



सत्यमेव जयते

**File No.: 10956**  
**Government of India**  
**Ministry of Environment, Forest and Climate Change**  
**(Issued by the State Environment Impact Assessment Authority(SEIAA),**  
**TAMIL NADU)**

\*\*\*



Dated 06/09/2024



To,

KALIDASS MUTHIAH  
KALIDASS MUTHIAH  
2-126, RAGAVA NAGAR, 2ND MAIN ROAD, MOOVARASAMPATTU, MADIPAKKAM,  
KANCHIPURAM, TAMIL NADU, 600091  
kalidossec2024@gmail.com

**Subject:** Amendment in Environmental Clearance (EC) granted to the project under the provision of the EIA Notification 2006 as amended -regarding.

**Sir/Madam,**

This is in reference to your application submitted to SEIAA vide proposal number SIA/TN/MIN/478698/2024 dated 11/07/2024 for grant of an amendment in prior Environmental Clearance (EC) issued to the project Proposed Savudu Deposit Quarry lease over an extent of 3.96.5 Ha Patta Land in S.F.No.192(P) at PWD Tank, Kondamangalam Village, Chengalpattu Taluk, Kancheepuram District, Tamilnadu by Thiru.M.Kalidoss under the provision of the EIA Notification 2006-and as amended thereof.

2. The particulars of the proposal are as below :

(i) EC Identification No.	EC24C0108TN5458146A
(ii) File No.	10956
(iii) Clearance Type	Amendment in EC
(iv) Category	B2
(v) Schedule No./ Project Activity	1(a) Mining of minerals Proposed Ordinary Earth Quarry of Thiru. M. Kalidoss over an Extent of 3.44.0 Ha at S. F. No 192(P) PWD Tank, Kondamangalam Village, Chengalpattu Taluk, Kancheepuram District, Tamil Nadu
(vii) Name of Project	
(viii) Location of Project (District, State)	KANCHIPURAM, TAMIL NADU
(ix) Issuing Authority	SEIAA
(x) EC Date	11/07/2024
(xii) Applicability of General Conditions	NO
(xiii) Status of implementation of the project	

Environmental Clearance was accorded vide Lr. No. SEIAA-TN.F.No. 2027/ EC /1(a)/1220/2013 Dated:22.04.2014 to Thiru.M.Kalidoss for the Proposed Savudu Deposit Quarry lease over an extent of 3.96.5Ha Patta Land in S.F.No.192(P) at PWD Tank, Kondamangalam Village, Chengalpattu Taluk, Kacheepuram District, Tamil Nadu.

Now, the Proponent has submitted an application seeking Amendment to Environmental Clearance vide Online Proposal No. SIA/TN/MIN/478698/2024, Dated: 04.06.2024.

#### **Remarks of SEAC**

The proposal was placed for appraisal in this 482<sup>nd</sup> meeting of SEAC held on 12.07.2024. The details of the project furnished by the proponent are given in the website (parivesh.nic.in).

#### **The SEAC noted the following:**

1. EC was issued to the project proponent vide Lr. No. SEIAA-TN.F.No. 2027/ EC /1(a)/1220/2013 Dated:22.04.2014.
2. EC was accorded for mining of 28.300m<sup>3</sup> of savudu for the period of 50days from the date of execution of mining lease period.
3. Now, the Proponent, **Thiru.M.Kalidoss**, has submitted an application in Form-4 seeking amendment in Environmental Clearance dated.07.06.2024, requesting to change the mineral name to 'ordinary earth' instead of 'savudu'.
4. The project proponent has not executed the mining lease till date.
5. However, the proponent submitted a letter obtained from Deputy Director (Addl. Charge) – Geology & Mining, vide Rc.442/Q1/2012 dated.21.05.2024 stating as follows:  
“... in the approved mining plan dated.26.06.2013 it may please be read as “ordinary earth” in all the places where it was mentioned as “savudu”...”
6. Further, the proponent submitted the soil test report obtained from Department of Geology, University of Madras, Guindy vide letter dated; 06.03.2024. According to the report, the maximum sand content in the soil sample is determined as 7%.
7. Further, the proponent submitted a letter dated.29.04.2024 obtained from Deputy Director (Addl. Charge) – Geology & Mining stating that the applied area/ proposed quarry site does not lie adjoining to river, canals, streams, etc., and also not comes under notified, declared protected zones.
8. Now, the PP has requested Amendment in EC as follows:

S.No.	Description	As in EC dated.22.04.2014	Amendment issued
1	Mineral Name	Savudu	Ordinary Earth

1. Based on the presentation and details submitted by the project proponent, the Committee decided to recommend the Amendment in the EC dated 22.04.2014 as follows:
2. The word “savudu” wherever occurred in the EC issued by SEIAA-TN, may be read as an “ordinary earth”
3. All other conditions and validity mentioned in the EC dated.22.04.2014 shall remain unchanged and unaltered.

#### **1. Discussion of SEIAA:**

1. The subject was placed in the 749<sup>th</sup> Authority meeting held on 27.08.2024 & 28.08.2024. The authority noted that the subject was appraised in the **482<sup>nd</sup> meeting of SEAC held on 12.07.2024** and SEAC has furnished its recommendations subject to the conditions stated therein.

After detailed discussions, the Authority taking into account the recommendations of SEAC and also the safety aspects and to ensure sustainable, scientific and systematic mining, decided to **amend the Environmental Clearance** for the production quantity of **28,300m<sup>3</sup> of Ordinary Earth and the annual peak production shall not exceed 28,300m<sup>3</sup> of Ordinary Earth and restricting the maximum depth of mining upto 0.9m BGL for a period of 50 days.** This is also subject to the conditions imposed by SEAC, normal conditions stipulated by MOEF&CC 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 and also during the mine plan period, till the project life so as to review the EC conditions and to ensure that they have all been adhered to and implemented.
3. The topsoil/side burden/weathered rock should be used only for the purpose of progressive mine closure.
4. The project proponent shall submit a Certified Compliance Report obtained from IRO of MoEF&CC to the

monitoring, regulatory and other concerned authorities including SEIAA, while seeking a renewal of the mining plan to cover the project life.

5. There should be regular monitoring of air quality, water quality, ground water level and noise quality and reports regarding the same should be submitted to TNPCB, SEIAA & IRO of MoEF&CC once in every 6 months.
  6. The proponent shall strictly adhere to the mining plan and half yearly and annual returns shall be submitted to the Director of Geology and Mining Department with copy marked to TNPCB, SEIAA & IRO of MoEF&CC.
  7. Biodiversity in and around the project area should be monitored frequently and detailed biodiversity report should be submitted every year to SEIAA & IRO of MoEF&CC.
  8. The progressive and final mine closure plan including the green belt implementation and environmental norms should be strictly followed as per the EMP and as per the amount committed and approved in EC for EMP. Status of progressive mine closure and green belt implementation should be included in the half yearly compliance report submitted to TNPCB, SEIAA & IRO of MoEF&CC.
  9. 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 prescribed in the prior environmental clearance letter(s) through newly developed compliance module in the PARIVESH Portal from the respective login.
  10. The amount allocated for EMP should be kept in a separate account and both the capital and recurring expenditures should be done year wise for the works identified, approved and as committed. The work & expenditure made under EMP should be elaborated in the bi-annual compliance report submitted and also should be brought to the notice of concerned authorities during inspections.
  11. The PP shall strictly adhere carrying out **mining operation only within the earmarked coordinates**, as per the approved mining plan.
  12. The PP shall ensure that the **biodiversity** as reported in “Environment Impact Assessment report” **should not be disturbed**.
  13. The nature of vegetation, flora, fauna, shrubs, water bodies should not be disturbed by the project activity.
  14. The agriculture & horticulture pattern and livelihood of the local community should not be disturbed.
  15. The PP shall ensure that soil diversity **should not be disturbed**.
2. This issues with the approval of the Competent Authority.

#### **Copy To**

1. The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.
2. The Principal Secretary to Government, Environment and Forests Department, Tamil Nadu.
3. The Additional Chief Secretary to Government, Natural Resources Department, Tamil Nadu.
4. The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-Cum-Office Complex, East Arjun Nagar, New Delhi-110 032.
5. The Chair Person, TNPC Board, 76, Mount Salai, Guindy, Chennai-32
6. The District Collector, Kacheepuram District
7. The Commissioner of Geology and Mines, Guindy, Chennai-32
8. Assistant Director, Department of Geology & Mining, Kacheepuram District
9. EI Division, Ministry of Environment & Forests, Paryavaran Bhawan, New Delhi.
10. File Copy

**Annexure 1**

**Specific EC Conditions for (Mining Of Minerals)**

## 1. Seiaa Specific Conditions

S. No	EC Conditions
1.1	<p>After detailed discussions, the Authority taking into account the recommendations of SEAC and also the safety aspects and to ensure sustainable, scientific and systematic mining, decided to grant Environmental Clearance for the production quantity of 28,300m<sup>3</sup> of Ordinary Earth and the annual peak production shall not exceed 28,300m<sup>3</sup> of Ordinary Earth and restricting the maximum depth of mining upto 0.9m BGL for a period of 50 days. This is also subject to the conditions imposed by SEAC, normal conditions stipulated by MOEF&amp;CC in addition to the following conditions and the conditions in Annexure 'A' of this minutes.</p> <ol style="list-style-type: none"> <li>1. Keeping in view of MoEF&amp;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.</li> <li>2. The EC granted is subject to review by District Collector, Mines Dept. and TNPCB on completion of every 5 years and also during the mine plan period, till the project life so as to review the EC conditions and to ensure that they have all been adhered to and implemented.</li> <li>3. The topsoil/side burden/weathered rock should be used only for the purpose of progressive mine closure.</li> <li>4. The project proponent shall submit a Certified Compliance Report obtained from IRO of MoEF&amp;CC to the monitoring, regulatory and other concerned authorities including SEIAA, while seeking a renewal of the mining plan to cover the project life.</li> <li>5. There should be regular monitoring of air quality, water quality, ground water level and noise quality and reports regarding the same should be submitted to TNPCB, SEIAA &amp; IRO of MoEF&amp;CC once in every 6 months.</li> <li>6. The proponent shall strictly adhere to the mining plan and half yearly and annual returns shall be submitted to the Director of Geology and Mining Department with copy marked to TNPCB, SEIAA &amp; IRO of MoEF&amp;CC.</li> <li>7. Biodiversity in and around the project area should be monitored frequently and detailed biodiversity report should be submitted every year to SEIAA &amp; IRO of MoEF&amp;CC.</li> <li>8. The progressive and final mine closure plan including the green belt implementation and environmental norms should be strictly followed as per the EMP and as per the amount committed and approved in EC for EMP. Status of progressive mine closure and green belt implementation should be included in the half yearly compliance report submitted to TNPCB, SEIAA &amp; IRO of MoEF&amp;CC.</li> <li>9. 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 prescribed in the prior environmental clearance letter(s) through newly developed compliance module in the PARIVESH Portal from the respective login.</li> <li>10. The amount allocated for EMP should be kept in a separate account and both the capital and recurring expenditures should be done year wise for the works identified, approved and as committed. The work &amp; expenditure made under EMP should be elaborated in the bi-annual compliance report submitted and also should be brought to the notice of concerned authorities during inspections.</li> <li>11. The PP shall strictly adhere carrying out mining operation only within the earmarked coordinates, as per the approved mining plan.</li> <li>12. The PP shall ensure that the biodiversity as reported in "Environment Impact Assessment report" should not be disturbed.</li> <li>13. The nature of vegetation, flora, fauna, shrubs, water bodies should not be disturbed by the project activity.</li> <li>14. The agriculture &amp; horticulture pattern and livelihood of the local community should not be disturbed.</li> <li>15. The PP shall ensure that soil diversity should not be disturbed</li> </ol>

S. No	EC Conditions
1.2	<p><b>a) EC Compliance:</b></p> <ol style="list-style-type: none"> <li>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.</li> <li>2. All the conditions as presented by the proponent in the PPT during SEAC appraisal should be addressed in Full.</li> <li>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).</li> <li>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.</li> </ol> <p><b>b) Applicable Regulatory Frameworks:</b></p> <ol style="list-style-type: none"> <li>5. The project proponent shall strictly adhere to the provisions of Water (Prevention &amp; Control of Pollution) Act, 1974, the Air (Prevention &amp; Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public Liability Insurance Act, 1991, along with their amendments, Minor Mineral Conservation &amp; 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, Biological diversity Rules, 2004 &amp; TN Forest Act, 1882 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.</li> </ol> <p><b>c) Safe mining Practices:</b></p> <ol style="list-style-type: none"> <li>6. The AD/DD, Dept. of Geology &amp; Mining shall ensure operation of the proposed quarry after the submission of slope stability study conducted through the reputed research &amp; Academic Institutions such as NIRM, IITs, NITS Anna University, and any CSIR Laboratories etc and ensure strict compliance and implementation of bench wise recommendations/action plans as recommended in the scientific slope stability study.</li> <li>7. 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.</li> </ol> <p><b>d) Water Environment – Protection and mitigation measures:</b></p> <ol style="list-style-type: none"> <li>8. The proponent shall ensure that the activity does not disturb the water bodies, neighboring open wells, bore wells and natural flow of surface and groundwater, nor cause any pollution, to water sources in the area nor effect the water quality and water quantity in the water sources.</li> <li>9. Water level in the nearest dug well in the downstream side of the quarry should be monitored regularly and included in the Compliance Report.</li> <li>10. 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.</li> <li>11. 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.</li> <li>12. 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. 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.</li> <li>13. Garland drains and silt traps are to be provided in the slopes around the core area to channelize</li> </ol>

S. No	EC Conditions
	<p>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.</p> <p><b>e) Air Environment – Protection and mitigation measures:</b></p> <p>14. The activity should not result in CO<sub>2</sub> release and temperature rise and add to micro climate alternations.</p> <p>15. 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.</p> <p><b>f) Soil Environment – Protection and mitigation measures:</b></p> <p>16. The proponent shall ensure that the operations neither result in loss of soil biological properties and nutrients nor deplete the indigenous soil seed bank and disturb the mycorrhizal fungi, soil organism, soil community and result in eutrophication of soil and water. Further, 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.</p> <p>17. Bio remediation using microorganisms should be carried out to restore the soil environment to enable carbon sequestration.</p> <p>18. The proponent shall ensure that the mine restoration is done using mycorrhizal VAM, vermincomposting, Biofertilizers and the topsoil is protected and used in planting activities, site restoration and establishment of green belt in the area to ensure soil health and biodiversity conservation.</p> <p>19. 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.</p> <p>20. Activities should not result in invasion of site by exotic and alien plant and animal species and disturb the native biodiversity and soil micro flora and fauna.</p> <p><b>g) Noise Environment – Protection and mitigation measures:</b></p> <p>21. The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines. The activity of the proponent should not effect the biological clock of the villages resulting in stress, sleeping disorders affecting health.</p> <p><b>h) Biodiversity - Protection and mitigation measures:</b></p> <p>22. 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.</p> <p>23. 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 &amp; fauna in the ecosystem. The proponent shall ensure that the activities do not disturb the resident and migratory birds. The proponent shall ensure that the activities do not disturb the vegetation and wildlife in the adjoining reserve forests and areas around. Also, the activities should not disturb the agro biodiversity, agro farms, green lands and grazing fields of all types. Actions to be taken to promote agroforestry, mixed plants to support biodiversity conservation in the mine restoration effort.</p> <p>24. The proponent shall ensure that all mitigation measures listed in the EIA/EMP are taken to</p>

S. No	EC Conditions
	<p>protect the biodiversity and natural resources in the area.</p> <p><b>i) Climate Change:</b></p> <p>25. There should be least disturbance to landscape resulting in land use change, contamination and alteration of soil profiles leading to Climate Change.</p> <p>26. Operations should not result in GHG releases and extra power consumption leading to Climate Change.</p> <p>27. Mining through operational efficiency, better electrification, energy use, solar usage, use of renewable energy should try to decarbonize the operations.</p> <p>28. Mining should not result in water loss from evaporation, leaks and wastage and should support to improve the ground water.</p> <p>29. 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.</p> <p><b>j) Reserve Forests &amp; Protected Areas:</b></p> <p>30. The activities should provide nature based support and solutions for forest protection and wildlife conservation.</p> <p>31. The project activities should neither result in forest fires, encroachments nor create forest fragmentation and disruption of forest corridors and alter the geodiversity and geological heritage of the area.</p> <p>32. There should be no disturbance to the freshwater flow from the forest impacting the water table and wetlands.</p> <p>33. The project proponent should support all activities of the forest department in creating awareness to local communities on forest conservation.</p> <p>34. The activities should not result in temperature rise due to increased fossil fuels usage disrupting the behaviour of wildlife and flora.</p> <p>35. The activities should support and recognise the rights and roles of indigenous people and local communities and also support sustainable development.</p> <p>36. The project activities should support the use of renewables for carbon capture and carbon storage in the project site and forest surrounds.</p> <p>37. The project activities should not result in changes in forest structure, habitats and genetic diversity within forests.</p> <p><b>k) Green Belt Development:</b></p> <p>38. The proponent shall ensure that in the green belt development more indigenous trees species as suggested in Appendix of SEAC Minutes are planted and that the area is restored and rehabilitated with native trees .</p> <p><b>l) Workers and their protection:</b></p> <p>39. 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.</p> <p>40. The proponent has to provide insurance protection to the workers and the working hours and wages shall be implemented/enforced as per the Mines Act, 1952 in the case of existing mining or provide the affidavit in case of fresh lease before execution of mining lease.</p> <p><b>m) Transportation:</b></p> <p>41. 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. The pollution due to transportation load on the environment will be effectively controlled and</p>

S. No	EC Conditions
	<p>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 centres.</p> <p>42. 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.</p> <p><b>n) Storage of wastes</b></p> <p>43. The project proponent shall store/dump the waste generated within the earmarked area of the project site for mine closure as per the approved mining plan.</p> <p><b>o) CER/EMP:</b></p> <p>44. The CER should be fully Implemented and fact reflected in the Half-yearly compliance report.</p> <p>45. The EMP shall also be implemented in consultation with local self-government institutions &amp; Govt. departments as indicated in SEAC meeting.</p> <p><b>p) Directions for Reclamation of mine sites:</b></p> <p>46. 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 ensure that the Geotechnical, physical, chemical properties are sustainable that the soil structure composition is buildup, during the process of restoration. 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.</p> <p>47. 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.</p> <p>48. 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. Soil and moisture conservation and water harvesting structures to be used where ever possible for early amelioration and restoration of site. 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.</p> <p>49. 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. 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.</p> <p>50. Reclamation involves planned topographical reconstruction of site. Care to be taken to minimize erosion and runoff. Topsoil should have necessary physical, chemicals, ecological, properties and therefore should be stored with precautions and utilized for reclamation process. Stocked topsoil</p>

S. No	EC Conditions
	<p>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. 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. Efforts should to taken to aesthetically improve the mine site. Action taken for restoration of the site should be specifically mentioned in the EC compliances.</p>

