
Kaliapani

Sub: Intimation of obtaining Environmental Clearance under EIA Notification,
2006 in respect of Sukinda Chromite Mine having Mining Lease area over
406 ha in Jajpur District.

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore, Beneficiation plant and Pyroxenite ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2013-I.A.II(M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully
T. Tata Steel Limited


Chief (Mining)
&
Manager Care Agent
Sukinda Chromite Mine

Jinita Manda
Sarpanch
KALIAPANI G.P.

Encl: As above

TATA STEEL LIMITED

Kaliapani Chromite Mine, Sukinda, Jajpur District, Orissa-751007
Phone No. 91 0676 2661214-1191142470
Registered Office: Kalijapani, P.O. Kalijapani, District: Jajpur, Orissa-751007
www.tatasteel.com



Ref: SCM/ENV/ 70 / 13
Date: 26/11/13

Mrs. Sushama Nayak
Sarpanch,
Ransol Grama Panchayat,
Ransol

Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sakinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sakinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrometallurgy capacity and change of mining & beneficiation technologies vide its letter no. J-11015/96/2013-LA(I)(M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully
F: Tata Steel Limited


Chief (Mining)
&
Manager Core Agent
Sakinda Chromite Mine

Encl: As above


Sarpanch
Ransol Grama Panchayat

TATA STEEL LIMITED

Corporate Office: Tata Steel Limited, Sakinda, Jajpur District, Orissa, India
Registered Office: Tata Steel Limited, Sakinda, Jajpur District, Orissa, India
www.tatasteel.com



Ref: SCM/ENV/31 / 13

Date: 25/09/13

Mrs. Renuka Dehari
Sarpanch,
Chingulpal Grama Panchayat,
Chingulpal

Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sakinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sakinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore, Beneficiation plant and Pyrovents ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2011-IA(E/M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully
F: Tata Steel Limited


Chief (Mining)
&
Manager Cum Agent
Sakinda Chromite Mine

Encl. As above

Renuka Dehari
Sarpanch
Chingulpal G.P.

TATA STEEL LIMITED

Corporate Office: Tata Steel Limited, Sakinda, Jajpur District, Orissa
Telephone: 06742 222221 Fax: 06742 222222

Registered Office: Sakinda, Jajpur District, Orissa
www.tatasteel.com



Ref: SCM/ENV/ 72 / 13

Date: 25/04/13

Mr. Gobinda Chandra Dethari,
Sarpanch,
Kankadpal Grama Panchayat,
Kankadpal

Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sukinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.

Dear Sir,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrocentric ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2011-GJ(M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours faithfully
Tata Steel Limited


Chief (Mining)
&
Manager-Cum Agent
Sukinda Chromite Mine

Encl: As above


02-09-2013
SARAPANCH
KANKADAPAL G.P.

TATA STEEL LIMITED

Corporate Office: Tata Steel Limited, Sakinaka, Jamshedpur - 831001
Registered Office: Tata Steel Limited, Sakinaka, Jamshedpur - 831001
www.tatasteel.com

ANEXURE-XX

Environmental Clearance Advertisement and Intimation to Eastern Regional Office of the MoEF



**Addl. Director(S)
Ministry of Environment & Forests
Eastern Regional Office
A/3, Chandrasekharapur,
Bhubaneswar- 751023**

Ref: SCM/ ENV/ 012/ ~~066~~ /13
Date: 18th June 2013

Sub: Advertisement for grant of Environmental Clearance in respect of Sukinda Chromite Mine in Jajpur District of Odisha (Mining Lease area: 406 ha).

Ref: Ministry of Environment & Forests, Govt. of India letter no. J-11015/96/2011-1A.II(M), Dated 06.09.2013.

Dear Sir,

As per the General Condition no. xvi of the Environmental Clearance granted by Ministry of Environment & Forests, Govt. of India in respect of Sukinda Chromite Mine vide letter no. J-11015/96/2011-1A.II(M), Dated 06.09.2013, the matter was advertised in the Oriya daily " **The Samaja**" (date: 11.09.2013, page-5) and in English daily " **The New Indian Express**" (date: 11.09.2013, page-5). Copy of the above advertisement is enclosed as annexure for your ready reference.

Thanking you,

Yours sincerely,
f: Tata Steel Ltd.

A handwritten signature in blue ink, appearing to be 'f. J. J.', written over the typed name of the signatory.

Manager cum Agent
Sukinda Chromite Mine

Encl: as above

TATA STEEL LIMITED

Sukinda Chromite Mine (S) - Kalamangata Dist. Jajpur, Orissa-755024
Phone no. 01 6726 266761 Fax : 01 6726 268734
Registered Office: 9th Floor, Tower 24, One One One, Mumbai - 400 001

ANEXURE-XXI
Photographs of Backfilling (In Progress)



ANEXURE-XXII
Year wise Plantation target and Actual Plantation Achieved

Year	Plan (Within ML)		Actual (within ML)		Plan (Outside ML)		Actual (Outside ML)	
	Nos. of Sapling	Area in Ha	Nos. of Sapling	Area in Ha	Nos. of Sapling	Area in Ha	Nos. of Sapling	Area in Ha
1998-99	4000	1.62	4000	1.7				
1999-00	4000	1.62	18000	4				
2000-01	5000	2.02	28342	2				
2001-02	5000	2.02	15000	0.5				
2002-03	5000	2.02	22000	1.5				
2003-04	10000	4	45500	1.5				
2004-05	2500	1	48000	1				
2005-06	6250	2.5	75000	2.5				
2006-07	14375	5.75	129500	5.75				
2007-08	13550	5.42	94000	4.42	Additional Area (100ha)obtained (#)			
2008-09	3000	1.2	85250	2.94	8750	3.5	36750	1.76
2009-10	4000	1.6	28000	3.9	17750	7.1	56000	5.6
2010-11	0	0	25000	2	20000	8	60000	6.5
2011-12	11250	4.5	45000	4.5	8750	3.5	35000	3.5
2012-13	4625	1.9	5700	1.83	21375	8.55	40000	6.5
2013-14	6250	2.5	3700	1.32	20000	8	54326	5.6
2014-15	4000	1.6	4050	1.2	19875	7.95	50100	5.1
2015-16	7500	3	6000	1	20125	8.05	61473	8
TOTAL	110300	44.27	682042	43.56	136625	54.65	393649	42.56
NB : (#) Actual less than plan due to delay in phased allotment of land								
Plantation during 2015-16 is continuing.								