

ମହାନଦୀ କୋଲ ଫିଲ୍ଡସ୍ ଲିମିଟେଡ୍
महानदी कोलफील्ड्स लिमिटेड
Mahanadi Coalfields Limited
(A subsidiary of Coal India Limited)

OFFICE OF THE PROJECT OFFICER
LAKHANPUR OPENCAST PROJECT
LAKHANPUR AREA
PO- UBUDA, VIA- BELPAHAR (768 217)
DIST-JHARSUGUDA, (ODISHA)
PH-06645-605900, 06645-605914
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Email Id: polkpoep_mcl@rediffmail.com



MCL

Ref.No: MCL/LKPA/LKPOCP/Env/2022-23/ 348

Date: 21.05.2022

To

The Additional Principal Chief Conservator of Forests (C),
Ministry of Environment, Forest and Climate Change
Integrated Regional Office, A/3,
Chandersekharpur,
Bhubaneswar – 751023

Kind Attention:

Director (S),
Ministry of Environment, Forest and Climate Change,
Integrated Regional Office
Chandershekharpur,
Bhubaneswar-751023

Sub: Half yearly compliance report from October 2021 to March 2022 of EC no. No. J-11015/391/2012-IA.II(M) dated 10th January 2020.

Sir,

Please find enclosed herewith the half yearly compliance report of EC no._J-11015/391/2012-IA.II (M), Dated: 10th January 2020 for the term October 2021 to March 2022 with respect to Lakhanpur Open Cast Project on conditions given therein.

Thanking you

Encl: As above

Yours faithfully,

JM
21/5/22

Project Officer
Lakhanpur Opencast Project

Copy to:

- 1) Member Secretary, OSPCB, Paribesh Bhavan, Bhubaneswar - 751012.
- 2) Regional officer, SPCB Odisha, Plot No .370/ 5971, Cox Colony, Jharsuguda - 768203.
- 3) General Manager, Lakhanpur Area.
- 4) General Manager (Env. & Forest), MCL HQ.
- 5) Area Environment Officer, LKPA.
- 6) Nodal Officer (Environment), LKPOCP.
- 7) Office Copy.


Name of the Project: Lakhanpur Open Cast Project, Mahanadi Coalfields Limited.

Clearance L.No and date: J- 11015/391/2012-IA.II(M) dated 10th January 2020.

Period of Compliance Report: October 2021 to March 2022.



Specific conditions:

S.No.	Conditions	Compliance Status										
i.	Adequate ambient air quality monitoring stations shall be established in consultation with the State Pollution Control Board, and regular monitoring shall be carried out for particulate emissions (both PM10 & PM2.5), SO ₂ & NO _x . The monitoring results for the period during summer season (April-June, 2018) shall be submitted to the State PCB and the Regional Office of this Ministry.	<p>Ambient air quality monitoring is being monitored for the parameters of SPM, PM₁₀, PM_{2.5}, SO₂, and NO_x through stations fixed after consultation and approval from the Regional office, Jharsuguda of Odisha State Pollution Control Board (Annexure- I). The previous report was submitted to OSPCB and ERO, MoEF&CC vide letter No. MCL/LA/PO/LKPOCP/Envvt./2021-22/274 dated: 30.11.2021. For the year 2021-22, air quality monitoring is being carried out through 4 Nos. of stations in both the core zone and buffer zone of the project.</p> <table border="1" data-bbox="849 869 1464 1224"> <thead> <tr> <th data-bbox="849 869 1208 905">Station Name</th> <th data-bbox="1208 869 1464 905">Coordinates</th> </tr> </thead> <tbody> <tr> <td data-bbox="849 905 1208 1014">Near Lilari Nallah Pump house</td> <td data-bbox="1208 905 1464 1014">21.777147° N 83.850411° E</td> </tr> <tr> <td data-bbox="849 1014 1208 1083">South of Quarry 6</td> <td data-bbox="1208 1014 1464 1083">21.7370747° N 83.830168° E</td> </tr> <tr> <td data-bbox="849 1083 1208 1152">South west of Quarry 6</td> <td data-bbox="1208 1083 1464 1152">21.732742° N 83.791011° E</td> </tr> <tr> <td data-bbox="849 1152 1208 1224">Near Quarry 3.</td> <td data-bbox="1208 1152 1464 1224">21.765694° N 83.813028° E</td> </tr> </tbody> </table> <p>The air quality monitoring results for the period October 2021 to March 2022 are attached as Annexure-II.</p>	Station Name	Coordinates	Near Lilari Nallah Pump house	21.777147° N 83.850411° E	South of Quarry 6	21.7370747° N 83.830168° E	South west of Quarry 6	21.732742° N 83.791011° E	Near Quarry 3.	21.765694° N 83.813028° E
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ii.	The EAC shall review compliance of the actions taken on observations of the Regional Office before December, 2018, and make its recommendations for continuance of the project thereafter. Also, based on the monitoring results, the Committee shall examine adequacy and efficacy of the pollution control measures and its impact on ambient air quality.	The previous inspection of ERO, MoEF&CC was carried out on 13.11.2018 and EAC reviewed the compliance conditions and further extension of EC was granted for one year on 13.02.2019. Also inspection of ERO, MoEF&CC was carried out on 31.10.2019, and EC was granted on 10.01.2020 for 30 years or the life of the mine, whichever is earlier under the provisions of EIA Notification, 2006.										
iii.	To control the dust generation at source, the crusher and in pit belt conveyors shall be provided with mist type sprinklers.	No crusher or in-pit belt conveyor is being used. Coal is being excavated through eco-friendly surface miners which eliminate the blasting and crushing of coal. During 2021-22, 8 Nos. of surface miners with dust suppression through water sprinkling were deployed for coal extraction and										

		98.94 % (20778159.8 Tonnes) of coal extraction was done through surface miners.
iv.	Mitigative measures to be undertaken to control dust and other fugitive emissions all along the roads by providing sufficient numbers of water sprinklers preferably mist type mobile sprayers/sprinklers.	<p>A total of 103 fixed sprinklers have been installed along the Coal Transportation roads (20 nos. from E&M workshop to Milan Chowk, 12 nos. from stockyard1 to Ubuda Chowk, 26 Nos. from Lilari bridge to Manager office, 45 Nos. in Main haul road) in the project.</p> <p>Mobile tankers are deployed on haul roads, mining areas, and transportation roads for dust suppression by both departmental and contractual means.</p> <p>Departmental: 28KL (7 Nos.), 9KL (4 Nos.) Contractual: 20KL (19 Nos.), 12KL (2 Nos.), 8 KL (2 Nos.), and Truck mounted Fog Cannon (40m Throw) on a hiring basis.</p> 
v.	Regular monitoring of occupational safety and other health hazards of all employees including outsourced workers and the corrective actions shall be ensured. Report in this regard be submitted to the Regional Office of the Ministry.	Regular monitoring of employees of both departmental and contractual is being carried out for occupational health and other health hazards. During 2021-22, Initial Medical Examination was carried out for 1302 contractual employees, and 405 departmental employees were engaged in Periodical Medical Examination. The workers are being checked for occupational disease, hearing impairment, and others in MCL, Central Hospital, Mandalia, and Jharsuguda. The report is being submitted to ERO, MoEF&CC on a half-yearly basis. The previous report was submitted vide letter No. MCL/LA/PO/LKPOCP/Envnt./2021-22/274 dated: 30.11.2021
vi.	Controlled blasting techniques should be adopted to control ground vibration and fly	Controlled blasting techniques with Nonel tube initiation are being adopted, vibration monitoring is

	rocks	also being carried out at regular intervals. Adequate safety measures are being implemented during blasting and the blasting operations are being carried out only during the daytime.
vii.	Persons of nearby villages shall be given training for their livelihood and skill development.	<p>MOU has been signed between CIPET, Chennai, and Coal India Limited for conducting a skill development training program for 250 nos. of youth from command areas of MCL.</p> <p>An MoU has been made with BAIF (Bharatiya Agro Industries Foundation) for the “Comprehensive Community Development Programme” through various schemes such as animal husbandry, sustainable agricultural practices, and workshops for Quality of life improvement, etc. in 10 villages of Jharsuguda district (Lachhipali, Parasian, Kadamdhee, Dudugaon, Kuruebahal, Jamugaon, Thebra, Samarbaga, Baurkhol, Sagarpali) for five years.</p>  <p>Community Development Programme</p> <p>Further vocational training programs and apprenticeship training programs are being organized at the project level. The land oustees employed in the company are being trained for Skill up-gradation through ITI programs.</p>


viii.	To ensure health and welfare of nearby villages, regular medical camps shall be organized and report shall be submitted to the Regional Office of the Ministry.	<p>General Preventive Health camps are being conducted. The health checkup, medicines, and consultation are provided free of cost. Details of camps conducted from the year 2019-20 till date are tabulated below.</p> <table border="1" data-bbox="818 239 1432 947"> <thead> <tr> <th>Village</th> <th>Date</th> <th>No of beneficiaries</th> </tr> </thead> <tbody> <tr><td>Chaurimahul</td><td>09/08/2019</td><td>124</td></tr> <tr><td>Kusaraloi</td><td>21/08/2019</td><td>164</td></tr> <tr><td>Junian</td><td>11/09/2019</td><td>68</td></tr> <tr><td>Soldia</td><td>20/09/2019</td><td>132</td></tr> <tr><td>Kudaloi</td><td>16/10/2019</td><td>187</td></tr> <tr><td>Khadam</td><td>06/11/2019</td><td>159</td></tr> <tr><td>Jorabaga</td><td>22/11/2019</td><td>259</td></tr> <tr><td>Kirtimal</td><td>26/11/2019</td><td>380</td></tr> <tr><td>Kheraulbahal</td><td>28/11/2019</td><td>100</td></tr> <tr><td>Kirarama</td><td>4/12/2019</td><td>101</td></tr> <tr><td>Kudaloi</td><td>13/12/2019</td><td>477</td></tr> <tr><td>Karlajuri</td><td>10/01/2020</td><td>75</td></tr> <tr><td>Khaliapali</td><td>17/01/2020</td><td>77</td></tr> <tr><td>Ubuda</td><td>07/02/2020</td><td>80</td></tr> <tr><td>Kandsar</td><td>18/02/2020</td><td>116</td></tr> <tr><td>Karpabahal</td><td>25/02/2020</td><td>81</td></tr> <tr><td>Kherualbahal</td><td>18/03/2020</td><td>174</td></tr> </tbody> </table> <p>Health Camp was conducted on 23.11.2021 at Kandsar village.</p>	Village	Date	No of beneficiaries	Chaurimahul	09/08/2019	124	Kusaraloi	21/08/2019	164	Junian	11/09/2019	68	Soldia	20/09/2019	132	Kudaloi	16/10/2019	187	Khadam	06/11/2019	159	Jorabaga	22/11/2019	259	Kirtimal	26/11/2019	380	Kheraulbahal	28/11/2019	100	Kirarama	4/12/2019	101	Kudaloi	13/12/2019	477	Karlajuri	10/01/2020	75	Khaliapali	17/01/2020	77	Ubuda	07/02/2020	80	Kandsar	18/02/2020	116	Karpabahal	25/02/2020	81	Kherualbahal	18/03/2020	174
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ix.	Wind barrier wall/screen and vertical greenery system, green belt, dust suppression arrangement at railway siding to be installed.	<p>Mobile Tankers, fixed sprinklers, and 6 nos. of 100m throw trolley mounted fog cannon is installed in railway sidings for dust suppression. A work order (MCL/HQ/Sambalpur/GM (P&P)/18/494-H Dated: 18.08.2018) has been issued to CMPDIL, Ranchi for the Design of installation of a Wind barrier wall/screen and vertical greenery system. Fabrication and erection of wind barrier (750 m length 10m height) and development of vertical greenery system (300m) at Siding No.3 are in progress. In addition to this, vertical greenery of length 30m has been developed at siding No.3</p>																																																						

		 <p style="text-align: center;">Vertical Greenery System in Railway Siding</p>
<p>x.</p>	<p>Three tier multi-species green belt of not less than 7.5 m width should be developed all along the project to mitigate/check the dust pollution. Only native species to be used for plantation/greenbelt development.</p>	<p>The periphery of the project is surrounded by External OB dumps, Govt. Non-Forest land, Forest land, and Tenancy land. The external OB dumps have been completely biologically reclaimed; the Govt. Non-Forest land and Forest land have been covered with natural vegetation and the land acquisition process for the tenancy land in the periphery of the project area is under process. However, progressive biological reclamation of the project area is being carried out. The details of reclamation are as follows:-</p> <p>External OB dumps: 17.5 Ha Backfilled area: 129.7 Ha Block plantation: 34.985 Ha Avenue Plantation: 6.93 Rkm</p> <p>During the year 2021-22, plantation over an area of 18.75 Ha (30,000 saplings) was carried out in nearby villages to the project, and plantation over an area of 2 Ha (5,000 saplings) was carried out over the internally backfilled OB dumps.</p>  <p style="text-align: center;">Plantation over internally backfilled OB dump</p>
<p>xi.</p>	<p>In view of the mining potential of the area and the prevailing environmental concerns, carrying capacity of the riverine eco-system shall be studied through some expert agencies to assess impact on the</p>	<p>A work order (MCL/HQ/Sambalpur/GM (P&P)/18/264-H Dated: 01.07.2018) has been issued to Central Mine Planning and Design Institute Limited (CMPDIL), Ranchi for the study of the carrying capacity of riverine eco-system to</p>

	environmental components.	assess the impact on the environmental components. After field study, sample collection, and data analysis the final report has been submitted by CMPDI.
xii.	A mitigation plan based on the study to be submitted to the MOEF&CC Regional Office/SPCB and displayed on company's website.	Based upon the recommendation of the report on the likely impact on the riverine ecosystem and also to improve and maintain the ecological condition, a mitigation plan has been submitted to MoEF&CC Regional Office and SPCB vide letter No. MCL/LA/PO/LKPOCP/Envt.19-20/35 Dated: 24.08.2019. The report and mitigation plan for the study have been uploaded to the company's website. http://www.mahanadicoal.in/Environment/env_compliance.php

General Conditions:

S.No.	Conditions	Compliance Status
4.1 (a) Mining		
I.	Mining shall be carried out under strict adherence to provisions of the Mines Act 1952 and subordinate legislations made there-under as applicable.	The project is strictly adhering to the conditions of the Mines Act, 1952, Coal Mine Regulations, 2017 and other subordinate legislations made there-under as applicable.
II.	No change in mining method i.e. OC to UG, calendar programme and scope of work shall be made without obtaining prior approval of the Ministry of Environment, Forest and Climate Change (MoEF&CC).	No change in mining method is made; presently Opencast Mining with Shovel Dumper combination for OB extraction and Coal extraction through ecofriendly Surface Miner. During the year 2021-22 20,999,998.11 tonnes of coal and 39,012,191 m ³ of OB have been excavated. No change in the calendar program and scope of work will be made without obtaining prior approval from the Ministry of Environment, Forest and Climate Change (MoEF&CC).
III.	Mining shall be carried out as per the approved mining plan(including Mine Closure Plan) abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).	Mining is being carried out as per the approved Mining Plan (including Mine Closure Plan), Lakhanpur OC Expansion, Phase-II (21MTY), Approved by MoC, GoI vide No. 34011/36/2017-CPAM Dated: 20.11.2017 (Annexure-IV). The project is abiding by mining laws related to coal mining and the relevant circulars issued by Directorate General Mines Safety (DGMS).
IV.	No mining shall be carried out in forest land without obtaining Forestry Clearance as per Forest (Conservation) Act, 1980 and also adhering to The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 read with provisions of Indian Forest Act, 1927.	Forest clearance has been obtained for an area of 233.43 ha vide letter No.8- 280 / 89 – FC Dated: 08/10/1990 and approval for change of land use plan for an area of 84.399 Ha (No.8- 280 / 89 – FC Vol. I Dated: 19/01/2012) and approval for change of land use plan for an area of 25.238 Ha (No.8- 280/ 89 – FC Vol. II Dated: 20/11/2018) has been obtained. No

		mining activities are being carried out in Forest land where clearance has not been obtained.
4.1 (b) Land reclamation and water conservation		
I.	Digital Survey of entire lease hold area/core zone using Satellite Remote Sensing survey shall be carried out at least once in three years for monitoring land use pattern and report in 1:50,000 scale shall be submitted to Ministry of Environment, Forest and Climate Change/Regional Office (RO).	Land Restoration/Reclamation Monitoring based on Satellite Data has been carried out in the year 2020 by CMPDIL, Ranchi. The report for Land Restoration / Reclamation Monitoring of Lakhanpur OCP has been enclosed as Annexure –XIII. The previous report was submitted vide letter no. MCL/LA/PO/LKPOCP/Envvt./2021-22/274 dated: 30.11.2021. Further report is available online http://www.mahanadicoal.in/Environment/satelite_map.php
II.	The surface drainage plan including surface water conservation plan for the area of influence affected by the said mining operations, considering the presence of river/rivulet/pond/lake etc, shall be prepared and implemented by the project proponent. The surface drainage plan and/or any diversion of natural water courses shall be as per the approved Mining Plan/EIA/EMP report and with due approval of the concerned State/GoI Authority. The construction of embankment to prevent any danger against inrush of surface water into the mine should be as per the approved Mining Plan and as per the permission of DGMS.	The storm and strata water from mines are diverted to mine sumps and stored for dust suppression, firefighting, and other mining-related activities. Garland drains (4.5km x 2m x 2m) are made along the periphery of the mines to prevent them from inundation. Two nallahs are flowing nearby, they are namely a seasonal nallah Pulijore and Lilari nallah. The seasonal Pullijore nallah flows in between Quarry-3 and Quarry-4 and Lilari nallahs flow outside of the mine boundary. Embankment has been made all along the nallah (Pulijore and Lilari nallah) to prevent the inrush of surface water into the mine. Internal drains are made along the haul roads, stocks, and working area, and water is diverted to mine sumps. 
III.	The final mine void depth should preferably be as per the approved Mine Closure Plan, and in case it exceeds 40 m, adequate engineering interventions shall be provided for sustenance of aquatic life therein. The remaining area shall be backfilled and covered with thick and alive . Post-mining land be rendered usable for agricultural/forestry purposes and shall be handed over to the respective state	Mining operation is currently in progress and the project will keep the final mine depth to 40m and engineering interventions will be made for aquatic life sustenance. Progressive biological reclamation is being carried out. To date 17.5 ha of external dump plantation, 6.93RKM of avenue plantation, 34.985 ha of block plantation, and 129.7 ha of backfilled area plantation has been carried out. Post mining activities will be carried out as per approved mining closure plan guidelines.



	<p>government as specified in the guidelines for Preparation of Mine Closure Plan issued by the Ministry of Coal dated 27th August, 2009 and subsequent amendments.</p>	
<p>IV.</p>	<p>The entire excavated area, backfilling, external OB dumping (including top soil) and afforestation plan shall be in conformity with the "during mining"/"post mining" land-use pattern, which is an integral part of the approved Mining Plan and the EIA/EMP submitted to this Ministry. Progressive compliance status vis-a-vis the post mining land use pattern shall be submitted to the Ministry of Environment, Forest and Climate Change/Regional Office on six monthly basis</p>	<p>The excavated area is progressively being backfilled and reclaimed technically and biologically. <u>Progressive till March 2022</u> Excavated area:863.92 ha Decoaled area: 601.5 ha Backfilled area: 503.97 ha Technically reclaimed: 305.37 ha Biologically reclaimed: 129.7 ha. The external dumps of an area of 17.5 ha have been completely biologically reclaimed. The progressive compliance is being submitted to RO, MoEF&CC every half-yearly. The previous report was submitted vide letter No. MCL/LA/PO/LKPOCP/Envt./2021-22/274 dated: 30.11.2021</p> 
<p>V.</p>	<p>The top soil shall temporarily be stored at earmarked site(s) only and shall not be kept unutilized for long. The top soil shall be used for land reclamation and plantation purposes. Active OB dumps shall be stabilised with native grass species to prevent erosion and surface run off. The other overburden dumps shall be vegetated with native flora species. The excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change/ Regional Office on six monthly basis.</p>	<p>The top soil which is being excavated is stored in earmarked sites in each quarry. During the year 2021-22, 1,43,970 m³ of top soil has been excavated and stored. The top soil is spread over dumps and plantation is carried out. Grass species such as <i>Stylosanthes Hamata</i>, <i>Pennisetum pedicellatum</i>, and <i>Chrysopogon zizanioides</i> are planted in OB slopes and top soil stocks.</p>




The mining and backfilling are being carried out as Mining and Mine closure plan. The plantation is being carried out through government agencies; a contract of 5 years is given to the agency for maintaining the plantation after which the trees become self-sustainable. Native and fruit-bearing species such as Mango, Neem, Bel. Ber, Jamun, Bamboo, Chatiyan, Karanj, Radha chuta, Krishna chuta, Sisso, Mahua, etc. are planted. The previous report was submitted vide letter No. MCL/LA/PO/LKPOCP/Envt./2021-22/274 dated: 30.11.2021

4.1 (c) Emissions, effluents and waste disposal

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| <p>I. Transportation of coal, to the extent permitted by road, shall be carried out by covered trucks/conveyors. Effective control measures such as regular water/mist sprinkling/rain gun etc shall be carried out in critical areas prone to air pollution (with higher values of PM10/PM2.5) such as haul road, loading/unloading and transfer points. Fugitive dust emissions from all sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board.</p> | <p>a. Transportation of coal is being carried out on the permitted road and all road sale coal trucks are covered with tarpaulin.</p> <p>b. A total of 103 fixed sprinklers have been installed along the Coal Transportation roads (20 nos. from E&M workshop to Milan Chowk, 12 nos. from stockyard1 to Ubuda Chowk, 26 Nos. from Lilari bridge to Manager office, 45 Nos. in Main haul road) in the project.</p> <p>c. Mobile tankers are deployed on haul roads, mining areas, and transportation roads for dust suppression by both departmental and contractual means.
Departmental: 28KL (7 Nos.), 9KL (4 Nos.)
Contractual: 20KL (19 Nos.), 12KL (2 Nos.), 8 KL (2 Nos.), Truck-mounted Fog Cannon (40m Throw) on hiring basis.</p> <p>d. 9 nos. of 100m throw trolley type fog cannon has been deployed at Coalstocks and railway siding for dust suppression</p> <p>e. Two Mist type Instant shower systems have been installed and coal-loaded trucks to sidings are passed through this to avoid dust.</p> |
|---|--|

		 <p style="text-align: center;">Instant Shower system</p>
<p>II.</p>	<p>Greenbelt consisting of 3-tier plantation of width not less than 7.5 m shall be developed all along the mine lease area in a phased manner. The green belt comprising a mix of native species shall be developed all along the major approach/ coal transportation roads.</p>	<p>The periphery of the project is surrounded by External OB dumps, Govt. Non-Forest land, Forest land, and Tenancy land. The external OB dumps have been completely biologically reclaimed; the Govt. Non-Forest land and Forest land have been covered with natural vegetation and the land acquisition process for the tenancy land in the periphery of the project area is under process. However, progressive biological reclamation of the project area is being carried out. The details of reclamation are as follows:-</p> <p>External OB dumps: 17.5 Ha Backfilled area: 129.7 Ha Block plantation: 34.985 Ha Avenue Plantation: 6.93 Rkm</p> <p>During the year 2021-22, plantation over an area of 18.75 Ha (30,000 saplings) was carried out in nearby villages to the project, and plantation over an area of 2 Ha (5,000 saplings) was carried out over the internally backfilled OB dumps.</p>  <p style="text-align: center;">Avenue Plantation</p>
<p>III.</p>	<p>The transportation of coal shall be carried out as per the provisions and route proposed in the approved Mining Plan. Transportation of the coal through the existing road passing through any village shall be avoided. In case, it is proposed to construct a 'bypass' road, it should be so constructed so that the impact of sound, dust and accidents could</p>	<p>Coal transportation is being carried out as per the approved mining plan. Village roads are not being used for coal transportation. Mobile tankers are deployed in haul roads, mining areas, and transportation roads for dust suppression by both departmental and contractual means. Graders are also being deployed to reduce ruts and potholes. Speed limits of the vehicles are restricted and proper sign boards are placed to avoid accidents.</p>

	be appropriately mitigated.	
IV.	Vehicular emissions shall be kept under control and regularly monitored. All the vehicles engaged in mining and allied activities shall operate only after obtaining 'PUC' certificate from the authorized pollution testing centres.	Tippers and HEMMs are maintained through scheduled maintenance thus reducing emissions. Roads also maintained ruts and potholes free by deploying graders. PUC "Pollution Under Control" certificate has been obtained from authorized pollution testing centers for all the transporting vehicles.
V.	Coal stock pile/crusher/feeder and breaker material transfer points shall invariably be provided with dust suppression system. Belt-conveyors shall be fully covered to avoid air borne dust. Side cladding all along the conveyor gantry should be made to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.	No coal handling plant is being used, coal is being excavated from ecofriendly surface miners with a water sprinkling arrangement which eliminates drilling, and blasting of coal, and coal production is being carried out through these surface miners. The project has presently 11 Nos. of drills (6 Nos. diesel-powered drills and 5 Nos. Electric powered drills), all the drills are equipped with a dust extractor system and wet drilling arrangement. Further, all the drills are covered with dust traps to arrest fugitive dust emissions. 
VI.	Coal handling plant shall be operated with effective control measures viz. bag filters/water or mist sprinkling system etc. to check fugitive emissions from crushing operations, conveyor system, transfer points, etc.	No coal handling plant is being used; coal is being excavated through ecofriendly surface miners with a water sprinkling arrangement that eliminates drilling, blasting, and crushing of coal.
VII.	Ground water, excluding mine water, shall not be used for mining operations. Rainwater harvesting shall be implemented for conservation and augmentation of ground water resources.	No ground water is being used for mining operations. Strata water and storm water is stored in mine sumps and used for dust suppression and firefighting activities. Rainwater harvesting pits are constructed in the PO office, Manager's office, and canteen.



VIII. Catch/garland drains and siltation ponds of appropriate size shall be constructed around the mine working, coal heaps & OB dumps to prevent run off of water and flow of sediments directly into the river and water bodies. Further, dump material shall be properly consolidated/ compacted and accumulation of water over dumps shall be avoided by providing adequate channels for flow of silt into the drains. The drains/ ponds so constructed shall be regularly desilted particularly before onset of monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper settling of silt material. The water so collected in the sump shall be utilised for dust suppression measures and green belt development. Dimension of the retaining wall constructed, if any, at the toe of the OB dumps within the mine to check run-off and siltation should be based on the rainfall data. The plantation of native species to be made between toe of the dump and adjacent field/habitation/water bodies.

Catch drains are made all around the Coal stocks, mine working areas, roads, and OB dump. The water from catch drains is diverted to mine sumps for settling and for firefighting and dust suppression activities. Garland drains (4.5km x2mx 2m) have been excavated along the periphery of the mine boundary to prevent the inrush of storm water.



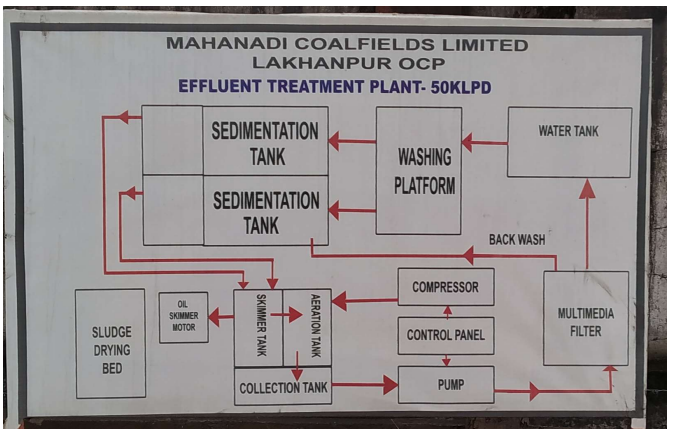
A yearly average of 1500-2000m³/day of water is used from mine sumps. The drains are de-silted and maintained at routine intervals. At the onset of every monsoon, a monsoon preparation plan is made based on the rainfall data.

Plantation of native species and grass species is being carried out in OB dump top and OB slopes. To date, 129.7 ha of the backfilled area and 17.5 ha of the external dump has been biologically reclaimed. Plantation details are enclosed in Form III of the report. As the shovel-dumper combination is being carried out the dump achieves the required compaction. As the OB dumps are progressively

advancing construction of a retaining wall at the toe of the dump is not possible. However, a retaining wall for 100m is made around the External dump- gram Devi dump.

IX. Industrial waste water generated from CHP, workshop and other waste water, shall be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap shall be installed and maintained fully functional with effluents discharge adhering to the norms. Sewage treatment plant of adequate capacity shall be installed for treatment of domestic waste.

Three ETPs of 240 m³/day capacity are established in Workshop one each at the Dumper section, Shovel section, and Dozer section out of which one ETP (50KLPD) has been renovated with Skimmer belt unit, Aeration tank, and Multimedia filter with Zero discharge circuit. The flowchart of the ETP has been mentioned below. A Mine discharge treatment plant of 1080m³/day capacity is installed in the project. STP of 1.7 MLD is established in the residential colony and soak pits are also constructed. The effluent from ETP and MDTP is being monitored at regular intervals. Pictures enclosed as Annexure – V.



X. Adequate groundwater recharge measures shall be taken up for augmentation of ground water. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

Rainwater harvesting pits are made in the PO office, Manager office, and Canteen. Further storm and strata water are collected in mine sumps which help in recharge of the aquifers. Ground water depth level is also being monitored in nearby villages at every season (pre-monsoon, post-monsoon, monsoon, and winter).

Nov 2021	Kansar	1.65 m
	Khairkuni	2.15 m
Jan 2022	Kansar	4.4 m
	Khairkuni	8.9 m

Nearby villages are being provided with drinking water from IWSS through mobile tankers. The list is given below

Village	Trips	Capacity (KL)	Days
Kudaloi	8	2	90
Chringriguda	8	2	90
Bichuapada	8	2	90
Gangapada			

		Dahaldera			
		Bolamal			
		Thak Taki pada	8	2	90
		Bazar pada			
		Old Khairkuni	8	2	90
		New Khairkuni	8	3	90
		Chruchpada			
		Jabudhia	8	2	90
		Changapada			
		Tingismal	8	2	365
		Lahurapada			
		Sahajbahal	8	2	365
		Ubuda	8	2	365
		Karlajori			
		Khaliapali	8	2	365

4.1 (d) Illumination, noise and vibration

I.	Adequate illumination shall be ensured in all mine locations (as per DGMS standards) and monitored weekly. The report on the same shall be submitted to this ministry & its RO on six-monthly basis.	Illumination survey is being carried out in workshops and at different places in mines such as OB dump, coal face, coal & OB transportation roads, etc. at regular intervals as per DGMS guidelines. The report for March - 2022 is attached as Annexure-VI. The previous report was submitted vide letter MCL/LA/PO/LKPOCP/Envnt./2021-22/274 dated: 30.11.2021
II.	Adequate measures shall be taken for control of noise levels below 85 dB(A) in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with personal protective equipments (PPE) like ear plugs/muffs in conformity with the prescribed norms and guidelines in this regard. Adequate awareness programme for users to be conducted. Progress in usage of such accessories to be monitored.	Workers engaged in blasting and drilling operations, operation of HEMM, etc are being provided with personal protective equipment (PPE) like ear plugs. Routine maintenance is also being carried out to reduce vibrations and noise. The noise level survey of the mine from October 2021 to March 2022 is attached as Annexure-VII. Safety talks are being conducted at regular intervals for increasing the awareness
III.	Controlled blasting techniques shall be practiced in order to mitigate ground vibrations and fly rocks as per the guidelines prescribed by the DGMS.	Controlled blasting techniques with Nonel tube initiation are being adopted, vibration monitoring is also being carried out at regular intervals. Adequate safety measures are being implemented during the blasting period and the blasting operations are being carried out only during the daytime.
IV.	The noise level survey shall be carried out as per the prescribed guidelines to assess noise exposure of the workmen at vulnerable points in the mine premises and report in this regard shall be submitted to	Noise level survey is being carried out at every fortnight at 4 locations during daytime and nighttime. The Noise level monitoring report for October 2021 to March 2022 is attached as Annexure-VII. Locations for noise monitoring station is tabulated below

the Ministry/ RO on six-monthly basis.	Station Name	Coordinates
	Near Lilari Nallah Pump house	21.777147° N 83.850411° E
	South of Quarry 6	21.7370747° N 83.830168° E
	South west of Quarry 6	21.732742° N 83.791011° E
	Near Quarry 3.	21.765694° N 83.813028° E

The previous report was submitted vide letter No. MCL/LA/PO/LKPOCP/Envt./2021-22/274 dated: 30.11.2021

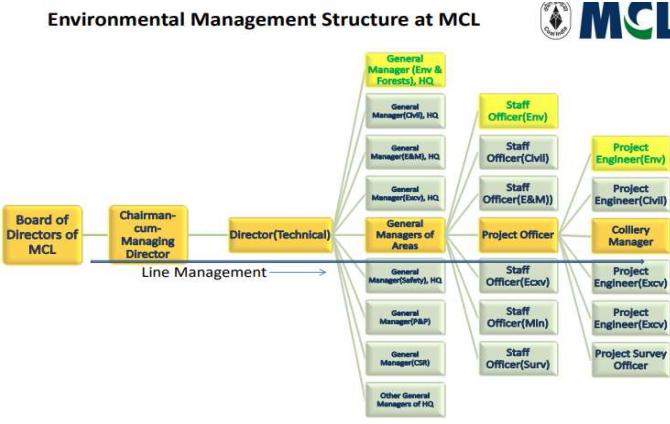
4.1 (e) Occupational health and safety

I.	The project proponent shall undertake occupational health survey for initial and periodical medical examination of the workers engaged in the project and maintain records accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. Besides regular periodic health check-up, 20% of the workers identified from workforce engaged in active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any.	Occupational health monitoring for initial and periodical medical examination of the workers engaged in the project is being carried out and records are maintained accordingly as per the provisions of the Mines Rules, 1955 and DGMS circulars. During 2021-22, Initial Medical Examination was carried out for 1302 contractual employees, and 405 departmental employees were engaged in Periodical Medical Examination. The workers are being checked for occupational disease, hearing impairment, and others in MCL, Central Hospital, Mandalia, Jharsuguda.
II.	Personnel (including outsourcing employees) working in dusty areas shall wear protective respiratory devices and shall also be provided with adequate training and information on safety and health aspects.	Personnel working in dusty areas are provided with dust masks and training is provided for all employees through classroom training and safety talks. During the year 2021-22, 57 Nos. of dusk masks has been distributed to departmental employees. Safety talks are being held at regular intervals and personnel are insisted to wear dust masks.
III.	Skill training as per safety norms specified by DGMS shall be provided to all workmen including the outsourcing employees to ensure high safety standards in mines	Employees of both departmental and contractual are trained with initial training and refresher training, During 2021-22, 820 contractual employees, 22 departmental employees were imparted with initial training, and 155 departmental and 276 contractual employees were trained with refresher training.



4.1 (f) Ecosystem and Biodiversity conservation

I.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered flora/fauna, if any, spotted/reported in the study area. The Action plan in this regard, if any, shall be prepared and implemented in consultation with the State Forest and Wildlife Department.	The Environmental Impact Assessment and Environmental Management Plan were prepared by CMPDI and it was found that no endangered flora/fauna are found in the mining area of the project. Site-specific wildlife conservation plan for the project has been approved by the Conservator of Forests, Odisha, Bhubaneswar (Memo No. 3056/1WL(C) SSP-299/2011 Dated: 5 th May 2011.)
4.1 (g) Public hearing, R&R and CSR		
I.	Implementation of the action plan on the issues raised during the public hearing shall be ensured. The project proponent shall undertake all the tasks/measures as per the action plan submitted with budgetary provisions during the public hearing. Land oustees shall be compensated as per the norms laid down in the R&R policy of the company/State Government/Central Government, as applicable.	Odisha Rehabilitation and Resettlement policy,2006 and Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 are being followed which include Employment, Cash compensation in place of employment, Plot, Cash compensation in place of plot, Annuity, House building assistance for the eligible persons as per policy. There are about 8 affected villages and 1041 land oustees have been employed. Details of R&R are enclosed as Form-II.
II.	The project proponent shall ensure the expenditure towards socio-economic development in and around the mine, in every financial year in pursuance of the Corporate Social Responsibility Policy as per the provisions under Section 135 of the Companies Act, 2013	CSR activities are being carried out every year in nearby villages as Corporate Social Responsibility Policy as per the provisions under Section 135 of the Companies Act, 2013. During F.Y. 2021-22 an amount of 136.12 Lakhs has been spent for CSR works in the Lakhanpur area, attached as Annexure-IX.
III.	The project proponent shall follow the mitigation measures provided in this Ministry's OM No.Z-11013/5712014-IA.II (M) dated 29th October 2014, titled 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area'.	The project proponent is adhering to the mitigation measures as per the guideline specific under the title 'Impact of mining activities on habitations-issues related to the mining projects wherein habitations and villages are the part of mine lease areas or habitations and villages are surrounded by the mine lease area' OM No.Z-11013/5712014-IA.II (M) dated 29 th October 2014. CSR activities, Drinking water supply to villages, the separate road for coal transportation, controlled blasting, dust suppression, etc. are being carried out.
IV.	The project proponent shall make necessary alternative arrangements, if grazing land is involved in core zone, in consultation with the State government to provide alternate areas for livestock grazing, if any. In this context, the project proponent shall implement the directions of Hon'ble Supreme Court with regard to acquiring grazing land.	Project affected families are provided with Odisha Rehabilitation and Resettlement policy in which Plot is provided to eligible people. The rehabilitation sites of Lakhanpur OCP, Ganesh Nagar and Jagannath Nagar have land for livestock grazing.

4.1 (h) Corporate Environment responsibility		
I.	<p>The Company shall have a well laid down environment policy duly approved by Board of Directors. The environment policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental or forest norms/conditions. Also, the company shall have a defined system of reporting of non-compliances/violations of environmental norms to the Board of Directors and/or shareholders/stakeholders.</p>	<p>The company has well down environment policy which states that “<i>Mahanadi Coalfields Limited(MCL) is committed to promoting sustainable development by protecting the environment through integrated project planning & design, prevention/mitigation of pollution, conservation of natural resources, restoration of ecology & biodiversity, recycling/ proper disposal of wastes, addressing climate change and inclusive growth. It also aims to bring awareness amongst its stakeholders for continual improvement in environmental performances following best practices</i>” and has been approved by the Board of Directors. The company also reviews the non-compliance of environmental conditions are regular intervals. The policy is available online at http://www.mahanadicoal.in/Environment/pdf/MCL%20CEP-2018.pdf</p>
II.	<p>The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental clearance conditions should be displayed on website of the Company.</p>	<p>The compliance with the clearance conditions is displayed on the company website. The environment management structure of the company is available online at http://www.mahanadicoal.in/Environment/pdf/ORGANISATION.pdf</p>  <p>The diagram illustrates the Environmental Management Structure at MCL. It shows a hierarchical structure starting with the Board of Directors of MCL, followed by the Chairman-cum-Managing Director and the Director (Technical). The Director (Technical) oversees several General Managers (Env & Forests, HQ) and General Managers (Civil, HQ). These General Managers are supported by Staff Officers (Env) and Staff Officers (Civil). The structure also includes Project Officers (Env) and Project Engineers (Env) at the project level, along with a Colliery Manager and various Project Engineers (Civil, Excv, Min, Surv) and Staff Officers (E&M, Excv, Min, Surv). Other General Managers of HQ are also shown at the bottom level.</p>
III.	<p>A separate environmental management cell both at the project and company headquarter level, with suitable qualified personnel shall be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.</p>	<p>A separate environmental management cell has been established at the project level with the E-3 grade officer reporting to the Project officer of the E-7 grade and the E-4 grade environment officer at the area level. The environment department has been established at the Headquarters level directly reporting to the Head of the organization.</p>
IV.	<p>Action plan for implementing EMP and environmental conditions shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and not to be diverted for any other purpose. Year wise progress of implementation of action plan</p>	<p>EMP and Environmental conditions are reviewed periodically at the Headquarters level. During the year 2020-21, Rs. 103692115 has been spent for environmental protection measures as per environment statement Form-V. The environment-related works are booked in both capital and revenue heads and works are carried out accordingly. The previous report was submitted vide letter No. :</p>

	shall be reported to the Ministry/Regional Office along with the Six Monthly Compliance Report.	MCL/LA/PO/LKPOCP/Envnt./2021-22/274 dated: 30.11.2021				
V.	Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out	An environmental audit is being carried out by MCL Headquarters for verification of Form-V data. During 2020-21 third-party environmental audit was carried out by CSIR-NEERI, Kolkata and the report is awaited. Inter-project Environment audit is being carried out quarterly to review the environmental conditions and rating is given based on that and based on observation from Apex Committee for monitoring compliance EC/FC conditions, a multidisciplinary team from IB valley Area inspected the EC conditions of the project.				
4.1 (I) Statutory Obligations						
I.	The environmental clearance shall be subject to orders of Hon'ble Supreme Court of India, Hon'ble High Court, NGT and any other Court of Law from time to time, and as applicable to the project.	Any change made in environmental clearance from the orders of the Hon'ble Supreme Court of India, Hon'ble High Court, NGT, and any other Court of Law shall be implemented.				
II.	This environmental clearance shall be subject to obtaining wildlife clearance, if applicable, from the Standing Committee of National Board for Wildlife.	Site-specific wildlife conservation plan for the project has been approved by the Conservator of Forests, Odisha, Bhubaneswar (Memo No. 3056/1WL(C) SSP-299/2011 Dated: 5 th May 2011.				
III.	The project proponent shall obtain Consent to Establish/Operate under the Air Act, 1981 and the Water Act, 1974 from the concerned State Pollution Control Board.	Consent to Establish (No.2256/ IND –II- NOC_ -6151 Dated: 03/03/2018) and Consent to Operate (No. 5278/IND-I-CON-1220 Dated: 26.03.2021) has been obtained from Odisha State Pollution Control Board for 21MTY.				
IV.	The project proponent shall obtain the necessary permission from the Central Ground Water Authority (CGWA)	No Objection Certificate (NOC) to abstract groundwater w.r.t Lakhanpur OCP was obtained vide no. CGWA/NOC/MIN/ORIG/2020/9248 which is valid till 08.12.2022.				
4.1 (j) Monitoring of Project						
I.	Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10, PM2.5, SO ₂ and NO _x . Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Online ambient air quality monitoring stations may also be installed in addition to the regular monitoring stations as per the requirement and/or in consultation	<p>Ambient air quality monitoring is being monitored for the parameters of SPM, PM₁₀, PM_{2.5}, SO₂, and NO_x through stations fixed after consultation and approval from the Regional office, Jharsuguda of Odisha State Pollution Control Board (Annexure- I). The previous report was submitted to OSPCB and ERO, MoEF&CC vide letter No. MCL/LA/PO/LKPOCP/Envnt./2021-22/274 dated: 30.11.2021. For the year 2021-22, air quality monitoring is being carried out through 4 Nos. of stations in both the core zone and buffer zone of the project.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%; text-align: center;">Station Name</th> <th style="width: 50%; text-align: center;">Coordinates</th> </tr> </thead> <tbody> <tr> <td style="height: 20px;"> </td> <td> </td> </tr> </tbody> </table>	Station Name	Coordinates		
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	<p>with the SPCB. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc to be carried out at least once in six months..</p>	<table border="1" data-bbox="850 65 1466 384"> <tr> <td data-bbox="850 65 1208 174">Near Lilari Nallah Pump house</td> <td data-bbox="1208 65 1466 174">21.777147° N 83.850411° E</td> </tr> <tr> <td data-bbox="850 174 1208 243">South of Quarry 6</td> <td data-bbox="1208 174 1466 243">21.7370747° N 83.830168° E</td> </tr> <tr> <td data-bbox="850 243 1208 312">South west of Quarry 6</td> <td data-bbox="1208 243 1466 312">21.732742° N 83.791011° E</td> </tr> <tr> <td data-bbox="850 312 1208 384">Near Quarry 3.</td> <td data-bbox="1208 312 1466 384">21.765694° N 83.813028° E</td> </tr> </table> <p>The air quality monitoring results for the period October 2021 to March 2022 are attached as Annexure-II. The heavy metal monitoring for October 2021 to March 2022 is attached as Annexure-III.</p>	Near Lilari Nallah Pump house	21.777147° N 83.850411° E	South of Quarry 6	21.7370747° N 83.830168° E	South west of Quarry 6	21.732742° N 83.791011° E	Near Quarry 3.	21.765694° N 83.813028° E
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Near Quarry 3.	21.765694° N 83.813028° E									
II.	<p>The Ambient Air Quality monitoring in the core zone shall be carried out to ensure the Coal Industry Standards notified vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data shall be regularly reported to the Ministry/Regional Office and to the CPCB/SPCB.</p>	<p>Ambient Air Quality monitoring is being carried out in the core zone as per Coal Industry Standards notified vide GSR 742 (E) dated 25.9.2000. Data on ambient air quality and heavy metals such as Hg, As, Ni, Cd, Cr is being sent to SPCB in CTO compliance and RO, MoEF&CC through EC compliance. The air quality monitoring results for the period October 2021 to March 2022 are attached as Annexure-II. The previous report was submitted to OSPCB and ERO, MoEF&CC vide letter No: MCL/LA/PO/LKPOCP/Envvt./2021-22/274 dated: 30.11.2021.</p>								
III.	<p>The effluent discharge (mine waste water, workshop effluent) shall be monitored in terms of the parameters notified under the Coal Industry Standards vide GSR 742 (E) dated 25.9.2000 and as amended from time to time by the Central Pollution Control Board.</p>	<p>The effluent discharge is monitored at regular intervals. The effluent is monitored in ETPs, MDTPs, and Mine sumps as per Coal Industry Standards vide GSR 742 (E) dated 25.9.2000. The details of the monitoring data from October 2021 to March 2022 are attached as Annexure-IX.</p>								
IV.	<p>The monitoring data shall be uploaded on the company's website and displayed at the project site at a suitable location. The circular No. J-20012/1/2006-1A.1 1 (M) dated 27.052009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.</p>	<p>The monitoring data for Air, Water, and Noise further to this general data of the project is being displayed at the project site through an electronic board and uploaded on the company's website.</p>								
V.	<p>Regular monitoring of ground water level and quality shall be carried out in and around the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operations. The monitoring of ground water levels shall be carried out four times a year i.e. pre-monsoon, monsoon, post-monsoon</p>	<p>Monitoring of ground water level and quality is being carried out in village wells and piezometers. A total of 17 piezometers have been constructed in IB valley coalfields out 2 piezometers are under the area of the Lakhanpur project which is located at 21°45'49.21"N 83°47'42.22"E and 21°46'51.61"N 83°48'47.60"E report enclosed as Annexure X. Ground water depth level is also being monitored in nearby villages at</p>								

	<p>and winter. The ground water quality shall be monitored once a year, and the data thus collected shall be sent regularly to Ministry of Environment, Forest and Climate Change/Regional Office.</p>	<p>every season (pre-monsoon, post-monsoon, monsoon, and winter).</p> <table border="1" data-bbox="894 149 1406 302"> <tr> <td rowspan="2">Nov 2021</td> <td>Kansar</td> <td>1.65 m</td> </tr> <tr> <td>Khairkuni</td> <td>2.15 m</td> </tr> <tr> <td rowspan="2">Jan 2022</td> <td>Kansar</td> <td>4.4 m</td> </tr> <tr> <td>Khairkuni</td> <td>8.9 m</td> </tr> </table> <p>Piezometer level and water quality report are attached as Annexure-X.</p> <p>The previous report was submitted to OSPCCB and ERO, MoEF&CC vide letter No: Ref.No. MCL/LA/PO/LKPOCP/Envnt./2021-22/274 dated: 30.11.2021.</p>	Nov 2021	Kansar	1.65 m	Khairkuni	2.15 m	Jan 2022	Kansar	4.4 m	Khairkuni	8.9 m
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VI.	<p>Monitoring of water quality upstream and downstream of water bodies shall be carried out once in six months and record of monitoring data shall be maintained and submitted to the Ministry of Environment, Forest and Climate Change/Regional Office. The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental conditions to the Ministry of Environment, Forest and Climate Change/Regional Office. For half yearly monitoring reports, the data should be monitored for the period of April to September and October to March of the financial years.</p>	<p>The surface water quality is being monitored both upstream and downstream of the nearby water bodies (Pulijore nallah and Lilari nallah). The surface water quality report monitoring data for the period October 2021 to March 2022 is attached as Annexure XI.</p> <p>The half-yearly compliance reports are being submitted to RO, MoEF&CC. The report for the months April to September is submitted before 1st December and the report for the months October to March is submitted before 1st June. The previous report was submitted to ERO, MoEF&CC vide letter No: Ref.No. MCL/LA/PO/LKPOCP/Envnt./2021-22/274 dated: 30.11.2021.</p>										
VII.	<p>The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental conditions to the Ministry of Environment, Forest and Climate Change/Regional Office. For the half yearly monitoring report, the data should be monitored for the period of April to September and October to March for financial years.</p>	<p>Six months environment clearance compliance report is being submitted timely to the Ministry of Environment, Forest and Climate Change/Regional Office Previous reports were submitted to ERO, MoEF&CC vide letter No: Ref.No. MCL/LA/PO/LKPOCP/Envnt./2021-22/274 dated: 30.11.2021.</p>										
VIII.	<p>The Regional Office of this Ministry 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</p>	<p>The project authorities will always extend full cooperation to the officer (s) of the Regional Office Previous inspection was conducted on 31.10.2019 by ERO, MoEF&CC, and full cooperation was given by furnishing the requisite data/information/monitoring reports.</p>										
<p>4.1 (k) Miscellaneous</p>												

I.	Efforts should be made to reduce energy consumption by conservation, efficiency improvements and use of renewable energy.	The conventional lights are being replaced by LED lights in offices, street lightings & mines (Coal face, OB face, OB dumps, Haul roads, Workshops, etc.). and Till date: 20W- 100 Nos., 70W- 367 Nos., 80W- 100 Nos, 120W- 500 Nos. 250W- 260 Nos. 400W- 293 Nos, 700W – 12 Nos., 1000W – 10 Nos. as been installed. Electrical machinery is being maintained at regular intervals and the power factor for the Lakhanpur Area is maintained at 0.98.
II.	The project authorities shall inform to the Regional Office regarding commencement of mining operations.	The project commenced the mining operations on 28.02.2019 after obtaining Consent To Establish and Consent To Operate and it has been communicated to ERO, MoEF&CC vide letter No. MCL/LKPA/PO/LKPOCP/Env.18-19/3812 Dated: 28/02/2019.
III.	A copy of the environmental clearance shall be marked to concerned Panchayat. A copy of the same shall also be sent to the concerned State Pollution Control Board, Regional Office, District Industry Sector and Collector's Office/Tehsildar Office for information in public domain within 30 days.	A copy of environmental clearance has been forwarded to Odisha State Pollution Control Board, Regional Office, District collector, Tehsildar Office, District Industry Sector and Sarpanch of concerned Panchayat vide letter no: MCL/LKPA/ PO/LKPOCP /Env.18-19/66,67,68,69,70&71Dated: 18/02/2019 respectively.
IV.	The EC shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain.	Environmental clearance for 21MTY has been uploaded to the company website and also compliance status is also being uploaded to the company website and updated once every six months. (http://www.mahanadicoal.in/Environment/Clearances/compliances.htm)
V.	The project authorities shall advertise at least in two local newspapers 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, Forest and Climate Change at www.environmentclearance.nic.in and a copy of the same shall be forwarded to the Regional Office.	The Project has advertised in two newspapers Indian express in English and Sambad in Odia on 17.01.2020 stating that <i>“It is for the information of all concerned that Lakhanpur OCP, Lakhanpur Area of Mahanadi Coalfields Limited, Post: Ubuda, Via-Belpahar, District: Jharsuguda (Odisha) has been accorded with Environmental Clearance for 21 MTPA vide letter NO. J-11015/391/2012-IA-II(M) dated:10th January 2020 by the Ministry of Environment, Forest &Climate Change, New Delhi. A copy of the clearance letter is available with Odisha State Pollution Control Board and may also be seen on the website of the Ministry of Environment, Forest &Climate Change at www.environmentclearance.nic.in”</i> . Advertisement enclosed as Annexure-XII. The previous report was submitted vide letter No: MCL/LA/PO/LKPOCP/Envt./2021-22/274 dated: 30.11.2021.

VI.	The environmental statement for each financial year ending 31 March in Form-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF&CC by e-mail. Concerns raised during public hearing	The environmental statement Form-V for each financial year ending 31 st March is being submitted to State Pollution Control Board, for the year 2020-21 was submitted Vide Letter No. एम०सी०एल०/ मुख्यालय/ पर्यावरण&वन/2021/65 dated 21-09-2021. The previous report was submitted to OSPCB and ERO, MoEF&CC vide letter No: MCL/LA/PO/LKPOCP/Envvt./2021-22/274 dated: 30.11.2021. Form-V and Compliance of EC conditions have been uploaded in the company website(http://www.mahanadicoal.in/ Environment /Clearances_compliances.htm).
VII.	The above conditions will be enforced inter-alia, 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 and any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter	The project has obtained Consent to Establish (No.2256/ IND-II- NOC -6151 Dated: 03/03/2018) and Consent to Operate (No. 5278/IND-I-CON-1220 Dated: 26.03.2021) under Air (PCP) Act, 1981 and Water (PCP) Act, 1974 and conditions states thereby are being complied. In addition, any other orders passed by the Hon'ble Supreme Court of India/High Courts and any other Court of Law relating to the subject matter will be complied.
5	The proponent shall abide by all the commitments and recommendations made in the EIA/EMP report and also that during presentation to EAC. All the commitments made on the issues raised during public hearing shall also be implemented in letter and spirit.	All the commitments and recommendations made in the EIA/EMP report and also during presentation to EAC are being complied. Issues raised in the public hearing are also being implemented. Details are enclosed in Annexure- XIII.
6	The proponent shall obtain all necessary clearances/approvals that may be required before the start of the project. The ministry or any other competent authority may stipulate any further condition for environmental protection. The ministry or any other competent authority may stipulate any further condition for environmental protection.	The project has obtained the necessary clearance Consent to Establish (No.2256/ IND –II- NOC- 6151 Dated: 03/03/2018) and Consent to Operate (No. 5278/IND-I-CON-1220 Dated: 26.03.2021) before the start of the project and any other further condition stipulated by the ministry or any other competent authority for environmental protection will be complied.
7	Any appeal against this environmental clearance shall lie with National Green Tribunal, if preferred, within a period of 30 days as prescribed under section 16 of National Green Tribunal Act,2010.	No appeal has been made against this environmental clearance.
8	The coal company/ project proponent shall be liable to pay compensation against illegal	The project will comply with the orders of the Hon'ble Supreme Court as per the EC condition mentioned.

	mining, if any, and as raised by the respective State Government at any point of time, in terms of the orders dated 2 nd August 2017 of Hon'ble Supreme Court in WP(Civil) No.114/2014 in the matter of "Common Cause Vs Union of India & Others"	
9	The project proponent, without prejudice to this environmental clearance, shall be bound to comply with any other interpretation of the orders of Hon'ble Supreme Court also, in due course of time	The project will comply with the orders of the Hon'ble Supreme Court as per the EC condition mentioned.
10	This EC supersedes the earlier granted vide letter No. J-11015/391/2012-IA.II (M) dated 21 st May 2014 with a capacity 18.75 MTPA.	EC for 21 MTPA has been obtained vide No. J-11015/391/2012-IA.II (M) dated 13 th February 2019 and the conditions are being complied. MoEF&CC has granted EC on 10.01.2020 for 30 years or the life of the mine, whichever is earlier under the provisions of EIA Notification, 2006.

Additional Conditions:

S.No	Conditions	Compliance status
i.	EAC desired that the MoC may direct CIL subsidiaries to comply the EC/FC/CTO conditions strictly within certain time bound manner so that the mining operations will be environmentally sustainable/viable etc.	MoC has directed CIL subsidiaries for the formation of Internal monitoring mechanism to verify compliance with EC/FC/CTO conditions strictly within a certain time-bound manner and the same has been formed at the Area and HQ levels.
ii.	Also, EAC asked project proponent to plant 50,000 nos. of native trees with broad leaves along the villages and transportation route to prevent the effect of air pollution. After completion of tree plantation, number of trees shall be duly endorsed from District Forest Officer.	During 2021-22, plantation of 30,000 saplings was carried out over an area of 18.75 Ha and during 2020-21, plantation of 28,000 saplings was carried out over an area of 17.5 Ha by State Forest Department, Odisha under Urban Sector Plantation scheme and duly endorsed by DFO, Jharsuguda. Also, plantation is being carried out progressively in the mine lease area. External OB dumps: 17.5 Ha Backfilled area: 129.7 Ha Block plantation: 34.985 Ha Avenue Plantation: 6.93 Rkm
iii.	The project proponent shall complies with all statutory requirements and judgement of Hon'ble Supreme Court dated the 2 nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and ors. State Government shall ensure that the entire compensation levied, if any, for illegal mining paid by the project proponent through their respective department in strict compliance of judgement of Hon'ble Supreme Court	Project Proponent has obtained all statutory clearances such as Environmental Clearance, Consent To Operate, Mining Plan duly approved by the competent authority, and NPV for the entire forest falling within the mining lease is deposited in the Compensatory Afforestation Fund. No illegal mining has been carried out by Project Proponent

	dated 2 nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.	
iv.	Project Proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) in case of intersecting the Ground water table. The intersecting ground water table. The intersecting ground water table can only be commenced after conducting detailed hydrogeological study and necessary permission from the CGWA. The Report on six monthly basis on changes in Ground water level and quality shall be submitted to the Regional Office of the Ministry, CGWA and State Pollution Control Board.	No Objection Certificate (NOC) to abstract groundwater w.r.t Lakhanpur OCP was obtained vide no. CGWA/NOC/MIN/ORIG/2020/9248 which is valid till 08.12.2022.
v.	Proponent shall appoint an Occupational Health Specialist for Regular and Periodical medical examination of the workers engaged in the Project and maintain records accordingly; also, occupational health check-ups for workers having some ailments like BP, diabetes, habitual smoking etc. shall be undertaken once in six months and necessary remedial/preventive measure taken accordingly. The Recommendations of National Institute for ensuring good occupational environment for mine workers shall be implemented; the prevention measure for burns, malaria and provision of antisnake venom including all other paramedical safeguards may be ensured before initiating the mining activities.	Regular monitoring of employees of both departmental and contractual is being carried out for occupational health and other health hazards. During 2021-22, Initial Medical Examination was carried out for 1302 contractual employees, and 405 departmental employees were engaged in Periodical Medical Examination. The workers are being checked for occupational disease, hearing impairment, and others in MCL, Central Hospital, Mandalia, Jharsuguda.
vi.	Project Proponent shall follow the mitigation measures provided in Office Memorandum No. Z-11013/57/2014-IA.II(M) dated 29 th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".	Project authorities are following the measures provided in Office Memorandum No. Z-11013/57/2014-IA.II(M) dated 29 th October 2014, such as the construction of check dams, retaining walls/structures, garland drains, settling ponds, drinking water supply to villagers, regular water table monitoring, provision of water sprinklers and water tankers, CSR expenditure-based 2% turnover, No blasting near public works.
vii.	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may effect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/masks away from the villagers and keeping the noise levels well within the prescribed limits for day light/night hours.	Floodlights/masks are oriented away from the villagers so that the biological clock of the villages is not disturbed and noise levels are well within the prescribed limits for day light/night hours.
viii.	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, 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	No endangered fauna has been identified in the study area of the project

	Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	
ix.	Hon'ble Supreme court in an Writ petition(s) Civil No. 114/2014, Common Cause vs union of India to impose a condition in the mining lease and a similar condition in the environmental clearance and the mining plan to the effect that the mining lease holders shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. Compliance of this condition after the mining activity is over at the cost of the mining lease holders/Project Proponent". The implementation report of the above said condition shall be sent to the Ministry's Regional Office for site inspection/verification.	Project shall undertake re-grassing of mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc and Compliance of this condition after the mining activity is over at the cost of the Project Proponent shall be submitted. However Grass species such as <i>Stylosanthes Hamata</i> , <i>Pennisetum pedicellatum</i> and <i>Chrysopogon zizanioides</i> are planted in OB slopes and top soil stocks.

Wf
21/5/22

Project Officer
Lakhanpur OCP

FORM -I
MINISTRY OF ENVIRONMENT & FORESTS, REGIONAL OFFICE
MONITORING PROFORMA PART-I (DATASHEET)

1	Project type	:	Mining Industry
2	Name of the Project	:	Lakhanpur Opencast Mine
3	Clearance letter(s) OM No. & date	:	No. J- 11015/391/2012-IA.II (M) 10 th January 2020
4	a Location District	:	Jharsuguda
	b State	:	Odisha
	b Latitude	:	21°47'32"N & 21°43'12"N
	b Longitude	:	83°47'59"E & 83°51'30"E
5	a Address of concerned Project Chief Engineer	:	Office of the Project Officer Lakhanpur Open Cast Project Lakhanpur Area PO- UBUDA Via-Belpahar (768217) Dist- JHARSUGUDA (ODISHA) PH-06645-605900 FAX- -06645-233353 Email: po-lkpp.mcl@coalindia.in
	b Address of Executive Project Engineer/Manager	:	-do-
6	a Salient features of Project	:	Minable reserve 263.90 Mte (as on 01.04.2017) Target output 21 MTPA Average stripping ratio 01:2.59 Project life 13Years(as on 01.04.2017)
	b Details of the Environmental Management Plans	:	a Pre-mining Env't. Scenario b Env't. Impact analysis c Pollution control measures i.e. provision of dust prevention & suppression, arrangement of water pollution control measures, PST, O>, SST, Backfilling, Tech, Bio-Reclamation d Env't. Monitoring etc.
7	a Breakup of the Project area	:	No submergence area
	a Submergence area (Forest and Non-Forest)	:	a Forest 233.43 ha b Non-forest 2006.57 ha
	b Others(Private Land)	:	2240.00 ha
8	Breakup of the Project affected population, with enumeration of those losing houses/dwelling units only, agricultural land only, both dwelling units & agricultural land	:	a SC 153 b ST/ Adivasees 538

	and less labour/artisans	c	Other	552
			Total	1243
9	Financial Details			
a	Project cost as originally planned and subsequently revised estimates and the years of price reference			Rs. 391.33 crores
b	Allocation made for environmental management plans, with item wise & year wise breakup			Rs. 3922 lakhs (As per EMP Ch-IX pg-249)
c	Benefit cost ratio/ Internal rate of return and the year of assessment			
d	Whether 9(c) includes the cost of Environmental Management Plan so far			Yes
e	Expenditure on environmental management			2020-21 ₹103692115
f	Actual expenditure incurred on the Environmental Management plans so far			5596.35 lakhs up to 2020-21
10	Forest requirements			
a	The status of approval of diversion of forest land for non-forestry use	233.43 Ha already approved No.8-280/89-FC Dated: Oct 8 th 1990		
b	The status of compensatory afforestation.	Money deposited with the State Forest department		
c	The status of tree felling	Tree felling is being done through OFDC Ltd. With permission of the State forest dept. as per the progress of the project.		
11	Comments on the viability and sustainability of the Compensatory afforestation programme in the light of actual fields experience so far.			Satisfactory.
12	Status of construction			
a	Date of commencement(actual and/or planned)			03.10.1991
b	Date of completion (actual and/or planned)			Year 2029-30 @ 21 MTY capacity.
	Present Status of the Project			Running as planned.
13	Reason for the delay if the Project is yet to start.			Not Applicable

FORM-II
PROFORMA FOR PROVIDING INFORMATION ON REHABILITATION

1	No. of villages affected	:	8 (Eight)		
2	Families affected and displaced	:	250 nos. Affected and 1243 nos. Displaced		
3	Compensation Package offered per family	:	Besides land compensation and employment, two rehabilitation sites have been developed with the provision of drinking water, ponds, wells, community club, puja mandap, roads, drains, school, boundary wall, street light, and dispensary.		
4	Budget estimate for Rehabilitation				
	a	Total outlay	:	48.09 crores (Cash Compensation in place of Plot, House building allowance, and Incentive)	
	b	Amount paid/ used	:	40.42 crores	
5	Employment details-				
	a	Total employment to be provided	:	20 nos#	
	b	Employment given so far	:	1041 nos	
		Name of the village	Employment provided (nos)	under consideration	
		Khairkuni	267	1	
		Ghanamal	86		
		Ubuda	317	6	
		Tingismal	225	13	
		Khuntamahul	51	0	
		Banjipali	29	0	
		Khaliapali	68	0	
		Karlajori	3	0	
		Total	1047	20	
6	Rehabilitation & Resettlement details		Rehabilitation Site + Cash Compensation		
	a	No. of families rehabilitated			
		i) Name of site	Ganesh Nagar Jagannath Nagar		
		ii) Families Rehabilitated	1081 Nos (Including own choice cash compensation taken in lieu of Plot at rehab. Site)		
		Name of the Village	Nos of families displaced	Nos of families shifted	Balance
		Khairkuni	267	242	25
		Ghanamal	107	105	2
		Tingismal	319	311	9
		Banjipali	30	30	0
		Khuntamahul	20	20	0
		Ubuda	390	313	70
		Karlajori	10	0	10
		Khaliapali	100	66	32
		Total	1243	1087	148
	b	Family yet to be Rehabilitated			
		i) Name of the site	1. Ganesh Nagar 2. Jagannath Nagar 3. Chaurimahul & Grindola Site		
		ii) Nos. of family	148 nos.#		
7	Any other information		:	#Tentative figure. Assessment of two more villages is yet to be done.	

FORM –III
FORMAT FOR PROVIDING PARTICULARS ON GREEN BELT/ PLANTATION UNDER
FC ACT 1980 AND EP ACT 1986

1	a)	Name of the organization	: Lakhanpur Open Cast Project, 21 MTY
	b)	Envt./Forest clearance order Nos	: No. J- 11015/391/2012-IA.II (M) 10 th January 2020 No.8-280/89-FC Dated: Oct 8 th 1990
2		Location,Block/Sub.Div./Dist/State	: P.O.- UBUDA, Via-Belpahar Dist.-Jharsuguda, Odisha
3		Address of communication	: Office of the Project Officer, Lakhanpur Open Cast Project Lakhanpur Area PO- UBUDA Via Belpahar(768217) JHARSUGUDA (ODISHA) PH-06645-605900 FAX- 06645-233353
4		Existing vegetation in the area/region	
	a)	Species (Trees/Shrubs/Grasses/Climbers)	: Bel, Bamboo, Neem, Teak, Amla, Chatiyani, Karanj, Raintree Siris, White Siris, Pijuli, Sissoo, Ambada, Jamun, Patuli. Peltafarm Gulmohar, Kala sirus, Ascacia, Casicia –semia, Sema-ruma, Karanj, Mahaneem, Ber, Kaju etc.
	b)	Major prevalent species of each type	: Bel, Bamboo, Neem, Teak, Amla, Chatiyani, Karanj, Raintree Siris, White Siris, Pijuli, Sissoo, Ambada, Jamun, Patuli. Peltafarm Gulmohar, Kala sirus, Ascacia, Casicia –semia, Sema-ruma, Karanj, Mahaneem, Ber, Kaju etc.
5		Land coverage by the Project	
	a)	The total area under Project	: 2240 ha
	b)	Area covered for basic infrastructure (Roads/Buildings/Factory etc.)	: 212 ha
6		Details about Natural vegetation	
	a)	Name & number of tree/species felled	: From 2011-12 to September 2019, around 15331 trees have been felled over an area of 82.54 ha in Government Non-Forest land and 9997 trees have been felled over an area of 76.34 ha in Forest land.
	b)	Name & number of plant species still available in the area	: Kendu, Bheru, Jamu, Sal, Dhaura, Kurei, Khajuri, Chara, Kuruda, Sunari, etc are the indigenous species as per EMP
	c)	By protecting the area will indigenous	: Proper plantation measures must be taken for the indigenous stock to come up.
7		Plantation required to be carried out as per	
	a)	Condition of Environment clearance in Nos/ha.	: 2500 Nos./ha
	b)	Condition of Forest (c) Clearance in Nos/ha.	: not mentioned
	c)	Voluntarily in Nos./ha	: 2500 Nos./ha
8		Details about Plantation	

a) Total area available for plantation in each category : Green Belt/Gap plantation 160.615 ha, External OB Dumps 17.5 ha, Back filled Area 127.7 ha, Road Sides 6.93 Rkm, Block Plantation 34.985 ha. Urban Plantation: 17.5 Ha

b) Plantation details (category wise & Methodology)

Year of Plantation	Species Planted	Spacing	Height attained	Total area covered	Proposed Plantation
1993-2019	As mentioned above		1m to 1.5m	187.115	Yearly for 3 or 5 years maintenance
Survival % of plantation		:	> 80%		
Total plantation		:	526344		

9 Agency carrying out plantation & maintenance : OFDC & Chhattisgarh Rajya Van Vikas Nigam Ltd, State Forest Department (DFO Jharsuguda).

Financial details (year wise and item wise)

Sl.No.	Year	Expenditure made (in Rs.)	Average cost each surviving plants in Rs. (Plantation scheme valid for three years)
1	1997-98	585689.6	Rs. 66.78
2	1998-99	959857.7	Rs. 66.79
3	1999-00	1457972	Rs. 66.79
4	2000-01	1038273	Rs. 56.46
5	2001-02	Nil	
6	2002-03	Nil	
7	2003-04	Nil	
8	2004-05	235012	Rs. 27.85
9	2005-06	Nil	
10	2006-07	775115	Rs. 41.69
11	2007-08	2500000	Rs.39.66
12	2008-09	1071000	49.85
13	2009-10	1046000	50.41
14	2010-11	686390	210.93
16	2012-13	263227 ^s	
17	2013-14	1991622 ^s	
18	2014-15	1611778.00	Rs. 40.29
19	2015-16	A scheme of plantation is made for 3 years for gap plantation and 5 years for block plantation. So the expenditure for plantation and average surviving cost of a plant cannot be finalized. Final amount will be declared after closure of agreement.	
20	2016-17		
21	2017-18		
22	2018-19		
23	2019-20		
24	2020-21	1122022.05	Rs. 30.97
25	2021-22	14570630	Rs. 251 (Urban Plantation)
10	Inspection of plantation field experts and their comments and follow up action	:	Inspected by DFO, Sambalpur & D.M. Chhattisgarh Rajya Van Vikas Nigam Ltd. Survival was found more than 80%
11	Remarks/ any other information		NIL

Date: 21.05.2022

Signature of Incharge

ମହାନଦୀ କୋଲଫିଲ୍ଡସ୍ ଲିମିଟେଡ୍
 Mahanadi Coalfields
 Limited
 (A subsidiary of coal India Limited)

OFFICE OF THE GENERAL
 MANAGER, LAKHANPUR AREA. ③
 P.O. - Bandhabahal.
 Dist: Jharsuguda (ORISSA)
 PIN: 768211
 Phone: 06645-233528, FAX:- 06645-
 233353



Email: lkparea_mcl@rediffmail.com

Ref: MCL/GM/LKPA/Env/2020-21/ ୧୭

Date: 09.02.2021

To
 The Regional Officer,
 State Pollution Control Board,
 COX Colony, Jharsuguda

Sub: Requesting for approval for Routine Environmental Monitoring Stations for the mines of Lakhanpur Area, MCL for the F.Y. 2021-22.

Sir,

As per the stipulated conditions in Environmental Clearance, Consent to Establish and Consent to Operate of Mines of Lakhanpur Area, MCL (Lakhanpur OCP, Belpahar OCM and Lilari OCP), the Routine Environmental Monitoring Stations location must be consulted with State Pollution Control Board. In this regard, the location and coordinates for Routine Environmental Monitoring Stations for the year 2021-22 of Lakhanpur Area mines are mentioned below:

Air and Noise Monitoring stations			
Sl.No.	Project	Name of Station	Co-ordinates
1	Lakhanpur Opencast Project	Near Lilari Nallah pump house	21.777147° N 83.850411° E
2	Lakhanpur Opencast Project	South of Quarry 6	21.730747° N 83.830168° E
3	Lakhanpur Opencast Project	South west of Quarry 6	21.732742° N 83.791011° E
4	Lakhanpur Opencast Project	Near Quarry 3	21.765694° N 83.813028° E
5	Belpahar Opencast Mine	Near magazine house	21.746669° N 83.858742° E
6	Belpahar Opencast Mine	Near Central Workshop	21.773982° N 83.872821° E
7	Belpahar Opencast Mine	South of the Mine	21.709160° N 83.846757° E
8	Belpahar Opencast Mine	East of the Mine	21.724506° N 83.867225° E
9	Lilari Opencast Project	Near Lilari Magazine House	21.785989° N 83.854048° E

Heavy metal Monitoring stations

Sl.No.	Project	Name of Station	Co-ordinates
1	Lakhanpur Opencast Project	South west of Quarry 6	21.732742° N 83.791011° E
3	Belpahar Opencast Mine	Near Central Workshop	21.773982° N 83.872821° E
5	Lilari Opencast Project	Near Lilari Magazine House	21.785989° N 83.854048° E

Effluent quality Monitoring stations

Sl.No.	Project	Name of Station
1	Lakhanpur Opencast Project	Effluent Treatment Plant
		Minesump water
		Minewater Discharge Treatment Plant
2.	Belpahar Opencast Mine	Effluent Treatment Plant
		Minesump water
		Minewater Discharge Treatment Plant
		Sewage Treatment Plant
3.	Lilari Opencast Project	ECO Tank
		Minesump water

Drinking water quality Monitoring stations

Sl.No.	Project	Name of Station
1	Lakhanpur Opencast Project	Lakhanpur OCP project office
2.	Belpahar Opencast Mine	IWSS outlet

Piezometer locations

Sl.No.	Project	Name of Station
1	Lakhanpur Opencast Project	MIP 09 – State Horticulture office MIP 10 – Daheldera school
2.	Belpahar Opencast Mine	MIP 07- DAV school, Bandhbahal MIP 08- Kusaraloi School
3.	Lilari Opencast Project	MIP 06 -Lilari PO office

Surfacewater monitoring locations

Sl.No.	Project	Name of Station
1.	Lakhanpur Opencast Project	Pulijor Stream near Tingismal Village (u/s of Lakhanpur OCP)
		Pulijhor stream near Darlipali Village before confluence to Lilari nallah (d/s of Lakhanpur OCP)
		Lilari Nallah near Kudaloi village (u/s of Lakhanpur OCP)
		Lilari Nallah near project office at Lilari bridge (d/s of Lakhanpur OCP)

Well level monitoring locations		
Sl.No.	Project	Name of Station
1	Lakhanpur Opencast Project	Khairkuni Village well Kansar Village well
2.	Belpahar Opencast Mine	Darlipali Village Well Ubuda Village Well

Submitted for your kind consideration and approval

Yours faithfully,

[Signature]
09/02/21
**Project Officer
Lakhanpur OCP**

[Signature]
10/2/21.
**Project Officer
Belpahar OCM**

[Signature]
10/2/21
**Project Manager
Lilari OCP**

Copy to:

1. General Manager, LKPA.
2. General Manager (Env), MCL HQ.
3. Area Environment Officer, LKPA.
4. Nodal Officer (Env), LKPOCP/BOCM.
5. Office copy.

[Signature]
18.02.2021
**Regional Officer
State Pollution Control Board
JHARSUGUDA**


AMBIENT AIR QUALITY MONITORING - Annexure - II

Date of Sampling	Monitoring Station	SPM	PM ₁₀	PM _{2.5}	SO ₂	NOx
12-Oct-21	Near Quarry 3	292	173	58	17.51	28.91
12-Oct-21	Near Lilari Nallah Pump House	227	139	43	10.73	19.19
23-Oct-21	Near Quarry 3	317	195	63	14.99	28.15
23-Oct-21	Near Lilari Nallah Pump House	239	151	38	10.6	16.68
06-Oct-21	Southwest of Quarry 6	137	83	39	15.18	25.64
06-Oct-21	South of Quarry 6	143	94	44	16.34	22.91
07-Oct-21	South of Quarry 6	132	86	41	19.71	26.56
07-Oct-21	Southwest of Quarry 6	151	89	43	13.63	21.54
11-Oct-21	South of Quarry 6	154	89	45	10.98	24.98
11-Oct-21	Southwest of Quarry 6	145	87	45	11.28	20.98
12-Oct-21	Southwest of Quarry 6	161	93	49	15.79	22.13
12-Oct-21	South of Quarry 6	163	92	49	16.29	19.5
20-Oct-21	Southwest of Quarry 6	153	80	45	14.24	22.51
20-Oct-21	South of Quarry 6	155	72	44	13.49	21.32
21-Oct-21	Southwest of Quarry 6	171	82	47	16.29	27.49
21-Oct-21	South of Quarry 6	180	85	48	14.16	27.46
27-Oct-21	South of Quarry 6	190	86	50	13.17	32.95
27-Oct-21	Southwest of Quarry 6	177	93	53	12.28	26.35
28-Oct-21	South of Quarry 6	176	89	52	16.35	24.74
28-Oct-21	Southwest of Quarry 6	156	90	51	17.71	23.93
08-Nov-21	Near Quarry 3	331	196	63	18.23	22.89
08-Nov-21	Near Lilari Nallah Pump House	209	127	47	9.1	21.03
20-Nov-21	Near Quarry 3	368	214	66	10.08	24.8
20-Nov-21	Near Lilari Nallah Pump House	227	141	49	11.97	19.41
05-Nov-21	Southwest of Quarry 6	165	77	42	18.61	20.74
05-Nov-21	South of Quarry 6	164	83	48	16.12	24.9
06-Nov-21	South of Quarry 6	158	89	46	28.47	34.28
06-Nov-21	Southwest of Quarry 6	158	86	47	21.31	35.26
10-Nov-21	Southwest of Quarry 6	169	85	49	12.98	30.12
10-Nov-21	South of Quarry 6	174	90	51	13.01	23.36
11-Nov-21	South of Quarry 6	171	93	53	14.72	29.31
11-Nov-21	Southwest of Quarry 6	186	91	52	12.71	33.74
18-Nov-21	Southwest of Quarry 6	161	84	43	12.21	22.75

Date of Sampling	Monitoring Station	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x
18-Nov-21	South of Quarry 6	159	83	44	10.91	21.65
19-Nov-21	Southwest of Quarry 6	136	78	48	12.5	20.21
19-Nov-21	South of Quarry 6	157	90	46	10.93	22.26
26-Nov-21	South of Quarry 6	161	86	51	9.09	18.92
26-Nov-21	Southwest of Quarry 6	185	94	54	12.4	23.11
27-Nov-21	Southwest of Quarry 6	191	88	52	9	18.85
27-Nov-21	South of Quarry 6	184	89	47	10.68	24.46
07-Dec-21	Near Quarry 3	184	134	68	15.28	32.59
07-Dec-21	Near Lilari Nallah Pump House	196	135	48	14.2	25.57
18-Dec-21	Near Quarry 3	183	121	46	15.81	26.99
18-Dec-21	Near Lilari Nallah Pump House	275	162	45	12.26	19.77
03-Dec-21	Southwest of Quarry 6	162	83	43	14.11	23.52
03-Dec-21	South of Quarry 6	138	84	46	16.26	38.63
04-Dec-21	South of Quarry 6	134	80	47	18.01	31.21
04-Dec-21	Southwest of Quarry 6	112	72	41	13.5	28.4
10-Dec-21	Southwest of Quarry 6	140	73	45	19.55	34.41
10-Dec-21	South of Quarry 6	176	91	53	16.11	20.83
11-Dec-21	South of Quarry 6	158	95	51	11.88	27.08
11-Dec-21	Southwest of Quarry 6	153	89	49	15.63	31.88
20-Dec-21	Southwest of Quarry 6	136	98	58	17.95	29.73
20-Dec-21	South of Quarry 6	182	93	47	19.03	24.58
21-Dec-21	South of Quarry 6	225	99	52	18.84	26.03
21-Dec-21	Southwest of Quarry 6	203	93	54	19.68	23.7
27-Dec-21	South of Quarry 6	233	95	56	34.28	54.68
27-Dec-21	Southwest of Quarry 6	175	90	56	15.87	31.97
28-Dec-21	Southwest of Quarry 6	133	92	52	15.97	19.45
28-Dec-21	South of Quarry 6	235	95	53	14.42	18.26
04-Jan-22	Near Quarry 3	177	110	45	15.47	29.57
04-Jan-22	Near Lilari Nallah Pump House	200	144	41	12.2	17.76
22-Jan-22	Near Quarry 3	185	124	47	20.2	28.27
22-Jan-22	Near Lilari Nallah Pump House	191	135	45	15.71	22.23
05-Jan-22	Southwest of Quarry 6	145	68	26	16.21	29.24
05-Jan-22	South of Quarry 6	165	66	22	16.51	21.75
06-Jan-22	South of Quarry 6	146	70	32	15.34	26.83
06-Jan-22	Southwest of Quarry 6	165	78	23	15.48	26.85

Date of Sampling	Monitoring Station	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x
12-Jan-22	Southwest of Quarry 6	152	80	29	15.2	30.33
12-Jan-22	South of Quarry 6	165	69	27	17.72	32.19
13-Jan-22	South of Quarry 6	140	72	30	17.11	17.22
13-Jan-22	Southwest of Quarry 6	132	77	24	20.78	24.16
19-Jan-22	Southwest of Quarry 6	129	97	33	14.95	28.76
19-Jan-22	South of Quarry 6	157	69	36	15.48	23.7
20-Jan-22	South of Quarry 6	133	93	30	20.5	27.8
20-Jan-22	Southwest of Quarry 6	158	70	36	14.43	23.7
27-Jan-22	South of Quarry 6	186	81	40	21	28.62
27-Jan-22	Southwest of Quarry 6	133	66	40	16.41	27.81
28-Jan-22	Southwest of Quarry 6	136	62	37	15.34	20.86
28-Jan-22	South of Quarry 6	154	82	14	13.46	33.25
05-Feb-22	Near Quarry 3	198	132	55	14.45	22.35
05-Feb-22	Near Lilari Nallah Pump House	172	111	40	13.5	19.62
22-Feb-22	Near Quarry 3	215	159	45	12.8	21.41
22-Feb-22	Near Lilari Nallah Pump House	191	144	40	10.45	17.91
03-Feb-22	Southwest of Quarry 6	127	62	22	17.13	18.57
03-Feb-22	South of Quarry 6	132	79	36	12.56	20.42
04-Feb-22	South of Quarry 6	145	86	39	13.42	18
04-Feb-22	Southwest of Quarry 6	135	68	26	15.14	16.99
11-Feb-22	Southwest of Quarry 6	144	74	30	19.74	19.58
11-Feb-22	South of Quarry 6	163	81	33	16.53	18.01
12-Feb-22	South of Quarry 6	108	65	28	10.1	19.41
12-Feb-22	Southwest of Quarry 6	156	79	34	20.09	18.91
16-Feb-22	Southwest of Quarry 6	136	66	30	9.09	24.72
16-Feb-22	South of Quarry 6	108	65	20	11.57	16.5
17-Feb-22	South of Quarry 6	127	70	23	14.01	18.8
17-Feb-22	Southwest of Quarry 6	155	77	36	14.51	29.95
25-Feb-22	South of Quarry 6	100	63	20	12.3	17.35
25-Feb-22	Southwest of Quarry 6	130	60	21	15.52	22.45
26-Feb-22	Southwest of Quarry 6	107	70	22	11.43	19.78
26-Feb-22	South of Quarry 6	86	55	16	14.72	21.24
05-Mar-22	Near Quarry 3	170	111	49	17.81	22.62
05-Mar-22	Near Lilari Nallah Pump House	148	93	38	13.79	17.28
18-Mar-22	Near Quarry 3	183	126	39	11.25	21.23

Date of Sampling	Monitoring Station	SPM	PM ₁₀	PM _{2.5}	SO ₂	NO _x
18-Mar-22	Near Lilari Nallah Pump House	170	130	45	14.25	25.36
03-Mar-22	Southwest of Quarry 6	116	63	25	17	22.23
03-Mar-22	South of Quarry 6	111	59	16	16.1	25.14
04-Mar-22	South of Quarry 6	128	69	26	24.53	22.33
04-Mar-22	Southwest of Quarry 6	147	74	35	12.02	22.55
11-Mar-22	Southwest of Quarry 6	154	88	39	15	20.18
11-Mar-22	South of Quarry 6	144	73	33	14.58	23.99
12-Mar-22	South of Quarry 6	128	65	30	14.36	23.85
12-Mar-22	Southwest of Quarry 6	136	70	27	18.06	27.35
21-Mar-22	Southwest of Quarry 6	149	76	33	10.59	23.41
21-Mar-22	South of Quarry 6	115	67	25	10.23	18.24
22-Mar-22	South of Quarry 6	139	79	28	13.25	26.1
22-Mar-22	Southwest of Quarry 6	134	70	30	13.25	24.23
27-Mar-22	South of Quarry 6	129	73	29	11.29	24.12
28-Mar-22	South of Quarry 6	123	65	22	9.07	15.63
28-Mar-22	Southwest of Quarry 6	122	65	25	15.23	22.89
29-Mar-22	Southwest of Quarry 6	135	70	27	11.25	21.09

 cmpdi <i>A Mini Ratna Company</i>		AMBIENT AIR QUALITY DATA (NAAQS PARAMETER) Area: Lakhanpur			
Project	Lakhanpur OCP				
Monitoring Station	South of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
06-Oct-2021	<20.0	4.87	<0.1	<1.0	<1.0
07-Oct-2021	<20.0	4.63	<0.1	<1.0	<1.0
11-Oct-2021	<20.0	3.92	<0.1	<1.0	<1.0
12-Oct-2021	<20.0	4.77	<0.1	<1.0	<1.0
20-Oct-2021	<20.0	4.77	<0.1	<1.0	<1.0
21-Oct-2021	<20.0	3.62	<0.1	<1.0	<1.0
27-Oct-2021	<20.0	5.12	<0.1	<1.0	<1.0
28-Oct-2021	<20.0	3.66	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South West of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
06-Oct-2021	<20.0	4.07	<0.1	<1.0	<1.0
07-Oct-2021	<20.0	3.88	<0.1	<1.0	<1.0
11-Oct-2021	<20.0	4.63	<0.1	<1.0	<1.0
12-Oct-2021	<20.0	5.06	<0.1	<1.0	<1.0
20-Oct-2021	<20.0	4.15	<0.1	<1.0	<1.0
21-Oct-2021	<20.0	6.26	<0.1	<1.0	<1.0
27-Oct-2021	<20.0	4.75	<0.1	<1.0	<1.0
28-Oct-2021	<20.0	3.75	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
05-Nov-2021	<20.0	5.69	<0.1	<1.0	<1.0
06-Nov-2021	<20.0	6.24	<0.1	<1.0	<1.0
10-Nov-2021	<20.0	5.73	<0.1	<1.0	<1.0
11-Nov-2021	<20.0	6.56	<0.1	<1.0	<1.0
18-Nov-2021	<20.0	7.56	<0.1	<1.0	<1.0
19-Nov-2021	<20.0	6.54	<0.1	<1.0	<1.0
26-Nov-2021	<20.0	7.15	<0.1	<1.0	<1.0
27-Nov-2021	<20.0	6.36	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South West of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
05-Nov-2021	<20.0	7.36	<0.1	<1.0	<1.0
06-Nov-2021	<20.0	6.45	<0.1	<1.0	<1.0
10-Nov-2021	<20.0	6.45	<0.1	<1.0	<1.0
11-Nov-2021	<20.0	5.83	<0.1	<1.0	<1.0
18-Nov-2021	<20.0	6.15	<0.1	<1.0	<1.0
19-Nov-2021	<20.0	4.88	<0.1	<1.0	<1.0
26-Nov-2021	<20.0	6.12	<0.1	<1.0	<1.0
27-Nov-2021	<20.0	7.73	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South West of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
03-Dec-2021	<20.0	6.16	<0.1	<1.0	<1.0
04-Dec-2021	<20.0	6.44	<0.1	<1.0	<1.0
10-Dec-2021	<20.0	5.45	<0.1	<1.0	<1.0
11-Dec-2021	<20.0	5.63	<0.1	<1.0	<1.0
20-Dec-2021	<20.0	6.14	<0.1	<1.0	<1.0
21-Dec-2021	<20.0	4.28	<0.1	<1.0	<1.0
27-Dec-2021	<20.0	6.11	<0.1	<1.0	<1.0
28-Dec-2021	<20.0	5.63	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
03-Dec-2021	<20.0	5.15	<0.1	<1.0	<1.0
04-Dec-2021	<20.0	4.58	<0.1	<1.0	<1.0
10-Dec-2021	<20.0	5.14	<0.1	<1.0	<1.0
11-Dec-2021	<20.0	6.69	<0.1	<1.0	<1.0
20-Dec-2021	<20.0	5.58	<0.1	<1.0	<1.0
21-Dec-2021	<20.0	6.11	<0.1	<1.0	<1.0
27-Dec-2021	<20.0	5.55	<0.1	<1.0	<1.0
28-Dec-2021	<20.0	6.59	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
05-Jan-2022	<20.0	4.58	<0.1	<1.0	<1.0
06-Jan-2022	<20.0	5.88	<0.1	<1.0	<1.0
12-Jan-2022	<20.0	6.02	<0.1	<1.0	<1.0
13-Jan-2022	<20.0	3.15	<0.1	<1.0	<1.0
19-Jan-2022	<20.0	7.15	<0.1	<1.0	<1.0
20-Jan-2022	<20.0	3.91	<0.1	<1.0	<1.0
27-Jan-2022	<20.0	6.23	<0.1	<1.0	<1.0
28-Jan-2022	<20.0	4.28	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South West of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
05-Jan-2022	<20.0	6.06	<0.1	<1.0	<1.0
06-Jan-2022	<20.0	7.27	<0.1	<1.0	<1.0
12-Jan-2022	<20.0	4.53	<0.1	<1.0	<1.0
13-Jan-2022	<20.0	6.12	<0.1	<1.0	<1.0
19-Jan-2022	<20.0	6.66	<0.1	<1.0	<1.0
20-Jan-2022	<20.0	3.69	<0.1	<1.0	<1.0
27-Jan-2022	<20.0	4.81	<0.1	<1.0	<1.0
28-Jan-2022	<20.0	5.71	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
03-Feb-2022	<20.0	7.07	<0.1	<1.0	<1.0
04-Feb-2022	<20.0	5.68	<0.1	<1.0	<1.0
11-Feb-2022	<20.0	7.25	<0.1	<1.0	<1.0
12-Feb-2022	<20.0	4.88	<0.1	<1.0	<1.0
16-Feb-2022	<20.0	5.26	<0.1	<1.0	<1.0
17-Feb-2022	<20.0	6.15	<0.1	<1.0	<1.0
25-Feb-2022	<20.0	5.15	<0.1	<1.0	<1.0
26-Feb-2022	<20.0	6.26	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South West of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
03-Feb-2022	<20.0	5.34	<0.1	<1.0	<1.0
04-Feb-2022	<20.0	6.12	<0.1	<1.0	<1.0
11-Feb-2022	<20.0	7.01	<0.1	<1.0	<1.0
12-Feb-2022	<20.0	3.91	<0.1	<1.0	<1.0
16-Feb-2022	<20.0	6.82	<0.1	<1.0	<1.0
17-Feb-2022	<20.0	7.15	<0.1	<1.0	<1.0
25-Feb-2022	<20.0	6.23	<0.1	<1.0	<1.0
26-Feb-2022	<20.0	5.81	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

Hattawalk

Anish Mandal



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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
03-Mar-2022	<20.0	7.36	<0.1	<1.0	<1.0
04-Mar-2022	<20.0	7.21	<0.1	<1.0	<1.0
11-Mar-2022	<20.0	6.12	<0.1	<1.0	<1.0
12-Mar-2022	<20.0	5.89	<0.1	<1.0	<1.0
21-Mar-2022	<20.0	5.15	<0.1	<1.0	<1.0
22-Mar-2022	<20.0	6.18	<0.1	<1.0	<1.0
28-Mar-2022	<20.0	5.45	<0.1	<1.0	<1.0
29-Mar-2022	<20.0	5.71	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

Jasmati

Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR

K. Parashik

O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar



cmpdi

A Mini Ratna Company

AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP				
Monitoring Station	South West of Quarry 6				
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)
03-Mar-2022	<20.0	6.12	<0.1	<1.0	<1.0
04-Mar-2022	<20.0	5.81	<0.1	<1.0	<1.0
11-Mar-2022	<20.0	6.12	<0.1	<1.0	<1.0
12-Mar-2022	<20.0	6.01	<0.1	<1.0	<1.0
21-Mar-2022	<20.0	5.61	<0.1	<1.0	<1.0
22-Mar-2022	<20.0	5.55	<0.1	<1.0	<1.0
28-Mar-2022	<20.0	5.58	<0.1	<1.0	<1.0
29-Mar-2022	<20.0	4.89	<0.1	<1.0	<1.0
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)

Jamali

Authorized Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR

Hattaraj
O.L.C.
Env. Lab
CMPDI, RI-V
Bhubaneswar

No.34011/36/2017-CPAM
Government of India
Ministry of Coal

Shastri Bhawan, New Delhi
Dated: 20th November, 2017

To,

Chairman-Cum-Managing Director
Mahanadi Coalfields Limited,
AT/P.O Jagruti Vihar,
Burla Distt. Sambalpur
Odisha
E-mail: cmd.mcl.cil@coalindia.in

Subject: Approval of Mine Plans and Mine Closure Plans for the following projects of MCL namely: Basundhara West, Samleswari OCP Expansion, Bhubaneshwari OCP, Lakhanpur OC Expansion -reg.

Sir,

I am directed to refer to your letter no. MCL/HQ/GM(P&P)17/972 Dated 12.11.2017 regarding above mentioned subject for approval of the following projects of MCL:

1. Basundhara (West) Expansion OCP (7.00 Mty)(Revision-1), duly approved by MCL Board in its 194th meeting held on 08.09.2017
2. Samleswari OCP Expansion (Phase-IV)(Revision-1) (15.00 Mty), duly approved by MCL Board in its 194th meeting held on 08.09.2017
3. Bhubaneshwari OCP (28.00 Mty), duly approved by MCL Board in its 196th meeting held on 07.11.2017
4. Lakhanpur OC Expansion, Ph-II (21.00 Mty), duly approved by MCL Board in its 196th meeting held on 07.11.2017.

The above mentioned projects duly signed and stamped by the competent authority are hereby approved.

Four copies of approved plans of each project are returned herewith this letter.

Enclosures: As above.

Yours Faithfully

Signature valid

Digitally signed by ANANDA
KUMAR MANDAL

Date: 2017.11.20 19:27:59 IST
Reason: Approved

A.K. Mandal
Under Secretary to the Govt. of India
CPAM Section

Copy to: CCO, Kolkata, West Bengal

Ref. No. MCL/SBP/CS/BD-196/Exct/2017/180

Date: 15.11.2017

गोपनीय/CONFIDENTIAL

सेवा में,
महाप्रबंधक (P&P)
महानदी कोलफील्ड्स लिमिटेड

Sub: Extract from the Minutes of the 196th Board meeting of MCL held at 04.00 PM on 7th November, 2017 at MCL Office, Plot No G-3, Gadakana, Bhubaneswar-751017.

प्रिय महोदय,

आप के सूचनार्थ एवं उचित कार्यवाही हेतु एम.सी.एल. निदेशक मण्डल की 196 वी बैठक का उदधृत दिया जा रहा है। इसी के साथ आप को यह भी अनुरोध किया जा रहा है के इसका **ATR** यह कार्यालय मे यथासिद्ध भेज दें।

196.C/2 Approval of Mining Plan and Mine Closure Plan for Lakhanpur OC Expansion Phase-II (21 Mty) with balance estimated mine closure cost of Rs. 18729.0087 lakhs compounded @ 5% annually for 13 years.

2.1 The Board deliberated on the subject in detail and based on the facts brought out in the agenda note and clarification offered by GM (P&P), approved the Mining Plan and Mine Closure Plan for Lakhanpur OC Expansion Phase-II (21 Mty) with total mine closure cost of Rs. 18729.0087 lakhs compounded @ 5% annually for 13 years as per the details brought out in the agenda note.

भवदीय,


कंपनी सचिव

✓
Shri Tripathy, (C&P)
15/11/2017

Effluent treatment plant at Lakhanpur OCP



Aeration tank and Oil skimmer



Control panel and Pump



Sludge drying bed



Multimedia filter



Sedimentation tanks



Compressor for Aeration

Sewage treatment plant at BTI colony



Aeration tank



Clarifier tank



Flow chart



Multimedia filter



Aerators



Feed tank

**Annexure -
VI**

ILLUMINATION SURVEY (March 2022)						
S.No	Date of Survey	Place of Survey	Standard Value as per DGMS circular		Measured value in Lux	
			Horizontal	Vertical	Horizontal	Vertical
1.	12.03.2022	Quarry No.6 OB Face	15	25	5	11
			H-576	15	25	7
		1200 (N)	15	25	9	13
			15	25	11	18
		BHD (N)	15	25	3	8
			15	25	11	21
2.	12.03.2022	Quarry No.6 OB dump yard	15	15	6	13
			15	15	9	13
			15	15	3	8
3.	12.03.2022	Quarry No.6 Coal face	15	25	3	8
			15	25	7	13
			15	25	1	3
			15	25	5	11
4.	12.03.2022	Quarry No.5 Coal Junction	10	-	7	-
			10	-	11	-
			10	-	9	-
			10	-	0	-
5.	12.03.2022	VPR OB transport Road from Q5 Junction to Ubuda Junction	10	-	6	-
			10	-	9	-
			10	-	19	-
			10	-	11	-
			10	-	7	-
6	12.03.2022	Ubuda Junction	10	-	23	-
			10	-	11	-
			10	-	7	-
			10	-	11	-
7.	14.03.2022	LKP stock no.1	10	-	3	-

		Junction	10	-	7	-
			10	-	11	-
8.	14.03.2022	LKP stock no.5 near W/B	15	15	5	9
			15	15	7	13
			15	15	3	3
9.	14.03.2022	OB transport road stock no.1 to Q3 Junction	10	-	7	-
			10	-	11	-
			10	-	5	-
			10	-	9	-
			10	-	13	-
10	14.03.2022	Q. No.3 Junction	10	-	6	-
			10	-	11	-
			10	-	9	-
			10	-	7	-
11.	14.03.2022	Q3 Junction towards E&M workshop light vehicle road	10	-	11	-
			10	-	13	-
			10	-	7	-
			10	-	9	-
			10	-	6	-
12.	14.03.2022	Dumper section workshop	100	50	81	53
			100	50	59	89
			100	50	11	64
13.	14.03.2022	Stock no.II Junction	10	-	7	-
			10	-	11	-
			10	-	6	-

Noise Level Monitoring - Annexure VII

Date of Sampling	Station	Noise Level Measurement in Leq dB(A)	
		Day	Night
5-Oct-2021	Near Quarry 3	65.2	59.6
5-Oct-2021	South of Quarry 6	63.3	61.2
5-Oct-2021	Near Lilari Nallah Pump House	63.5	60.8
5-Oct-2021	SouthWest of Quarry 6	60.4	58.1
26-Oct-2021	Near Lilari Nallah Pump House	64.7	60.3
26-Oct-2021	South of Quarry 6	64.6	58.7
26-Oct-2021	SouthWest of Quarry 6	62.1	60.3
26-Oct-2021	Near Quarry 3	63.5	59.9
9-Nov-2021	SouthWest of Quarry 6	66.9	60.5
9-Nov-2021	South of Quarry 6	64.2	59.3
9-Nov-2021	Near Lilari Nallah Pump House	65.4	62.7
9-Nov-2021	Near Quarry 3	66.5	62.4
17-Nov-2021	South of Quarry 6	64.6	60.7
17-Nov-2021	Near Lilari Nallah Pump House	65.6	63.2
17-Nov-2021	Near Quarry 3	63.2	62.8
17-Nov-2021	SouthWest of Quarry 6	66.7	61.4
3-Dec-2021	SouthWest of Quarry 6	63.3	57.7
3-Dec-2021	Near Quarry 3	64.9	60.3
3-Dec-2021	Near Lilari Nallah Pump House	63.4	57.6
3-Dec-2021	South of Quarry 6	65.8	62.1
21-Dec-2021	South of Quarry 6	64.8	57.3
21-Dec-2021	Near Quarry 3	62.6	55.4
21-Dec-2021	Near Lilari Nallah Pump House	63.8	57.6
21-Dec-2021	SouthWest of Quarry 6	62.1	58.9
11-Jan-2022	SouthWest of Quarry 6	66.5	61.2
11-Jan-2022	South of Quarry 6	64.9	59.3
11-Jan-2022	Near Quarry 3	63.3	57.6
11-Jan-2022	Near Lilari Nallah Pump House	66.8	62.4
25-Jan-2022	Near Quarry 3	57.1	55.9
25-Jan-2022	Near Lilari Nallah Pump House	64.8	62.1
25-Jan-2022	South of Quarry 6	59.7	58.9
25-Jan-2022	SouthWest of Quarry 6	60.9	57.1
4-Feb-2022	Near Quarry 3	62.4	59.1
4-Feb-2022	South of Quarry 6	64.6	60.8
4-Feb-2022	Near Lilari Nallah Pump House	66.8	63.2
4-Feb-2022	SouthWest of Quarry 6	63.2	60.1

Date of Sampling	Station	Noise Level Measurement in Leq dB(A)	
		Day	Night
24-Feb-2022	Near Lilari Nallah Pump House	64.9	62.7
24-Feb-2022	Near Quarry 3	63.8	58.8
24-Feb-2022	South of Quarry 6	64.7	60.9
24-Feb-2022	SouthWest of Quarry 6	66.4	62.1
8-Mar-2022	SouthWest of Quarry 6	64.9	59.4
8-Mar-2022	South of Quarry 6	66.3	57.6
8-Mar-2022	Near Lilari Nallah Pump House	64.3	61.7
8-Mar-2022	Near Quarry 3	63.6	60.4
25-Mar-2022	Near Quarry 3	64.9	59.8
25-Mar-2022	Near Lilari Nallah Pump House	64.4	57.9
25-Mar-2022	SouthWest of Quarry 6	64.9	63.5
25-Mar-2022	South of Quarry 6	66.5	62.7

Progress Report of CSR Activities for the month of March-2022 of Lakhanpur

Area

Annexure - VIII

Sl. No.	Description of work	Work Order No & Date	Work order Value (in Lakh)	Payment made (in Lakh)
				During this year (2021-22)
Activities as per Annexure-I				
1	Construction of urinal, bath room with toilet at Majhipada School and Anganwadi.	18-19/180/2299/1769 dt:26.03.2019	3.11	0.00
2	Water supply for Villages Luhurapada & Sahajbahal at LKP OCP under Lakhanpur Area (For one year).	WO/19-20/38/2296/423 dt:28.06.2019	6.62	0.00
3	Supply of drinking water to different villages at BIT under CSR of Lakhanpur Area(Phase-I) (for 60 Days)	19-20/196/ 2323/203 dt:02.05.19	13.17	0.50
4	Supply of drinking water to villages Kherulbahal and Lechuapada under BOCM for 1 year (AP-1)	WO/20-21/118/2422/1803 Dt: 17.04.2020	7.87	2.22
5	Supply of drinking water to Darlipali village under BOCM (AP-1)	WO/20-21/111/2415/1889 Dt.:02.05.2020	5.03	1.08
6	Supply of drinking water to village Karlajori & Khaliapali at LKP OCP under LKPA (AP-2)	WO/20-21/115/2419/1770 Dt:08.04.2020	6.11	0.00
7	Supply of drinking water to village Tingismal at LKP OCP under LKPA (AP-5)	20-21/130/2434/1971 dt:18.05.2020	5.51	1.24
8	Supply of drinking water to villages Luhurapada & Sahajbahal at LKP OCP under LKPA (AP-3)	20-21/146/2450/2189 dt:30.06.2020	5.32	1.89
9	Supply of drinking water to village Ubuda at LKP OCP under LKPA (AP-4)	20-21/147/2451/2188 dt:30.06.2020	5.51	1.97
10	Construction of CC Road at Sibalal pada, Bandi pahar in Lakhanpur Gram Panchayat	20-21/215/2526/3096 dt:09.02.2021	3.96	3.87
11	Construction of concrete road from Talipada to Goudapada connecting main road with drain system on both side of road.	19-20/97/2401/1638 dt:04.03.2020	49.59	5.29
12	Completion of Drain at Shanti nagar at Bandhbahal Gram Panchayat	20-21/150/2454/2060 dt:01.06.20	11.71	6.06
13	Construction of Boundry wall of Kalyan Mandap and CC Road near Filter plant at Bandbahal Gram Panchayat	20-21/163/2469/2292 dt:23.07.20	13.22	14.39

Sl. No.	Description of work	Work Order No & Date	Work order Value (in Lakh)	Payment made (in Lakh)
				During this year (2021-22)
14	Construction of cc Road Andhapara(Pada no 1) at Kushraloi Gram Panchayat	20-21/217/2529/3096 dt:09.02.2021	5.41	5.40
15	Supply of drinking water to different villages by water tanker at BIT under CSR work of Lakhanpur Area (Phase-I) for 60 days	21-22/10/2559/58 dt:12.04.2021	8.14	8.14
16	Supply of drinking water to different villages by water tanker at BIT under CSR work of Lakhanpur Area (Package S-II) for 60 days	21-22/02/2551/02 dt:01.04.2021	7.32	7.32
17	Supply of drinking water to different villages by water tanker at BIT under CSR work of Lakhanpur Area (For 60 days) (Package S-III)	21-22/06/2555/51 dt:12.04.2021	3.95	3.94
18	Supply of drinking water to different villages by water tanker at BIT under CSR work of Lakhanpur Area (For 60 days) (Package S-IV)	21-22/11/2560/55 dt:12.04.2021	5.03	5.01
19	Supply of drinking water by water tanker for village Old Khairkuni, New Khairkuni, Chruhpada, Jaybudia and Changapada at LKP OCP of LKPA (For 90 days)	21-22/231/2543/109 dt:19.04.2021	2.64	2.64
20	Supply of drinking water by water tanker for villages Kudaloi, Chingriguda, Bichuapada, Gangapada, Dahaldera, Bholamal, Thakthakipada and Bazarpada at LKP OCP under	21-22/230/2542/35 dt:07.04.2021	4.34	4.34
21	Supply of drinking water to Jorabaga, Majhi pada & muchbahal at BOCM of LKPA (for 90 days). (Package-8)	21-22/232/2544/53 dt:12.04.2021	2.27	2.24
22	Supply of drinking water to village Baghmunda, Dasrupali, Dasrupali (Mundapada), Gopipali and Saleipali village under Remanda G.P. under CSR work at Belpahar OCM under Lakhanpur Area	21-22/04/2553/04 dt:02.04.2021	5.91	5.86
23	Supply of drinking water to peripheral village Kherualbahal and Lechuapada at BOCM under Lakhanpur Area (CSR/ Pack A-VI)	21-22/236/2548/94 dt:17.04.2021	4.45	3.52
24	Supply of drinking water to village Jurabaga (Gourpara) under BOCM of LKPA (Package A-1) (365 days)	21-22/15/2564/63 dt:12.04.2021	2.45	1.98
25	Supply of drinking water by water tanker to village Darlipali at BOCM under Lakhanpur Area (for One year) (Package A 5)	21-22/05/2554/05 dt:24.04.2021	3.18	2.38
26	Supply of drinking water for village Tingismal at LKP OCP under Lakhanpur Area (For one year) (Package A-3)	21-22/234/2546/115 dt:19.04.2021	2.89	1.76
27	Supply of drinking water to village Ubuda at LKP OCP under LKPA .for one year	21-22/235/2547/108 dt:19.04.2021	3.19	1.53
28	Supply of drinking water to village Karlajori & Khaliapali at LKP OCP under LKPA (AP-4)	21-22/233/2545/78 dt:14.04.2021	4.45	2.30
29	Supply of drinking water to villages Luhurapada & Sahaibahal at LKP OCP under LKPA (AP-2)	21-22/03/2552/114 Dt:19.04.2021	3.02	1.46

Sl. No.	Description of work	Work Order No & Date	Work order Value (in Lakh)	Payment made (in Lakh)
				During this year (2021-22)
Total			205.37	98.32

Activities as per Annexure-II				
Total:			136.44	0.00

Activities as per Annexure-III				
8	Organizing and observing Swachhata Pakhwada, Swachhata Hi Seva, other Swachhata Campaigns in 2021	Supply Order - SOC/709, SOC/710, SOC/711 and SOC/712	1.31	0.83
Total			281.83	0.83

Additional Work				
1	Placement of funds in connection with supply of drinking water to the 17 water scarce villages of Lakhanpur Block for the year 2021	MCL/GM/LKPA/S O(C)/37 Dt.: 08.04.2021	24.67	24.67
2	Advance/deposit of funds for installation of CCTV at the 2nd COVID Hospital, Bandhabahal, Jharsuguda	MCL/GM/LKPA/S O(C)/398 Dt.: 10.07.2021	2.69	0.00
3	Improvement of Snehmal Kanta (pond) and construction of bathing steps under Dalgaon G.P.	WO/20-21/137/2441/1895 Dt.:04.05.2020	10.41	10.23
4	Development of basic infrastructure Negipali site for resettlement of poor Sukhbasi families of affected villages of Lakhanpur Area	20-21/178/2485/2475 dt:14.09.2020	76.77	2.07
			114.54	36.97

Grand Total:			738.18	136.12
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Effluent Quality Monitoring - Annexure IX

Date of sampling	Sampling Station	pH	Oil & Grease	TSS	COD
04-Oct-21	Minesump Water	7.38	<4.0	40	32
12-Oct-21	Inlet of Secondary Sedimentation Tank	7.51	<4.0	64	52
12-Oct-21	O&G Trap Outlet	7.1	<4.0	34	28
12-Oct-21	O&G Trap Inlet	6.79	<4.0	52	44
12-Oct-21	Outlet of Secondary Sedimentation Tank	7.84	<4.0	48	36
21-Oct-21	Outlet of Secondary Sedimentation Tank	6.85	<4.0	36	24
21-Oct-21	Minesump Water	6.69	<4.0	40	32
12-Nov-21	Outlet of Secondary Sedimentation Tank	6.63	<4.0	28	24
12-Nov-21	Minesump Water	6.61	<4.0	36	28
23-Nov-21	Outlet of Secondary Sedimentation Tank	6.88	<4.0	30	28
23-Nov-21	Minesump Water	6.86	<4.0	42	36
10-Dec-21	Outlet of Secondary Sedimentation Tank	7.09	<4.0	38	64
10-Dec-21	Minesump Water	7.54	<4.0	26	28
24-Dec-21	Outlet of Secondary Sedimentation Tank	6.5	<4.0	18	32
24-Dec-21	Minesump Water	6.56	<4.0	68	60
11-Jan-22	Minesump Water	6.82	<4.0	62	44
11-Jan-22	Outlet of Secondary Sedimentation Tank	6.48	<4.0	64	40
11-Jan-22	Inlet of Secondary Sedimentation Tank	6.42	<4.0	72	44
11-Jan-22	O & G Trap Outlet	6.68	<4.0	58	36
11-Jan-22	O & G Trap Intlet	6.39	<4.0	74	52
25-Jan-22	Outlet of Secondary Sedimentation Tank	6.48	<4.0	36	40
25-Jan-22	Minesump Water	6.65	<4.0	40	32
04-Feb-22	Outlet of Secondary Sedimentation Tank	6.63	<4.0	44	40
04-Feb-22	Minesump Water	6.88	<4.0	48	36
25-Feb-22	Minesump Water	6.8	<4.0	54	40
25-Feb-22	Outlet of Secondary Sedimentation Tank	6.79	<4.0	48	36
08-Mar-22	Outlet of Secondary Sedimentation Tank	7.68	<4.0	50	40
08-Mar-22	Minesump Water	6.89	<4.0	38	28
25-Mar-22	Outlet of Secondary Sedimentation Tank	7.54	<4.0	42	44
25-Mar-22	Minesump Water	6.71	<4.0	32	20

**cmpdi**

A Mini Ratna Company

Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Lakhanpur**Project:****Belpahar OCP**

Date of Sampling	Name of the Station	Ground Levels (in meter)
26-Nov-21	Piezometer No MIP 08; Village Kusraloi, Inside the Premises of Prathamik Vidyalaya Latitude 21.01800 N Longitude 85.13027 E	6.11
27-Nov-21	Piezometer No MIP 07; Infront of DAV school Bandbahal, Inside colony substation Latitude 21.01800 N Longitude 85.13027 E	4.23

Project:**Lakhanpur OCP**

Date of Sampling	Name of the Station	Ground Levels (in meter)
26-Nov-21	Piezometer No MIP 09; Village Junion; Inside the Premises of State Govt Horticulture Institute Latitude 21°45'49" N Longitude 83°47'42" E.	7.19
26-Nov-21	Piezometer No MIP 10; Village Dahaldera; Inside the Premises of UP School. Latitude 21 ° 46 '51" N Longitude 83 ° 48'47" E	14.37

Project:**Lilari OCP**

Date of Sampling	Name of the Station	Ground Levels (in meter)
26-Nov-21	Piezometer No MIP 06; Infront of Lilari Mines Project Office. Latitude 21.77826 N Longitude 85.8580 E	17.41

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BHUBANESWAR

[Signature]
O. I. C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar



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Piezometer Water Quality Data: Lakhanpur Area

Project / OCP	Lakhanpur OCP		Indian Drinking Standards (IS-10500):2012	
	MIP-09	MIP-10		
Monitoring Station	Village Junion - Inside the Premisies of State govt. Horticulture Institute	Village Dahaldera, Inside the Premisies of UP School		
Date of Sampling	25-Jan-2022	25-Jan-2022	Acceptable	Permissible
Colour(Hazen)	1	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	2	1	5
pH	6.71	6.64	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	20	168	200	600
Total Hardness (Ca CO ₃)(mg/L)	56	140	200	600
Iron(mg/L)	<0.1	<0.1	0.3	No relaxation
Chloride(mg/L)	42	12	250	1000
Total Dissolve Solid(mg/L)	128	218	500	2000
Calcium(mg/L)	16.0	36.8	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	7.87	11.28	200	400
Nitrate(mg/L)	<0.5	<0.5	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	0.05
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.01	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation

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Piezometer Water Quality Data: Lakhanpur Area

Project / OCP	Lakhanpur OCP		Indian Drinking Standards (IS-10500):2012	
	MIP-9	MIP-10		
Monitoring Station	Village Junion - Inside the Premisies of State govt. Horticulture Institute	Village Dahaldera, Inside the Premises of UP School		
Date of Sampling	25-Jan-2022	25-Jan-2022	Acceptable	Permissible
MPN (Index/100ml)	<1.8	<1.8	-	-
Residual Free Chlorine (mg/L)	<0.2	<0.2	0.2	1
Phenolics (mg/L)	<0.001	<0.001	0.001	0.002
Selenium (mg/L)	<0.005	<0.005	0.01	No relaxation

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Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Lakhanpur

Project:

Belpahar OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
25-Jan-22	Piezometer No MIP 07; Infront of DAV school Bandbahal, Inside colony substation Latitude 21.01800 N Longitude 85.13027 E	6.22
25-Jan-22	Piezometer No MIP 08; Village Kusaloi, Inside the Premises of Prathamik Vidyalaya Latitude 21.01800 N Longitude 85.13027 E	9.53

Project:

Lakhanpur OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
25-Jan-22	Piezometer No MIP 10; Village Dahaldera; Inside the Premises of UP School. Latitude 21 ° 46 '51" N Longitude 83 ° 48'47" E	12.39
25-Jan-22	Piezometer No MIP 09; Village Junion; Inside the Premises of State Govt Horticulture Institute Latitude 21°45'49" N Longitude 83°47'42" E.	5.27

Project:

Lilari OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
25-Jan-22	Piezometer No MIP 06; Infront of Lilari Mines Project Office. Latitude 21.77826 N Longitude 85.8580 E	15.59

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Annexure - XI

Surface Water Quality Data Lakhanpur Area

Project/OCP	Lakhanpur				IS:2296-1982 Tolerance for inland Surface water (Class C)
	Pulijhor Stream Near Tingismal Village as u/s for Lakhanpur OCP	Pulijhor Stream Near Darlipalil Village Before Confluence to Lilari Nallah as d/s Water of Lakhanpur OCP	Lilari Nallah Near Kudaloi Village as u/s of Lakhanpur OCP	Lilari Nallah Near Project Office Lilari Bridge Village as d/s of Lakhanpur OCP	
NAME OF STATIONS					
Date of Sampling	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	
pH	6.62	7.26	6.65	7.08	6.5-8.5
Dissolved Oxygen(mg/L)	6.0	6.2	6.6	6.4	4
BOD (3 days 27oc)(mg/L)	<2.0	2.4	2.3	2.4	3
Color (Hazen unit)	4	3	3	1	300
Total dissolved solids (mg/L)	146	80	124	156	1500
TSS(mg/L)	30	40	44	26	-
Total Hardness(mg/L)	88	48	40	76	-
Copper(mg/L)	<0.04	<0.04	<0.04	<0.04	1.5
Iron(mg/L)	<0.1	<0.1	<0.1	<0.1	50
Chlorides(mg/L)	10	8	12	14	600
Sulphate(mg/L)	46	3.29	11.86	10.86	400
Nitrate(mg/L)	2.11	0.71	0.31	1.29	50
Fluoride(mg/L)	0.41	<0.3	<0.3	0.37	1.5
Cadmium(mg/L)	<0.001	<0.001	<0.001	<0.001	0.01
Arsenic(mg/L)	<0.005	<0.005	<0.005	<0.005	0.2
Lead(mg/L)	<0.005	<0.005	<0.005	<0.005	0.1
Zinc(mg/L)	0.05	<0.04	0.06	<0.04	15
Chromium(as Cr6)(mg/L)	<0.05	<0.05	<0.05	<0.05	0.05
Oil & Grease	<4.0	<4.0	<4.0	<4.0	0.1

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Surface Water Quality Data Lakhanpur Area

Project/OCP	Lakhanpur				IS:2296-1982 Tolerance for inland Surface water (Class C)
NAME OF STATIONS	Pulijhor Stream Near Tingismal Village as u/s for Lakhanpur OCP	Pulijhor Stream Near Darlipalil Village Before Confluence to Lilari Nallah as d/s Water of Lakhanpur OCP	Lilari Nallah Near Kudaloi Village as u/s of Lakhanpur OCP	Lilari Nallah Near Project Office Lilari Bridge Village as d/s of Lakhanpur OCP	
Date of Sampling	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	
MPN (Index/100 ml)	10	8.3	12	10	-
Selenium(mg/L)	<0.005	<0.005	<0.005	<0.005	0.01

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Authorised Signatory
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O.L.C.
Env. Lab
CMPDI, RI-VII
Bhubaneswar



Six injured in road mishaps

Performance: As many as six persons sustained critical injuries in two separate road accidents in Ganjam district on Thursday...

newindiansexpress.com

Olive Ridleys seized from trawler, 6 held

The endangered turtles were released into the sea after being rescued from the vessel

EXPRESS NEWS SERVICE @ Bhubaneswar
FOREST guards on Wednesday night seized six olive ridley sea turtles...

net guards have been deployed to check fishermen from entering the marine sanctuary...



Six olive ridley sea turtles were rescued from the trawler...

The Indian Coast Guard made the first officials in their endeavour to prevent illegal fishing...

Pisciculture gives new lease of life to women in Kendrapara villages

ASMITA SENGUPTA @ Bhubaneswar

THIRIO has been an inspiring transformation in the lives of women of Uparajapada in Balasore district...



Women at work in a pond in Kendrapara district...

Missing truck driver found dead

EXPRESS NEWS SERVICE @ Bhubaneswar

THE body of a truck driver with hand injuries was found near a railway station in Bhubaneswar...



Truck driver found dead near railway station...

Work on Kalyan Mandap far from over

EXPRESS NEWS SERVICE @ Bhubaneswar

WORK on a Kalyan Mandap in Balasore district, started four years back, is far from over...

Several people and animals are struck by lightning in these villages every year...

Man on a mission to check lightning strikes
SANTOSH Kumar Saha is a man on a mission. A resident of bonded village in Kapurthala block...

Man charred to death
Bhubaneswar: In a shocking incident, the secretary of Sree Saranya Sarani at Luchampada...

Four injured in group clash, NH-18 blocked
FOUR persons were injured in a clash between two rival groups of Takrapur block on Thursday...

Man charred to death
Bhubaneswar: In a shocking incident, the secretary of Sree Saranya Sarani at Luchampada...

Women sell fish caught from the pond and this has helped them become financially independent...

Foghalts boat movement in Chilika

Bhubaneswar: AS many as 30 people had a harrowing experience when the boat in which they were travelling was stranded in Chilika...

CLASSIFIED, CMCL, MAHARAJA COALFIELDS LIMITED, AFFIDAVIT, NOTICE

LOOK OUT FOR A KIDNAPER/ABDUCTOR PERSON, REF - BALUPATNA PS CASE NO 190, DATE - 03/04/2015, U.S. - 36/5726/14 KC

IDBI BANK, DEMAND NOTICE, 100% Secured, 100% Government Guarantee

Man on a mission to check lightning strikes, SANTOSH Kumar Saha is a man on a mission...

THE CHODAVARAM COOPERATIVE SUGARS LIMITED, TENDER NOTICE

Coal India Limited, (A Maharatna Company), MARKETING & SALES, KOLKATA

Annexure - XIII

Points raised by the public hearing of M/s MCL Lakhanpur Opencast Project for the expansion project of coal capacity from 10 Mty to 15 Mty held on 27.07.2007 at 11:00 AM At: Gram Panchayat Office, Bandhabahal, Jharsuguda.

Status

The mine water along with oil & grease and coal dust is directly discharged to Lilari Nallah without treatment which ultimately meets Hirakud Reservoir. The mine authority should treat this water before discharging it to Lilari Nallah.

Presently no mine water is discharged into Lilari nallah. The mine water is being stored in mine sumps and used for dust suppression activities. An ETP of 50KLPD has been established in the workshop with state of art technology including Oil skimmer, Aeration tanks, Multimedia filter, and Zero discharge circuit. Further surface water sampling is being carried every six months, the previous sampling was carried out in February 2022 at Upstream and Downstream of Pulijhore and Lilari nallah, and the values were found to be within limit as per IS 2296-1982. (Tolerance for inland surface water (Class C)). The surface water quality report monitoring data is attached as Annexure XI.

Proper land acquisition, rehabilitation & settlement programme should be adopted by the mine as these are not followed properly. MCL authority has not yet provided employment and proper rehabilitation programme for the people displaced in the past.

Proper land acquisition, rehabilitation & settlement programme is being followed (Odisha Rehabilitation and Resettlement Policy, 2006 and Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013). Presently there are two rehabilitation sites Jagannath Nagar and Ganesh Nagar. A total of 1243 families have been displaced to date out of which have been provided 1041 employment and 1096 families have been rehabilitated. A scheme has been prepared for two more rehabilitation sites at Chaurimal and Grindola and has been sent to Govt. of Odisha for further approval. Details of R&R enclosed in Form-II

Heavy fugitive emissions occur in the mine area and coal dusts are deposited on the water

Adequate pollution measures are being taken to reduce fugitive emissions. Mobile tankers are deployed in haul

<p>of village wells and ponds. So the mining authority should accept necessary control measures to control the fugitive dust emission and deposition of dust or water bodies.</p>	<p>roads, mining areas, and transportation roads for dust suppression by both departmental and contractual means.</p> <p>Departmental: 28KL (7 Nos.), 9KL (4 Nos.) Contractual: 20KL (19 Nos.), 12KL (2 Nos.), 8 KL (2 Nos.), and Truck mounted Fog Cannon (40m Throw) on a hiring basis.</p> <p>A total of 103 fixed sprinklers have been installed along the Coal Transportation roads (20 nos. from E&M workshop to Milan Chowk, 12 nos. from stockyard1 to Ubuda Chowk, 26 Nos. from Lilari bridge to Manager office, 45 Nos. in Main haul road) in the project and 9 nos. of 100m throw Fog Cannon for dust suppression at CoalStocks and railway sidings. During the 2021-22, 8 Nos. of surface miners with dust suppression through water sprinkling were deployed for coal extraction and 98.94 % (20778159.8 Tonnes) of coal extraction was done through surface miners. Vertical greenery of length 30m has been developed in railway siding No.3. Fabrication and erection of wind barrier (750 m length 10m height) and development of vertical greenery system (300m) at Siding No.3 is in progress.. Also, a Mechanical Road sweeper is deployed to keep roads clean and free from debris.</p>
<p>Public road is being used by the mine authority for coal transportation at any stretch of the public road and they should make separate coal transportation road.</p>	<p>No public road is being used for coal transportation. All roads are meant exclusively for coal transportation within the mines and to the sidings and it is being maintained separately with proper grading and dust suppression measures.</p>
<p>The public and transportation roads are full ruts and potholes for which there are spillages of coal on the roads. The mine authorities should repair and maintain these roads regularly to avoid any spillage of coal on the roads.</p>	<p>Regular repair and maintenance of roads are being continuously carried out. Graders and water tankers have been continuously deployed in mines and haul roads to avoid ruts and potholes. Vehicles are loaded optimally and road conditions are well ensured to avoid coal spillage. A proposal has been initiated for the concrete road for a length of 6.93Km (Rs.53.52 Crores) and WMM road for a length of 13Km (Rs. 13.15Crores). Work of “Repairing of local</p>

	<p>sale road from quarry no.4 end to NH-49 at LKPOCP/LKPA” is completed.</p>
<p>The OB materials are dumped haphazardly in the OB dump areas and the dumps are not covered with plantation. The mine authority should take initiative to plant trees on the OB dumps</p>	<p>OB Dumps are being made systematically and are reclaimed technically followed by biological reclamation. To date, two external OB dumps have been completely stabilized by plantation over an area of 17.5 Ha (43750 plants) and 129.7 ha of the backfilled area has been biologically reclaimed. Further grass species such as Stylosanthes Hamata, Pennisetum pedicellatum, and Chrysopogon zizanioides are being planted in OB slopes.</p>
<p>The mine authority should carry out compensatory afforestation in the affected localities. The mine authority should carry out roadside avenue plantation also.</p>	<p>During the year 2021-22, plantation over an area of 18.75 Ha (30,000 saplings) was carried out in nearby villages to the project and plantation over an area of 2 Ha (5,000 saplings) was carried out over the internally backfilled OB dumps. An area of 34.985 ha of Block plantation and 6.93 Rkm of avenue plantation has also been carried out. Further plantation saplings are being distributed to nearby villages, schools, and employees.</p>
<p>The mine authorities should provide employment to the affected local people on priority basis.</p>	<p>Employment to the project-affected people is given as per the R&R norms (Odisha Rehabilitation and Resettlement Policy, 2006 and Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013). A total of 1041 employments have been provided and project authority also provides an option for cash compensation in place of employment. Other local people are being engaged in ancillary services (Contractors) as per requirement.</p>

The mine authorities should provide free medical facilities in their hospitals to the affected people including providing Ambulance facilities.

Medical facilities are being provided to the occupants of Ganesh Nagar and Jagannath Nagar rehabilitation colonies with ambulance facilities. During 2019-20, General Preventive Health camps were conducted, details tabulated below:

Village	Date	No of beneficiaries
Chaurimahul	09/08/2019	124
Kusaraloi	21/08/2019	164
Junian	11/09/2019	68
Soldia	20/09/2019	132
Kudaloi	16/10/2019	187
Khadam	06/11/2019	159
Jorabaga	22/11/2019	259
Kirtimal	26/11/2019	380
Kheraulbahal	28/11/2019	100
Kirarama	4/12/2019	101
Kudaloi	13/12/2019	477
Karlajuri	10/01/2020	75
Khaliapali	17/01/2020	77
Ubuda	07/02/2020	80
Kandsar	18/02/2020	116
Karpabahal	25/02/2020	81
Kherualbahal	18/03/2020	174

Health Camp was conducted on 23.11.2021 at Kandsar village.

The mine authorities should establish a technical training institute in the area to train the local youth for better employment. There is a discrepancy in the fee structure in the schools run by MCL for outside students and children of MCL employees. Hence, uniform fees structure should prevail in their schools for all students.

MOU has been signed between CIPET, Chennai, and Coal India Limited for conducting a skill development training program for 250 nos. of youth from command areas of MCL.

A MoU has been made with BAIF (Bharatiya Agro Industries Foundation) for “Comprehensive Community Development Programme” through various schemes such as animal husbandry, sustainable agricultural practices, and workshops for Quality of life improvement, etc. in 10 villages of Jharsuguda district (Lachhipali, Parasian, Kadamdhee, Dudugaon, Kuruebahal, Jamugaon, Thebra, Samarbaga, Baurkhol, Sagarpali) for five years.

	<p>Further vocational training programs and apprenticeship training programs are being organized at the project level. The land oustees employed in the company are being trained for Skill up-gradation through ITI programs.</p> <p>The fee structure is fixed by school authorities and the project does not have a role in the fixation of the fees, however, the project encourages the participation of students of other schools in the various events conducted by the project.</p>										
<p>Due to heavy air pollution in the area, commutates face a lot of problem. Hence mine authority should provide water sprinkling arrangements on the roads and other dust generating points.</p>	<p>Mobile tankers are deployed in haul roads, mining areas, and transportation roads for dust suppression by both departmental and contractual means.</p> <p>Departmental: 28KL (7 Nos.), 9KL (4 Nos.) Contractual: 20KL (19 Nos.), 12KL (2 Nos.), 8 KL (2 Nos.), and Truck mounted Fog Cannon (40m Throw) on a hiring basis.</p> <p>9 nos. of 100m throw trolley type fog cannon have been deployed at Coalstocks and railway siding for dust suppression. Also, a Mechanical Road sweeper is deployed to keep roads clean and free from debris.</p>										
<p>Due to mining activities, the groundwater table of the area has lower down. Hence the mine authorities should recharge the groundwater table.</p>	<p>Backfilling of the voids and Afforestation have been done to maintain the groundwater level as far as possible. Two nos. of piezometers are installed under the area of Lakhanpur project which is located at 21°45'49.21"N 83°47'42.22"E and 21°46'51.61"N 83°48'47.60"E to monitor the groundwater quality and level. Monitoring for water levels is also carried out in nearby village wells.</p> <table border="1" data-bbox="776 1654 1510 1820"> <tr> <td rowspan="2">Nov 2021</td> <td>Kansar</td> <td>1.65 m</td> </tr> <tr> <td>Khairkuni</td> <td>2.15 m</td> </tr> <tr> <td rowspan="2">Jan 2022</td> <td>Kansar</td> <td>4.4 m</td> </tr> <tr> <td>Khairkuni</td> <td>8.9 m</td> </tr> </table>	Nov 2021	Kansar	1.65 m	Khairkuni	2.15 m	Jan 2022	Kansar	4.4 m	Khairkuni	8.9 m
Nov 2021	Kansar		1.65 m								
	Khairkuni	2.15 m									
Jan 2022	Kansar	4.4 m									
	Khairkuni	8.9 m									
<p>The mine authority should clarify regarding considering 10 km radius area as a study area to prepare the EIA report and highlight the</p>	<p>EIA and EMP report of Lakhanpur OCP highlights the socio-economic scenario, Environmental quality, information of Biodiversity, Hydrological assessment within</p>										

back ground concentration.	the Buffer zone, which comprises the area of a 10 km radius around the periphery of the core zone.
State Pollution Control Board, Odisha should monitor the air and water quality regularly.	Monitoring of the air and water quality is being done regularly by CMPDIL as per the EC conditions (Air Quality and Noise: Fortnightly, Effluent Quality: Quarterly, Drinking water and Village wells: Monthly, Heavy metal, and Surface water quality: Six-monthly, Water level: Every season) and reports are sent to State Pollution Control Board, Odisha. The OSPCB also monitors the air and water quality regularly.
Control Measures in EIA/EMP report	Action taken
Dust extractor in drill Machines	11 Nos of drill operated with dust extractor system
Fixed sprinkler at CHP, railway siding, etc. Mobile water tanker for quarry, haul road, transport road, CHP, etc.	No CHP, fixed sprinklers, and mobile tankers deployed for dust suppression in siding and haul roads respectively.
Green cover development for control of dust.	External OB dump, natural vegetation, and other biologically reclaimed area act as Green cover for dust control
Provision of eco-friendly surface mines for production	98.94 % coal production through surface miners
Ambient air quality Monitoring	4 Nos. of stations established and air quality monitored every fortnight and 1 no of CAAQMS was commissioned at Lakhanpur Tahsil office.
Coal transportation roads	Adequate grading and water spraying is being carried out
Domestic effluent	An STP of 1.7 MLD capacity has been established at the colony.
Industrial effluent	An ETP of 50 KLPD has been provided with state of art technology with Oil skimmer, aeration tank, and multimedia filter with zero discharge arrangement.
Mine effluent	No mine water is discharged in nearby water bodies. Mine water is collected in mine sumps and used for mining activities

Land Restoration / Reclamation Monitoring of 51 Opencast Coal Mines Projects of CIL producing more than 5 mcm (Coal+OB) annually based on Satellite Data for the Year 2020



**Land Restoration / Reclamation Monitoring of 51 Opencast
Coal Mines Projects of CIL producing more than 5 mcm
(Coal+OB) annually based on Satellite Data for the Year 2020**

March- 2021



**Remote Sensing Cell
Geomatics Division
CMPDI, Ranchi**

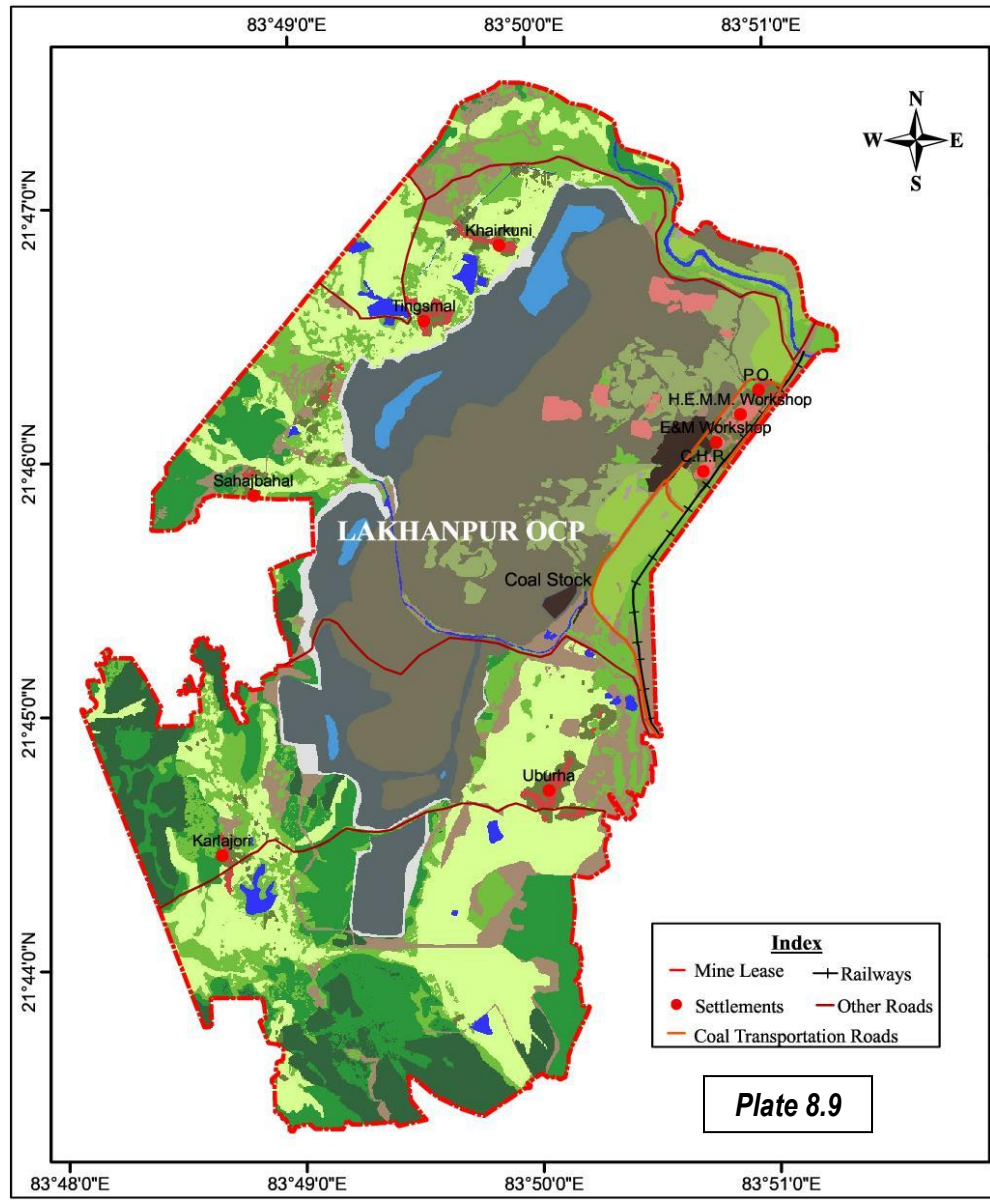



Plate 8.9

Area Statistics - Lakhanpur OCP (2020)				
Classes		Colour	Area	
Level-I	Level-II		Area (Km ²)	% of Total
Forest Area	Dense Forest		1.48	6.61
	Open Forest		2.45	10.94
	Total Forest Area (A)		3.93	17.54
Scrubs	Scrubs (B)		2.78	12.41
Plantation	Social Forestry		0.44	1.96
	Plantation on Backfill		0.83	3.71
	Plantation on OB Dump		0.59	2.63
	Total Plantation (C)		1.86	8.30
Total Vegetation(A+B+C)			8.57	38.26
Agriculture	Agriculture Land		4.01	17.90
Waste Land	Waste Land		1.71	7.63
Mining Area	Coal Quarry		2.32	10.36
	Barren OB Dump		0.02	0.09
	Area Under Backfilling		4.32	19.29
	Water Filled Quarry		0.29	1.29
	Coal Dump		0.14	0.63
	Advance Quarry Site		0.38	1.70
	Total Mining Area		7.47	33.35
Settlements	Rural Settlement		0.14	0.63
	Industrial Settlement		0.22	0.98
Total Settlement Area			0.36	1.61
Water Body	River, Ponds		0.28	1.25
Total			22.40	100.00

Customer	Mahanadi Coalfields Limited				
Title	Land Reclamation Monitoring of OC Projects				Job No. 561410027
Subject Land Reclamation Status of Lakhanpur OCP based on Satellite Data (R2A/L-IV) of the year 2020	Activity	Name	Designation	Signature	Date
	Prepared	A. Biswas	Mgr.(Geology)	<i>A. Biswas</i>	
	Checked	T. Mondal	CM (RSC)	<i>T. Mondal</i>	
Approved	R. Kumar	GM (Geomatics)	<i>R. Kumar</i>		
	Scale:	0 0.375 0.75 1.5 Km			Sheet 1
	Drg No.	HQ REM 07 A4 20 09			Rev No.0

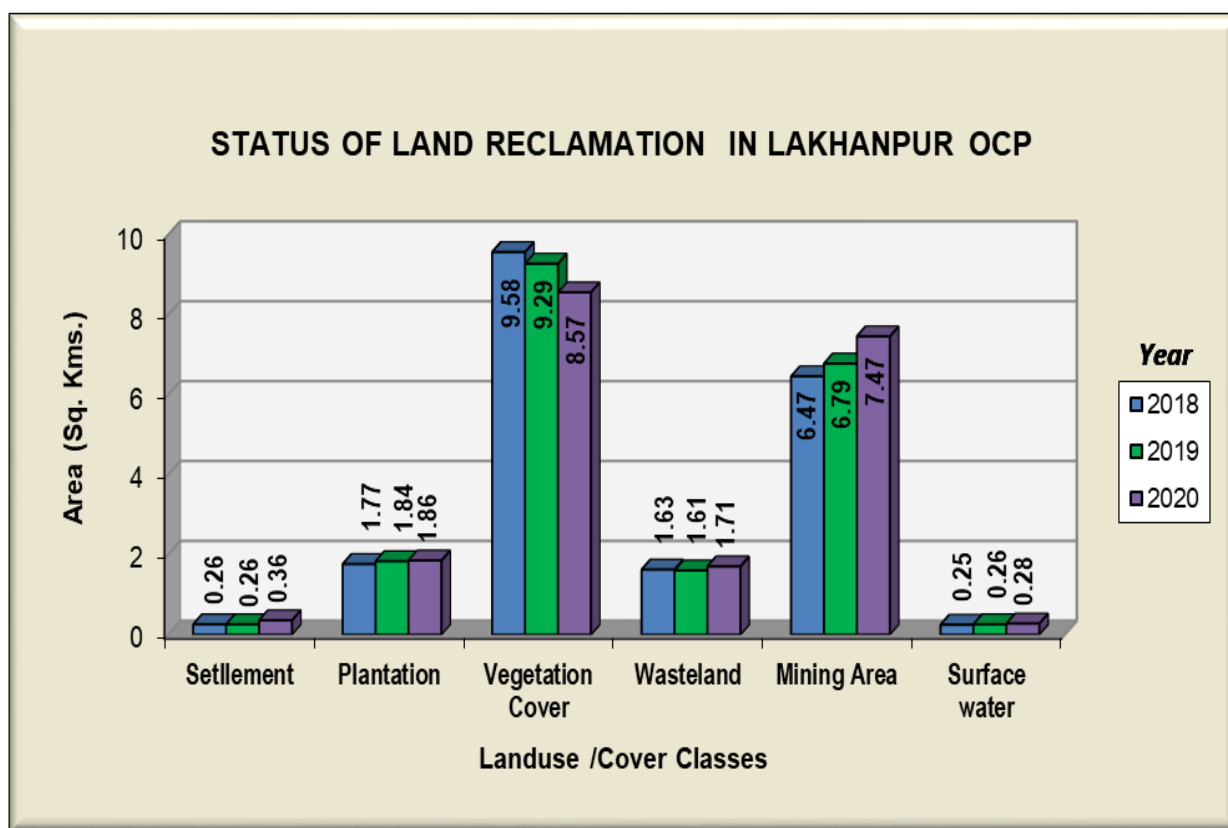


Figure 8.10

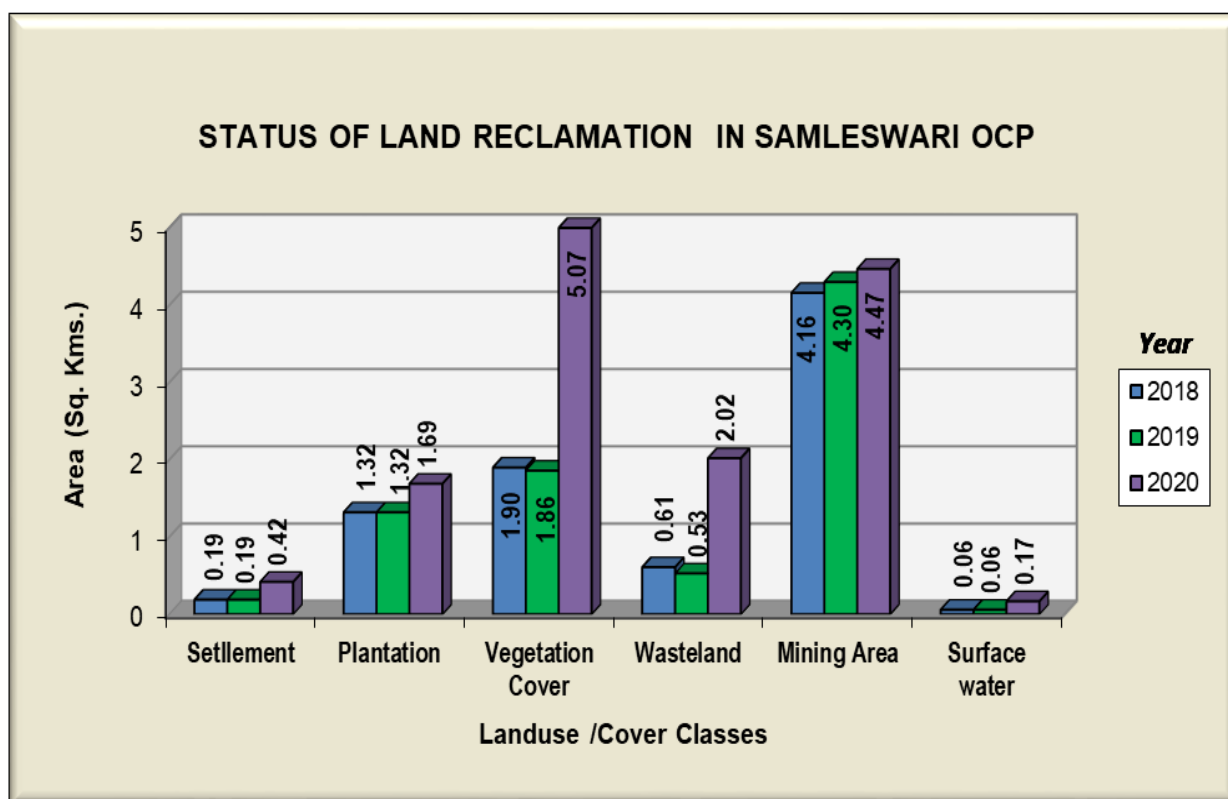


Figure 8.11



Photograph-8.9: Plantation on Internal OB/Backfill (Lakhanpur OC Mine)



Photograph-8.10: Plantation on Internal OB/Backfill (Samleswari OC Mine)