



THIRU.DEEPAK S.BILGI, I.F.S.
MEMBER SECRETARY

**STATE LEVEL ENVIRONMENT IMPACT
ASSESSMENT AUTHORITY-TAMILNADU**

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Extension - Environmental Clearance

Lr. No.SEIAA-TN/F.No.6726/Violation/EC.No: 4571/2020/Extn/2023/ Dated:28.03.2023

To

M/s. Krishna Mines,
Mr. Ravi Shankar, General Manager
Post Box No. 8,
No. 23, Sripuram,
Tirunelveli - 627 001.

Sir/Madam,

Sub: SEIAA, Tamil Nadu – Extension of Validity in Environmental Clearance for the Existing Limestone Mine lease over an extent of 31.092 Ha at S.F.Nos. 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790 & 791/2 in Ramayanpatti Village, Tirunelveli Taluk, Tirunelveli District, Tamil Nadu by M/s. Krishna Mines – issue of Extension of validity in Environmental Clearance – Regarding.

Ref: 1. Earlier EC issued by SEIAA-TN vide Lr. No.SEIAA-TN/F.No.6726/Violation/EC-4571/2020 dated:03.03.2021
2. MoEF&CC Notification S.O. 1807(E) dated 12.04.2022.
3. MoEF&CC Office Memorandum dated: 13.12.2022.
4. Online Proposal No. SIA/TN/MIN/295544/2022 dated: 23.12.2022.
5. Proponent application for Extension of validity of EC dated: 30.12.2022.
6. Minutes of the 359th SEAC meeting held on 02.03.2023.
7. Minutes of the 605th SEIAA meeting held on 28.03.2023.


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In the reference 1st cited above, the Environmental Clearance under Violation was accorded to M/s. Krishna Mines for the Existing Limestone Mine lease over an extent of 31.092 Ha at S.F.Nos. 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790 & 791/2 in Ramayanpatti Village, Tirunelveli Taluk, Tirunelveli District, Tamil Nadu vide Lr. No.SEIAA-TN/F.No.6726/Violation/EC-4571/2020 dated:03.03.2021. The Environmental Clearance will be coterminous with the mine lease period or limited to a period up to 31.03.2023 with production of 13,47,114 tons of Limestone from the date of issue of EC whichever is earlier.

Now the project proponent has submitted form-6 (Application for extension of validity of Environmental Clearance) seeking EC Extension through online and offline vide reference 4th & 5th cited.

SEAC Remarks:

Existing Limestone Mine lease over an extent of 31.092 Ha at S.F.Nos. 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790 & 791/2 in Ramayanpatti Village, Tirunelveli Taluk, Tirunelveli District, Tamil Nadu by M/s. Krishna Mines- For Extension of Validity of Environmental Clearance. (SIA/TN/MIN/295544/2022, dated:23.12.2022)

The proposal was placed in this 359th meeting of SEAC held on 02.03.2023. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

The SEAC noted the following:

1. The Proponent, M/s. Krishna Mines has applied for Extension of Validity of Environmental Clearance for the Existing Limestone Mining lease over an extent of 31.092 Ha at S.F.Nos. 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790 & 791/2 in Ramayanpatti Village, Tirunelveli Taluk, Tirunelveli District, Tamil Nadu.
2. The project/activity is covered under Category "B1" of Item 1(a) "Mining Projects" of the Schedule to the EIA Notification, 2006.
3. Mining operation in this lease was stopped on 16.04.2014 after receiving directions from MoEF&CC under Section-5 of Environment (Protection) Act, 1986, vide Lr. No. J-11015/06/2014-1A.II (M) dated 04.04.2014.
4. As directed by MoEF & CC, TNPCB had initiated credible action by way of filing a complaint vide CC No 280 of 2014 under section 200 of Cr.PC for offences U/s 15 tw, 16 & 19 (a) of the EPA act 1986 before Hon'ble Magistrate V court. Tirunelveli vide letter dated 10.09.2014.


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5. In pursuance of the Supreme Court order dated 02.08.2017 in CWP no. 114/2014, the District Collector, Tirunelveli has levied a penalty of Rs.2,57,18,346 vide notice M3/10842/2019 dated 19.12.2019 for mining and transportation of 1,75,065MT excess quantity of Limestone from lease area from 2000-01 to 2014-15 without prior environmental clearance under Section 21(5) of MMDR Act 1957.
6. Krishna Mines had deposited Rs 2,57,18,346/- on 20.12.2019 and obtained NOC from Director of Geology and Mining, Chennai vide letter Re No.8480/MM3/2002 dated 10.01.2020.
7. Then environmental clearance under violation category on 03.03.2021 was issued by SEIAA-Tamil Nadu vide Lr. No.SEIAA-TN/F.No.6726/Violation/EC-4571/2020 dated:03.03.2021. The Environmental Clearance will be coterminous with the mine lease period or limited to a period up to 31.03.2023 with production of 13,47,114 tons of Limestone from the date of issue of EC whichever is earlier.
8. Subsequently the supplementary lease order was obtained vide G.O (Ms) No 302 Industries (MMA.2) Department on 17.11.2021. The supplementary lease deed was executed on 01.12.2021 and the lease is valid up to 31-3-2030.
9. Consent to Operate (CTO) for Air (Prevention and Control of Pollution) Act 1981 and Water (Prevention and Control of Pollution) Act 1974 has been obtained on 24.08.2021. CTO is valid up to 31.03.2023.
10. After obtaining EC, executing supplementary lease deed & CTO mining was restarted on the lease area on 04.12.2021.
11. Permission has been obtained from Director of Mines Safety, under Regulation 106(2)(b) of Metalliferous Mines Regulations, 1961.
12. Mining operations in this lease area is carried out after obtaining all required statutory clearances and implementation of various control measures for environmental management such as water sprinkling, provision of garland drains, retaining wall plantation of about 33,000 trees inside and outside the lease area, etc.
13. Certified EC compliance report obtained from Integrated Regional office, MOEF & CC. Chennai, vide letter no EP/12.1.2022-23/SEIAA/194/TN/1336 dated 14/12/2022.
14. Penalty of Rs 2,50,000/- was imposed by J.M.Court V, Tirunelveli order dated 26.02.2022 for the credible action plan initiated by TNPCB vide CC No 280 of 2014 under section 200 of


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Cr.P.C for offences U/s 15 r/w, 16 & 19 (a) of the EPA act 1986 and the amount was also paid by Krishna Mines.

15. Towards conservation plan for flora & Fauna and annual monitoring of Bio diversity Rs 50 lakhs by way of DD no 397145 dated 17-11-2022 is paid to DFO & Wild life warden, Tirunelveli Division on 23-11-2022.
16. The amount prescribed for Ecological remediation (Rs15.546 lakhs), natural resource augmentation (Rs.18.66 lakhs) & community resource augmentation(Rs.23.319 lakhs) totalling Rs 57.525 lakhs remitted in the form of bank guarantee to TNPCB on July 26th, 2021 which is valid up to 31-3-2023.
17. As per this EC condition, as against Rs 57.525 lakhs, Rs 60.22 lakhs is spent for carrying out the following activities:

Sl.No	Particulars	Amount spent in Rupees
1.	Ecological Remediation	Rs.16,49,480/-
2.	Natural Resource Augmentation	Rs.19,41,600/-
3.	Community Resource Augmentation Plan	Rs.24.21 500/-
	Total cost for Remediation plan & NCRAP	Rs.60,22,580/-
	Say	Rs.60.22 Lakhs

18. Past production details have been certified by Joint Director/Assistant Director, Geology & Mining, Tirunelveli vide Rc.No.M3/10844/2019 dated 22.08.2022.
19. From the above, it is seen that an amount of 1,59,938.46T of limestone has only been mined up to 31-3-22 out as against the EC approved quantity of 13,47,114T. Hence it could be seen that only less quantity than the approved quantity has been achieved so far.
20. From the above table it could be seen that the present review of mining plan was prepared and approved for quantity not exceeding the quantity in the previous mining plan (i. e annual lime stone production of 4.55 lakh TPA).
21. Salient details of the approved mining plan is as follows,

Balance available mineral reserve as on 1/9/2022	9.57 Mil.T
Proposed production during plan period (2023-24 to 2027-28)	2.28 Mil.T


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Balance Reserves available after present period. (2023-24 to 2027-28)	7.29 Mil.T
Proposed limestone Production per year	0.455 Mil.T
Additional Years available after plan period	16.02 Say 16 years (up to 2043-44)

22. Review of mining plan for the period 2023-24 to 2027-28 obtained and approved by IBM vide No TN/TNL/LST/ROMP-1694-MDS dated 02/12/2022.
23. MoEF&CC Notification S.O. 221(E), Dt:18.01.2021.
24. MoEF&CC Notification S.O. 1807(E), Dt: 12.04.2022.
25. MoEF&CC O.M. Dt: 13.12.2022.

During the meeting, the proponent stated that he had requested for an automatic extension as per the MoEF&CC notification dated 12.04.2022 and O.M dated 13.12.2022 and hence requested for the same.

SEAC noted that as per OM Dated 13.12.2022, Clarification on the amendment to EIA Notification 2006 issued vide S.O. No. 1807(E) dated 12.04.2022 with regard to validity of Environment Clearance, para 2 (ii) states that...

“The Environment Clearances for which the project proponents have submitted the application for extension of validity as per the provisions of the EIA Notification 2006 as on the date of publication of Notification i.e., 12.04.2022 shall stand automatically extended to respective increased validity as mentioned at Para no. 1 column (C) above.”

Based on the presentation made by the proponent, the SEAC noted that the PP has valid lease up to 31.03.2030 and hence decided to confirm that the PP is eligible for ‘automatic extension’ as per the aforementioned OM issued by the MoEF & CC.

As accepted by the Project proponent in lieu of the CER Rs.5.0 lakhs shall be spent for the conservation measures in Gangaikondan Wild Life sanctuary in consultation with DFO, Tirunelveli, before obtaining CTO from TNPCB.

SEIAA Remarks:

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The subject was placed in 605th authority meeting held on 28.03.2023. The authority noted that this proposal was placed for appraisal in 359th meeting of SEAC held on 02.03.2023.

SEAC noted that as per OM Dated 13.12.2022, Clarification on the amendment to EIA Notification 2006 issued vide S.O. No. 1807(E) dated 12.04.2022 with regard to validity of Environment Clearance, para 2 (ii) states that...

“The Environment Clearances for which the project proponents have submitted the application for extension of validity as per the provisions of the EIA Notification 2006 as on the date of publication of Notification i.e., 12.04.2022 shall stand automatically extended to respective increased validity as mentioned at Para no. 1 column (C) above.”

Based on the presentation made by the proponent, the SEAC noted that the PP has valid lease up to 31.03.2030 and hence decided to confirm that the PP is eligible for ‘automatic extension’ as per the aforementioned OM issued by the MoEF & CC.

After detailed discussions, the Authority decided to accept ‘automatic extension’ and grant Environmental Clearance as per the mine plan approved by the Department of Geology & Mining. This is also subject to the standard conditions as per Annexure - (I) of SEAC minutes, other normal conditions stipulated by MOEF&CC & all other specific conditions as recommended by SEAC in addition to the following conditions and the conditions in Annexure ‘A’ of this minutes.

1. Keeping in view of MoEF&CC’s notification S.O.1533(E) dated.14.09.2006 and S.O. 1807(E) dated 12.04.2022, this Environmental Clearance is valid as per the approved mine plan period.
2. The EC granted is subject to review by District Collector, Mines Dept. and TNPCB on completion of every 5 years till the project life. They should also review the EC conditions to ensure that they have all been adhered to and implemented.
3. The project proponent shall furnish a Certified Compliance Report obtained from MoEF&CC while seeking a renewal of the mining plan to cover the project life.
4. The progressive and final mine closure plan including the green belt implementation and environmental norms should be strictly followed as per the EMP.
5. As per the OM vide F. No. IA3-22/1/2022-IA-III [E- 172624] Dated: 14.06.2022, the Project Proponents are directed to submit the six-monthly compliance on the environmental conditions


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prescribed in the prior environmental clearance letter(s) through newly developed compliance module in the PARIVESH Portal from the respective login.

Annexure-‘A’

EC Compliance

1. The Environmental Clearance is accorded based on the assurance from the project proponent that there will be full and effective implementation of all the undertakings given in the Application Form, Pre-feasibility Report, mitigation measures as assured in the Environmental Impact Assessment/ Environment Management Plan and the mining features including Progressive Mine Closure Plan as submitted with the application.
2. All the conditions as presented by the proponent in the PPT during SEAC appraisal should be addressed in Full.
3. The proponent shall submit Compliance Reports on the status of compliance of the stipulated EC conditions including results of monitored data. It shall be sent to the respective Regional Office of Ministry of Environment, Forests and Climate Change, Govt. of India and also to the Office of State Environment Impact Assessment Authority (SEIAA).
4. Concealing the 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.

Applicable Regulatory Frameworks

5. The project proponent shall strictly adhere to the provisions of Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation & Development Rules, 2010 framed under MMDR Act 1957, National Commission for protection of Child Right Rules, 2006, Wildlife Protection Act, 1972, Forest Conservation Act, 1980, Biodiversity Conservation Act, 2016, the Biological Diversity Act, 2002 and Biological diversity Rules, 2004 and Rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/Hon'ble High Court of Madras and any other Courts of Law relating to the subject matter


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Safe mining Practices

6. The AD/DD, Dept. of Geology & Mining shall ensure operation of the proposed quarry after the submission slope stability study conducted through the reputed research & Academic Institutions such as NIRM, IITs, NITS Anna University, and any CSIR Laboratories etc.
7. The AD/DD, Dept. of Geology & Mining & Director General of Mine safety shall ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study of the reputed research & Academic Institutions as a safety precautionary measure to avoid untoward accidents during mining operation.
8. A minimum buffer distance specified as per existing rules and statutory orders shall be maintained from the boundary of the quarry to the nearest dwelling unit or other structures, and from forest boundaries or any other ecologically sensitive and archeologically important areas or the specific distance specified by SEIAA in EC as per the recommendations of SEAC depending on specific local conditions.

Water Environment – Protection and mitigation measures

9. The proponent shall ensure that the activity does not disturb the water bodies and natural flow of surface and groundwater, nor cause any pollution, to water sources in the area.
10. The proponent shall ensure that the activities do not impact the water bodies/wells in the neighboring open wells and bore wells. The proponent shall ensure that the activities do not in any way affect the water quantity and quality in the open wells and bore wells in the vicinity or impact the water table and levels. The proponent shall ensure that the activities do not disturb the river flow, nor affect the Odai, Water bodies, Dams in the vicinity.
11. Water level in the nearest dug well in the downstream side of the quarry should be monitored regularly and included in the Compliance Report.
12. Quality of water discharged from the quarry should be monitored regularly as per the norms of State Pollution Control Board and included in the Compliance Report.
13. Rain Water Harvesting facility should be installed as per the prevailing provisions of TNMBR/TNCDBR, unless otherwise specified. Maximum possible solar energy generation and utilization shall be ensured as an essential part of the project.


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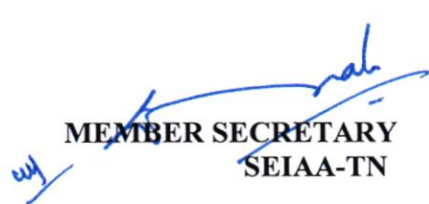
14. Regular monitoring of flow rates and water quality upstream and downstream of the springs and perennial nallahs flowing in and around the mine lease area shall be carried out and reported in the compliance reports to SEIAA.
15. Regular monitoring of ground water level and water quality shall be carried out around the mine area during mining operation. At any stage, if it is observed that ground water table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.
16. Garland drains and silt traps are to be provided in the slopes around the core area to channelize storm water. De-silting of Garland canal and silt traps have to be attended on a daily basis. A labour has to be specifically assigned for the purpose. The proponent shall ensure the quality of the discharging storm water as per the General Effluent Discharge Standards of CPCB.

Air Environment – Protection and mitigation measures

17. The activity should not result in CO₂ release and temperature rise and add to micro climate alternations.
18. The proponent shall ensure that the activities undertaken do not result in carbon emission, and temperature rise, in the area.
19. The proponent shall ensure that Monitoring is carried out with reference to the quantum of particulate matter during excavation; blasting; material transport and also from cutting waste dumps and haul roads.

Soil Environment – Protection and mitigation measures

20. The proponent shall ensure that the operations do not result in loss of soil biological properties and nutrients.
21. The proponent shall ensure that activity does not deplete the indigenous soil seed bank and disturb the mycorrhizal fungi, soil organism, soil community nor result in eutrophication of soil and water.
22. The activities should not disturb the soil properties and seed and plant growth. Soil amendments as required to be carried out, to improve soil health.
23. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.
24. The proponent shall ensure that the mine restoration is done using mycorrhizal VAM, vermin-composting, Biofertilizers to ensure soil health and biodiversity conservation.


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25. The proponent shall ensure that the topsoil is protected and used in planting activities in the area.
26. The proponent shall ensure that topsoil to be utilized for site restoration and Green belt alone within the proposed area.
27. The top soil shall be temporarily stored at earmarked place (s) and used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. At critical points, use of geotextile shall be undertaken for stabilization of the dump. Protective wall or gabions should be made around the dump to prevent erosion / flow of sediments during rains. The entire excavated area shall be backfilled.

Noise Environment – Protection and mitigation measures

28. The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.
29. The sound 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. Hence, the PP shall ensure that the biological clock of the villages are not disturbed because of the mining activity.

Biodiversity - Protection and mitigation measures

30. The proponent should ensure that there is no disturbance to the agriculture plantations, social forestry plantations, waste lands, forests, sanctuary or national parks. There should be no impact on the land, water, soil and biological environment and other natural resources due to the mining activities.
31. No trees in the area should be removed and all the trees numbered and protected. In case trees fall within the proposed quarry site the trees may be transplanted in the Greenbelt zone. The proponent shall ensure that the activities in no way result in disturbance to forest and trees in vicinity. The proponent shall ensure that the activity does not disturb the movement of grazing animals and free ranging wildlife. The proponent shall ensure that the activity does not disturb the biodiversity, the flora & fauna in the ecosystem. The proponent shall ensure that the activity does not result in invasion by invasive alien species. The proponent shall ensure that the activities do not disturb the resident and migratory


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- birds. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoining reserve forests and areas around.
32. The proponent shall ensure that the activities do not disturb the agro biodiversity and agro farms. Actions to be taken to promote agroforestry, mixed plants to support biodiversity conservation in the mine restoration effort.
33. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to protect the biodiversity and natural resources in the area.
34. The proponent shall ensure that the activities do not impact green lands/grazing fields of all types surrounding the mine lease area which are food source for the grazing cattle.

Climate Change

35. The project activity should not in any way impact the climate and lead to a rise in temperature.
36. There should be least disturbance to landscape resulting in land use change, contamination and alteration of soil profiles leading to Climate Change.
37. Intensive mining activity should not add to temperature rise and global warming.
38. Operations should not result in GHG releases and extra power consumption leading to Climate Change.
39. Mining through operational efficiency, better electrification, energy use, solar usage, use of renewable energy should try to decarbonize the operations.
40. Mining Operation should not result in droughts, floods and water stress, and shortages, affecting water security both on site and in the vicinity.
41. Mining should not result in water loss from evaporation, leaks and wastage and should support to improve the ground water.
42. Mining activity should be flood proof with designs and the drainage, pumping techniques shall ensure climate-proofing and socio-economic wellbeing in the area and vicinity.

Reserve Forests & Protected Areas

43. The activities should provide nature based support and solutions for forest protection and wildlife conservation.
44. The project activities should not result in forest fires, encroachments or create forest fragmentation and disruption of forest corridors.


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45. There should be no disturbance to the freshwater flow from the forest impacting the water table and wetlands.
46. The project proponent should support all activities of the forest department in creating awareness to local communities on forest conservation.
47. The project activities should not alter the geodiversity and geological heritage of the area.
48. The activities should not result in temperature rise due to increased fossil fuels usage disrupting the behaviour of wildlife and flora.
49. The activities should support and recognise the rights and roles of indigenous people and local communities and also support sustainable development.
50. The project activities should support the use of renewables for carbon capture and carbon storage in the project site and forest surrounds.
51. The project activities should not result in changes in forest structure, habitats and genetic diversity within forests.

Green Belt Development

52. The proponent shall ensure that in the green belt development more indigenous trees species (Appendix as per the SEAC Minutes) are planted.
53. The proponent shall ensure the area is restored and rehabilitated with native trees as recommended in SEAC Minutes (in Appendix).

Workers and their protection

54. The project proponent is responsible for implementing all the provisions of labour laws applicable from time to time to quarrying /Mining operations. The workers on the site should be provided with on-site accommodation or facilities at a suitable boarding place, protective equipment such as ear muffs, helmet, etc.
55. The proponent has to provide insurance protection to the workers in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.
56. The workers shall be employed for working in the mines and the working hours and the wages shall be implemented/enforced as per the Mines Act, 1952.

Transportation

57. 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


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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. 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.

58. 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.

Storage of wastes

59. The project proponent shall store/dump the granite waste generated within the earmarked area of the project site for mine closure as per the approved mining plan.

CER/EMP

60. The CER Should be fully Implemented and fact reflected in the Half-yearly compliance report.
61. The EMP Shall also be implemented in consultation with local self-government institutions.
62. The follow-up action on the implementation of CER Shall be included in the compliance report.

Directions for Reclamation of mine sites

63. The mining closure plan should strictly adhere to appropriate soil rehabilitation measures to ensure ecological stability of the area. Reclamation/Restoration of the mine site should


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ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is buildup, during the process of restoration.

64. The proponent shall ensure that the mine closure plan is followed as per the mining plan and the mine restoration should be done with native species, and site restored to near original status. The proponent shall ensure that the area is ecologically restored to conserve the ecosystems and ensure flow of goods and services.
65. A crucial factor for success of reclamation site is to select sustainable species to enable develop a self-sustaining eco system. Species selected should easily establish, grow rapidly, and possess good crown and preferably be native species. Species to be planted in the boundary of project site should be un palatable for cattle's/ goats and should have proven capacity to add leaf-litter to soil and decompose. The species planted should be adaptable to the site conditions. Should be preferably pioneer species, deciduous in nature to allow maximum leaf-litter, have deep root system, fix atmospheric nitrogen and improve soil productivity. Species selected should have the ability to tolerate altered pit and toxicity of and site. They should be capable of meeting requirement of local people in regard to fuel fodder and should be able to attract bird, bees and butterflies. The species should be planted in mixed association.
66. For mining area reclamation plot culture experiments to be done to identify/ determine suitable species for the site.
67. Top soil with a mix of beneficial microbes (Bacteria/Fungi) to be used for reclamation of mine spoils. AM Fungi (Arbuscular mycorrhizal fungi), plant growth promoting Rhizo Bacteria and nitrogen fixing bacteria to be utilized.
68. Soil and moisture conservation and water harvesting structures to be used where ever possible for early amelioration and restoration of site.
69. Top soil is most important for successful rehabilitation of mined sites. Topsoil contains majority of seeds and plant propagation, soil microorganism, Organic matter and plant nutrients. Wherever possible the topsoil should be immediately used in the area of the for land form reconstruction, to pre mining conditions.
70. Over burdens may be analyzed and tested for soil characteristics and used in the site for revegetation. Wherever possible seeds, rhizome, bulbs, etc of pioneering spices should be collected, preserved and used in restoring the site.


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71. Native grasses seeds may be used as colonizers and soil binders, to prevent erosion and allow diverse self- sustaining plant communities to establish. Grasses may offer superior tolerance to drought, and climatic stresses.
72. Reclamation involves planned topographical reconstruction of site. Care to be taken to minimize erosion and runoff. Topsoils should have necessary physical, chemical, ecological, properties and therefore should be stored with precautions and utilized for reclamation process. Stocked topsoil should be stabilized using grasses to protect from wind. Seeds of various indigenous and local species may be broad casted after topsoil and treated overburden are spread.
73. Alkaline soils, acidic soils, Saline soils should be suitably treated/amended using green manure, mulches, farmyard manure to increase organic carbon. The efforts should be taken to landscape and use the land post mining. The EMP and mine closure plan should provide adequate budget for re-establishing the site to pre-mining conditions. Effective steps should be taken for utilization of over burden. Mine waste to be used for backfilling, reclamation, restoration, and rehabilitation of the terrain without affecting the drainage and water regimes. The rate of rehabilitation should be similar to rate of mining. The land disturbed should be reshaped for long term use. Mining should be as far as possible be eco-friendly. Integration of rehabilitation strategies with mining plan will enable speedy restoration.
74. Efforts should be taken to aesthetically improve the mine site. Generally, there are two approaches to restoration i.e Ecological approach which allows tolerant species to establish following the succession process allowing pioneer species to establish. The other approach i.e plantation approach is with selected native species are planted. A blend of both methods may be used to restore the site by adding soil humus and mycorrhiza.
75. Action taken for restoration of the site should be specifically mentioned in the EC compliances.


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1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Additional Chief Secretary to Government, Environment, Climate Change and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Industries, Investment Promotion & Commerce Department, Tamil Nadu.
4. The Additional Principal Chief Conservator of Forests, Regional Office (SZ), 34, HEPC Building, 1st & 2nd Floor, Cathedral Garden Road, Nungambakkam, Chennai – 34.
5. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi - 110 032.
6. The Chairman, TNPC Board, 76, Mount Salai, Guindy, Chennai - 32.
7. The District Collector, Tirunelveli District.
8. The Commissioner of Geology and Mines, Guindy, Chennai - 32.
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. File Copy.

