



Director (S)
Ministry of Environment, Forest & Climate Change
Eastern Regional Office,
A/3, Chandrasekharpur
Bhubaneswar- 751023

Ref No: SCM/ENV/012/053/17

Date: 30.11.2017

Sub: Submission of Six monthly compliance report on implementation of environmental safeguards of Sukinda Chromite Mine, for the period from April' 17 to Sep'17.

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'17 to Sep' 17 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 & CC, New Delhi CPCB, Zonal office Kolkata OSPCB, Bhubaneswar OSPCB, Regional office Kalinganagar

TATA STEEL LIMITED



Compliance

To

Environmental Clearance Conditions

Of

Sukinda Chromite Mine

M/s. Tata Steel Limited

For the period: April'2017 - September'2017

(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:

ı	Sl	Condition	Compliance	
	1	No mining activities will be allowed in forest area	The mine was granted a	single window Forest-cum-
1		for which the Forest Clearance is not available	Environmental clearance vide	letter no. 8-78/96-FC dated
			27.01.1998 over 73.697 ha	of forest area. As the lease
1			renewal was due on 12.01.20	13, Renewal forest diversion
			proposal was applied and Sta	ge-I FC along with one year
1	1		temporary working permission	was obtained from MoEF &
			CC vide letter no. 8-78/1996-F0	(pt-I), dated 03.11.2014.
			Subsequent to endorsement o	
			2015, the Govt. of Odisha ext	ended the mining lease from
			12.01.2013 to 31.03.2020 for v deed was executed on 24.	onich the supplementary lease
			26.08.2015. In accordance to	the MoFF&CC Circular No
			F.No.11-51/2015-FC, dated.01.	04 2015 the forest clearance
П			dated 27.01.1998 got extended	till 31.03.2020.
	- 1			
			Further, in accordance to the M	oEF&CC Circular dated F.No.8-
П			78/1996-FC, dated.10.03.201	
П			25.10.1980 (i.e Sabik Settleme	
			land. Thus 404.669 ha. within	the mining lease of 406 ha is
П			now termed as forest land. I	lence, fresh forest diversion
П			proposal over an area of 330.9	
П		*	diverted area of 73.697 ha) was with reference to the Agenda	
1			the Minutes of meeting of Fores	t Advisory Committee held on
. 1			25th April 2017 (published in th	e web site), the FC proposal is
П			under the active consideration	of the MOEF&CC, Govt of India
П			and has accorded Stage-I cle	arance vide letter F.No 8-
			15/2016-FC , dated 04.07.201	7 over 330.972 ha of forest
Н	II	The project and the state of th	land as on 25.10.1980.	
П	11	The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the	Renewal Forest Diversion Prop	osal for entire forest land of
П		entire forest land located within the mining lease	73.697 ha within the Mining Le	ase area was applied in time.
П		within a period of two years from 01.02.2013 i.e.	The FDP has been duly indepartment Court of Odisha to the	ecommended by the F&E
Ш		the date of issue of guidelines by FC vide there letter	department, Govt. of Odisha to t Forests, Govt. of India for onwa	rd consideration for great of
П		F. No. 11-362/ 2012-FC, failing which the mining	Forest Clearance. MoEF, Govt.	
П		lease area will be reduced to the non-forest area	Forest Clearance with one year	
П		plus the forest area for which the project proponent	letter no. 8-78/1996-FC (pt-I),	ated 03.11.2014. Copy of the
П		has been able to obtain the FC at the end of this time	letter enclosed as Annexure-I.	
		period. In the case of reduction in mine lease area,		
		the project proponent will need to get a revised	Subsequent to endorsement of	the MMDR Amendment Act,
		mining plan approved from the competent authority	2015, the Govt. of Odisha exte	nded the mining lease from
		for reduced area and enter into a new mining lease	12.01.2013 to 31.03.2020 for w	hich the supplementary lease
		as per reduced lease area. The EC will be construed to be available for the mining lease area as per the	deed was executed on 24.0	8.2015 and registered on
		revised mining lease deed.	26.08.2015. In accordance to	the MoEF & CC Circular No.
		remod mining rease deed.	F.No.11-51/2015-FC, dated.01.0 dated 27.01.1998 got extended t	4.2015, the forest clearance
			dated 27.01.1330 got extended t	III 31.03.2020

SI	Com disting		
21	Condition	Compliance	
		Further, in accordance to th F.No.8-78/1996-FC, dated.10.0 25.10.1980 (i.e Sabik Settlen mining lease of 406 ha is now fresh forest diversion proposa (404.669 ha – already diverte applied on 02.11.2015 and wit (F.No.8-15/2016-FC) of the N	3.2015, the forest area as on nent) 404.669 ha. within the termed as forest land. Hence, all over an area of 330.972 had area of 73.697 ha) has been a reference to the Agenda No.1
		Advisory Committee held on 25 web site), the FC proposal is un the MOEF&CC, Govt of Indi clearance vide letter F.No 8-1 over 330.972 ha of forest land letter enclosed as Appendix 1.	th April 2017 (published in the der the active consideration of a and has accorded Stage-I 5/2016-FC, dated 04.07.2017
III	Till all the clearances are obtained for the proposed tailing pond/dam the project would only use existing tailing dam.	The mine has applied for 73.66 and non-forest part of 65.31 which environmental clearance. This proposal is on hold at predict passed by Hon'ble Suprof WP(Civil) No. 435 of 2012. India). Further, this proposal sfavourable order ascends in due.	ha) for tailing disposal for has already been accorded, present in accordance to the eme court of India on disposal (Goa Foundation vs Union of shall be pursued after further
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 sanctua	ry, National Park, Biosphere e zone located within 10 km y. Hence, clearance under the from the Standing Committee
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 Odisha State Pollution Cont 17750/IND-II-NOC-5664 dated Consent to Operate had been revide letter no. 14781/IND-I-CONThe conditions stipulated in t	been already obtained from rol Board vide letter no. 30.09.2013. newed up to 31st March 2020 N-226 dated 01.10.2016. he Consent to Establish and
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.	Consent to Operate are being eff As per Ministry of Environmen notification, there are no wildli biosphere reserve or any other 10 Km radius from the mining le	t Notification and local forest fe sanctuaries, national park/ sensitive zones located within
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.	The ambient air quality is bein six locations within the Cor composition analysis is done qu been enclosed as Annexure-III .	e Zone. The mineralogical
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 trans boundary to the various destina is being completely covered by position by plastic straps. All the help of four Weigh Bridges location boundary to ensure that we Photograph showing the same is	tions using the outside trucks tarpaulin and is secured in the vehicles are weighed with the mining lease thicle is not overloaded.
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	To limit the fugitive emissions, water sprinkling on haul road, tretc is being done. Four grade grading all the haul roads to rer Ten water sprinklers (two of 28 KL) have been deployed in suppression on haul road and a	rarious control measures like ansfer points, Ore stack yard, rs have been deployed for move the accumulated muck. KL, four of 25 KL, and four 8 the mine area for dust

SI	Condition	Compliance					
		Compliance					
	conform to the norms prescribed by the Central Pollution Control Board in this regard	l main haul ro	ads and areas in	main	tenance, stac	k yard an	
	- Sur ui	stationary wa	peneficiation pla	nt ha	ve been con	creted an	
		dust dust in t	ter sprinkler hav	e also	been installed	to contro	
		20 m width ha	nese permanent s also been raise	iauiag	e roads. Plani	tation of 5	
		to minimize a	ny air borne prob	a in be	tween colony	and mine	
		Stationary wa	iter sprinklers l	ave b	water spray	l in road	
		within COB Plant and Workshop also. Water spraying through pressure water jets at feed hopper, transfe					
		discharge chu	te to prevent du	st gan	eration The	ner points	
	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.	COB Plant is to	tally wet and eli	ninate	e the chance	of any dua	
		generation. Th	ne concentrate s	acks	are now being	or any uus	
		using tarpaulin	sheets to preve	nt fine	r concrete pa	rticle from	
		getting air bo	rne. Photographs	show	ving measure	e taken te	
		control dust ar	e attached in Ani	exur	e-V	s taken ((
		The details of	concrete road	includ	ling provision	n of fived	
		water sprinkle	r are as follows:		mg provision	of fixed	
		Table	I: Concrete and F	ixed V	Vater Sprinkle	er Details	
		Particulars	Location		Length(m)	Width(n	
			Main Haulage r	oad	1000	13	
		Concrete	COB Plant		100	10	
		road	LOP Plant		200	06	
			Workshop		200	06	
			Main Haulage r	oad	1000	-	
		Fixed water	COB Plant		100		
		sprinkling	LOP Plant		200		
		system	Workshop		100		
			Mining Road		1500	11	
		All these major	ors are being s	uccess	fully implem	ented to	
		maintain Amb	ent Air Quality	. The	ambient ai	r quality	
		monitoring rep	ort for period of	Apr'1	7 to Sep'17 is	attached	
	The project authority shall in the	in Annexure V	*				
	Conservation measures to augment suitable	Rain water har	vesting proposal	has a	lready been s	ubmitted	
	resources in the area in consultation with it	to the Regional	Ground Water Bi	pard F	Rhuhaneswar	The final	
	Regional Director Central Ground Water Based	approval is awa	ited. However, w	e now	have a fully f	unctional	
	sound breetor, dentral dround water Board.	roor top rain	water harvestin	g pro	iect operatin	g at the	
		Administrative	office inaugurate	ed in	Oct 2014. Ph	otograph	
		snowing the san	ne is enclosed as	Annex	ture-VII.		
ı	Y	Further, feasib	ility study was	con	ducted through	ah VDC	
		Foundation to e	xplore the possi	hility	of water harv	esting in	
ı		the nearby v	illages located	in t	he mine n	orinhorn	
I		Recommendation	ns thereof shall	be in	inlemented in	nhacad	
	Donal to to do	manner.					
	Regular monitoring of ground water level and	Presently there	are 4 nos. of p	iezom	eters installe	d in the	
	quality shall be carried out in and around the mine	periphery of the	quarry. We hav	e plan	s to install for	rther 14	
	lease by establishing a network of existing wells and	nos. of piezome	ters during 201	7-18.	Till that time	We are	
	installing new piezometers during the mining	conducting regu	iar monitoring o	fgrou	nd water of t	the onen	
l	operation. The periodic monitoring [(at least four	wells/ dug wel	Is located aroui	nd the	e nearby vill	ages on	
	times in a year pre monsoon (April-May), monsoon	monthly basis at	nd all the data ar	e bein	g submitted to	OSPCR	
	(August), post-monsoon (November) and winter	on monthly bas	is along with t	he Fo	rm-1 of Wat	ter Cece	
	(January); once in each season)] shall be carried out	Return. The data	so collected is si	ent res	gularly to the	Ministry	
	Roard/Control Control 141	or Environmen	and Forests	and	its Regional	Office	
	data thus callested and the	bhubaneswar, th	ie Central Groun	d Wat	er Authority	and the	
	Ministry of Caring De Sche regularly to the	Regional Directo	r, Central Groun	d Wat	er Board. The	ground	
	Ministry of Environment and Forests and its	water quality a	nd level record	led in	nearby vil	ages is	
	Board/Central Ground Water Authority and the data thus collected may be sent regularly to the	of Environmen Bhubaneswar, th Regional Directo water quality a	t and Forests ne Central Groun r, Central Groun	and d Wat d Wat	its Regiona er Authority er Board, Th	a	

SI		Compliance
	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.	enclosed as Annexure-VIII.
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.	to the top of the dump on sloping ground is being maintained within 110 m. Dump Stability Study was taken up in 2010-11 with IIT, Kharagpur as per advice of the Regional Office of the MoEF,
		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.
*****		Presently, backfilling of OB-II quarry is going on since April' 2014. Photograph showing the same is enclosed as Annexure-IX.
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 runoffs.	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 and vetiver plantation has been done on the dump slopes to prevent wash off during the morsoon. 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 OR
		dumps to collect the surface run-off during rainy season. The collected run-off is treated in newly installed ETP of capacity 4500 m³/hr and is then discharged beyond the lease boundary. The garland drains and settling pits are being cleaned before the onset of rainy season and also after the rainy season for efficient and better management of surface run off in the lease area.
XIV	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	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

SI	Condition	
31	Condition	Compliance
	constructed at the toe of the over burden dumps t check run-off and siltation.	
XVI	Plantation shall be raised in an area of 384.44 h.	photograph of same is attached in Annexure-X.
I	including a 7.5m wide green belt in the safety zon	The plantation programme is being carried out as par the
	around the mining lease, backfilled and reclaimed	e approved Mining Plan & Progressive Mine Closure Plan same
	area, around the higher benches of excavated voice	a las that was envisaged in the EIA report.
	etc. after the completion of opencast mining activity	To, total 59,000 no. of Sapling
	by planting the native species in consultation with	and the in the Mining lease
	the local Dru/Agriculture Department. The density	and 5 ha in the Additional area of 100 ha allotted for
	of the trees should be around 2500 plants per ha.	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
		unrough ISRDS (Tata Steel rural Development Society)
		rul tiler, 6000 nos. of fruit bearing sapling were planted in the
	1	interested villagers nearby (Kansa, Chingudinal, Gauramia)
		Also a 7.5m wide greenbelt in the safety zone around the
		mining lease, backfilled and reclaimed area is being
XIX	Effective safeguard measures such as regular water	manitamed.
	sprinkling shall be carried out in critical areas prope	tentor appinishing the state of
	to air pollution and having high levels of SPM and	ota is being on haul road, transfer points, Ore stack yard,
	KPM such as haul road, loading and unloading point	grading all the health graders have been procured for
	and transfer points. It shall be ensured that the	Nine water and 11 (c. c.)
	Ambient Air Quality parameters conform to the	one 10 KL and one 8 KL) have been deployed in the mine area
	norms prescribed by the Central Pollution Control Board in this regard	for dust suppression on haul road and at mineral storage
	Board in this regard	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. Fixed sprinkler, about a length of
		1.5 Km, is installed in mining road. Photograph showing the
		installed stationary water sprinkling system is enclosed as Annexure-V.
		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,
- 1		discharge chute to prevent dust generation. The process at
	27	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. All parameter w.r.t
,	M.	ambient air quality is complying with the prescribed limit. Air quality reports are attached as Annexure-VI .
X	Mine water discharge and/or any waste water shall	The new ETP equipped with state – of the art technology and
	be properly treated in an ETP/s for the removal of	with automated dozing and online dozing had been
	hexavalent chromium and to meet the prescribed	commissioned. This is having capacity of 4500 KI / hour and
	standards before reuse/discharge. The run off from	is more than sufficient enough to treat the total effluents from
	OB dumps and other surface run off shall be analyzed for hexavalent chrome and in case its	the filme even during the peak monsoon period
	concentration is found higher than the permissible	This ETP is equipped with automated dosing system
	limit, the waste water should be treated before	cial mocculator, and flash mixture, dry sludge collection
	discharge/reuse.	system, multi-bed hitration system etc to ensure more
		effective treatment of surface funoff 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. 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

SI	Condition	Compliance
		Compliance Annexure-XIII. Water samples are tested at our own laboratory on data to the complex tested at our own laboratory on the complex tested at our own laboratory on data to the complex tested at our own laboratory on the complex tested at our own laboratory of the complex tested at our own lab
		are drawn and tested by OSPCB accredited 3rd party weekly & monthly basis and records are being maintained.
		Further, company has also commissioned one Her Treatment Plant in the COB Plant since 2007-08 for to company the content of the chrome concentration.
		Some of its related processes have been patented a Company has also won DSIR National Award for the same Photographs showing herbal treatment plant are attached
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 thicken Thickener increases the settling rate of particles th producing clarified water which is re-circulated to the plan Thickener's discharge is fed to Tailings Dewatering Plant
		Tailing pond. Clarified water from the tailing pond & cle 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 unat the COB Plant to recover the water from the tailings are then tailings are disposed in the form of dry cake in safe are environment friendly manner. Photograph showing the samis enclosed as Annexure-XV .
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 Damsa Nallah is being carried out once in a month and record monitoring data is maintained and submitted to Stat Pollution Control Board on monthly basis. Analysis report for the period Apr'17 to Sep'17 is enclosed as Annexure-XVI . In addition to the above, installation of online monitoring facility for the pH, TSS & Cr+6 parameters at our intake point of Damsala Nala has been completed on 2nd December' 201 and monitoring data is being transmitted to SPCR. Odicha
XII	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 new ETPs before discharging it out of our lease. Further, the new ETP with higher capacity is in operation having the facilities like, settling pit, flash mixture, clarrifocculator, 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 new ETF shall continue to be analysed at regular interval to confirm the CPCB standards before releasing the same to outside. In addition to this, real time online monitoring system has been installed at outlet side of this new ETP. It continuously monitor parameters like pH. TSS, flow and Cr+6
	of requisite quantity of surface water for the project.	from Damsala nalla for domestic uses vide our letter no. FAMD/ L&L/56-4/2012, dated 28.07.2012, Agreement for drawl of 2100 cum of surface water from Damsala Nalla has been signed with Executive Engineer Jaroka Unicetical
	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	Division in December'15 for a period of three years. 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 a ready started at GM office building which is fully functional. Photograph showing the

SI	Condition	Compliance
		same is enclosed as Annexure-VII.
		Further, feasibility study has been carried out for possibly water harvesting in the periphery through KRG Foundation
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 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 appropriate the control of the proposed to the prop
XXV	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 properties of blast area is used controlled blasting method practiced here to reduce back break. Both, SME and NONE blasting are being practiced to reduce huge inventory in the magazine house and control ground vibration, respectively Further, Blast Vibration study is conducted through CIMFF Dhanbad on quarterly basis and recommendation thereof
XXV	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. Prewetting 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.
	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. Consent to operate shall be obtained from State	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.
_ I	oroduction 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.
0	and wastewater generated during mining operation.	Domestic effluent of the township is treated at Sewage Treatment Plant constructed as treated water is being reused for 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-XVII . 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.
		Similarly, mine water is also being treated in the ETP and is et out beyond the lease area which finds way into a small

SI	Condition	Compliance
		drain. From the inference of the recent data for the period Apr'17 to Sep'17 (Annexure-XVIII), it is evident that the outlet 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. Company has installed the new ETP of 4500 m3/hr 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
XXX	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.	standards before releasing the same to outside. Digital processing of the entire lease area using remote sensing technique was carried out for baseline information of land use pattern and the report was submitted to Ministry of Environment, Forests & Climate Change and its Regional Office, Bhubaneswar vide letter no. SCM/MPP/39/16 dated 24.11.2016.
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 is being carried out and records are being maintained. The ambient air quality report is attached as Annexure-VI. Report of mineralogical composition of particulate matter is attached as Annexure-III
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. 56 nos. persons were covered under PME during year 2016-17. 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. The health surveillance program was carried out for both permanent and contractual employees for the period 2000 to 2011 in which 994 permanent and 744 contractual employees were examined. The chromium level in the blood
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	samples of all the employees was found to be normal. We have deposited Rs 81,20,000/- vide DD No 111682 dated 21.07.2009 and differential cost of Rs 24,36,000/- through RTGS dated 7.03.2014 respectively in the State Specific CAMPA account towards the cost of Wildlife Management Plan for implementation of Regional Wildlife Management Plan. Further, Site 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. We have deposited Rs 6,86,86,240/-in RTGS Mode in State Specific CAMPA Fund towards contribution for Site Specific Wildlife Conservation

SI	Condition	Compliance			
		Plan on 7.12.2015. All the precaution by State Forest Department and approval of Site Specific Wild Life Condensed to	laid down	during the	
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.	As per MMDR Amendment Act 2015, the lease is expiring on			
. Ge	neral Conditions:				
I II	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 to working proposed be made beyond EC obtained. Prior approval from sought in case of change in scope of v	the scope of the Ministry vorking in futi	the present would be are.	
1	The calendar plan including excavation, quantum of chrome ore, beneficiated chrome concentrates, pyroxenite ore and waste shall not be exceeded.	During the year 2016-17 (Apr 16 to quantum of chrome ore, beneficiate (OB) has not exceeded the approvapproved mining plan. Details are given was no production from pyroxenite of	Mar'17) total d chrome ore red quantity ren in table be	excavation, and waste	
		Table IV: Excavation Approved Quantity Vs. Actual			
		Compliance for the year 2016-17			
			Plan	Actual	
		Total Excavation (Lakh cum)	60.39	56.23	
	* .	Chrome Ore ROM (MT) Waste Generation (Lakh cum)	1800000	1640004	
		Beneficiated chrome concentrate (MT)	54.42 528000	41.88 332692	
		Underground I	Mining		
		Total Excavation (Lakh Cum)	0	0	
		Chrome ore ROM (MT)	0	0	
		Waste Generation (Lakh Cum)	0	0	
		 * Target as per approved Mining mining is yet to start. 	Plan. The u	ındergrour	
	Phylogen at the state of the st	Six air quality monitoring stations (fo in residential area and one in hospital been set up within the mine lease are quality is being conducted twice in a lines. Likewise quarterly monitoring i locations. PM10, PM2.5, SO2,NOx, CO benzo(a) Pyrene, Arsenic & Nickel quality were being monitored. We have quality monitoring as per recent Gaze dated 16.11.2009. The data on ambiguous as well as buffer zone for the preveal that all the parameters are standards (Annexure-VI).	l i.e. sensitive a. Monitoring week as per C s done in 10 b , O3, Pb, NH3 parameters in ave started an ette Notification ent air quality	area) had g of the air PCB guide uffer zone, Benzene, in the air mbient air on 826(E), ty of core	

SI	Condition	Compliance	
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 be in work zone and in ambient. The data on noise level for period Apr'17 to Sept'17 indicate that the values of no levels are within the prescribed limits. To limit exposure noise level of 85 dBA, due precautions at source and at receiver end are being taken adequately. Wherever possithe noise is controlled at the source by replacement metallic screens by rubber screens & polyurethane panels at Chrome Ore Beneficiation and Lumpy Ore Processing pla DG sets have also been provided with acoustic enclosures prevent noise propagation.	r the noise re of t the sible t of s etc
		The operator's cabin of all the HEMM's including drills a dozers has been made air conditioned which serves acoustic barriers. Controlled blasting technique like prespiblasting, use of Nonel and SME (Site Mixed Emulsion) is bei followed as per CIMFR, Dhanbad's recommendati 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 his	s as split eing tion ver, with
		noise. Regular test of all the vehicles is being carried out check whether the vehicles are meeting pollution und control (PUC) norms. The K factor for all the vehicles is <0.3 Noise monitoring for the period Apr'17 to Sept'17 is attach as Annexure-XIX.	der
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 the producing clarified water which is re-circulated to the plant. Thickener's discharge is fed to Tailings Dewatering Plant at Tailing pond. Clarified water from the tailing pond & clewater produced from the dewatering plant is re-circulate back to the COB plant. Photographs are attached Annexure-XV.	hus ant. and lear
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	the the
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 on once in three years for those employees who have reached 4 years of age or more. As of now, no occupational disease have been reported till date. 56 Nos. persons were covered under PME during year 2016-17. To improve the occupational health and removing the safety hazards a industrial workplace, 3 ACT (Advice, Connect & Transform teams have been made under 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	ion ent out 45 ses red the at em) ace oth to ual
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.	blood samples of all the employees is found to be normal. The Environmental Management Cell is being headed by th Head (Mine and Production Planning) and is supported b Senior Manager(Mine Planning & Environment), Manage (Environment), Environmental Supervisor and Chemists. Th Head (MPP) is directly reporting to the GM, Operations of the	the by ger

SI	Condition	Com	pliance			
	The funds commonly of for	Divis of en integ has b	ion. Roles, responsibility nvironmental cell's emp rated management syste een made.	loyees ha m and pr	oper comr	defined nunicatio
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.	prote purpo exper	rate budgetary provisions oction measures every years ose for the year 2017-18 aditure done during the year	ar. Funds . Plan e	earmarke enenditure	d for th
	once located at Blidbaneswar.	No.	Item		Plan (Lakh)	Actua (Lakh
		1	Afforestation		84.19	75.5
	*	2	Dust suppression		180	184.5
		3	Treatment of mine discreecycling		55.00	65.00
		4	Environment & weather exhaust monitoring	٠,	49.63	49.63
		5	Horticulture developme	nt	54.97	51
		6	Drinking water supply		35.00	34.50
		7	STP Operation & Mainte	nance	6.84	6.84
		8	Sanitation		51.00	50.00
		9	Herbal Treatment		5.00	5.00
		10	Malaria Eradication		7.00	7.00
			Garland drain & storm w drain	ater	2.50	2.69
		12	Family planning		1.00	00
		13	Slime dam management		10.00	10.50
		14	Environment awareness	(EMS)	10.00	13.00
		15	Community developmen through TSRDS		455.28	464.7
		16	Hazardous waste manag	ement	21.5	6.00
		17	Bio medical waste Total		4.00	3.00
	The project authorities should inform to the	As per	MMDR Amendment Act	2015 the	1032.91	1028.9
	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.	2017, year point of the after sidevelop final mine before	ar, 2020. Further in according the final mine closure plation to the expiry of least losure plan in respect of circles approval and copy of Ministry of Environment ubsequent approval. Nepment activity for closure ine closure plan would be commencement of the accommencement of the according to t	dance to the can is liable. Hence the cour mine the same the same to be considered as the case of the	he Rule 24 le for subn we will su by 31st Mar e shall be & Climate ntimation on as per a d to Region	of MCDI nission 2 bmit the , 2018 to provided Change for land pproved
	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) of the Regional Office by furnishing the requisite data/information/monitoring reports. The project propogent shall sale in the project authorities should extend full sale in the project authorities sa	The mine management will always extend full cooperation to officer(s) of Regional office by furnishing the requisite data/				
10 miles 10 miles	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	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 in both hard copy as well as soft copy.				

SI	Condition	Compliance
	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.	Last EC compliance was submitted vide letter no SCM/ENV/012/022/17 dated 31.05.2017. We are also uploading the same on our website www.tatasteelindia.com The snapshot of the site is attached as Annexure-XX
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, where 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 XXI. 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-XXII.
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-XXIII. Environment Statement for the year 2016-17 was submitted vide letter no. SCM / ENV/ 002 / 044 / 17 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 should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	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 is enclosed as Annexure-XXIV.

Date: 29th Nov'2017

Manager Sukinda Chromite Mine