



Government of India
Ministry of Environment, Forest and Climate Change
(Issued by the State Environment Impact Assessment
Authority(SEIAA), Orissa)

To,

The Whole Time Director

SHIVA CEMENT LTD

Village-Telighana, P.O-Bringatoli, P.S.-Kutra, Tehsil-Kutra, Sundargarh - 770018

Subject: Grant of Environmental Clearance (EC) to the proposed Project Activity under the provision of EIA Notification 2006-regarding

Sir/Madam,

This is in reference to your application for Environmental Clearance (EC) in respect of project submitted to the SEIAA vide proposal number SIA/OR/MIN/37895/2019 dated 09 Nov 2021. The particulars of the environmental clearance granted to the project are as below.

- | | |
|--|---|
| 1. EC Identification No. | EC22B001OR123294 |
| 2. File No. | 37895/62-MINB1/11-2021 |
| 3. Project Type | Expansion |
| 4. Category | B1 |
| 5. Project/Activity including Schedule No. | 1(a) Mining of minerals |
| 6. Name of Project | Khatkurbahal Limestone & Dolomite Mine (ML Area-72.439 ha) with Expansion in Production Capacity from 0.3475 Million TPA to 1.50 Million TPA Limestone (Including Sub-grade), 0.20 Million m3 per annum OB/Waste/SB/IB/Low grade Dolomite and 0.108 Million m3 per annum Top Soil with mobile crusher with screen of 500 TPH Capacity Near Villages- Khatkurbahal & Kulenbahal, Tehsil – Kurta, District- Sundergarh (Odisha) |
| 7. Name of Company/Organization | SHIVA CEMENT LTD |
| 8. Location of Project | Orissa |
| 9. TOR Date | 14 Aug 2020 |

The project details along with terms and conditions are appended herewith from page no 2 onwards.

Date: 11/03/2022

(e-signed)
Sri Susanta Nanda
 Member Secretary
 SEIAA - (Orissa)

Note: A valid environmental clearance shall be one that has EC identification number & E-Sign generated from PARIVESH. Please quote identification number in all future correspondence.

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सत्यमेव जयते

STATE LEVEL ENVIRONMENT IMPACT ASSESSMENT AUTHORITY ODISHA, BHUBANESWAR

(Constituted under the EP Act, 1986 and EIA Notification, 2006 by the MoEF & CC, Govt. of India)
5RF-2/1, Unit-IX, Bhubaneswar-751022, Tel: 0674-2541029, E-mail-seiaaorissa@gmail.com

Letter No. _____

Dt. _____

SEIAA File No: 37895/62-MINB1/11-2021

Project: Application of EC of M/s Shiva Cement Limited for Environmental Clearance of Khatkurbahal Limestone & Dolomite Mine with expansion in production capacity from 0.3475 Million TPA to 1.50 Million TPA Limestone (Including Sub-grade) with mobile crusher with screen of 500 TPH Capacity over an area of 72.439 ha in Villages- Khatkurbahal & Kulenbahal, Tahasil – Kurta, District- Sundargarh-- Environmental Clearance reg.

Ref: Your online application dated 09.11.2021 for issue of EC vide File No: SIA/OR/MIN/37895/2019

Sir,

This has reference to your online application seeking environmental clearance of the above mentioned project. The project falls under Category” B” Project or Activity 1(a)-“Mining of Minerals” and S. No. 2, Project or Activity 2 (b)-“Mineral Beneficiation” as per schedule of EIA Notification, 2006, as amended from time to time The proposal has been appraised as per the provisions under the EIA Notification 2006 and on the basis of the documents enclosed with the application such as Form-I, Prefeasibility report, Form-2, final report of EIA/EMP, Public hearing proceedings, Certified Compliance Report of earlier EC and clarifications furnished to SEAC in response to their observations.

Background:

1. This is a proposal of M/s Shiva Cement Limited for Environmental Clearance of Khatkurbahal Limestone & Dolomite Mine with expansion in production capacity from 0.3475 Million TPA to 1.50 Million TPA Limestone (Including Sub-grade) with mobile crusher with screen of 500 TPH Capacity over an area of 72.439 ha in Villages- Khatkurbahal & Kulenbahal, Tahasil – Kurta, District- Sundargarh.

[Handwritten Signature]

2. **Location and Connectivity** – The mine is situated near Villages- Khatkurbahal & Kulenbahal, Tahasil – Kurta, District- Sundargarh. The Geographical coordinates of the lease area is: The latitude is 22°16'42.55755" N to 22°16'53.70413" N and longitude is 84°27'35.99047" E to 84°29'04.10197" E. The mine is well connected with SH-10 (~5.4 Km in SSW Direction). The nearest railway is available at Sonakhan (~12.9 km in SE direction), the nearest airport is Rourkela (~33 km in East Direction) and Jhasuguda (~70 km in SW Direction) & the nearest city is Rajgangpur (~13.5 km in SE direction). There is no National Park, Wildlife Sanctuary, Biosphere Reserves, Tiger Reserves, and Wildlife Corridors, etc. within 10 km radius of the mining lease area. There are 3 Protected Forests and 13 Reserve Forests falls within 10 km radius study area.
3. The mining lease of Khatkurbahal limestone & dolomite mine over an area of 72.439 ha was executed in favor of M/s. Shiva Cement Limited on 04.11.1997 for a period of 20 years w.e.f.15.01.1992. The first renewal application was made in the year 2010, for 20 years w.e.f. 14.01.2012 but later on as per section 8A of the Mines & Mineral (Development & Regulation) Amendment Act 2015, the lease period was extended for 50 years from first grant i.e. up-to 14.01.2042. Supplementary lease deed for the same was executed on 10.11.2016.
4. Environment Clearance for expansion in limestone production capacity from 0.12 Million TPA to 0.3475 Million TPA limestone was issued in the form of NGT Order vide letter dated 04.03.2014. Compliance report of the conditions stipulated in the Environment Clearance has been certified by Regional Office of Ministry of Environment, Forest and Climate Change vide their letter No. 101-642/10/EPE/GY.Y dated 13.07.2020, subsequently a letter was issued by the R.O Bhubaneswar based upon the action taken report submitted by SCL to MoEF & CC. Consent to Operate under Air & Water Act has been obtained by OSPCB vide letter no 5344/IND-I-CON-1904 dated 27.03.2021 (valid up to 31.03.2022).
5. Demand Notice was issued to Shiva Cement Limited by DDM, Rourkela dated 30.07.2020 whereby it has been directed to pay an amount of Rs. 18,57,73,619 purportedly towards compensation under Section 21(5) of the MMDR Act for production as per the judgment of Hon'ble Supreme court dated the 2nd August 2017 in writ Petition (civil) No. 114 of 2014 in the matter of common cause versus Union of India & Ors as applicable. Company has challenged the Demand Notice dated 30.07.2020 before the Central Government (Ministry of Mines), New Delhi on. 05-10-2020 by Application No. RA/22/22/2020-RC-1 under Rule 35 of the Minerals (Other than Atomic and Hydro Carbons Energy Minerals) Concession Rules, 2016 ("Revision Application") and the interim protection was granted to company vide order dated 24.02.2021. The matter was earlier heard on 26.10.2021 and the Mines Tribunal, New Delhi directed the State Govt. to provide clarifications in this matter. Subsequently, during the hearing on 30-11-2021, the Ld. Counsel of state govt.

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sought time to clarify the matter. The Revision Application is pending before the Central Government (Ministry of Mines), New Delhi. Final outcome of the issue under adjudication shall be followed by the company.

6. **R&R Details:** This is an operating mine and expansion in limestone production capacity is proposed within existing mining lease area. Therefore, no additional land will be required. Out of total mining lease area, 1.822 ha is grazing land. An area equivalent to the grazing land will be acquired in nearby area. Budget of Rs. 1.62 crore has been allocated for acquiring the alternate grazing land under R&R plan. Out of the total Private land, company has surface rights on 19.51 ha & remaining land will be acquired under the "Right to fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act-2013 (LARR Act, 2013)".
7. The Application for Environmental Clearance was submitted to SEIAA, Odisha on 19.06.2019 and accordingly, the standard ToR was issued on 14.08.2020 for the project. Base line data was generated from October to December, 2020. The Public Hearing for the proposal has already been conducted on 24.08.2021. Accordingly, the final EIA report was submitted to SEIAA, Odisha for Environmental Clearance on 24.08.2021.
8. **Method of Mining:** The project proponent has submitted that the Khatkurbahal Limestone & Dolomite Mine is in operation since 1992. The method of mining adopted as opencast semi mechanized as well as manual with development of bench from ground level to top. It is proposed to deploy surface miner specially designed for hard and massive rock to avoid drilling and blasting as much as possible. Surface miner is eco-friendly mining solution for operation in the close proximity of habitants. So opencast mechanized mining by forming systematic benches of 6.0 m height with proper width of about more than 10 m and combination of surface miner as well as conventional drilling blasting will be adopted for excavation of limestone as well as waste as per requirement and site conditions/constraints due to proximity of habitations. The drilling of blast holes will be done by rig mounted hydraulic rock drills instead of existing jack hammers. This will be transformed gradually during next three years of planning; the hole diameter will be 32-55 m and the machines will be operated by compressed air. The average rate of drilling will be about 8m/hr. Staggered pattern drilling will be done with limiting of 3 rows maximum per blast. Required yield per holes will be 54.675 ton (1.5m burden x 3.0m spacing x 4.5 m average depth x 2.7 specific gravity). Blasting will be done as per MMR 1961 under the supervision of qualified blasting in-charge/Blaster certificate holder and other competent personals. Blasting will be done beyond the danger zone. The loading of limestone will be done by hydraulic excavators of 1.6 cum as well as loaders of 1.3 cum bucket capacity. The transport of blasting material is being done by 16-25-ton capacity dumpers from mine faces to mobile crusher. Mobile crusher with screening arrangement/sizer of capacity 500

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TPH will be procured at the mines site to bring down the limestone to less than 50 mm to make it suitable for feeding to the grinding system. The mobile crusher with screen will be procured and placed at the location within lease area. Screening will be done in view of mineral conservation by separating the interstitial clay from the ROM. Cross belt analyzer will be installed to monitor the homogeneity of limestone and to make suitable corrections in crusher feeding from mines. The ultimate transport of limestone from mine face to the cement plant is mainly by road using tippers of 16-25-ton capacity. The distance between mining lease area and cement plant is ~19.2 kilometers.

9. **Top Soil and Solid Waste Generation and Management** : The project proponent has submitted that the top soil within the applied area is Silty loam in nature and brown in color. Top soil is about 2 m thick. About 0.187 million tone (0.162 million tonnes & 0.025 million tonnes during 2018-2019 & 2019-2020 respectively) of top soil has been generated since year 1998 to 2020, part of which has been utilized for plantation and the remaining top soil temporarily stacked and will be eventually used for greenbelt/ plantation. Total 0.656 million cum of top soil will be generated. Topsoil will be used in plantation to stabilize the backfilled area. The waste materials occurring within the ore zone is intercalated/overburden and inter-burden. About 59746 cum of waste have been generated till date. All OB generated throughout the years are adjusted in our two dumps which are well stabilized by plantation and around these dumps garland drains have been provided. at the conceptual stage, Total 4.7 Million cum of material consisting of 3.28 million cum OB/IB/SB/Waste/Low grade Dolomite & 1.42 million cum mineral reject/ sub grade will be generated. Once the reserve will be exhausted in the Eastern part of the lease area then the waste accumulated will be backfilled in the pit 1 & pit 2. (Phase wise/Concurrent reclamation shall be initiated after this plan period). The backfilled area would be covered with topsoil and plantation will be done over the same to restore the environmental setup
10. **Land Use**: At present 1.0 ha has been covered under greenbelt/plantation with 1800 saplings. During plan period 0.8 ha will be covered 1200 saplings. Total 21.07 ha area will be covered under Green belt and plantation (6.58 ha on backfilled area + 1.50 ha area under greenbelt along 7.5 m lease boundary in Eastern, Western and southern direction + 5.73 ha area on safety zone of Village habitation (3.58 along Khatkurbahal and 2.15 along Malatoli) + 7.26 ha area on safety zone of roads). An area of 22.259 ha area will remain undisturbed.
11. **Water Requirement**: Existing water requirement for the project is 32 KLD. Additional water requirement for the proposed expansion project will be 40KLD therefore the total water requirement after expansion will be 72 KLD. Water will be sourced from the ground water and rainwater collected in mine sump. NOC from CGWA has been obtained vide letter no. 21-4(304)/CGWA/SER/2011/66 dated

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14.02.2011 and vide NOC no CGWA/NOC/MIN/ORIG/2021/12245 dated 07.07.2021

12. **Power Requirement:** The existing power requirement is 10 KW. Additional power requirement for proposed expansion will be 740 KW. Therefore, Total power requirement after proposed expansion will be 750 KW
13. **Employment Potential:** Existing manpower for the project is 100 persons which will be 142 after expansion (including 17 Persons for EMP). The Unskilled /semi-skilled manpower are being sourced from the local area whereas the skilled manpower is being sourced from local as well as outside. Preference is given to the locals as per their skills set, qualification and eligibility.
14. The project proponent has submitted that no forest land falls within the lease area. No schedule- I species is found in the study area. A copy of letter for the same has been received from Regional Chief Conservator of Forests, Rourkela Circle vide Memo no 2852/3F-799/2021 dated 05.10.2021. There are 3 Protected Forests and 13 Reserve Forests which falls within 10 km radius of the study area
15. **Baseline Data:** The primary baseline data for site specific micro meteorology data, ambient air quality, water quality, noise level, soil and flora & fauna was collected during Post Monsoon Season (October to December, 2020). The baseline monitoring results of ambient air, soil, ambient noise level and ground water have been reported and the same were compared with respective prescribed standards viz. NAAQS-2009 (for air monitoring), IS:10500-2012 (for ground water) and ambient noise limits prescribed by CPCB. Concentrations of PM₁₀ and PM_{2.5} for all the 11 AAQM stations were found between 42.3 to 94.8 µg/m³ and 20.4 to 58.7 µg/m³ respectively. The concentrations of SO₂ and NO₂ were found to be in range of 5.05 to 12.75 µg/m³ and 11.95 to 27.63 µg/m³, respectively. Noise levels varied from 48.9 to 66.2 Leq dB (A) during day time and from 40.9 to 59.5 Leq dB (A) during night time and found within the limits prescribed by CPCB. The ground water /drinking water samples were collected from 8 locations, the ground water was found potable. The pH of collected water samples varied from 6.88 to 7.58. Total hardness varied from 62 mg/l to 295 mg/l. Total dissolved solids varied from 97 mg/l to 384 mg/l. The water samples contain, chloride from 7.39 to 87.4 mg/l, SO₄ varies from BDL (DL 1.0 mg/l) to 32.4 mg/l, Ca from 10.02 to 78.16 mg/l, Mg varies from 7.29 to 19.44 mg/l. The analysis results of soil show that soil is moderately acidic to slightly acidic in nature, the pH value ranges from 4.55 to 7.12, the soil texture is silty clay loam. The impact prediction carried through modeling indicated maximum incremental concentrations w.r.t. PM₁₀ as 3.433 µg/m³.
16. **Public Hearing:** Public hearing for the project was conducted on 24.08.2021 at 12:00 Noon behind Jagannath Temple, in Khatkurbahal Village under Kutra Block of District Sundargarh, Odisha under chairmanship of Shri Biswajit Mohapatra

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Additional District Magistrate, Sundargarh and Shri Dr. P.K. Mohapatra, Regional Officer, Rourkela, State Pollution Control Board, Odisha. Issues raised during public hearing were about employment, health facility, education facility, land acquisition, local area development, grazing land, Noise and dust pollution, better infrastructure etc. An estimated budget of Rs. 2.30 Crores has been allocated for addressing the Public Hearing issues.

17. **Project Cost:** The total project cost is Rs. 65 Crores. Cost for Environment Management Plan is 7.57 Crores (Capital Cost). Recurring Cost for EMP is Rs. 1.0 Crore/annum.
18. The proponent along with the consultant M/s JM EnviroNet Pvt. Ltd. Gurugram (Haryana) made a detailed presentation before the SEAC on 07.12.2021.
19. The project proponent furnished additional information / documents on the project to SEAC on 14.01.2021.
20. The SEAC considered the proposal for EC on 28.01.2022 and recommended for grant of Environmental Clearance for the project stipulating various conditions.

The State Environment Impact Assessment Authority (SEIAA) after considering the proposal and recommendations of SEAC, Odisha hereby accords Environmental Clearance in favour of the project under the provisions of EIA Notification 2006 and subsequent amendments thereto subject to strict compliance of all stipulated conditions, as follows.

Stipulated Conditions:

A. Specific Conditions:

1. The proponent shall implement the Pollution Control Measures and safeguards as proposed in the Environment Management Plan (EMP) of project report.
2. The proponent shall implement an appropriate technology for control of fluoride below the permissible limits after identifying its source. The fluoride concentrations in and around the mine shall be monitored periodically.
3. Separate road shall be constructed (as proposed) with definite time frame for transportation of mineral to avoid traffic congestion in existing haulage road.
4. Haulage road shall be developed and maintained perennially and perpetually by the proponent in consultation with the concerned authority of the Govt.
5. The mining authority shall assess the impact of blasting by carrying out a few trial blasts in the beginning through an institution/organization having the domain expertise and the optimum blasting parameters should be established in order to avoid any adverse impact.

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6. As per EIA report in project description, Bench width, height and angle is indicated along with Quarry slope and the proponent shall follow it as per approved mining plan and so also blasting procedure.
7. This Environmental Clearance is issued without prejudice to the legal cases if pending in the different Court.
8. Approval/permission of CGWA/SGWA shall be obtained before drawing ground water for the project activities. State Pollution Control Board (SPCB) concerned shall not issue Consent to Operate (CTO) till the project proponent obtains such permission.
9. Proper R&R plan has to be implemented in time bound manner by the project proponent which is also the main issue raised in public hearing, because displacement of people is a major environmental issue and without proper land based rehabilitation the outsees become environmental refugees.
10. The amount proposed under Corporate Environment Responsibility (CER) head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and details of implementation of CER activities along with proof of activities viz. photographs (before & after with geo-location date & time), purchase documents, photographs & Geo-location of the infrastructures/facilities developed, etc. to the Regional Office of MoEF&CC, Bhubaneswar and SEIAA, Odisha before 1st July of every year for the activities carried out during previous year.
11. The amount (except occupational health) proposed under Environmental Management Plan (EMP) head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed environment monitoring report along with proof of activities viz. photographs (before & after with geo-location date & time), purchase documents, sampling reports, photographs & Geo-location of the infrastructures/facilities developed, details of persons engaged in Environment Management Cell etc. to the Regional Office of MoEF&CC, Bhubaneswar and SEIAA, Odisha before 1st July of every year for the activities carried out during previous year.
12. The amount proposed under Occupational Health plan head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed environment monitoring report along with proof of activities viz. photographs (before & after with geo-location date & time), purchase documents, sampling reports, photographs & Geo-location of the infrastructures/facilities developed, details of persons engaged in Environment Management Cell etc. to the Regional Office of MoEF&CC, Bhubaneswar and SEIAA, Odisha before 1st July of every year for the activities carried out during previous year.

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13. The Project Proponent shall set up an Environmental Management Cell comprises of persons having qualification and experience in the field of environment along with supporting staff. The details of the same needs to be submitted to the SEIAA, Odisha within 3 months of the grant of EC.
14. The project proponent shall give an undertaking by way of affidavit to comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. before grant of ToR/ EC. The undertaking inter-alia include commitment of the PP not to repeat any such violation in future.
15. In case of violation of above undertaking, the ToR/Environmental Clearance shall be liable to be terminated forthwith.
16. The Environmental Clearance will not be operational till such time the Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.
17. State Government concerned shall ensure that mining operation shall not commence till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.
18. The Project Proponent shall keep a record of each blasting viz. location, number of holes, delay assigned of each hole, explosive quantity of each hole, blasting pattern etc.

B. Standard Conditions:

Statutory compliance:

1. This Environmental Clearance (EC) is subject to orders/ judgment of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.
2. The Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors before commencing the mining operations.
3. The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors.

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4. This Environmental Clearance shall become operational only after receiving formal NBWL Clearance from MoEF & CC subsequent to the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project.
5. This Environmental Clearance shall become operational only after receiving formal Forest Clearance (FC) under the provision of Forest Conservation Act, 1980, if applicable to the Project.
6. Project Proponent (PP) shall obtain Consent to Operate after grant of EC and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish / Consent to Operate from the concerned State Pollution Control Board/Committee.
7. The Project Proponent shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development & Regulation), Act, 2015 and rules & regulations made there under. PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.
8. The Project Proponent shall obtain consents from all the concerned land owners, before start of mining operations, as per the provisions of MMDR Act, 1957 and rules made there under in respect of lands which are not owned by it.
9. The Project Proponent shall follow the mitigation measures provided in MoEF&CC's Office Memorandum No. Z-11013/57/2014-1A. 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".
10. The Project Proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and from CGWA for withdrawal of ground water for the project.
11. A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any, from whom suggestion / representation has been received while processing the proposal.
12. State Pollution Control Board/Committee shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector's office/ Tahasildar's Office for 30 days.
13. The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board/Committee and web site of the Ministry of Environment, Forest and Climate Change (www.parivesh.nic.in). A copy of the advertisement may be forwarded to the concerned MoEF & CC Regional Office for compliance and record.

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14. The Project Proponent shall inform the MoEF&CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred than mining operation shall only be carried out after transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.
15. It shall be mandatory for the project management to submit six (06) monthly compliance reports on post environmental monitoring in respect of the stipulated terms and conditions in this Environmental Clearance to the State Environment Impact Assessment Authority (SEIAA), Odisha, SPCB & Regional Office of the Ministry of Environment & Forest, Odisha in hard and soft copies on 1st June and 1st December of each calendar year. The proponent shall also upload the compliance report including results of monitored data, as applicable in the website of the Ministry for monitoring of EC Conditions.

Air quality monitoring and preservation:

16. The Project Proponent shall install a minimum of 3 (three) online Ambient Air Quality Monitoring Stations with 1 (one) in upwind and 2 (two) in downwind direction based on long term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM₁₀, PM_{2.5}, NO₂, CO and SO₂ etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCII, dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.
17. Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM₁₀ and PM_{2.5} are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from all sources shall be regularly controlled by installation of required equipments/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured that air pollution level conform to the standards prescribed by the MoEF&CC/ Central Pollution Control Board.

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Water quality monitoring and preservation:

18. In case, immediate mining scheme envisages intersection of ground water table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEF&CC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.
19. Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug well located in village should be incorporated to ascertain the impact of mining over ground water table. The Report on changes in Ground water level and quality shall be submitted on six- monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.
20. The Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.
21. The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease and maintain its records. The project proponent shall undertake regular monitoring of water quality upstream and downstream of water bodies passing within and nearby/ adjacent to the mine lease and maintain its records. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. PP shall carryout regular monitoring w.r.t. pH and included the same in monitoring plan. The parameters to be monitored shall include their water quality vis-a-vis suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/ or alteration be made to water bodies during mining operations without justification and prior approval of MoEF & CC. The monitoring of water courses/ bodies existing in lease area shall be carried out four times in a year viz. pre- monsoon (April- May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data may be sent

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regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.

22. Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS), Dissolved Oxygen (DO), pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular No. J- 20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.
23. Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEF & CC annually.
24. Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap.
25. The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF & CC and State Pollution Control Board/Committee.

Noise and vibration monitoring and prevention:

26. The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.
27. 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 affect 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 /night hours.

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28. The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.

Mining plan:

29. The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt., in the form to Short Term Permit (STP), Query license or any other name.
30. The Project Proponent shall get the Final Mine Closure Plan along with Financial Assurance approved from Indian Bureau of Mines/Department of Mining & Geology as required under the Provision of the MMDR Act, 1957 and Rules/ Guidelines made there under. A copy of approved final mine closure plan shall be submitted within 2 months of the approval of the same from the competent authority to the concerned Regional Office of the Ministry of Environment, Forest and Climate Change for record and verification.
31. The land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life shall be governed as per the approved Mining Plan. The excavation vis-a-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEF & CC and its concerned Regional Office.

Land Reclamation:

32. The Overburden (O.B.) generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the

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guidelines/circulars issued by D.G.M.S w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of top soil/OB dumps. The topsoil shall be used for land reclamation and plantation.

33. The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.
34. The reclamation of waste dump sites shall be done in scientific manner as per the Approved Mining Plan cum Progressive Mine Closure Plan.
35. The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, use of geo textiles/ geo-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.
36. The Project Proponent shall carry out slope stability study in case the dump height is more than 30 meters. The slope stability report shall be submitted to concerned regional office of MoEF & CC.
37. Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil/OBA/waste dumps to prevent run off of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.
38. Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The sedimentation pits/ sumps shall be constructed at the corners of the garland drains.
39. The top soil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the top soil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS w.r.t. safety in

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- mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose.
40. 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.
 41. Slope study by an expert of repute of water dumps to be done and submitted within six months from the date of issue of EC to SEAC / SEIAA

Transportation:

42. No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load.
43. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.
44. The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt- conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.
45. Haulage road shall be developed and maintained perennially and perpetually by the proponent in construction with the concerned authority of the Govt. and to this effect, the proponent shall submit an undertaking in form of a legal affidavit
46. Traffic density study if not done by domain expert, then the expert to be ratified / authenticated by domain expert and submitted within a month time.

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Green Belt Development

47. The Project Proponent shall develop greenbelt in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan.
48. The Project Proponent shall carryout plantation/ afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/ Agriculture Department/ Rural development department/ Tribal Welfare Department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per Hectare. Adequate budgetary provision shall be made for protection and care of trees.
49. The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/ protected against felling and plantation of such trees should be promoted.
50. The Project Proponent shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-1 species during mining operation. A Wildlife Conservation Plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life Warden of the State Govt.
51. And implemented in consultation with the State Forest and Wildlife Department. A copy of Wildlife Conservation Plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.

Public hearing and human health issues:

52. The Project Proponent shall appoint an occupational health specialist for regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records shall be maintained properly. PP shall also carryout Occupational health check-ups in respect of workers which are having ailments like BP, diabetes, habitual smoking, etc. The check-ups shall be undertaken once in six months and necessary remedial/ preventive measures be taken. A status report on the same may be sent to MoEF & CC Regional Office and

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DGMS on half-yearly basis.

53. The Project Proponent must demonstrate commitment to work towards 'Zero Harm' from their mining activities and carry out Health Risk Assessment (HRA) for identification workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community. The proponent shall maintain accurate and systematic records of the HRA. The HRA for neighborhood has to focus on Public Health Problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under five, respiratory infections due to bio mass cooking. The proponent shall also create awareness and educate the nearby community and workers for Sanitation, Personal Hygiene, Hand washing, not to defecate in open, Women Health and Hygiene (Providing Sanitary Napkins), hazard of tobacco and alcohol use. The Proponent shall carryout base line HRA for all the category of workers and thereafter every five years.
54. The Proponent shall carry out Occupational health surveillance which be a part of HRA and include Biological Monitoring where practical and feasible, and the tests and investigations relevant to the exposure (e.g. for Dust a X-Ray chest; For Noise Audiometric; for Lead Exposure Blood Lead, For Welders Full Ophthalmologic Assessment; for Manganese Miners a complete Neurological Assessment by a Certified Neurologist, and Manganese (Mn) Estimation in Blood; For Inorganic Chromium- Fortnightly skin inspection of hands and forearms by a responsible person. Except routine tests all tests would be carried out in a Lab accredited by NABH. Records of Health Surveillance must be kept for 30 years, including the results of and the records of Physical examination and tests. The record of exposure due to materials like Asbestos, Hard Rock Mining, Silica, Gold, Kaolin, Aluminium, Iron, Manganese, Chromium, Lead, Uranium need to be handed over to the Mining Department of the State in case the life of the mine is less than 30 years. It would be obligatory for the State Mines Departments to make arrangements for the safe and secure storage of the records including X-Ray. Only conventional X-Ray will be accepted for record purposes and not the digital one). X-Ray must meet ILO criteria (17 x14 inches and of good quality).
55. The Proponent shall maintained a record of performance indicators for workers which includes (a) there should not be a significant decline in their Body Mass Index and it should stay between 18.5 -24.9, (b) the Final Chest X-Ray compared with the base line X-Ray should not show any capacities ,(c) At the end of their leaving job there should be no Diminution in their Lung Functions Forced Expiratory Volume in one second (FEV1), Forced Vital Capacity (FVC), and the ratio) unless they are smokers which has to be adjusted, and the effect of age, (d) their hearing should not be affected. As a proof an Audiogram (first and last need to be presented), (e) they should not have developed any Persistent Back Pain, Neck Pain, and the

54

- movement of their Hip, Knee and other joints should have normal range of movement, (f) they should not have suffered loss of any body part. The record of the same should be submitted to the Regional Office, MoEF & CC annually along with details of the relief and compensation paid to workers having above indications.
56. The Project Proponent shall ensure that Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.
57. Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The domestic waste water should be treated with STP in order to avoid contamination of underground water.
58. The activities proposed in Action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status Report on implementation of Action Plan shall be submitted to the concerned Regional Office of the Ministry along with District Administration.
59. The proponent shall implement the mitigative measures as suggested in the Study Report on effect of chromite mines to nearest human habitation.
60. Occupational health check-up shall be done by occupational health expert periodically for employees as well as nearby villagers.
61. Issues raised and recorded in proceedings of public hearing w.r.t. environment / pollution / CER shall be complied by the Mining Authority as per OM F. No. 22-65/2017-IA.III, dated 30.09.2020 of MoEF&CC, Govt. of India.

Corporate Environment Responsibility (CER):

62. The activities and budget earmarked for Corporate Environmental Responsibility (CER) as per Ministry's dated 30.09.2020 should be kept in a separate bank account. The activities proposed for CER shall be implemented in a time bound manner and annual report of implementation of the same along with documentary proof viz. photographs, purchase documents, latitude & longitude of infrastructure developed & road constructed needs to be submitted to Regional Office MoEF & CC annually along with audited statement.
63. Project Proponent shall keep the funds earmarked for environmental protection measures in a separate account and refrain from diverting the same for other purposes. The Year wise expenditure of such funds should be reported to the MoEF & CC and its concerned Regional Office.

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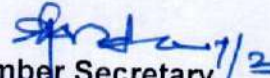
Miscellaneous:

64. The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEF & CC, Bhubaneswar and SEIAA, Odisha.
65. The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
66. The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEF&CC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.
67. A separate 'Environmental Management Cell' with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEF & CC, Bhubaneswar and SEIAA, Odisha.
68. The concerned Regional Office of the MoEF & CC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEF & CC officer(s) by furnishing the requisite data / information / monitoring reports.
69. In pursuant to Ministry's O.M No 22-34/2018-IA.III dated 16.01.2020 to comply with the direction made by Hon'ble Supreme Court on 8.01.2020 in W.P. (Civil) No 114/2014 in the matter Common Cause vs Union of India, the mining lease holder shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.
70. The SEIAA, Odisha or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.
71. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.
72. 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 made there under and also any other orders passed by the Hon'ble Supreme Court of India/ High Court and any other Court of Law relating to the subject matter.
73. This Environmental Clearance (EC) is subject to orders/judgment of Hon'ble

Signature

- Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.
74. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

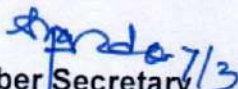
Yours faithfully,


Member Secretary

Copy to:

1. **Joint Secretary (Environment)**, Ministry of Environment, Forests and Climate Change Govt. of India, Indira Paryavaran Bhavan, Jor Bagh Road, Aliganj, New Delhi-110003 for information.
2. **Additional Chief Secretary**, Forests & Environment Dept., Government of Odisha for information.
3. **Member Secretary**, State Pollution Control Board, Odisha, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-8, Bhubaneswar for information.
4. **Additional Principal Conservator** of Forests, Regional Office (EZ), Ministry of Environment & Forests, A-31, Chandrasekharpur, Bhubaneswar for information.
5. **Member Secretary**, CGWA, 18/11, Jamnagar House, ManSingh Road, New Delhi-110011 for information.
6. **Collector, District Magistrate**, Sundargarh, for kind information and necessary action.
7. **Secretary**, SEAC, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar for kind information.
8. Guard file for record/Website/Parivesh Portal.

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Member Secretary