O/C

BALASORE ALLOYS LIMITED

ISPAT

CIN-L27101OR1984PLC001354

BAL/Mines/MoEF & CC/4571 Date: 17.11.2017

The Director (S),
Ministry of Environment Forests & Climate Changes
Eastern Regional office,A/3, Chandrasekharpur,
BHUBANESWAR – 751023

Sub: Six-monthly Compliance Report of conditions of Environment Clearance Vide no No. J-11015/139/2012-IA.II (M) dated 22.08.2014 with respect to Kaliapani Chromite Mines of M/s- Balasore Alloys Ltd for the period of April- September,2017.

Ref: Environment Clearance No. J-11015/139/2012-IA.II (M) dated 22.08.2014

Dear Sir,

We are herewith enclosed the compliance report on the status of the conditions stipulated in the Environmental Clearance Vide No. J-11015/139/2012-IA.II (M) dated 22.08.2014 for the period of April- September,2017 with respect to our Kaliapani Chromite Mines, M/s Balasore Alloys Ltd (ML area 64.463 ha) for your kind perusal.

Thanking you,

Yours faithfully,
For M/s Balasore Alloys Ltd

Received 21/11/17

GOVT OF INDIA
MoEF & CC, Eastern R.O.
Bhubaneswar-751023
21 NOV 2017
RECEIVED

S.P.C.B. BOARD
BHUBANESWAR-12
21 NOV 2017

Swarup Panda
Sr. Vice President (Corporate Affairs)
Encl: As above
Copy to:

1. The Member Secretary, State Pollution Control Board,Paribesh Bhawan A/118 Nilakantha Nagar Unit-VIII,Bhubaneswar -751012.

2. Shri R. C Saxena(Scientist'E' & Incharge) ,Central Pollution Control Board, Southemd Conclave,1582,Raidanga Main Road, Kolkata-700107.

Report on

"Status of Compliance to Conditions Stipulated by MoEF &CC in Environmental Clearance Order Vide No J-11015/139/2012-IA.II (M) dated 22.08.2014 in Respect of Kaliapani Chromite Mines."

(ML Area 64.463ha)"

(***Period April, 2017-September, 2017***)

Submitted to:

- Ministry Of Environment, Forest and Climate Changes Regional Office (EZ) A/3 ,Chadrasekharpur, Bhubaneswar, Odisha.

- The Member Secretary, State Pollution Control Board,Paribesh Bhawan A/118 Nilakantha Nagar Unit-VIII,Bhubaneswar -751012.

- Shri R. C Saxena(Scientist'E' & Incharge) ,Central Pollution Control Board, Southemd Conclave,1582,Raidanga Main Road, Kolkata-700107.

Submitted By:

Kaliapani Chromite Mines

M/s Balasore Alloys Ltd

At/Po: Kaliapani,Dist Jajpur,Odihsa

Status of compliance of conditions stipulated by MoEF in Environment Clearance no.- No. J-11015/139/2012-IA.II (M) dated 22.08.2014 of Kaliapani Chromite Mine of M/s Balasore Alloys Ltd as on 30.9.2017

……

A. Specific Conditions		
Condition No	**Condition**	**Compliance**
i	Mining shall not commence without necessary permissions for drawl of water and intersection of ground water table	Permission has been obtained for drawl of water and intersection of ground water table during mining activities from Central Ground Water Authority, Govt. Of India ,Ministry Of Water Resource, vide CGWA/NOC/MIN/ORIG/2015/2122 Dated 10.12.2015 , for quantity of ground water drawl 3293 m^3/Day (3188 m^3/Day from Mine Dewater & 105 m^3/Day from Bore well). Copy of the same is attached as **Annexure-I.**
ii	Mitigation measures such as well-designed ventilation network within underground mine, provision of Personal Protective Equipment should be ensured and necessary training and awareness programs for mine workers should be undertaken	Underground mining has not been started yet, however Ventilation fan shall be provided within underground mine in order to control the air pollution during same. Necessary PPEs viz helmet, Dust mask etc is being/shall be provided to the employees. Training and awareness programme for mine worker regarding health Safety and Environment is going on regular basis and shall be continued.
iii	**Continuous monitoring of Mine water should be done and reports furnished**	Mine water from mine pit is channelized to up graded ETP designed as per the recommendation of IIT, Kharagpur for proper treatment, continuous monitoring of quality and quantity of Mine water (viz parameters pH, TSS, Cr+6, Flow Rate) is going on through online monitoring system installed at ETP Outlet and Inlet as per the Guidelines by CPCB for Real-time Effluent Quality Monitoring System. The monitoring data also transferred to OSPCB website through Real data Acquisition System. The data downloaded from OSPCB website for the period of April-Sept, 2017 is attached **Annexure-II.**
iv	**Continuous monitoring of all drinking water sources for Cr(VI) of Mine water should be done and reports furnished**	Monitoring of drinking water sources at six different locations including mines are being done on monthly basis and report submitted to State Pollution Control Board. The analysis report of the period of April, 2017 to September, 2017 is attached as **Annexure-III.**
v	**Morbidity pattern which is a**	A study on morbidity pattern has been done by

	sensitive indicator of ill health with regard to Cr related diseases need to be done.	engaging Asian Institute of Public Health, Bhubaneswar with overall aim to create baseline data base on current status of occupational health risks especially morbidity pattern with regard to Chromium and air born dust associated with the facility & identify unhealthy behavior of exposures. The findings of assessment show that, problems with vision (28%), Breathlessness (22%), Headache (22%) are the major contributors towards the current morbidity conditions. Hence it is hereby concluded that, there is no definite pattern/figure to be mentioned as the key indicator of the morbidity resulting from chrome related exposure rather it indicate that the pattern of morbidity follows the general trend of villages or urban areas elsewhere. Based upon the outcome of result, action is being taken.
vi	**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 runoff 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.**	Mine water discharge is channelized to Effluent Treatment Plant present at mines to remove the Cr+6 and some of treated water are used for Dust Suppression, Plantation, COBP and rest discharged outside. Regular monitoring of treated water is going on through Online analyzer and report transferred to OSPCB website through RTDAS . The Run-off from OB dumps and other surface run off are properly collected through garland drains, settling pond & channelized to ETP by pump & pipeline facility for proper treatment before discharge to outside. Run off from OB dumps and other surface run-off are being analyzed on fortnightly basis during monsoon period. Report of the surface runoff analysis for last rainy season and photos showing channelization of same attached **Annexure-IV.**
vii	**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**	Consent to establish has obtained from SPCB,Odisha vide letter No. 18196/ IND-II-NOC-5723 dated 08.10.2013 & subsequently Consent to Operate has obtained from SPCB,Odisha vide letter No. 15398/ IND-I-CON-2576 dated 20.10.2016 valid upto 31.3.2018. Copy of the same are attached as **Annexure- V &VI respectively.** All the conditions stipulated in Consent to

		Establish and Consent to Operate are effectively implemented and compliance being submitted to State Pollution Control Board, Odisha
viii	**Traffic density on the route of mineral transportation shall be regularly monitored and report shall be submitted along with compliance report.**	Traffic density is being monitored on the route of mineral transportation at three locations and the monitoring report is attached as **Annexure-VII**.
i x	**As part of ambient air quality monitoring during operational phase of the project, the air samples shall also be analysed for their mineralogical composition and records maintained**	The ambient air quality is being monitored at six locations of core and buffer zone of the lease area. The air samples are being analysed for all the 12 parameters as per CPCB guideline engaging third party and data recorded. The analysis report of the same is attached as **Annexure-VIII**
x	**Mineral handling plant shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated**	There is no crusher and screening Plant running at mines. Mineral handling plant in the form of chrome ore beneficiation is in operation and working in wet process. However water sprinkling is going on through fixed sprinkler inside COB area and through water tankers at loading and unloading points including transfer points regularly to control the generation of dust.
xi	**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.**	Regular water sprinkling has been going on engaging two nos of water tankers of 12 KL capacity at critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point, transfer points, haul road & stack area etc. Fixed type of sprinklers also installed at Strategic area viz. COB plant, haul road to arrest the fugitive dust. Ambient air quality monitoring is being done by establishing 6 ambient air monitoring stations in core and buffer zone of the lease area. The analysis result of all the parameters conform to the norms prescribed by the Central Pollution Control Board. The monitoring data for the period April,2017 to September,2017 is attached as **Annexure-VIII.** Photos showing dust Suppression system t mines is attached as **Annexure-IX**
xii	**The project authority shall implement suitable conservation measures to augment ground**	Rooftop rain water harvesting structure has implemented to augment ground water resources in the area in consultation with the Regional

	water resources in the area in consultation with the Regional Director, Central Ground Water Board	Director, Central Ground Water Board and construction of another structure is in process.  
xiii	**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 piezo meters 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 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.**	Regular monitoring of ground water level & quality has been monitored on quarterly basis at core and buffer zone at six different locations & data has been sent 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 on regular basis. We have installed four nos of Piezometers inside Core Zone and One piezometric at Vimtanger village to measure the ground water level. Monitoring report reveals that there is no significant impact on ground water table due to mining activity. Report of Ground water level and quality attached as **Annexure- X & XI** respectively.
xiv	**The project proponent shall regularly monitor the flow rate of the natural water streams flowing adjacent to the mine lease and maintain the records**	The flow rate of Damsala Nallah is being regularly monitored at both upstream and downstream on quarterly basis and record has maintained. The monitoring report of same attached as **Annexure-XII**

xv	**The reclaimed and rehabilitated area shall be afforested. 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**	37100 Sqm area of dump slope has been covered by Geotextile and 16550 Sqm area covered with grass turffing & 78540 nos of saplings planted at dump slope , roadside in side ML area since 2010-11. The details of the same are attached as Annexure-XIII**.** Regular Monitoring and management of rehabilitated areas is being done. Six monthly report of the same is being submitted to respective authority regularly. **Photo of Plantation, coirmatting & Grass turffing is given as Annexure-XIV.**
xvi	**Dimension of the retaining wall at the toe of temporary over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data**	Dimension of the retaining wall at the toe of temporary over burden dumps and OB benches within the mine to check run-off and siltation are based on the rain fall data. The details of the structures dump wise are attached as **Annexure XV**.
xvii	**Plantation shall be raised in an area of 36.156 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 to be converted in to water body, roads etc. 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.**	Year wise plantation programme is being undertaken on dump slopes and safety zone area. The details of the plantation year wise is given as **Annexure-XIII** .The density of trees planted is around 3000 nos/ha. Presently only one quarry is in operation, hence all measures as per the condition will be undertaken at the cessation of the quarry operations
xviii	**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**	Regular water sprinkling is being done by deploying two no 12 KL mobile water tanker in critical areas prone to air pollution and having high levels of SPM & RPM such as loading and unloading point, transfer points, haul road & stack area etc. Fixed type of sprinklers also installed near COB plant to arrest the fugitive dust.

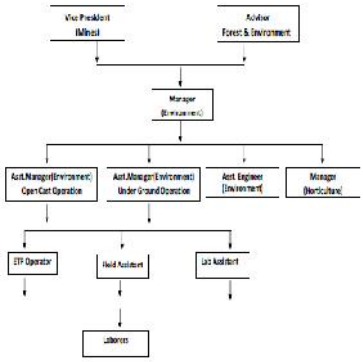
	the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Ambient air quality monitoring is being done by establishing 6 ambient air monitoring stations in core and buffer zone of the lease area. The analysis result of all the parameters conforms to the norms prescribed by the Central Pollution Control Board. The monitoring data for the period April, 2017 to Sept,2017 is attached as **Annexure-VIII**..
xix	**Process water discharge and/or any waste water shall be properly treated to meet the prescribed standards before reuse/discharge. The runoff from temporary OB dumps and other surface run off shall be analyzed for iron and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.**	**Process** water in COB plant is completely reused and the treated water from the ETP is used as make-up quantity. However the quantity of water dewatered from mine pit is properly treated through an up graded Effluent Treatment Plant of capacity 445KL/Hr established with the recommendation of IIT, Kharagpur. The treated water has been monitored regularly and meeting the prescribed standards before reuse/discharge. Run off from OB dumps and other surface run-off are being analyzed on fortnightly basis during monsoon period at two different stations inside ML area with the analysis of the iron concentration in surface run-off. However channelization of all surface run-off water to ETP for proper treatment is made through settling pit and pumping arrangement. Report of the surface runoff analysis of last monsoon (April-Septmber,2017) is attached as **Annexure-IV..**
xx	**.The decanted water from the beneficiation plant and slime/tailing pond shall be re circulated within the mine and there shall be zero discharge from the mine.**	Total decanted water from the beneficiation plant & tailing/slime pond is reused in COB plant; hence no discharge of decanted effluents from the same
xxi	**Regular monitoring of the flow rate of the springs and perennial nallahs shall be carried out and records maintained.**	The flow rate of Damsala Nallah is being regularly monitored and record has maintained. The flow rate in monsoon period is attached as **Annexure-XII**.

xxii	**Regular monitoring of water quality, upstream and downstream of natural water bodies shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.**	Monitoring of water quality, upstream and downstream of natural water bodies i.e Damsala Nallah is being carried out on quarterly basis and report submitted to Ministry of Environment and Forests & CC Regional Office, Bhubaneswar, Central Ground Water Board & State Pollution Control Board on regular basis. The report of same attached **Annexure-XV**.
xxiii	**Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.**	Rooftop rain water harvesting structure has implemented to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board. **. Another Roof**-top rain water harvesting structure construction proposal is in progress.
xxiv	**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 be covered with a tarpaulin and shall not be overloaded.**	Periodical maintenance of the vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant is being ensured. Regular monitoring of vehicular emission also being done . For outside trucks carrying mineral from mine to plant are ensured valid Pollution Under Control Certificate. The transporting trucks are being covered with tarpaulin and are allowed to take only the prescribed load i.e. below 10.5 Ton. Copy of Vehicular emission report and photographs showing vehicles covered with tarpaulin are attached **Annexure-XVI**.
xxv	**Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.**	We have no colony within the lease area. However for the treatment of the canteen waste water and organic waste STP of 40 KLD capacity is installed at site . The waste water generated during mining operation is properly treated through an up graded Effluent Treatment Plant of capacity 445

		KL/Hr established with the recommendation of IIT, Kharagpur. The treated water has been monitored on daily basis and meeting the prescribed standards before reuse/discharge. The waste water source of workshop is alo channelized to ETP for treatment.
xxvi	**xxii. 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 is beng carried out for monitoring land use pattern . the prepared map is attached as **Annexure-XVII.**
xxvii	**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.**	Pre-placement medical examination and periodical medical examination of the workers engaged in the project is being carried out and records maintained. During 2016-17 IME done for 346 employee and 238 PME done.
xxviii	**The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost.**	Site Specific Wildlife Conservation Plan has been prepared and approved by PCCF(WL) & Chief Wild Life warden ,Odisha Vide Memo 8478/1WL(C)-SSP-425/2014 Dated 7th Nove-2014 and amount of Rs 1,89,36,000/- towards implementation of Site Specific Conservation Plan including cost of vehicle to be provided against demand note from DFO, Cuttack vide no 443 dated 21st January,2015 has been deposited in favor of Ad-hoc Body of Compensatory Afforestation Fund Management and Planning Authority(CAMPA) through RTGS No.SBINR52170022300051075724059 ORISSA CAMPA on 23.02.2017 . Rs 64.82 lakh has been earmarked for carrying out Interventions inside ML area as per approved Site

	All the safeguard measures brought out in the Wildlife Conservation Pan so prepared specific to the project site shall be effectively implemented. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	Specific Wildlife Conservation Plan. The proposed interventions have been carrying out and status being submitted to State Forest department. The details of payments made attached as **Annexure-XVIII.**
xxix	**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.**	Final Mine Closure Plan will be submitted to the ministry 5 years before the anticipated final mine closure.
xxx	**The project proponent shall undertake all the commitments made during the public hearing and effectively address the concerns raised by the locals in the public hearing as well as during consideration of the project, while implementing the project.**	All the commitments made during public hearing are being undertaken by incorporating in the CSR activities. There was expenditure of Rs 926128 incurred during April,2017 to September,2017 toward various activities under CSR **.** The details of CSR activities during April-Sept, 2017 is attached as **Annexure-XIX.**
B.General Conditions		
i	**No change in Chrome Ore Processing/Beneficiation technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.**	Chrome ore Mining method practiced in the project is both opencast & underground fully mechanized. There is/will be no change in Chrome Ore Processing/Beneficiation technology and scope of working shall be made without prior approval of the Ministry of Environment & Forests
ii	**No change in the calendar plan including Processing/Beneficiation of mineral chrome ore and waste should be made.** .	No change in the calendar plan including Processing/Beneficiation of mineral chrome ore and waste shall be made
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**	Air quality monitoring for the parameters viz PM10,PM2.5, SO_2 , NOx,CO,NH_3 &O_3 are being done by establishing 6 ambient air monitoring stations on the basis of meteorological data,

	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.	topographical features after consultation with SPCB in the core & Buffer zone. The data so recorded is being 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.
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.**	Maintenance of all HeMM are being carried out on regular basis to suppress the Noise generation**.** Regular monitoring is being carried out for noise level in the work environment. Ear plugs / muffs are provided to all workers engaged in operations of HEMM etc. Noise level monitoring results attached as **Annexure-XX**.
v	**There will be zero waste water discharge from the plant.**	Total decanted water from the beneficiation plant & tailing/slime pond is reused in COB plant; hence there is zero waste water discharge from the plant.
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.**	Personal protective equipments are being provided to all workers respective to the nature of the job. Initial and periodical awareness training is being imparted to all workers in the Company's Vocational Training Centre located within the lease area on Safety and Health Aspects. Periodical health check up as per DGMS guideline is being carried out for all employees .
vii	**Occupational health surveillance program of the workers should be undertaken periodically to observe**	Pre-placement medical examination and periodical medical examination of the workers engaged in the project is being carried out and

	any contractions due to exposure to dust and take corrective measures, if needed.	records maintained for corrective measures
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.**	A separate Environment management cell under the control of President (Mines) has been set up. Organizational Chart of Environmental Management Cell is given below 
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.**	Separate fund is being earmarked for environmental protection measures. Year wise Expenditure also been reported to Regional Office, MoEF,BBSR. The detail of the expenditure is attached **Annexure -XXI..**
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.**	This is an ongoing project since Sept' 2000.
xi	**The Regional Office of this**	We are abide by the condition and shall extend

	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.	full cooperation to the officer(s) of regional office by furnishing the requisite data / information/monitoring reports during their monitoring of compliance of the stipulated conditions.
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 compliance report is being submitted 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 status of compliance of the environmental clearance conditions, including results of monitored data is uploaded on company website periodically.
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**	Copy of the clearance letter has been sent to concerned Panchayat. The clearance letter also been uploaded on the website of the Company. The URL for the same is **http://www.balasorealloys.com/webpage.php?title=Environment+Policy&p_type=1&parent=36&catid=78**.

	also be put on the website of the Company by the proponent.	
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.**	Agreed.
xv	**The environmental statement for each financial year ending 31st 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 environmental statement for each financial year ending 31st March in Form-V is being submitted to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, also uploaded on the website of the company along with the status of compliance of environmental clearance conditions and also sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail. The copy of the last environmental statement for financial year ending 31st March 2016-17 is attached as **Annexure- XXII.**
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**	The clearance letter informing that the project has been accorded environmental clearance is advertised in "The Sambad" (Odia daily) & The Pioneer (English daily) newspaper, the copy of which is shown below.

	and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	

सत्यमेव जयते

भारत सरकार
केन्द्रीय भूमि जल प्राधिकरण
जल संसाधन, नदी विकास
और गंगा संरक्षण मंत्रालय

SUPERINTENDING HYDROGEOLOGIST

Government of India
Central Ground Water Authority
Ministry of Water Resources,
River Development & Ganga Rejuvenation

File No:- 21-4/819/OR/MIN/2015- 1835

NOC No:- CGWA/NOC/MIN/ORIG/2015/2122

Dated: - 10/12/2015

10 DEC 2015

To,

Sr.Vice President (Mines),
Kaliapani Chromite Mines,
M/s Balasore Alloys Ltd., Po- Kaliapani,
Sub-District Sukinda, District Jajapur,
State Odisha,
Pincode - 755047

Sub:- NOC for ground water withdrawal to M/s Balasore Alloys Ltd., in respect of their Kaliapani Chromite Mine located at Village Kaliapani (CT), Sub-District Sukinda, District Jajapur, State Odisha – reg.

Refer to your application on the above cited subject. Based on recommendations of Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar vide their recommendations dated 13/10/2015 and further deliberations on the subject, the NOC of Central Ground Water Authority is hereby accorded to **M/s Balasore Alloys Ltd., in respect of their Kaliapani Chromite Mine located at Village Kaliapani (CT), Sub-District Sukinda, District Jajapur, State Odisha.** The NOC is, however subject to the following conditions:-

1. The firm may abstract **105.00 cu.m/day** of ground water though **1** proposed borewell and **3188.00 cu.m/day** through dewatering the mine seepage on account of mining intersecting the water table. The total withdrawal should not exceed **3293.00 cu.m/day** (not exceeding **1201945.00 cu.m/year**). No additional dewatering and no additional ground water abstraction structures to be constructed for this purpose without prior approval of the CGWA.
2. The dewatering structure as well borewell to be fitted with water meter by the firm at its own cost and monitoring of ground water abstraction to be under taken accordingly on regular basis, at least once in a month. The ground water quality to be monitored twice in a year during pre- monsoon and post- monsoon periods.
3. **M/s Balasore Alloys Ltd.**, shall in consultation with the Regional Director, Central Ground Water Board South Eastern Region, Bhubaneswar, implement ground water recharge measures atleast to the tune of **41,050 m^3/year** as proposed for augmenting the ground water resources of the area within six months from the date of issue of this letter. Treated water from ETP shall not be used for ground water recharge.
4. The photographs of the recharge structures after completion of the same are to be

furnished immediately to the Regional Director, Central Ground Water Board, South Eastern Region, Bhubaneswar for verification and under intimation to this office.
5. The firm at its own cost shall install piezometer with automatic water level recorder at suitable location and execute ground water regime monitoring programme in and around the project area on regular basis in consultation with the Central Ground Water Board South Eastern Region, Bhubaneswar.
6. The ground water abstraction and monitoring data in respect of S. No. 2 & 5 to be submitted to Central Ground Water Board, South Eastern Region, Bhubaneswar on regular basis at least once in a year.
7. The firm shall ensure proper recycling and reuse of waste water after adequate treatment.
8. Action taken report in respect of S. No. 1 to 7 may be submitted to CGWA within one year period.
9. The permission is liable to be cancelled in case of non-compliance of any of the conditions as mentioned in S. No. 1 to 8.
10. This NOC is subject to prevailing Central/State Government rules/laws or Court orders related to construction of tubewell/ ground water withdrawal/ construction of recharge or conservation structures/ discharge of effluents or any such matter as applicable.
11. This NOC does not absolve the applicant / proponent of his obligation / requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.
12. The NOC does not imply that other statutory / administrative clearances shall be granted to the project by the concerned authorities. Such authorities would consider the project on merits and be taking decisions independently of the NOC. .
13. This NOC is valid till 09/12/2017.

10.12.15

Superintending Hydrogeologist

Copy to:
1. The Director, Ministry of Environment and Forests (I. A. Division), Paryavaran Bhawan, CGO Complex, Lodhi Road, New Delhi-110003.
2. The Member Secretary, State Pollution Control Board, Orissa, Parivesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar, Orissa-751012.
3. The Regional Director, Central Ground Water Board South Eastern Region, Bhubaneswar. This has reference to your recommendation dated 13/10/2015.
4. The District Collector, District Jajapur, State Odisha.
5. TS to the Chairman, Central Ground Water Board, Bhujal Bhawan, Faridabad, Haryana.
6. Guard File 2015-16.

Superintending Hydrogeologist

Station Id.	Location
EQMS-1	INLET STATION
EQMS-2	OUTLET STATION

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
01/04/2017	EQMS-1	Avg: 0.724 Min: 0.000 Max: 1.460	Avg: 139.746 Min: 1.350 Max: 376.500	Avg: 8.090 Min: 8.030 Max: 8.130	Avg: 193.709 Min: 191.190 Max: 199.060
01/04/2017	EQMS-2	Avg: 0.010 Min: 0.000 Max: 0.020	Avg: 223.069 Min: 15.100 Max: 416.280	Avg: 7.469 Min: 7.290 Max: 7.670	Avg: 34.522 Min: 32.560 Max: 36.060
03/04/2017	EQMS-1	Avg: 0.483 Min: 0.000 Max: 1.010	Avg: 253.856 Min: 1.650 Max: 418.050	Avg: 8.132 Min: 8.090 Max: 8.160	Avg: 193.674 Min: 189.660 Max: 211.310
03/04/2017	EQMS-2	Avg: 0.008 Min: 0.000 Max: 0.010	Avg: 235.520 Min: 18.250 Max: 282.850	Avg: 7.653 Min: 7.410 Max: 7.860	Avg: 34.415 Min: 32.560 Max: 36.060
04/04/2017	EQMS-1	Avg: 0.463 Min: 0.000 Max: 1.080	Avg: 106.645 Min: 1.350 Max: 400.350	Avg: 8.156 Min: 8.110 Max: 8.200	Avg: 125.883 Min: 99.530 Max: 192.940
04/04/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.020	Avg: 200.642 Min: 15.330 Max: 303.100	Avg: 7.682 Min: 7.340 Max: 7.930	Avg: 34.530 Min: 33.220 Max: 35.840
05/04/2017	EQMS-1	Avg: 0.490 Min: 0.000 Max: 1.200	Avg: 150.097 Min: 1.350 Max: 437.400	Avg: 7.788 Min: 7.360 Max: 8.200	Avg: 120.520 Min: 100.840 Max: 694.310
05/04/2017	EQMS-2	Avg: 0.010 Min: 0.000 Max: 0.010	Avg: 222.504 Min: 15.330 Max: 309.850	Avg: 7.577 Min: 7.380 Max: 7.810	Avg: 34.599 Min: 33.220 Max: 35.840
06/04/2017	EQMS-1	Avg: 0.643 Min: 0.000 Max: 1.960	Avg: 157.080 Min: 1.350 Max: 432.750	Avg: 7.882 Min: 7.760 Max: 8.290	Avg: 117.141 Min: 80.060 Max: 142.630
06/04/2017	EQMS-2	Avg: 0.010 Min: 0.000 Max: 0.020	Avg: 241.150 Min: 16.560 Max: 282.850	Avg: 7.469 Min: 7.330 Max: 7.810	Avg: 34.640 Min: 33.220 Max: 35.840
07/04/2017	EQMS-1	Avg: 2.025 Min: 0.080 Max: 2.430	Avg: 197.241 Min: 1.500 Max: 437.400	Avg: 8.074 Min: 8.020 Max: 8.120	Avg: 177.190 Min: 138.030 Max: 204.750
07/04/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.010	Avg: 225.193 Min: 15.770 Max: 286.450	Avg: 7.464 Min: 7.370 Max: 7.860	Avg: 34.709 Min: 33.440 Max: 35.840
08/04/2017	EQMS-1	Avg: 2.255 Min: 0.000 Max: 4.290	Avg: 206.256 Min: 1.350 Max: 433.650	Avg: 8.310 Min: 8.060 Max: 9.090	Avg: 328.716 Min: 77.440 Max: 608.560
08/04/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.010	Avg: 239.060 Min: 15.440 Max: 298.600	Avg: 7.588 Min: 7.420 Max: 8.000	Avg: 34.764 Min: 33.660 Max: 36.060
09/04/2017	EQMS-1	Avg: 4.198 Min: 3.860 Max: 4.550	Avg: 240.865 Min: 1.500 Max: 443.700	Avg: 9.475 Min: 9.040 Max: 9.640	Avg: 133.276 Min: 131.250 Max: 138.250
09/04/2017	EQMS-2	Avg: 0.010 Min: 0.010 Max: 0.010	Avg: 220.423 Min: 33.100 Max: 280.260	Avg: 7.539 Min: 7.510 Max: 7.570	Avg: 35.024 Min: 34.530 Max: 35.840
10/04/2017	EQMS-1	Avg: 2.555 Min: 0.000 Max: 4.370	Avg: 69.450 Min: 1.650 Max: 294.450	Avg: 8.809 Min: 8.400 Max: 9.660	Avg: 107.607 Min: 74.590 Max: 131.690
10/04/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.010	Avg: 149.390 Min: 15.770 Max: 284.540	Avg: 7.325 Min: 7.210 Max: 7.460	Avg: 33.825 Min: 32.560 Max: 34.970
11/04/2017	EQMS-1	Avg: 3.020 Min: 0.000 Max: 4.777	Avg: 133.619 Min: 1.500 Max: 445.200	Avg: 8.171 Min: 7.472 Max: 8.890	Avg: 113.664 Min: 49.875 Max: 200.594
11/04/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.014	Avg: 223.820 Min: 0.025 Max: 284.200	Avg: 7.397 Min: 7.230 Max: 7.713	Avg: 34.007 Min: 31.469 Max: 38.250
12/04/2017	EQMS-1	Avg: 1.483 Min: 0.760 Max: 2.208	Avg: 90.524 Min: 1.500 Max: 434.100	Avg: 7.889 Min: 7.807 Max: 7.982	Avg: 52.809 Min: 50.750 Max: 57.312
12/04/2017	EQMS-2	Avg: 0.019 Min: 0.009 Max: 0.035	Avg: 239.011 Min: 0.025 Max: 417.738	Avg: 6.990 Min: 6.840 Max: 7.393	Avg: 42.452 Min: 36.937 Max: 45.906
13/04/2017	EQMS-1	Avg: 1.637 Min: 0.002 Max: 2.629	Avg: 177.377 Min: 1.350 Max: 433.950	Avg: 8.010 Min: 7.789 Max: 8.166	Avg: 66.422 Min: 49.219 Max: 192.937
13/04/2017	EQMS-2	Avg: 0.013 Min: 0.007 Max: 0.025	Avg: 213.084 Min: 15.887 Max: 315.362	Avg: 7.094 Min: 6.943 Max: 7.400	Avg: 45.593 Min: 38.906 Max: 50.281
14/04/2017	EQMS-1	Avg: 1.785 Min: 0.741 Max: 2.595	Avg: 147.234 Min: 1.350 Max: 407.250	Avg: 8.021 Min: 7.950 Max: 8.098	Avg: 57.863 Min: 54.250 Max: 61.688
14/04/2017	EQMS-2	Avg: 0.015 Min: 0.001 Max: 0.029	Avg: 204.339 Min: 17.463 Max: 341.462	Avg: 7.146 Min: 6.334 Max: 7.481	Avg: 45.453 Min: 37.813 Max: 114.156
15/04/2017	EQMS-1	Avg: 1.811 Min: 0.605 Max: 2.524	Avg: 141.973 Min: 1.350 Max: 391.950	Avg: 8.156 Min: 8.076 Max: 8.203	Avg: 55.119 Min: 52.500 Max: 64.531
15/04/2017	EQMS-2	Avg: 0.014 Min: 0.007 Max: 0.025	Avg: 205.825 Min: 15.663 Max: 322.787	Avg: 7.282 Min: 7.102 Max: 7.567	Avg: 39.892 Min: 38.687 Max: 41.313

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
16/04/2017	EQMS-1	Avg: 2.047 Min: 1.712 Max: 2.415	Avg: 174.467 Min: 1.350 Max: 301.200	Avg: 8.252 Min: 8.215 Max: 8.274	Avg: 54.940 Min: 53.813 Max: 60.594
16/04/2017	EQMS-2	Avg: 0.017 Min: 0.011 Max: 0.025	Avg: 190.694 Min: 16.225 Max: 314.238	Avg: 7.250 Min: 7.205 Max: 7.327	Avg: 40.120 Min: 38.687 Max: 41.313
22/04/2017	EQMS-1	Avg: 0.689 Min: 0.106 Max: 1.322	Avg: 149.242 Min: 1.650 Max: 448.950	Avg: 8.141 Min: 8.114 Max: 8.162	Avg: 69.789 Min: 68.250 Max: 72.625
22/04/2017	EQMS-2	Avg: 0.011 Min: 0.007 Max: 0.017	Avg: 194.291 Min: 17.687 Max: 298.600	Avg: 7.624 Min: 7.517 Max: 7.716	Avg: 40.084 Min: 39.125 Max: 41.531
23/04/2017	EQMS-1	Avg: 1.287 Min: 0.931 Max: 1.656	Avg: 223.993 Min: 1.350 Max: 449.850	Avg: 8.092 Min: 7.654 Max: 8.253	Avg: 72.313 Min: 68.250 Max: 85.531
23/04/2017	EQMS-2	Avg: 0.015 Min: 0.008 Max: 0.024	Avg: 211.806 Min: 18.025 Max: 284.425	Avg: 7.417 Min: 7.374 Max: 7.515	Avg: 40.247 Min: 39.125 Max: 41.531
24/04/2017	EQMS-1	Avg: 0.553 Min: 0.054 Max: 1.777	Avg: 437.200 Min: 437.100 Max: 437.400	Avg: 7.773 Min: 7.578 Max: 7.957	Avg: 107.106 Min: 70.000 Max: 442.969
24/04/2017	EQMS-2	Avg: 0.010 Min: 0.006 Max: 0.016	Avg: 176.922 Min: 0.025 Max: 360.025	Avg: 7.729 Min: 7.484 Max: 7.876	Avg: 40.277 Min: 39.125 Max: 41.969
25/04/2017	EQMS-1	Avg: 0.544 Min: 0.014 Max: 1.130	N/A	Avg: 7.854 Min: 7.778 Max: 7.917	Avg: 76.702 Min: 72.188 Max: 83.344
25/04/2017	EQMS-2	Avg: 0.009 Min: 0.006 Max: 0.016	Avg: 175.265 Min: 0.025 Max: 545.538	Avg: 7.764 Min: 7.580 Max: 7.905	Avg: 40.385 Min: 39.125 Max: 41.531
27/04/2017	EQMS-1	Avg: 0.642 Min: 0.018 Max: 4.773	Avg: 1.919 Min: 1.200 Max: 2.550	Avg: 7.976 Min: 7.662 Max: 8.357	Avg: 155.435 Min: 68.469 Max: 348.031
27/04/2017	EQMS-2	Avg: 0.010 Min: 0.003 Max: 0.015	Avg: 133.817 Min: 0.025 Max: 295.225	Avg: 7.587 Min: 6.685 Max: 7.873	Avg: 58.571 Min: 33.875 Max: 191.813
28/04/2017	EQMS-1	Avg: 0.443 Min: 0.002 Max: 4.748	Avg: 1.568 Min: 1.200 Max: 2.400	Avg: 7.859 Min: 7.501 Max: 8.096	Avg: 308.391 Min: 70.656 Max: 457.625
28/04/2017	EQMS-2	Avg: 0.013 Min: 0.000 Max: 0.024	Avg: 196.222 Min: 18.025 Max: 450.137	Avg: 7.436 Min: 7.328 Max: 7.700	Avg: 108.786 Min: 39.125 Max: 227.250
29/04/2017	EQMS-1	Avg: 1.561 Min: 0.974 Max: 1.986	Avg: 1.827 Min: 1.350 Max: 2.400	Avg: 8.023 Min: 8.004 Max: 8.040	Avg: 57.692 Min: 54.250 Max: 62.344
29/04/2017	EQMS-2	Avg: 0.010 Min: 0.002 Max: 0.022	Avg: 108.712 Min: 0.025 Max: 273.850	Avg: 7.555 Min: 6.914 Max: 7.821	Avg: 98.714 Min: 52.688 Max: 237.750
30/04/2017	EQMS-1	Avg: 2.891 Min: 0.000 Max: 5.106	Avg: 1.485 Min: 1.350 Max: 1.950	Avg: 8.244 Min: 6.467 Max: 8.521	Avg: 392.632 Min: 164.281 Max: 541.406
30/04/2017	EQMS-2	Avg: 0.014 Min: 0.006 Max: 0.021	Avg: 211.270 Min: 14.763 Max: 371.387	Avg: 7.322 Min: 7.256 Max: 7.482	Avg: 69.435 Min: 66.906 Max: 71.500
01/05/2017	EQMS-1	Avg: 3.258 Min: 2.590 Max: 3.940	N/A	Avg: 8.091 Min: 8.040 Max: 8.110	Avg: 51.244 Min: 49.880 Max: 52.280
01/05/2017	EQMS-2	Avg: 0.026 Min: 0.020 Max: 0.040	Avg: 222.440 Min: 14.990 Max: 327.960	Avg: 7.757 Min: 7.610 Max: 8.110	Avg: 45.176 Min: 38.910 Max: 54.660
02/05/2017	EQMS-1	Avg: 3.343 Min: 2.740 Max: 3.860	N/A	Avg: 8.113 Min: 8.080 Max: 8.140	Avg: 51.369 Min: 49.660 Max: 52.500
02/05/2017	EQMS-2	Avg: 0.030 Min: 0.020 Max: 0.040	Avg: 232.036 Min: 15.100 Max: 316.940	Avg: 7.670 Min: 7.610 Max: 7.730	Avg: 45.131 Min: 42.410 Max: 47.880
03/05/2017	EQMS-1	Avg: 3.252 Min: 2.620 Max: 3.760	N/A	Avg: 8.116 Min: 8.080 Max: 8.140	Avg: 51.264 Min: 49.880 Max: 52.500
03/05/2017	EQMS-2	Avg: 0.027 Min: 0.010 Max: 0.040	Avg: 211.975 Min: 15.660 Max: 325.040	Avg: 7.753 Min: 7.600 Max: 8.160	Avg: 44.146 Min: 39.780 Max: 64.500
04/05/2017	EQMS-1	Avg: 3.352 Min: 2.750 Max: 3.930	N/A	Avg: 8.134 Min: 8.110 Max: 8.160	Avg: 51.432 Min: 50.090 Max: 52.500
04/05/2017	EQMS-2	Avg: 0.031 Min: 0.020 Max: 0.040	Avg: 215.929 Min: 15.550 Max: 315.250	Avg: 7.734 Min: 7.620 Max: 8.140	Avg: 44.271 Min: 41.970 Max: 46.780
05/05/2017	EQMS-1	Avg: 3.511 Min: 2.670 Max: 4.250	N/A	Avg: 8.141 Min: 8.080 Max: 8.190	Avg: 52.616 Min: 50.750 Max: 54.690
05/05/2017	EQMS-2	Avg: 0.032 Min: 0.010 Max: 0.050	Avg: 224.491 Min: 15.660 Max: 328.530	Avg: 7.810 Min: 7.680 Max: 8.280	Avg: 43.822 Min: 38.910 Max: 45.690
06/05/2017	EQMS-1	Avg: 3.268 Min: 0.570 Max: 4.220	N/A	Avg: 7.645 Min: 7.180 Max: 8.170	Avg: 80.206 Min: 51.840 Max: 234.940
06/05/2017	EQMS-2	Avg: 0.033 Min: 0.000 Max: 0.050	Avg: 218.170 Min: 15.660 Max: 327.400	Avg: 7.783 Min: 7.620 Max: 8.220	Avg: 46.345 Min: 41.090 Max: 175.190

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
07/05/2017	EQMS-1	Avg: 3.588 Min: 1.660 Max: 5.170	N/A	Avg: 7.296 Min: 7.220 Max: 7.590	Avg: 86.345 Min: 69.130 Max: 147.440
07/05/2017	EQMS-2	Avg: 0.033 Min: 0.020 Max: 0.050	Avg: 215.959 Min: 14.430 Max: 313.790	Avg: 7.801 Min: 7.660 Max: 8.020	Avg: 45.190 Min: 42.190 Max: 49.190
09/05/2017	EQMS-1	Avg: 3.523 Min: 3.020 Max: 4.370	N/A	Avg: 7.871 Min: 7.820 Max: 7.910	Avg: 57.708 Min: 56.440 Max: 59.060
09/05/2017	EQMS-2	Avg: 0.027 Min: 0.020 Max: 0.040	Avg: 240.961 Min: 3.060 Max: 320.090	Avg: 8.011 Min: 7.630 Max: 8.290	Avg: 44.557 Min: 43.280 Max: 55.530
10/05/2017	EQMS-1	Avg: 3.607 Min: 3.020 Max: 4.450	N/A	Avg: 7.960 Min: 7.910 Max: 8.000	Avg: 57.221 Min: 55.340 Max: 58.630
10/05/2017	EQMS-2	Avg: 0.026 Min: 0.020 Max: 0.040	Avg: 220.258 Min: 20.840 Max: 318.850	Avg: 8.045 Min: 7.920 Max: 8.140	Avg: 44.282 Min: 42.190 Max: 45.690
11/05/2017	EQMS-1	Avg: 3.793 Min: 2.450 Max: 4.440	N/A	Avg: 7.884 Min: 7.050 Max: 8.060	Avg: 61.394 Min: 55.560 Max: 115.280
11/05/2017	EQMS-2	Avg: 0.031 Min: 0.020 Max: 0.040	Avg: 184.013 Min: 14.990 Max: 283.080	Avg: 7.996 Min: 7.820 Max: 8.280	Avg: 44.683 Min: 43.280 Max: 83.530
12/05/2017	EQMS-1	Avg: 3.883 Min: 3.420 Max: 4.320	N/A	Avg: 7.683 Min: 7.570 Max: 7.870	Avg: 59.425 Min: 57.530 Max: 61.250
12/05/2017	EQMS-2	Avg: 0.030 Min: 0.020 Max: 0.040	Avg: 194.529 Min: 15.550 Max: 302.650	Avg: 8.041 Min: 7.980 Max: 8.300	Avg: 39.628 Min: 37.810 Max: 41.090
13/05/2017	EQMS-1	Avg: 4.214 Min: 3.550 Max: 4.730	N/A	Avg: 7.802 Min: 7.670 Max: 7.940	Avg: 57.583 Min: 55.340 Max: 59.940
13/05/2017	EQMS-2	Avg: 0.034 Min: 0.020 Max: 0.040	Avg: 192.218 Min: 16.680 Max: 296.910	Avg: 8.047 Min: 4.160 Max: 8.180	Avg: 39.860 Min: 38.690 Max: 51.380
14/05/2017	EQMS-1	Avg: 4.332 Min: 3.660 Max: 4.890	N/A	Avg: 7.912 Min: 7.840 Max: 7.960	Avg: 56.913 Min: 55.340 Max: 58.630
14/05/2017	EQMS-2	Avg: 0.029 Min: 0.020 Max: 0.050	Avg: 198.948 Min: 16.110 Max: 281.160	Avg: 7.999 Min: 7.950 Max: 8.330	Avg: 36.914 Min: 32.130 Max: 54.660
15/05/2017	EQMS-1	Avg: 4.388 Min: 3.500 Max: 4.890	N/A	Avg: 7.970 Min: 7.930 Max: 8.010	Avg: 56.644 Min: 55.340 Max: 58.630
15/05/2017	EQMS-2	Avg: 0.029 Min: 0.020 Max: 0.040	Avg: 196.335 Min: 15.100 Max: 386.800	Avg: 8.006 Min: 7.900 Max: 8.140	Avg: 35.094 Min: 33.220 Max: 37.810
16/05/2017	EQMS-1	Avg: 4.478 Min: 3.640 Max: 4.850	N/A	Avg: 7.999 Min: 7.930 Max: 8.040	Avg: 56.513 Min: 54.470 Max: 58.630
16/05/2017	EQMS-2	Avg: 0.034 Min: 0.020 Max: 0.050	Avg: 217.948 Min: 0.140 Max: 299.730	Avg: 7.931 Min: 7.850 Max: 8.120	Avg: 38.914 Min: 34.310 Max: 53.560
17/05/2017	EQMS-1	Avg: 1.932 Min: 0.880 Max: 3.190	Avg: 145.941 Min: 1.200 Max: 355.500	Avg: 7.876 Min: 7.720 Max: 7.990	Avg: 87.231 Min: 82.910 Max: 94.940
17/05/2017	EQMS-2	Avg: 0.026 Min: 0.010 Max: 0.040	Avg: 170.327 Min: 12.290 Max: 281.390	Avg: 8.281 Min: 8.110 Max: 8.480	Avg: 35.006 Min: 33.440 Max: 36.720
18/05/2017	EQMS-1	Avg: 1.824 Min: 0.000 Max: 4.040	Avg: 179.500 Min: 1.350 Max: 442.500	Avg: 8.020 Min: 7.770 Max: 8.110	Avg: 88.240 Min: 82.690 Max: 274.090
18/05/2017	EQMS-2	Avg: 0.025 Min: 0.010 Max: 0.040	Avg: 178.136 Min: 15.770 Max: 280.150	Avg: 8.307 Min: 8.140 Max: 8.490	Avg: 35.097 Min: 34.090 Max: 36.940
19/05/2017	EQMS-1	Avg: 1.482 Min: 0.170 Max: 2.320	Avg: 143.831 Min: 1.350 Max: 653.400	Avg: 8.008 Min: 7.950 Max: 8.050	Avg: 89.881 Min: 87.060 Max: 94.500
19/05/2017	EQMS-2	Avg: 0.023 Min: 0.010 Max: 0.040	Avg: 99.696 Min: 15.770 Max: 310.750	Avg: 8.355 Min: 8.170 Max: 8.550	Avg: 35.141 Min: 34.090 Max: 36.720
20/05/2017	EQMS-1	Avg: 1.551 Min: 0.200 Max: 2.470	Avg: 131.920 Min: 1.350 Max: 453.450	Avg: 8.080 Min: 7.990 Max: 8.130	Avg: 88.574 Min: 85.530 Max: 91.660
20/05/2017	EQMS-2	Avg: 0.017 Min: 0.010 Max: 0.030	Avg: 155.147 Min: 14.990 Max: 271.490	Avg: 8.488 Min: 8.310 Max: 8.610	Avg: 35.074 Min: 34.310 Max: 36.720
21/05/2017	EQMS-1	Avg: 1.514 Min: 0.030 Max: 2.790	Avg: 172.269 Min: 1.350 Max: 456.450	Avg: 8.061 Min: 7.770 Max: 8.190	Avg: 93.535 Min: 84.220 Max: 133.880
21/05/2017	EQMS-2	Avg: 0.022 Min: 0.010 Max: 0.040	Avg: 182.601 Min: 14.990 Max: 272.730	Avg: 8.425 Min: 8.150 Max: 8.720	Avg: 35.390 Min: 34.310 Max: 36.940
22/05/2017	EQMS-1	Avg: 1.250 Min: 0.130 Max: 2.060	Avg: 165.952 Min: 1.350 Max: 461.850	Avg: 7.988 Min: 7.930 Max: 8.060	Avg: 91.718 Min: 87.280 Max: 98.660
22/05/2017	EQMS-2	Avg: 0.019 Min: 0.010 Max: 0.030	Avg: 166.416 Min: 15.100 Max: 276.330	Avg: 8.362 Min: 4.090 Max: 8.590	Avg: 38.540 Min: 33.440 Max: 516.660

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
24/05/2017	EQMS-1	Avg: 2.013 Min: 1.016 Max: 2.739	N/A	Avg: 8.130 Min: 8.022 Max: 8.193	Avg: 67.659 Min: 64.531 Max: 70.875
24/05/2017	EQMS-2	Avg: 0.014 Min: 0.001 Max: 0.025	Avg: 223.077 Min: 20.838 Max: 337.300	Avg: 7.433 Min: 7.256 Max: 7.768	Avg: 43.058 Min: 41.531 Max: 44.594
25/05/2017	EQMS-1	Avg: 1.893 Min: 0.868 Max: 2.549	N/A	Avg: 8.127 Min: 7.675 Max: 8.188	Avg: 64.770 Min: 60.594 Max: 68.469
25/05/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.021	Avg: 247.935 Min: 0.025 Max: 634.862	Avg: 7.500 Min: 7.265 Max: 7.848	Avg: 42.850 Min: 41.531 Max: 43.937
26/05/2017	EQMS-1	Avg: 2.266 Min: 0.465 Max: 4.516	N/A	Avg: 7.784 Min: 7.305 Max: 8.154	Avg: 65.217 Min: 52.500 Max: 244.125
26/05/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.018	Avg: 263.591 Min: 25.563 Max: 349.000	Avg: 7.395 Min: 7.129 Max: 7.744	Avg: 43.077 Min: 41.531 Max: 62.750
27/05/2017	EQMS-1	Avg: 2.751 Min: 2.247 Max: 3.271	N/A	Avg: 7.722 Min: 7.540 Max: 7.870	Avg: 54.139 Min: 49.875 Max: 58.625
27/05/2017	EQMS-2	Avg: 0.011 Min: 0.004 Max: 0.018	Avg: 269.264 Min: 0.025 Max: 293.200	Avg: 7.214 Min: 7.108 Max: 7.347	Avg: 43.064 Min: 41.531 Max: 44.813
28/05/2017	EQMS-1	Avg: 2.612 Min: 1.844 Max: 3.056	N/A	Avg: 7.962 Min: 7.869 Max: 8.041	Avg: 50.907 Min: 47.906 Max: 54.031
28/05/2017	EQMS-2	Avg: 0.010 Min: 0.003 Max: 0.018	Avg: 120.880 Min: 10.600 Max: 301.637	Avg: 7.279 Min: 7.130 Max: 7.455	Avg: 43.441 Min: 41.531 Max: 44.813
29/05/2017	EQMS-1	Avg: 2.570 Min: 1.753 Max: 3.131	N/A	Avg: 8.083 Min: 8.036 Max: 8.161	Avg: 49.654 Min: 46.813 Max: 55.125
29/05/2017	EQMS-2	Avg: 0.011 Min: 0.003 Max: 0.018	Avg: 154.429 Min: 18.700 Max: 316.825	Avg: 7.332 Min: 7.148 Max: 7.577	Avg: 43.562 Min: 42.406 Max: 44.594
30/05/2017	EQMS-1	Avg: 2.632 Min: 1.780 Max: 3.353	N/A	Avg: 8.158 Min: 8.098 Max: 8.210	Avg: 49.908 Min: 47.031 Max: 53.594
30/05/2017	EQMS-2	Avg: 0.012 Min: 0.001 Max: 0.025	Avg: 60.370 Min: 1.038 Max: 148.863	Avg: 7.363 Min: 7.164 Max: 7.648	Avg: 43.831 Min: 42.406 Max: 44.594
31/05/2017	EQMS-1	Avg: 2.530 Min: 1.971 Max: 3.028	N/A	Avg: 8.165 Min: 8.125 Max: 8.242	Avg: 49.157 Min: 46.594 Max: 52.500
31/05/2017	EQMS-2	Avg: 0.011 Min: 0.002 Max: 0.022	Avg: 192.185 Min: 24.438 Max: 301.188	Avg: 7.425 Min: 7.233 Max: 7.564	Avg: 43.832 Min: 42.406 Max: 44.813
01/06/2017	EQMS-1	Avg: 2.550 Min: 1.770 Max: 3.073	N/A	Avg: 8.195 Min: 8.120 Max: 8.242	Avg: 48.984 Min: 46.375 Max: 55.562
01/06/2017	EQMS-2	Avg: 0.011 Min: 0.000 Max: 0.021	Avg: 195.147 Min: 0.025 Max: 405.700	Avg: 7.408 Min: 7.224 Max: 7.650	Avg: 43.908 Min: 43.281 Max: 45.031
02/06/2017	EQMS-1	Avg: 2.471 Min: 1.876 Max: 2.924	N/A	Avg: 8.179 Min: 8.127 Max: 8.212	Avg: 48.273 Min: 45.063 Max: 50.531
02/06/2017	EQMS-2	Avg: 0.011 Min: 0.004 Max: 0.014	Avg: 248.823 Min: 15.887 Max: 314.462	Avg: 7.464 Min: 7.379 Max: 7.615	Avg: 44.141 Min: 43.281 Max: 45.031
03/06/2017	EQMS-1	Avg: 2.194 Min: 1.147 Max: 2.938	N/A	Avg: 8.039 Min: 7.850 Max: 8.220	Avg: 50.601 Min: 46.156 Max: 56.219
03/06/2017	EQMS-2	Avg: 0.011 Min: 0.003 Max: 0.017	Avg: 259.876 Min: 17.575 Max: 354.287	Avg: 7.341 Min: 6.945 Max: 7.456	Avg: 42.761 Min: 40.000 Max: 57.062
04/06/2017	EQMS-1	Avg: 2.017 Min: 1.104 Max: 2.835	N/A	Avg: 8.028 Min: 7.916 Max: 8.102	Avg: 51.612 Min: 47.906 Max: 54.906
04/06/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.016	Avg: 0.036 Min: 0.025 Max: 0.138	Avg: 7.476 Min: 7.219 Max: 7.787	Avg: 41.728 Min: 40.000 Max: 42.844
05/06/2017	EQMS-1	Avg: 2.077 Min: 1.299 Max: 2.686	N/A	Avg: 8.101 Min: 8.002 Max: 8.137	Avg: 54.288 Min: 50.313 Max: 65.625
05/06/2017	EQMS-2	Avg: 0.011 Min: 0.004 Max: 0.016	Avg: 155.926 Min: 3.962 Max: 464.875	Avg: 7.573 Min: 5.582 Max: 7.733	Avg: 42.025 Min: 41.094 Max: 42.844
06/06/2017	EQMS-1	Avg: 2.401 Min: 1.926 Max: 2.901	N/A	Avg: 8.150 Min: 8.114 Max: 8.188	Avg: 53.879 Min: 50.313 Max: 57.312
06/06/2017	EQMS-2	Avg: 0.012 Min: 0.001 Max: 0.024	Avg: 205.598 Min: 0.700 Max: 314.238	Avg: 7.344 Min: 7.082 Max: 7.444	Avg: 56.573 Min: 40.000 Max: 153.312
07/06/2017	EQMS-1	Avg: 2.475 Min: 2.091 Max: 2.830	N/A	Avg: 8.154 Min: 8.128 Max: 8.173	Avg: 51.881 Min: 49.219 Max: 54.906
07/06/2017	EQMS-2	Avg: 0.008 Min: 0.000 Max: 0.015	Avg: 115.221 Min: 3.287 Max: 321.887	Avg: 7.299 Min: 7.197 Max: 7.500	Avg: 102.659 Min: 47.875 Max: 184.594

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
08/06/2017	EQMS-1	Avg: 2.037 Min: 1.426 Max: 2.627	N/A	Avg: 8.086 Min: 8.046 Max: 8.119	Avg: 54.456 Min: 49.000 Max: 70.438
08/06/2017	EQMS-2	Avg: 0.009 Min: 0.001 Max: 0.011	Avg: 148.176 Min: 17.687 Max: 270.250	Avg: 7.428 Min: 7.225 Max: 7.597	Avg: 52.381 Min: 42.406 Max: 162.281
09/06/2017	EQMS-2	Avg: 0.013 Min: 0.004 Max: 0.018	Avg: 218.570 Min: 0.475 Max: 304.337	Avg: 7.412 Min: 7.366 Max: 7.533	Avg: 43.287 Min: 42.187 Max: 43.937
10/06/2017	EQMS-2	Avg: 0.015 Min: 0.003 Max: 0.028	Avg: 224.347 Min: 16.450 Max: 329.987	Avg: 7.321 Min: 7.247 Max: 7.459	Avg: 43.464 Min: 42.187 Max: 68.438
11/06/2017	EQMS-2	Avg: 0.014 Min: 0.004 Max: 0.025	Avg: 201.581 Min: 15.100 Max: 325.938	Avg: 7.383 Min: 7.247 Max: 7.506	Avg: 43.123 Min: 42.187 Max: 43.719
12/06/2017	EQMS-2	Avg: 0.012 Min: 0.000 Max: 0.024	Avg: 197.453 Min: 0.813 Max: 311.650	Avg: 7.528 Min: 7.387 Max: 7.746	Avg: 60.717 Min: 41.094 Max: 161.406
13/06/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.017	Avg: 210.434 Min: 15.325 Max: 326.050	Avg: 7.571 Min: 7.459 Max: 7.743	Avg: 65.658 Min: 62.312 Max: 69.531
14/06/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.018	Avg: 180.023 Min: 15.325 Max: 322.337	Avg: 7.531 Min: 7.434 Max: 7.617	Avg: 54.976 Min: 41.531 Max: 111.750
16/06/2017	EQMS-2	Avg: 0.012 Min: 0.006 Max: 0.018	Avg: 43.380 Min: 16.900 Max: 64.825	Avg: 7.324 Min: 7.275 Max: 7.358	Avg: 43.037 Min: 41.969 Max: 43.500
17/06/2017	EQMS-2	Avg: 0.012 Min: 0.000 Max: 0.021	Avg: 126.696 Min: 15.100 Max: 321.100	Avg: 7.295 Min: 7.220 Max: 7.388	Avg: 61.530 Min: 31.250 Max: 88.344
18/06/2017	EQMS-2	Avg: 0.008 Min: 0.000 Max: 0.021	Avg: 120.601 Min: 0.587 Max: 298.938	Avg: 7.332 Min: 7.229 Max: 7.471	Avg: 47.982 Min: 31.687 Max: 88.344
19/06/2017	EQMS-2	Avg: 0.006 Min: 0.000 Max: 0.014	Avg: 169.987 Min: 15.775 Max: 286.675	Avg: 7.409 Min: 7.283 Max: 7.610	Avg: 32.706 Min: 31.250 Max: 33.656
20/06/2017	EQMS-2	Avg: 0.008 Min: 0.001 Max: 0.022	Avg: 181.985 Min: 15.775 Max: 310.975	Avg: 7.451 Min: 7.228 Max: 7.628	Avg: 40.845 Min: 31.250 Max: 159.000
21/06/2017	EQMS-2	Avg: 0.015 Min: 0.002 Max: 0.025	Avg: 158.598 Min: 17.012 Max: 308.162	Avg: 7.225 Min: 7.183 Max: 7.309	Avg: 32.258 Min: 31.031 Max: 33.656
22/06/2017	EQMS-2	Avg: 0.012 Min: 0.007 Max: 0.018	Avg: 119.586 Min: 15.212 Max: 334.600	Avg: 7.225 Min: 7.192 Max: 7.254	Avg: 32.163 Min: 31.031 Max: 33.437
23/06/2017	EQMS-2	Avg: 0.008 Min: 0.001 Max: 0.015	Avg: 212.538 Min: 15.887 Max: 305.238	Avg: 7.398 Min: 7.219 Max: 7.502	Avg: 32.097 Min: 31.031 Max: 33.437
24/06/2017	EQMS-2	Avg: 0.013 Min: 0.006 Max: 0.018	Avg: 247.269 Min: 16.338 Max: 305.125	Avg: 7.288 Min: 7.238 Max: 7.367	Avg: 32.251 Min: 31.031 Max: 33.656
25/06/2017	EQMS-2	Avg: 0.014 Min: 0.006 Max: 0.021	Avg: 271.176 Min: 15.212 Max: 306.137	Avg: 7.267 Min: 7.224 Max: 7.380	Avg: 32.211 Min: 31.031 Max: 33.656
26/06/2017	EQMS-2	Avg: 0.009 Min: 0.003 Max: 0.018	Avg: 286.324 Min: 17.463 Max: 303.325	Avg: 7.313 Min: 6.946 Max: 7.426	Avg: 32.242 Min: 31.250 Max: 33.437
27/06/2017	EQMS-2	Avg: 0.011 Min: 0.003 Max: 0.014	Avg: 249.113 Min: 15.775 Max: 290.163	Avg: 7.159 Min: 7.105 Max: 7.193	Avg: 32.133 Min: 31.031 Max: 32.563
28/06/2017	EQMS-2	Avg: 0.005 Min: 0.000 Max: 0.014	Avg: 257.266 Min: 16.338 Max: 294.100	Avg: 7.237 Min: 7.174 Max: 7.311	Avg: 71.161 Min: 31.250 Max: 159.875
29/06/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.018	Avg: 251.538 Min: 4.300 Max: 298.150	Avg: 7.198 Min: 7.129 Max: 7.268	Avg: 32.190 Min: 31.031 Max: 36.937
30/06/2017	EQMS-2	Avg: 0.009 Min: 0.002 Max: 0.014	Avg: 277.025 Min: 15.775 Max: 336.513	Avg: 7.293 Min: 7.220 Max: 7.400	Avg: 31.880 Min: 31.031 Max: 32.563
01/07/2017	EQMS-2	Avg: 0.012 Min: 0.006 Max: 0.017	Avg: 241.372 Min: 12.287 Max: 280.825	Avg: 7.171 Min: 7.156 Max: 7.185	Avg: 31.663 Min: 31.031 Max: 32.563
03/07/2017	EQMS-2	Avg: 0.012 Min: 0.004 Max: 0.021	Avg: 245.949 Min: 15.100 Max: 306.362	Avg: 7.282 Min: 7.238 Max: 7.349	Avg: 31.785 Min: 30.813 Max: 32.563
04/07/2017	EQMS-2	Avg: 0.011 Min: 0.003 Max: 0.018	Avg: 258.537 Min: 15.775 Max: 309.062	Avg: 7.311 Min: 7.237 Max: 7.394	Avg: 31.681 Min: 30.813 Max: 32.563
05/07/2017	EQMS-2	Avg: 0.011 Min: 0.007 Max: 0.014	Avg: 250.614 Min: 0.138 Max: 288.812	Avg: 7.158 Min: 6.975 Max: 7.351	Avg: 31.737 Min: 30.813 Max: 32.563
06/07/2017	EQMS-2	Avg: 0.010 Min: 0.002 Max: 0.017	Avg: 255.004 Min: 16.787 Max: 304.675	Avg: 7.013 Min: 6.957 Max: 7.079	Avg: 31.698 Min: 31.031 Max: 32.563
07/07/2017	EQMS-2	Avg: 0.010 Min: 0.002 Max: 0.018	Avg: 276.642 Min: 15.212 Max: 306.925	Avg: 7.067 Min: 7.021 Max: 7.147	Avg: 31.802 Min: 31.031 Max: 32.563
08/07/2017	EQMS-2	Avg: 0.013 Min: 0.001 Max: 0.022	Avg: 277.072 Min: 0.925 Max: 305.688	Avg: 7.109 Min: 7.010 Max: 7.302	Avg: 31.893 Min: 30.375 Max: 32.563

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
09/07/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.021	Avg: 265.634 Min: 0.813 Max: 1539.812	Avg: 7.247 Min: 7.101 Max: 7.408	Avg: 31.783 Min: 29.719 Max: 40.219
10/07/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.018	Avg: 276.132 Min: 16.450 Max: 305.800	Avg: 7.340 Min: 7.251 Max: 7.472	Avg: 31.872 Min: 31.031 Max: 32.563
11/07/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.014	Avg: 246.849 Min: 0.362 Max: 298.375	Avg: 7.210 Min: 7.011 Max: 7.439	Avg: 66.733 Min: 31.031 Max: 157.688
12/07/2017	EQMS-2	Avg: 0.012 Min: 0.001 Max: 0.021	Avg: 252.866 Min: 15.100 Max: 294.100	Avg: 7.045 Min: 7.002 Max: 7.142	Avg: 32.328 Min: 30.813 Max: 33.656
13/07/2017	EQMS-2	Avg: 0.014 Min: 0.009 Max: 0.021	Avg: 243.345 Min: 19.712 Max: 283.075	Avg: 7.094 Min: 7.047 Max: 7.140	Avg: 32.273 Min: 31.031 Max: 33.437
14/07/2017	EQMS-2	Avg: 0.013 Min: 0.006 Max: 0.022	Avg: 259.099 Min: 14.538 Max: 302.875	Avg: 7.126 Min: 7.051 Max: 7.157	Avg: 32.220 Min: 31.031 Max: 33.656
15/07/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.018	Avg: 240.164 Min: 0.025 Max: 310.750	Avg: 7.261 Min: 7.119 Max: 7.391	Avg: 32.203 Min: 31.031 Max: 33.656
16/07/2017	EQMS-2	Avg: 0.012 Min: 0.002 Max: 0.021	Avg: 248.775 Min: 16.787 Max: 313.788	Avg: 7.241 Min: 7.160 Max: 7.358	Avg: 34.441 Min: 31.031 Max: 48.094
17/07/2017	EQMS-2	Avg: 0.014 Min: 0.009 Max: 0.021	Avg: 240.824 Min: 0.700 Max: 310.862	Avg: 7.129 Min: 7.065 Max: 7.193	Avg: 34.837 Min: 33.219 Max: 37.813
18/07/2017	EQMS-2	Avg: 0.014 Min: 0.009 Max: 0.021	Avg: 236.957 Min: 9.813 Max: 303.888	Avg: 7.151 Min: 7.078 Max: 7.188	Avg: 34.560 Min: 32.125 Max: 36.719
19/07/2017	EQMS-2	Avg: 0.014 Min: 0.007 Max: 0.018	Avg: 266.938 Min: 16.338 Max: 303.325	Avg: 7.146 Min: 7.106 Max: 7.168	Avg: 32.912 Min: 32.125 Max: 33.656
20/07/2017	EQMS-2	Avg: 0.011 Min: 0.003 Max: 0.018	Avg: 258.611 Min: 17.463 Max: 303.325	Avg: 7.248 Min: 6.965 Max: 7.390	Avg: 32.884 Min: 32.125 Max: 33.656
21/07/2017	EQMS-2	Avg: 0.010 Min: 0.000 Max: 0.018	Avg: 254.213 Min: 0.700 Max: 317.837	Avg: 7.353 Min: 7.261 Max: 7.498	Avg: 32.872 Min: 31.250 Max: 34.531
22/07/2017	EQMS-2	Avg: 0.013 Min: 0.007 Max: 0.020	Avg: 256.739 Min: 18.025 Max: 315.025	Avg: 7.229 Min: 7.201 Max: 7.298	Avg: 33.053 Min: 32.125 Max: 33.656
23/07/2017	EQMS-2	Avg: 0.015 Min: 0.011 Max: 0.021	Avg: 266.848 Min: 0.138 Max: 300.962	Avg: 7.166 Min: 7.133 Max: 7.202	Avg: 32.920 Min: 32.125 Max: 33.656
24/07/2017	EQMS-2	Avg: 0.015 Min: 0.012 Max: 0.021	Avg: 269.000 Min: 9.138 Max: 306.137	Avg: 7.138 Min: 7.128 Max: 7.148	Avg: 32.753 Min: 31.250 Max: 33.656
25/07/2017	EQMS-2	Avg: 0.014 Min: 0.007 Max: 0.021	Avg: 259.403 Min: 20.838 Max: 298.037	Avg: 7.156 Min: 7.124 Max: 7.194	Avg: 32.524 Min: 32.125 Max: 33.656
26/07/2017	EQMS-2	Avg: 0.013 Min: 0.008 Max: 0.018	Avg: 269.023 Min: 16.900 Max: 310.975	Avg: 7.194 Min: 7.160 Max: 7.226	Avg: 32.682 Min: 32.125 Max: 34.531
27/07/2017	EQMS-2	Avg: 0.013 Min: 0.006 Max: 0.018	Avg: 225.822 Min: 15.212 Max: 317.837	Avg: 7.197 Min: 7.146 Max: 7.272	Avg: 32.600 Min: 31.250 Max: 33.656
28/07/2017	EQMS-2	Avg: 0.009 Min: 0.001 Max: 0.018	Avg: 220.042 Min: 17.012 Max: 294.775	Avg: 7.291 Min: 7.191 Max: 7.369	Avg: 32.541 Min: 31.250 Max: 33.656
29/07/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.014	Avg: 193.496 Min: 16.338 Max: 304.562	Avg: 7.358 Min: 7.268 Max: 7.475	Avg: 32.733 Min: 32.125 Max: 33.875
30/07/2017	EQMS-2	Avg: 0.014 Min: 0.011 Max: 0.018	Avg: 228.248 Min: 17.463 Max: 312.550	Avg: 7.266 Min: 7.256 Max: 7.283	Avg: 32.779 Min: 32.125 Max: 33.656
31/07/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.018	Avg: 240.875 Min: 14.650 Max: 294.325	Avg: 7.379 Min: 7.296 Max: 7.547	Avg: 34.745 Min: 33.437 Max: 35.844
01/08/2017	EQMS-2	Avg: 0.007 Min: 0.000 Max: 0.018	Avg: 257.640 Min: 12.850 Max: 295.337	Avg: 7.477 Min: 7.301 Max: 7.633	Avg: 33.886 Min: 32.344 Max: 34.969
02/08/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.018	Avg: 270.566 Min: 17.012 Max: 297.588	Avg: 7.383 Min: 7.264 Max: 7.568	Avg: 33.686 Min: 32.125 Max: 34.969
03/08/2017	EQMS-2	Avg: 0.011 Min: 0.002 Max: 0.018	Avg: 229.023 Min: 17.463 Max: 297.025	Avg: 7.336 Min: 7.265 Max: 7.508	Avg: 33.564 Min: 32.125 Max: 34.750
04/08/2017	EQMS-2	Avg: 0.012 Min: 0.006 Max: 0.018	Avg: 245.297 Min: 2.725 Max: 306.925	Avg: 7.315 Min: 7.255 Max: 7.394	Avg: 33.522 Min: 32.125 Max: 34.969
05/08/2017	EQMS-2	Avg: 0.013 Min: 0.006 Max: 0.018	Avg: 259.883 Min: 17.012 Max: 315.025	Avg: 7.178 Min: 6.973 Max: 7.324	Avg: 35.802 Min: 32.125 Max: 47.000
06/08/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.018	Avg: 248.171 Min: 16.338 Max: 325.262	Avg: 7.156 Min: 7.030 Max: 7.344	Avg: 36.151 Min: 33.437 Max: 39.125
07/08/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.015	Avg: 244.909 Min: 15.100 Max: 314.350	Avg: 7.255 Min: 7.192 Max: 7.369	Avg: 34.926 Min: 33.656 Max: 36.937

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
08/08/2017	EQMS-2	Avg: 0.009 Min: 0.001 Max: 0.018	Avg: 255.888 Min: 16.900 Max: 308.050	Avg: 7.309 Min: 7.224 Max: 7.473	Avg: 34.445 Min: 33.219 Max: 35.844
09/08/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.018	Avg: 258.734 Min: 2.050 Max: 299.837	Avg: 7.311 Min: 7.274 Max: 7.464	Avg: 34.374 Min: 33.219 Max: 36.937
10/08/2017	EQMS-2	Avg: 0.010 Min: 0.001 Max: 0.018	Avg: 175.909 Min: 20.500 Max: 300.512	Avg: 7.223 Min: 6.999 Max: 7.297	Avg: 33.795 Min: 31.250 Max: 42.406
11/08/2017	EQMS-2	Avg: 0.007 Min: 0.001 Max: 0.014	Avg: 239.111 Min: 17.463 Max: 307.037	Avg: 7.078 Min: 6.989 Max: 7.169	Avg: 33.443 Min: 32.344 Max: 34.750
12/08/2017	EQMS-2	Avg: 0.010 Min: 0.003 Max: 0.014	Avg: 253.343 Min: 79.900 Max: 295.900	Avg: 7.140 Min: 7.107 Max: 7.205	Avg: 33.862 Min: 32.344 Max: 34.750
14/08/2017	EQMS-2	Avg: 0.010 Min: 0.005 Max: 0.014	Avg: 229.314 Min: 19.825 Max: 297.700	Avg: 7.257 Min: 7.193 Max: 7.295	Avg: 33.673 Min: 32.125 Max: 34.750
15/08/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.018	Avg: 227.874 Min: 15.100 Max: 294.662	Avg: 7.266 Min: 7.219 Max: 7.411	Avg: 33.768 Min: 33.219 Max: 34.969
16/08/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.015	Avg: 247.431 Min: 21.625 Max: 282.625	Avg: 7.298 Min: 7.233 Max: 7.456	Avg: 33.945 Min: 32.563 Max: 34.969
17/08/2017	EQMS-2	Avg: 0.014 Min: 0.005 Max: 0.018	Avg: 243.781 Min: 14.538 Max: 304.562	Avg: 7.258 Min: 7.233 Max: 7.341	Avg: 33.953 Min: 33.219 Max: 34.969
18/08/2017	EQMS-2	Avg: 0.014 Min: 0.008 Max: 0.018	Avg: 250.950 Min: 16.338 Max: 295.225	Avg: 7.278 Min: 7.246 Max: 7.347	Avg: 33.961 Min: 33.219 Max: 34.750
19/08/2017	EQMS-2	Avg: 0.013 Min: 0.005 Max: 0.018	Avg: 257.481 Min: 18.025 Max: 322.450	Avg: 7.302 Min: 7.241 Max: 7.367	Avg: 34.033 Min: 33.437 Max: 34.750
20/08/2017	EQMS-2	Avg: 0.014 Min: 0.008 Max: 0.016	Avg: 245.989 Min: 15.212 Max: 305.125	Avg: 7.299 Min: 7.268 Max: 7.348	Avg: 33.949 Min: 33.219 Max: 34.969
21/08/2017	EQMS-2	Avg: 0.011 Min: 0.000 Max: 0.018	Avg: 253.500 Min: 22.638 Max: 320.650	Avg: 7.363 Min: 7.268 Max: 7.517	Avg: 33.852 Min: 32.125 Max: 34.969
22/08/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.015	Avg: 272.877 Min: 16.338 Max: 295.000	Avg: 7.219 Min: 6.877 Max: 7.450	Avg: 34.330 Min: 33.219 Max: 37.156
23/08/2017	EQMS-2	Avg: 0.009 Min: 0.001 Max: 0.018	Avg: 185.774 Min: 15.775 Max: 268.675	Avg: 6.984 Min: 6.939 Max: 7.026	Avg: 34.620 Min: 33.437 Max: 35.844
24/08/2017	EQMS-2	Avg: 0.013 Min: 0.006 Max: 0.018	Avg: 142.161 Min: 16.338 Max: 286.113	Avg: 6.983 Min: 6.949 Max: 7.047	Avg: 34.539 Min: 33.219 Max: 35.625
25/08/2017	EQMS-2	Avg: 0.011 Min: 0.002 Max: 0.018	Avg: 260.626 Min: 22.750 Max: 305.913	Avg: 7.052 Min: 6.961 Max: 7.155	Avg: 34.442 Min: 33.219 Max: 35.625
26/08/2017	EQMS-2	Avg: 0.009 Min: 0.001 Max: 0.018	Avg: 256.172 Min: 17.012 Max: 301.075	Avg: 7.148 Min: 7.011 Max: 7.257	Avg: 34.310 Min: 33.219 Max: 35.844
27/08/2017	EQMS-2	Avg: 0.012 Min: 0.004 Max: 0.015	Avg: 164.500 Min: 21.512 Max: 296.913	Avg: 7.163 Min: 7.147 Max: 7.190	Avg: 34.193 Min: 33.219 Max: 34.750
28/08/2017	EQMS-2	Avg: 0.013 Min: 0.007 Max: 0.018	Avg: 234.088 Min: 17.463 Max: 324.812	Avg: 7.205 Min: 7.137 Max: 7.254	Avg: 34.198 Min: 33.219 Max: 35.625
29/08/2017	EQMS-2	Avg: 0.014 Min: 0.010 Max: 0.018	Avg: 232.388 Min: 17.463 Max: 322.562	Avg: 7.232 Min: 7.200 Max: 7.281	Avg: 34.103 Min: 33.219 Max: 34.750
01/09/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.018	Avg: 109.481 Min: 1.825 Max: 292.413	Avg: 7.401 Min: 7.350 Max: 7.532	Avg: 34.160 Min: 33.219 Max: 35.625
02/09/2017	EQMS-2	Avg: 0.013 Min: 0.006 Max: 0.018	Avg: 265.072 Min: 15.775 Max: 292.975	Avg: 7.376 Min: 7.336 Max: 7.429	Avg: 34.194 Min: 33.219 Max: 34.750
03/09/2017	EQMS-2	Avg: 0.011 Min: 0.000 Max: 0.018	Avg: 227.425 Min: 0.025 Max: 286.225	Avg: 7.423 Min: 7.351 Max: 7.605	Avg: 34.203 Min: 32.563 Max: 34.969
04/09/2017	EQMS-2	Avg: 0.010 Min: 0.000 Max: 0.018	Avg: 255.516 Min: 0.025 Max: 324.925	Avg: 7.451 Min: 7.309 Max: 7.665	Avg: 34.202 Min: 33.219 Max: 34.969
05/09/2017	EQMS-2	Avg: 0.008 Min: 0.000 Max: 0.018	Avg: 238.825 Min: 17.012 Max: 566.350	Avg: 7.480 Min: 7.309 Max: 7.637	Avg: 34.171 Min: 33.219 Max: 34.969
06/09/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.014	Avg: 224.590 Min: 0.138 Max: 280.263	Avg: 7.486 Min: 7.359 Max: 7.678	Avg: 34.212 Min: 33.219 Max: 34.969
07/09/2017	EQMS-2	Avg: 0.009 Min: 0.001 Max: 0.014	Avg: 171.379 Min: 15.775 Max: 275.763	Avg: 7.461 Min: 7.359 Max: 7.627	Avg: 34.345 Min: 33.219 Max: 35.844
08/09/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.014	Avg: 43.796 Min: 2.500 Max: 143.688	Avg: 7.503 Min: 7.378 Max: 7.661	Avg: 34.405 Min: 32.563 Max: 35.625
09/09/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.018	Avg: 142.691 Min: 16.338 Max: 300.175	Avg: 7.468 Min: 7.337 Max: 7.691	Avg: 34.395 Min: 33.219 Max: 35.625

Day	Station Id.	Cr6+ *(in mg/l)*	FLOW *(in m3/h)*	PH *(in ph)*	TSS *(in mg/l)*
10/09/2017	EQMS-2	Avg: 0.009 Min: 0.000 Max: 0.018	Avg: 186.841 Min: 16.338 Max: 341.687	Avg: 7.209 Min: 6.912 Max: 7.387	Avg: 64.798 Min: 32.344 Max: 162.062
11/09/2017	EQMS-2	Avg: 0.006 Min: 0.000 Max: 0.015	Avg: 220.276 Min: 15.325 Max: 797.650	Avg: 7.064 Min: 6.903 Max: 7.219	Avg: 33.378 Min: 32.125 Max: 34.750
12/09/2017	EQMS-2	Avg: 0.008 Min: 0.000 Max: 0.014	Avg: 177.554 Min: 16.338 Max: 337.300	Avg: 7.169 Min: 7.128 Max: 7.235	Avg: 33.250 Min: 32.125 Max: 33.875
13/09/2017	EQMS-2	Avg: 0.008 Min: 0.000 Max: 0.015	Avg: 180.767 Min: 16.338 Max: 319.075	Avg: 7.148 Min: 7.006 Max: 7.234	Avg: 33.147 Min: 32.125 Max: 33.656
14/09/2017	EQMS-2	Avg: 0.007 Min: 0.000 Max: 0.015	Avg: 88.389 Min: 16.338 Max: 272.837	Avg: 7.095 Min: 6.921 Max: 7.252	Avg: 56.262 Min: 32.125 Max: 154.625
15/09/2017	EQMS-2	Avg: 0.005 Min: 0.000 Max: 0.014	Avg: 194.205 Min: 16.450 Max: 297.137	Avg: 7.163 Min: 7.102 Max: 7.261	Avg: 51.225 Min: 31.250 Max: 158.781
16/09/2017	EQMS-2	Avg: 0.007 Min: 0.001 Max: 0.015	Avg: 91.498 Min: 16.563 Max: 324.700	Avg: 7.223 Min: 7.074 Max: 7.352	Avg: 32.430 Min: 31.250 Max: 33.656
17/09/2017	EQMS-2	Avg: 0.008 Min: 0.001 Max: 0.015	Avg: 179.549 Min: 17.575 Max: 295.225	Avg: 7.215 Min: 7.133 Max: 7.351	Avg: 32.369 Min: 31.250 Max: 33.656
18/09/2017	EQMS-2	Avg: 0.013 Min: 0.002 Max: 0.018	Avg: 86.038 Min: 5.875 Max: 287.125	Avg: 7.164 Min: 7.124 Max: 7.360	Avg: 32.216 Min: 31.031 Max: 33.656
19/09/2017	EQMS-2	Avg: 0.012 Min: 0.006 Max: 0.018	Avg: 269.835 Min: 15.100 Max: 307.825	Avg: 7.226 Min: 7.147 Max: 7.254	Avg: 32.405 Min: 31.031 Max: 36.937
20/09/2017	EQMS-2	Avg: 0.013 Min: 0.003 Max: 0.018	Avg: 261.000 Min: 21.512 Max: 356.538	Avg: 7.220 Min: 7.138 Max: 7.266	Avg: 32.331 Min: 31.250 Max: 33.656
21/09/2017	EQMS-2	Avg: 0.008 Min: 0.001 Max: 0.014	Avg: 245.049 Min: 15.775 Max: 294.212	Avg: 7.222 Min: 7.121 Max: 7.331	Avg: 32.052 Min: 31.031 Max: 32.563
22/09/2017	EQMS-2	Avg: 0.006 Min: 0.000 Max: 0.014	Avg: 220.240 Min: 18.250 Max: 283.750	Avg: 7.308 Min: 7.129 Max: 7.474	Avg: 32.065 Min: 31.250 Max: 36.719
23/09/2017	EQMS-2	Avg: 0.005 Min: 0.000 Max: 0.014	Avg: 253.073 Min: 56.950 Max: 290.163	Avg: 7.354 Min: 7.165 Max: 7.534	Avg: 32.234 Min: 31.250 Max: 32.781
24/09/2017	EQMS-2	Avg: 0.008 Min: 0.001 Max: 0.015	Avg: 274.702 Min: 53.237 Max: 292.413	Avg: 7.248 Min: 7.169 Max: 7.367	Avg: 32.350 Min: 31.250 Max: 33.656
25/09/2017	EQMS-2	Avg: 0.006 Min: 0.001 Max: 0.011	Avg: 203.304 Min: 16.450 Max: 300.062	Avg: 6.967 Min: 6.876 Max: 7.012	Avg: 33.741 Min: 32.344 Max: 34.969
26/09/2017	EQMS-2	Avg: 0.007 Min: 0.001 Max: 0.014	Avg: 242.638 Min: 16.900 Max: 297.588	Avg: 7.171 Min: 7.004 Max: 7.265	Avg: 33.162 Min: 32.125 Max: 35.625
27/09/2017	EQMS-2	Avg: 0.011 Min: 0.001 Max: 0.014	Avg: 250.733 Min: 40.525 Max: 292.413	Avg: 7.109 Min: 7.089 Max: 7.130	Avg: 46.162 Min: 32.125 Max: 157.688
29/09/2017	EQMS-2	Avg: 0.013 Min: 0.005 Max: 0.018	Avg: 227.223 Min: 16.900 Max: 297.137	Avg: 6.787 Min: 6.764 Max: 6.813	Avg: 36.155 Min: 34.531 Max: 39.125
30/09/2017	EQMS-2	Avg: 0.012 Min: 0.000 Max: 0.024	Avg: 231.814 Min: 15.100 Max: 292.413	Avg: 6.915 Min: 6.808 Max: 6.999	Avg: 42.450 Min: 33.219 Max: 158.562

Annexure –III

Monitoring of Drinking Water Sources for Cr(VI)

Sl. No.	Station Details	Co-ordinates	CPCB Standard	Conc. Of Hexavalent Chromium (Cr^{+6}) – mg/l				
				May	June	July	August	Sept
1.	TISCO Camp (GW1)	21^0 01'44.8"N 85^0 44'44.6"E	0.05 mg/l	0.016	0.010	0.016	0.022	0.018
2.	Kaliapani Village (GW2)	21^0 02'39.1"N 85^0 46'21.4"E		0.022	0.026	0.032	0.028	0.032
3.	Sukurangi Village (GW3)	21^0 02' 18.1"N 85^0 47' 41.7"E		0.014	0.008	0.010	0.016	0.014
4.	Inside Mine (GW4)	21^0 02'07.7"N 85^0 45'32.6"E		0.028	0.034	0.024	0.026	0.020
5.	Chingudiapal (GW5)	21^0 02'56.9"N 85^0 45' 04.5"E		0.026	0.016	0.020	0.024	0.028
6.	Kalarangi Village (GW6)	21^0 00' 47.6"N 85^0 43' 38.1"E		0.018	0.022	0.016	0.020	0.016

Annexure-IV

Analysis Report of Surface Runoff generating at Mines

July,2017

Sl. No	Parameters	Unit	Prescribed standards	SRF - 1	SRF - 2
1	pH	-	5.5-9.0	6.68	6.94
2	Total Suspended Solids	mg/l	100	87	92
3	Chromium (as Cr^{+6})	mg/l	0.1	0.072	0.064

August,2017

Sl. No	Parameters	Unit	Prescribed standards	SRF - 1	SRF - 2
1	pH	-	5.5-9.0	7.91	8.12
2	Total Suspended Solids	mg/l	100	98	88
3	Chromium (as Cr^{+6})	mg/l	0.1	0.084	0.064

September,2017

Sl. No	Parameters	Unit	Prescribed standards	SRF - 1	SRF - 2
1	pH	-	5.5-9.0	8.24	7.76
2	Total Suspended Solids	mg/l	100	95	91
3	Chromium (as Cr^{+6})	mg/l	0.1	0.062	0.078

BY REGD POST

ODISHA

OFFICE OF THE
STATE POLLUTION CONTROL BOARD, ODISHA
Parivesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII,
Bhubaneswar - 751 012

No. 18196 / **IND-II-NOC-5723** Date 08-10-13

OFFICE MEMORANDUM

In consideration of the application for obtaining Consent to Establish for **Kaliapani Chromite Mines of M/s Balasore Alloys Ltd.,** the State Pollution Control Board has been pleased to convey its Consent to Establish under section 25 of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 for **enhancement of production capacity of Chrome ore from 0.42 MTPA to 0.6 MTPA and Change of mining from opencast to underground mining, over mining lease hold area of 64.463 ha., At – Kaliapani, Sukinda** in the district of **Jajpur** with the following conditions.

GENERAL CONDITIONS:-

1. **This consent to establish is valid for the product, method of mining and capacity mentioned in the application form. This order is valid for five years, which means the proponent shall commence mining activities for the proposal within a period of five years from the date of issue of this consent to establish order. If the proponent fails to commence mining activities for the proposal within five years then a renewal of this consent to establish shall be sought by the proponent.**
2. Adequate effluent treatment facilities are to be provided such that the quality of sewage and trade effluent satisfies the standards as prescribed under Environment Protection Rule, 1986 or as prescribed by the Central Pollution Control Board and/or State Pollution Control Board or otherwise stipulated in the special conditions.
3. All emission from the mining activities as well as the ambient air quality and noise shall conform to the standards as laid down under Environment (Protection) Act. 1986 or as prescribed by Central Pollution Control Board/State Pollution Control Board or otherwise stipulated in the special conditions.
4. Appropriate method of disposal of solid waste is to be adopted to avoid environmental pollution.
5. The mine shall comply to the provisions of Environment Protection Act, 1986 and the rules made there under with their amendments from time to time such as the Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008, Hazardous Chemical Rules /Manufacture, Storage and Import of Hazardous Chemical

Rules, 1989 etc. and amendments there under. The mine shall also comply to the provisions of Public Liability Insurance Act, 1991, if applicable.

6. The mine shall apply for grant of Consent to operate under section 25/26 of Water(Prevention & Control of Pollution)Act, 1974 & Air (Prevention & Control of Pollution)Act, 1981 at least 3 (three) months before the commencement of production and obtain Consent to Operate from this Board.

7. **This consent to establish is subject to statutory and other clearances from Govt. of Odisha and/or Govt. of India, as and when applicable.**

SPECIAL CONDITIONS : -

1. **The proponent has to seek environmental clearance as per EIA notification 2006 and mining activity for proposal shall commence after obtaining environmental clearance.**
2. **The mine shall treat all the mine drainage water and surface run-off in the new ETP of capacity 445 m^3/hr designed as per IIT recommendation.**
3. **The surface run-off from OB-dump-I shall be routed through ETP instead of existing practice.**
4. **Toe wall and garland drain shall be provided around all the three dumps and surface run-off shall be routed through the ETP.**
5. **Present development of plantation is less, so more plantation with help of coir matting shall be carried out for slope stabilization in all the existing dumps.**
6. **Presently surface run-off from tailing disposal area is collected in an earthen pond. The mine shall make this pond impervious/concreted and surface run-off shall be routed to ETP.**
7. **The mine shall explore the quantity of mine drainage water to be generated from underground mining.**
8. **The mine shall submit the copy of agreement from M/s IMFA for joint dumping, at the time of consent to operate application.**
9. Sewage Treatment Plant shall be installed for the treatment of domestic effluent generated from the colony and mines so as to meet the prescribed standard such as pH=6.5-8.0, SS=50mg/l, BOD=30mg/l & O&G=5mg/l and shall be reused for green belt development.

10. No change in mining technology and scope of working shall be made without prior approval of the Board.

11. Top soil should be stacked properly with proper slope at earmarked site(s) with adequate measures and shall be used for reclamation and rehabilitation of mined out areas.

12. Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data. The detail specification shall be worked out and submitted to the Board at the time of consent to operate application.

13. Reclamation programme along with the post closure plan is to be submitted within 06 months from the date of issue of this order.

14. Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The drains should be regularly de-silted and maintained properly. The garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material.

15. The OB/waste dumps shall be properly dressed benched stopped at low angle with terracing and bamboo barricades in the slopes making retaining walls, stone barriers at the toe of the dumps gully plugging etc. to prevent the solid erosion during monsoon, besides establishing vegetation on dump top as well as its slope surface. In difficult cases, hydro-seedling technique or use of geo-tiles mat embedded with seeds shall be adopted.

16. Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), Monsoon (August), Post-monsoon(November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly. Following heavy metals need to be monitored at least once during post monsoon period whose values shall not exceed as per following standard.

    i) Cd - 2.0 mg/l
    ii) Cr+6 - 0.10 mg/l
    iii) Copper - 3.0 mg/l
    iv) Lead - 0.10 mg/l
    v) Mercury - 0.01 mg/l
    vi) Nickel - 0.50 mg/l
    vii) Zinc - 5.0 mg/

17. Wastewater (workshop, wastewater from the mine i.e. pit water, check dams or any other discharge leaving lease boundary of the mine) should be properly collected, treated so as to conform the prescribed standard i.e. pH = 6 – 9.0, SS = 50 mg/l, & O & G = 5 mg/l and Cr^{+6}= 0.1 mg/l or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop. Domestic effluent shall be discharged to soak pit via septic tank.

18. The mine shall provide full-fledged effluent treatment plant for removal of Hexavalent Chromium from wastewater from mine pit and shall discharge after conforming to the standard prescribed by the Board i.e. pH – 6.0-9.0, total SS=50mg/l & O&G = 5 mg/l and Cr^{+6}= 0.1 mg/l.

19. Two ambient air quality monitoring stations for 24 hours operation should be established in the core zone as well as in the buffer zone for RPM, SPM, SO_2, NO_x and CO monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board (i) Data on ambient air quality (RPM, SPM, SO_2, NO_x and CO) should be regularly submitted to the State Pollution Control Board once in six months.

20. The haulage roads and arterial roads shall be made black topped / concrete with avenue plantation. The speed of dumpers / trucks on haul roads shall be controlled as increased speed increases dust emission. Overloading of transport vehicles shall be avoided. Further, during transportation of ore by trucks through public roads, the truck shall be properly covered with tarpaulin sheets / leak proof coverings and shall ply at safe speed.

21. Dust suppression on mine haul roads, active OB dumps and mine working benches shall be done by spraying water through water sprinklers along with chemical binders/wetting agents at frequent interval in order to reduce water consumption and to improve retention and re-absorption capacity of water. The additive chemicals should not have any adverse impact on the environment. Water sprinklers of fixed type shall also be provided at the mine HEMM maintenance shop, other service centers and approach roads from mines to crusher hopper to prevent the generation of dust to be air borne.

22. Regular collection of spilled over raw material from haul roads shall be practiced to prevent the generation of dust due to movement of dumpers/truck.

23. Air blast level resulting from blasting on any premises or public place must not exceed 90 dB linear, peak at any other premises outside the period between 7 AM and 6 PM on

any day. Noise levels at the boundary line of M.L area shall not exceed 75 dB (A) during day time (6 AM to 10 AM) and 70 dB (A) during night time (10, PM to 6 AM).

24. At stockpile and loading plant area, a network of drains with concrete bottom shall be constructed at a depth of 1.5 meter below the lowest level on the sites parallel to the stockpile area with interconnected box culverts. The sloping of surface shall be given inward to the stockpiles so that surface water will only infiltrate in to the drain.

25. Sedimentation ponds shall be constructed at strategic points in order to guide all surface run-off water containing sediments for settlement of suspended solids before discharge of water in to natural stream/water courses during monsoon.

26. The waste dumps shall be located away from the natural nallas, rivers in the area and on an impervious & non-mineralized area to minimize the water pollution.

27. The completed out slope of the waste dumps should not exceed 20 degrees from horizontal to avoid excessive erosion and easy vegetation.

28. Adequate measures shall be taken to prevent land subsidence.

29. The mine water from the underground mine shall be monitored regularly and be treated to remove Cr^{+6} if found more than the standard of 0.1mg/l.

30. **A green belt of adequate width and density preferably with local species along the periphery of the mine shall be raised so as to provide protection against particulates and noise. It must be ensured that at least 33% of the total land area shall be under permanent green cover, in such a manner that, atleast plantation shall be taken up at least in 20% of the total green belt area and progressively achieve 100% in a span of five years.**

31. Consent to operate shall be obtained from this Board before commencing the mining activities of proposed expansion project.

32. Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.

33. 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.

34. The Board may impose further conditions or modify the conditions stipulated in this order during installation and/or at the time of obtaining consent to operate and may revoke this clearance in case the stipulated conditions are not implemented.

35. The above conditions will be enforced, inter-allia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 the Air (Prevention & Control of Pollution) Act, 1981 the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

MEMBER SECRETARY

To

The Mines Manager,
Kaliapani Chromite Mines of
M/s Balasore Alloys Ltd.,
At/Po- Kaliapani, Dist – Jajpur,
Odisha-755047

Memo No._____/Dt._____/

Copy forwarded to:

1. Secretary Steels & Mines, Govt. of Odisha, Bhubaneswar
2. District Magistrate & Collector, Jajpur
3. District Industries Centre, Jajpur
4. Consent Section, SPC Board, BBSR
5. Director, Factories & Boiler, Bhubaneswar
6. Director of Mines, Odisha, BBSR
7. Regional Officer, SPC Board, Cuttack
8. DFO, Jajpur
9. HSM Cell, SPC Board, BBSR
10. Copy to Guard file

SR. ENV. ENGINEER (N)

BY Reg. Post with A.D

Tel : 0674-2564033
FAX : 0674-2564033/2564573
EPABX : 2561909/2562847
E-mail: paribesh1@ospcboard.org
Website: www.ospcboard.org

STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST & ENVIRONMENT, GOVERNMENT OF ODISHA]

Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII
Bhubaneswar – 751 012, INDIA

No. 1073 / Ind. I con. 2576 Date: 19.01.2017 /

To

The Sr. Vice President (Mines),
Kaliapani Chromite Mines of M/s. Balasore Alloys Limited,
Module C1, 1st Floor, Fortune Tower,
Bhubaneswar-23, Odisha

Sub: Extension of validity period of CTO order issued vide letter No. 15398 dated 20.10.2016

Ref: i. Consent Order vide Board's Letter No. 15398 Dated 20.10.2016
ii. Online reply dated 18.01.2017

Sir,

This has reference to your request for consideration of extension of validity period of consent to operate order issued by SPCB, Odisha vide letter No.15398 dated 20.10.2016. In this context, this is to inform that in view of interim order passed by the Hon'ble High Court of Orissa on 16.01.2017 in the matter of W.P. (C) 4157/2016, the Board is pleased to extend the validity period of CTO order issued vide this office letter No.15398 dated 20.10.2016 up to 31.03.2018 subject to final outcome of the said Writ Petition. The conditions imposed in the original consent order issued vide letter under reference shall remain unchanged.

Yours faithfully,

19/1/17

MEMBER SECRETARY

Memo No._____/Dt._____/

Copy forwarded to :

i) Regional Officer, State Pollution Control Board, **Kalinganagar**
ii) District Collector, **Jajpur**
iii) Director of Mines, Govt. of Odisha, Bhubaneswar,
iv) Director, Environment -cum-Special Secretary, F & E. Deptt. Govt. of Odisha, Bhubaneswar.
v) D.F.O,**Cuttack**
vi) Deputy Director of Mines, **Jajpur Road**
vii) Cess Section (Head Office)
viii) Sr. Env. Engineer-L-I (C) (Hazardous waste cell)
ix) Sr. Env. Scientist –L-I (L), Central Lab. SPCB, Bhubaneswar
x) Consent Register

SR. ENV. SCIENTIST (MINES)

BY REGD. POST WITH AD

STATE POLLUTION CONTROL BOARD, ODISHA

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012
Phone-2561909, Fax: 2562822, 2560955 E-mail: paribesh1@ospcboard.org, Website: www.ospcboard.org

CONSENT ORDER

No. 4712 / **IND-I-CON-2576** Dt. 17.3.16 /

CONSENT ORDER NO. 1239

Sub: **Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.**

Ref: **Your online application No. 432290 dated 11.12.2015 and your online reply dated 9.3.2016**

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry: **KALIAPANI CHROMITE MINES OF M/S. BALASORE ALLOYS LTD.**

Name of the Occupier & Designation: **SRI BACHCHAN KUMAR, SR. VICE PRESIDENT (MINE)**

Address: **AT/PO: KALIAPANI, DIST: JAJPUR**

This consent order is valid for the period **up to 30.09.2016**

This consent order supersedes the earlier consent order issued vide letter No. 557 dated 12.01.2015.

Details of Products Manufactured

Sl. No	Product	Quantity
01.	Chrome ore(ROM)	0.6 MTPA

Details of Mineral Handling/Processing Plants

01.	COB Plant of capacity	1x20 TPH

This consent order is valid for the specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.

A. Discharge permitted through the following outlet subject to the standard

Outlet No.	Description of outlet	Point of discharge	Quantity of discharge/ hr	Pre-scribed Standard							
				pH	TSS (mg/l)	BOD (mg/l)	COD (mg/l)	Oil & Grease (mg/l)	Cr+6 (mg/l)	Total Chromium (mg/l)	Fe (mg/l)
01.	*Septic tank (Domestic effluent)*	*Soak pit*	--	*5.5 to 9.0*	*200*	*100*	--	--	--	--	-
02.	*Mine drainage water / surface run off/ other wastewater*	*On land / inland surface water body*	*199*	*5.5 to 9.0*	*100*	--	--	*10*	*0.05*	*2.0*	*3*

B. Emission permitted through the following stack subject to the prescribed standard

Chimney Stack No.	Description of Stack	Stack height (m)	Quantity of emission	Prescribed Standard				

C. Disposal of solid waste permitted in the following manner

Sl. No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site(TPD)	Quantity to be reused off site(TPD)	Quantity disposed off (TPD)	Description of disposal site.
01.	Top soil / overburden	As per approved mining plan	--	--	--	As per approved mining plan

D. GENERAL CONDITIONS FOR ALL UNITS

1. The consent is given by the Board in consideration of the particulars given in the application. Any change or alternation or deviation made in actual practice from the particulars furnished in the application will also be the ground liable for review/variation/revocation of the consent order under section 27 of the Act of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.

2. The industry would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / and products / manufacturing process or quantity /quality of the effluent rate of emission / air pollution control equipment / system etc.

3. The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.

4. The application shall comply with and carry out the directives/orders issued by the Board in this consent order and at all subsequent times without any negligence on his part. . In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law/Act.

5. The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.

6. The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.

7. This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.

8. The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.

9. An inspection book shall be opened and made available to Board's Officers during the visit to the factory.

10. The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.

11. Meters must be affixed at the entrance of the water supply connection so that such meters are easily accessible for inspection and maintenance and for other purposes of the Act provided that the place where it is affixed shall in no case be at a point before which water has been taped by the consumer for utilization for any purposes whatsoever.

12. Separate meters with necessary pipe-line for assessing the quantity of water used for each of the purposes mentioned below:

    a) Industrial cooling, spraying in mine pits or boiler feed,

    b) Domestic purpose

    c) Process

13. The applicant shall display suitable caution board at the lace where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.

14. Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.

15. The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.

16. The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.

17. Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed with sides and bottom made impervious.

18. The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.

19. The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.

20. If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the industry must adopt alternate satisfactory treatment and disposal measures.

21. The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.

22. The effluent treatment units and disposal measures shall become operative at the time of commencement of production.

23. The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Act or Rules made therein.

24. The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.

25. The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.

26. No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.

27. The liquid effluent arising out of the operation of the air pollution control equipment shall be treated in the manner and to ion of standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 (as amended).

28. The stack monitoring system employed by the applicant shall be opened for inspection to this Board at any time.

29. There shall not be any fugitive or episodal discharge from the premises.

30. In case of such episodal discharge/emissions the industry shall take immediate action to bring down the emission within the limits prescribed by the Board in conditions/stop the operation of the plant. Report of such accidental discharge /emission shall be brought to the notice of the Board within 24 hours of occurrence.

31. The applicant shall keep the premises of the industrial plant and air pollution control equipments clean and make all hoods, pipes, valves, stacks/chimneys leak proof. The air pollution control equipments, location, inspection chambers, sampling port holes shall be made easily accessible at all times.

32. Any upset condition in any of the plant/plants of the factory which is likely to result in increased effluent discharge/emission of air pollutants and / or result in violation of the standards mentioned above shall be reported to the Headquarters and Regional Office of the Board by fax / speed post within 24 hours of its occurence.

33. The industry has to ensure that minimum three varieties of trees are planted at the density of not less than 1000 trees per acre. The trees may be planted along boundaries of the industries or industrial premises. This plantation is stipulated over and above the bulk plantation of trees in that area.

34. The solid waste such as sweeping, wastage packages, empty containers residues, sludge including that from air pollution control equipments collected within the premises of the industrial plants shall be disposed off scientifically to the satisfaction of the Board, so as no to cause fugitive emission, dust problems through leaching etc., of any kind.

35. All solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by :
    i) Land fill in case of inert material, care being taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
    ii) Controlled incineration, wherever possible in case of combustible organic material.
    iii) Composting, in case of bio-degradable material.

36. Any toxic material shall be detoxicated if possible, otherwise be sealed in steel drums and buried in protected areas after obtaining approval of this Board in writing. The detoxication or sealing and burying shall be carried out in the presence of Board's authorized persons only. Letter of authorization shall be obtained for handling and disposal of hazardous wastes.

37. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard, vary all or any of such condition and thereupon the applicant shall be bound to comply with the conditions so varied.

38. The applicant, his/heirs/legal representatives or assignees shall have no claim whatsoever to the condition or renewal of this consent after the expiry period of this consent.

39. The Board reserves the right to review, impose additional conditions or condition, revoke change or alter the terms and conditions of this consent.

40. Notwithstanding anything contained in this conditional letter of consent, the Board hereby reserves to it the right and power under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Act by the Board.

41. The conditions imposed as above shall continue to be in force until revoked under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 A of Air (Prevention & Control of Pollution) Act, 1981.

42. In case the consent fee is revised upward during this period, the industry shall pay the differential fees to the Board (for the remaining years) to keep the consent order in force. If they fail to pay the amount within the period stipulated by the Board the consent order will be revoked without prior notice.

43. The Board reserves the right to revoke/refuse consent to operate at any time during period for which consent is granted in case any violation is observed and to modify/ stipulate additional conditions as deemed appropriate.

GENERAL CONDITIONS FOR UNITS WITH INVESTMENT OF MORE THAN Rs 50 CRORES, AND 17 CATEGORIES OF HIGHLY POLLUTING INDUSTRIES (RED A).

1. The applicant shall analyse the emissions every month for the parameters indicated in TABLE :B & C as mentioned in this order and shall furnish the report thereof to the Board by the 10th of the succeeding month.

2. The applicant shall provide and maintain at his own cost three ambient air quality monitoring stations for monitoring Suspended Particulate Matter, Sulphor Dioxide, Oxides of Nitrogen, Hydro-Carbon, Carbon-Monixide and monitor the same once in a day/week/fortnight/month. The data collected shall be maintained in a register and a monthly extract be furnished to the Board.

3. The applicant shall provide and maintain at his own cost a meteorological station to collect the data on wind velocity, direction, temperature, humidity, rainfall, etc. and the daily reading shall be recorded and the extract sent to the Board once in a month.

4. The applicant shall forward the following information to the Member Secretary, State Pollution Control Board, Odisha, Bhubaneswar regularly.
   a. Report of analysis of stack monitoring, ambient air quality monitoring meteorological data as required every month.
   b. Progress on planting of trees quarterly.

5. The applicant shall install mechanical composite sampling equipment and continuous flow measuring / recording devices on the effluent drains of trade as well as domestic effluent. A record of daily discharge shall be maintained.

6. The following information shall be forwarded to the Member Secretary on or before 10th of every month.

   a. Performance / progress of the treatment plant.
   b. Monthly statement of daily discharge of domestic and/or trade effluent.

7. **Non-compliance with effluent limitations**

   a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.

      i) Causes of non-compliance

      i) A description of the non-compliance discharge including its impact on the receiving waters.

      ii) Anticipated time of continuance of non-compliance if expected to continue or if such condition has been corrected the duration or period of non-compliance.

      iii) Steps taken by the applicant to reduce and eliminate the non-complying discharge and

      iv) Steps to be taken by the applicant too prevent the condition of non-compliance.

   b) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.

   c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster.

8. The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board.

9. The addition of various treatment chemicals should be done only with mechanical dosers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalies arbitrarily and utilizing poles for stirring etc. should not be resorted to.

10. In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for;

    Rotation of crops

    Change of point of application of effluent on land

    A portion of land kept fallow.

11. The adoption of these would avoid soil becoming sick or slate, the industry may ensure this in consultation with the Agriculture Department.

12. It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royats in the surrounding areas as a result of discharge of sewage or trade effluent if any.

13. Proper housekeeping shall be maintained by a dedicated team.

14. The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately.

E. SPECIAL CONDITIONS:

1) This consent order is subject to subject to fulfillment/compliance of MoEF & CC, Govt. of India guidelines dated. 9th March, 2016 and permission of State Govt. to continue mining operation.

2) A copy of the annual return (annual return submitted to IBM, Govt. of India/ Directorate of Mines, Govt. of Odisha) shall be submitted every year.

3) The environmental statement report shall be submitted to the Board in proper format every year.

4) Wet drilling shall be practiced or suitably designed dust extractor shall be provided for dry drilling to prevent generation of dust in the work environment.

5) Pre-wetting of blasting site and controlled blasting shall be practiced. Blasting shall be carried out during day time.

6) Water sprinkling through tankers / fixed sprinklers shall be carried out on the mine haulage roads and should always be in wet condition, so as to prevent generation of dust during transportation of materials.

7) Wheel washing facility for the ore transport vehicles shall be provided at the exit point of the mine.

8) The vehicles carrying ore for transportation from the mine shall be covered with tarpaulin.

9) Regular water sprinkling on mineral transportation roads passing through the habitation area as well as other strategic point on the ore transportation road shall be done jointly by the mining lessees.

10) All mine haulage roads and other transportation roads shall be maintained properly to avoid creation of ruts and pot holes.

11) Adequate measures shall be taken for control of noise levels below 85 dB(A) in work zone.

12) Regular monitoring of ambient air quality shall be carried out at three appropriate places and monitoring report shall be furnished to the Board once in six months. The permanent monitoring stations shall be fixed in consultation with the Regional Officer of the Board.

13) Ambient air quality of the mine shall meet the prescribed standards for industrial area.

14) Wastewater generated from the ore beneficiation plant shall be completely reused.

15) The slime generated from the ore beneficiation plant shall be disposed of safely as per mining plan and action shall be taken to prevent the contamination of ground water due to its disposal.

16) Retention wall shall be constructed at the toe of OB dump with provision of garland drain. Provision shall be made to divert the runoff from OB, ore stack yard and other areas of the mine to the ETP. Garland drains, channels and sedimentation pits constructed for the purpose shall be desilted after monsoon or as and when required.

17) Mine drainage water shall be used for wet beneficiation of sub-grade ore. Excess water if any, shall be discharged into surface water body after adequate treatment in the ETP. The treated wastewater of ETP shall also be utilized for sprinkling activities at various sources of generation of dust.

18) Online continuous monitoring system with data transfer facility to SPCB server shall be installed at the inlet and outlet of the ETP for monitoring of flow rate,pH, TSS& hexavalent chromium.

19) Overburden / waste rock shall be properly stacked in the earmarked areas approved by IBM and shall be suitably terraced and stabilized through vegetative cover or otherwise.

20) Restoration and rehabilitation of the mine shall be done in accordance with approved mine closure plan.

21) Seasonal monitoring of ground water level and its quality shall be carried out four times a year and report shall be submitted to the Board.

22) Domestic effluent of the township shall be treated in suitable and well-designed sewage treatment plant or shall be discharged to soak pit via septic tank constructed as BIS specifications.

23) Oil and grease trap with sedimentation pit shall be provided for treatment of workshop effluent, if any. The treated wastewater shall be completely recycled.

24) Ambient Air Quality monitoring data, Noise Monitoring data & Water/Waste Water Quality Monitoring data shall be electronically displayed at the entry point of the mine or at a suitable location of the mine.

25) Plantation of trees shall be undertaken in the colony/ township, over top soil dumps, OB dumps, back filled areas, along the side of haul road and in other areas of the mines not being utilized for mining activities. The mine shall take up avenue plantation and plantation in nearby village areas in consultation with DFO/Horticulture Department. The density of the plantation shall be around 2500 plants per hectare. Nursery shall also be developed for plantation activities within the ML area and free distribution of seedlings to nearby villagers. The annual statements pertaining to the number of trees planted areas where plantation has been done, survival percentage and area in Ha. covered under plantation shall be submitted to the Board, every year in prescribed format.

26) Mining operation is subject to availability of all other statutory clearances required under relevant Acts/Rules.

27) The mine shall submit a declaration by 30th April every year that all pollution control systems are in good condition, are operated efficiently and ambient air quality as well as wastewater quality are conforming to the prescribed standards.

MEMBER SECRETARY
STATE POLLUTION CONTROL BOARD, ODISHA

TO,

THE SR. VICE PRESIDENT (MINES),
KALIAPANI CHROMITE MINES OF M/S. BALASORE ALLOYS LIMITED,
MODULE C1, IST FLOOR, FORTUNE TOWER,
BHUBANESWAR-23,
ODISHA

Memo No._____/Dt._____/

Copy forwarded to :

i) Regional Officer, State Pollution Control Board, **Kalinganagar**
ii) District Collector, **Jajpur**
iii) Director of Mines, Govt. of Odisha, Bhubaneswar,
iv) Director, Environment -cum-Special Secretary, F & E. Deptt. Govt. of Odisha, Bhubaneswar.
v) D.F.O **Jajpur**
vi) Deputy Director of Mines, **Jajpur Road**
vii) Cess Section (Head Office)
viii) Sr. Env. Engineer-L-I (C) (Hazardous waste cell)
ix) Sr. Env. Scientist –L-I (L), Central Lab. SPCB, Bhubaneswar
x) Consent Register

SR. ENV. SCIENTIST (MINES)
STATE POLLUTION CONTROL BOARD, ODISHA

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS

GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART –A : EFFLUENTS

Sl.No.	Parameters	Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
1.	Colour&odour	Colourless/Odourless as far as practible	------	See 6 of Annex-1	See 6 of Annex-1
2.	Suspended Solids (mg/l)	100	600	200	For process wastewater – 100 b. For cooling water effluent 10% above total suspended matter of influent.
3.	Particular size of SS	Shall pass 850	-----	------	
5.	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	Shall not exceed 5^0C above the receiving water temperature	-------	--------	Shall not exceed 5^0C above the receiving water temperature
7.	Oil & Grease mg/l max.	10	20	10	20
8.	Total residual chlorine	1.0	----	------	1.0
9.	Ammonical nitrogen (as N) mg/l max.	50	50	------	50
10.	Total Kajeldahl nitrogen (as NH_3) mg/1 max.	100	----	------	100
11.	Free ammonia (as NH_3) mg/1 max.	5.0	----	------	5.0
12.	Biochemical Oxygen Demand (5 days at (20^0C) mg/1 max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/1 max.	250	----	------	250
14.	Arsenic (as As) mg/1 max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg) mg/1 max.	0.01	0.01	------	0.001
16.	Lead (as pb) mg/1 max.	01.	1.0	------	2.0

17.	Cardmium (as Cd) mg/1 max.	2.0	1.0	------	2.0
18.	Hexavalent Chromium (as Cr + 6) mg/l max.	0.1	2.0	--------	1.0
19.	Total Chromium (as Cr) mg/l max.	2.0	2.0	---------	2.0
20.	Copper (as Cu) mg/l max.	3.0	3.0	---------	3.0
21.	Zinc (as Zn) mg/l max.	5.0	15	---------	15
22.	Selenium (as Sc) mg/l max.	0.05	0.05	---------	0.05
23.	Nickel (as Nil) mg/l max.	3.0	3.0	---------	5.0
24.	Cyanide (as CN) mg/l max.	0.2	2.0	0.2	0.02
25.	Fluoride (as F) mg/l max.	2.0	15	---------	15
26.	Dissolved Phosphates (as P) mg/l max.	5.0	-------	---------	--------
27.	Sulphide (as S) mg/l max.	2.0	--------	---------	5.0
28.	Phennolic compounds as (C_6H_5OH) mg/l max.	1.0	5.0	---------	5.0
29.	Radioactive materials a. Alpha emitter micro curle/ml. b. Beta emitter micro curle/ml.	 10^7 10^6	 10^7 10^6	 10^8 10^7	 10^7 10^6
30.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
31	Manganese (as Mn)	2 mg/l	2 mg/l	---------	2 mg/l
32.	Iron (Fe)	3 mg/l	3 mg/l	---------	3 mg/l
33.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	---------	0.2 mg/l
34.	Nitrate Nitrogen	10 mg/l	--------	---------	20 mg/l

NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutants	Time Weighed Average	Concentrate of Ambient Air		
			Industrial Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO_2), $\mu g/m^3$	Annual *	50	20	-Improved west and Gaeke
		24 Hours **	80	80	- Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO_2), $\mu g/m^3$	Annual *	40	30	- Modified Jacob &Hochheiser (Na-Arsenite)
		24 Hours **	80	80	- Chemiluminescence
3.	Particulate Matter (size less than 10μm) or $PM_{10}\mu g/m^3$	Annual *	60	60	-Gravimetric - TOEM
		24 Hours **	100	100	- Beta Attenuation
4.	Particulate Matter (size less than 2.5μm) or $PM_{2.5}\mu g/m^3$	Annual *	40	40	-Gravimetric - TOEM
		24 Hours **	60	60	- Beta Attenuation
5.	Ozone (O_3) $\mu g/m^3$	8 Hours **	100	100	- UV Photometric - Chemiluminescence
		1 Hours **	180	180	- Chemical Method
6.	Lead (Pb) $\mu g/m^3$	Annual *	0.50	0.50	-AAS/ICP method after sampling on EMP 2000 or equivalent filter paper. - ED-XRF using Teflon filter
		24 Hours **	1.0	1.0	
7.	Carbon Monoxide (CO) mg/m^3	8 Hours **	02	02	- Non Dispersive Infra Red (NDIR) Spectroscopy
		1 Hours **	04	04	
8.	Ammonia (NH_3) $\mu g/m^3$	Annual*	100	100	-Chemiluminescence - Indophenol Blue Method
		24 Hours**	400	400	
9.	Benzene (C_6H_6) $\mu g/m^3$	Annul *	05	05	-Gas Chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP)-Particulate phase only, ng/m^3	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis
11.	Arsenic (As), ng/m^3	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni), ng/m^3	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

** Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Annexure: VII

Kaliapani Chromite Mines										
Traffic Density Study Report										
Station	**Working Days**				**Non Working Days**			**Market Days**		
Mines main Gate	**Result**	**Light Vehicle**	**Medium Vehicle**	**Heavy Vehicle**	**Light Vehicle**	**Medium Vehicle**	**Heavy Vehicle**	**Light Vehicle**	**Medium Vehicle**	**Heavy Vehicle**
	Total Nos	1507	566	560	1019	341	306	2506	944	541
	Avg Traffic Load/Hr	62.79	23.58	23.33	42.45	14.2	12.75	104.41	39.33	22.54
	Passenger Car Unit(PCU) Factor	0.75	2	3.7	0.75	2	3.7	0.75	2	3.7
	PCU/Hr	47.09	47.16	86.33	31.84	28.41	47.17	78.31	78.66	83.40
Kalarngiatta	Total Nos	878	379	455	950	418	265	2363	934	345
	Avg Traffic Load/Hr	36.58	15.79	18.95	39.58	17.41	11.04	98.45	38.91	14.37
	Passenger Car Unit(PCU) Factor	0.75	2	3.7	0.75	2	3.7	0.75	2	3.7
	PCU/Hr	27.43	31.58	70.14	29.68	34.83	40.85	73.84	77.83	53.18
Kansa	Total Nos	878	379	455	745	278	193	1374	328	309
	Avg Traffic Load/Hr	36.58	15.79	18.95	31.04	11.58	8.04	57.25	13.66	12.87
	Passenger Car Unit (PCU) Factor	0.75	2	3.7	0.75	2	3.7	0.75	2	3.7
	PCU/Hr	27.43	31.58	70.14	23.28	23.16	29.75	42.93	27.33	47.63

Sampling Station: Office Area (210 02'04.7"N, 850 45' 31.0"E) , Station Code AAQ - 1													
Month	Value	Analysis Results											
		PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO µg/m^3	O_3 µg/m^3	NH_3 µg/m^3	C_6H_6 µg/m^3	Bap ng/m^3	Pb µg/m^3	Ni ng/m^3	As ng/m^3
April,17	Average	69	32.375	5.5375	13.0375	0.466667	5.575	BDL	0.55625	BDL	0.00022	BDL	BDL
	Min	52	26	4.9	10.5	0.2	4.7	BDL	0.5	BDL	0.00017	BDL	BDL
	Max	82	39	6.1	14.8	0.8	6.5	BDL	0.63	BDL	0.00029	BDL	BDL
May,17	Average	69.55	27.44	6.35	12.93	0.33	5.61	BDL	0.52	BDL	0.000232	BDL	BDL
	Min	59	22	5.4	11.6	0.2	4.8	BDL	0.39	BDL	0.00018	BDL	BDL
	Max	82	32	7.3	14.2	0.6	6.7	BDL	0.62	BDL	0.00028	BDL	BDL
June,17	Average	67.375	29.25	5.8375	12.425	0.4	5.3875	BDL	0.54875	BDL	0.000223	BDL	BDL
	Min	55	23	4.8	10.2	0.2	4.3	BDL	0.47	BDL	0.00017	BDL	BDL
	Max	80	38	7.3	14.1	0.6	6.7	BDL	0.64	BDL	0.00027	BDL	BDL
July,17	Average	61.83	27.83	5.68	12.15	0.4	5.21	BDL	0.512	BDL	0.000227	BDL	BDL
	Min	51	20	4.8	10.9	0.2	4.2	BDL	0.38	BDL	0.00018	BDL	BDL
	Max	71	35	6.8	13.5	0.6	6.4	BDL	0.66	BDL	0.00028	BDL	BDL
Aug,17	Average	70.6	31.2	6.44	13.6	0.4	5.86	BDL	0.496	BDL	0.00022	BDL	BDL
	Min	61	25	5.4	10	0.2	4.4	BDL	0.35	BDL	0.00018	BDL	BDL

	Max	80	37	7.9	16.9	0.6	7.5	BDL	0.61	BDL	0.00025	BDL	BDL
Sept,17	Average	60.66	25.66	6.4	12.98	0.4	5.25	BDL	0.41	BDL	0.000218	BDL	BDL
	Min	54	20	5.1	10.7	0.2	4.5	BDL	0.3	BDL	0.00018	BDL	BDL
	Max	66	30	7.8	14.4	0.6	5.7	BDL	0.52	BDL	0.00027	BDL	BDL
CPCB Standards	Annual Average	60	40	50	40	2	100	100	5	1	0.5	20	6
	24 Hrs	100	60	80	80	4	180	400	5	1	1	20	6

Sampling Station: Bachelor Barrack (21^0 02'05.7"N, 85^0 45' 34.2"E) Station Code : AAQ - 2

Month	Value	Analysis Results											
		PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO µg/m^3	O_3 µg/m^3	NH_3 µg/m^3	C_6H_6 µg/m^3	Bap ng/m^3	Pb µg/m^3	Ni ng/m^3	As ng/m^3
April,17	**Average**	75.875	35.25	5.4625	13.05	0.36	5.6375	BDL	0.52375	BDL	BDL	BDL	BDL
	Min	63	27	4.3	11.6	0.2	4.7	BDL	0.45	BDL	BDL	BDL	BDL
	Max	88	41	6.8	14.7	0.6	6.5	BDL	0.57	BDL	BDL	BDL	BDL
May,17	**Average**	76.77	30.11	7.15	13.85	0.33	5.46	BDL	0.54	BDL	0.000242	BDL	BDL
	Min	69	26	6.3	12.3	0.2	4.6	BDL	0.49	BDL	0.00019	BDL	BDL
	Max	85	34	7.8	15.1	0.6	6.3	BDL	0.63	BDL	0.00029	BDL	BDL
June,17	**Average**	67.75	28.375	6.4375	12.375	0.3	5.5875	BDL	0.56375	BDL	0.000239	BDL	BDL

	Min	58	22	5.4	10.4	0.2	4.8	BDL	0.44	BDL	0.00019	BDL	BDL
	Max	77	35	7.1	13.6	0.4	6.6	BDL	0.66	BDL	0.00028	BDL	BDL
July,17	**Average**	64	27.66	6.38	13.01	0.3	5.28	BDL	0.55	BDL	0.000237	BDL	BDL
	Min	55	21	5.1	10.5	0.2	4.3	BDL	0.47	BDL	0.00018	BDL	BDL
	Max	75	33	7.2	15.3	0.4	6.4	BDL	0.64	BDL	0.00027	BDL	BDL
Aug,17	**Average**	67.6	29.4	6.28	13.18	0.33	5.8	BDL	0.42	BDL	0.00022	BDL	BDL
	Min	55	24	4.9	10.8	0.2	4.6	BDL	0.28	BDL	0.00016	BDL	BDL
	Max	73	33	7.5	15.8	0.4	7.2	BDL	0.5	BDL	0.00025	BDL	BDL
Sept,17	**Average**	65.16	26.83	6.2	13.81	0.4	5.38		0.48	BDL	0.000228	BDL	BDL
	Min	50	19	5.2	11.7	0.2	4.2		0.26	BDL	0.00017	BDL	BDL
	Max	75	32	7.3	15.4	0.6	6.3		0.63	BDL	0.00029	BDL	BDL
CPCB Standards	Annual Average	60	40	50	40	2	100	100	5	1	0.5	20	6
	24 Hrs	100	60	80	80	4	180	400	5	1	1	20	6

Sampling Station: Quarry (21^0 01'57.8"N, 85^0 46' 01.2"E), Station Code : AAQ - 3													
Month	Value	Analysis Results											
		PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO µg/m^3	O_3 µg/m^3	NH_3 µg/m^3	C_6H_6 µg/m^3	Bap ng/m^3	Pb µg/m^3	Ni ng/m^3	As ng/m^3
April,17	**Average**	72.375	31	5.4125	12.9625	0.4	5.4875	BDL	0.5175	BDL	0.000239	BDL	BDL
	Min	66	23	4.9	11.4	0.2	4.9	BDL	0.45	BDL	0.00017	BDL	BDL
	Max	82	38	7.1	13.8	0.6	6.3	BDL	0.59	BDL	0.00029	BDL	BDL
May,17	**Average**	72.88	27.44	6.46	14.06	0.3	5.41	BDL	0.55	BDL	0.000242	BDL	BDL
	Min	59	22	5.1	12.3	0.2	4.8	BDL	0.48	BDL	0.00018	BDL	BDL
	Max	83	36	7.8	15.9	0.4	6.7	BDL	0.62	BDL	0.00029	BDL	BDL
June,17	**Average**	70.12	29.75	6.53	13.45	0.32	5.57	BDL	0.53	BDL	0.000236	BDL	BDL
	Min	56	19	5.1	10.8	0.2	4.6	BDL	0.36	BDL	0.00018	BDL	BDL
	Max	85	37	7.6	15.8	0.6	6.6	BDL	0.64	BDL	0.00029	BDL	BDL
July,17	**Average**	63.66	28.33	5.85	12.63	0.4	5.46	BDL	0.50	BDL	0.000232	BDL	BDL
	Min	56	19	5.1	10.2	0.2	4.4	BDL	0.43	BDL	0.00017	BDL	BDL
	Max	73	36	6.8	14.9	0.6	6.4	BDL	0.62	BDL	0.00028	BDL	BDL
Aug,17	**Average**	68.6	30.4	6.68	14.16	0.4	5.64	BDL	0.496	BDL	0.000238	BDL	BDL
	Min	59	26	5.7	12.1	0.2	5.2	BDL	0.41	BDL	0.00018	BDL	BDL

	Max	82	37	7.5	16.4	0.8	6.7	BDL	0.64	BDL	0.00028	BDL	BDL
Sept,17	**Average**	65.83	29.66	6.433	13.31	0.4	BDL	BDL	0.48		0.000244	BDL	BDL
	Min	57	24	5.2	12.1	0.2	BDL	BDL	0.36		0.0002	BDL	BDL
	Max	73	34	7.5	15.3	0.6	BDL	BDL	0.64		0.00028	BDL	BDL
CPCB Standards	Annual Average	60	40	50	40	2	100	100	5	1	0.5	20	6
	24 Hrs	100	60	80	80	4	180	400	5	1	1	20	6

Sampling Station: Kaliapani Village (21^0 03'42.0"N, 85^0 46' 19.3"E), Station Code : AAQ - 4													
Month	Value	Analysis Results											
		PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO µg/m^3	O_3 µg/m^3	NH_3 µg/m^3	C_6H_6 µg/m^3	Bap ng/m^3	Pb µg/m^3	Ni ng/m^3	As ng/m^3
April,17	**Average**	60.5	26.875	5.4	11.0375	BDL	BDL	BDL	0.49625	BDL	0.000235	BDL	BDL
	Min	50	19	4.9	9.7	BDL	BDL	BDL	0.39	BDL	0.00018	BDL	BDL
	Max	68	32	5.9	12.4	BDL	BDL	BDL	0.63	BDL	0.00028	BDL	BDL
May,17	**Average**	66.22	27.11	5.98	12.35	BDL	BDL	BDL	0.52	BDL	0.000248	BDL	BDL
	Min	55	21	4.9	9.7	BDL	BDL	BDL	0.38	BDL	0.00021	BDL	BDL
	Max	72	32	6.7	13.8	BDL	BDL	BDL	0.63	BDL	0.00029	BDL	BDL
June,17	**Average**	63.125	25.625	5.3875	11.25	BDL	BDL	BDL	0.495	BDL	0.000229	BDL	BDL
	Min	52	18	4.4	9.1	BDL	BDL	BDL	0.4	BDL	0.00018	BDL	BDL

	Max	74	32	6.5	13.3	BDL	BDL	BDL	0.57	BDL	0.00027	BDL	BDL
July,17	**Average**	57.5	22.66	5.33	10.83	BDL	BDL	BDL	0.52	BDL	0.000212	BDL	BDL
	Min	46	17	4.5	9.5	BDL	BDL	BDL	0.4	BDL	0.00017	BDL	BDL
	Max	68	29	6.5	12.5	BDL	BDL	BDL	0.62	BDL	0.00026	BDL	BDL
Aug,17	**Average**	55.2	22.6	5.66	11.16	BDL	BDL	BDL	0.316	BDL	0.000208	BDL	BDL
	Min	49	18	4.8	9.9	BDL	BDL	BDL	0.25	BDL	0.00014	BDL	BDL
	Max	63	27	6.7	12.7	BDL	BDL	BDL	0.43	BDL	0.00027	BDL	BDL
Sept,17	**Average**	59.33	24.16	6.01	12.58	BDL	BDL	BDL	0.355	BDL	0.000218	BDL	BDL
	Min	50	19	4.9	10.7	BDL	BDL	BDL	0.27	BDL	0.00015	BDL	BDL
	Max	69	31	7.6	15.2	BDL	BDL	BDL	0.42	BDL	0.00027	BDL	BDL
CPCB Standards	Annual Average	60	40	50	40	2	100	100	5	1	0.5	20	6
	24 Hrs	100	60	80	80	4	180	400	5	1	1	20	6

Sampling Station: Ransol Village (21^0 03'43.1"N, 85^0 44' 32.2"E) Station Code : AAQ – 5													
Month	Value	Analysis Results											
		PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO µg/m^3	O_3 µg/m^3	NH_3 µg/m^3	C_6H_6 µg/m^3	Bap ng/m^3	Pb µg/m^3	Ni ng/m^3	As ng/m^3
April,17	**Average**	62.75	31.125	5.4375	12.4875	BDL	5.342857	BDL	0.535	BDL	0.000236	BDL	BDL

	Min	52	26	4.9	10.9	BDL	4.7	BDL	0.45	BDL	0.000 18	BDL	BDL
	Max	69	34	6.1	13.7	BDL	6.2	BDL	0.63	BDL	0.000 29	BDL	BDL
May,17	**Average**	59.88	24.77	5.53	11.57	11.57	BDL	5.41	BDL	0.53	0.000 229	BDL	BDL
	Min	50	20	4.8	10	10	BDL	4.8	BDL	0.47	0.000 19	BDL	BDL
	Max	71	31	6.3	13.8	13.8	BDL	6.2	BDL	0.64	0.000 29	BDL	BDL
June,17	**Average**	52.25	20.87	4.92	11.373	BDL	5.125	BDL	0.45	BDL	0.000 214	BDL	BDL
	Min	38	15	4.3	9.9	BDL	4.1	BDL	0.36	BDL	0.000 16	BDL	BDL
	Max	64	27	5.4	12.8	BDL	6.2	BDL	0.56	BDL	0.000 27	BDL	BDL
July,17	**Average**	54.5	23	5.31	11.45	BDL	5.21	BDL	0.44	BDL	0.000 228	BDL	BDL
	Min	48	19	4.2	9.9	BDL	4.2	BDL	0.38	BDL	0.000 18	BDL	BDL
	Max	64	30	7.4	13.3	BDL	6.7	BDL	0.56	BDL	0.000 27	BDL	BDL

Aug,17	**Average**	51.8	21	5.06	10.84	BDL	BDL	BDL	0.26	BDL	0.000 202	BDL	BDL
	Min	48	18	4.7	10.3	BDL	BDL	BDL	0.21	BDL	0.000 16	BDL	BDL
	Max	56	24	5.3	11.7	BDL	BDL	BDL	0.3	BDL	0.000 23	BDL	BDL
Sept,17	**Average**	58.66	24.66	5.56	12.26	BDL	BDL	BDL	0.33	BDL	0.000 227	BDL	BDL
	Min	49	16	4.5	10.4	BDL	BDL	BDL	0.22	BDL	0.000 16	BDL	BDL
	Max	64	30	6.7	14.8	BDL	BDL	BDL	0.44	BDL	0.000 27	BDL	BDL
CPCB Standards	Annual Average	60	40	50	40	2	100	100	5	1	0.5	20	6
	24 Hrs	100	60	80	80	4	180	400	5	1	1	20	6

Sampling Station: Sukrangi Village (21^0 02'44.5"N, 85^0 48' 16.3"E) Station Code : AAQ - 6

Month	Value	Analysis Results											
		PM_{10} µg/m^3	$PM_{2.5}$ µg/m^3	SO_2 µg/m^3	NO_2 µg/m^3	CO µg/m^3	O_3 µg/m^3	NH_3 µg/m^3	C_6H_6 µg/m^3	Bap ng/m^3	Pb µg/m^3	Ni ng/m^3	As ng/m^3
April,17	**Average**	67	29.875	5.2375	13.275	BDL	5.4875	BDL	0.52	BDL	0.000244	BDL	BDL
	Min	51	20	4.3	10.4	BDL	4.8	BDL	0.42	BDL	0.00018	BDL	BDL

	Max	79	38	6.1	14.6	BDL	6.2	BDL	0.64	BDL	0.00029	BDL	BDL
May,17	**Average**	59.88	24	5.7	11.72	BDL	5.18	BDL	0.51	BDL	0.000226	BDL	BDL
	Min	52	20	4.7	9.5	BDL	4.5	BDL	0.43	BDL	0.00017	BDL	BDL
	Max	68	29	6.3	13.5	BDL	6	BDL	0.67	BDL	0.00028	BDL	BDL
June,17	**Average**	60.5	24.62	5.74	11.91	BDL	5.375	BDL	0.53	BDL	0.00022	BDL	BDL
	Min	43	18	4.9	10.3	BDL	4.2	BDL	0.42	BDL	0.00016	BDL	BDL
	Max	72	31	6.7	13.6	BDL	6.5	BDL	0.64	BDL	0.00027	BDL	BDL
July,17	**Average**	61.16	26.33	5.78	12.85	0.3	5.05	BDL	0.48	BDL	0.00024	BDL	BDL
	Min	53	20	4.4	11.6	0.2	4.1	BDL	0.38	BDL	0.0002	BDL	BDL
	Max	71	35	7.4	14.9	0.4	6.3	BDL	0.64	BDL	0.00029	BDL	BDL
Aug,17	**Average**	53.4	23.2	5.48	11.26	BDL	BDL	BDL	0.33	BDL	0.000196	BDL	BDL
	Min	49	20	4.9	10.7	BDL	BDL	BDL	0.29	BDL	0.00015	BDL	BDL
	Max	58	26	6.1	12.3	BDL	BDL	BDL	0.38	BDL	0.00024	BDL	BDL
Sept,17	**Average**	54.83	23.16	5.45	11.36	BDL	BDL	BDL	0.34	BDL	0.00024	BDL	BDL
	Min	48	19	4.5	10.2	BDL	BDL	BDL	0.24	BDL	0.00019	BDL	BDL
	Max	65	31	6.7	12.8	BDL	BDL	BDL	0.47	BDL	0.00027	BDL	BDL
CPCB Standards	Annual Average	60	40	50	40	2	100	100	5	1	0.5	20	6
	24 Hrs	100	60	80	80	4	180	400	5	1	1	20	6

Dust Suppression Measure Inside Mines

Annexure-IX

Fixed Sprinkler

Ongoing Installation of Fixed sprinkler along Haul road

Water tanker

Annexure-X

Ground Water Level report (April- Sept 2017)						
M/S Balasore Alloys Ltd						
Kaliapani Chromite mines						
Station	**Water Table (MBGL)**	**Water Table (MBGL)**	**Water Table (MBGL)**	**Water Table (MBGL)**	**Water Table (MBGL)**	**Water Table (MBGL)**
	April,17	**May,17**	**June,17**	**July,17**	**Aug,17**	**Sept,17**
Buffer Zone						
kaliapani-1	3.3	3.6	3.1	2.9	2.5	2.1
kaliapani-2	4.2	3.9	3.7	3.2	3.1	2.9
Tisco Hutting	6.2	6.5	6.1	5.9	5.6	5.2
Sukrangi	3.8	4.1	3.5	3.1	2.9	2.5
Core Zone						
Piezohole-1	25.1	25.5	24.9	24.1	23.8	23.1
Piezohole-2	27.5	27.6	27.2	26.7	26.0	25.4

Annexure: XI

Ground Water Quality Report

Kaliapani Chromite Mines/s Balasore Alloys Ltd

April,2017

Sl. No.	Parameters	Unit	Standard as per IS–10500	GW1	GW2	GW3	GW4	GW5	GW6
				Open Well	Open Well	Open Well	Bore Well	Open Well	Open Well
1	pH	---	6.5-8.5	7.81	7.57	7.96	7.51	7.42	7.07
2	Odour	---	Agreeable	AL	AL	AL	AL	AL	AL
3	Colour	Hazen	5 (Max)	CL	CL	CL	CL	CL	CL
4	Taste	---	Agreeable	AL	AL	AL	AL	AL	AL
5	Turbidity	NTU	1 (Max)	0.6	0.4	0.8	0.4	0.6	0.2
6	Chloride (as Cl)	mg/l	250 (Max)	13.7	16.5	12.4	13.8	11.2	12.9
7	Residual free Chlorine	mg/l	0.2 (Min)	ND	ND	ND	ND	ND	ND
8	Total Dissolved Solid	mg/l	500 (Max)	94	91	106	110	117	98
9	Total Hardness (as $CaCO_3$)	mg/l	200 (Max)	38	32	41	39	37	45
10	Iron (as Fe)	mg/l	0.3 (Max)	0.18	0.22	0.27	0.29	0.21	0.25
11	Calcium (as Ca)	mg/l	75 (Max)	15.4	12.7	13.1	14.3	11.2	19.1
12	Magnesium (as Mg)	mg/l	30 (Max)	8.0	9.5	7.1	8.9	8.3	7.7
13	Sulfate (as SO_4)	mg/l	200 (Max)	18.6	14.5	12.5	17.2	12.7	17.2
14	Manganese (as Mn)	mg/l	0.10 (Max)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
15	Nitrate (as NO_3)	mg/l	45 (Max)	0.53	0.59	0.37	0.45	0.54	0.42
16	Alkalinity (as $CaCO_3$)	mg/l	200 (Max)	21	30	26	37	28	23
17	Chromium (as Cr^{+6})	mg/l	$	0.010	0.018	0.024	0.016	0.032	0.028
18	Fluoride (as F)	mg/l	1.0(Max)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	mg/l	0.003 (Max)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
20	Copper (as Cu)	mg/l	0.05 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
21	Zinc (as Zn)	mg/l	5 (Max)	0.15	0.10	0.27	0.22	0.15	0.23
22	Lead (as Pb)	mg/l	0.01 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
23	Selenium (as Se)	mg/l	0.01 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
24	Mineral Oil	mg/l	0.5 (Max)	ND	ND	BDL	BDL	ND	ND
25	Mercury (as Hg)	mg/l	0.001 (Max)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
26	Cyanide (as CN)	mg/l	0.05 (Max)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
27	Boron (as B)	mg/l	0.5 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
28	Arsenic (as As)	mg/l	0.01(Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
29	Phosphorus (as P)	mg/l	$	0.41	0.48	0.56	0.50	0.43	0.51

Note- AL- Agreeable, CL-Colourless, ND-Not Detecte,. $-Not Specified.

August, 2017

Sl. No.	Parameters	Unit	Standard as per IS–10500	GW1	GW2	GW3	GW4	GW5	GW6
				Open Well	Open Well	Open Well	Bore Well	Open Well	Open Well
1	pH	---	6.5-8.5	7.30	7.15	7.50	7.10	6.95	7.20
2	Odour	---	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless	Odourless
3	Colour	Hazen	5 (Max)	CL	CL	CL	CL	CL	CL
4	Taste	---	Agreeable	AL	AL	AL	AL	AL	AL
5	Turbidity	NTU	1 (Max)	0.4	0.4	0.6	0.2	0.4	0.2
6	Chloride (as Cl)	mg/l	250 (Max)	11.2	10.5	12.1	10.7	12.6	10.5
7	Residual free Chlorine	mg/l	0.2 (Min)	ND	ND	ND	ND	ND	ND
8	Total Dissolved Solid	mg/l	500 (Max)	126	136	142	124	143	118
9	Total Hardness (as $CaCO_3$)	mg/l	200 (Max)	67	78	81	86	83	97

10	Iron (as Fe)	mg/l	0.3 (Max)	0.28	0.20	0.15	0.18	0.12	0.10
11	Calcium (as Ca)	mg/l	75 (Max)	35.1	44.1	34.3	33.2	35.4	36.7
12	Magnesium (as Mg)	mg/l	30 (Max)	22.1	18.9	27.4	25.4	21.2	20.7
13	Sulfate (as SO_4)	mg/l	200 (Max)	11.4	13.3	16.4	14.4	14.8	13.8
14	Manganese (as Mn)	mg/l	0.10 (Max)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
15	Nitrate (as NO_3)	mg/l	45 (Max)	0.62	0.43	0.51	0.72	0.59	0.53
16	Alkalinity (as $CaCO_3$)	mg/l	200 (Max)	52	64	66	68	66	69
17	Chromium (as Cr^{+6})	mg/l	$	0.022	0.028	0.016	0.026	0.024	0.020
18	Fluoride (as F)	mg/l	1.0(Max)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cadmium (as Cd)	mg/l	0.003 (Max)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
20	Copper (as Cu)	mg/l	0.05 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
21	Zinc (as Zn)	mg/l	5 (Max)	0.17	0.21	0.20	0.18	0.22	0.23
22	Lead (as Pb)	mg/l	0.01 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
23	Selenium (as Se)	mg/l	0.01 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
24	Mineral Oil	mg/l	0.5 (Max)	ND	ND	BDL	BDL	ND	ND
25	Mercury (as Hg)	mg/l	0.001 (Max)	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
26	Cyanide (as CN)	mg/l	0.05 (Max)	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
27	Boron (as B)	mg/l	0.5 (Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
28	Arsenic (as As)	mg/l	0.01(Max)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
29	Phosphorus (as P)	mg/l	$	0.53	0.60	0.68	0.50	0.65	0.72

Note- AL- Agreeable, CL-Colourless, ND-Not Detected,. $-Not Specified.

GW1- Tisco Camp (21^0 01'44.8"N, $85^0$44'44.6"E)
GW2- Kaliapani Village (21^0 02'39.1"N, $85^0$46'21.4"E)
GW3- Sukurangi (21^0 02' 18.1"N, $85^0$47' 41.7"E)
GW4- Inside Mine ($21^0$02'7.7"N, $85^0$45'32.6"E)
GW5- Chingudiapal (21^0 02'56.9"N, 85^0 45' 4.5"E)
GW6- Kalarangi Village (21^0 0' 47.6"N, 85^0 43' 38.1"E)

Annexure: XII

Kaliapani Chromite Mines

Flow Rate Monitoring Report

Sl No	Location	April,2017		Aug,2017	
		Flow rate m^3/s	**Flow rate IN CUSEC**	**Flow rate m^3/s**	**Flow rate IN CUSEC**
1	**Damsala U/S**	**2.17**	**76.79**	**5.99**	**211.46**
2	**Damsala D/S**	**3.01**	**106.45**	**7.25**	**256.00**

Annexure: XIII

DETAILS OF COIR MATTING & GRASS TURFING ON DUMP SLOPE

KALIAPANI CHROMITE MINES,M/s BALASORE ALLOYS LIMITED

DETAILS OF COIRMATTING		
YEAR	**LOCATION**	**AREA (SQM)**
2010-11	Dump 2	5000
2011-12	Dump-3(IMFA side)	4500
2012-13	Dump-3(IMFA side)	4500
2013-14	Dump-3(Mahagiri side)	8600
2014-15	Dump-1 (North)	8500
2015-16	Dump 3 (North side)	6000
Total		**37100**

DETAILS OF GRASS TURFING		
YEAR	**LOCATION**	**AREA (SQM)**
2013-14	Dump-1 (Access road) slope	5000
2014-15	Dump-1 (Access road) slope	5200
2015-16	Washing Bay to View Point and common Boundary with IMFA	6350
Total		**16550**

DETAILS OF INSIDE ML AREA PLANTATION

YEAR	LOCATION	AREA (Ha.)	NOS.	SURVIVAL %	SPECIES
2010-11	Dump-1	2	11020	87%	Peltophorum, Acacia, Albizzia, Pongamia, Tamarind, Almond, Neem and Arjun
	Inside mines premises (COB, Canteen & weigh bridge)		95	87%	
2011-12	Dump-3	0.8	1600	87%	
	Dump-1	1.2	8375	87%	
2012-13	Dump-3	0.2	250		
	Dum-1	1.8	8150		
2013-14	Dump-3, slope	0.8	6882	85%	
	Safety zone, Dump-3	0.5	3018	85%	
	Dump-1 (Access road)	0.7	2085	87%	
2014-15	Dump-1 (Access road) slope and safety zone	1	2565	86%	
	Dump-1 (North)	1.25	4000	86%	
	Dump-2 slope and safety zone	4	12000	88%	
2015-16	Admin. Office premises & Access road Jindal side from Old washing platform to View point (Dump-1)	1.25	5000	85%	
	Common boundary with IMFA Area (Mines Pit)	1	4000	89%	
	Access road Jindal side along with Aloe vera Plantn (Dump-1)	0.3	1200	86%	
	Over coirmatting of dump-3, 2nd terrace (mines pit side)	0.1875	750	85%	
	Dump-3(Jindal site Boundary area)	1.2	4800	86%	
	Dump-3 Slope	0.18	750	90%	
2016-17	Dump-3 slope	0.2	2000	90%	
TOTAL			**78540**		

Annexure-XIV

Plantation inside ML area



Vertiver Plantation and Grass Turffing at Dump slope



Coirmatting at Dump-3



ANNEXURE:XV

ENVIRONMEATL MEUSRE AT DUMPS

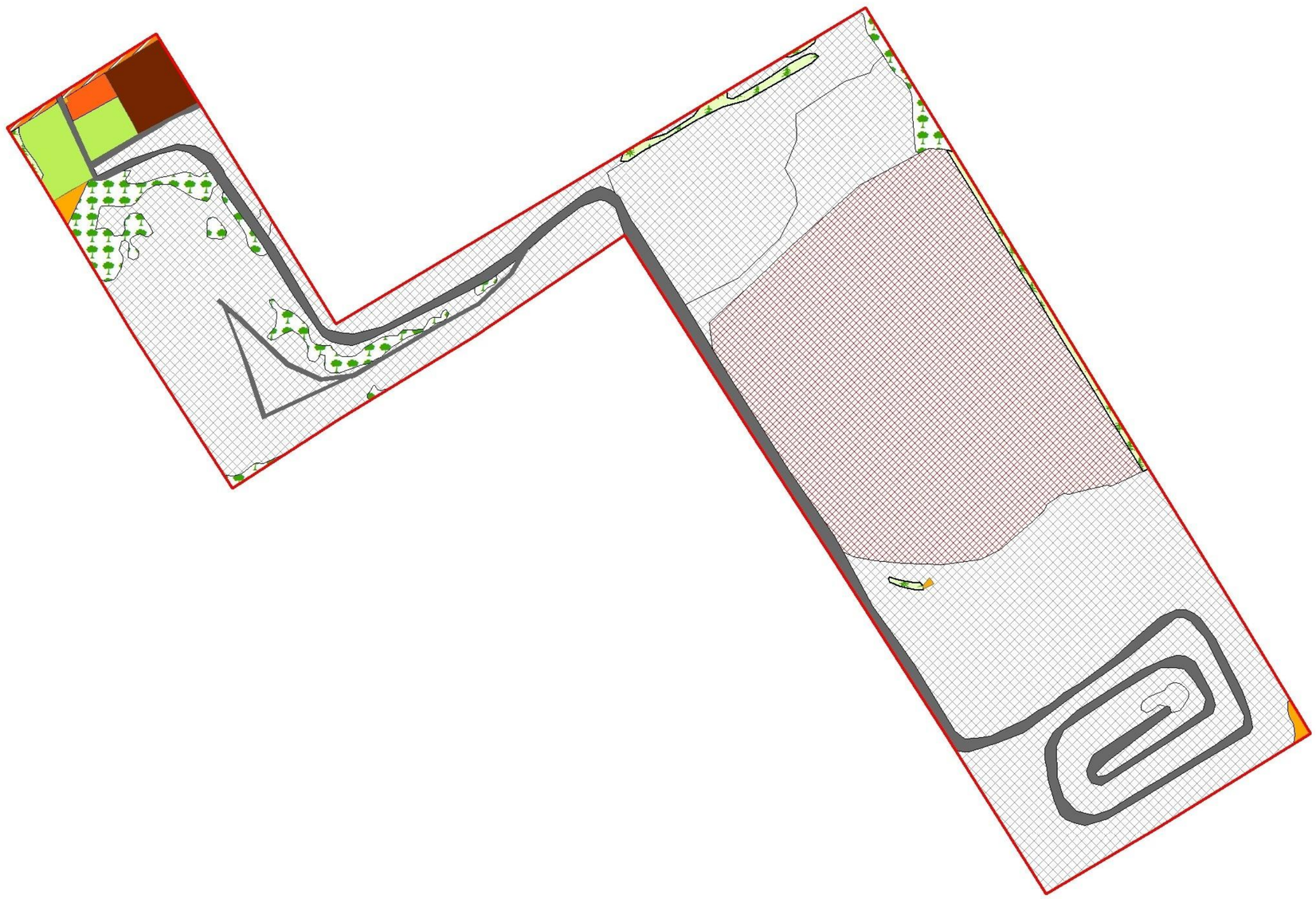
Environmental Measures	**Dump-1**	**Dump-2**	**Dump-3**
Retaining wall	360M×20M×15M	116M×2M×1M	380M×1M×2M, 150M×1M×5M
Garland drain	224 M	116 M	830 M
Coirmatting	8500 Cum	5000 Cum	16500 Cum
Plantation	36190 nos	12000 nos	15750 nos
Grass Turffing	10200 Cum		
Settling Pit	Two nos 90 Cum & 192 Cum		Two nos 972 Cum & 288 Cum

ANNEXURE:XVI

Sl. No.	Vehicle No.	Vehicle Make	Vehicle Model	CO (%)	HC (ppm)	NOx (%)	Smoke (HSU)
1	OD-04- B- 8779	MAN	HIWA	0.124	59	78.63	36.48
2	OD-04- E- 7537	MAN	HIWA	0.116	62	79.52	26.56
3	OD-04- E- 8594	MAN	HIWA	0.108	73	77.21	42.20
4	OD-04- E- 8592	MAN	HIWA	0.097	58	78.46	50.49
5	OD-04- B- 8781	MAN	HIWA	0.117	70	78.36	29.36
6	OD-04- B- 8780	MAN	HIWA	0.089	82	77.74	46.77
7	OD-04- E- 8589	MAN	HIWA	0.099	67	77.92	37.95
8	OD-04- E- 8590	MAN	HIWA	0.101	77	80.56	49.78
9	OD-04- E- 7536	MAN	HIWA	0.126	68	79.02	38.49
10	OD-04- G- 5855	MAN	HIWA	0.109	81	80.76	39.93
11	OD-04- E- 7535	MAN	HIWA	0.116	79	78.90	59.55
12	OD-04- B- 8776	MAN	HIWA	0.120	84	78.87	39.47
13	OD-04- B- 8778	MAN	HIWA	0.098	69	75.59	56.59
14	OD-04- B- 8782	MAN	HIWA	0.082	74	75.59	45.33
15	OD-04- E- 7537	MAN	HIWA	0.123	65	78.90	52.52
16	OD-04- E- 7535	MAN	HIWA	0.112	76	77.79	34.61
17	OD-04- E- 7534	MAN	HIWA	0.104	80	77.51	17.65
18	OD-04- E- 7533	MAN	HIWA	0.093	55	76.50	54.36
19	Water Tanker	--	--	0.135	87	78.22	36.39
20	Water Tanker	--	--	0.141	90	78.44	33.25
CPCB Standard				**3.0**	**1500**	**--**	**65**

SHOWING VEHICLE COVERED WITH TARPAULINE

LAND USE / LAND COVER MAP OF KALIAPANI CHROMITE MINES OF M/S. BALASORE ALLOYS LTD.



N
W E
S

SCALE - 1:5,000

Meters

100 50 0 100 200 300

LEGEND

- M.L.BOUNDARY
- SAFETY ZONE
- COBP
- ETP
- INFRASTRUCTURE
- MINING ROAD
- DUMP
- QUARRY
- SETTLING PIT
- PLANTATION OVER DUMP
- PLANTATION
- OTHER UTILITY AREA

For BALASORE ALLOYS LTD.

BACHCHAN KUMAR

President (Mines) & Constituted Attorney

BY E-MAIL

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
GHATAKULA, NUAPADA, MADHUPATNA, CUTTACK-753010.
E-mail Id-dfo.cuttackforestdivision@yahoo.com, Fax-0671-2347611
No. 443 /
Dated, Cuttack 21 Th January, 2015..

To

The Vice President (Mine),
Kaliapani Chromite Mines,
M/s-Balasore Alloys Ltd., At/P.O.- Kaliapani, Dist-Jajpur.

Sub: - Site specific wildlife conservation plan in respect of Kaliapani Chromite mines of M/s Balasore Alloys Ltd. in Jajpur Dist. Odisha.

X-Sub:- Revision/modification of this office memo no.233 dt.12.01.2015.

Ref: - (i) Memo No.8478 dt.07.11.2014 of PCCF, (Wildlife) & Chief Wildlife Warden, Odisha to your address.
(ii) This office letter no.233 dt.12.01.2015.
(iii)Your letter no.1968 dt.20.01.2015.

Sir,

In inviting a reference to the subject cited above it is to inform you that the letter as issued vide this office no.233 dt.12.01.2015 is hereby revised /modified which should be read as follows and act accordingly.

The Site specific wildlife conservation plan in respect of Kaliapani Chromite mines of M/s Balasore Alloys Ltd. has been approved by the PCCF (Wildlife) & Chief Wildlife Warden, Odisha with the financial forecast of Rs.254.18 Lakh (Two Crore Fifty Fore Lakh Eighteen Thousand) only for the following activities.

(i)	For activities to be implemented in project area by the User Agency in Cuttack Forest Division.	Rs.64.82 Lakh
(ii)	For activities to be Implemented by DFO, Cuttack Division in project impact area	Rs 189.36 Lakh
	Grand Total-	**Rs 254.18 Lakh**

Hence you are requested to deposit an amount of **Rs 189.36 Lakh (Rupees One Crore Eighty Nine Lakh Thirty Six Thousand)** only through RTGS in either of the following Banks in the CAMPA fund.

1. Corporation Bank, Lodhi Complex Branch, New Delhi-110003 (RTGS/IFSC No. CORP0000371, **SB Account No. SB01025222**).
2. Union Bank of India, Sundar Nagar, New Delhi-110003 (RTGS/IFSC No. UBIN0534498, **SB Account No. 344902010105428**)

Further, you are requested to note the following conditions for future compliance.

i. This plan may be revisited after five years and the user agency will give undertaking to contribute towards the revised cost of the conservation plan till the project period, if any.
ii. The project proponent has to prepare and submit the Conservation Plan for the next ten years of their lease period (balance period of which forest land remains diverted) at least one year before the expiry of the present Conservation Plan and deposit the outlay amount upon its approval. In case of delay, the project operation will be automatically stopped.

Contd…2

Further , as regards the guidance sought by you for para (i) it is to inform you that an undertaking require to be furnished as per the memo no.8478 dt.07.11.2014 of the PCCF, (Wildlife) & Chief Wildlife Warden, Odisha communicated to your address.

Yours faithfully,

21/1/2015

Divisional Forest Officer,
Cuttack Forest Division

Memo No. 444 /dt. 21-01-2015.

Copy forwarded to Addl. Pr. Chief Conservator of Forests, Forest Diversion and Nodal Officer, FC Act, O/o-the PCCF, Odisha for information and necessary action in continuation to this office memo no.234 dt.12.01.2015.

21/1/2015

Divisional Forest Officer,
Cuttack Forest Division

Memo No. 445 /dt. 21-01-2015.

Copy forwarded to Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind in continuation to this office memo no.234 dt.12.01.2015.

21/1/2015

Divisional Forest Officer,
Cuttack Forest Division

Memo No. 446 /dt. 21-01-2015.

Copy forwarded to PCCF (Wildlife) & Chief Wildlife Warden for information and necessary action in continuation to this office memo no.234 dt.12.01.2015.

21/1/2015

Divisional Forest Officer,
Cuttack Forest Division

Online Submission & Monitoring of Environmental, Forest and Wildlife Clearances -A Single Window Clearance System

14 Mar 2017 12:17:52 Logout

User Name: [Swarup]
State: [Orissa]
Role : [Applicant]

My Account | My Proposals Environment Clearance | My Proposals Forest Clearance | My Proposals Wildlife Clearance | Help

Online payment history made by User Agency under CAMPA

Help

Sno.	Proposal Detail	Application_No	Date of IN-PRINCIPLE	Amount to be Paid/Amount Paid (in Rs.)	Payment Status	Payment Detail	Demand Letter
1	FP/OR/MIN/11934/2015 Kaliapani Chromite Mines, Village:Kaliapani,Tehsil: Sukinda, Dist. Jajpur , Odisha.	MIN119342015626	18 Nov 2016	**CA:** 23979700/- , **Addl CA :** 0/- **PCA:** 0/- , **CAT :** 0/- **Safety Zone:** 0/- , **Addl PA :** 0/- **NPV:** 0/- , **Site Specific Conservation Plan :** 18936000/- **Other Charges1 :** 0/- **Other Charges2 :** 0/- **Other Charges3 :** 0/- **Total :** 42915700/-	Paid	**Fund Demand Verified by Nodal Officer On** : 30 Dec 2016 **Bank Name** : Union Bank Of India **Mode of Payment** : NEFT/RTGS (Challan) **Challan Generated On** : 30 Dec 2016 **Transaction Date** : 23 Feb 2017	Demand Letter Generated Challan

BALASORE ALLOYS LIMITED

ISPAT

CIN-L27101OR1984PLC001354

Ref. No: BAL/ACCTS/
Date : 23 FEB 2017

The Chief Manager
State Bank of India
SME Branch
Balasore Industrial Estate Branch
Balasore

Dear Sir,

Sub: Payment Through RTGS/NEFT

Kindly arrange to transfer a sum of **Rs. 4,29,15,700/-** (Rupees Four Crore Twenty Nine Lac Fifteen Thousand Seven Hundred) only through RTGS/NEFT as per the details given below by debiting our CC a/c No. **30352334031** with you towards CA Scheme Charge and Site Specific Wildlife Management Plan.

Amount	:	**Rs. 4,29,15,700/-**
Account No	:	**CAMPAORMIN119342015626**
Name of Party	:	**ORRISA CAMPA**
Bank Name	:	**Union Bank Of India** **52, Sunder Nagar** **New Delhi - 110003**
IFSC/RTGS Code No	:	**UBIN0534498**

22 FEB 2017

Necessary bank charges also may please be debited to our above account under intimation to us.

Your kind co-operation in this regard shall be highly appreciated

Thanking you.

Yours faithfully
For BALASORE ALLOYS LTD.

AUTHORISED SIGNATORIES

Mob: 07381095938
UTR NO. SBINR520170223000 51...

4,29,15,700=00
Com. 57=50
4,29,15,757=50

R520170223000510 75 Ref - 724059 (EC)

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
GHATAKULA: NUAPARA: CUTTACK

Memo 7581 /5F (Misc.)
Dated, Cuttack, the 2ND Spetemeber'2013

To

The Addl.Chief Conservator of Forests,
Forest Diversion and Nodal Officer, FC Act,
O/O-the Pr. Chief Conservator of Forests,
Odisha Bhubaneswar.

Sub: Implementation of Wildlife Management Plan in the Mining area at Project cost.

X-Sub: Payment of cost of Wildlife Management Plan in respect of lease for Chromite Mines of M/S Ispat Alloys now renamed as M/S Balasore Alloys Ltd.

Ref: Letter No.10F (Cons)-81/2004-6495/F&E Dt.23.03.2008 of Govt. of Orissa Forest & Environment Department & your office memo no.8664 Dt.02.05.2008.

As per the instruction contained in the above memo, the User Agency, M/S Balasore Alloys Ltd. Dist. - Jajpur was asked to submit the cost of Wildlife Management Plan to make payment towards cost of Wildlife Management Plan over 64.463 ha. (64.743 ha. mentioned in the demand notice which is a typographical error) of M.L area in respect of Kaliapani Chromite Mines. Accordingly the User Agency has deposited the cost of Wildlife Management Plan through RTGS in favour of *"Compensatory Afforestation Fund (CAF)-Orissa. Account No. C.A-25222 in Corporation Bank, Lodhi Road, New Delhi* amounting to Rs. 1289260 /- (Rupees twelve lakh eighty nine thousand two hundred sixty) only" and the copy of the receipt is sent herewith for favour of kind information and necessary action.

Encl: As above

Sd/-
DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No._____/Dt.

Copy forwarded to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information and necessary action.

Sd/-
DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No. 7581 ***/Dt.*** 02-9-13

Copy forwarded to the Vice -President (Mines), M/S Balasore Alloys Pvt. Ltd., 199, Forest Park, Bhubaneswar for info5rmation and necessary action with reference to his letter No.BAL/MINES/716/2013 Dt.16.08.2013.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Annexure: IX

Kaliapani Chromite Mines

CSR Activities (April-September, 2017)

Sl No	Details	Amount
1	Rural Development (Infrastructure Development)	2,26,410
	Education Development	88,651
2	Supply of Safe Drinking Water	358174
3	Swachha Bharat Abhijan	3000
4	Women Empowerment	106815
5	Health Promotion	0.00
6	Environmental Conservation	21240
7	Tribal Development	87291
8	Youth Development	0.00
10	Animal Welfare	0.00
10	Eradication of Hunger	34547
Total		**926128**

Annexure: XX

Kaliapani Chromite Mines
AMBIENT NOISE LEVEL

Sl.No	Location	Station Code	Values are in dB(A)											
			DAY	NIGHT	DAY	NIGHT	DAY	NIGHT	DAY	NIGHT	DAY	NIGHT	DAY	NIGHT
Month			APRIL 2017		MAY 2017		JUNE 2017		JULY 2017		AUGUST 2017		SEPTEMBER 2017	
1	Mines Office	ANL 1	44.2	30.7	43.5	30.9	43.5	31	44.4	32.2	43.7	31.8	44.7	31.5
2	Village Kaliapani	ANL 2	46.9	31.8	46.1	32	45.9	32.4	44.7	31.4	45	31.2	46.2	32.5
3	Village Sukrangi	ANL 3	43	30.8	43.9	29.9	43.9	30.5	44.4	32.6	44.2	31	43.8	30.8
4	Village Ransol	ANL 4	46	33	44.9	32	46	33.7	46.5	32.8	47	33.3	46.7	31.8
6	Village Tisco Hutting	ANL 6	47.3	31.4	47.3	33.4	46.7	32.4	46	31.6	45.1	32	45.4	33.4
WORK ZONE NOISE LEVEL														
1	O/C Quarry	WNL 1	64.8	63.9	65.6	64	62	62.4	63	62.7	61.9	62.4	62.1	60
2	Dumper Operation	WNL 2	69.3	66	68.8	65.9	65.3	63	65.1	63	65.1	63	64.1	63.7
3	Excavator Operation	WNL 3	69.8	67	70.1	66.9	68	65.2	67.5	66	68	65.2	66.5	64.8
4	DG Set	WNL 4	67.9	65.2	67.7	65	67.4	65.3	69	65.7	68.8	65.3	68.8	65.8
5	Electric Pump	WNL 5	68.3	67.6	68.8	67.2	68.4	66.7	68.4	66.8	68.7	66.7	68.4	67.7
6	Loading Point	WNL 6	69.8	65.8	70.1	64.1	66.6	65.2	65	66	66.7	65.2	66.9	64.5
7	COB Plant	WNL 7	66.2	62	66.3	61.3	65.3	63.4	65.8	62.8	66.8	63.4	66	63.4

ANNEXURE XXI

Kaliapani Chromite Mines/s Balasore Alloys Ltd			
Details of Expenditure Made Towards Protection of Environment(Rupees in Lakh)			
sl No	Activity	Sub-Activities	April-Sept,2017
1	Protection Measures for Water Pollution	Fixed type water sprinklers installation/maintenance	8.52
		Dry-fog system installation / maintenance	0.10
		Expenditure towards deployment of water tankers for water sprinkling including recurring expenditure	15.00
2	Dump Management	Construction /Maintenance of check dams, garlanding drain& Retaining wall, Gabion wall,Shot-creting etc	165
		Stone Pitching Dump Slope	0.85
		Coirmatting	5.40
		Vertiver plantation at Gabion wall	3.26
3	Plantation	Inside ML area Plantation(Dump slope, Safety zone incl maintenance)	2.97
		Out ML area plantation(Avenue & Block)	6.33
4	Protective Measures for Water Pollution	ETP Operation and Maintenance(incl Chemical Cost)	21.85
		ETP Upgrdation	21.47
		Surface Run Off Management	25.00
5	Training & Awareness	Training	0.10
		Awareness	0.10
6	Occupational Health & Hygiene	IME/PME	0.20
		Drinking Water facility	1.00
		Medicine/First aid	0.60
8	Environmental Monitoring	Water,Air,Soil, Noise	6.80
		Maintenance of Equipment	0.8
9	Other Expenses	Statutory Payment	4.94
Total			290.29

BALASORE ALLOYS LIMITED

CIN-L27101OR1984PLC001354

Ref No: BAL/Mines/4449

Dated: 04.09.2017

The Member Secretary,
State Pollution Control Board
Paribesh Bhawan,A/118
Nilakantha Nagar Unit-VIII
Bhubaneswar -751012

Sub: Submission of Environmental Statement in Form-V with respect to our Kaliapani Chromite Mines, M/s Balasore Alloys Ltd for the financial year 2016-17.

Ref: *Consent to Operate Vide No No: 4712/IND_I-CON-2576 dated 17.3.2016 Consent Order No. 1239*

Dear Sir,

Please find enclosed herewith the Environmental Statement in Form - V for the financial year 2016-17 with respect to our Kaliapani Chromite Mines, M/S Balasore Alloys Ltd, Kaliapani, Jajpur,Odisha for your kind perusal.

Thanking you with regards

Yours faithfully
For M/s Balasore Alloys Ltd

Swarup Panda
Vice President (Corporate Affairs)
Encl: As above

Copy to: The Regional Officer,Kalinagnagar, OSPCB.

Received 4/9/17

No. Dt.
04 SEP 2017
S.P.C.B. BOARD
BHUBANESWAR-12

Kaliapani Chromite Mines, At/Po. : Kaliapani - 755047,Dist. : Jajpur, Odisha, Phone : 06726-268297/98, Fax : 06726-268520
E-mail : sukinda_mines@balasorealloys.com. ialmines@yahoo.com, Website : www.balasorealloys.com

Kaliapani Chromite Mines, M/s Balasore Alloys Ltd
Environment Statement For the Year 2016-17

FORM – V

(See rule 14)

Environmental Statement for the financial year ending with 31st March' 17

PART – A

i. Name and address of the owner/occupier of the industry/operation/process :

Mr Amarnath Dhar
Mines Manager
Kaliapani Chromite Mine,
M/s Balasore Alloys Ltd
At/PO:Kaliapani, Jajpur 755047
Odisha.
sukinda_mines@balasorealloys.com

ii. Industry category : Primary - Large
Secondary - Red

iii. Production category : Open Cast Chromite Mine

iv. Year of establishment : 2000

v. Date of the last Environmental Statement submitted: 26.9.2016

PART – B

Water and Raw Material Consumption:

i. Water consumption in m^3/day

Process (COB Plant): 220 M^3/Day

Cooling: Not Applicable

Domestic: 50 M^3/Day

Name of Products	Process water consumption per unit of products	
	During the current financial year(2015-16)	During the current financial year(2016-17)
Chrome Ore	No water is required for mining of chrome ore	
Chrome concentrate	2.07 KL/Ton	2.07 KL/Ton

For BALASORE ALLOYS LTD.

Authorised Signatory

ii. Raw material consumption: Raw material is consumed only in the C.O.B. Plant.

Name of raw materials*	Name of Products	Consumption of raw material per unit of output	
		During the current last financial year(2015-16)	During the current financial year(2016-17)
Low Grade Chrome Ore	Chrome Concentrate	2.918 MT	2.918 MT

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART – C

Pollution discharged to environment/unit of output:

(Parameter as specified in the consent issued)

Pollutants	Quantity of Pollutants discharged (mass/day)	Concentration of Pollutants discharged (mass/volume)	Percentage of variation from prescribed standards with reasons
Water			
i. pH	7.6	7.76	-13.71%
ii. TSS	171106.6 mg	43.8 mg/L	-61.20%
iii. Cr^{6+}	88.94 mg	0.015 mg/L	-59.67%

For BALASORE ALLOYS LTD.

Authorised Signatory

Kaliapani Chromite Mines, M/s Balasore Alloys Ltd
Environment Statement For the Year 2016-17

Air			
i. PM 10	-	60.86 µg/m^3 25.51 µg/m^3	-39..13% -57.48%
ii. PM 2.5		6.59 µg/m^3	-91.75%
iii. SO_2	-	12.39 µg/m^3	-84.50%
iv. NO_x	-	0.288 µg/m^3	-92.75 %
v. CO		5.85 µg/m^3	-96.75%
vi. O_3		26.26 µg/m^3	-93.43 %
vii. NH_3		0.32 µg/m^3	-93.59 %
viii. C_6H_6		0.3 µg/m^3	-70%
ix. Bap		0.20 µg/m^3	-79.98%
x. Pb		0.26 µg/m^3	-98.67
xi. NI		<0.1 µg/m^3	
xii. As			.....

PART – D

HARZARDOUS WASTES:

(As specified under Hazardous Wastes (Management & Handling Rules, 1989)

Hazardous Wastes	Total Quantity	
	During the previous financial year(2015-16)	During the current financial year(2016-17)
From Process i. Used oil	4400 Ltrs	6720 Ltrs
From Pollution Control Equipments (ETP sludge)	25.00 Metric Ton	38.97 Metric Ton

For BALASORE ALLOYS LTD.

Authorised Signatory

Kaliapani Chromite Mines, M/s Balasore Alloys Ltd
Environment Statement For the Year 2016-17

.....

PART – E

SOLID WASTES:

Solid Wastes	Total Quantity	
	During the previous financial year(2015-16)	During the current financial year(2016-17)
From Process i. Overburden ii. Tailing Pond Sludge	426602 M^3 **55200.769 Ton**	438060 M^3 51104.57 Ton
From Pollution Control Facility	Nil	Nil
Quantity recycled or reutilized within the unit	Nil	Nil

PART – F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes:

I. **Solid Waste:**

Overburden: Solid wastes in form of overburden and sludge of the tailing pond are generated during development of open cast mines and operation of Chrome Ore Beneficiation Plant. The overburden is being dumped on non-mineralized zone as per the mining plan approved by Indian Bureau of Mines.

Tailing Pond Sludge: The sludge of the tailing pond, after drying, are taken to the tailing dump, where these are dumped on a impervious platform made up of concrete and HDPE lining by providing retaining wall along the dump with settling pit and leachate collection pit. The collected run-off and leachate are diverted to the ETP for treatment with pumping arrangement.

For BALASORE ALLOYS LTD.

Authorised Signatory

II. Hazardous Waste:

ETP Sludge: The sludge from the ETP has been disposed to Common Hazardous Waste treatment Storage Disposal facility (M/s Ramky) present at Jajpur, Odisha.

Used Oil: The used oil generated at mines collected in leak proof barrels and stored at hazardous waste yard and disposed to OSPCB authorized vendors as per the guidelines.

PART – G

In respect of the pollution abatement measures taken up on conservation of natural resources and on the cost of production

- To suppress the fugitive dust generation, regular sprinkling of water is being done on haul roads and transporting roads.
- The dead overburden dump surfaces are covered with intensive plantation. For treatment of mine discharge water, run-off water during rain an Effluent Treatment Plant is in operation.
- Regular maintenance of vehicle deployed at mines is going on for minimizing the noise generation and other emission. For the people in the noise prone areas protection equipments like ear muffs have been provided.
- Oil & Grease pit has been provided at vehicle washing center and after separation oil and grease has been stored at hazardous waste yard

PART – H

Additional measures/investment proposal for environmental protection including abatement of pollution:

- The dump slopes of the dead dumps will be covered with coir matting, grass turfing, grass development through seed dispersion and massive plantation.
- Hexavalent chromium content of the mine water is being/will be reduced by treatment of at ETP.
- All the surface runoff of mines has been channelized to ETP for treatment before disposing outside.
- Plantation at outside ML area and inside ML area.

PART – I

Any other particular for improving the quality of the environment

- Gabion wall is constructed at toe of dump-1 to arrest wash off from dump slope.
- Dump slope has been stabilized by plantation of Vertiver and installation of coirmat.
- Construction of wheel washing bay at mine gate to avoid chromite contamination of by the dust carried by wheels of trucks.

For BALASORE ALLOYS LTD.

Authorised Signatory