o/c

MEGHALAYA CEMENTS LIMITED

CIN- U26942ML2003PLC007125

TOPCEM CEMENT
Mazbooti ka bharosa...hamesha

Ref: MCL/ENV/MoEF&CC/Compliance-I/2022-23/35 Date: 10/12/2022

To,

The Addl. Director General (Central),
Ministry of Environment Forest & Climate Change,
North Eastern Regional Office, Shillong,
Meghalaya.

Sub: - Submission of half yearly compliance report for 2600 TPD cements plant for the period of April'2022 to September'2022.

Dear Sir,

We are hereby furnishing the half yearly compliance report (hard copy and soft copy) for the period from **April'2022 to September'2022** on Environmental Stipulation for Expansion of Cement Plant (from 900 TPD to 2600 TPD) along with 10MW Captive Power Plant at Village- Thangskai, East Jaintia Hills District, Meghalaya, vide your Environment Clearance letter no SEIAA/PROJECT-2/2007/18 dated: 25th March'2009.

This is for your kind information and perusal. You are requested to kindly acknowledge the receipt of the same.

Thanking You,

Yours Faithfully.

For **MEGHALAYA CEMENTS LIMITED**

STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY ★ MEGHALAYA, SHILLONG ★ Receipt No. 14 DEC 2022.

MEGHALAYA CEMENTS LTD. THANGSKAI

MINISTRY OF ENVIRONMENT, FOREST & CLIMATE CHANGE, REGIONAL OFFICE, GOVT. OF INDIA

14/12/22

(Authorized Signatory)

Encl: As stated above

Copy to:

1) **The Member Secretary, Meghalaya State Pollution Control Board, Shillong.**
2) **The Member Secretary, State Environment Impact Assessment Authority, Shillong.**

Half yearly Compliance Report (for the period April'2022 to September'2022) on Environmental Stipulations for Expansion of Cement Plant (from 900 TPD-2600 TPD), along with 10 MW Captive Power Plant at Thangskai, East Jaintia Hills District by M/s Meghalaya Cements Ltd. – Environmental Clearance Letter No. SEIAA/PROJECT-2/2007/18; Dated 25th March 2009.

<table>
<tr><th colspan="2">Sl. No. as per letter dated 25.03.2009 of State Environment Impact Assessment Authority</th><th>Compliance Status</th></tr>
<tr><td colspan="3">A. SPECIFIC CONDITIONS</td></tr>
<tr><td>(i)</td><td>A stack of 100 m height shall be provided with continuous on-line monitoring system in respect of Thermal Power Plant [TPP] The data collected shall be analyzed and submitted regularly to the Meghalaya State Pollution Control Board.</td><td>Complied with.
A stack of required height is provided and opacity meter for continuous online monitoring (CEMS) is provided. The data transmission of online data to MsPCB and CPCB are being done through the system. Also Monthly report for the Analysis of PM, Sox, Nox and Hg being submitted to MsPCB. Details of the monitoring as mentioned below:-
<table>
<tr><th></th><th>Apr' 2022</th><th>May' 2022</th><th>Jun' 2022</th><th>Jul' 2022</th><th>Aug' 2022</th><th>Sep' 2022</th><th>Avg.</th></tr>
<tr><td>PM</td><td>25.94</td><td>29.34</td><td colspan="4" rowspan="4">Plant Stopped as per Management decision.</td><td>27.64</td></tr>
<tr><td>SO_2</td><td>437.69</td><td>492.50</td><td>465.09</td></tr>
<tr><td>NOx</td><td>284.31</td><td>219.08</td><td>251.69</td></tr>
<tr><td>Hg</td><td>0.004</td><td>-</td><td>0.004</td></tr>
</table>
Detailed is also mentioned as an Annexure-I</td></tr>
<tr><td>(ii)</td><td>High efficiency Electrostatic Precipitators [ESPs] of not less than 99.98% efficiency shall be installed in the TPP to limit particulate emission to 50 mg/Nm^3</td><td>Complied with.
ESP is provided for thermal power plant to control the emission from Captive power plant and it is working effectively. Monthly report for the Analysis of PM is being submitted to MsPCB. Details of the monitoring as mentioned below:-
<table>
<tr><th></th><th>Apr' 2022</th><th>May' 2022</th><th>Jun' 2022</th><th>Jul' 2022</th><th>Aug' 2022</th><th>Sep' 2022</th><th>Avg.</th></tr>
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</table>
Detailed is also mentioned as an Annexure-I</td></tr>
<tr><td>(iii)</td><td>Sorbent limestone shall be fed (12% of coal by weight) along with coal in the boiler of the TPP to reduce formation of Sox and thus help neutralize the impact of sulphur in coal.</td><td>Complied with.
Provision has been made for lime feeding in boiler through over bed feeding system to reduce the formation of Sox.
Project proponent is using limestone for above purpose, as per requirement of the process and it helps</td></tr>
</table>

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<table>
<tr><td></td><td></td><td>neutralize the impact of sulphur in coal. Monthly report for the Analysis of Sox is being submitted to MsPCB. Details of the monitoring as mentioned below:-

<table><tr><th></th><th>Apr' 2022</th><th>May ' 2022</th><th>Jun' 2022</th><th>Jul' 2022</th><th>Aug' 2022</th><th>Sep' 2022</th><th>Avg.</th></tr><tr><td>Sox</td><td>437.69</td><td>492.50</td><td colspan="3">Plant Stopped as per Management decision.</td><td>465.09</td></tr></table>
Detailed is also mentioned as an Annexure-I</td></tr>
<tr><td>(iv)</td><td>Space provision shall be made for Flue Gas De-sulphurisation [FGD] unit of requisite efficiency for removal of SO2 when required at a later stage.</td><td>Complied with.
Space provided for Flue Gas De-sulphurisation [FGD] unit of requisite efficiency for removal of SO2 when required at a later stage. The Project proponents are using CIL Auction & Linkage CIL coal in Captive power plant. The Company has maintaining SO2 in flue gas within the prescribed range. Also provision for lime feeding in boiler through over bed feeding system has been made to reduce the formation of SO2. Monthly report for the Analysis of Sox is being submitted to MsPCB. Details of the monitoring as mentioned below:-

<table><tr><th></th><th>Apr' 2022</th><th>May ' 2022</th><th>Jun' 2022</th><th>Jul' 2022</th><th>Aug' 2022</th><th>Sep' 2022</th><th>Avg.</th></tr><tr><td>Sox</td><td>437.69</td><td>492.50</td><td colspan="3">Plant Stopped as per Management decision.</td><td>465.09</td></tr></table>
Detailed is also mentioned as an Annexure-I</td></tr>
<tr><td>(v)</td><td>Dust extraction and suppression system along with water sprinklers shall be provided for controlling fugitive dust during transportation, in coal storage area and other vulnerable area of the TPP.</td><td>Complied with.
Water sprinkling is being carried out on daily basis in plant premises on the places where fugitive dust particles are present and also on internal roads through Mobile tanker fitted with sprinklers.
Installation work for Permanent Water Sprinklers has been started along the haul road in the CPP and raw material yard to reduce the fugitive emission.
Installation work will be done by our own resources and it will be completed before March-2023. Purchase Order has made for required materials. Copy of the Purchase Oder attached as an Annexure-II.</td></tr>
<tr><td>(vi)</td><td>Water requirement for the Thermal Power Plant shall be met from the existing water source. No ground water shall be extracted for the power plant at any stage.</td><td>Complied with.
Water requirement for the Thermal Power Plant is meeting from Chynryntong-Umparti River. During rainy season PP is using Rain water for operation of Captive Power Plant.</td></tr>
</table>

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		No extraction of ground water is being done by the PP for any activities. Water drawl quantity for Captive Power Plant is mentioned below:- <table><tr><th>Apr' 2022</th><th>May' 2022</th><th>Jun' 2022</th><th>Jul' 2022</th><th>Aug' 2022</th><th>Sep' 2022</th><th>Avg. (m^3/ Day</th></tr><tr><td>2713</td><td>1083 5</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>222.1 0</td></tr></table>
(vii)	Closed Cycle Cooling system with induced draft cooling towers shall be provided in the Thermal Power Plant.	**Complied with.** Closed cycle cooling system has been adopted and recirculation of cooling water is being practiced. Induced draft cooling towers are a type of mechanical draft tower that features with fans. These fans will be located atop the tower, drawing air upwards against the downward flow of water. The water is passed through it and system is working efficiently.
(viii)	Fire protection system shall be made in coal stock yard and other vulnerable areas of the TPP. Fire protection equipment and machinery should be tested periodically and shall always be kept in operational mode. Mock drills shall be conducted regularly.	**Complied with.** Fire protection system along with fire extinguisher of various types is already installed within the entire premises as well as other vulnerable areas of TPP. Also Fire Hydrants has installed at coal stock yard and other vulnerable areas of the Captive Power Plant. Regular safety training is being provided to the workers. The fire protection equipments and machineries are being tested periodically and kept in operation mode. Mock drills are being conducted on regular basis by our Safety & Vigilance Department. Details of Mock drills and trainings are attached as an **Annexure-III** Also Summary sheet of periodic testing for Fire protection equipment and machinery is attached as an **Annexure-IV**
(viii) (a)	The PP is prohibited to use high sulphur local coal in its thermal power plant.	**Complied with.** PP is not using high sulphur local coal in its thermal power plant. The Project proponents are using CIL Auction coal in Captive power plant.
(ix)	The treated effluents shall be re-circulated and reused within the plant area. There shall be no waste water discharge outside the plant boundary.	**Complied with.** The PP has installed Sewage Treatment Plant with capacity 100 KLD for treatment of domestic effluents and Effluents Treatment Plant with capacity 25 KLD for treatment of Effluents water generated from Automobile workshop. 100% treatment is being done and treated water is being utilized in Dust suppression, Green belt development and Vehicle washing in or around the plant and colony. No waste water is discharge outside the plant boundary.

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(x)	Rain water harvesting shall be practiced. A detailed scheme for rain water harvesting to recharge the ground water aquifer shall be prepared in consultation with Central Ground Water Authority/State Ground Water Board within six months of receipt of Environmental Clearance.	**Complied with.** The PP has upgraded the existing system of Rain water harvesting. Scheme for rain water recharging pit has been made, The rain water collection and reuse also being practiced to fulfill the requirement of cooling water as well as drinking purpose during monsoon period. Also Rainwater Harvesting Scheme has been submitted to Central Ground Water Board, Guwahati vide Letter No. MCL/ENV/Comm./ 2022-23/26, dated: 20.10.2022. After vetting/ approval by the Board for efficiency/adequacy, status will be submitted to the Region Office (MoEF). The acknowledged copy of the Rainwater Harvesting Scheme is attached as an **Annexure-V.**
(xi)	Permission for drawl of water of the required quantity from the streams in favor of the Cement – Thermal Power Plant complex shall be secured from the competent Authority within 6 (six) months of receipt of Environmental Clearance.	**Complied with.** Permission for drawing of water has been obtained from Executive Engineer (Irrigation), Jaintia, Hills Division Jowai; vide letter no.AID (J) 223/2007-2008/4456, Dated Jowai 24th March 2008 for the required quantity 0.04 Cumecs from Chynryntong-Umparti river. Also PP has obtained NOC from Office of the Deputy Commissioner Jaintia Hills District vide letter no. GEN/MCL-4/81/140-A, dated 21st Nov 2007, Office of the Dolloi Elaka Narpuh, Jaintia Hills District, dated 03 Sept 2007 and Office of the Jaintia Hills Autonomous District Council, Jowai vide letter no. JHADC/FOR/22/04/1318, dated 05th June 2007. Copy of the all NOC are attached as **Annexure- VI**
(xii)	Noise level in the Thermal Power Plant premises shall be limited to 75 dB and regular maintenance of equipment should be undertaken. For personnel working in high noise areas, personal protection devices like earplugs /ear muffs, etc. should be provided. Workers engaged in noisy areas such as turbine area, air compressors, etc. shall be periodically examined to maintain audiometric record and for treatment for any hearing loss apart from exercising option of shifting to non noisy/less noisy areas when necessary.	**Complied with.** Noise level in TTP premises is analyzed periodically and it is being maintained under limit. Necessary PPEs like earplugs /ear muffs, etc. are being provided to those employees who engaged in noisy areas such as turbine area, air compressors, etc. We have fully automated system for operation of turbine, so the exposure of employee to the high noise is very less. The PP has provided an acoustic covered screw air compressor to maintain the noise level within the permissible limit i.e 75 dB. The regular routine testing of the machinery is been carried out as per the manufacturers' manuals Periodically examination of employees are being done to maintain audiometric record and for treatment for any hearing loss apart from exercising option of shifting to non noisy/less noisy areas. Analysis report for Noise level attached as **Annexure-I** List of the employees who have examined

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		audiometric record are mentioned as an **Annexure-VII**
(xiii)	Acoustic hoods shall be provided in respect of all equipment that has potential to contribute towards noise pollution and additionally technical improvement measure detailed in Para 4.3.2 of the EIA/EMP report of the project proponent shall be adopted in the TPP towards noise attenuation.	**Complied with.** The project proponent has provided acoustic hoods in the Thermal Power Plant. Also Earmuff/Ear Plug has been provided to the workers who engaged in highly noisy area and regularly observed by Safety Officer. Noise pollution has regularly monitored by Environment department and Detailed report attached as **Annexure-I**
(xiv)	Dry ash collection system shall be provided in the Thermal Power Plant. 100% ash utilization shall be ensured from the very first day of commissioning of the Thermal Power Plant.	**Complied with.** Fly ash generated in Captive Power Plant is completely collects in silo through ESP and it is being loaded into tankers for feeding to cement mill hoppers pneumatically. Hence 100% consumption of the ash generated is achieved in our cement plant.
(xv)	The stack emission from various sources shall not exceed 50 mg/Nm3	**Complied with.** The stack emission from various sources has monitored regularly for PM, Sox and Nox. Total 13 stack are exists in plant including Captive Power Plant. Monitoring of Hg being done on regular basis. All the parameters are maintained within permissible limits. Details of the Stacks as mentioned below:-

Chimney	Avg. of Apr to Sept 2022	Permissible Limits (mg/Nm3)
Pr. Crusher	16.79	30
Sec. Crusher	15.29	30
Coal mill 1	21.01	30
Coal mill 2	21.73	30
RABH-1 (PM)	13.14	30
RABH-1 (Sox)	397.33	1000
RABH-1 (Nox)	217.11	600
RABH-2 (PM)	16.64	30
RABH-2 (Sox)	426.29	1000
RABH-2 (Nox)	218.32	600
ESP 1	26.17	30
ESP 2	24.64	30
Cement Mill No-1	17.31	30
Cement Mill No-2	17.79	30
Packing House-1	12.31	30
Packing House-2	13.61	30
CPP (PM)	27.64	50
CPP (Sox)	465.09	600
CPP (Nox)	251.69	300
CPP (Hg)	0.004	0.03

Reports are attached as **Annexure-I**

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<table>
<tr><td>(xvi)</td><td>The project proponent shall get the optimum functioning of the environmental protection equipment certified by a technical institution of repute.</td><td>Complied with.
Performance assessment has been conducted as per as the norms by the NCCBM, New Delhi. The test results are submitted earlier for environmental protection equipment. Further the project proponent is continuously maintaining the pollution control devices to maintain the efficiency. Regular maintenance of Pollution Control Device has taken by PP.</td></tr>
<tr><td>(xvii)</td><td>Bag House/Filters shall be provided to control the fugitive emission during loading and unloading of raw materials/intermediate and finished products.</td><td>Complied with.
Nuisance bag filters, Bag House and ESP has been provided to control fugitive emission at Crusher, Raw Mill, Coal Mill, Kiln, Cement mill & Packing Plant. Regular maintenance is being done to maintain the efficiency of the Bag House/Filters and other Pollution control device. Fugitive emission are being monitored regularly:-

<table>
<tr><th>Location</th><th>Avg.</th><th>As per standard limit (µg/m^3)</th></tr>
<tr><td>Lime stone Storage Area</td><td>1836.67</td><td>5000</td></tr>
<tr><td>Coal Storage Area</td><td>792.83</td><td>2000</td></tr>
<tr><td>Clinker Loading Area</td><td>1465.67</td><td>5000</td></tr>
<tr><td>Cement Loading Area</td><td>1455.50</td><td>5000</td></tr>
<tr><td>Coal Storage Area (CPP)</td><td>840.17</td><td>2000</td></tr>
<tr><td>Fly Ash Silo Area (CPP)</td><td>740.00</td><td>2000</td></tr>
</table>

Detailed report are attached as Annexure-VIII</td></tr>
<tr><td>(xviii)</td><td>The project proponent shall store all the raw materials except limestone in covered sheds to control fugitive emission. The coal storage facility should have water sprinkling facility in order to arrest fire hazard, if any.</td><td>Complied with.
All the raw materials except limestone are being stored in covered shed. Additional shed are under construction phase and it will be completed by March-23. Installation of Permanent water sprinklers is under progress to arrest fire hazard and necessary material for sprinklers has been ordered. Permanent shed layout plan and work order for Sprinklers material are attached as an Annexure-IX & Annexure-II</td></tr>
<tr><td>(xviii) (a)</td><td>The storage of the coal dump shall be housed by permanent sheds open on all sides and stacked on impervious floor, preferably cemented to prevent Acid Mine Drain (AMD).</td><td>Agreed for compliance.
Permanent shed with impervious flooring and water sprinkling facility for storage of Coal has been started. Erection work completed up to 95 Meters length out of 220 Meters in Shed-1 and 95 Meter length out of 195 Meters in Shed-2. After completion of erection work, cemented flooring will be done. Remaining work is under progress. Layout for Permanent Storage Shed along with Neutralizing Pit and Drains attached</td></tr>
</table>

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<table>
<tr><td></td><td></td><td>as an Annexure-IX.</td></tr>
<tr><td>(xviii) (b)</td><td>The project proponent shall construct garland drains along with Acid Mine Drains Neutralization tanks, in consultation with and approved by the state pollution control board.</td><td>Agreed for compliance.
Plan for Neutralizing Tank has made & submitted to the State Pollution Control Board for approval vides Letter no. - MCL/ENV/MsPCB/Comm./ 2022-23/25, dated: 26.09.2022. Once we get the approval copy form SPCB, will be submitted to the Region Office (MoEF). Also provision of garland drain and Neutralizing Tank in the coal offloading and on loading area will be made to reduce the impact of coal leachate on the natural stream/water bodies in the area. The will be completed by March-2023. The acknowledged copy of the Neutralizing Tank Plan which is submitted to the State Pollution Control Board for approval is attached as an Annexure-X.</td></tr>
<tr><td>(xviii) (c)</td><td>No direct discharge of AMD into any drains/natural drains shall be allowed; proper treatment of AMD shall be done by the Project Proponent in the Neutralization Tank before releasing the water to the drain/natural drain, which shall be duly approved by the Meghalaya State Pollution Control Board.</td><td>Agreed for compliance.
Plan for Neutralizing Tank has made & submitted to the State Pollution Control Board for approval vides Letter no. - MCL/ENV/MsPCB/Comm./ 2022-23/25, dated: 26.09.2022. Once we get the approval copy form SPCB, will be submitted to the Region Office (MoEF). Also provision of garland drain and Neutralizing Tank in the coal offloading and on loading area will be made to reduce the impact of coal leachate on the natural stream/water bodies in the area. The will be completed by March-2023. The acknowledged copy of the Neutralizing Tank Plan which is submitted to the State Pollution Control Board for approval is attached as an Annexure-X.</td></tr>
<tr><td>(xix)</td><td>The ambient air quality monitoring stations shall be set up as per statutory requirement in consultation with the Meghalaya State Pollution Control Board (MsPCB) and additional stations shall be installed, in the downwind direction as well as where maximum ground level concentrations are anticipated.</td><td>Complied with.
The testing of ambient air quality are being done at four location including downwind direction and where maximum ground level concentrations are anticipated. The testing parameters are PM $_{10}$, PM $_{2.5}$, SO2, NOx. One online ambient air quality monitoring station installed near Plant entrance gate in consultation with the Meghalaya State Pollution Control Board.
<table>
<tr><th>Location</th><th>Parameters</th><th>Apr-Sep'2022 Avg.</th><th>Permissible limits</th></tr>
<tr><td rowspan="4">Near CCR Building</td><td>PM $_{10}$</td><td>37.73</td><td>100</td></tr>
<tr><td>PM 2.5</td><td>20.92</td><td>60</td></tr>
<tr><td>SO2</td><td>12.64</td><td>80</td></tr>
<tr><td>NOx</td><td>08.81</td><td>80</td></tr>
<tr><td rowspan="4">Guest House</td><td>PM 10</td><td>37.28</td><td>100</td></tr>
<tr><td>PM 2.5</td><td>17.42</td><td>60</td></tr>
<tr><td>SO2</td><td>13.44</td><td>80</td></tr>
<tr><td>NOx</td><td>09.01</td><td>80</td></tr>
<tr><td rowspan="2">Crusher</td><td>PM 10</td><td>34.56</td><td>100</td></tr>
<tr><td>PM 2.5</td><td>21.53</td><td>60</td></tr>
</table></td></tr>
</table>

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			SO2	09.90	80
			NOx	06.87	80
		DG House (Downwind direction)	PM 10	38.86	100
			PM 2.5	18.73	60
			SO2	14.07	80
			NOx	07.31	80

Detailed report attached as an **Annexure-I**

(xx)	Quarterly reports on emission levels, surface and ground water quality shall be submitted to Meghalaya State Pollution Control Board, Chromium (VI) level in nearby surface water bodies flowing in the eastern site of the Plant, and ground water shall be monitored and reported to the MSPCB. Water in the Common Effluent Pit of the TPP shall be monitored monthly for Chromium (VI) toxicity and ensured that its level dose not rise beyond 0.05 mg/t.	**Complied.** Report on emission levels are being submitted to Meghalaya State Pollution Control Board. Report attached as **Annexure-I** Chromium (VI) level in nearby surface water bodies flowing in the eastern site of the Plant (i.e Umparti River) are is being monitored on monthly basis and submitted to MSPCB with Half yearly compliance. The results of Chromium (VI) for average of the April-Sept'2022 are 0.05 mg/t. Detailed report of Chromium (VI) for Surface water is attached as an **Annexure-XI.**
(xxi)	Total water requirement shall not exceed 2000 cum/day [inclusive of the water requirement of the TPP]. The project proponent shall install sewage treatment plant of minimum 120 m^3 /day capacity employing suitable and appropriate technology to treat domestic sewage and treated sewage shall be utilized for green belt development. No waste water shall be discharged outside the premises and zero discharge shall be ensured. No surface runoff from the factory premises shall either reach/contaminate Um-lunar River or any other stream flowing near the industrial location.	**Complied.** Total water requirement will not exceed 2000 cum/day including TPP. The PP has installed the Sewage Treatment Plant to treat the domestic sewage water with the help of suitable and appropriate technology. 100% treated water is being utilized for green belt development and dust suppression. Also Effluent Treatment Plant (ETP) has installed to treat the effluent water generated from Automobile workshop. 100% treated water is being utilized for washing of HEMM vehicle. No waste water is being discharged outside the premises and zero discharge is maintained by the company. There is no surface runoff from the factory premises either reach/contaminate Um-lunar River or any other stream flowing near the industrial location. Water consumption details mentioned here:-

Location	Avg. of Apr to Sep'2022 (m^3/Day)	Water Consumption not exceed
Domestic consumption	364.92	2000 m^3/Day
Cement Plant Industrial consumption	373.76	
Captive Power Plant consumption	222.10	

Details of Water consumption attached as **Annexure-I**

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(xxii)	The project proponent shall make all out effort to use high calorific value hazardous waste in the kiln towards which necessary provision shall be made.	**Complied with.** The project proponent has made an Automated mechanical arrangement for feeding of high calorific value hazardous waste in the kiln in Tertiary Air Duct (TAD) at pre- heater and using the waste as alternative fuel on availability basis. NOC for utilization of high calorific waste has been obtained from MsPCB vide letter no. MPCB/TB-86(2016)/2019-2022/35, dated 17th Dec 2019 for Plastic waste, Scrap Tyre and Wood chips.
(xxiii)	The project proponent shall transport raw materials and industrial products through covered means.	**Complied with.** Raw materials like coal and industrial products like clinker are being transported from one location to other location by properly covered with tarpaulin to avoid any spreading of fugitives.
(xxiv)	Thirty three percent of the core project area i.e. 20.143 Ha of land shall be developed as green belt by the project proponent as per the guidelines of Central Pollution Control Board to mitigate the effect of fugitive emission, incurring the expenditure as stated by the project proponent. The program ought to be completed within 5 years from the date of issue of prior Environmental Clearance. Suitable species in respect of the same for the stated area shall be approved by the project proponent from the DFO (Territorial) of Jaintia Hills District.	**Complied with.** Development of Green belt had been started in the Year 2009 and 100% of the project area **(i.e. 20.22 Ha)** plantation has been completed. Suitable local species are being planted as per the suggestions given by the Sr. Engineer, (CPCB) & DFO (Territorial); East Jaintia hills Dist, Jowai. The details are enclosed herewith for your kind reference. As per amendment of EC vide letter no. SEIAA/PROJECT-2/2007/8/1818 dated Shillong, the 30th September, 2020 (Area 59.269 to 52.949). Total plantation including project area and around the project area is 19.9253ha. Details of the Plantation is attached as an **Annexure-XII**
(xxv)	The project proponent shall provide a Health Care Center with all emergency medicines and ambulance along with regularly serving doctors complete with emergency unit that would function round the clock. Occupational health surveillance of the workers shall be carried out on a regular basis and records shall be maintained in compliance of provisions contained on Chapter III and V of the Factories Act, 1948.	**Complied with.** The Health Care Centre is functioning under qualified Doctor, Nurses and staffs. With all emergency medicine and ambulance to meet up the emergency. **Complied with.** Proponent has appointed Competent Occupational Health Specialist including Medical Officer, Dentist, Nurse, Compounder, Lab Technician & Dresser for the medical examination of the workers engaged in the project. Occupational Health check-ups schedule is being followed as per the guideline and necessary remedial/ preventive measures are taken. The following equipments has setup in Occupational Health for regular examination of workers or any emergency :- ECG ,Machine, Audiometry; Spirometry (PFT), Cardiac Monitor, Oxygen Cylinder, Suction Machine,

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		Nebulizer machine, Semi auto Analyzer, Micro Scope, Incubator, Centrifuge machine, Haemometer, Accu chek machine, Blood cell counter, Homocyto Meter etc. Company has 02 (Two) Ambulance in which one is Advanced life support with Cardiac monitor & Defibrillator and another one is only with Oxygen support. The prevention measures for burns, material, and provision of anti-snake venom including all other paramedical safeguards are already implemented to the workers for mining activities. Occupational health surveillance of the workers is being carried out on a regular basis and records are being maintained. Equipments and testing facilities and Medical Checkup reports are attached as an **Annexure-VII & Annexure-XIII.**
(xxvi)	The salaries of the Cleaners shall be raised by 30% from the present Rs.2500/- p.m. as assured by the project proponent at p.0.15 of the EIA/EMP report in response to concern raised during the Public Hearing.	**Complied with.** The salaries of Cleaners are being reviewed on the yearly basis. Total 53 Cleaners are working and details of salary is attached as **Annexure- XIV**
(xxvii)	Measures shall be taken to prevent impact of particulate emission/fugitive emission, if any, from the proposed plant on the surrounding private forest areas depicted in their land use study.	**Complied with.** An air quality dispersion modelling study has been carried out to assess the contribution by the existing stacks of the cement plant in the present ambient air quality of the area within 10 km radius of the project. The storage areas of the various raw materials and fuels are covered and hence, the fugitive airborne dust due to wind erosion has not been considered. This air quality dispersion modeling study has been carried out by M/s Min Mec Consultancy Pvt. Ltd., New Delhi (Accredited by NABET, QCI vide letter no. NABET/EIA/2225/IA 0095 valid till 29.03.2025). The conclusion of the report speaks that the maximum Ground Level Concentration does not have a significant impact on environment/ ambient air quality on sensitive receptors. Copy of the report is attached as an **Annexure- XV.**
(xxviii)	The project proponent shall take all such measures as are necessary in the matter of utilization of limestone towards ensuring that no unscientific extraction of limestone is encouraged in the process.	Complied with. The Project proponent ensures that no unscientific extraction of limestone is encouraged in the process. The best mining practices are being adopted by the Project Proponent for extraction of limestone. Systematic opencast mechanized mining method being implemented to win the limestone minerals which have involved deep hole drilling and blasting, excavator and blasting by slurry explosive. Loading and hauling from the mine face being done mechanically by excavators and tipper combination.

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		The method involves the removal of huge quantities of overburden, dumping, and backfilling of the excavated area. In the mining area adequate number of check dams, retaining walls / structures, garland drains and settling ponds are provided to arrest the wash-off with rain water in catchment area. All necessary approval taken from the Authority and NOC from nearby villagers. The mining is being done in day light time only and necessary measures are being maintained to mitigate the impact of Air, water, Noise Pollution. Also Plantation is being done by the mining employee to maintain the ecology. Regular water sprinkling are being done to avoid fugitive emission. Also transportation of limestone is being done through covered vehicle.
(xxix)	Meghalaya has been recognized as a cradle for several endemic species and an important constituent of the biodiversity hotspots spread over North East India. Therefore, as a measure of protection of rich biodiversity of the region, the project proponent shall cover an area of not less than 2 ha where would be located green house, mist chamber etc. (within the green belt area already stipulated above), locate conservation plots in respect of at least two of the following species of endangered and endemic plants reported to have been occurring within the region: i) *Pteracanthus griffithianus,* Acanthaceae ii) *Nepenthes Khasiana*, Nepenthaceae iii) *Argostemma khasianum,* Rubiaceae iv) *Fimbristylish nigrobrunnea,* Cyperaceae v) *Trivalvaria kanjilali,* Annonaceae vi) *Begonia rubrovenia,* Begoniaceae vii) *Ceologyne ovalis,* Orchidceae A scheme /conceptual plan of raising such threatened species shall be prepared in consultation with a reputed institution such as Botanical Survey of India complete with cost and activity schedule within one year from date of issue of prior Environmental Clearance.	**Complied with.** The company has already doing work on Biodiversity Conservation of Schedule-I species in co-ordination with Environment Department of North Eastern Hill University (NEHU), Shillong since 05 (five) years. The NEHU, officials have already appointed a Project fellow for the Project and they are working at our site on Biodiversity Conservation Plan with focus on conservation of the schedule – I species in the area. The green house already developed with mist chamber and conservation of three flora species namely: Orchidceae, Cattelya Orchidceae, Cymbidium Orchidcear, Gladiolus, Anthurium and Begonia rubrovenia has been initiated.  *Ceologyne ovalis,* Orchidceae  *Begonia rubrovenia,* Begoniaceae Project report on Biodiversity Inventrorization and

MEGHALAYA CEMENT LTD THANGSKAI

		Conservation through Assisted Regeneration of RET Species and Photographs are attached as an **Annexure-XVI & XVII**
(xxx)	The project proponent shall sponsor research and development for conservation of threatened category of species occurring locally such Hedychium dekianum, [Zingiberaceae], Cymbidium eburneum (Orchidceae), or Dendrobium denonianum (Orchidceae) which would be carried out by an appropriate research or academic institution located in Meghalaya within a year of issue of prior Environmental Clearance. The research project shall be instituted at an expenditure of a minimum of Rs.5 lakh per year spread over at least 3 years.	**Complied with.** The company has already doing work on Biodiversity Conservation of Schedule-I species in co-ordination with Environment Department of North Eastern Hill University (NEHU), Shillong since 05 (five) years. The NEHU, officials have already appointed a Project fellow for the Project and they are working at our site on Biodiversity Conservation Plan with focus on conservation of the schedule – I species in the area. The green house already developed with mist chamber and conservation of three flora species namely: Orchidceae, Cattelya Orchidceae, Cymbidium Orchidcear, Gladiolus, Anthurium and Begonia rubrovenia has been initiated. Photographs are attached as **Annexure- XVII**
(xxxi)	A Conservation Plan for conservation of wild fauna in consultation with a reputed institution such as Wildlife Institute of India, Dehradun shall be prepared and implemented. Such conservation plan drawn in respect of wild life shall be completed within a maximum of 1 year from the date of issue of prior Environmental Clearance and implemented thereafter by the project proponent.	**Complied with.** Conservation plan for the conservation of wild fauna is being preparing by North Eastern Hill University (NEHU), Shillong against the Work Order no. MCL/WO/NEHU/22-23/287, dated: 03.11.2022. The title of the Work is "Preparation of Wildlife Conservation Plan". Copy of Work Order & other correspondence is attached as an **Annexure-XVIII.** Also Company is ready to contribute funds for implementation of Regional conservation plan as discussed in the meeting held on DT: 05.03.2021 at Integrated Regional Office (IRO), MoEF&CC, Shillong with Ref. No. RO-NE/E/WLC/2021-SHI/65-77, Dt: 01.04.2021. Copy of the MOM is attached as an **Annexure-XIX.**
(xxxii)	A sum of Rs.2109.52 lakh shall be spent towards capital expenditure as stated by the project proponent towards environment protection and a further sum of Rs.501.60 lakh as recurring cost annually shall be spent by the project proponent towards environmental protection.	**Complied with.** The Company has installed Pollution Control Device to control the air, water & noise pollution from the process. Regular maintenance of PDC is being carried out by the company. The revenue expenditure incurred on an environmental protection equipments / Machineries (from Apr-Sept'2022) are mentioned below:- **Heading** / **Amount in Rs.** Plant Bag Filters (Crusher, Raw Mills, Cement mill, Coal mill & Crusher) — 147682.03 ESP — 683678.42 RABH — 613182.79

		Sewage Treatment Plant & Neutralization Pit: 43530.81 SOX-NOX Reduction System: 12744.15 RO Treatment Plant: 7741.04 Environment Miscellaneous: 551899.74 **Total: 2060458.98**
(xxxiii)	A sum of Rs.50 lakh shall be utilized annually by the project proponent till the project subsists towards socio-economic/eco-development activities in the area part of which shall be spent towards distribution of free medicines, malaria eradication program etc. in the nearby villages. A portion of the sum (5%) shall be set apart annually towards creation of employees' welfare fund. Details of expenditure incurred under this Para shall form part of the compliance report to be submitted to the SEIAA/SEAC. Further, a comprehensive long term eco-development plan shall be prepared by the project proponent within six months of receipt of prior Environment Clearance.	**Complied with.** Implementation of socio-economic/eco-development activities has been done towards distribution of free medicines, malaria eradication program etc. in the nearby villages. Company has also spent funds annually towards creation of employees' welfare fund. The company has spent Rs. **3,595,760.00** funds on the following activities under Socio-Economic Development under CSR activities (duration Apr-Sept'2022):- 1. Emphasis on Education 2. Sports Activity 3. Encouraging/Felicitation program for Students 4. Polio Immunization Camps, family planning, etc 5. Infrastructure development of Hospitals / Schools 6. Cement Distribution Programme 7. Plant Distribution programme 8. Donation to Churches, Road & House Repairing etc 9. Community Feast 10. Drinking water supplying scheme 11. Village development funds Detailed report is attached as an **Annexure-XX** Further, a comprehensive long term eco-development plan shall be prepared by the project proponent with the help of NEHU Shillong. Report is already submitted vide letter no. MCL/Env/MOEF&CC/2021-22/05; Dt:19.05.2021

B. GENERAL CONDITIONS

In respect of the Cement Plant – Thermal Power Plant project the following general conditions shall be adhered to by the project proponent:

MEGHALAYA CEMENT LTD THANGSKAI

<table>
<tr><td>(i)</td><td>The project proponent shall strictly adhere to the stipulations of the MSPCB/State Government or any other statutory body as framed/modified from time to time.</td><td>Complied.
The company has following the stipulation of MSPCB State Government or any other statutory body as framed/modified from time to time and complies accordingly.</td></tr>
<tr><td>(i)-a</td><td>The Project Proponent shall not violate applicable provisions of any Acts, Rules Orders of the Government and judicial orders issued by the Hon'ble Supreme Court/High Courts/NGT, applicable to the project.</td><td>Agreed for compliance.
The Project Proponent is not violating applicable provisions of any Acts, Rules Orders of the Government and judicial orders issued by the Hon'ble Supreme Court/High Courts/NGT, applicable to the project. The PP has following all applicable provisions of any Acts, Rules Orders of the Government and judicial orders issued by the Hon'ble Supreme Court/High Courts/NGT.</td></tr>
<tr><td>(ii)</td><td>At no point of time, either the clinker production or cement production of either PPC or OPC type shall exceed the limit of 2600 tons per day.</td><td>Agreed for compliance.
As per EC Amendment (Ref. Letter No. - ML/SEIAA/PROJECT-2/2007/937; Dated, Shillong, 24th November 2021) company can produce Annual production of 8, 58,000 MTPA and 330 day working for both Cement and Clinker. Therefore company has marinating the Annual production of 8, 58,000 MTPA both Cement and Clinker bases on 330 days working. The detail of Cement & Clinker Production as mentioned below:-
<table>
<tr><th>FY</th><th>Clinker</th><th>Cement (OPC)</th><th>Cement (PPC)</th><th>Cement (PSC)</th></tr>
<tr><td>2021-22</td><td>770834</td><td>216855.75</td><td>327100.50</td><td>68854.40</td></tr>
<tr><td>2020-21</td><td>813817</td><td>203767.08</td><td>279232.97</td><td>92071.25</td></tr>
</table></td></tr>
<tr><td>(iii)</td><td>No further expansion or modification in the plant shall be carried out without prior approval of the Ministry of Environment & Forests or their nominated authority as the case may be. In case of deviation or alteration in the project proposal from those submitted to the Committee for clearance, a fresh reference shall be made to the SEAC through SEIAA to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.</td><td>Agreed for compliance.
No further expansion or modification will be carried out by the company without prior approval of the Ministry of Environment & Forests or their nominated authority. The Company will inform to the authority and take prior approval and the same status or information will be share to SEAC through SEIAA to assess the adequacy of conditions imposed and to add additional environmental protection measures.</td></tr>
</table>

MEGHALAYA CEMENT LTD THANGSKAI

<table>
<tr>
<td>(iv)</td>
<td>The gaseous emissions (SO_2, NO_x) and particulate matter levels from various process units shall conform to the standards prescribed by the concerned authorities from to time. At no point of time, the emissions shall exceed the prescribed limits. Interlocking system of equipment shall be chosen such that in the event of failure of any pollution control system adopted by the unit, the unit shall be immediately put out of operation and shall not be restarted until the desired efficiency has been achieved.</td>
<td>Complied.
The gaseous emissions (SO_2, NO_x) and particulate matter levels from various process units are being maintained within prescribed limit. Data is continuously transmitted to SPCB/CPCB.
ABB make SCADA based Interlocking is in system to control SO_2, NO_x levels in case of failure and working effectively and at no point of time the emission will exceed the prescribed limit. Monitoring results are mentioned below:-
<table>
<tr><th>Chimney</th><th>Avg. of Apr to Sept 2022</th><th>Permissible Limits (mg/Nm3)</th></tr>
<tr><td>Pr. Crusher</td><td>16.79</td><td>30</td></tr>
<tr><td>Sec. Crusher</td><td>15.29</td><td>30</td></tr>
<tr><td>Coal mill 1</td><td>21.01</td><td>30</td></tr>
<tr><td>Coal mill 2</td><td>21.73</td><td>30</td></tr>
<tr><td>RABH-1 (PM)</td><td>13.14</td><td>30</td></tr>
<tr><td>RABH-1 (Sox)</td><td>397.33</td><td>1000</td></tr>
<tr><td>RABH-1 (Nox)</td><td>217.11</td><td>600</td></tr>
<tr><td>RABH-2 (PM)</td><td>16.64</td><td>30</td></tr>
<tr><td>RABH-2 (Sox)</td><td>426.29</td><td>1000</td></tr>
<tr><td>RABH-2 (Nox)</td><td>218.32</td><td>600</td></tr>
<tr><td>ESP 1</td><td>26.17</td><td>30</td></tr>
<tr><td>ESP 2</td><td>24.64</td><td>30</td></tr>
<tr><td>Cement Mill No-1</td><td>17.31</td><td>30</td></tr>
<tr><td>Cement Mill No-2</td><td>17.79</td><td>30</td></tr>
<tr><td>Packing House-1</td><td>12.31</td><td>30</td></tr>
<tr><td>Packing House-2</td><td>13.61</td><td>30</td></tr>
<tr><td>CPP (PM)</td><td>27.64</td><td>50</td></tr>
<tr><td>CPP (Sox)</td><td>465.09</td><td>600</td></tr>
<tr><td>CPP (Nox)</td><td>251.69</td><td>300</td></tr>
<tr><td>CPP (Hg)</td><td>0.004</td><td>0.03</td></tr>
</table>
The gaseous emission report in detailed are attached as Annexure-I</td>
</tr>
<tr>
<td>(v)</td>
<td>The project authorities should adhere to the provisions stipulated in the fly ash notification of September, 1999 as amended in August, 2003 with regard to fly ash utilization.</td>
<td>Complied with.
Fly ash generation in our Captive Thermal Power Plant is completely collected by the ESP to its hoppers and it is being loaded into tankers for feeding to cement mill hoppers pneumatically. Hence 100% consumption of the flyash generated from the Captive Power Plant is being utilized in making of Cement.</td>
</tr>
<tr>
<td>(vi)</td>
<td>The industry shall undertake the following waste minimization measures:
• Reuse of by-products from the process as raw materials or as raw material substitutes in other process.
• Use of closed pneumatic system for transport of fine material.
• All venting systems shall be connected with dust or particulate arresting equipments.</td>
<td>Complied with.
The Project Proponent is not generating any kind of bi-product of process.
Closed pneumatic system is installed for transport of the fine material in the manufacturing process. All venting systems are connected with dust or particulate arresting equipments such as Bag Filters.</td>
</tr>
</table>

MEGHALAYA CEMENT LTD. THANGSKAI

<table>
<tr><td></td><td>• Dust/particulate matter collected in pollution control equipments shall be reused.</td><td></td></tr>
<tr><td>(vii)</td><td>Fugitive emissions in the work zone environment, product and raw materials storage area shall be regularly monitored. The emissions shall conform to the limits imposed by the State Pollution Control Boards/Central pollution Control Board.</td><td>Complied with.
Monitoring of fugitive emission is already been under taken and the tests were conducted in-house with our team and also by the third party. The Project Proponent is submitting monthly report to MsPCB which is generated by the third party as well as our laboratory team. Results of monitoring of Fugitive emissions in the work zone environment, product and raw materials storage area is mentioned below:-
<table>
<tr><th>Location</th><th>Avg.</th><th>As per standard limit (µg/m^3)</th></tr>
<tr><td>Lime stone Storage Area</td><td>1836.67</td><td>5000</td></tr>
<tr><td>Coal Storage Area</td><td>792.83</td><td>2000</td></tr>
<tr><td>Clinker Loading Area</td><td>1465.67</td><td>5000</td></tr>
<tr><td>Cement Loading Area</td><td>1455.50</td><td>5000</td></tr>
<tr><td>Coal Storage Area (CPP)</td><td>840.17</td><td>2000</td></tr>
<tr><td>Fly Ash Silo Area (CPP)</td><td>740.00</td><td>2000</td></tr>
</table>
Detailed report is attached as an Annexure-VIII</td></tr>
<tr><td>(viii)</td><td>Dust/particulate matter collected in pollution control equipments shall be reused. Spares would be maintained in respect of all pollution control equipment. Maintenance and optimum functioning of the pollution control equipment shall be ensured by the project proponent.</td><td>Complied with.
The Project proponent has provided different types of Environmental Protection Equipments for collection of dust/particulate matter and to reuse the same in our process. The required spares parts are also maintaining for optimum functioning of the said equipments.</td></tr>
<tr><td>(ix)</td><td>The project proponent shall strictly comply with the rules and guidelines under Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989, as amended from time to time. Authorization from the MSPCB shall be obtained for collection, treatment, storage and disposal of hazardous wastes.</td><td>Complied with.
Authorization letter No. MPCB/ATH-27/2007/2021-2022/20; dated 11th FEB 2022.
Authorization letter No. MPCB/ATH-27/2007/2021-2022/19; dated 11th FEB 2022 for 2600 TPD cement manufacturing plant, valid up to 30th November, 2025.

Also application submitted to the MSPCB for Renewal of Authorization for CPP Hazardous waste vide letter no. - MCL/Env./ATH/MsPCB/2022-23/21 dated 09.08.2022.

Copy of the Authorization is attached as an Annexure-XXI</td></tr>
</table>

MEGHALAYA CEMENT LTD THANGSKAI

(x)	A separate Environmental Management Cell equipped with full fledged laboratory facilities shall be set up to carry out the Environmental Management and Environmental Quality Monitoring functions. A state of the art Chromium testing kit shall be maintained in the laboratory.	**Complied with.** Dedicated environmental Management Cell is functioning and Environmental quality functions like Ambient Air Quality Monitoring, Stack Monitoring Emission, and Drinking Water Quality and Waste Water quality are being regularly monitored. Chromium testing kit maintained in laboratory and testing of for Surface water is also being carried out regularly. Testing report attached as **Annexure-XI**. Also detail of Environmental Management Cell and testing equipments details are attached an **Annexure-XXII**.
(xi)	All pollution control equipment in STP of the type specified by the project proponent shall be duly installed and manned full time by trained personnel appointed for the purpose.	**Complied with.** The Sewage Treatment Plant (STP) has been installed and the capacity of the same is 100m³/Day, and the treated water being utilized for suppresses the fugitive dust of our internal roads. The Effluent Treatment Plant (ETP) has been installed near Vehicle Work Shop and the treated water is being recycled for the same purpose. The capacity of the ETP is 25 kL/Day. The Neutralization Pit has been also installed at CPP. Rejected water generates through De-mineralization of water is being neutralized in the neutralizing pit and then used for green belt development. Drainage system and STP, ETP and NPT map are submitted earlier. All pollution control equipment in STP being operated by trained personnel.
(xii)	A six monthly compliance status report shall be submitted to SEIAA/SEAC and Regional Office, Ministry of Environment & Forests, Govt. of India, Shillong apart from posting the same on the website of the Project proponent.	**Complied with.** Half yearly compliance reports along with monitoring data are being submitted to concerned officials SEIAA/SEAC and Regional Office, Ministry of Environment & Forests, Govt. of India, Shillong on the regular basis and posting the same data on the website https://topcem.in/ also.
(xiii)	Implementation of the project vis-à-vis environmental action plans shall be monitored by the Regional Office, Ministry of Environment & Forests duly assisted by the SPCB. The Regulatory Authority may revoke or suspend the clearance on the recommendation of the SEAC, if implementation of any of the above conditions is not satisfactory.	**Agreed for compliance.**

	The Regulatory Authority may on the recommendation of SEAC reserve the right to stipulate additional conditions, if found necessary. The Project proponent in a time bound manner shall implement these conditions too. The above conditions will be enforced, inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous Waste (Management & Handling) Rules, 2003 and the Public Liability Insurance Act, 1991 along with their amendments and Rules.	

C. ADDITIONAL CONDITIONS

(i)	The project proponent to create a good and successful plantation in the green belt area of approximately 18 hectares by using indigenous plant species like *Michelia Chaumpacca, Castanopsis sp, Schima wallichi, Mesua ferrea, Artocarpus hetero-phylla* preceded by establishing well stocked nurseries of above species in the different plots. The project proponent must accord importance & seriousness to undertake the plantation on mission mode. The plantation so create act as a model for all the industrial units located within the district.	**Complied with** Company has established a Nursery in which indigenous plant species like Michelia Champaka, Mesua ferrea, Artocarpus heterophyllus has planted in different plots inside the nursery. The planted quantity of the indigenous plant species as mentioned below:- **SL. No. / Name of the Species / Quantity Planted** 1 / Michelia Champaka / 100 2 / Mesua ferrea / 100 3 / Artocarpus heterophyllus / 125 However, for Castanopsis sp & Schima wallichi, we have approached to different Government Botanical Center. Once we get the species, it will be planted in the Nursery & status will be submitted to the Region Office (MoEF). Photographs of the indigenous plant species attached as an **Annexure-XXIII.**

MEGHALAYA CEMENT LTD THANGSKAI

Annex-I

MEGHALAYA CEMENTS LIMITED

Six Monthly Reports: Stack Emission Report, 2022-2023

Chimney		Suspended Particulate Matter (PM):mg/Nm^3							
		Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg.	Concentration not to exceed, in mg/Nm^3
Pr. Crusher		23.25	13.90	11.26	21.39	14.37	16.59	16.79	30
Sec. Crusher		20.67	19.35	10.12	09.04	17.70	14.86	15.29	30
Coal mill 1		16.87	13.85	13.66	26.05	28.91	26.71	21.01	30
Coal mill 2		24.59	23.30	19.00	20.33	21.03	22.14	21.73	30
RABH 1	PM	18.32	15.06	12.04	09.67	12.16	11.60	13.14	30
	SO_2	352.92	372.39	353.04	423.61	469.48	412.57	397.33	1000 (Based on pyritic sulphur presence in limestone)
	NOx	219.05	204.68	196.46	259.82	216.47	206.19	217.11	600
RABH 2	PM	15.16	14.43	20.44	19.26	16.81	13.76	16.64	30
	SO_2	354.09	426.82	472.64	431.94	454.63	417.61	426.29	1000 (Based on pyritic sulphur presence in limestone)
	NOx	212.67	243.91	221.08	207.19	212.96	212.08	218.32	600
ESP 1		22.85	29.71	26.43	23.67	28.69	25.69	26.17	30
ESP 2		27.46	28.89	16.07	21.64	26.70	27.10	24.64	30
Cement Mill No-1		19.37	27.39	10.38	14.57	16.15	16.00	17.31	30
Cement Mill No-2		19.59	17.60	19.25	19.45	13.22	17.63	17.79	30
Packing House-1		10.69	18.63	11.74	08.92	12.27	11.59	12.31	30
Packing House-2		10.47	13.59	27.02	11.28	09.77	09.50	13.61	30

Prepared by

Arti Singh

Checked & Verified by

Ujjwal Anurag

Regd. Office and Works: Village Thangskai, P.O. Lumshnong, Dist Jaintia Hills, Meghalaya Pin-793200 Ph.:03655-278324/363/364
Corporate Office: BE-77, Salt Lake City, Sector – 1, Kolkata – 700 064, Ph.:033 23340666/0004, Fax: 03655 278327

Annex- I

MEGHALAYA CEMENTS LIMITED

Six Monthly Report: Ambient Air Quality Report, 2022-2023

Location		Ambient Air Quality (AAQ): µg/m^3							
		Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg.	MoEF notification G.S.R 826(E), dated 16.11.2009, Concentration not to exceed,
Near CCR Building	PM_{10}	46.07	42.24	30.64	32.37	35.48	39.57	37.73	100
	$PM_{2.5}$	22.62	20.89	13.69	18.74	22.76	26.84	20.92	60
	SO_2	16.04	11.59	11.47	08.17	12.94	15.64	12.64	80
	NOx	09.39	08.64	07.89	08.24	7.69	11.06	08.81	80
Guest House	PM_{10}	52.64	49.68	26.93	27.69	31.78	34.95	37.28	100
	$PM_{2.5}$	21.73	19.05	12.48	14.84	16.93	19.48	17.42	60
	SO_2	17.92	15.38	11.87	10.64	13.44	11.39	13.44	80
	NOx	11.84	06.91	09.19	05.94	10.59	09.61	09.01	80
Crusher	PM_{10}	41.29	38.47	27.31	29.42	33.51	37.34	34.56	100
	$PM_{2.5}$	27.69	26.94	12.77	17.30	21.41	23.06	21.53	60
	SO_2	09.38	08.34	06.90	11.89	10.08	12.82	09.90	80
	NOx	07.67	06.08	06.59	05.09	7.61	08.19	06.87	80
DG House (Downwind direction)	PM_{10}	37.16	35.96	35.45	36.91	41.02	46.68	38.86	100
	$PM_{2.5}$	19.43	16.71	17.91	15.69	19.67	22.94	18.73	60
	SO_2	15.11	13.25	12.68	14.49	14.81	14.08	14.07	80
	NOx	07.53	04.82	05.32	09.29	8.64	08.24	07.31	80

Prepared by

Arti Singh

Checked & Verified by

Ujjwal Anurag

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Annex-I

MEGHALAYA CEMENTS LIMITED

Six Monthly Reports: Noise Intensity and Water Consumption, From Apr'2022 to Sep'2022

Location		Noise Intensity: dB (A) Leq							
		Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg.	Noise Level not to exceed, in dB (A) Leq
Captive Power Plant	Day	71	69	Captive Power Plant Stopped				70	75
	Night	56	51					53.5	70
DG House	Day	69	66	73	68	72	71	69.83	75
	Night	57	59	60	57	60	57	58.17	70
Guest House	Day	55	58	57	53	54	59	56.00	75
	Night	43	46	42	43	41	42	42.83	70
Crusher	Day	71	69	72	70	71	73	71.00	75
	Night	49	53	61	58	54	59	55.67	70

NOTE : Day Time (6:00AM to 9:00PM), Night Time (9:00PM to 6:00AM)

Location	Water Consumption(Monthly) : M^3							
	Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg. (m^3/Day)	Water Consumption not exceed
Domestic	11987	13995	13970	11004	8114	7711	364.92	1236 m^3/Day
Industrial	8185	9463	12435	14535	11992	11789	373.76	

Prepared by

Arti Singh

Checked & Verified by

Ujjwal Anurag

Annex-I

MEGHALAYA CEMENTS LIMITED

Six Monthly Reports (CPP): PM & AAQ Report, 2022-2023

Suspended Particulate Matter (PM) & Gaseous Emission:mg/Nm^3

Chimney : CPP		Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg.	Concentration not to exceed, in mg/Nm^3
	PM	25.94	29.34	Plant Stopped due to Management decision.				27.64	50
	SO_2	437.69	492.50					465.09	600
	NOx	284.31	219.08					251.69	300
	Hg	0.004	-					0.004	0.03

Ambient Air Quality (AAQ):µg/m^3

Location: CPP		Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg.	MoEF notification G.S.R 826(E), dated 16.11.2009, Concentration not to exceed,
S↔E	PM_{10}	35.26	38.67	28.69	32.15	34.16	38.56	34.58	100
	$PM_{2.5}$	21.40	23.90	11.90	13.62	17.86	19.71	18.07	60
	SO_2	17.60	12.71	20.78	14.25	16.07	15.28	16.12	80
	NOx	14.73	9.14	14.47	11.93	14.55	13.49	13.05	80
S↔W	PM_{10}	33.83	34.49	25.20	27.60	29.94	33.47	30.76	100
	$PM_{2.5}$	19.54	21.07	16.37	19.47	19.59	21.09	19.52	60
	SO_2	15.58	20.93	12.45	18.20	13.78	17.39	16.39	80
	NOx	09.36	11.93	07.11	11.38	08.81	10.68	9.88	80
N↔E	PM_{10}	38.04	41.58	32.81	36.01	40.69	43.82	38.83	100
	$PM_{2.5}$	22.97	19.84	13.04	16.73	23.70	25.84	20.35	60
	SO_2	10.93	13.06	13.47	12.36	10.07	11.36	11.88	80
	NOx	07.29	09.50	10.12	10.32	08.60	7.42	08.87	80

Prepared by
Arti Singh

Checked & Verified by
Ujjwal Anurag

Annex-I

MEGHALAYA CEMENTS LIMITED

Location: CPP	Water Consumption(Monthly) :M^3							
	Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg. (m^3/Day Cons.)	Water Consumption not exceed
	2713	10835	0.00	0.00	0.00	0.00	222.10	2000 m^3/Day

Prepared by

Arti Singh

Checked & Verified by

Ujjwal Anurag

Annex- I

MEGHALAYA CEMENTS LIMITED

Location		Meteorological Data (Monthly Avg.)					
		Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022
Temperature	Min	10.81	14.21	16.34	18.03	18.30	18.36
	Max	28.75	30.40	27.36	33.57	30.61	30.33
	Avg.	19.65	20.27	19.72	22.66	22.96	21.79
Humidity	Min	54.47	58.26	74.92	54.76	55.38	55.82
	Max	103.03	103.42	104.64	103.96	104.34	104.76
	Avg.	86.31	89.19	98.87	91.66	88.60	91.58
Rain Fall	MTD	1230	2413.5	3327.5	488.5	151	576.5
	YTD	1230	3643.5	6971	7459.5	7610.5	8187

MEGHALAYA CEMENTS LTD. THANGSKAI

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Naga Plaza, 4th Floor, Christian Basti, G.S. Road, Guwahati-781005
Ph. No. (0361) 2345421/22/23/24, Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BR-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340034/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To, BLUE BIRD CHEMICAL 34, CANAL SOUTH ROAD KOLKATA Phone No: 9433060765 Fax No: Email : Contact Person Mr. Biswa Saraf Contact No. 9433060765 GST No:19AJMPS2133H1ZX	**Invoice To** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia GST- 17AADCM8079P1ZM **Delivery Address** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia	Purchase Group : KOLKATA PO No : 4500040020 PO Date : 09.03.2021 Quotation No : Quotation Date :

Dear Sir,

We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00010	CVGER1100	HDPE PIPE 32 MM\18.03.2021	3917	140	M	30.00 /1 M		4,200.00

Page Total	4,200.00
Other Page Total	236,250.00
Grand Total	240,450.00

Tax Code	: IGST INPUT- 18%
Payment Terms	: 100% AGAINST PERFORMA INVOICE
Inco Terms	: BY ROAD
Transporter	: Ex-Kolkata, Freight Charges: To Pay/At Actual
Inspection	: You will intimate us in advance the readiness of the material.

P & F	:	0.00
OTHER CHARGES	:	0.00
Loading/Unloading	:	0.00
CGST	:	0.00
SGST	:	0.00
IGST	:	43,288.20
CCESS	:	0.00
TDS	:	240.49
TCS	:	0.00
Insurance Value	:	0.00
Total with Tax	:	283,778.20
P & F(AT)	:	0.00
Discount(AT)	:	0.00
Total		283,537.71

Amount In Words: TWO LAKH EIGHTY THREE THOUSAND FIVE HUNDRED THIRTY SEVEN Rupees SEVENTY ONE Paise INR

General Terms & Conditions

1. Original Document required along with the materials.
2. Purchase Order No. & Material Code must be mentioned in invoice.
3. All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4. Others Terms & Condition as per ANNEXURE-1
5. Issued Under GST Act, 2017

Remarks: Indent No: 1100040668,40743

On accepting this order it is understood that you agree to the terms & conditions above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340084/666, Fax : 033-23340505.
GST NO: 17AADCM8079P1ZN, CIN No: U26942ML2003PLC007125

PO No : 4500046023 PO Date:09.03.2021

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		AJAPLAS Brand HDPE Pipe as per IS:4984/2016 MATERIAL GRADE: PE80 PRESSURE RATING: PN6						
00020	CVGER1187	HDPE PIPE 75 MM\18.03.2021	3917	1,500	M	115.00 /1 M		172,500.00
		AJAPLAS Brand HDPE Pipe as per IS:4984/2016 PIPE OD 75 MM MATERIAL GRADE: PE80 WALL THICKNESS: PN6 END TYPE: PLAIN END Pipe shall be manufactured as per IS:4984/95, duly "ISI" marked, of PE63 PN16 Grade,in 6 Mtrs length						
00040	CVGER1164	HDPE PIPE 90 MM\18.03.2021	39172110	5	NO	768.00 /1 NO		3,840.00
		AJAPLAS Brand HDPE Pipe as per IS:4984/2016 MATERIAL GRADE: PE80 PRESSURE RATING: PN6 1 no = 6 mtr length (Total 30 mtr) NOTE: Our Requirment 5 Nos 6 Mtr = 01 Nos 30 Mtr = 05 Nos Per Mtr Rate Rs. 128/- (128*30/5)=768/- Per nos						
00050	CVGER1166	HDPE PIPE 160 MM\18.03.2021	3917	5	NO	2,400.00 /1 NO		12,000.00

Page Total : 188,340.00

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex- II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4500040020 PO Date:09.03.2021

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		AJAPLAS Brand HDPE Pipe as per IS:4984/2016 MATERIAL GRADE: PE80 PRESSURE RATING: PN6 1 no = 6 Mtr length (Total 30 mtr) NOTE: Our Requirment 5 Nos 6 Mtr = 01 Nos 30 Mtr = 05 Nos Per Mtr Rate Rs. 400/- (400*30/5)=2400/-Per nos						
00190	CVGER1457	HDPE TEE 75X25 MM\18.03.2021	3917	250	NO	175.00 /1 NO		43,750.00
		AJAPLAS Brand HDPE Pipe as per IS:4984/2016 HDPE TEE 75X25MM PRESSURE RATING: PN6 RAW MATERIAL GRADE: PE 80						
00320	CVGER1454	HDPE PIPE 25 MM\18.03.2021	3917	200	M	21.00 /1 M		4,200.00
		AJAPLAS Brand HDPE Pipe as per IS:4984/2016 PIPE OD 25 MM MATERIAL GRADE: PE80 WALL THICKNESS: PN6 END TYPE: PLAIN END Pipe shall be manufactured as per IS:4984/95, duly "ISI" marked, of PE80 PN6 Grade.in 6 Mtrs length						

Page Total : 47,950.00

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: B2-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340094/666, Fax : 033-23340905,
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To, SHREE NARAYANI PIPE MFG. CO. 29, GANESH CHANDRA AVENUE, 3RD FLOO Kolkata Phone No: Fax No: Email : Contact Person Mr. Navin Contact No. 9830118771 GST No:19AAKFS4206J1ZY	**Invoice To** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia GST- 17AADCM8079P1ZM **Delivery Address** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia	Purchase Group : KOLKATA PO No : 4500040697 PO Date : 21.04.2021 Quotation No : Quotation Date :

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00030	CVGSR1455	HDPE COLLAR FLANGE 75 MM\30.04.2021	39174000	20	NO	88.00 /1 NO		1,760.00

Page Total	1,760.00
Other Page Total	7,500.00
Grand Total	9,260.00

Tax Code	: IGST INPUT- 18%
Payment Terms	: 100% AGAINST PERFORMA INVOICE
Inco Terms	: BY ROAD
Transporter	: Ex-Kolkata, Freight Charges: To Pay/At Actual
Inspection	: You will intimate us in advance the readiness of the material.

P & F	:	0.00
OTHER CHARGES	:	0.00
Loading/Unloading	:	0.00
CGST	:	0.00
SGST	:	0.00
IGST	:	1,666.80
CCESS	:	0.00
TDS	:	9.26
TCS	:	0.00
Insurance Value	:	0.00
Total with Tax	:	10,926.80
P & F(AT)	:	0.00
Discount(AT)	:	0.00
Total		10,917.54

Amount In Words: TEN THOUSAND NINE HUNDRED SEVENTEEN Rupees FIFTY FOUR Paise INR

General Terms & Conditions

1. Original Document required along with the materials.
2. Purchase Order No. & Material Code must be mentioned in Invoice.
3. All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4. Others Terms & Condition as per ANNEXURE-1
5. Issued Under GST Act, 2017

Remarks: Indent No: 1100040743 Dated: 16.12.2020

On accepting this order it is understood that you agree to the terms & conditions shown above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED
Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4500040697 PO Date:21.04.2021

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		AJAPLAS BRAND HDPE COLLER FLANGE Pipe as per IS:4984/2016 Size:75MM PRESSURE RATING: PN6 MATERIAL GRADE: PE80						
00040	CVGER1456	HDPE COLLAR FLANGE 25 MM\30.04.2021	39174020	250	NO	30.00 /1 NO		7,500.00
		AJAPLAS BRAND HDPE COLLER FLANGE Pipe as per IS:4984/2016 Size:25MM PRESSURE RATING: PN6 MATERIAL GRADE: PE80						

Page Total : 7,500.00

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To,	Invoice To	
ASVA CORPORATION SHED NO:6, SATYA ESTATE, AHMEDABAD Phone No: 9099032897 Fax No: Email : Contact Person Ms. Rushika Contact No. 9099032897 GST No:24AOPPP7663H2ZM	MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia GST- 17AADCM8079P1ZM **Delivery Address** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia	Purchase Group : KOLKATA PO No : 4500040698 PO Date : 21.04.2021 Quotation No : Quotation Date :

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00070	CVOEN1459	HDPE BALL VALVE 25 MM\30.04.2021	84818030	250	NO	301.00 /1 NO		75,250.00

Page Total	75,250.00
Other Page Total	13,330.80
Grand Total	88,580.80

Tax Code	: IGST INPUT- 18%	P & F	: 0.00
Payment Terms	: 100% AGAINST PERFORMA INVOICE	OTHER CHARGES	: 0.00
Inco Terms	: BY ROAD	Loading/Unloading	: 0.00
Transporter	: Ex-Ahmedabad, Freight Charges: To Pay	CGST	: 0.00
Inspection	: You will intimate us in advance the readiness of the material.	SGST	: 0.00
		IGST	: 15,944.40
		CCESS	: 0.00
		TDS	: 68.58
		TCS	: 0.00
		Insurance Value	: 0.00
		Total with Tax	: 104,524.40
		P & F(AT)	: 0.00
		Discount(AT)	: 0.00
		Total	104,435.82

Amount In Words: ONE LAKH FOUR THOUSAND FOUR HUNDRED THIRTY FIVE Rupees EIGHTY TWO Paise INR

General Terms & Conditions

1. Original Document required along with the materials.
2. Purchase Order No. & Material Code must be mentioned in invoice.
3. All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4. Others Terms & Condition as per ANNEXURE-1
5. Issued Under GST Act, 2017

Remarks: Indent No: 1100040743 Dated: 16.12.2020

On accepting this order it is understood that you agree to the terms & conditions shown above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED
Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007129

PO No : 4500040698 PO Date:21.04.2021

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		HDPE BALL VALVE WITH FLANGE END ID 25 MM PRESSURE RATING: PN5 RAW MATERIAL GRADE: PE 80 Connection End: FLANGE MAKE: ASVA CORPORATION						
00000	CVDER1460	HDPE BALL VALVE 75 NB\30.04.2021	84818010	10	NO	1,333.00 /1 NO		13,330.00
		HDPE BALL VALVE WITH FLANGE END ID 75 MM PRESSURE RATING: PN4 RAW MATERIAL GRADE: PE 80 Connection End: FLANGE MAKE: ASVA CORPORATION						

Page Total : 13,330.00

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340094/666, Fax : 033-23340505,
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To,	Invoice To	
Nagarjuna polymers PLOT NO: 206/8&9, IDA,PHASE-II, CHE Hyderabad Phone No: 9701544069 9100500777 Fax No: Email : Contact Person Mr. Raju Contact No. 9000227583 GST No:36AACFN7973P1ZF	MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia GST- 17AADCM8079P1ZM **Delivery Address** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia	Purchase Group : KOLKATA PO No : 4500040022 PO Date : 09.03.2021 Quotation No : Quotation Date :

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00090	CVGEK1190	HDPE BEND 75 MM\16.03.2021	3917	50	NO	73.00 /1 NO		3,650.00

Page Total	3,650.00
Other Page Total	6,640.00
Grand Total	10,290.00

Tax Code	: IGST INPUT- 18%
Payment Terms	: 100% AGAINST PERFORMA INVOICE
Inco Terms	: BY ROAD
Transporter	: Ex-Hyderabad, Freight Charges: To Pay
Inspection	: You will intimate us in advance the readiness of the material.

P & F	:	0.00
OTHER CHARGES	:	0.00
Loading/Unloading	:	0.00
CGST	:	0.00
SGST	:	0.00
IGST	:	1,852.20
CCESS	:	0.00
TDS	:	18.29
TCS	:	0.00
Insurance Value	:	0.00
Total with Tax	:	12,161.20
P & F(AT)	:	0.00
Discount(AT)	:	0.00
Total		12,161.91

Amount In Words: TWELVE THOUSAND ONE HUNDRED THIRTY ONE Rupees NINETY ONE Paise INR

General Terms & Conditions

1. Original Document required along with the materials.
2. Purchase Order No. & Material Code must be mentioned in invoice.
3. All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4. Others Terms & Condition as per ANNEXURE-1
5. Issued Under GST Act, 2017

Remarks: Indent No: 3100040743 Dated: 16.12.2020

On accepting this order it is understood that you agree to the terms & conditions given above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED
Authorised Signatory

MEGHALAYA CEMENTS LTD. THANGSKAI

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist - East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 84014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4500040022 PO Date:09.03.2021

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		90DEGREE BEND PRESSURE RATING: PN6 RAW MATERIAL GRADE: PE 80 MAKE: NAGARJUNA						
00110	CVGER1461	HDPE FLANGE 25 MM\16.03.2021	3917	250	NO	22.00 /1 NO		5,500.00
		REQUIRE FLANGE WITHOUT COLLAR PRESSURE RATING: PN5 RAW MATERIAL GRADE: PE 80 MAKE: NAGARJUNA						
00120	CVGER1462	HDPE FLANGE 75 MM\16.03.2021	3917	20	NO	57.00 /1 NO		1,140.00
		REQUIRE FLANGE WITHOUT COLLAR PRESSURE RATING: PN6 RAW MATERIAL GRADE: PE 80 MAKE: NAGARJUNA						

Page Total : 6,640.00

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex- II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505,
ECC No: AABCM8079PKM001, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To,	Invoice To	
SHREE NARAYANI PIPE MFG. CO. 29, GANESH CHANDRA AVENUE, 3RD FLOO Kolkata Phone No: Fax No: Email : Contact Person Mr. Navin Lath Contact No. 9830118771 GST No:19AAKFS4206J1ZY	MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia GST- 17AADCM8079P1ZM **Delivery Address** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia	Purchase Group : KOLKATA PO No : 4500039237 PO Date : 02.02.2021 Quotation No : Quotation Date :

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00100	CVGER098C	SPRINKLER -180 DEG. ROTATION\10.02.2021	8424	150	NO	700.00 /1 NO		105,000.00

Page Total	105,000.00
Other Page Total	0.00
Grand Total	105,000.00

Tax Code	: IGST INPUT- 18%
Payment Terms	: 100% AGAINST PERFORMA INVOICE
Inco Terms	: BY ROAD
Transporter	: Ex-Kolkata, Freight Charges: To Pay/At Actual
Inspection	: You will intimate us in advance the readiness of the material.

P & F	:	0.00
OTHER CHARGES	:	0.00
Loading/Unloading	:	0.00
CGST	:	0.00
SGST	:	0.00
IGST	:	18,900.00
CCESS	:	0.00
TDS	:	105.00
TCS	:	0.00
Insurance Value	:	0.00
Total with Tax	:	123,900.00
P & F(AT)	:	0.00
Discount(AT)	:	0.00
Total		123,795.00

Amount In Words: ONE LAKH TWENTY THREE THOUSAND SEVEN HUNDRED NINETY FIVE Rupees INR

General Terms & Conditions

1. Original Document required along with the materials.
2. Purchase Order No. & Material Code must be mentioned in invoice.
3. All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4. Others Terms & Condition as per ANNEXURE-1
5. Issued Under GST Act, 2017

Remarks: Indent No: 1100040743 Dated: 16.12.2020

On accepting this order it is understood that you agree to the terms & conditions shown above and on continuation sheet all which are made part thereof.

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED
Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
ECC No: AADCM8079PXM001, CIN No: U26942ML2003PLC007125

PO No : 4500039237 PO Date:02.02.2021

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		3/4"# Impact Metallic half Circle# Sprinkler BSP Male Threads- 3/4" Sprinkler's Operating Pressure- 1kg/cm2 to 3kg/cm2 Sprinkler's Discharge- 25 LPM to 42 LPM Sprinkler's Diameter of Coverage- 21mtr to 27mtr MAKE : AJAPLAST NOTE : Supplier will send 5Pcs Sprinkle out of total ordered qty immediately for our site approval purpose.						

Page Total : 0.00

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Prepared By _____ Checked By _____

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To,
ANANT ENTERPRISES
NH-37, BELTOLA LALMATI
SANSAI PARKING, GUWAHATI
Phone No: 7827465652
Fax No:
Email :
Contact Person Mr. Varun Rathi
Contact No. 7827465652
GST No:18ABQFA0199R1ZI

Invoice To
MEGHALAYA CEMENTS LTD
Vill-Thangskai, Dist.- East Jaintia Hills,
PO-Lumshnong-793210
MeghalayaIndia
GST- 17AADCM8079P1ZM
Delivery Address
MEGHALAYA CEMENTS LTD
Vill-Thangskai, Dist.- East Jaintia Hills,
PO-Lumshnong-793210
MeghalayaIndia

Purchase Group	: KOLKATA
PO No	: 4500049803
PO Date	: 02.11.2022
Quotation No	: BY MAIL
Quotation Date	: 02.11.2022

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00010	CWGBR0701	PPR PIPE 90MM (PN-16)\09.11.2022	3917	115	NO	1,237.39 /1 NO		142,299.85

Page Total	142,299.85
Other Page Total	603,829.62
Grand Total	746,129.47

Tax Code	: IGST INPUT- 18%
Payment Terms	: 100% AGAINST PERFORMA INVOICE
Inco Terms	: BY ROAD
Transporter	: F.O.R - GUWAHATI
Inspection	: You will intimate us in advance the readiness of the material.

P & F	:	0.00
OTHER CHARGES	:	0.00
Loading/Unloading	:	0.00
CGST	:	0.00
SGST	:	0.00
IGST	:	134,301.33
CCESS	:	0.00
TDS	:	0.00
TCS	:	0.00
Insurance Value	:	0.00
Total with Tax	:	880,431.80
P & F(AT)	:	0.00
Discount(AT)	:	0.00
Total		880,432.00

Amount In Words: EIGHT LAKH EIGHTY THOUSAND FOUR HUNDRED THIRTY TWO Rupees EIGHTY Paise INR

General Terms & Conditions

1 Original Document required along with the materials.
2 Purchase Order No. & Material Code must be mentioned in invoice.
3 All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4 Others Terms & Condition as per ANNEXURE-1
5 Issued Under GST Act, 2017

Remarks: Indent No: 1100052765, 52458

On accepting this order it is understood that you agree to the terms & conditions shown above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED
Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53841 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AAICM8079P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4500049803 PO Date:02.11.2022

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		Each Length : 6 Mtr. MAKE : KPT						
00020	CVGER0589	PPR PIPE PN-16 25 MM (NPU)\09.11.2022	3917	3,244	M	90.90 /1 M		114,219.60
		Each Length : 6 Mtr. MAKE : KPT						
00050	CVGER0318	PPR ELBOW 50MM\09.11.2022	3917	15	NO	70.37 /1 NO		1,055.55
		MAKE : KPT						
00060	CVGER1718	PPR BALL VALVE 50MM\09.11.2022		6	NO	416.62 /1 NO		2,499.72
		MAKE : KPT						
00070	CVGER0842	PPR SOCKET 50MM\09.11.2022	3917	115	NO	32.01 /1 NO		3,681.15
		MAKE : KPT						
00080	CVGER0841	PPR SOCKET 25MM\09.11.2022	3917	280	NO	8.55 /1 NO		2,394.00
		MAKE : KPT						
00090	CVGER0869	PPR END CAP 50MM\09.11.2022	3917	10	NO	32.25 /1 NO		322.50
		MAKE : KPT						
00100	CVGER1714	PPR REDUCER TEE 50X25MM\09.11.2022		10	NO	90.40 /1 NO		904.00
		MAKE : KPT						
00110	CVGER1715	PPR REDUCER TEE 25X15MM\09.11.2022		460	NO	14.90 /1 NO		6,854.00
		Note :- 25mm Side Plain and 15mm Side BSP Thread required. MAKE : KPT						
00120	CVGER1716	PPR ELBOW 25X15MM\09.11.2022		287	NO	13.68 /1 NO		3,831.96

MEGHALAYA CEMENTS LTD THANGSKAI

Page Total : 134,762.28

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Sumshnong-793210, Meghalaya, India
Corporate Office: Moga Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AABCM8079P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4501049803 PO Date:02.11.2022

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		Note :- 25mm Side Plain and 15mm Side BSP Thread required. MAKE : KPT						
00130	CVGER0780	PPR PIPE 63MM PN 16\09.11.2022	3917	192	NO	2,002.87 /1 NO		384,551.04
		1NO= 6 MTR LENGTH MAKE : KPT						
00150	CVGER0959	R TEE 63 X 25 MM\09.11.2022	3917	100	NO	161.76 /1 NO		16,176.00
		PPR REDUCER TEE 63X25 MM MAKE : KPT						
00160	CVGER0598	PPR GATE VALVE 25MM\09.11.2022	3917	100	NO	271.47 /1 NO		27,147.00
		MAKE : KPT						
00170	CVGER0738	P.SOCKET 63MM\09.11.2022	39174000	100	NO	70.86 /1 NO		7,086.00
		PPR PLAIN SOCKET 63 MM MAKE : KPT						
00180	CVGER0829	PPR ELBOW 63MM\09.11.2022	3917	30	NO	146.14 /1 NO		4,384.20
		MAKE : KPT						
00190	CVGER0912	PPR GATE VALVE 63MM\09.11.2022	3917	20	NO	468.91 /1 NO		9,378.20
		MAKE : KPT						
00200	CVGER1044	PPR FEMALE THREADED SOCKET (63 MM)\09.11.2022	3917	5	NO	516.53 /1 NO		2,582.65
		MAKE : KPT						
00210	CVGER1043	PPR MALE THREADED SOCKET (63 MM)\09.11.2022	39174000	5	NO	683.55 /1 NO		3,417.75
		MAKE : KPT						
00220	CVGER0882	PPR TEE 63MM\09.11.2022	3917	5	NO	198.90 /1 NO		994.50
		MAKE : KPT						
00230	CVGER0920	PPR FEMALE SOCKET 25-3/4"\09.11.2022	3917	100	NO	72.72 /1 NO		7,272.00

Page Total : 467,959.34

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BB-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340084/666, Fax : 033-23340505,
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4500049803 PO Date:02.11.2022

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		MAKE : KPT						
00250	CVGER0689	PP8 PIPE PN-16 25 MM (NFU)\09.11.2022	3917	120	M	50.90 /1 M		6,108.00
		MAKE : KPT						

MEGHALAYA CEMENT LTD THANGSKAI

Page Total : 6,108.00

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex- II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To,
VINEET ENTERPRISE
26, GOPI BOSE LANE
KOLKATA
Phone No: 9339804495
Fax No:
Email :
Contact Person Mr. Vineet
Contact No. 8961669899
GST No:19ACXPJ6646C1Z4

Invoice To
MEGHALAYA CEMENTS LTD
Vill-Thangskai, Dist.- East
Jaintia Hills,
PO-Lumshnong-793210
MeghalayaIndia
GST- 17AADCM8079P1ZM
Delivery Address
MEGHALAYA CEMENTS LTD
Vill-Thangskai, Dist.- East
Jaintia Hills,
PO-Lumshnong-793210
MeghalayaIndia

Purchase Group	: KOLKATA
PO No	: 4500049806
PO Date	: 03.11.2022
Quotation No	: 2316
Quotation Date	: 15.10.2022

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00030	CVGIP0060	G.I. PIPE 15 MM\09.11.2022	73063010	12	NO	708.48 /1 NO		8,501.76

Page Total	8,501.76
Other Page Total	7,970.00
Grand Total	16,471.76

Tax Code	: IGST INPUT- 18%
Payment Terms	: 100% AGAINST PERFORMA INVOICE
Inco Terms	: BY ROAD
Transporter	: Ex-Kolkata, Freight Charges: To Pay/At Actual
Inspection	: You will intimate us in advance the readiness of the material.

P & F	:	0.00
OTHER CHARGES	:	0.00
Loading/Unloading	:	0.00
CGST	:	0.00
SGST	:	0.00
IGST	:	2,964.92
CCESS	:	0.00
TDS	:	0.00
TCS	:	0.00
Insurance Value	:	0.00
Total with Tax	:	19,436.68
P & F(AT)	:	0.00
Discount(AT)	:	0.00
Total		19,436.68

Amount In Words: NINETEEN THOUSAND FOUR HUNDRED THIRTY SIX Rupees SIXTY EIGHT Paise INR

General Terms & Conditions

1. Original Document required along with the materials.
2. Purchase Order No. & Material Code must be mentioned in invoice.
3. All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4. Others Terms & Condition as per ANNEXURE-1
5. Issued Under GST Act, 2017

Remarks: Indent No: 1100062765 Dated: 12.10.2022

On accepting this order it is understood that you agree to the terms & conditions shown above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED
Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: ME-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4500049806 PO Date:03.11.2022

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		Each Length : 6 Mtr. MAKE: JINDAL						
00130	CVGER1717	PPR CROSS 50X25MM\09.11.2022		100	NO	29.70 /1 NO		2,970.00
		PPR 4 WAY CROSS 50X25 MM MAKE: SPMC						
00150	CVGER0193	TEFLON TAPE\09.11.2022	3919	500	ROL	10.00 /1 ROL		5,000.00

Page Total : 7,970.00

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

MEGHALAYA CEMENTS LTD THANGSKAI

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 6th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505,
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To,
RAGI MERCANTILE PVT.LTD
"A.T.ROAD,GUWAHATI,KAMRUP"

Phone No: 7896021210
Fax No:
Email :
Contact Person Mr. Shambhu Bharti
Contact No. 7896021210
GST No:18AAECR4516R1ZS

Invoice To
MEGHALAYA CEMENTS LTD
Vill-Thangskai, Dist.- East Jaintia Hills,
PO-Lumshnong-793210
MeghalayaIndia
GST- 17AADCM8079P1ZM

Delivery Address
MEGHALAYA CEMENTS LTD
Vill-Thangskai, Dist.- East Jaintia Hills,
PO-Lumshnong-793210
MeghalayaIndia

Purchase Group	: KOLKATA
PO No	: 4500049804
PO Date	: 03.11.2022
Quotation No	: 2316
Quotation Date	: 15.10.2022

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00040	CVGIP0085	G.I. SOCKET 1/2"\09.11.2022	7307	666	NO	9.34 /1 NO		6,220.44

Page Total	6,220.44
Other Page Total	0.00
Grand Total	6,220.44

Tax Code : IGST INPUT- 18%
Payment Terms : After 30 Days From Invoice date
Inco Terms : SELF TRANSPORTATION
Transporter : Ex-Guwahati
Inspection : You will intimate us in advance the readiness of the material.

P & F	:	0.00
OTHER CHARGES	:	0.00
Loading/Unloading	:	0.00
CGST	:	0.00
SGST	:	0.00
IGST	:	1,119.68
CESS	:	0.00
TDS	:	0.00
TCS	:	0.00
Insurance Value	:	0.00
Total with Tax	:	7,340.12
P & P(AT)	:	0.00
Discount(AT)	:	0.00
Total	:	7,340.12

Amount In Words: SEVEN THOUSAND THREE HUNDRED FORTY Rupees TWELVE Paise INR

General Terms & Conditions

1 Original Document required along with the materials.
2 Purchase Order No. & Material Code must be mentioned in invoice.
3 All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4 Others Terms & Condition as per ANNEXURE-1
5 Issued Under GST Act, 2017

Remarks: Indent No: 1100052765 Dated: 22.10.2022

On accepting this order it is understood that you agree to the terms & conditions shown above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED
Authorised Signatory

Annex-II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 860 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (M.B.)
Ph. 033-23340004/666, Fax : 033-23340505.
GST No: 17AADCM8079P1ZM, CIN No: U26942ML2003PLC007125

PURCHASE ORDER

To, RAYYAN SPRAY SYSTEMS UNIT NO-10, OLD MODELA THANE(W) Phone No: 022-25826359 8424928432 Fax No: Email : Contact Person Mr. C. Lokhande Contact No. 8424928432 GST No:27AGBPK8026F1ZX	**Invoice To** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia GST- 17AADCM8079P1ZM **Delivery Address** MEGHALAYA CEMENTS LTD Vill-Thangskai, Dist.- East Jaintia Hills, PO-Lumshnong-793210 MeghalayaIndia	Purchase Group : KOLKATA PO No : 4500049734 PO Date : 31.10.2022 Quotation No : 5290 Quotation Date : 06.10.2022

Dear Sir,
We are pleased to place order to you for the following on the terms & conditions given below:

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
00010	MECPP0934	SPRAY NOZZLE FOR DUST SUPPRESSION\21.11.2022	6409	100	NO	340.00 /1 NO		34,000.00

Page Total	34,000.00
Other Page Total	136,000.00
Grand Total	170,000.00

Tax Code	: IGST INPUT- 18%	P & F	: 0.00
Payment Terms	: 100% AGAINST PERFORMA INVOICE	OTHER CHARGES	: 0.00
Inco Terms	: BY ROAD	Loading/Unloading	: 0.00
Transporter	: Ex-Thane, Freight Charges: To Pay	CGST	: 0.00
Inspection	: You will intimate us in advance the readiness of the material.	SGST	: 0.00
		IGST	: 30,600.00
		CESS	: 0.00
		TDS	: 0.00
		TCS	: 0.00
		Insurance Value	: 0.00
		Total with Tax	: 200,600.00
		P & F(AT)	: 0.00
		Discount(AT)	: 0.00
		Total	200,600.00

Amount In Words: TWO LAKH SIX HUNDRED Rupees INR

General Terms & Conditions

1. Original Document required along with the materials.
2. Purchase Order No. & Material Code must be mentioned in invoice.
3. All related documents & manuals need be attached along with the invoice copy & should come in two sets, among which one set needs to be sent to branch office & the other one along with the material.
4. Others Terms & Condition as per ANNEXURE-1
5. Issued Under GST Act, 2017

Remarks: Indent No: 1100052765, 52418

On accepting this order it is understood that you agree to the terms & conditions shown above and on continuation sheet all which are made part thereof

Prepared By _____ Checked By _____

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Annex – II

MEGHALAYA CEMENTS LTD

Regd. Office: Vill-Thangskai, Dist.- East Jaintia Hills,PO-Lumshnong-793210, Meghalaya, India
Corporate Office: Mega Plaza, 4th Floor, Christian Basti,G.S. Road,Guwahati-781005
Ph. No. (0361) 2345421/22/23/24,Fax: 2345419 Mobile: 94014 53861 / 863 / 862
Kolkata Office: BE-77, Saltlake City, Sector-I, Kolkata - 700064 (W.B.)
Ph. 033-23340004/666, Fax : 033-23340505,
GST No. 17AADCM8078P1ZM, CIN No: U26942ML2003PLC007125

PO No : 4500049734 PO Date:31.10.2022

PURCHASE ORDER

Sl.	Material Code	Item Name\Delivery Date	HSN	Qty.	Unit	Rate INR	Discount %	Total Value
		WATER SPRAY NOZZLE 1/2" FOR DUST SUPPRESSION FULL CONE NOZZLE FLOW RATE : 18 LPM(+_10%) SPRAY ANGLE: 90#(+_5#) PRESSURE: 2 BAR CONNECTION : 3/4"BSP(M) M.O.C : SS 304 MAKE : RAYYAN SPRAY						
00150	MBCPP0034	SPRAY NOZZLE FOR DUST SUPPRESSION\21.11.2022	8409	400	NO	340.00 /1 NO		136,000.00
		WATER SPRAY NOZZLE 1/2" FOR DUST SUPPRESSION FULL CONE NOZZLE FLOW RATE : 10 LPM(+_10%) SPRAY ANGLE: 90#(+_5#) PRESSURE: 2 BAR CONNECTION : 3/4"BSP(M) M.O.C : SS 304 MAKE : RAYYAN SPRAY						

Page Total 136,000.00

For MEGHALAYA CEMENTS LIMITED

Authorised Signatory

Prepared By _____ Checked By _____

Annex - III

FIRE FIGHTING REPORT

DATE: 31.05.2022

THEME: FIRE FIGHTING & RESCUE PROCESS

CONDUCTED BY	: SAFETY DEPARTMENT
VENUE	: COMMUNITY HALL
DATE	: 31.05.2022
TIME	: 3:00 PM To 5:30 PM
TRAINERS NAME	: MR. PRAJJAL RAIKUMAR (DY. MANAGER SAFETY)
	: MR. GANESH QUILA (ASTT. FIRE FIGHTING OFFICER)

NUMBER OF PARTICIPANTS: Twenty nine [29] participants from MCL security responder team & BSS security.

On 31st May' 2022 at sharp 3 PM up to 5:30 PM at Community Hall we have conducted "Fire Fighting Training Programme" 28 participants were attended from MCL security responder team & BSS.

Main Motto of the training programme was in case of Fire how to fight and prevent the fire, discussions about fire fighting procedures to various classes of fires and how to know which type of fire to use of appropriate Fire Extinguishers to Extinguish the Fire. As well as we shown to participants about rescue procedure, if found senseless due to fire accidents the immediately how to rescue the persons? We have shown its procedure during the Programme.

Shown to participants various classes of Fire with Extinguishers and its using procedure:

1) **Class A- Fire:**
   Fire involving on combustible materials of organic nature, such as wood, paper, rubber & plastic etc.
   - ✓ For extinguisher this class fire we can use Water, Foam, ABC type Fire Extinguisher.
2) **Class B- Fire:**
   Fire involving on flammable liquids, comes under this category such as Petroller, Kerosene, Fuel oil, Diesel etc where the blanketing effect is essential.
   - ✓ For extinguish this class fire we can use Foam, DCP, CO2 type Fire Extinguisher.
3) **Class C –Fire:**
   Fire involving on flammable gasses such as cooking gas, acetylene etc.
   - ✓ To extinguish this fire we should close down the supply of gas by closing the valye and simultaneously for cooling CO2, Dry Chemical Powder and ABC type extinguishers may be used.

MEGHALAYA CEMENT LTD THANGSKAI

4) **Class D- Fire:**

Fire involving combustible metals such as magnesium, zinc, sodium etc.

- ✓ When the burning metals are reactive to water and water containing agents and in certain cases carbon dioxide and ordinary dry powders, these fires require special media and techniques to extinguish.

5) **Class E-Fire:**

This is the fire in electrical appliances. By closing electrical supply fire will come under any of categories given above and can be extinguished by applying fire extinguisher applicable for that category. But dangerous if used water or foam type fire extinguisher on live electrical equipments.

Fire Extinguisher's Using Procedure: -

It is easy to remember how to use a fire extinguisher if you can remember the acronym pass, which stands for Pull, Aim, Squeeze and Sweep.

a) Pull the pin or safety clip- this will allow you to discharge the Extinguisher.
b) Aim at the base of Fire – if you aim at the flames (Which are frequently the temptation) the extinguishing agent will fly right through and do no good. You must aim at the base of fire.
c) Squeeze/Open the top handle or lever this depresses a button that releases the pressurizes extinguishing agent in the Extinguisher.
d) Sweep from side to side until the fire is completely out start using the extinguisher from a safe distance away, then move forward. Once the fire is out, keep an eye on side to side the area in case it re-ignites.

Shown various safety practices to employees on fire safety and also get lesson to employees about fire evolution and how to contact with combustible materials as well as its control measures.

Control Measures/Method of fire extinction:

We discussed with participants about method of fire extinction which are mentioned below: -

a) **Starvation** – In this method we try to remove un-burnt materials from the place of fire and fire extinguishers due to non-availability of fuel.
b) **Smothering/Blanketing** – In this method we lay a fire resistant layer over the burning material to stop of fresh air (Oxygen) supply of fire.
c) **Cooling** – In this method we bring down the temperature of fire below auto ignition temperature of fuel and fire extinguishers.

Various Safety practices: -

a) **In case of fire: -**
   - ➢ If in case of fire keep calm, act quickly, tell everyone in your premises, don't delay get everyone.
   - ➢ Before opening a closed door use the back of your hand to touch it. Don't open, if you feel hot – the fire will be on the other side.

b) **In case Escape route is blocked: -**
   - ➢ Get everyone into one room, with a window that opens and shut the door.
   - ➢ Put cushions and bedding around the bottom of the door to block out smoke.
   - ➢ Open the window and call for help.

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c) **If our clothes catch fire: -**

- Don't run round, you will fan the flames and makes them burn faster.
- Lie down and roll around. It makes it harder for the fire to spread and smothers the flames.
- Smother the flames with a heavy material like a coat, blanket etc.

d) **Escape Tips: -**

- If you see smoke as you escape to try another escape route.
- If you have to escape through smokes, crawl low to your exist. Keep your head one to two feet above the floor. That's where the air will be cleanest.
- Never go back into the building until its safe to do so.

Fire Demonstration: -

Particularly we have given the training to above mentioned participants where shift staff also attended & along with them formulate a fire fighting team for emergency of fire an incidents or incidents. We trained to all participants employees through theoretically and practically.

We have seen how to use the fire Extinguishers at the different stages of fire. Particularly we charged a foam type fire extinguisher, to train charging procedure and to give concept of 'A' class fire.

Then participants charged ABC & CO2 type fire extinguisher to understand those type of fire Extinguishers using procedure along with shown about electrical fire, CO2 Fire Extinguishers is the best for Electrical fire as well as can be used for all class fire also and ABC Fire Extinguisher is the best for all class fire.

Rescue procedure: -We shown to participants about rescue procedure.

a) **Fire Man's lift:**

Fire man's lift is a technique allowing one person to carry another person without assistance, by placing the carried person across the shoulders of the carrier. The technique was commonly used by fire fighters to carry injured or unconscious people away from danger, but has been replaced in the fighting due to the drawback that smoke and heat are greater higher up and may be fatal to the person being carried.

b) **Two hand seat carry:**

When man get leg injured then this rescue procedure is very essential to remove from accident place to reach to doctor very quickly. For this carry process requires two people and it can be used for any injured person.

Put the arm behind the person's things and the across the person's back.

Then interlock your arms with those of a second responder behind the person's leg and across his or her back.

Lift the person in the 'Seat' formed by responders arm. Responders should co-ordinate their movement so they walk together.

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c) **Human Crutch:**

The human crutch carry is a method of transport whereby the casualty lean on two rescuers side by side with the casualty's arms around both persons shoulders. This enables the casualty to experience support from the rescuer and allow him to walk with a minor injury.

d) **Pick-a –back:**

The rescuer and casualty stand back to back. The rescuer passes both his hands backwards and grips around the waist of the casualty. He then leans forward and lifts the casualty off the feet and upon his back.

Basic Preventive measures:

We discussed about fire preventive measures the mentioned point we discussed: -

- Ensure high housekeeping standard.
- Segregate flammable material from source of ignition.
- Promptly eliminate oil/gas leaks and clean spillage of flammable material.
- Strictly adhere to work permit instructions for welding, cutting and other hot work in areas where flammables are present.
- Where flammables are stored and use, ensure adequate ventilation prohibits smoking and use flame proof electric equipments.
- Electrical repair should be carried out by qualified personnel and avoid multi socket connections.
- Don't use damaged electric cords and avoid temporary connections.
- Lubricate, maintain and align all machines/equipments to prevent generation of heat.

Before ending the programmed we discussed about responsibility of Safety Officer, at last moment of fire accident. After fire accidents safety officer find how came the fire? And give the remedial measure for future protection and prepare a list of injured, death persons and too property damage.

MEGHALAYA CEMENT LTD THANGSKAI

Annex- III

Trainer's Att.,

Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No: MCL/IMS&EnMS/HR& A/TAF/019
Rev No.:01
Date: 01.04.2016

Training Details : **Fire Fighting Training** at community Hall.

Agency : INTERNAL

Date : **31.05.2022**

Time : **03:00 pm to 05:30 pm**

Name of Trainers : **Dy. Mgr-Safety & Asst. Fire officer.**

Attendance Record:

Sl. No.	*Emp Code*	*Employee Name*	*Department*	*Designation*	*Signature*
1		Baikunth Bas			[signature]
2		Pradip Sinha	BSS		[signature]
3		Saluh Khonkh	MCL		[signature]
4		N.U. Tapadar	"		[signature]
5		Jibonch Nath	"		[signature]
6		Amal Sarkar	"		[signature]
7		[signature]	BJS		[signature]
8		Pradip Boro	MCL		[signature]
9		Tushaswar Nath	MCL		[signature]
10		Kamal Das	B.S.S		[signature]
11		Montu Borah	M.C.L		[signature]

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	E Code	Name	Desig	Deptt	Signature
12		Arup Borah		MCL	A. Borah
13		Himadri chaudhury		MCL	[illegible]
14		Robort Hazarika		B.S.S.	[illegible]
15		Jan mani Nath		B.S.S.	[illegible]
16		Samajit Sinha		B.22	[illegible]
17		[illegible]		B.S.S	[illegible]
18		Girindra Deka		B.S.S	G Deka
19		Dilip Bor		B.S.S.	[illegible]
20		Manik Kr Pator		B.S.S	[illegible]
21		Bhaskar Jyoti Kalita		B.S.S	[illegible]
22		Ogsunath Das		B.S.S	[illegible]
23		Rupam Bhattacharya		vigilance	[illegible]
24		Sarvik Mandal		S & V	[illegible]
25		Rupam Paul		HR & A	[illegible]
26		Relyna Pyntluh		HR & A	[illegible]
27		Tarun Kr. Das		HR & A	[illegible]
28		Pradip Paul		vigilance	P. Paul
29		Rupam Bhattacharya		wh	[illegible]
30					
31					
32					
33					
34					
35					
36					

MEGHALAYA CEMENTS LTD THANGSKAI

Annex- III

FIRE MOCKDRILL & EMERGENCY PROGRAMME

DATE: 14/07/2022

THEME: MOCKDRILL ON FIRE

CONDUCTED BY	: SAFETY DEPARTMENT
VENUE	: VEHICLE WORKSHOP (HEMM)
DATE	: 14/07/2022
TIME	: 4:30 PM -5:00 PM
NUMBER OF ATTENDED PERSONS	: 51 Persons were attended.
NAME OF INFORMER	: Mechanic of HEMM workshop
ALARM RAISED BY	: CCR security person (after got the information)
FIRE CAUGHT	: At around 4:28 PM
FIRE –FIGHTING & RESCUE TEAM REACHED	: At around 4:31 PM
TOTAL LIVING PERSONS	: In Fire caught place 04 Persons.
PERSONS EVACUATED TO	: Safe zone within 6 minutes.
LAST PERSON EVACUATED	: At around 4:36 PM
FALLING THREE PROCESS	: Head counting started during evacuation simultaneously.
TOTAL RESCUER	: 03 Persons
DECLARATION	: After getting everyone in counting Extinguished the fire & the area was declared safe and total 04 persons were safely evacuated.

On 14/07/2022 **at around 4:30 PM to 5:00 PM at Vehicle workshop** "Mock Drill was conducted on Fire" total 49 Persons were involved from Mines & Vehicle workshop.

Main Motto of the training programme was in case of any fire emergency in night time how to fight and extinguish the fire in darkness and how to handle the situation and evacuate the persons from fire area, as well as practically shown the Drill to involved persons along with rescue systems of casualties. We shown to participants about rescue procedure, if found senseless due to fire accidents then immediately how to rescue the injured persons (casualties) & also shown its procedure.

Mock Drill- Suddenly Alarm was raised by CCR security person after got the information from Vehicle workshop. According to siren & information by vehicle section Fire fighting team along with Fire fighting tanker reached the spot within 3 minutes, workers were evacuated from Hot Zone to Cold zone i.e safe zone, one person at around 4:36 PM he evacuated from there he was last men as per information of our 1st responders team Fire caught at Dumper in HSD tank. During rescue simultaneously head counting also continued at safe zone by helping of 'Falling Three' procedures and finally observed total casualties were removed from fire caught area. After safely evacuation of workers immediately Fire extinguishing process had started, due to major fire it was extinguished by Fire Fighting Tanker, Extinguishing Media is AFFF because it was oil Fire.

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Medical team also in ready position during emergency for help and further first-aid of causalities, after extinguished and controlled, Safety officer observed & investigated the area and taken the report of property lost & damage as well as after mitigation Safety officer had declared that it is now safe.

1) TURN OUT: Employees were taught how to fight with fire at the time of Emergency and given knowledge about evacuation process & First Aid knowledge also imparted them.
2) SAFE ZONE ASSEMBLY: Employees were taught about why and how gathered at assembling point also introduced "COLD/SAFE ZONE".
3) VICTIMS: Demonstrations for treating victims & shown to everyone. All the victims were treated & transported for Medical Aid to the nearby facility by the employees of MCL and they were aided by the Medical staff.
4) ATTENDANCE & CHECKING OF DAMAGE PROPERTY & LIVES LOST AND REPORTING. After the drill Safety officer with his team visited the area & estimated the damages.
5) COMMUNICATION: Safety office makes the communication to concern as well as informed to unit head about the incident and for further action.

CONCLUSION: Training is important part for help to educate of employees for make potential and competent in this regards the Fire Mock Drill was held to spread knowledge to our employees as well as participants also can understand and gain the knowledge about Fire mock drill, it was observed most of the workers activated while siren rang and every involved persons learned the lesson and became active

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- III

Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No:MCL/ IMS &EnMS/MR/G10

Rev No.:00

Date:

Training Details : Mock Drill on Fire.

Agency : Safety Dept. Location: HEMM Workshop

Duration :

(a) Date/s From: 14-07-2022 To:

(b) Time From: 4:30 Pm To: 5:Pm

Names of Trainers :

1. S. Rajkumar 2.

Attendance Record:

Sl.	Employee Name	Department	Designation	Signature
01	GOPU PRASHANTH	MINES	Asst. Manager	[signature]
02	K. Aravind	"	Asst Manager	[signature]
03	Neobhay. Kumar	"	Helper	[signature]
04	Anil Kumar Choubey	"	Supervisor	[signature]
05	Bijay Deb	"	Driver	[signature]
06	Balwant Paul	"	J.H.Opt	[signature]
07	Bambam Bhaskar	"	L&T Opt	Ashish
08	Akhilesh Singh	"	"	[signature]
09	Baban Thakur	"	Driver	[signature]
10	Subah Ch Ram	"	Supew	[signature]
11	Ashok Kr. Panda	"	J.E	[signature]
12	Sunil Sunam	"	Driver	[signature]
13.	Anil yadav	"	L&T Opt	Anil
14.	Binay Sinha	"	"	Binay Sinha

MEGHALAYA CEMENTS LTD THANGSKAI

Annex- III

Meghalaya Cements Ltd.

Vill: Thangskai, P.O Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No:MCL/ IMS &EnMS/ MR/ G10

Rev No.:00

Date:

Training Details : Mock Drill on fire

Agency : Safety Dept.

Duration :

(a) Date/s From: 14-07-2021 To:

(b) Time From: 4:30 PM To: 5 PM

Names of Trainers :

1. P. Rajkumar 2.

Attendance Record:

Sl.	Employee Name	Department	Designation	Signature
1	Binod Sing	Mines	L2 OP	[signature]
2	Kishori Yadav	"	operator	[signature]
3	Amitesh Kumar	mines	DET	[signature]
4	B Dmg			[signature]
5	Md. Kalamuddin	Mines	Hyva Opt	[signature]
6	HANSRAJ PAL	"		[signature]
7	David	"	OPT	[signature]
8	V.M RAO	"	Dy officer	[signature]
	Subrata Biswas	"	Data E	[signature]
10	Subodh Dam	"		[signature]

MEGHALAYA CEMENTS LTD. THANGSKAI

[signature] HOD

Annex-III

Meghalaya Cements Ltd.

Vill. Thangskai, P.O. Umshiang, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No:MCL/ IMS &EnMS/ MR/ G10
Rev No.:00
Date:

Training Details : 'Mock Drill on Fire'
Agency : Safety Depot.

Duration :
(a) Date/s From: 14-07-2022 To:
(b) Time From: 4:30 PM To: 5PM

Names of Trainers :
1. L. Rajkumar 2. Ganesh Gurung

Attendance Record:

Sl.	Employee Name	Department	Designation	Signature
1	Dilip Kr. Nath	Mines	Supervisor	
2	Mamta Malekal	-do-	-do-	
3	S. N. Singh	-do-	-do-	
4	Lalu Pal	H EMM	Loader OPP	
5	Iftekhar Ahmed	"	Helper	Iftekhar Ahmed
6	Vakil Pandit	mines	JE	
7	Ram Shankar Pa	V Mines	Super	
8	Vijay Kr. Thakur	Mines	SUPERVISOR	
9	Ram Kalesh pal	mines	OPT R.O.C	R.K Pal
10	Abhay Kumar	Mines	Supervisor	
11	Dharanjay Singh	Mines	Pay loader OPT	
12	Krishna Nan Sinha	=		K. Sinha
13	Badal pal	mines	ROC OPT	
	Pradip Banerjee			

MEGHALAYA CEMENT LTD. THANGSKAI

HOD

Annex - III

Meghalaya Cements Ltd.

Vill: Thangskai P.O Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No:MCL/ IMS &EnMS/ MR/G10

Rev No.:00

Date:

Training Details : Mock Drill on Fire.

Agency : Safety Dept.

Duration :

(a) Date/s From: 14/07/22 To:

(b) Time From: 4:30 PM To: 5PM

Names of Trainers :

1. L. Rajkumar 2.

Attendance Record:

Sl.	Employee Name	Department	Designation	Signature
	Hemanta Baruah	Mines	R.O.C opt	[signature]
	Dipendra Chutia	Mines	HEMM. opt	[signature]
	Hemanay Kumar	Mines	H.O.A	H.K
	[illegible]	"	"	[signature]
	Rahul Barkar	Mines	"	[signature]
	[illegible] Kumar Singh	Mines	welder	[signature]
	Amar Singh	"	mechanic	[signature]
	NAREN Dash	[illegible]	HAVA OP	[signature]
	Sukumar Sinha	Mines	SCB - OP	Sukumar Sinha
	Pabitra Daimary	Mines	Mechanick	[signature]
	Ranjan Sinha	"	Hem (opt)	[signature]
	Santa Sinha	Mines	"	[signature]
	Rupam Bhattacharya	Vigilance	Supervisor	[signature]

MEGHALAYA CEMENTS LTD. THANGSKAI

[signature] HOD

Annex- III

FIRE FIGHTING TRANING REPORT

Date: 23.07.2022

THEME: Fire fighting training conducted with different departments employees. Topic based on studies of Emergency preparedness or activation, sirens code of practice distinguish the type of fire & fire extinguishers using process etc.

- TRAINER's NAME: - B. B Singh – DGM-Safety / Prajjal Rajkumar – Dy. Mgr.-Safety
- VENUE: - Vocational Training Center
- DATE:- 23.07.2022
- TIME: - 4:00 PM TO 5:30 PM.
- DURATION: - 1:30 Hour
- NUMBER OF PARTCIPANTS: - [08] Eight participants were attended.

On 23rd July' 2022 from 4:00 PM to 5:30 PM at Vocation Training Center we have conducted "FIRE FIGHTING TRAINING" along with studied emergency preparedness function and accident indicator siren alarming procedure" i.e accident indicator siren alarming procedure also taught the classification of fire & using of different extinguishers. Total 18 persons were participated in the training. Our Motto is about to educate all & knowing about using procedures of fire extinguishers during any fire emergency.

Methods of Fire Extinction: Following methods are used for extinguishing the fire according to fire Triangle.

1) Starvation: In this method we discussed & shown how to remove un-burnt materials from surrounding of fire occurrence area & to control the fire.
2) Blanketing: In this method we discussed & shown how to cut oxygen from the fire by using of extinguishers & wet blanket to stop the fire by blanketing process:
   - Foam, ABC, DCP extinguishers are used for blanketing.
3) Cooling: In this method we bring down temperature of fire below auto ignition temperature of fuel & fire extinguishers.
   - Foam, Water, CO2 extinguishers are used for cooling.

Classification of Fire: Fire is five [5] types.

- **A class Fire**: Fire involving combustible materials of Organic nature.
- **B class Fire**: Fire involving Flammable liquids.
- **C class Fire**: Fire involving flammable Gases.
- **D class fire**: Fire involving combustible metals.
- **E class Fire**: Fire involving on Electrical appliances.

- At the time of any fire emergency how to fight with fire & what precaution to be taken during that situation.
- Which type of Fire extinguishers can be use on what type of Fire.
- Classification of Fire and according to it explanation & types of fire.
- Communication procedure during emergency.
- During Fire what can do or not.

MEGHALAYA CEMENT LTD THANGSKAI

Annex-III

- Explanation of locations where Fire can catch at our factory premises & in vehicles.
- Introduction and function of Fire fighting tanker along with Fire equipments.
- During fire accident siren alarming procedure.
- Operating procedure of fire extinguishers & Fire fighting tanker if necessary.
- Practical Demonstration.

Finally we have conducted practical demo program on fire by use of fire fighting equipments like Fire extinguishers, Fire fighting tanker & given the training to all participants, observed each and every one can operate the extinguishers and understood fire fighting process. Finally we have seen most of the persons learnt well & satisfactory as practice training will be continued for further progress.

SAFETY OFFICER

DGM [SAFETY]

MEGHALAYA CEMENT LTD
THANGSKAI

Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No: MCL/IMS&EnMS/HR& A/TAF/019
Rev No.:01
Date: 01.04.2016

Training Details : Fire fighting training at VTC

Agency : INTERNAL

Date : 23.07.2022

Time : 04:00 pm to 05:30 pm

Name of Trainers 1) B. Bhagaram Singh DGM- Safety 2) Prasjit Rajkumar Dy Mgr- Safety.

Attendance Record:

Sl. No.	Emp Code	Employee Name	Department	Designation	Signature
1	5162	LAKHI NANDA BORA	QC	Prafelom	[signature]
2	5600	HARBOM KUMAR	Q.C	Office Asst	[signature]
3	3284	Dhananjai Kr	Q.C	Sr. Supervisor	[signature]
4	5556	Rishabh Gupta	Finance.	Asst officer	[signature]
5	5875	Manoj kr sharma	Finance	Sr. officer	[signature]
6	5730	Souvik Mandal	Safety & vigi	Fireman	[signature]
7	2923	Niranta Basumatary	Q.C	Sr. Analyst	[signature]
8	2246	Rupan Bora	HR	Asst. Officer	[signature]
9					
10					
11					

MEGHALAYA CEMENT LTD THANGSKAI [stamp, signature]

Annex- III

Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No: MCL/IMS&EnMS/HR& A/TAF/019
Rev No.:01
Date: 01.04.2016

Training Details : Safe driving awareness & Extinguisher operation program.

Location- VTC

Agency : INTERNAL

Date : 17.08.2022

Time : 04:00 pm to 05:30 pm

Name of Trainers : DGM-Safety & Dy. Mgr- Safety.

Attendance Record:

Sl. No.	Emp Code	Employee Name	Department	Designation	Signature
1		Ibrahim Ali	HR&A	LMV Driver	[signature]
2		Shymal Sinha	HR&A.	-do-	[signature]
3		Md. Kalam Uddin	Mines.	Hyva Optr	Kalam
4		Asif Singhar.	"	"	[signature]
5		Dwipen Chentey	"	"	[signature]
6		Chandra Dev Roy	"	"	[signature]
7		Heeman Khujur	"	"	Heman
8		S.D. Barman	"	"	[signature]
9		Situ Das	"	"	[signature]
10		[illegible]	"	"	[signature]

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Annex-II

12	2246	Rupam Bora	HR & A	Asst. Officer	[signature]
13		Pradip Bhandari			[signature]
14	5731	Pradip Bora	Vigilance	Fireman	[signature]
15	5730	Souvik Mani	Vigilance	Fireman	[signature]
16		Preeman Sutop	HR & A	Trainee	[signature]
17		Hanayan Lohji	HR & A	Trainee	[signature]
18		Maidul Roy	HR & A	Sweeper	[signature]
19		Rupam Bhattacharya	Vigilance	Supervisor	[signature]
20		Monikant Sinha	HR & A	LMV driver	[signature]

[signature]

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Annex-III

SAFE DRIVING & EXTINGUISHER OPERATOR AWARENESS

DATE: 18th August' 2022

- **TRAINING DETAILS** : SAFE DRIVING AWARENESS & EXTINGUISHER OPERATION PROGRAM
- **NAME OF TRAINERS** : DGM –Safety & Dy. Mgr - Safety
- **VENUE** : VOCATIONAL TRAINING CENTER
- **DATE** : 17.08.2022
- **TIME** : 4:00 PM To 5:30 PM
- **NUMBER OF PARTICIPANTS**: 20 Persons were attended.

On 17.08.2022 FROM 4:00 PM up to 5:30 PM at Vocation Training Center we have conducted "SAFE DRIVING AWARENES PROGRAMME". Awareness program was conducted for all HMV & LMV drivers of Company. Main motto of the Program was how to drive the Vehicle safely also during Fire Emergency how Extinguisher can operate to control & extinguish of fire.

Lesson Learned

- Before start of vehicle necessary to check the break condition, Type, oil level & water etc.
- How safe are our roads?
- Driving injuries-on or off the job.
- Unsafe acts behind the wheel.
- Driving under the influence
- Unsafe conditions.
- Vehicle safety features.
- Better not to leave mobile phones in car compartment especially when the vehicle is exposed to direct sunlight.

UNSAFE ACTS BEHIND THE WHEEL

- Shaving, Putting on make-up, Reading a map, Reaching behind you to spank kids, Not using a seatbelt, driving under the influence
- Driving at unsafe speed.
- Failing to stop or yield
- Unsafe passing of another vehicle
- Through perhaps In a difference category, eating when driving and using cell phones can compromise your response time by distracting you and by removing one hand from the steering wheel.

POOR VISIBILITY

- Night time driving (Fatality rates/mile are 4 times higher at night).
- Dust storms & Rain storms.
- Windshield wipers not effective.

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POOR ROAD CONDITIONS

- Slippery surfaces from weather.
- Road not properly maintained.

IMPROPER VEHICLE MAINTENANCE

- Inadequate brakes.
- Worn tread on tires.
- Hoses, belts
- Inadequate acceleration
- Headlight (s) out

VEHICLE SAFETY FEATURES:

- Day time running lights
  - (Headlights that are on whenever vehicle is running)
- Lap/shoulder safety belts
  - Reduce risk of moderate- to fatal injuries by approximately 50%.
- Air bags for driver & passenger
  - Combined with lap/shoulder belts, they reduce risk of fatality by another 10%.
- Child Safety seats

  Note: Children in child seats should not be placed in the front seat of cars.
- Anti-lock brakes

Finally Extinguisher operation process shown to participants and explain using procedure, -Pull the pin, Aim to Fire & Squeeze side to side. Most of participants practically operated the Extinguishers one by one & learned using process.

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Annex-III

Meghalaya Cements Ltd.

Vill: Thangskai, P.O. Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc. No: MCL/IMS & EnMS/MR/G10
Rev No.: 00
Date: 01-03-2016

Training Details : Mock Drill on Fire   Location :- Packing plant.
Agency : Safety Dept.
Duration :
(a) Date/s   From: 18/08/2022   To:
(b) Time   From 4:30 PM ;   To: 5:30 PM

Names of Trainers :
1. B. Bhagavan Singh DGM-Safety   2. Prajjal Rajaikumar - Dy. Mgr-Safety

Attendance Record:

Sl. No	Employee Name	Department	Designation	Signature
1.	Shashi Bhushan Prasad -	Logistics -	AGM -	[signature]
2.	Manoj Kr Kejriwal	Logistics	Manager	[signature]
3.	Hanuman Sharma	Logistics	Dy. Manager	[signature]
4.	Jay Kishor Mahato	Logistics	Officer	[signature]
5.	Pankaj Kr. Pandit	Logistics	Jr. Assistant	[signature]
6	Sahn Rajaul Karim Hassan	Logistic.	Sr. Officer	[signature]
7	Nil Kumar Sinha	Logistics	Asst. Supt.	[signature]
8	Somsuddin Barbhuiya	Logistics	J. Assistant	[signature]
9	Banipada Sikdar	Logistics	Supervisor	[signature]
10	Ritik Kumar	Logistics	Supervisor	[signature]
11	Tanmoy Jay Prasad Yadav	Logistics.	Sr. Assistant	[signature]
12	Bablu Kr Singh	Logistics	Sr. Assistant	[signature]
13	MOHIT KUMAR SINGH	logistics	Supervisor	[signature]
14	VIKKY THAKUR	Logistics	Supervisor	[signature]
15	Karuna Kanta Das	Logistics.	Sr. Clerk.	[signature]
16	Mukesh Ku. Sharma	Logistics	Supervisor	[signature]
17	Bikram Kr. Mahato	Logistics	Sr. Supervisor	Bikram
18				
19				
20				

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Annex-III

Meghalaya Cements Ltd.

Vill: Thangskai, P.O. Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc. No: MCL/IMS & EnMS/MR/G10
Rev No.: 00
Date: 01-03-2016

Training Details : Mock Drill on Fire
Agency : Safety Dept.
Duration :
(a) Date/s From: 18/08/2022 To:
(b) Time From 4:30 PM To: 5:30 PM
Names of Trainers :
1. B. Bhagavan Singh - DGM-Safety 2. Prajjal Raj Kumar - Dy. Mgr. - Safety.

Attendance Record:

Sl. No	Employee Name	Department	Designation	Signature
21	Maynal Hoque Choudhury	Packing Plant	G.R.I.E.N.F Supervisor	[signature]
22	Ghanakanta Gogoi	"	-"-	[signature]
23	Mominul Hoque	"	Cleaner	
24	Budhuwar Bosemotra	"	-"-	
25	Madhab Nath	"	-"-	
26	Porag Deka	"	-"-	
27	Rashikar Jyoti Deka	"	-"-	
28	Sibhu Namasudra	"	-"-	

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[signature]

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Annex- III

FIRE MOCKDRILL & EMERGENCY PROGRAMME

DATE: 19/08/2022

THEME: MOCKDRILL ON FIRE

CONDUCTED BY	: SAFETY DEPARTMENT
VENUE	: PACKING PLANT
DATE	: 18/08/2022
TIME	: 4:30 PM -5:20 PM
NUMBER OF ATTENDED PERSONS	: Twenty five (25) persons.
NAME OF INFORMER	: A shift person of Logistics dept.
ALARM RAISED BY	: CCR security person (after got the information from Dispatch)
FIRE CAUGHT	: At around 4:30 PM
FIRE –FIGHTING & RESCUE TEAM REACHED	: At around 4:33 PM
TOTAL WORKING PERSONS	: In Fire caught place 05 Persons.
PERSONS EVACUATED TO	: Safe zone within 5 minutes.
LAST PERSON EVACUATED	: At around 4:39 PM
FALLING THREE PROCESS	: Head counting started during evacuation Simultaneously.
TOTAL RESCUER	: 04 Persons
DECLARATION	: After getting everyone in counting Extinguished the fire & the area was declared safe and total 04 persons were safely evacuated.

On 18/08/2022 **at around 4:30 PM to 5:30 PM at Packing Plant** "Mock Drill was conducted on Fire" total 28 Persons were involved from Logistics Dept.

Main Motto of the training programme was in case of any fire emergency in night time how to fight and extinguish the fire in darkness and how to handle the situation and evacuate the persons from fire area, as well as practically shown the Drill to involved persons along with rescue systems of casualties. We shown to participants about rescue procedure, if found senseless due to fire accidents then immediately how to rescue the injured persons (casualties) & also shown its procedure.

Mock Drill- Suddenly Alarm was raised by CCR security person after got the information from Dispatch shift office. Accordingly siren & information by Dispatch office Fire fighting team along with Fire fighting tanker reached the spot within 3 minutes, workers were evacuated from Hot Zone to Cold zone i.e safe zone, one person at around 4:39 PM he evacuated from there he was last men as per information of our 1st responders team Fire caught at PP bag stock. During rescue simultaneously head counting also continued at safe zone by helping of 'Falling Three' procedures and finally observed total casualties were removed from fire caught area. After safely evacuation of workers immediately Fire extinguishing process had started, due to major fire breakout it was extinguished by Fire Fighting Tanker, Extinguishing Media water.

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Annex- III

Fire – Drill started at 4;40 PM emergency information were given by site Supervisor by mobile phone to ECR Emergency team member make the communication to directly the occupant to leave location/evacuate the work are, and assemble at the save assembly point. When all employee officer/ supervisor and workers arrived at the assembly point. Area rescue techniques were used by the ERT. A briefing was done on fire and emergency response during fire emergency.

Point:

- Line of communication total time line or the rescue operation and checked the response of entire team which included workforce and the awareness of the workforce regarding the emergency contact numbers.

Positive note:-

- All the staff and officer reported to the assembly point without any panic.
- The evacuation works performed successfully well inside.
- Communication work well enough reach the fire at the right time.
- The fire fighting team used the right extinguishing media for extinguished of fire.
- Before started the operation our isolation have done.
- ERT member has done well an evacuate the work location on time.
- Workers were briefed about the emergency response procedure and fire emergency.
- The evacuation team response was quick.
- The workforce remain calm, why the Mock drill was in progress and showed keen interest to get knowledge about the emergency.

Deficiency observed during the exercise:

- Less awareness of ERT team member.

Medical team also in ready position during emergency for help and further first-aid of causalities, after extinguished and controlled, Safety officer observed & investigated the area and taken the report of property lost & damage as well as after mitigation Safety officer had declared that it is now safe.

1) SAFE ZONE ASSEMBLY: Employees were taught about why and how gathered at assembling point also introduced "COLD/SAFE ZONE".
2) VICTIMS: Demonstrations for treating victims & shown to everyone. All the victims were treated & transported for Medical Aid to the nearby facility by the employees of MCL and they were aided by the Medical staff.
3) ATTENDANCE & CHECKING OF DAMAGE PROPERTY & LIVES LOST AND REPORTING. After the drill Safety officer with his team visited the area & estimated the damages.
4) COMMUNICATION: Safety office makes the communication to concern as well as informed to unit head about the incident and for further action.

CONCLUSION: Training is important part for help to educate of employees for make potential and competent in this regards the Fire Mock Drill was held to spread knowledge to our employees as well as participants also can understand and gain the knowledge about Fire mock drill, it was observed most of the workers activated while siren rang and every involved persons learned the lesson and became active

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Annex-III

Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Attendance Sheet for IMS/EnMS/External Agency Training

Doc.No: MCL/IMS&EnMS/HR& A/TAF/019
Rev No.:01
Date: 01.04.2016

Training Details : **Earth quake and disaster awareness training.** Loc- Topcem public school

Agency : INTERNAL

Date : 26/08/2022

Time : **04 pm to** 6 PM

Name of Trainers : **DGM-Safety & Dy. Mgr- Safety.**

Attendance Record:

Sl. No.	*Emp Code*	*Employee Name*	*Department*	*Designation*	*Signature*
1		Soman Dey	CPP		[signature]
2		Soni Devi	Mech.		[signature]
3		Sima Neoria	Mech.		[signature]
4		Rami Kumari	Mines.		[signature]
5		Rupali Mishra	Mines.		[signature]
6		Hari Priya Sinha	H R		[signature]
7		Pinki Devi	Prod		[signature]
8		Manju Kumari	Civil		[signature]
9		Priyanka Devi	Mech		Priya
10		Ashoni Kerga	Geo		[signature]
11		Minakshi Das	Mech.		M Das.

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[signature]

Annex-III

	Emp Code	Employee Name	Department	Designation	Signature
12		Rabia Das	H Vehicle		R. Das.
13		Shima Roy	Vigilance.		S. Roy
14		Sarda Gaonala.	Mines.		S. Gaonla.
15		mamata Khatua	~~Khatua~~ CPP		m. Khatu
16		Gita Talukdar	Mines		Geeta Talukdar
17		Rekha Sinha	logistic		Rsinha
18		Sampa Das	Inst		S. Das
19		Amrita	Prod.		[illegible]
20		Dipika Basnet	C.P.P		Db
21		Parmila Joshi	Ele		P. Joshi
22		Rekhamai Nandi	Ele.		R. Nandi
23		Latika Urang	Mech		L. Urang
24		Ron verma	Mech.		Ron
25		Jonmoni Koch	Mines		Jonmoni
26		Madhumita Das	HR		Madhu
27		Pinki Lahkar	HR		Pinki
28		B Sufiya	CPP		Sufiya
29		Sakina Begum	HR		Sakina
30		Amrita Janamlesh	HR		AJL
31		Dolumoni Nati	Mech		Dolumoni
32		Laxmi Devi	Mines.		Laxmi Devi
33		Bobita Devi	Mines		Bobita
34		Saroj Devi	Mines		Saroj Devi
35		Sangita Pangjing	~~Guest House~~ Vigilance.		Sangita Pangjing
36		Baby Bhawati Das	Mines		Baby Bhawati Das

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Annex - III

	Emp Code	Name	Department	Designation	Signature
37		Manju Bhowal Tiru	Mines		Manju Bhowal Tiru
38		Abhishek Yadav	Mechanical		Abhishek
39		Rupam Boro	HR & A		[illegible]
40		Narayan Acharya	HR & A		[illegible]
41		Tapan Basumatary	HR		[illegible]
42		[illegible]	Vigilance		[illegible]
43		Premen Gutiry	HR & A		[illegible]
44		Baby Sinha	Mines		Baby Sinha
45		Rahul Pangjing	Vigilance		[illegible]
46		Kanika Das.	QC		K.D.
47		Puspa Kataki.	Mech		P.K.
48		Anima Basumatary	Prod		A. Basumatary.
49					
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EARTHQUAKE DISATER TRAINING REPORT

DATE: 27th August' 2022

- THEME: DISASTER AWARENESS ON EARTHQUAKE TO FAMILY MEMBERS OF RESIDENTIAL COLONIES WITH STUDIED EARTHQUAKE PREPAREDNESS AND EMERGENCY CONTACT NUMBERS.
- TRAINER'S NAME: SHRI. B. BHAGAVAN SINGH & MR. PRAJJAL RAJKUMAR.
- VENUE : TOPCEM PUBLIC SCHOOL
- DATE : 26.08.2022
- TIME : FROM: - 4 PM to 6 PM
- DURATION : 2 Hours.
- NUMBER OF PARTICIPANTS : FORTY EIGHT (48) PERSONS

On 26.08.2022 from 4 PM to 6 PM at Topcem Public School we have conducted "EARTHQUAKE DISASTER AWARENESS PROGRAMME". Training was conducted for family members of employees who reside in residential colonies. Total 48 Participants were attended the program. Main motto of the Programe was pre-preparation before earthquake happens also activation during and after emergency.

It was discussed in training about Emergency Number which can be used during and after Emergency as well as precautions how to evacuate the building if it is necessary. Also discussed what is Earthquake? When & how it is happen? How we can survive?
An Earthquake is the sudden, rapid shaking of the caused by the shifling of rock beneath the earth surface. They strike without warning at any time of year day or night. There is no certainty.

1. Practice DROP, cover and hole on with all members of your household.
2. Doorways are no stronger than any other part of a structure so don't rely on them or protection. During an earthquake, get under a sturdy piece of furniture and hold on.

Why plan is required? General plan is essential accordingly practice also for those who reside in home/outside particularly for Earthquake zone peoples.

- Disasters can strike quickly and without warning.
- You may be separated from one another.
- Emergency personnel may be overwhelmed, so you need for planning.

- **Why don't we prepare?**
  - "It will never happen to me".
  - Unaware of hazards or how to prepare.
  - Fear
  - Costs involved.
- **Prepare Home Earthquake Emergency kit**
  - 3 Days of food and water, Portable Radio, Flashlights & Batteries.
  - Extra Glasses, House/Car Keys, Essential Medications.
  - Blankets/Sleeping Bag, Water Purification Kit, Essentials for Infants, Elderly or pets.

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❖ **Earthquake Emergency Preparedness**

- Secure pictures, Secure Hot Water Heater, Secure Heavy Items.
- Know safe Spots in Every Room (Study tables, Desks)
- Know dangerous Spots in Every room (Windows, Hanging Objects, Fire place).

❖ **During an Earthquake if you are in indoor**

- Stay There! Do NOT Run Outside, Stay calm & remember the Phase, "Duck, Cover and Hold".
- **Duck**- And look for Cover, **Cover**- Under a study desk or table, **Hold**- Onto the furniture leg until shaking stops.
- Face Away from windows, stay clear of tall objects that may Topple Over Watch for falling objects.

❖ **During an Earthquake if you are in an Elevator**

- May Lose Power, May stop & lights may go out, use Emergency alarm.
- Wait emergency crew & follow directions.

❖ **During an Earthquake if you are in public area**

- Steer clear of panicking Crowds & structural Hazards
- Theater- Crouch in seat.
- Ball Park or Stadium-Go to the Open play filed- Not the Exits.
- Shopping Malls –Avoid Glass displays. Head to back of shop.

❖ **During an earthquake if you are in outdoor**

- Stop it safe, but stay inside car
- Avoid stopping under trees, Light posts, Power lines or Signs.
- Stay away from bridges, Overpasses & Tunnels.

❖ **After Earthquake (After Initial shock Have Subsided)**

- Remain Calm & be prepared for Aftershocks.
- Check for Injuries & Administer First Aid to the Degree you are trained for.
- Check for Obvious Hazards & Damage on your floor.
- Do not turn on or off any lighting or electrical devices.
- Use emergency supplies if necessary.
- Follow directions over the building PA system.

❖ **After Earthquake duty of Floor warden**

- Gather occupants at pre selected gathering place & perform head count-Is everyone accounted for? Search floor for Missing or Injured Personnel and attend injured persons (If anybody injured or any abnormal).
- Turn-On battery Operated Radio- Assign someone to keep track on what is going on in the surrounding community, listen for emergency instructions.
- Take Inventory of Emergency Supplies- May be needed to last several Days.
- Conserve Supplies.
- Wait for O.K to Evacuate.

Training & exercise:

- Ensure that all workers know what to do in case of an earthquake.
- Practice earthquake and evacuation plant on a regular basis update plan & procedure base on lesson learn from exercises.

When do evacuate

- If emergency respond authorities indicate specifically to do so.
- If emergency respond authorities indicate there it is time to do so.
- If you can reach safe location before an even if expected to occur.
- When environmental conditions could not exposed evacuee to a dangerous environment.

Earthquakes certainly are a terrible natural disaster. Furthermore, earthquakes can caused few damage life and property. Some earthquakes are weak in nature and probably go unnoticed.

Finally we have shown the practical scenario in projector through slide show and earthquake videos. Practically demonstrated the all exercises and the people got the points at that during emergency how to activate particularly earthquake, natural calamities should apply those things.

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Annex- IX

MEGHALAYA CEMENTS LIMITED

LOCATION & DETAILS OF FIRE EXTINGUISHERS

DOC NO: MCL/SA/FE/2014-15

LOCATION: T.G BUILDING (CPP)

REVIEWED ON: 31.10.2022

SL.NO	AREA NAME	DEPARTMENT	EXTING. SL. NO	LOCATION	CYLINDER TYPE	PRESSURE REGULATOR	TARE WEIGHT	CAPACITY/NET WEIGHT	GROSS WEIGHT	PHYSICAL WEIGHT	DATE OF REFILLING	NEXT DUE DATE OF REFILING	REMARKS
1	CHP	CPP	MCL-47	CHP Building 2nd floor.	CO2	N/A	19.5 Kg	9 Kg	28.5 Kg	26.5 Kg	03.03.2022	02.03.2023	
2	Coal Yard	CPP	MCL-148	On the left side column.	CO2	N/A	Gas Cartridge 400 gm	9 Kg	Gas Cartridge 460 gm	Gas Cartridge 472 gm	03.03.2022	02.03.2023	
3	Bad material & Charcoal Godown	CPP	MCL-118	Outside on the sheet near entrance door 2.	Mechanical foam	N/A	Gas Cartridge 440 gm	9 Ltrs	Gas Cartridge 500 gm	Gas Cartridge 506 gm	09.12.2021	08.12.2022	
4	Compressor House	CPP	MCL-96	Inside the compressor room.	CO2	N/A	19.4 Kg	9 Kg	28.4 Kg	31 Kg	01.04.2022	30.03.2023	
5	Compressor House	CPP	MCL-88	MCC Room for Comp/Ash handling/ESP.	CO2	N/A	7.23 Kg	2.27 Kg	9.50 Kg	9.30 Kg	11.02.2022	10.02.2023	
6	Turbine House ground floor	CPP	MCL-85	Gound floor near Fire Sand bucket stand.	CO2	N/A	19.6 Kg	9 Kg	28.6 Kg	31.5 Kg	03.03.2022	02.03.2023	
7	Turbine House 1st floor in MCC panel room	CPP	MCL-87	On the wall beside entrance door.	CO2	N/A	6.35 Kg	2.27 Kg	8.62 Kg	8.81 Kg	11.02.2022	10.02.2023	
8	Turbine House 1st floor in MCC panel room	CPP	MCL-99	Inside the MCC Room door side of turbine.	CO2	N/A	19.5 Kg	9 Kg	28.5 Kg	30.4 Kg	02.09.2021	01.09.2022	
9	Turbine House 1st floor in MCC panel room	CPP	MCL-89	On the side wall near Exit side.	CO2	N/A	6.5 Kg	2.27 Kg	8.77 Kg	8.15 Kg	11.02.2022	10.02.2023	
10	Turbine House 1st floor	CPP	MCL-81	On the floor beside MOT	CO2	N/A	19.3 Kg	9 Kg	28.3 Kg	30 Kg	11.02.2022	10.02.2023	
11	Turbine House 1st floor	CPP	MCL-245	1st floor of T.G building near landing platform of staircase.	Mechanical foam	N/A	Gas cartridge 1160 gm	50 Ltrs	Gas cartridge 1460 gm	Gas cartridge 1581 gm	08.12.2021	07.12.2022	
12	Turbine House 1st floor	CPP	MCL-83	1st floor of T.G building near landing platform of staircase.	CO2	N/A	10 Kg	4.5 Kg	14.5 Kg	15.8 Kg	03.03.2022	02.03.2023	
13	Turbine House 2nd floor	CPP	MCL-21	Near Tea stall.	CO2	N/A	19.4 Kg	9 Kg	28.4 Kg	28.4 Kg	03.03.2022	02.03.2023	
14	Turbine House 2nd floor	CPP	MCL-120	Outside wall of CCR (Exit door side).	CO2	N/A	5.1 Kg	2.27 Kg	7.37 Kg	8.5 Kg	11.02.2022	10.02.2023	

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Annex- IV

15	CPP Office - 2nd floor	CPP	MCL-95	Office Gallery	CO2	N/A	6.25 Kg	2.27 Kg	8.52 Kg	7.8 Kg	03.03.2022	02.03.2023	
16	DCS Control Room- 2nd floor		MCL-79	Inside the CCR	CO2	N/A	11.85 Kg	4.5 Kg	16.35 Kg	17 Kg	04.01.2022	03.01.2023	
17	D.M PLANT		MCL-144	Beside the office	CO2	N/A	6.35 Kg	2.27 Kg	8.62 Kg	9.36 Kg	29.10.2022	28.10.2023	
18	CPP LABORATORY		MCL-LMV-25	Inside the CPP Laboratory, front side of partition wall.	ABC	√	N/A	1 Kg	N/A	N/A	02.09.2022	01.09.2023	
19	WATER TREATMENT MCC PANEL ROOM		MCL-113	Inside the panel room	CO2	N/A	6.35 Kg	2.27 Kg	8.62 Kg	8.76 Kg	03.03.2022	02.03.2023	
20	INSIDE CHEMICAL STORAGE ROOM		MCL-157	Beside entrance door inside the room.	CO2	N/A	20.65 Kg	9 Kg	29.65 Kg	35 Kg	02.04.2022	01.04.2023	
21	PUMP SHED		MCL-20	Entrance way of Pump shed.	CO2	N/A	19.8 Kg	9 Kg	28.8 Kg	32 Kg	30.07.2022	29.07.2023	

CHECKING CRITERIA

* CO2 Extinguisher and CO2 Gas cartridge which have weight less than 10% are to be rejected
* Extinguisher CO2 - to be checked through gross weight
* DCP Extinguisher - only gas cartridge weight
* Mechanical Foam - only Gas cartridge weight
* ABC Extinguisher - Check by only pressuer regulator, in the regulator needle shoul within green zone [if ok Mark √]
* If any Extinguisher found empty / Pressure low / Body corrossion then necessary to send refilling through checking cylinder condition.

Total Riser - 4 Nos
Total Fire Extinguisher - 21 Nos
Total Fire Hose - 4 Nos
Total Hose Box- 4 Nos.
Total Emergency Exit - 3 Nos

MONITORED BY

CHECKED BY

APPROVED BY

Annex- IV

MEGHALAYA CEMENTS LIMITED

LOCATION & DETAILS OF FIRE EXTINGUISHERS

LOCATION: - COAL MILL-1 & 2

DOC NO: MCL/SA/FE/2014-15

REVIEWED ON: 31.10.2022

SL. NO	AREA NAME	DEPARTMENT	EXTING. SL. NO	LOCATION	CYLINDER TYPE	PRESSURE REGULATOR	TARE WEIGHT	CAPACITY/NET WEIGHT	GROSS WEIGHT	PHYSICAL WEIGHT	DATE OF REFILLING	NEXT DUE DATE OF REFILLING	REMARKS
1	Coal Mill 1 & 2	Production	MCL-32	Coal Mill -01 1st floor inside the Extinguishers frame.	Mechanical Foam	N/A	Gas Cartridge 370 gm	9 Ltr	Gas Cartridge 430 gm	Gas Cartridge 438 gm	02.09.2022	01.09.2023	
2			MCL-100	Same as above	Mechanical Foam	N/A	Gas Cartridge 480 gm	9 Ltr	Gas Cartridge 540 gm	Gas Cartridge 549 gm	20.08.2022	19.08.2023	
3			MCL-44	Same as above	Mechanical Foam	N/A	Gas Cartridge 370 gm	9 Ltr	Gas Catridge 430 gm	Gas Cartridge 434 gm	01.09.2022	30.08.2023	
4			MCL-34	Same as above	DCP	N/A	Gas Cartridge 900 gm	10 Kg	Gas Catridge 1000 gm	Gas Catridge 1197 gm	03.03.2022	02.03.2023	
5			MCL-127	Same as above	CO2	N/A	11.88 Kg	4.5 Kg	16.38 Kg	15 Kg	25.11.2021	24.11.2022	
6			MCL-74	Same as above	CO2	N/A	19.2 Kg	9 Kg	28.2 Kg	29 Kg	31.03.2022	30.03.2023	
7			MCL-102	Same as above	CO2	N/A	19.1 Kg	9 Kg	28.1 Kg	28 Kg	16.06.2022	15.06.2023	
8			MCL-160	Same as above	DCP	N/A	Gas Cartridge 2111 gm	25 Kg	Gas Cartridge 2610 gm	Gas Cartridge 2611 gm	30.12.2021	29.12.2022	

CHECKING CRITERIA

* CO2 Extinguisher and CO2 Gas cartridge which have weight less than 10% are to be rejected
* Extinguisher CO2 - to be checked through gross weight
* DCP Extinguisher - only gas cartridge weight
* Mechanical Foam - only Gas cartridge weight
* ABC Extinguisher - Check by only pressuer regulator, in the regulator needle shoul within green zone [if ok Mark √]
* If any Extinguisher found empty / Pressure low / Body corrossion then necessary to send refilling through checking cylinder condition.

Emergency exit - 01 No
Total Fire Extinguisher - 8 Nos
Total Fire Hose - 3 Nos
Total Hose Box- 3 Nos.
Tota Riser line - 3 Nos

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MEGHALAYA CEMENTS LTD. THANGSKAI

Annex- IV

MEGHALAYA CEMENTS LIMITED
LOCATION & DETAILS OF FIRE EXTINGUISHERS

DOC NO: MCL/SA/FE/2014-15

LOCATION: - BOILER HOUSE - CPP

REVIEWED ON - 31.10.2022

SL NO	AREA NAME	DEPARTMENT	EXTINGUISHER SL. NO	LOCATION	CYLINDER TYPE	PRESSURE REGULATOR	TARE WEIGHT	CAPACITY NET WEIGHT	GROSS WEIGHT	PHYSICAL WEIGHT	DATE OF REFILLING	NEXT DUE DATE OF REFILLING	REM
1	BOILER HOUSE GROUND FLOOR	CPP	MCL-97	Near the FD-Fan (HT).	CO2	N/A	19.4 Kg	9 Kg	28.4 Kg	32 Kg	29.10.2022	28.10.2023	
2			MCL-91	Ground floor on the column.	CO2	N/A	11.68 Kg	4.5 Kg	16.18 Kg	15.5 Kg	03.03.2022	02.03.2023	
3	BOILER HOUSE 1ST FLOOR		MCL-05	1st floor beside staircase.	AFFF Foam	N/A	N/A	9 Ltr	N/A	N/A	04.01.2022	03.01.2023	
4			MCL-106	1st floor beisde of staircase.	ABC	√	N/A	5 Kg	N/A	N/A	31.10.2022	30.10.2023	
5	Boiler House 2nd floor		MCL-104	At 2nd floor of Boiler House.	ABC	√	N/A	5 Kg	N/A	N/A	04.01.2022	03.01.2023	

CHECKING CRITERIA

* CO2 Extinguisher and CO2 Gas cartridge which have weight less than 10% are to be rejected
* Extinguisher CO2 - to be checked through gross weight
* DCP Extinguisher - only gas cartridge weight
* Mechanical Foam - only Gas cartridge weight
* ABC Extinguisher - Check by only pressuer regulator, in the regulator needle shoul within green zone [if ok Mark √]
* If any Extinguisher found empty / Pressure low / Body corrossion then necessary to send refilling through checking cylinder condition.

Total Emergency exit - 01 No
Total Fire Extinguisher - 5 Nos
Total Fire Hose - 8 Nos
Total Hose Box- 7 Nos.
Tota Riser line - 7 Nos

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Annex-V

MEGHALAYA CEMENTS LIMITED

CIN- U26942ML2003PLC007125

TOPCEM CEMENT
Mazbooti ka bharosa...hamesha

Ref:- MCL/ENV/CGWB/Comm./2022-23/31

Date: 07.11.2022

To,

The Regional Director,
Central Ground Water Board,
4P7C+7RQ, NH-37, OPP-ISBT,
Betkuchi, Gaurchuk,
Guwahati, Assam.

Sub: - Submission of Detailed Scheme for Rainwater harvesting system for 2600TPD Cement Plant & 31.05 Ha Mines for approval.

Ref: -Our Letter No. MCL/ENV/CGWB/Comm./2022-23/26; dated: 20.10.2022

Dear Sir,

With reference to subject cited above, we wish to inform you that we are complying the Environment Clearance compliance for the project of Expansion of Cement Plant (from 900-2600 TPD) along with 10 MW Captive Power Plant **(Specific Condition-X)** and For Limestone mining for an area of 31.05 Ha, South Khliejhari, Thangskai Village **(Specific Condition-XI)** under MoEF North Eastern Regional Office, Shillong. As per our EC Stipulation we interest to develop Rainwater harvesting in our premises. Detailed scheme for Rainwater Harvesting to recharge the ground water aquifer & reuse in domestic purpose along with Approved layout, Rainfall Data, Copy of Environmental Clearance, Estimation of Quantum of runoff available are attached herewith for your kind approval.

On view of the above we request you to kindly approve the Rainwater Harvesting scheme.

Thank you for your consideration and attention to the matter.

Thanking You Sir,

Yours Faithfully,

For *Meghalaya Cements Limited*

Authorized Signatory

Encl: as above.

MEGHALAYA CEMENT LTD. THANGSKAI

Despatcher
Government of India
Central Ground Water Board
North Eastern Region
NH-37, Betkuchi (Opp-ISBT)
Guwahati-781 035

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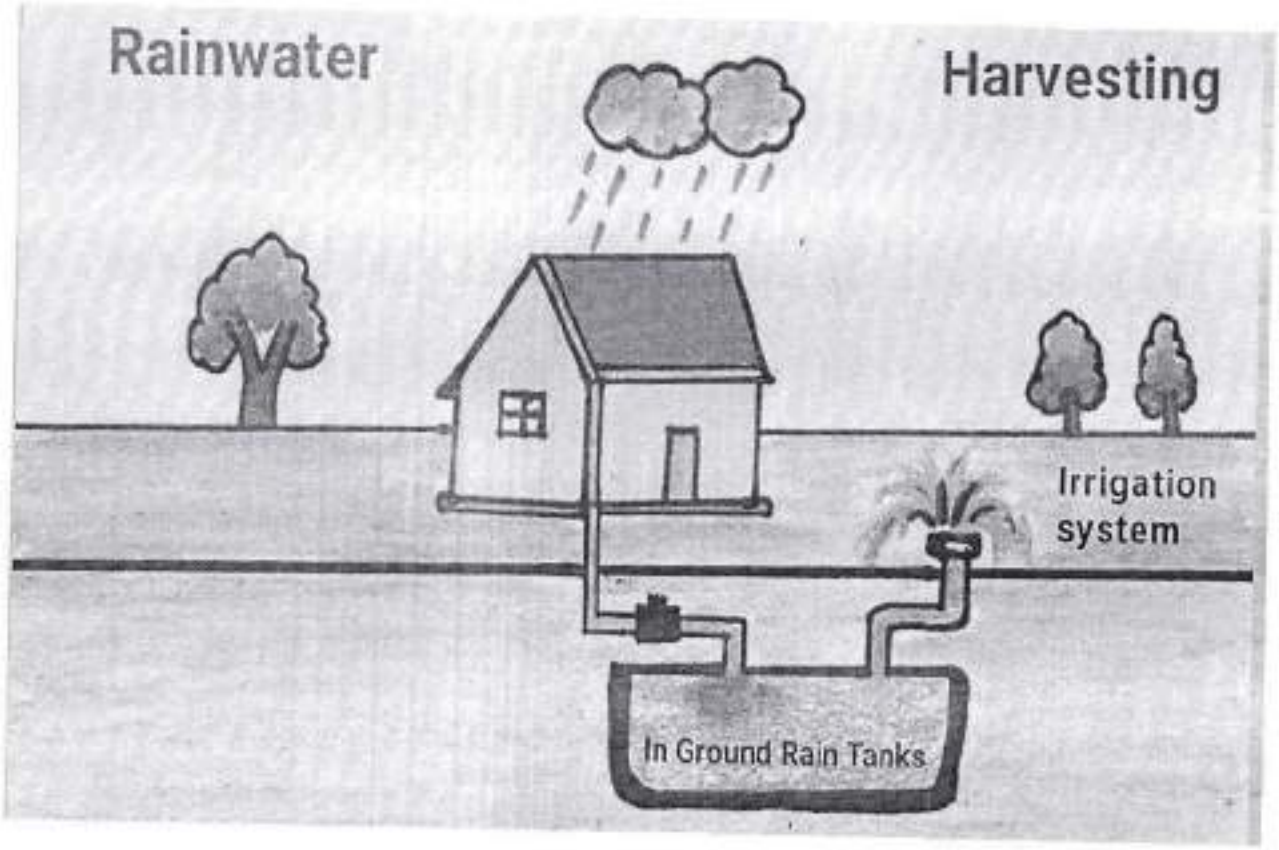
E-mail : kolkata@topcem.in

Registered Office :
Village: Thangskai, P.O. & P.S. Lumshnong
District : East Jaintia Hills, Meghalaya, PIN: 793210
Tel. : 03655 276326 / 383 / 384
Fax : 03655 276327
E-mail : meghalaya@topcem.in

HELPLINE NO : 18001233666

Annex- V

ARTIFICIAL RECHARGE TO GROUND WATER THROUGH RAIN WATER HARVESTING SYSTEM & MANAGEMENT



AT THE PREMISES OF

M/s MEGHALAYA CEMENTS LIMITED

VILLAGE- THANGSKAI, PO-LUMSHNONG

DIST-EAST JAINTIA HILLS, MEGHALAYA

MEGHALAYA CEMENT LTD THANGSKAI

Annex- V

Artificial Recharge to ground Water through Rainwater Harvesting at the premises of M/S Meghalaya Cements Limited, Vill- Thangskai.

1.0 INTRODUCTION

1.1 Purpose and scope

Rainwater harvesting allows the collection of large amount of water and mitigate the effects of drought. Most Rooftop provides the necessary platform for collecting water. Rainwater is mostly free from harmful chemicals, which makes it suitable for irrigation purpose. The main purpose of rainwater harvesting is to stop the flowing rainwater and make it percolate in the soil more efficiently which will eventually help to recharge ground water increase the level of water table. Rain water harvesting is collection and storage of rain 'water that runs off from roof tops,parks, roads, open ground, etc. This water runoff can be either stored or recharge into the ground water. Rain is a major component of the water cycle and is responsible for deposition most of the fresh water on the Earth. It provides water for hydroelectric power plants, crop irrigation, and suitable conditions for many types of ecosystem.

Rainwater harvesting is the simple process of technology used to conserve rainwater by collecting, storing, conveying and purifying of rainwater that's runoff from rooftops, parks, roads, open ground, etc. for later use.

The prime objective of this report is to fulfill the guidelines/criteria for Rainwater harvesting by M/s Meghalaya Cements Limited. For the purpose of regulation and control the use of Water, Department of Irrigation accorded NOC to Industrial/Infrastructure/mining projects as per the guidelines /criteria.

With an aim to fulfill the guidelines/criteria for issuance of NOC for withdrawal of surface water, the study was carried out to understand the hydro geological condition in and around the M/s Meghalaya Cements Limited, for selecting the feasible rain water harvesting structures to arrest runoff to the

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maximum possible extent with a view to augment ground water. Therefore, hydro geological studies i.e., geological formations, disposition of aquifers, ground water condition, chemical quality of ground water etc. were carried out in and around the unit area.

1.2 Location, Extent and Accessibility

M/S Meghalaya Cement Limited is located at village Thangskai, Po- Lumshnong, Dist-East Jaintia Hills, Meghalaya. Its distance from the state capital Shillong is 104 Kms on the National Highway number 44 connecting the capital and the eastern part of Assam passing through the district. The study area is located at a distance of 18 km south of district and block headquarters Khliehriat. The air route is through Shillong airport and Guwahati airport. The rail route is through Badarpur railway junction. Thangaskai is situated on a fall weather metalled road which runs upto Agartala in the state of Tripura through Silchar in Assam.

1.3 Geomorphology & Climate

Geomorphology

The study area is sparsely populated mountainous region which constitutes part of the Meghalaya plateau and has an average elevation of more than 3,000 feet (900 meters). It receives generally heavy rainfall and is densely forested. It is a rolling tableland. Geomorphologically, the district is an undulating one comprising dissected plateau, denudation (remnant after erosion in the geologic past) high and low hills with deep gorges. Undulating topography, dissected by numerous rivers and streams is the characteristic feature of the study area and its adjoining area. This feature favours surface run-off and does not allow water received from rainfall to get infiltrated into the underlying aquifer, if

The area represents a remnant of ancient plateau of Indian Peninsular shield uplifted to its present height due to tectonic activities in the past and deeply dissected, suggesting several geotectonic and structural deformities that the plateau has undergone. The southern parts form a platform on which Tertiaries were

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deposited in the post- cretaceous period. Topography varies from gently rolling type to highly undulating type. The study area (buffer zone) can be differentiating into two major following geographic units.

- Alluvial plain in the southern part of the study area bordering Bangladesh.
- Area having denudo-structural hills and highly undulating topography.

Climate:

Temperature: The climate of any region is governed by the two parameters ie, temperature and rainfall. The temperature data of the last five years (from 2015 to 2019), has been analyzed. On analyses, it is found that the month of January is the coldest month, when temperature goes down to about 90C, followed by the months of December and February. The maximum temperature of the year, is experienced in the months of May to August when temperature revolves around 300C. The mean temperature has been computed taking into consideration, mean temperature of each day of every month for a period of 5 years. The temperature data collected from NASA LaRC Sciences Data Center and analyzed, has been presented in tabular form (Table 1) and also graphically in the figure number 5 and 6. Based on temperature, the climate of the study area is mildly sub-tropical to temperate. In the winter months the climate is pretty cold like the other parts of the state and the district, the study area has a very pleasant climate.

Table 1: Monthly minimum, maximum and mean temperature variations for the period 2015-2019 (Data Source: NASA LaRC Sciences Data Center)

Year (2015-2019)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Max Temp	22.29	24.54	28.6	28.88	28.99	28.95	29.09	30.05	28.65	27.96	25.11	23.13
Mean Temp	14.93	17.36	20.73	23.25	24.72	25.59	25.56	25.85	25.11	23.05	19.50	16.03
Min Temp	9.17	11.4	14.24	18.45	20.94	22.94	22.81	23.01	22.36	18.02	14.01	10.43

MEGHALAYA CEMENT LTD THANGSKAI

Rainfall: Monthly minimum, maximum and mean temperature variations for the period 2015-2019 (Data Source: NASA LaRC Sciences Data Center) The area is influenced by the south-west monsoon and rainfall is assured during summer. Rainfall data recorded by the Indian Meteorological Department (IMD) has been taken into account for computation and analyses. Since the data available for Jowai recording station of IMD, was not available in a continuous time series for the last five years, the data available for Shillong station for the last five years (2016-2020), was analyzed. It was observed that the data of Jowai and Shillong does not vary much. The average annual rainfall in the study area considering Shillong station of IMD is 6683.18 mm/annum. The area receives a fairly high rainfall throughout the year. Most of the precipitation occurs between June to September due to south-west monsoon originating from the Arabian Sea. The months of April and May also receive a fair amount of rainfall of the order of 500 mm to 800 mm, if it is compared with the rainfall of the same period in rest of India- although it constitutes only 20% of the total annual rainfall in the region. This orographic rain during the non-monsoon period, results from clouds originating in the Bay of Bengal that drifts towards the Bangladesh plains after hitting the Jaintia hills and rapidly rise to the upper atmosphere, where they swiftly cool down and result in heavy precipitation. Rainfall during the winter months, specially in the month of October is also high which is of the order of 343.5mm which is attributed to 'Retreating Monsoon', when moisture laden south-west monsoon winds get reflected from the High Himalaya ranges and on their way back, precipitate in Myanmar and other adjoining hilly areas. This implies that rainfall is well distributed throughout the year and non- monsoon months also contribute to the annual rainfall in the area. July is the wettest month, when rainfall down pouring on the area is as high as 1500 to 2000mm, which can be compared with the annual rainfall of some of the high rainfall eastern states of the india.

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Table 2: Rainfall Data in mm over a period of last 5 years till 2020 (Data Source: IMD)

Year	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	Annual RF	Monsoonal RF
2016	13.7	8.8	83.7	1026.9	661.2	796.4	2603.8	318.6	644.4	335.6	25.7	7.5	6526.3	4363.2
2017	0.6	214.4	313.4	887.4	395.9	1537.9	1433	1523.6	854	471.9	11.8	35.8	7679.7	5348.5
2018	3.6	18.1	67.7	264.6	691.5	1129.7	1431.7	746.6	617.5	73.9	6.1	14.9	5065.9	3925.5
2019	0.1	28.9	22.5	271.9	913.5	1474.5	2210.6	731.3	1016.6	508.3	25.8	3.3	7207.3	5433
2020	28.1	14.9	31.2	265.1	1533.2	1465.5	1668.2	224.2	1361.4	327.7	17.2	0.0	6936.7	4719.3
Average													6683.18	4757.9

2.0 GROUND WATER SCENARION

2.1 Hydrogeology (Regional Hydrogeology)

The regional or the hydrogeology of the district can be divided into three units, namely consolidated, semi consolidated and unconsolidated formations:

Consolidated formation: These include the oldest rock formation occupying about 1300 km2 in the northern and western parts. Gneissic complex, quarzites etc constitute this unit. The depth of weathering varies from place to place and is 15 to 20m at places. The presence of substantial-weathered mantle is confined to their secondary porosities, which form excellent repository of ground water in hard rocks area. The storage and movement of ground water in hard rock is controlled by physiographic, zone of weathering and interconnected weak planes. Ground water occurs under unconfined condition and in semi-confined condition in the interconnected secondary structural weakplanes/ features like joints, fractures etc of the underlying hard rocks.

MEGHALAYA CEMENT LTD. THANGSKAI

Semi consolidated formation: These constitute the major part of the district covering Amlarem and Khliehriat blocks and two- thirds of the entire area. It ranges in age from late Cretaceous to Plio- Pleistocence. The Shella formation of the Jaintia group is the most conspicuous. Ground water in this formation occurs under unconfined to semi confined conditions due to primary porosities of the semi consolidated formations as well as in the secondary porosities like caverns, open fractures and joints. The formation shows both isolated hummocky topography to highly undulating topography with steeply rising hills and deep gorges. The karst topography is observed in areas of Letein, Latyrk, Litang etc. occupied by the cavernous limestone.

Unconsolidated formation: Semi consolidated formation: The unconsolidated formation is mainly represented by recent alluvium occurs near the southern fringe of the district and is the continuation of the alluvial plain of Bangladesh. It constitutes about 67 km2 representing about 2% of the total area. The depth of shallow aquifer in the district ranges from 5 to 40 meters. This shallow aquifer occurs under unconfined to semi confined condition. Ground water from shallow aquifer is exploited through different types of ground water extraction structures such as dug wells. The deeper aquifer occurs as semi-confined to confined condition where ground water is found in the fractured zone of consolidated Sandstone and Limestone. The drilled depth of exploratory wells tapping this aquifer ranges from 80.30 to 192m bgl. The number of fractures and its zones encountered varies in all the places which show the complexity of the hydrogeology of consolidated hard rock formation. In the study area there are two groups of aquifers (CGWB reports) which are described below:

Aquifer I: It is the unconfined aquifer where the aquifer zones were tapped within 2 to 40 m depth and generally exhibits unconfined nature of the aquifer. The study area is highly undulating terrain and tapping of aquifer I (shallow aquifer) is not suitable.

Aquifer II : This is the deeper aquifer which occurs in the as semi confined to confined condition where ground water is found in the fractured zone of

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consolidated Sandstone and Limestone. One exploratory well with one observation drilled by CGWB at Khliehriat block down to 164.90m. The result of exploratory drilling and detail study in the area indicates that the two sets fracture zones encountered within 50 to 100 m & 100 to 150 mbgl. The number of fractures and zones of encountering fractures varies widely which show the complexity of the hydrogeology of the formation. The piezometric head in second group of aquifer ranges from 9.36 to 63.88 mbgl.

3.0 STATUS OF WATER REQUIREMETS IN THE PROJECT AREA

In order to meet the total requirements of water in the M/s Meghalaya Cements Limited for different uses ie., domestic purpose, cement plant and industrial cooling, CPP, plantation and dust suppression in the plant area and found it is about 1355m3/day, the entire quantity of water is presently being pumped from a perennial nala Umtyrng flowing west to east along the northern boundary of the lease area, Umtyrng nala joins Umlunar river 2.5 km further ast. Umlunar is a tributary of Lukha River. The intake point of e water from the Lunar River is approximately 5km from the water treatment plant. The area is also very sparsely populated hence exploitation of groundwater for irrigation and drinking purposes is not being practiced in large scale in the core and buffer zone of the study area, except in few locations. In the lean months also surface water source can sustain the demand for different uses as mentioned above.

DETAILS OF RAINWATER HARVESTING /ARTIFICIAL RECHARGE MEASURES FOR GROUNDWATER RECHARGE IN THE PREMISES OF M/S MEGHALAYA CEMENTS LIMITED, VILL-THANGSKAI, PO- LUMSHNONG, EAST JAINTIA HILLS, MEGHALAYA.

As per the requirement and guidelines issued by Central Ground Water Authority, Ministry of Water Resources, River Development and Ganga Rejuvenation,Govt. of India in Sl. No 8 of the application for new NOC (Details of rainwater harvesting /artificial recharge measures for groundwater recharge in the area, if already

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implemented, details may be furnished.(Attach report on comprehensive & feasible rainwater harvesting /recharge proposal) for the industrial use of ground water , details of rainwater harvesting and suitable artificial recharge structure in the project site M/s. Meghalaya Cements Limited, Vill- Thangskai, Po- Lumshnong, Meghalaya have been furnished herewith.

4.0 ROOFTOP RAINWATER HARVESTING

Rainwater harvesting is the technique of collection and storage of rain water at surface or in sub-surface reservoir before it is lost as surface run – off. The augmented resources can be harvested in the time of need. Artificial recharge to groundwater is a process by which the groundwater reservoir is augmented at rate exceeding the one under natural conditions of replenishments. Rainwater collected whether for domestic use, stocking weathering, supplementary of full irrigation. The collection and storing of rain water on the surface of the soil subsequent use known as water harvesting. This includes all measures that induce, collect, store and conserve surface runoff. Water harvesting is mast essential operation in arid and semi arid region where water is the deficit for most of the season.

However, MCL has adopted & implemented two main technique of rain water harvesting. First one, Storage of rainwater on surface for future use and second one recharge the ground. The storage of rain water on surface is a traditional technique and structure used were underground tanks, ponds, check dams, weirs etc.

Rooftop rainwater harvesting structures are to be construed where yet not constructed in the premises of M/S Meghalaya Cements Limited. The collected rainfall at first is to paased through a filter so that the water can drained into suitable recharge structures. A provision to drain our portion of the first rainfall has been designed, as it would flush our dirt.

Meghalaya Cements Limited has emphasized on sustainable water sully systems and reliability in terms of quality as well as quantity by a combination of traditional wisdom and best practices in water management with modern technologies and scientific understanding. Importance has been given in popularizing water harvesting and watershed management based on agro-climatic zone for sustainability of the groundwater resources. Such approaches shall be to recharge

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unconfined or Semi-confined aquifer as per local hydro geological conditions as well as feasibility.

In the project area, the rainwater available from roof tops of Residential buildings, Raw Material Yard shed and office buildings that goes as waste can be recharged to aquifers as well as utilized gainfully at the time of need by way of surface storage. The rainwater harvesting system has been designed in such a way that it does not occupy large space for collection and recharge.

The importance of rainwater harvesting in the area lies in the following salient points:

i. To meet the ever increasing demand for water
ii. To check run-off
iii. To augment groundwater recharge and control decline groundwater level.
iv. To reduce soil erosion
v. To avoid flash flood.

Central Ground Water Board has evaluated the availability of rainwater from specific roof areas based on the criteria of available rainfall (Table-1)

Table-1- Availability of Rainwater through Rooftop Rainwater Harvesting

Rainfall (mm)	100	200	300	400	500	600	800	1000	1200	1400	1600	1800	2000
Rooftop Area (Sqm)	Harvested water from Roof Top (cum)												
20	1.6	3.2	4.8	6.4	8	9.6	12.8	16	19.2	22.4	25.4	28.8	32
30	2.4	4.8	7.2	9.6	12	14.4	19.2	24	28.8	33.6	38.4	43.2	48
	32	16.4	9.6	12.8	16	19.2	25.6	32	38.4	44.8	51.2	57.6	64
50	4	1.8	12	16	20	24	32	40	48	56	64	72	80
60	4.8	9.6	14.4	19.2	24	28.8	38.4	48	57.6	67.2	76.8	86.4	96
III	5.6	112	16.8	22.4	28	33.6	44.8	56	67.2	78.4	89.6	100.8	112
III	6.4	122	19.2	25.6	32	38.4	51.2	64	76.8	89.6	102.4	165.2	128
90	7.2	14.4	21.6	28.8	36	43.2	57.6	72	86.4	100.8	115.2	129.6	144
100	8	16	24	32	40	48	64	80	96	112	128	144	160
150	12	24	36	48	60	72	96	120	144	168	192	216	240
200	16	32	48	64	80	96	128	160	192	224	256	288	320
250	20	40	60	80	100	120	160	200	240	280	320	360	400
300	24	48	72	96	120	144	192	240	288	336	384	490	480
400	32	64	96	128	160	192	256	320	384	448	512	576	640
500	40	80	120	160	200	240	320	400	480	560	640	720	800
1000	80	160	240	320	400	480	640	800	960	1120	1280	1440	1600
2000	160	320	480	640	800	960	1280	1600	1920	2240	2560	2880	3200
3000	240	480	720	960	1200	1440	1920	2400	2880	3360	3840	4320	4800

(Source: Central Ground Water Board,MOWR.Govt of India)

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It is experimented that the cost of recharge to sub-surface reservoir is lower than that of surface reservoirs. The aquifers serves as the repository of the recharged water as well as the distribution system where no land is wasted for storage purpose and no population displacement is involved.. Groundwater is not directly exposed to evaporation and pollution.

4.1 DESIGN CONSIDERATIONS

The important aspects scrutinized for designing rainwater harvesting system to augment groundwater resources in the premises of M/S Meghalaya Cements Limited, Cement manufacturing industry are:

- Regional and local hydro geological set up including nature and extent of the aquifer, soil cover, topography, depth to water level and chemical quality of groundwater.
- The availability of source water, one of the prime requisite for ground water recharge in terms of non –committed surplus monsoon runoff.
- Area contributing run off like area available, land use pattern, industrial, residential and paved area, rooftop area etc.
- Hydrogeologival characters like rainfall duration, general pattern and intensity of rainfall

Some important information towards rainwater harvesting and artificial recharge to ground water is given below:-

Project area (Total land area)	52.969 Ha (529690 sq.m)
Rooftop area (Shed Area)	4.195 Ha (41950 sq.m)
Average annual rainfall	6683 mm

4.2 ESTIMATION OF RUN-OFF

Run –off generated from rainfall (annual) = area (sq m)*Rainfall (m)*Run-off **Coefficient = Volume of water in m^3**

Roof Area = 41950*6.683*0.80= 224281 m^3

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Total run-off available in the premises = 224281 m^3

The premises of M/S Meghalaya Cements Limited has a cumulative area of 529690 m^2 .Considering the average annual rainfall of 6683 mm (as per the record of IMD, rainfall data) a volume of 224281 m^3 rainfall can be harvested annually in the premises of the Industries. All the calculations have been made based on the standards norms put forth by Central ground Water Board.

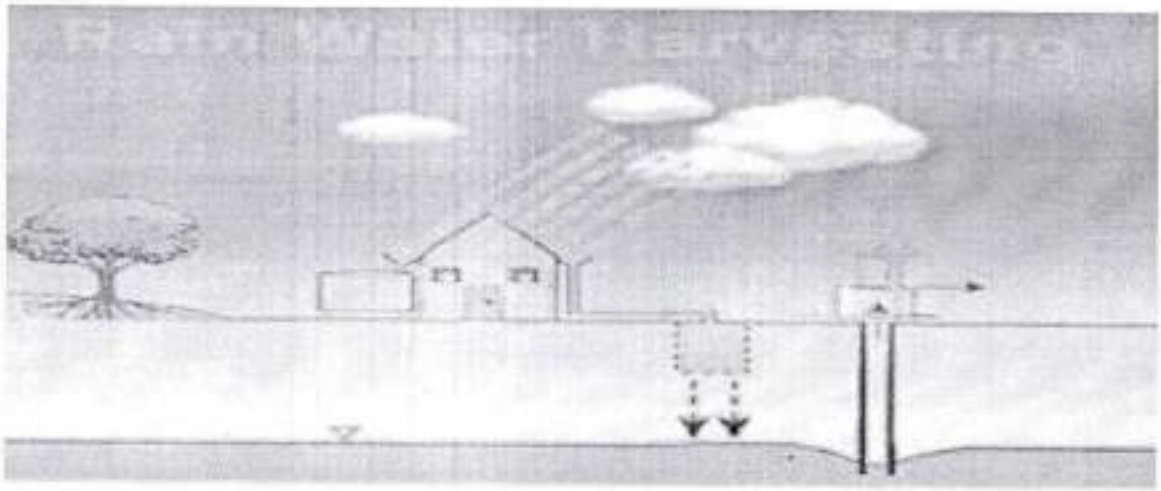
4.3 METHODS & TECHNIQUES

Basically there are three types of rain water harvesting methods: - first Storage of Rain water and recharge in ground, second Recharge through Pit and third the recharge of water through Trench.

4.3(A) STORAGE OF RAIN WATER AND RECHARGE UNDER GROUND

Water storage/collection in rooftop or plane, filtration and recharge it to the Ground. It can fulfill the extracted water excavation condition within the ground.

Diagrammatic representation of the roof top rainwater harvesting structure to be developed in the premises of the industry has been depicted in fig.1



Determining the normal rainfall bears signification. The intensity of each of the norms and durations has also been considered the important aspects towards designing the rainwater harvesting system to augment groundwater included a

MEGHALAYA CEMENT LTD THANGSKAI

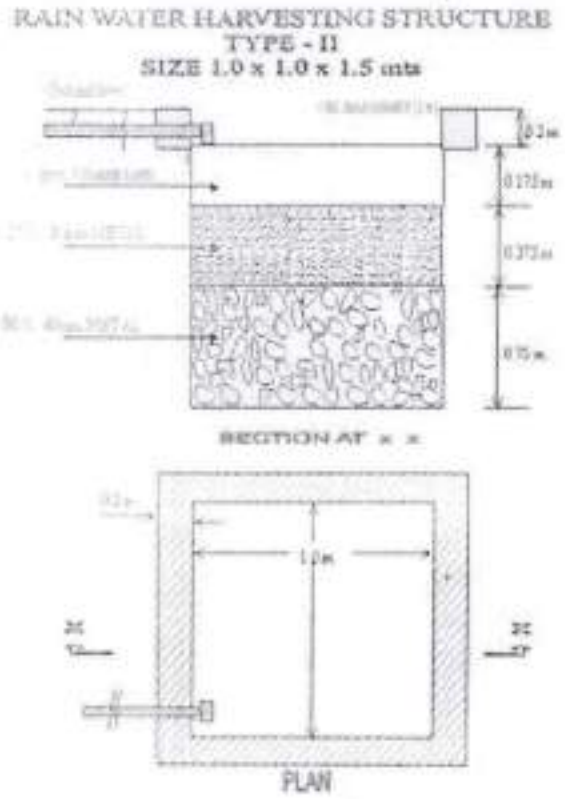
thorough study of hydrogeology of the area including the nature and extent of aquifer. Soil cover, topography, depth to water level and chemical quality of groundwater. The availability of source water, one of the prime requisite for groundwater recharge has been assessed in terms of non committed surplus monsoon runoff. Factors contributing runoff such as land use pattern, industrial residential, green belt, paved area, roof top area etc, have been given due consideration .Apart from that hydrometerlogical characters like rainfall duration, general pattern and intensity of rainfall have been studied and evaluated carefully.

4.3(B) RECHARGE THROUGH PIT

The areas where permeable formations outcrop /occur at very shallow depth, artificial recharge can be carried out through Recharge pots.

DESIGN-B

DESIGN OF THE RECHARGE PIT FOR COLLECTING RAIN WATER



MEGHALAYA CEMENT LTD
THANGSKAI

Annex- V

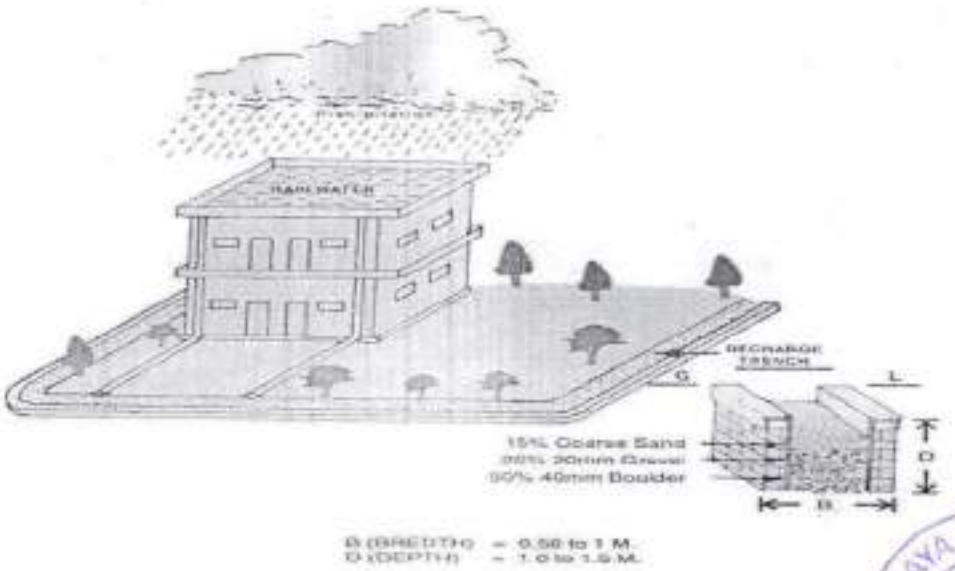
Recharge pits/tanks may be of any shape and size which are back filled with boulders, coarse gravels in grading with boulders at the bottom, fine gravels in between and coarse gravels and sand at the top so that the slit content generated with runoff will be deposited on top of the coarse sand layer and can easily be removed. However, the pits/pipes may be of the dimension as shown in the figure-2 (Design-B). Pipeline with should be provided at the channel so that leaves or any other solid waste/debris are prevented from entering and de-silting chamber may also be constructed at the ground to arrest the flow of finer particles. The top sand layer should be cleaned periodically to maintain the recharge rate.

The run-off generated from the roof area is very high; recharge pits are to be constructed with each of the 1 nos. storage tank to recharge the excess water from the roof –top of the building.

4.3(C) ARTIFICIAL RECHARGE THROUGH RECHARGE TRENCH

In the planes the area to be channelized to the recharge trench along the boundary of the campus to recharge to ground water. This system is suitable where slope area is present so that water can flow and collected.

The technical design of the recharge trench is shown fig.2.



Proposed techniques of Rainwater harvesting and artificial Recharge to ground water

LOCATION	SOURCES OF RUN-OFF	PROPOSED STRUCTURE	NO OF STRUCTURES
M/S Meghalaya Cements Limited	A. Roof area B. Open area C. Green area D. Paved area	Ground Recharge & Stores and use	03

5. CONCLUSION & RECOMMENDATION

Considering all the necessary factors and parameters, The M/s Meghalaya Cements Limited has been all the storage of rooftop rainfall which is 224281 m^3 and recharges it to the ground level through pipelines and reuse in domestic purpose. The suitable structure for Rooftop rainwater harvesting & artificial recharge to ground water and reused in domestic purpose within the campus of M/s Meghalaya Cements Limited, has been considered as Rooftop water collection and ground recharge. The study area has got ample scope for groundwater development from shallow as well as deeper aquifers. However, resource utilization should be done in a systematic and scientific manner keeping in view of the future prospect with due consideration of the prevailing hydrogeological conditions. The project area fall in "Safe" category and as per guidelines, NOC is required for ground water withdrawal subject to adoption artificial recharge to ground water and mandatory recycling and

MEGHALAYA CEMENT LTD THANGSKAI

reuse of water. However in section-D (i) says that mandatory clauses on RWH may be relaxed in case of water logged/shallow water level area (<5m bgl during pre monsoon).

M/s Meghalaya Cements Limited has an industrial & domestic requirement of 1355 m^3 of water per day. They have a cumulative area of 529690 m2. Considering the average annual rainfall of 6683 mm, a volume of 224281 m3 rain fall can be harvested annually considering all the necessary factors and parameters, the suitable structure for artificial recharge to ground water within the premises of M/s. Meghalaya Cements Limited, has been considered as recharge pit. One number recharge pit (with tank) has been constructed along with design criteria for construction to recharge the excess water from Rooftop. Another 02 recharge pit yet is developed. The 224281 m3 volume of water to be passing in the tank being directly obtained from the Rooftop recharge to ground water through recharge pit. The rainwater available from open land, paved area and green belt area has to be diverted to the recharge trench all along the boundaries for recharge to ground water. Thus a present a total volume of 224281 m3 of rain water available from Rooftop will be harvested annually in the premises of M/s Meghalaya Cements Limited through construction of 03 number of recharge pits. The total requirement of surface water and in future (if required) the entire rainfall available from paved, green belt and open area water can be utilized in the campus through construction of recharge trench all along the boundary of the campus.

MEGHALAYA CEMENT LTD. THANGSKAI

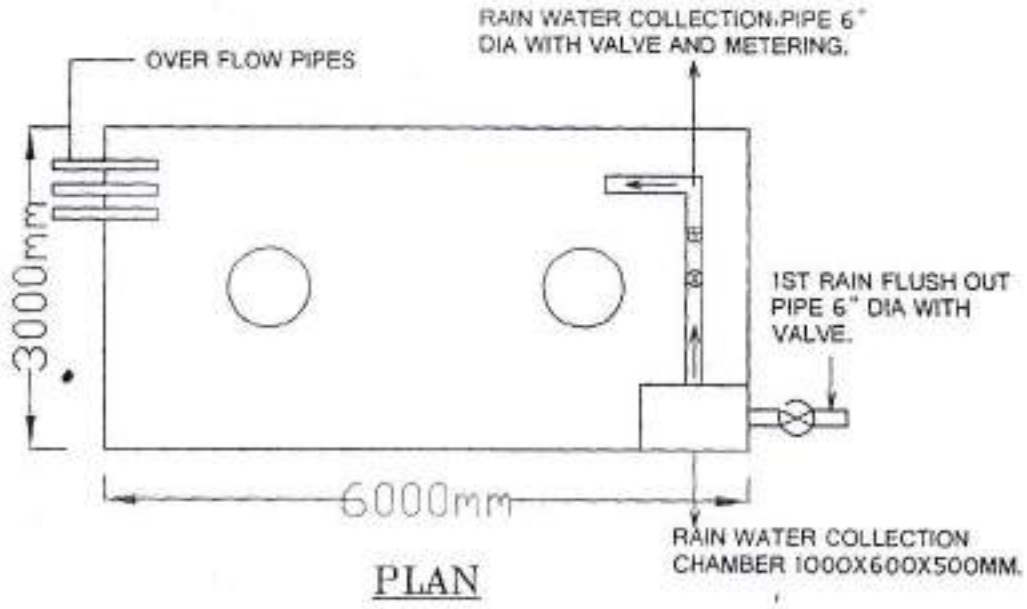
Annex-V

Rain Water Harvesting Layout Plan

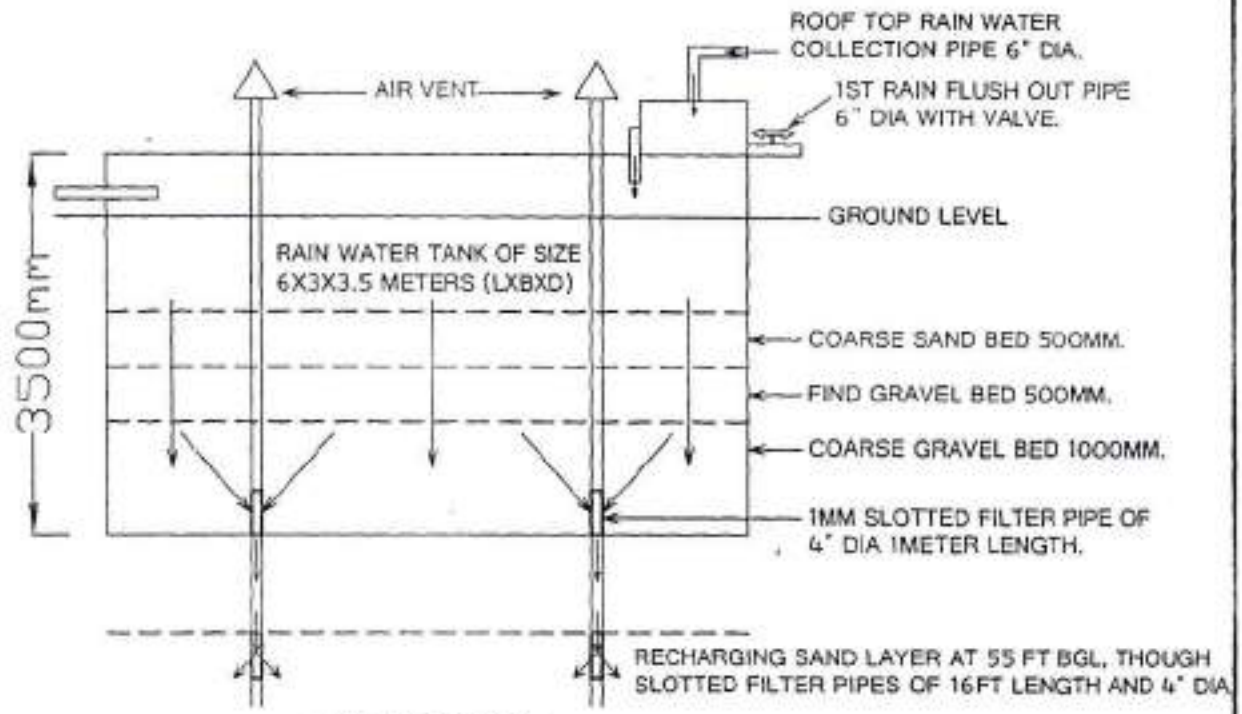
At Meghalaya Cements Limited

MEGHALAYA CEMENT LTD
THANGSKAI

Annex- V



PLAN



ELEVATION

MEGHALAYA CEMENT LTD
M. C. L.

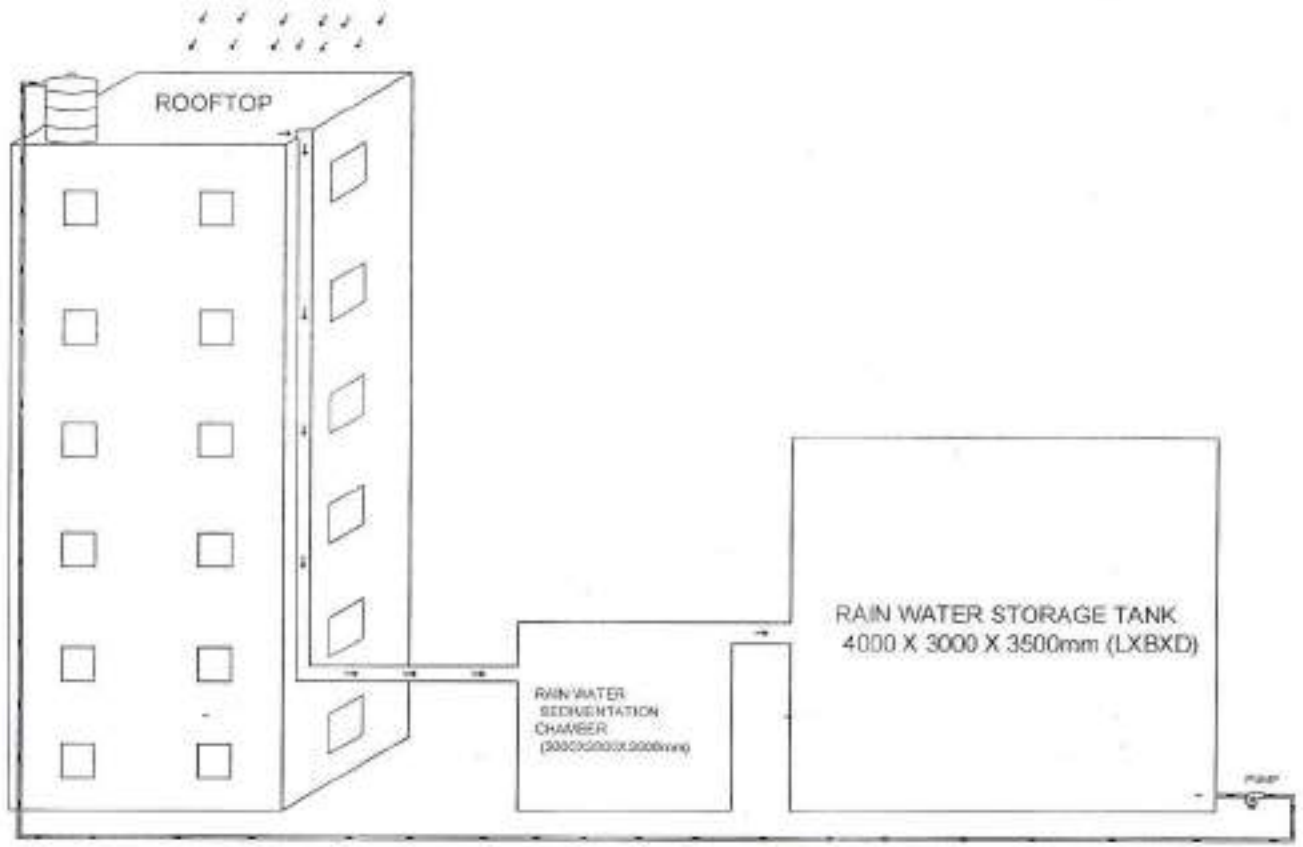
RAIN WATER HARVESTING SYSTEM

MEGHALAYA CEMENTS LIMITED

SCALE	DRAWN BY	DATE	CHKD. BY	APPD. BY
NTS	K.A.	06.02.16		

DRG. NO. MCL/LAYOUT/RWHS/001 | REV 0

Annex-V



MEGHALAYA CEMENT LTD THANGSKAI

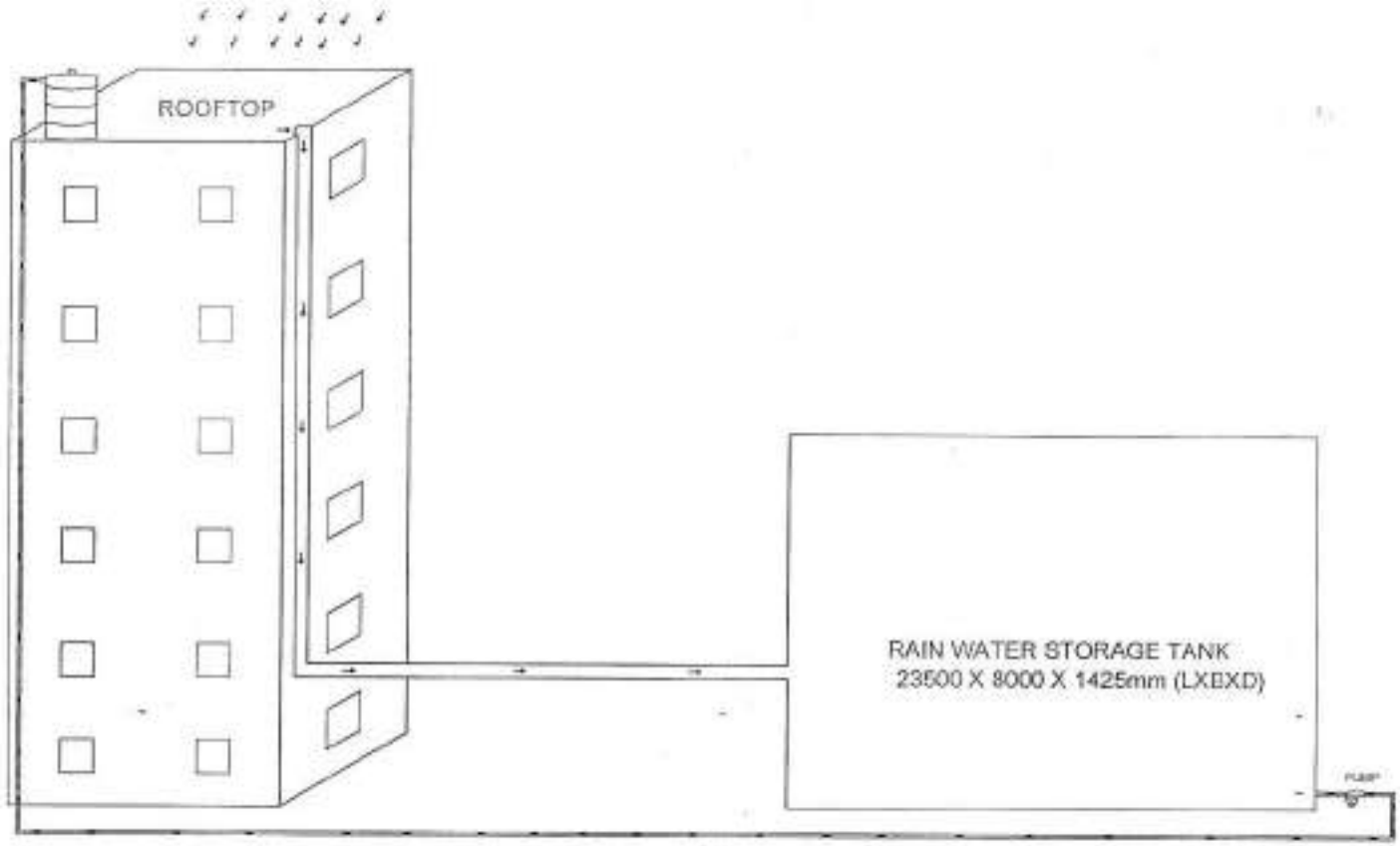
RAIN WATER HARVESTING SYSTEM-E BLOCK

MEGHALAYA CEMENTS LIMITED

Scale	Date	Drawn	Ch.By	App.By
NTS	26.09.22	V.M	K.A	

Dwg. No. MCL/LAY/MISC./002 | Rev.No. 0

Annex-V



MEGHALAYA CEMENT LTD. THANGSKAI

RAIN WATER HARVESTING SYSTEM
TOPCEM COLONY

MEGHALAYA CEMENTS LIMITED

Scale	Date	Drawn	Ch.By	App.By
NTS	26.09.22	V.M	K.A	

Dwg. No.	Rev.No.
MCL/LAY/MISC./003	0

Annex – VI

GOVERNMENT OF MEGHALAYA
DEPARTMENT OF IRRIGATION
OFFICE OF THE EXECUTIVE ENGINEER (IRRIGATION)
JAINTIA HILLS DIVISION, JOWAI

No AID(J)223/2007-2008/ Dated Jowai, the 24th March 2008.

NO OBJECTION CERTIFICATE.

The Executive Engineer Irrigation Jaintia Hills Jowai after due consideration of all formalities relating to the issue of N.O.C. to Meghalaya Cement Limited for drawal of water from the River Chynryntong – Umparti near Thangskai village for its Cement Plant with its Captive Power Plant at Thangskai village, subject to N.O.C. issued by District Administration of Jaintia Hills District, Jaintia Hills Autonomous District Council, Jowai, Durbar Elaka Narpuh, Durbar Shnong Thangskai, Narpuh, the undersigned is pleased to grant this NO OBJECTION CERTIFICATE to the Meghalaya Cement Limited for the drawal of water from Chynryntong – Umparti River to the proposed Cement Plant and Captive Power Plant of Meghalaya Cement Limited at Thangskai village subject to the following condition:-

1. The Company will not claim any right over the river nor shall refrain any other agency from utilizing the water from Chynryntong-Umparti River as and when required.
2. The Company is to draw only the required quantity of water of 0.04 Cumecs and extra requirement should be obtained prior permission from the undersigned before drawal of the water form Chynryntong – Umparti River.
3. To prevent pollution of river/streams, the company is to ensure that no liquid effluent should flow from the factory to any stream or river by construction of Treatment plants/ soak pits.
4. The company should pay royalty/Cess as and when required as per the rule and regulation laid by the Government.
5. Regular monitoring as to the observance of the terms and conditon to be done by the representative of the Department and the company on half yearly basis.

Cont.... P/2

MEGHALAYA CEMENT LTD. THANGSKAI

Annex-VI

6. The company should obtained No Objection Certificate for setting up plant from the Jaintia Hills Autonomous District Council including Trading Licence.

7. The company must follow the above terms and condition otherwise the legal action should be taken against the company.

Sd/-

Shri.K.D. Phawa
Executive Engineer(Irrigation)
Jaintia Hills Division, Jowai

Memo.No.AID(J)223/2007-2008/ 1145 6 Dated Jowai,the 24th March 2008.

Copy:

1. The Deputy Commissioner,Jaintia Hills District,Jowai - for favour of information.
2. The Chief Engineer(Irri), Meghalaya,Shillong – for favour of information as per technical approval vide letter no Agri/IRRI-1308/2007-08 /243 dt Shillong 20th March '08
3. The Superintending Engineer(I) Meghalaya, Shillong Circle for favour of information.
4. Shri. Gopal Sharma, Authorised Signatory of Meghalaya Cement Ltd. Thangskai for favour of information.

24/3/08

Shri.K.D. Phawa
Executive Engineer(Irrigation)
Jaintia Hills Division, Jowai

MEGHALAYA CEMENT LTD THANGSKAI

Annex-VI

GOVERNMENT OF MEGHALAYA
OFFICE OF THE DEPUTY COMMISSIONER JAINTIA HILLS DISTRICT
JOWAI

No. Gen/MCL-4/81/140 - This is to certify that there is NO Objection to Shri Gopal Sharma, Authorized Signatory of MEGHALAYA CEMENTS LIMITED for drawing water from Wah Shyrtong River to use of their Plant as well as for Power Plant. This certificate is issued on the basis of the N.O.Cs issued by the District Council/ Headman Myntre/ Dollor of Elaka

Deputy Commissioner,
Jaintia Hills District, Jowai

No GEN/MCL-4/81/140-A Dated Jowai the 21st November, 2007

Copy to :-

1. The Superintendent of Police, Jaintia Hills District Jowai for information.
2. The Secretary, Jaintia Hills Autonomous District Council Jowai for information and necessary action.
3. Shri Gopal Sharma, Authorized Signatory, Meghalaya Cements Limited for information and necessary action.

Deputy Commissioner
Jaintia Hills District, Jowai

MEGHALAYA CEMENT LTD
THANGSKAI

Annex- VI

OFFICE OF THE DOLLOI ELAKA NARPUH
Jaintia Hills District, Meghalaya

NO OBJECTION CERTIFICATE

I, Shri Manbha Kyndoh, Dolloi of Narpuh Elaka, Jaintia Hills District, Meghalaya, hereby certify that I have no objection in drawing water from Wah Shyrtong river by M/s Meghalaya Cements Limited for their use and for power plant purpose.

5/11/07.

Shri Manbha Kyndoh
Dolloi
Elaka Narpuh

Date: Thangkai.
Place: 3/9/07.

Shri Manbha Kyndoh
Dolloi of Narpuh Elaka

MEGHALAYA CEMENT LTD
THANGSKAI

Annex- VI

OFFICE OF THE JAINTIA HILLS AUTONOMOUS DISTRICT COUNCIL:JOWAI.

::::::

NO.JHADC/FOR/22/05/13/8 Dated Jowai, the 5-6- 2007.

To,

M/s Meghalaya Cement Limited,
Thangskai,Jaintia Hills District.

Subject :- No-objection certificate.

Reference :- Your letter dt.03.05.07.

With reference to your petition above, I am directed to inform you that this Office have no objection for your drawl of water from Wah Shynrymtong to the Cement Plant site on the following conditions.

1. This N.O.C is valid for drawl of water only.

2. The number and size of trees to be felled during the course of pipeline connection should be reported to this Office for necessary action.

3. The company shall have to reclaim out of its own cost any damage caused during the time of drawing of water from the river source.

4. It shall be the prime responsibility of the company that the nearby population crops, orchards etc. shall not be affected due to the drawl of water.

5. Non observance and violation of the above conditions this No-objection certificate is liable to be cancelled.

By.Chief Forest Officer,
Jaintia Hills Autonomous District Council,
Jowai.

/////

MEGHALAYA CEMENT LTD. THANGSKAI

Annex - VII

2088

SECOND SCHEDULE

REPORT OF MEDICAL EXAMINATON

I do hereby certify that I have examined Manoshjyoti Bose Certificate No. ______________ He / She appear to be 34 years of age.

The identification marks of the Candidate

(a) A mole on left face

(b) A mole on Chest

Signature/Left thumb Impression of the candidate:

The findings of the Examining Authority in respect the health of the candidate are as follows:-

General conformation Good / Fair / Poor

2. Height 166 cms

3. Weight 62 Kg.

- Eyes

Visual Acuity: Distant Vision

Right Eye 6/6 Left Eye 6/6 (Uncorrected)

Right Eye 6/6 Left Eye 6/6 (Corrected)

Ears Right Ear Left Ear

	Right Ear	Left Ear
Hearing	Nad	Nad
Any organic disease	Nad	Nad

Respiratory System:

Chest measurement

(i) after full expiration 87 cms

(ii) after full inspiration 92 cms

Auscultation finding Nad

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- VII

Other Abnormalities Nad

7. Circulatory system:

Pulse 72 per minute

Blood Pressure 110/70 mm of Hg

Heart Sound- S1 Nad

S2

Murmur – present/absent

Any other Abnormalities Nad

8. Abdomen ;

Tenderness Absent

Liver Nad

Spleen Nad

Tumour Nad

Other Abnormalities Nad

9. Nervous System:

History of fits or epilepsy absent

Sensory function Nad

Motor function Nad

Planter Nad

Mental Health Nad

Any other Abnormalities Nad

10. Genito – Urinary System: Nad

11. Locomotor System Nad

12. Skin : Nad

13. Hydrocele : Present / Absent

14. Hernia : Present / Absent

15. Any other abnormality: Nad

16. Investigation

A. Chest Radiograph (PA view)

B. Electro cardiogram (ECG) LBBB

C. Urine routine

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- VII

Reaction : Acidic
Albumin : Nil
Sugar : Nil

D. Blood Bio chemistry

i) Blood Sugar: Fasting 85 mg/dl Postprandial 128.3 mg/dl

ii) Blood Urea 28.0 mg/dl Serum Creatinine 0.81 mg/dl

iii) Lipid Profile Normal

19. Any other investigation or opinion of specialist considered necessary by the Examining Authority.

Opinion of Specialist (Attached)

20. Remark if any: —

21. Opinion of the Examining Authority:

✓ a. I consider that he / She is fit to perform his/her statutory duties in mines for a period of one year

b. I consider him / her unfit to perform statutory duties in mines because of

_____ (mentioned disability).

He / She is suffering from _____ and is unfit to perform statutory duties in underground mines but may continue to perform statutory duties on the surface/opencast mines only.

@Sig'd

Signature of the Examining Authority with date

Name (in Block Letters) NONGNGBAM RANJIT SINGH

Designation: CMO

Registration No. 5617 (AME)

(Seal)

Medical Officer
Meghalaya

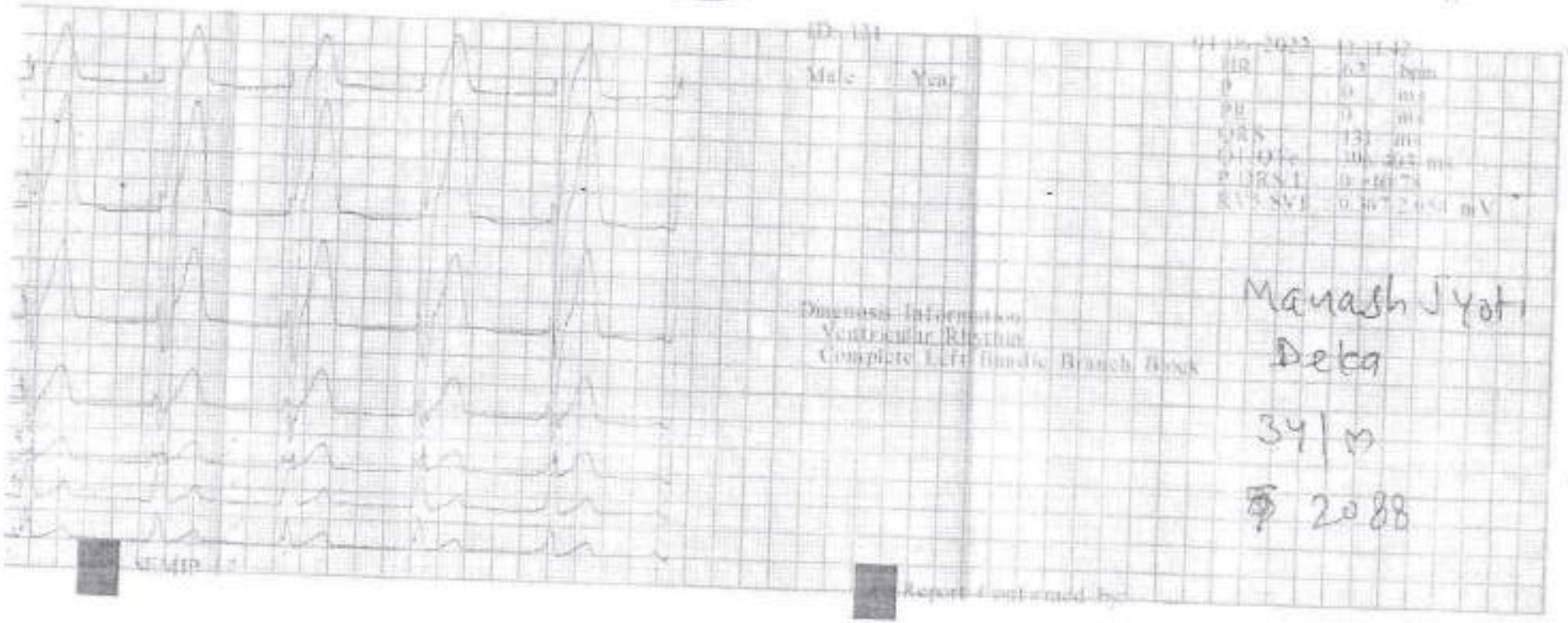
Place Thangskai ME

Date 04.06.21

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- ☑

MEGHALAYA CEMENT LTD THANGSKAI

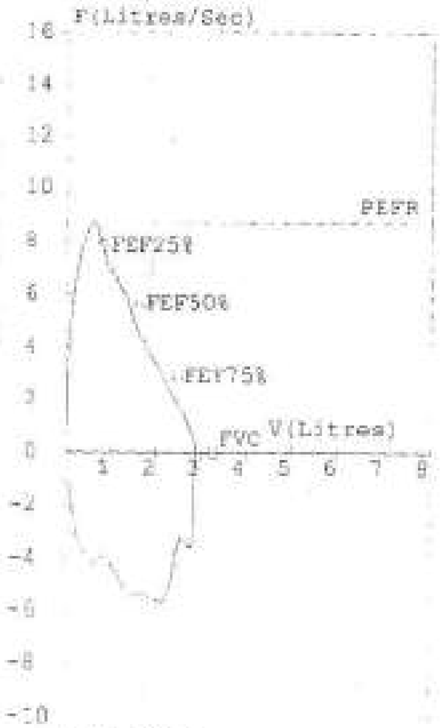


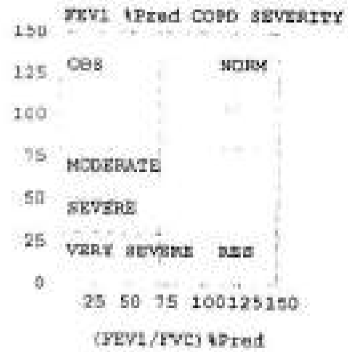
Annex-VII

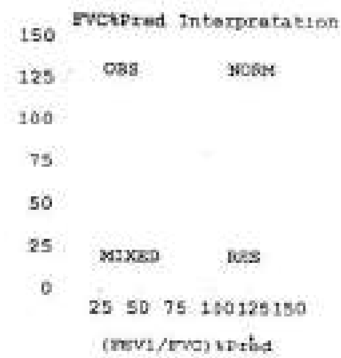
RECORDERS & MEDICARE SYSTEMS

Plot # 196,Industrial Area,Phase-1, Panchkula, Haryana INDIA - 134113

Patient: MANASH JYOTI DEKA	Age : 34 Yrs	Gender : Male
Refd.By:	Height : 165 Cms	Smoker : No
Pred.Eqns: RECORDERS	Weight : 62 Kgs	Eth. Corr: 100
Date : 04-Jun-2022 10:26 AM	ID : 144	Temp :







FVC Results

Parameter		Pred	M.Pre	%Pred	M.Post	%Pred	%Imp
FVC	(L)	03.28	02.89	088	-----	---	---
FEV1	(L)	02.76	02.89	105	-----	---	
FEV1/FVC	(%)	84.15	100.00	119	-----	---	
FEF25-75	(L/s)	04.12	04.81	117	-----	---	---
PEFR	(L/s)	08.70	08.64	099	-----	---	---
FIVC	(L)	-----	02.96	---	-----	---	---
FEV.5	(L)	-----	02.44	---	-----	---	---
FEV3	(L)	03.19	02.89	091	-----	---	---
PIFR	(L/s)	-----	05.64	---	-----	---	---
FEF75-85	(L/s)	-----	02.23	---	-----	---	
FEF.2-1.2	(L/s)	07.04	07.39	105	-----	---	---
FEF 25%	(L/s)	07.82	08.18	105	-----	---	---
FEF 50%	(L/s)	05.67	05.26	093	-----	---	---
FEF 75%	(L/s)	02.90	02.82	097	-----	---	---
FEV.5/FVC	(%)	-----	84.43	---	-----	---	---
FEV3/FVC	(%)	97.26	100.00	103	-----	---	---
FET	(Sec)	-----	00.99	---	-----	---	
ExplTime	(Sec)	-----	00.07	---	-----	---	
Lung Age	(Yrs)	034	032	094	-----	---	
FEV6	(L)	03.28	-----	---	-----	---	
FIF25%	(L/s)	-----	05.57	---	-----	---	---
FIF50%	(L/s)	-----	05.24	---	-----	---	---
FIF75%	(L/s)	-----	04.08	---	-----	---	---

Pre Test COPD Severity :

Test within normal limits

Pre Medication Report Indicates
Spirometry within normal limits as (FEV1/FVC)%Pred >95 and FVC%Pred >80

MEGHALAYA CEMENT LTD
THANGSKAI

Dr. N RANJIT

Annex-VII

OCCUPATIONAL HEALTH CENTER

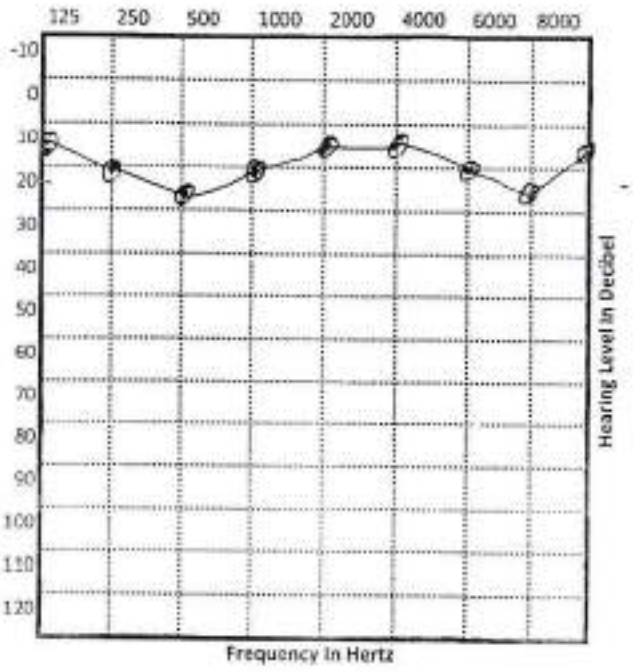
Unit - Meghalaya Cements Limited

AUDIOGRAM

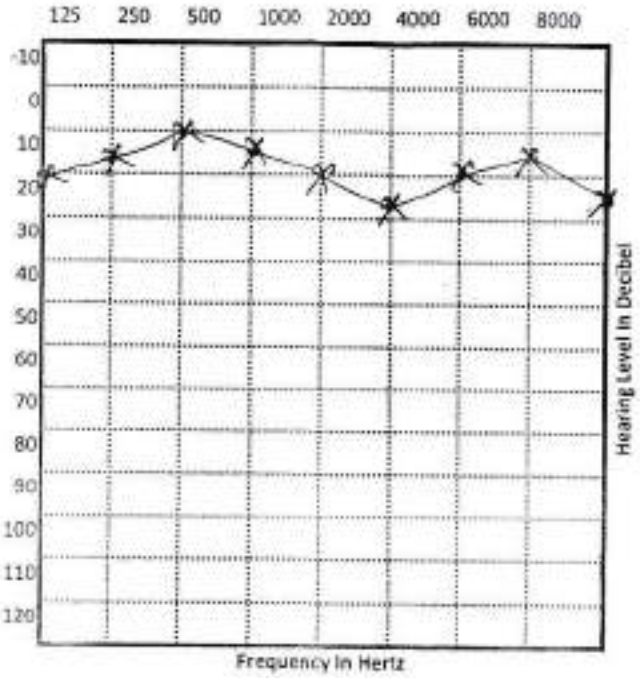
Name :- MANASH JYOTI DEKA Age :- 34 Sex :- Male

Department :- CPP Employee code :- 2088 Date :- 04/06/22

RIGHT



LIGHT



Complaints	Deafness/Otorrhoea/Tinnitus/ Nausea/_____
Past Illness	TB/Typhoid/Mumps/measles/Jaundice/Meningtis_____
Ototoxic Drugs	STP/Gentamycin/Salycilates/Antimalaria_____
Noise Exposure	Source:_____/Duration:_____Years: Use PPE:Yes/no

	AC	BC
Right	O	>
Left	x	<

AC : Air Conduction

BC : Bone Conduction

AC : Red Colour

BC : Blue Colour

MEGHALAYA CEMENT LTD. THANGSKAI

Remarks : Nad

Place :

Date :

Signature

(Medical Officer)

Annex – VII

M.C.L. DISPENSARY
LABORATORY REPORT

Name Manashjuti Deka..... .....Sex....M..Age ..34.... Date 04 06 22
Refd b .....

SL NO	NAME OF TEST	NORMAL RANGE	
1	Blood glucose Fasting	70 - 110 mg /dl	88.1 mg/dl
2	Blood glucose pp	UPTO 140mg /dl	128.3 mg/dl
3	Serum Creatinine	0.50-1.50 mgm/dl	1.01 mgm/dl
4	Serum Urea	13-45 mgm/dl	28.2 mgm/dl
5	Serum bilirubin	0 -1.0 mg dl	
6	Serum Cholesterol	0-200 mgm/dl	163.5 mgm/dl
7	Serum HDL Cholesterol	35-80 mgm/dl	36.2 mgm/dl
8	Serum LDL Cholesterol	≤ 130 mgm/dl	98.4 mgm/dl
9	Seruam Triglycerides	≤ 200 mgm/ dl	155.3 mgm/dl
10	SGOT	0-46 Units/ml	
11	SGPT	0-49 Units/ml	
12	Albumin	3.50-5.50 gm/dl	
13	Total Protein	6.0-8.0 mg/dl	
14	Alkaline Phosphatase	110-310 lu/l	

04/06/22
Lab Technician

Medical Officer

MEGHALAYA CEMENT LTD
THANGSKAI

Annex- VII

2062

SECOND SCHEDULE

REPORT OF MEDICAL EXAMINATON

I do hereby certify that I have examined BALARAM KHATUA Certificate No _____ He / She appears to be 47 years of age.

The identification marks of the Candidate.

(a) A small mole on left forehead

(b) A small mole on Right cheek

Signature/Left thumb impression of the candidate

The findings of the Examining Authority in respect the health of the candidate are as follows:-

1. General conformation — Good / Fair / Poor

2. Height 165 cms

3. Weight 58 kg

4. Eyes

Visual Acuity: Distant Vision

Right Eye 6/6 Left Eye 6/6 (Uncorrected)

Right Eye 6/6 Left Eye 6/6 (Corrected)

Ears.	Right Ear	Left Ear
Hearing	Normal	Normal
Any organic disease	Nil	Nil

5. Respiratory System:

Chest measurement

(a) after full expiration 83 cms

(b) after full inspiration 88 cms

Auscultation finding: Nad

MEGHALAYA CEMENT LTD THANGSKAI

Annex-VII

Other Abnormalities Nad

7. Circulatory system:

Pulse 72 per minute

Blood Pressure 120/80 mm of Hg

Heart Sound- S1

S2 Nad

Murmur – present/absent

Any other Abnormalities Nad

8. Abdomen ;

Tenderness about

Liver Nad

Spleen Nad

Tumour Nad

Other Abnormalities Nad

9. Nervous System:

History of fits or epilepsy about

Sensory function Nad

Motor function Nad

Planter Nad

Mental Health Nad

Any other Abnormalities Nad

10. Genito – Urinary System: Nad

11. Locomotor System Nad

12. Skin : Nad

13. Hydrocele : Present / Absent

14. Hernia : Present / Absent

15. Any other abnormality: Nad

16. Investigation

A. Chest Radiograph (PA view)

B. Electro cardiogram (ECG) Nad

C. Urine routine

MEGHALAYA CEMENT LTD. THANGSKAI

Annex-VII

Reaction : Acidic
Albumin : NIL
Sugar : NIL

D. Blood Bio chemistry

i) Blood Sugar: Fasting 76.2 mg/dl Postprandial 102 mg/dl

ii) Blood Urea 34.6 mg/dl Serum Creatinine 1.02 mg/dl

iii) Lipid Profile TRL above normal, other Normal

19. Any other investigation or opinion of specialist considered necessary by the Examining Authority:

NO

20. Remark if any: _____

21. Opinion of the Examining Authority:

✓ a. I consider that he / She is fit to perform his/her statutory duties in mines for a period of one year

b. I consider him / her unfit to perform statutory duties in mines because of _____ (mentioned disability).

He / She is suffering from _____ and is unfit to perform statutory duties in underground mines but may continue to perform statutory duties on the surface/opencast mines only.

Signature of the Examining Authority with date

Name (in Block Letter): NINGOMBAM RANJIT SINGH

Designation: CMO

Registration No. 5667 (Ame)

(Seal)

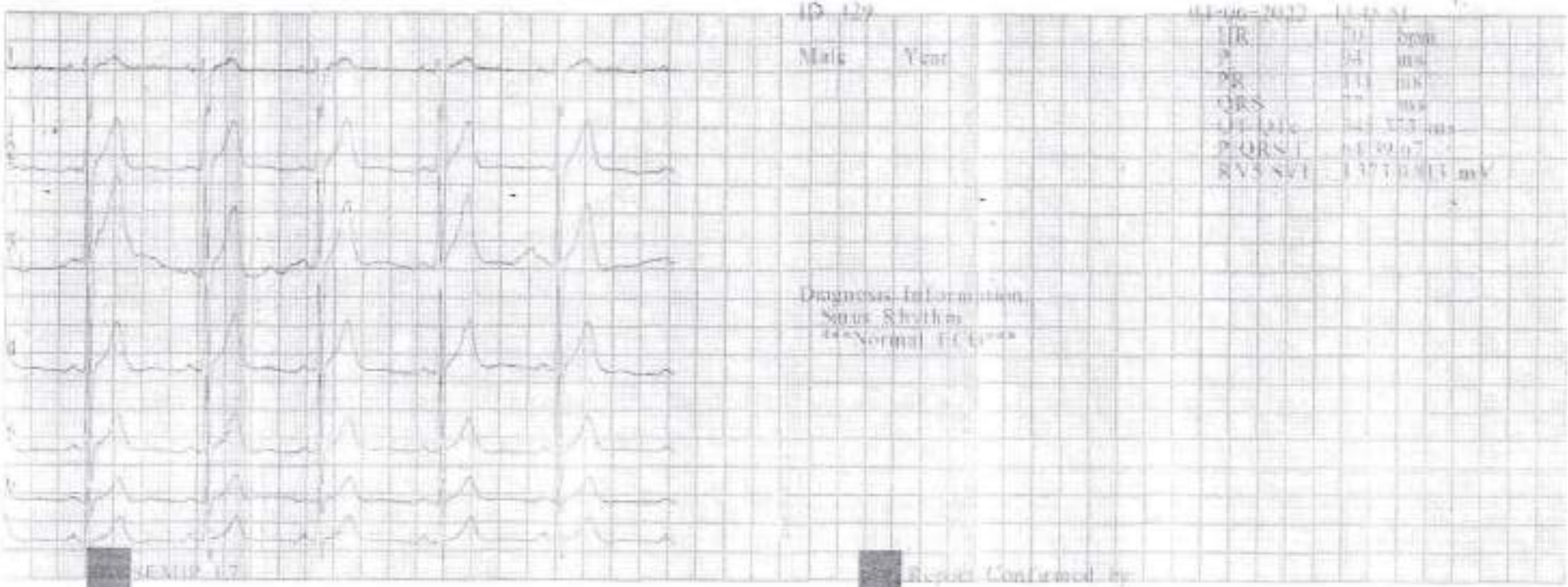
Medical Officer
Meghalaya Cements Ltd

Place Thangskai MCL

Date 04.06.22

MEGHALAYA CEMENT LTD
THANGSKAI

Annex-VI

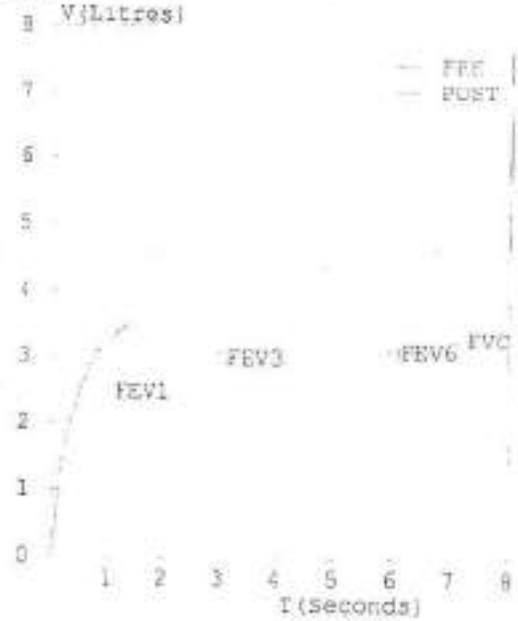

ID: 129
Male Year
Diagnosis Information
Sinus Rhythm
Normal ECG
Report Confirmed By:

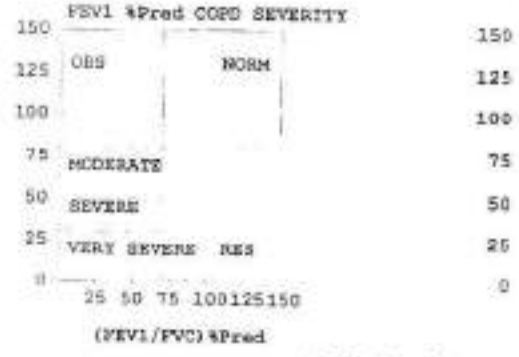
Annex-VII

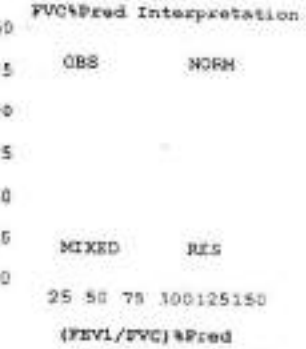
RECORDERS & MEDICARE SYSTEMS

Plot # 196,Industrial Area,Phase-1, Panchkula, Haryana INDIA - 134113

Patient: BALARAM KHATUA	Age : 47 Yrs	Gender : Male	
Refd.By:	Height : 165 Cms	Smoker : No	
Pred.Eqns: RECORDERS	Weight : 58 Kgs	Eth. Corr: 100	
Date : 04-Jun-2022 11:48 AM	ID : 152	Temp :	







FVC Results

Parameter		Pred	M.Pre	%Pred	M.Post	%Pred	%Imp
FVC	(L)	03.10	03.54	114	-----	---	---
FEV1	(L)	02.48	03.27	132	-----	---	---
FEV1/FVC	(%)	80.00	92.37	115	-----	---	---
FEF25-75	(L/s)	03.53	04.02	114	-----	---	---
PEFR	(L/s)	08.25	10.04	122	-----	---	---
FIVC	(L)	-----	03.41	---	-----	---	---
FEV.5	(L)	-----	02.57	---	-----	---	---
FEV3	(L)	03.01	03.54	118	-----	---	---
PIPR	(L/s)	-----	06.11	---	-----	---	---
FEF75-85	(L/s)	-----	01.68	---	-----	---	---
FEF.2-1.2	(L/s)	06.16	07.98	130	-----	---	
FEF 25%	(L/s)	07.56	07.28	096	-----	---	
FEF 50%	(L/s)	05.28	04.24	080	-----	---	---
FEF 75%	(L/s)	02.36	02.39	101	-----	---	---
FEV.5/FVC	(%)	-----	72.60	---	-----	---	---
FEV3/FVC	(%)	97.10	100.00	103	-----	---	---
FET	(Sec)	-----	01.42	---	-----	---	---
ExplTime	(Sec)	-----	00.03	---	-----	---	---
Lung Age	(Yrs)	047	032	068	-----	---	---
FEV6	(L)	03.10	-----	---	-----	---	---
PIF25%	(L/s)	-----	03.75	---	-----	---	---
PIF50%	(L/s)	-----	06.11	---	-----	---	---
PIF75%	(L/s)	-----	05.26	---	-----	---	---

Pre Test COPD Severity

Test within normal limits

Pre Medication Report Indicates
Spirometry within normal limits as (FEV1/FVC) %Pred >95 and FVC%Pred >80

MEGHALAYA CEMENT LTD. THANGSKAI

Dr. N RANJIT

Annex-V

OCCUPATIONAL HEALTH CENTER

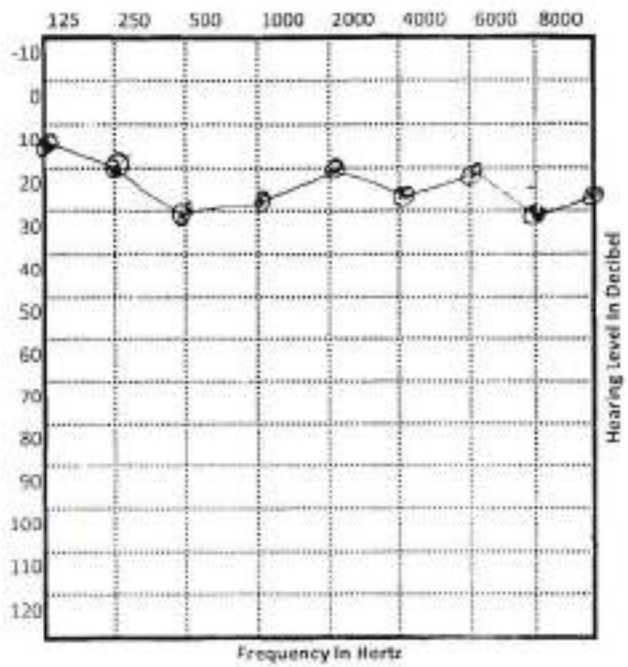
Unit - Meghalaya Cements Limited

AUDIOGRAM

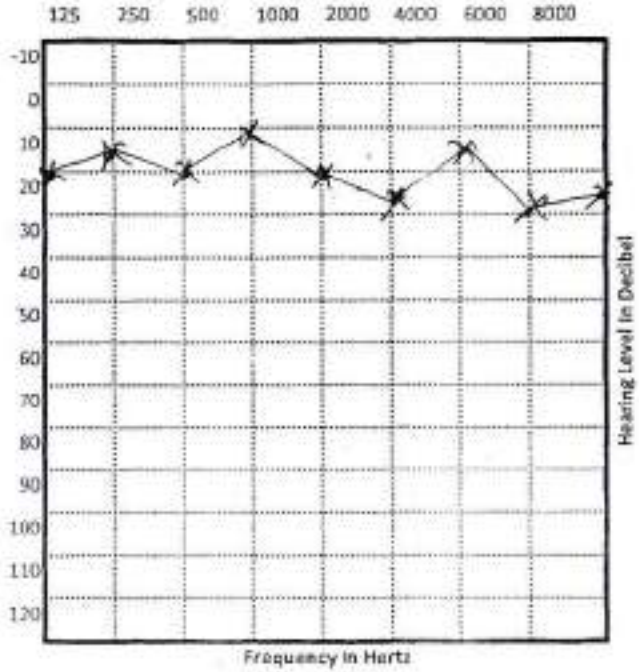
Name :- BALARAM KHATUA Age :- 47 Sex :- Male

Department :- C P P Employee code :- 2062 Date :- 4/6/2022

RIGHT



LIGHT



Complaints	Deafness/Otorrhoea/Tinnitus/ Nausea/
Past Illness	TB/Typhoid/Mumps/measles/Jaundice/Meningitis
Ototoxic Drugs	STP/Gentamycin/Salycilates/Antimalaria
Noise Expoure	Source:/Duration: Years. Use PPE:Yes/no

	AC	BC
Right	O	>
Left	x	<

AC : Air Conduction

BC : Bone Conduction

AC : Red Colour

BC : Blue Colour

Remarks : Nil

Place :

Date :

Signature

(Medical Officer)

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- VII

M.C.L. DISPENSARY
LABORATORY REPORT

Name Balaram Khatua.....Sex....M..Age ..42.... Date 04 06 22
Refd b .....

SL NO	NAME OF TEST	NORMAL RANGE	
1	Blood glucose Fasting	70 - 110 mg /dl	70.2 mg/dl
2	Blood glucose pp	UPTO 140mg /dl	102.0 mg/dl
3	Serum Creatinine	0.50-1.50 mgm/dl	1.02 mgm/dl
4	Serum Urea	13-45 mgm/dl	34.6 mgm/dl
5	Serum bilirubin	0 -1.0 mg dl	
6	Serum Cholesterol	0-200 mgm/dl	164.7 mgm/dl
7	Serum HDL Cholesterol	35-80 mgm/dl	62.6 mgm/dl
8	Serum LDL Cholesterol	≤ 130 mgm/dl	116.2 mgm/dl
9	Seruam Triglycerides	≤ 200 mgm/ dl	401.9 mgm/dl
10	SGOT	0-46 Units/ml	
11	SGPT	0-49 Units/ml	
12	Albumin	3.50-5.50 gm/dl	
13	Total Protein	6.0-8.0 mg/dl	
14	Alkaline Phosphatase	110-310 Iu/l	

Lab Technician

Medical Officer

MEGHALAYA CEMENT LTD

Annex-VII

M.C.L. DISPENSARY
LABORATORY REPORT

Name Sanjeeb Kr Sahoo.....Sex....M..Age ..39.... Date 01 06 22
Refd b/ .....

SL NO	NAME OF TEST	NORMAL RANGE	
1	Blood glucose Fasting	70 - 110 mg /dl	103.3 mg/dl
2	Blood glucose pp	UPTO 140mg /dl	113.5 mg/dl
3	Serum Creatinine	0.50-1.50 mgm/dl	0.89 mgm/dl
4	Serum Urea	13-45 mgm/dl	28.0 mgm/dl
5	Serum bilirubin	0 -1.0 mg dl	
6	Serum Cholesterol	0-200 mgm/dl	148.6 mgm/dl
7	Serum HDL Cholesterol	35-80 mgm/dl	43.5 mgm/dl
8	Serum LDL Cholesterol	< 130 mgm/dl	128.6 mgm/dl
9	Seruam Triglycerides	≤ 200 mgm/ dl	238.5 mgm/dl
10	SGOT	0-46 Units/ml	
11	SGPT	0-49 Units/ml	
12	Albumin	3.50-5.50 gm/dl	
13	Total Protein	6.0-8.0 mg/dl	
14	Alkaline Phosphatase	110-310 lu/l	

01/6/22
Lab Technician

Medical Officer

MEGHALAYA CEMENT LTD
THANGSKAI

Annex- VIII

Six Monthly Reports:

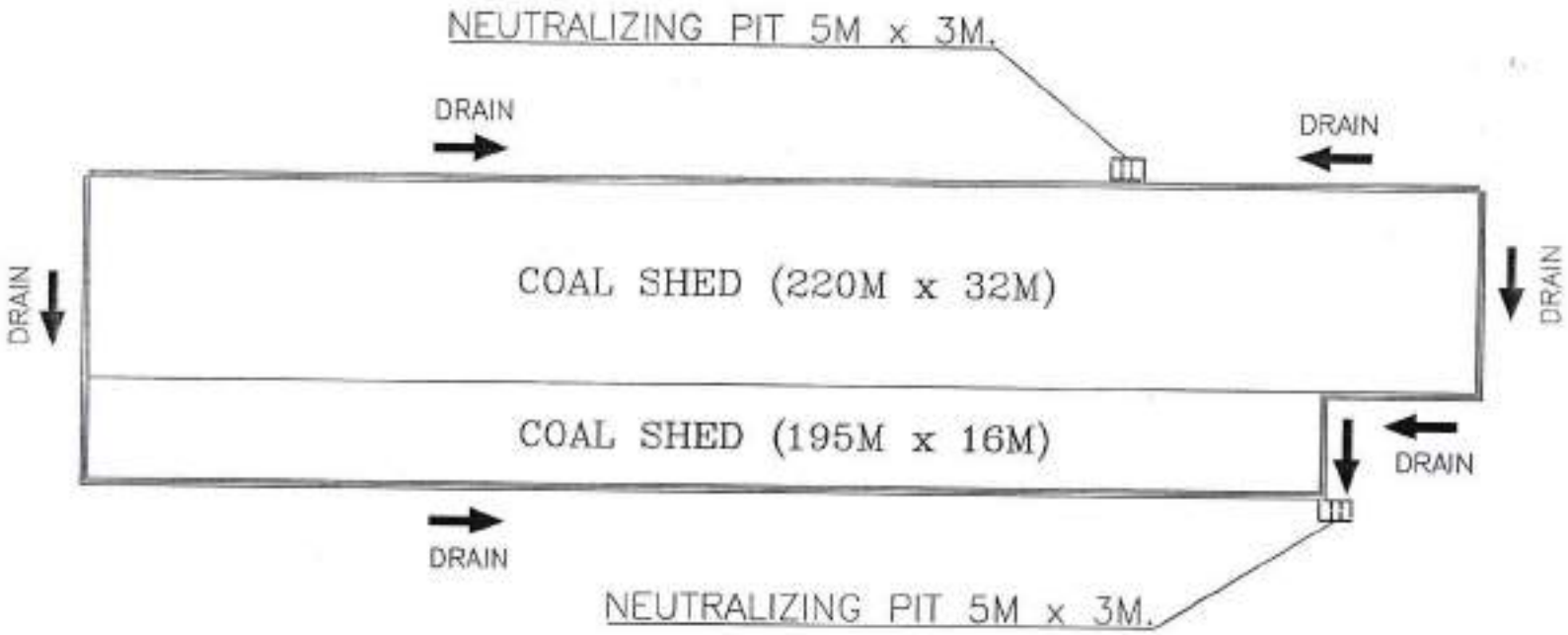
PROCESS FUGITIVE EMISSION TEST RESULTS

From Apr'2022 to Sep'2022

Location	Fugitive Emission Results for SPM (µg/m^3)							
	Apr' 2022	May' 2022	Jun' 2022	Jul' 2022	Aug' 2022	Sep' 2022	Avg.	As per standard limit (µg/m^3)
Lime stone Storage Area	2136	1908	1634	1789	1694	1859	**1836.67**	5000
Coal Storage Area	1109	694	563	631	812	948	**792.83**	2000
Clinker Loading Area	1756	1396	1196	1348	1489	1609	**1465.67**	5000
Cement Loading Area	1963	1277	1069	1109	1547	1768	**1455.50**	5000
Coal Storage Area (CPP)	962	712	689	697	957	1024	**840.17**	2000
Fly Ash Silo Area (CPP)	739	659	612	679	858	893	**740.00**	2000

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- IX



MEGHALAYA CEMENT LTD. THANGSKAI

COAL STORAGE SHED WITH DRAIN AND NEUTRALIZING PIT.					
MEGHALAYA CEMENTS LIMITED					
SCALE NTS	DRAWN BY K.A.	DATE 08.11.22	CHKD. BY	APPD. BY	
DRG. NO. MCL/LAY/MISC/003					REV 0

Annex - X

MEGHALAYA CEMENTS LIMITED

CIN- U26942ML2003PLC007125

TOPCEM CEMENT
Mazbooti ka bharosa...hamesha

Ref.:- MCL/ENV/MSPCB/Comm./2022-23/25

Date: 26.09.2022

To,

The Member Secretary,
Meghalaya State Pollution Control Board,
ARDEN Lumpyngngad
Shillong, Meghalaya

29/9/22

Sub: - Submission of Detailed Plan for Neutralizing pit along with Garland drainage system at Coal storage area for approval.

Dear Sir,

With reference to subject cited above, we wish to inform you that we are complying the Environment Clearance compliance for the project of Expansion of Cement Plant (from 900-2600 TPD) along with 10 MW Captive Power Plant under MoEF North Eastern Regional Office, Shillong. As per our EC Stipulation XVIII (b) & XVIII(C) we interest to develop Garland drains along with Neutralizing Tank at Coal storage area at proper place for treatment of Acid Mine Drains (AMD) in our premises.
In this reference we shall be highly thankful to you for provide approval to make Neutralizing Tank along with Garland drains at Coal storage area to comply the Environmental clearance conditions. Therefore, we are enclosing herewith the detailed plan for Garland along with Neutralizing Tank for your kind approval.

This is for your kind information & needful action from your end.

Thanking You Sir,

Yours Faithfully,

For Meghalaya Cements Limited

R.K. Pareek
(President)

MEGHALAYA STATE POLLUTION CONTROL BOARD 28/9/22

MEGHALAYA CEMENT THANGSKAI

Encl. Detailed Plan & Layout.

Annex - X

Coal Neutralizing Pit

Environmental norms require Coal contaminated water to be neutralized prior to disposal, which is normally carried out inside the concentrate neutralization pit where reaction done between an acid & a base. Coal stockpiles are a source of air and surface pollution, generating dust emissions and acid mine drainage (AMD), which may release heavy metals and toxic elements into the environment. The use of lime for the treatment of acidic mine water was implemented. The concept of acid mine drainage treatment by means of percolation (or trickle) neutralization, through a packed bed of coal discards has been demonstrated.

Limestone is an alkaline agent with the ability to neutralize, or partially neutralize strong acids. The neutralization process occurs when strong acids, in intimate contact with limestone chips, react with Calcium Carbonate (CaCO3, the primary constituent of limestone) to form water, carbon dioxide, and calcium salts. The following depicts the neutralization of hydrochloric acid by limestone.

$$CaCO_3 + 2HCl \rightarrow CaCl_2 + CO_2 + H_2O$$

The pH neutralization process occurs as strong acids react with the calcium carbonate in the limestone through intimate contact with small limestone chips. A high surface area is important as is sufficiently long contact time. The reaction is not instantaneous and requires sufficient time. Additionally the acidic solutions must be in intimate contact with the limestone. This leads to one of the biggest problems with the use of limestone as an effective treatment process, the coating of the available limestone surface area with precipitated debris.

One of the byproducts of the neutralization process is calcium salts. Calcium salts tend to be very insoluble in water. This results in the precipitation of salts that deposit on the limestone chips forming very effective coatings. Once coated with precipitated products, the limestone is rendered useless and must be replaced. Other solids and organic materials that are suspended in the waste stream will often come out as a result of mechanical filtration thereby contributing to the coating of the limestone chips.

MEGHALAYA CEMENT LTD. THANGSKAI

Annex-X

About Neutralizing Pit

Neutralizing pit has three chambers. All three chambers are internally connected. The neutralization of acid mine drainage (AMD) with coal discards practiced as a potential precursor to lime neutralization. AMD solution obtained until the pH of the accumulated drainage solution measured approximately pH 7. An economic analysis was performed to compare neutralization with waste coal against lime neutralization in tanks. The analysis was based on a rate of AMD generation, a neutralizing capacity of AMD per ton coal for lime neutralization for coal neutralization.

Step 1:- Primary Sedimentation or Presedimentation chamber

In step 1. Coal contaminated water entered in chamber 1 through garland drains & presedimentation being done in this chamber. After primary sedimentation water enter in chamber 2.

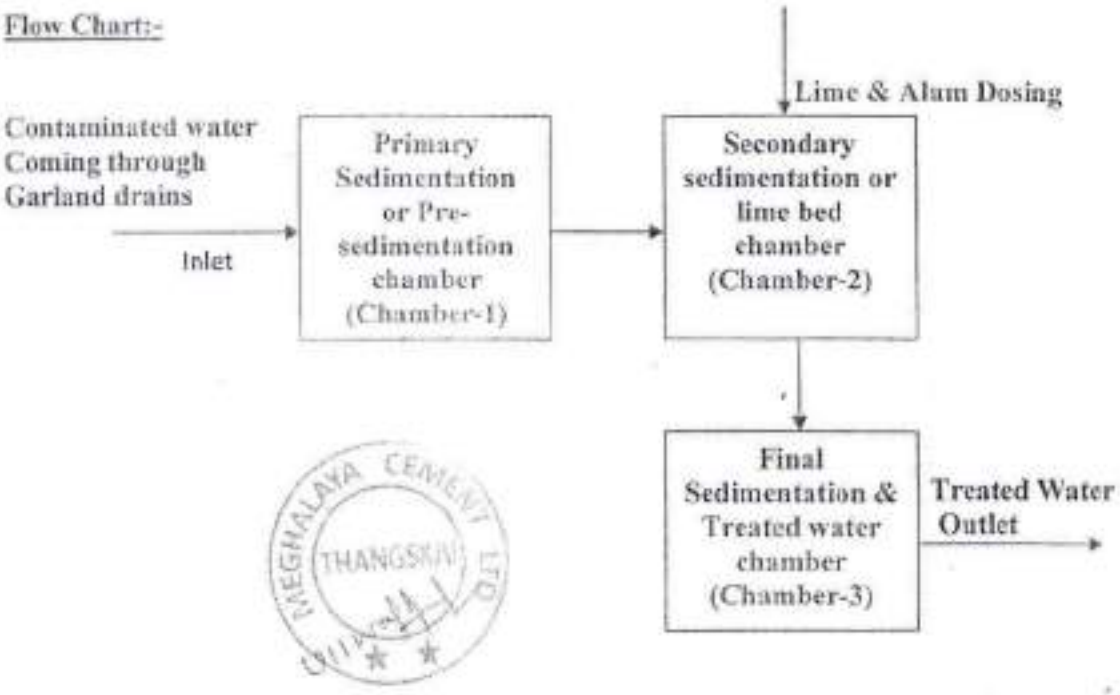
Chamber 2:- Secondary sedimentation or lime bed chamber

In step 2. water comes from chamber-1 and secondary sedimentation being done. Lime & alum dispersed into secondary chamber for treatment of Acid coal mine. After secondary sedimentation water enter in chamber 3.

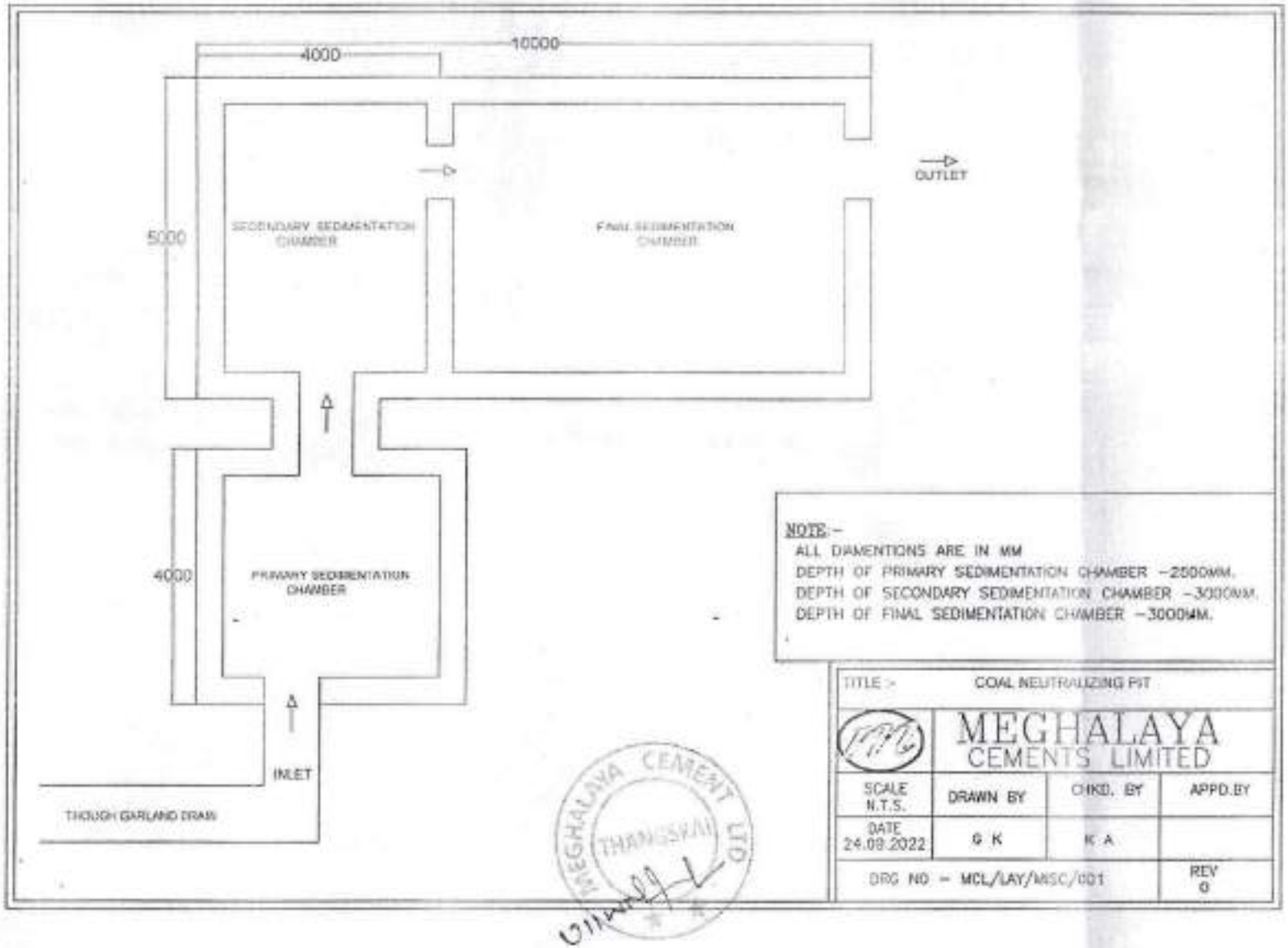
Chamber 3:- Final Sedimentation & Treated water chamber

In step 3, Treated water comes from chamber-2 & after that it discharged through drain.

Flow Chart:-



Annex-I



NOTE:-
ALL DIMENTIONS ARE IN MM
DEPTH OF PRIMARY SEDIMENTATION CHAMBER -2500MM.
DEPTH OF SECONDARY SEDIMENTATION CHAMBER -3000MM.
DEPTH OF FINAL SEDIMENTATION CHAMBER -3000MM.

TITLE :-	COAL NEUTRALIZING PIT		
	MEGHALAYA CEMENTS LIMITED		
SCALE N.T.S.	DRAWN BY	CHKD. BY	APPD.BY
DATE 24.09.2022	G K	K A	
DRG NO - MCL/LAY/MISC/001			REV 0

MEGHALAYA CEMENT LTD. THANGSKAI

Annex-XI

Meghalaya Cements Limited

Thangskai , Meghalaya

DOWNSTREAM WATER ANALYSIS REPORT FOR THE YEAR 2022-23 (Um-Lunar River)

Date:-22.09.2022

Sl. No.	Parameters	Obtained Values in						Average	Permissible Limit
		Apr'2022	May'2022	Jun'2022	Jul'2022	Aug'2022	Sep'2022		
1	pH	7.2	7.4	7.1	7.6	7.3	7.4	7.33	6.5 - 8.5
2	Dissolved Oxygen (mg/lt)	11.26	10.39	10.48	11.34	11.69	11.73	11.15	-
3	Total Dissolve Solids (mg/Lit)	176	182	149	167	149	194	169.50	<500
4	Conductivity (mg/Lit)	134	162	143	139	171	152	150.17	-
5	Total Hardness (mg/ Lit)	222	233	205	227	210	201	216.33	<300
6	Calcium Hardness (mg/Lit)	151	164	129	163	149	142	149.67	<200
7	Magnesium Hardness (mg/Lit)	71	69	76	64	61	59	66.67	<100
8	Alkalinity (mg/Lit)	86	69	71	64	72	63	70.83	<200
9	Cr+6 (mg/t)	0.0210	0.0190	0.0350	0.0440	0.0360	0.0390	0.0323	<0.05

Prepared By

Arti Singh

Checked & Verified By

Ujjwal Anurag

MEGHALAYA CEMENT LTD THANGSKAI

Annex- XI

Meghalaya Cements Limited

Thangskai , Meghalaya

UPSTREAM WATER ANALYSIS REPORT FOR THE YEAR 2021-22 (Um-Lunar River)

Date:-28.09.2022

Sl. No.	Parameters	Obtained Values in						Average	Permissible Limit
		Apr'2022	May'2022	Jun'2022	Jul'2022	Aug'2022	Sep'2022		
1	pH	7.2	7.4	7.1	7.3	7	6.9	7.15	6.5 – 8.5
2	Dissolved Oxygen (mg/lit)	12.1	12.3	11.9	13.2	12.9	12.2	12.43	-
3	Total Dissolve Solids (mg/Lit)	169	153	156	173	164	136	158.50	<500
4	Conductivity (mg/Lit)	159	143	158	147	139	149	149.17	-
5	Total Hardness (mg/ Lit)	250	226	241	224	215	223	229.83	<300
6	Calcium Hardness (mg/Lit)	161	153	165	158	143	157	156.17	<200
7	Magnesium Hardness (mg/Lit)	89	73	76	66	72	66	73.67	<100
8	Alkalinity (mg/Lit)	71	69	64	70	64	67	67.50	<200
9	Cr+6 (mg/t)	0.0270	0.0290	0.0320	0.0320	0.0420	0.0330	0.0325	<0.05

Prepared By

Arti Singh

Checked & Verified By

Ujjwal Anurag

MEGHALAYA CEMENTS LTD THANGSKAI

Annex – XII

YEAR WISE PLANTATION DETAILS
M/s MEGHALAYA CEMENTS LIMITED
Plant area - 52.949 Ha

As on Dated 30/09/2022

Year	Saplings planted (Nos.)	Area covered (Hect.)	Saplings Survive (Nos.)	Survival Rate	Remarks
2009-20	79900	19.1898	61195	76.59%	Planted at different locations such as Northern, Northeastern and eastern side of the project area, CPP campus, Lawn of residential blocks & Topcem Public School Campus, Interspaces in plant boundary, road & internal road side, Children park etc. before the amendment of reduction of existing of plant area from 59.269 Ha to 52.949 Ha vide letter no-SEIAA/PROJECT-2/2007/8/1818 dated Shillong, the 30th September, 2020.
2020-21	3475	0.2185	2955	85.04%	Planted CPP back side and interspaces along plant boundary.
2021-22	10548	0.5170	8697	82.45%	Planted LS Reclaimer back side,CPP back side, Topcem Public School Campus, Mazagine Area, Clay Shed back side, Cricket Ground road side and interspaces along plant boundary.
2022-23	3975	Nil (Gap filling)	3121	78.52%	Gap filling at Green Colony side, Old Transport Colony, Approach Road, Near By Topcem School, Nursery, CPP back side, Down Colony, Near Clay Shed, Near Cricket Ground, Near E-Block etc.
Total	**97898**	**19.9253**	**75968**	**77.60%**	

MEGHALAYA CEMENTS LTD. THADLASKEIN

Annex-XIII

MCL OCCUPATIONAL HEALTH CENTER

Health Center Staff

Sr No.	Name of Staff	Designation	Course
1	Dr. N.Ranjit Singh	Medical officer	MBBS
2	Dr. Gita Shylla	Dentist	BDS
3	Sabir Hussain	Male Nurse	GNM
4	Tarini Bazbaruah	Compounder	RMP
5	Shankar Singha	Lab Technician	MLT
6	Shibi Nath	Nurse	ANM
7	Wanpli Talang	Nurse	ANM
8	Doimonmi Suiam	Dresser	First Aid Training
9	Other Staffs	1 no.	JR. ASSISTANT

Hospital Equipment

Sr. No.	Hospital Equipment	Quantity	Remarks
1	ECG Machine	1	
2	Audiometry	1	
3	Spirometry (PFT)	1	
4	Cardiac Monitor	1	
5	Oxygen Cylinder for oxygen Inhalation (Jambo)	5	
6	Oxygen Cylinder for oxygen Inhalation (10 kg)	6	
7	Suction Machine	1	
8	Nebulizer Machine	2	
9	Bed in Ward	2	
10	Bed in Emergency ward	1	

Lab Equipment

Sr. No.	Hospital Equipment	Quantity	Remarks
1	Semi auto analyzer	1	
2	Micro scop	1	
3	Incubator	1	
4	Centrifuge machine	1	
5	Hemometer	1	
6	Accu check machine	1	
7	Blood cell counter	1	
8	Hemocyto meter	1	

TEST FACILITY

1	Blood RE (TC, DLC, ESR, HB%)
2	Blood Sugar
3	KFT, LFT, Lipid Profile
4	Malaria
5	Trop - T
6	VDRL,HBSAg, HCB
7	ASO titre
8	Widal test
9	Rheumatoid factor
10	Grouping, ABO RH typing
11	Uric acid
12	AFB
13	Urine analysis (test)

DENTIST FACILITY

1	Dental X-Ray Machine
2	Dentist Chair

AMBULANCE

1	Ambulance Traveler (Advance Life Support)	1	With Facility = Cardiac Monitor - 1 no., Defibrilator - 1 & Oxygen support
2	Ambulance (TATA SUMO)	1	With Facility = Oxygen support

Hospital Emergency Service

1	A) Annual Periodic Medical Examination of Employees. (ECG, Audiogram, PFT, Blood Test, Urine Test & Physical examination) B) Handling Emergencies in OHC Centre :- Accidental Cases, Burning cases, Snake bite, Cardiac arrest and all over emegency and primary treatment given. C) OPD

MEGHALAYA CEMENT LTD. THANGSKAI

Annex-XI

SALARY DETAILS OF CLEANER FOR THE MONTH OF SEPT'2022

S.N.	NAME	CODE NO.	SEX	D.O.J.	GRADE	DEPT	DESIG	SALARY
01	DISWONLANG BAREH	2260	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	16778
02	EDEN LALOO	3323	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	15596
03	PRAS BAREH	2261	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	19518
04	SABINA SYIH	2262	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	14322
05	KHALMISS SUTING	2263	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	16459
06	PHINIAL DHAR	2264	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	13730
07	IBASHISHA KHARSATI	2267	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	15420
08	ESTAR PUSIEN	2268	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	14776
09	PHIMAI SUTNGA	2271	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	16095
10	HILDIS SYRTI	2272	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11434
11	LILY POHBAN	2273	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11790
12	KYRSOI SYIH	2275	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	15283
13	PHYRNAI SYRTI	2276	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11818
14	RIDAMON SUCHEN	2277	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	12247
15	METHILDA SYIEMLIEH	2315	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11548
16	SPELBHA SUCHIANG	2322	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11901
17	WONDERFUL PALE	2330	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11601
18	RANSHI PUSEIN	2343	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11496
19	SAPHA SIANGSHAI	2344	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11601
20	EMLI DHAR	2345	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11548
21	TALITHA RYMBAI	2349	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11496
22	SHANIAH SHYLLA	2352	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	11868
23	CHEBARIMA BAREH	2362	FEMALE	02.06.2011	WORKMAN	HR&A	CLEANER	12893
24	MINA KHONGLAH	2269	FEMALE	01.04.2011	WORKMAN	HR&A	CLEANER	13560
25	NILDIS KHLUNG	3288	FEMALE	07.08.2012	WORKMAN	HR&A	CLEANER	11601
26	LUTMON LAMARE	3030	FEMALE	03.08.2012	WORKMAN	HR&A	CLEANER	11576
27	SHIDA SUTNGA	3316	FEMALE	01.07.2013	WORKMAN	HR&A	CLEANER	11496
28	HEL PAJAT	3244	FEMALE	03.08.2013	WORKMAN	HR&A	CLEANER	11601
29	PALDIS SUTING	3247	FEMALE	01.08.2013	WORKMAN	HR&A	CLEANER	11601
30	SABITRY KHONGLAH	3248	FEMALE	03.10.2013	WORKMAN	HR&A	CLEANER	11472
31	MARTHA CHALLAM	4051	FEMALE	04.05.2015	WORKMAN	HR&A	CLEANER	11630
32	SUMAR RYMBAI	4057	FEMALE	06.05.2015	WORKMAN	HR&A	CLEANER	11630
33	SABITRY LALOO	4086	FEMALE	12.06.2015	WORKMAN	HR&A	CLEANER	11368
34	SHELA SUTING	5088	FEMALE	17.05.2016	WORKMAN	HR&A	CLEANER	11630
35	HASINA SYRTI	5085	FEMALE	16.05.2016	WORKMAN	HR&A	CLEANER	10890
36	KYNJAILANG SYMPLI	5430	FEMALE	02.07.2018	WORKMAN	HR&A	CLEANER	11707
37	KMENLANG GYMPAD	5422	FEMALE	02.07.2018	WORKMAN	HR&A	CLEANER	11707
38	ISKAPAIA LAMARE	5429	FEMALE	02.07.2018	WORKMAN	HR&A	CLEANER	11548
39	KEEPHIM SYMPLI	5436	FEMALE	13.08.2018	WORKMAN	HR&A	CLEANER	11472
40	SOMLY SURONG	5589	FEMALE	17.08.2019	WORKMAN	HR&A	CLEANER	10890
41	HEIJINGMIAT RYMBAI	5587	FEMALE	17.08.2019	WORKMAN	HR&A	CLEANER	10890
42	SONITA RYMBAI	5590	FEMALE	17.08.2019	WORKMAN	HR&A	CLEANER	10890
43	DARI PUSEIN	5697	FEMALE	15.03.2021	WORKMAN	HR&A	CLEANER	9990
44	BEAUTIFUL PALE	5699	FEMALE	16.03.2021	WORKMAN	HR&A	CLEANER	9810
45	SYNDONG SYRTI	5703	FEMALE	18.03.2021	WORKMAN	HR&A	CLEANER	9810
46	MUNI SUTING	5706	FEMALE	19.03.2021	WORKMAN	HR&A	CLEANER	9810
47	RIMAIA SHADAP	4014	FEMALE	01.04.2022	WORKMAN	HR&A	CLEANER	9000
48	JUDICIAL RYMBAI	5834	FEMALE	04.07.2022	WORKMAN	HR&A	CLEANER	9000
49	SHEBA SHADAP	5835	FEMALE	04.07.2022	WORKMAN	HR&A	CLEANER	9000
50	ONJOLY PDANG	5836	FEMALE	04.07.2022	WORKMAN	HR&A	CLEANER	9000
51	WADLANG SYRTI	5846	FEMALE	05.08.2022	WORKMAN	HR&A	CLEANER	9000
52	MARGRED KHONGLAH	5847	FEMALE	08.08.2022	WORKMAN	HR&A	CLEANER	9000
53	PYNTNGEN SYRTI	5848	FEMALE	08.08.2022	WORKMAN	HR&A	CLEANER	9000

MEGHALAYA THANGSKAI LTD

A study to determine impact of particulate emission/fugitive emission on the surrounding private forest

An air quality dispersion modelling study has been carried out to assess the contribution by the existing stacks of the cement plant in the present ambient air quality of the area within 10 km radius of the project. The storage areas of the various raw materials and fuels are covered and hence, the fugitive airborne dust due to wind erosion has not been considered. This air quality dispersion modelling study has been carried out by M/s Min Mec Consultancy Pvt. Ltd., New Delhi (Accredited by NABET, QCI vide letter no. NABET/ EIA/2225/IA 0095 valid till 29.03.2025).

The details of existing stacks and stack emissions are summarized in Table 1. The stacks S01 to S13 are existing operational stacks and are contributing to the pollutant levels in the ambient air. Stack emissions are based on the measured stack monitoring results measured after the installed control measures like bag filters and ESP, where installed.

TABLE 1: STACK DETAILS OF EXISTING CEMENT PLANT OF 2600 TPD WITH 10 MW CAPTIVE POWER PLANT

Stack No.	Stack name	Height (m)	Dia (m)	Exit gas Volume (m^3/s)	Exit gas Velocity (m/s)	Temp (°C)	Emission rate (mg/Nm^3)		
							PM	SO_2	NOx
S01	Primary crusher	21	1.2	6.220	5.5	28	29	-	-
S02	Secondary crusher	16.366	1	4.712	6	30	23	-	-
S03	Coal mill 1	37	1.2	12.101	10.7	53	26	-	-
S04	Coal Mill 2	44	1.2	12.440	11	54	20	-	-
S05	Raw mill & kiln 1	81.875	3	84.821	12	180	22	489	258
S06	Raw mill & kiln 2	81.875	3	88.355	12.5	178	24	596	244
S07	Clinker Cooler 1	30.37	2.8	58.495	9.5	220	27	-	-
S08	Clinker Cooler 2	30.37	2.8	61.573	10	215	29	-	-
S09	Cement Mill 1	30.57	1.2	10.405	9.2	63	26	-	-
S10	Packing plant 1	30.57	0.595	2.836	10.2	32	23	-	-
S11	Captive power plant	71	2.53	42.730	8.5	85	25	456	216
S12	Cement Mill 2	40	1.2	9.952	8.8	65	28	-	-
S13	Packing Plant 2	26.425	0.988	4.753	6.2	31	27	-	-

Simulation model for prediction of ground level concentrations :

In order to assess the contribution of the project in the existing ambient air quality, air quality dispersion modelling has been carried out using ISCST3 of US EPA which is a steady-state Gaussian plume model which can be used to assess pollutant concentrations from a wide variety of sources associated with an industrial complex. This package was developed by Lakes Environmental, Canada. This model can account for settling and dry deposition of particles; downwash; point, area, line, and volume sources; plume rise as a function of

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downwind distance; separation of point sources; and limited terrain adjustment. ISCST3 operates in short-term mode.

Model Input Data:

The following assumptions were considered while modeling to predict the incremental ground level concentrations of pollutants due to emissions from the plant operation :

- The stack and emission details for have been adopted from **Table 1.**
- The prediction has been done to estimate concentration value over a radial distance of 10 km from the source for receptors outside the project boundary.
- Emission rate was considered constant throughout the averaging period.
- Ground level concentrations were computed without any decay co-efficient.
- The micro-meteorological observations made during the study period have been taken as input meteorological data. Calm wind conditions recorded during study period were also considered.
- Terrain (elevation) of sources and receptors has been taken as input into the model
- Atmospheric inversion has been input in the modelling in terms of mixing height as follows:

Hour	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
mixing height, m agl	90-110	110-150	225-275	300-350	195-480	293-630	421-780	780-970	990-1225	1120-1325	1050-1350	1050-1250	950-1200	750-900	600-725

The incremental ground level concentration contributed by the existing stack emissions have been calculated from the modelling and detailed in **Enclosure A.**

The summary of the maximum values is given in **Table 2**. These are already a part of the existing ambient air quality of that area, which had been monitored for the period March 2022 to May 2022 and found to be well within the National Ambient Air Quality Standards 2009 (NAAQS 2009). The maximum GLC contributed at the air quality monitoring stations as well as on forest areas and in study area of 10 km radius around the project is summarised in Table 3.

TABLE 2: CALCULATED MAXIMUM 24 HOURS AVERAGE GLC (ALL VALUES IN µg/m³)

Location	Distance (Direction from plant)	Pollutant			
		PM_{10}	$PM_{2.5}$	SO_2	NO_2
Air Quality Stations:					
A1: Project Site (Core Zone)	Within	0.669	0.144	2.535	1.203
A2: Mine Area	0.4 (E)	1.192	0.257	17.697	8.297
A3: Khliejheri Mine	0.8 (NE)	1.124	0.242	20.698	9.712
A4: Reservoir, NE of Thangskai Village	1.7 (NE)	0.689	0.149	13.272	6.160

MEGHALAYA ENVIRONMENT LTD THANGSKAI

Location	Distance (Direction from plant)	Pollutant			
		PM_{10}	$PM_{2.5}$	SO_2	NO_2
A5: Umlong Village	4.8 (SW)	0.081	0.017	2.342	1.086
A6: Wahiajer Village	0.4 (S)	0.426	0.092	5.109	2.388
A7: Chiehruphi Village	0.4 (N)	1.499	0.323	19.475	9.091
A8: Shiehruphi Village	3.2 (N)	0.202	0.044	4.370	2.035
Forest areas:					
Receptor No. 311 (Forest)	10 (SE)	0.160	0.034	4.594	2.131
Receptor No. 312 (Forest)	10 (SSE)	0.305	0.066	1.089	0.505
Receptor No. 314 (Forest)	10 (SSW)	0.064	0.014	1.030	0.478
Receptor No. 315 (Forest)	10 (SW)	0.055	0.012	1.587	0.736
Narpuh RF block-1	9.4 (SSW)	0.069	0.015	1.116	0.518
Narpuh RF block-2	7.5 (SE)	0.210	0.045	5.982	2.776
Maximum in Forest		0.305	0.066	5.982	2.776
Maximum in Study area	PM_{10}, $PM_{2.5}$ - 0.1 (NNW); SO_2, NO_2 at 7.0 (N)	2.743	0.591	32.839	15.341
NAAQS2009		**100**	**60**	**80**	**80**

Impact on Forests:

(source: Guidelines for Developing Greenbelts, Programme Objective Series : PROBES/75/1999-2000, March 2000 by Central Pollution Control Board)

Vegetation mitigates air pollution. The mode of absorption of a pollutant by plants, rate at which a pollutant is absorbed, total amount that can be absorbed and form of the pollutant in which it ends inside the plant, determine the success of the pollution absorption capacity the plant. When a pollutant is absorbed at a rate higher than the rate of its assimilation, then accumulation takes place. This results in an injury to the plant.

The pollutant wise interaction with plant is as follows:

1) <u>Sulphur dioxide:</u> SO_2 enters plants mainly through the stomatal apertures through the routes of gaseous exchange. Once inside the leaf, it passes into the intercellular spaces of mesophyll and gets absorbed on the wet cell-walls to finally diffuse gradually into the cell sap. Chemical reactions leading to leaf injury or absorption of S from SO_2 into the metabolic stream have been described variously. A widely accepted view is that SO_2 inside leaf gets oxidised to SO_3, which in turn combines with water to form sulphuric acid. The acid thus formed, upsets the critical balance between inorganic and organic sulphur in plants affecting several metabolic processes leading to reduction in productivity. Initial visual symptom of foliar injury caused by SO_2 is the formation of marginal and interveinal chlorotic,

MEGHALAYA ... THANGSKAI ...

bronzed or necrotic areas, starting with dark green or dull colouration, with water-soaked appearance. Necrotic areas extend and are visible on both epidermal surfaces older leaves having just attained full expansion are the most susceptible ones.

2) **Nitrogen Oxides:** On absorption in leaves across stomatal apertures, NOx react on cell walls to form HNOz and HN03, the former being more toxic pH drop and reaction of acids with unsaturated compounds causing isomerization and free radical formation. lead to toxicity. Nitrosamines are formed, cellular pH is lowered and acetate metabolism inhibited, leading to growth suppression. Injury symptoms are visible as discoloured spots of gray-green or light brown colour Bleached or necrotic spots in interveinal areas of leaves is a later development, appearing as stripes in advanced stages. NOx are not considered to be of major concern as phyto- toxicants since several studies suggest that levels sufficient to injure vegetation would be far above known or monitored amb1ent levels.

3) **Particulate Matters:** Heavier particles above 1 µm diameter size tend to settle while finer and lighter particles remain airborne for days together and travel for hundreds of kilometers over wind currents. Chemical dusts are more injurious and under humid conditions their phytotoxicity increases further. Finer particles clog stomatal apertures and prevent gaseous exchange by leaves. Physical weight on foliage and a film of dust causing rise in leaf surface temperature are other hazardous situations for plants. Dust particles deposited on stigmatic surfaces of flowers reduce effective pollination and hence fruit yields. Dust is captured by leaves of plants, leaf epidermal outgrowths like hairs and scales, hairy axils of stems and leaf bases. etc.

In view of above, Table 3 summarises the injury symptoms and pollution dose thresholds of tolerance by sensitive species of plants.

TABLE 3 : INJURY SYMPTOMS AND POLLUTION DOSE THRESHOLDS OF TOLERANCE BY SENSITIVE SPECIES OF PLANTS

Sl.	Pollutants	Threshold Dose	Plant injury symptoms
1	Sulphur dioxide	0.70 ppm (1820 µg/m^3) for 1 hr.; 0.18 ppm (468 µg/m^3) for 8 hr.; 0.008-0.017 ppm (21-44 µ g/m^3) for growing season;	Interveinal necrotic blotches, Red brown dieback or banding in pines
2	Nitrogen Oxides	20 ppm (38 x 10^3 µg/m^3) for 1 hr; 1.6-2.6 ppm (3000-5000 µ g/m^3) for 48 hr; 1 ppm (1900 µg/m^3) for 100 hr;	Interveinal necrotic blotches similar to those by SO_2, red brown distal necrosis in pines.
3	Dust/ fly ash	6 g/m^2/day (*Tritichum aestivam*)	Dust layer on leaves

Source: Table 2.5 & 2.6, Guidelines for Developing Greenbelts, Programme Objective Series : PROBES/75/1999-2000, March 2000 by Central Pollution Control Board

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Conclusion

It can be seen from table 2 that the peak 24 hours average GLC contribution of 2.743 $\mu g/m^3$ PM_{10}, 0.591 $\mu g/m^3$ $PM_{2.5}$, 32.839 $\mu g/m^3$ SO_2 and 15.341 $\mu g/m^3$ NO_2 occurs under specific meteorological conditions and remains for a period of 24 hours. This peak GLC contribution, when compared to the threshold dose for plant injury shows that the GLC is well below the threshold and due to its short lived nature, has not displayed any observable impact on the surrounding vegetation of that area as evidenced in the following photographs of immediate surroundings of the project:

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

```
CO STARTING
  TITLEONE MEGHALAYA CEMENT PLANT
  TITLETWO PM10 CONTROLLED EMISSIONS
  MODELOPT DFAULT CONC RURAL
  AVERTIME 24 PERIOD
  POLLUTID PM10
  RUNORNOT RUN
  TERRHGTS ELEV
CO FINISHED
ME STARTING
  INPUTFIL
MEG\MCP\Working\WithCM\MCP22S.MET
  ANEMHGHT 5.0
  SURFDATA 99999 2022 MCP
  UAIRDATA 99999 2022 MCP
  WDROTATE 180
ME FINISHED
OU STARTING
OU RECTABLE 24 FIRST
OU MAXTABLE 24 50
OU PLOTFILE 24 ALL FIRST
MEG\MCP\Working\WithCM\MCPPM10.PLT
OU FINISHED

**********
*** SETUP Finishes Successfully ***
**********
```

```
*** ISCST3 - VERSION 95250 ***     *** MEGHALAYA CEMENT PLANT EXISTING (CEMENT 2600
TPD & CLINKER 0.858 MTP ***
***     PM10 CONTROLLED EMISSIONS   ***

**MODELOPTs: CONC                          RURAL  ELEV          DFAULT
***      MODEL SETUP OPTIONS SUMMARY        ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 **Intermediate Terrain Processing is Selected
**Model Is Setup For Calculation of Average CONCentration Values.
--  SCAVENGING/DEPOSITION LOGIC --
 **Model Uses NO DRY DEPLETION.  DDPLETE = F
 **Model Uses NO WET DEPLETION.  WDPLETE = F
 **NO WET SCAVENGING Data Provided.
 **Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations
**Model Uses RURAL Dispersion.
**Model Uses Regulatory DEFAULT Options:
1. Final Plume Rise.; 2. Stack-tip Downwash.; 3. Buoyancy-induced Dispersion.; 4.
Use Calms Processing Routine.; 5. Not Use Missing Data Processing Routine.; 6.
Default Wind Profile Exponents.; 7. Default Vertical Potential Temperature
Gradients.; 8. "Upper Bound" Values for Supersquat Buildings.; 9. No Exponential
Decay for RURAL Mode
**Model Accepts Receptors on ELEV Terrain.
**Model Assumes No FLAGPOLE Receptor Heights.
**Model Calculates  1 Short Term Average(s) of: 24-HR
and Calculates PERIOD Averages
**This Run Includes: 13 Source(s);  1 Source Group(s); and 330 Receptor(s)
   **The Model Assumes A Pollutant Type of:  PM10
**Model Set To Continue RUNning After the Setup Testing.
**Output Options Selected:
Model Outputs Tables of PERIOD Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE)
Model Outputs Tables of Overall Maximum Short Term Values (MAXTABLE)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE)

 **NOTE:  The Following Flags May Appear Following CONC Values:
c for Calm Hours;  m for Missing Hours; b for Both Calm and Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 5.00; Decay Coef. = .0000; Rot. Angle = 180
Emission Units = GRAMS/SEC                          ;  Emission Rate Unit
Factor =    .10000E+07        Output Units    = MICROGRAMS/M**3

  **Input Runstream File: MEG\MCP\Working\WithCM\MCPPM10.INP      ;  **Output Print
                    File: MEG\MCP\Working\WithCM\MCPPM10.OUT

       **MODELOPTs: CONC                          RURAL  ELEV          DFAULT
```


MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

*** POINT SOURCE DATA ***

Source Id	No. Part. Cats.	Emission rate (Controlled) (GRAMS/SEC) PM10	PM2.5	Co-ordinates X (m)	Y (m)	Base Elev. (m)	Stack Height (m)	Stack Temp. (°K)	Stack Exit vel. (m/sec)	Stack Dia. (m)	Building Exists
PRESENT WORKING FOR 0.858 MTPA CEMENT & CLINKER											
S01	0	6.21E-02	1.34E-02	437764.4	2787948	801.0	21.00	301	5.5	1.2	NO
S02	0	3.70E-02	7.97E-03	437764.3	2787853	790.8	16.37	303	6.0	1.0	NO
S03	0	1.00E-01	2.16E-02	437748.3	2787723	782.4	37.00	326	10.7	1.2	NO
S04	0	7.64E-02	1.65E-02	437762.2	2787730	782.4	44.00	327	11.0	1.2	NO
S05	0	4.14E-01	8.92E-02	437715.1	2787644	775.1	81.88	453	12.0	3.0	NO
S06	0	4.84E-01	1.04E-01	437667.5	2787635	775.0	81.88	451	12.5	3.0	NO
S07	0	3.26E-01	7.03E-02	437782.0	2787713	780.8	30.37	493	9.5	2.8	NO
S08	0	3.73E-01	8.05E-02	437843.6	2787718	779.3	30.37	488	10.0	2.8	NO
S09	0	8.32E-02	1.79E-02	438068.7	2787695	778.6	30.57	336	9.2	1.2	NO
S12	0	8.33E-02	1.80E-02	438068.1	2787654	774.8	40.00	338	8.8	1.2	NO
S10	0	2.16E-02	4.66E-03	438093.7	2787685	776.5	30.57	305	10.2	0.59	NO
S13	0	4.33E-02	9.33E-03	438095.9	2787674	775.5	26.42	304	6.2	0.99	NO
S11	0	3.00E-01	6.47E-02	438229.5	2787907	780.6	71.00	358	8.5	2.53	NO

Source Id	No. Part. Cats.	Emission rate (Uncontrolled) (GRAMS/SEC) PM10	PM2.5	SO2	NO2	Co-ordinates X (m)	Y (m)	Base Elev. (m)	Stack Height (m)	Stack Temp. (°K)	Stack Exit vel. (m/sec)	Stack Dia. (m)	Building Exists
PRESENT WORKING FOR 0.858 MTPA CEMENT & CLINKER													
S01	0	6.21E+2	1.34E+2			437764.4	2787948	801.0	21.00	301	5.5	1.2	NO
S02	0	3.70E+2	7.97E+1			437764.3	2787853	790.8	16.37	303	6.0	1.0	NO
S03	0	1.00E+3	2.16E+2			437748.3	2787723	782.4	37.00	326	10.7	1.2	NO
S04	0	7.64E+2	1.65E+2			437762.2	2787730	782.4	44.00	327	11.0	1.2	NO
S05	0	4.14E+3	8.92E+2	2.50E+1	1.32E+1	437715.1	2787644	775.1	81.88	453	12.0	3.0	NO
S06	0	4.84E+3	1.04E+3	3.19E+1	1.30E+1	437667.5	2787635	775.0	81.88	451	12.5	3.0	NO
S07	0	3.26E+3	7.03E+2			437782.0	2787713	780.8	30.37	493	9.5	2.8	NO
S08	0	3.73E+3	8.05E+2			437843.6	2787718	779.3	30.37	488	10.0	2.8	NO
S09	0	8.32E+2	1.79E+2			438068.7	2787695	778.6	30.57	336	9.2	1.2	NO
S12	0	8.33E+2	1.80E+2			438068.1	2787654	774.8	40.00	338	8.8	1.2	NO
S10	0	2.16E+2	4.66E+1			438093.7	2787685	776.5	30.57	305	10.2	0.59	NO
S13	0	4.33E+2	9.33E+1			438095.9	2787674	775.5	26.42	304	6.2	0.99	NO
S11	0	3.00E+3	6.47E+2	1.49E+1	7.05E+0	438229.5	2787907	780.6	71.00	358	8.5	2.53	NO

```
*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                  (1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN DATA FILE
      *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
      (METERS/SEC):   1.54,   3.09,   5.14,   8.23,  10.80,
```

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER), WIND SPEED CATEGORY

CATEGORY	1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

FILE: MRG\MCP\Working\WithCM\MCP22S.MET FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,F9.4,F10.1,F8.4,I4,F7.2)

SURFACE STATION NO.: 99999 NAME: MCP YEAR: 2022

UPPER AIR STATION NO.: 99999 NAME: MCP YEAR: 2022

Year	Month	Day	Hour	Flow Vector	Wind Speed (M/s)	Temp (°K)	STBL CLASS	MIXING HEIGHT (m) RURAL	MIXING HEIGHT (m) URBAN	USTAR (M/S)	M-O LENGTH (m)	Z-0 (m)	IP CODE	PRATE (mm/HR)
22	2	28	24	338.1	0.99	287.7	6	393.0	393.0	.0000	.0	.0000	0	.00
22	3	1	1	344.9	1.89	287.3	6	333.0	333.0	.0000	.0	.0000	0	.00
22	3	1	2	355.4	1.74	286.8	6	333.0	333.0	.0000	.0	.0000	0	.00
22	3	1	3	9.3	1.66	286.2	6	303.0	303.0	.0000	.0	.0000	0	.00
22	3	1	4	221.7	1.64	285.7	6	283.0	283.0	.0000	.0	.0000	0	.00
22	3	1	5	225.6	2.85	285.4	5	228.0	228.0	.0000	.0	.0000	0	.00
22	3	1	6	2.1	2.38	286.0	2	100.0	100.0	.0000	.0	.0000	0	.00
22	3	1	7	4.2	3.19	288.4	2	130.0	130.0	.0000	.0	.0000	0	.00
22	3	1	8	36.9	2.61	290.2	2	250.0	250.0	.0000	.0	.0000	0	.00
22	3	1	9	183.1	1.16	291.5	1	325.0	325.0	.0000	.0	.0000	0	.00
22	3	1	10	42.8	0.13	292.0	1	331.0	331.0	.0000	.0	.0000	0	.00
22	3	1	11	253.5	0.20	292.4	1	462.0	462.0	.0000	.0	.0000	0	.00
22	3	1	12	271.2	1.02	292.5	1	601.0	601.0	.0000	.0	.0000	0	.00
22	3	1	13	269.1	3.18	292.5	2	875.0	875.0	.0000	.0	.0000	0	.00
22	3	1	14	268.6	2.60	292.4	2	1108.0	1108.0	.0000	.0	.0000	0	.00
22	3	1	15	268.3	2.79	292.0	2	1223.0	1223.0	.0000	.0	.0000	0	.00
22	3	1	16	268.3	1.14	291.3	1	1200.0	1200.0	.0000	.0	.0000	0	.00
22	3	1	17	269.4	2.09	289.4	2	1150.0	1150.0	.0000	.0	.0000	0	.00
22	3	1	18	12.2	2.29	288.6	2	1075.0	1075.0	.0000	.0	.0000	0	.00
22	3	1	19	287.3	2.19	288.4	2	825.0	825.0	.0000	.0	.0000	0	.00
22	3	1	20	54.2	2.33	288.1	5	663.0	663.0	.0000	.0	.0000	0	.00
22	3	1	21	351.8	2.58	287.4	5	488.0	488.0	.0000	.0	.0000	0	.00
22	3	1	22	6.4	1.76	286.7	6	428.0	428.0	.0000	.0	.0000	0	.00
22	3	1	23	216.8	2.26	286.1	5	408.0	408.0	.0000	.0	.0000	0	.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

RECEPTOR WISE GROUND LEVEL CONCENTRATIONS

Receptor No	Distance (km)/ Direction from plant	Co-ordinates X	Co-ordinates Y	Elev (m)	Ground level concentrations (µg/m³) PM_{10}	$PM_{2.5}$	SO_2	NO_2
1	At boundary/N	437772.9	2788215	809.1	2.233	0.482	10.426	4.948
2	At boundary/NNE	438042.5	2788291	798.8	2.237	0.482	13.332	6.097
3	At boundary/NE	438388.3	2788256	796.4	1.955	0.421	19.326	8.936
4	At boundary/ENE	438376.2	2787890	781.0	2.421	0.522	8.230	3.771
5	At boundary/E	438392.4	2787642	756.2	1.265	0.273	8.242	3.745
6	At boundary/ESE	438366.6	2787394	737.3	1.084	0.234	3.683	1.663
7	At boundary/SE	437947.2	2787466	752.6	0.504	0.109	2.581	1.224
8	At boundary/SSE	437859.9	2787430	750.4	0.457	0.099	3.961	1.868
9	At boundary/S	437772.9	2787383	751.6	0.634	0.137	6.552	3.108
10	At boundary/SSW	437628.1	2787291	751.9	0.691	0.149	7.545	3.579
11	At boundary/SW	437415.3	2787283	754.1	0.586	0.126	7.171	3.402
12	At boundary/WSW	436921.8	2787288	765.7	0.535	0.115	6.261	2.952
13	At boundary/W	436944.7	2787640	785.0	0.466	0.101	4.236	2.002
14	At boundary/WNW	437463.1	2787769	787.6	1.107	0.239	4.548	2.157
15	At boundary/NW	437639.5	2787774	791.0	1.050	0.226	4.081	1.936
16	At boundary/NNW	437678.5	2787868	797.0	2.222	0.479	4.705	2.232
17	100m/N	437772.9	2788333	808.4	2.137	0.461	13.723	6.510
18	100m/NNE	438080.8	2788384	795.5	1.983	0.428	13.084	6.002
19	100m/NE	438488.3	2788356	790.0	1.761	0.380	22.434	10.401
20	100m/ENE	438474.3	2787931	773.8	1.788	0.386	9.123	4.209
21	100m/E	438492.7	2787640	754.4	1.512	0.326	11.831	5.425
22	100m/ESE	438473.9	2787350	735.3	1.004	0.217	5.830	2.660
23	100m/SE	438033.9	2787379	742.3	0.703	0.151	3.564	1.691
24	100m/SSE	437898.2	2787338	741.7	0.462	0.100	3.628	1.816
25	100m/S	437772.9	2787261	738.8	0.608	0.131	5.731	2.719
26	100m/SSW	437588.9	2787196	742.9	0.578	0.125	6.673	3.165
27	100m/SW	437337.7	2787205	750.6	0.527	0.114	6.664	3.161
28	100m/WSW	436817.3	2787245	763.7	0.507	0.109	6.956	3.269
29	100m/W	436932.7	2787640	785.6	0.435	0.094	5.301	2.487
30	100m/WNW	437004.7	2787959	803.4	1.022	0.220	9.137	4.286
31	100m/NW	437547.0	2787866	794.0	2.167	0.467	5.637	2.674
32	100m/NNW	437527.6	2788233	813.1	2.743	0.591	10.871	5.163
33	200m/N	437772.9	2788434	808.7	2.144	0.462	15.872	7.529
34	200m/NNE	438138.5	2788523	792.8	1.547	0.334	13.479	6.183
35	200m/NE	438588.2	2788456	769.2	1.509	0.325	21.807	10.107
36	200m/ENE	438572.5	2787972	765.6	1.341	0.289	9.063	4.199
37	200m/E	438592.9	2787640	750.7	1.512	0.326	13.988	6.442
38	200m/ESE	438580.7	2787306	729.0	0.919	0.198	8.579	4.051
39	200m/SE	438380.1	2787033	722.6	0.970	0.209	17.466	8.074
40	200m/SSE	437936.5	2787246	733.2	0.455	0.098	4.826	2.289
41	200m/S	437772.9	2787138	718.4	0.515	0.111	4.738	2.248
42	200m/SSW	437550.5	2787103	734.5	0.537	0.116	5.845	2.772
43	200m/SW	437174.3	2787042	734.6	0.415	0.090	5.873	2.737
44	200m/WSW	436721.8	2787205	766.3	0.466	0.100	7.124	3.341
45	200m/W	436722.9	2787640	782.9	0.404	0.087	5.931	2.770
46	200m/WNW	436883.4	2788009	810.2	1.355	0.292	12.055	5.612
47	200m/NW	437439.4	2787974	795.2	2.108	0.454	6.170	2.928
48	200m/NNW	437484.5	2788337	807.6	1.832	0.395	11.756	5.585
49	300m/N	437772.9	2788534	803.3	1.276	0.275	15.108	7.166
50	300m/NNE	438226.6	2788736	788.9	0.722	0.156	12.612	5.892
51	300m/NE	438675.0	2788542	740.7	1.241	0.267	19.824	9.192
52	300m/ENE	438683.4	2788018	770.3	1.147	0.247	11.648	5.419
53	300m/E	438693.1	2787640	763.1	1.534	0.331	15.915	7.353
54	300m/ESE	438683.0	2787263	724.8	0.822	0.177	10.840	5.030

MEGHALAYA ... LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

Receptor No	Distance (km)/ Direction from plant	Co-ordinates		Elev (m)	Ground level concentrations (µg/m³)			
		X	Y		PM_{10}	$PM_{2.5}$	SO_2	NO_2
55	300m/SE	438466.2	2786947	712.0	0.895	0.193	18.186	8.403
56	300m/SSE	437974.7	2787153	727.3	0.492	0.106	5.391	2.557
57	300m/S	437772.9	2787018	704.2	0.452	0.097	3.956	1.876
58	300m/SSW	437500.3	2786982	718.0	0.496	0.107	4.925	2.336
59	300m/SW	437089.7	2786957	721.5	0.369	0.080	5.964	2.765
60	300m/WSW	436628.4	2787166	751.7	0.440	0.095	7.452	3.488
61	300m/W	436616.9	2787640	778.3	0.376	0.081	6.157	2.868
62	300m/WNW	436784.5	2789050	809.4	1.230	0.265	12.779	5.933
63	300m/NW	437305.4	2788108	801.4	1.639	0.353	9.006	4.269
64	300m/NNW	437443.6	2788435	801.3	1.364	0.294	11.775	5.588
65	400m/N	437772.9	2788634	799.3	0.893	0.193	13.516	6.411
66	400m/NNE	438274.1	2788850	726.6	0.491	0.106	11.348	5.299
67	400m/NE	438752.4	2788620	729.0	1.164	0.251	19.388	8.995
68	400m/ENE	438788.2	2788061	771.3	1.044	0.225	14.252	6.663
69	400m/E	438793.3	2787640	754.7	1.484	0.320	17.655	8.177
70	400m/ESE	438782.1	2787222	721.5	0.736	0.159	11.018	5.210
71	400m/SE	438644.0	2786869	701.3	0.827	0.178	18.127	8.384
72	400m/SSE	438042.0	2786991	712.7	0.495	0.107	5.044	2.380
73	400m/S	437772.9	2786909	696.7	0.427	0.092	3.954	1.861
74	400m/SSW	437456.2	2786876	703.7	0.487	0.101	5.294	2.477
75	400m/SW	436975.4	2786843	706.6	0.333	0.072	5.760	2.663
76	400m/WSW	436535.5	2787128	747.6	0.419	0.090	7.758	3.624
77	400m/W	436514.0	2787640	783.7	0.365	0.079	6.248	2.905
78	400m/WNW	436689.0	2788089	805.0	0.811	0.175	12.571	5.829
79	400m/NW	437192.9	2788220	808.8	1.462	0.315	15.642	7.337
80	400m/NNW	437402.9	2788534	799.5	1.143	0.246	11.332	5.374
81	500m/N	437772.9	2788734	789.0	0.627	0.135	11.223	5.324
82	500m/NNE	438317.2	2788954	715.9	0.443	0.095	10.232	4.775
83	500m/NE	438828.9	2788694	752.9	1.324	0.285	22.959	10.682
84	500m/ENE	438888.3	2788102	767.0	0.942	0.203	15.275	7.152
85	500m/E	438893.5	2787640	754.0	1.405	0.303	18.728	8.688
86	500m/ESE	438878.5	2787182	715.9	0.665	0.143	10.422	4.928
87	500m/SE	438618.7	2786795	668.2	0.756	0.163	18.340	8.478
88	500m/SSE	438123.0	2786795	700.3	0.476	0.103	7.047	3.187
89	500m/S	437772.9	2786804	688.1	0.416	0.090	4.677	2.189
90	500m/SSW	437414.7	2786776	693.5	0.444	0.096	5.806	2.706
91	500m/SW	436884.2	2786752	702.2	0.317	0.068	6.381	2.950
92	500m/WSW	436442.8	2787089	748.9	0.411	0.089	8.280	3.861
93	500m/W	436412.3	2787640	785.9	0.350	0.076	6.111	2.839
94	500m/WNW	436594.8	2788128	812.6	1.196	0.258	13.061	6.050
95	500m/NW	437055.6	2788358	819.3	1.343	0.290	19.985	9.323
96	500m/NNW	437363.2	2788630	795.5	0.990	0.213	10.216	4.841
97	600m/N	437772.9	2788834	779.2	0.570	0.123	9.220	4.373
98	600m/NNE	438358.6	2789054	738.4	0.500	0.108	9.578	4.461
99	600m/NE	438900.0	2788767	762.1	1.336	0.288	25.029	11.654
100	600m/ENE	438988.3	2788144	761.2	0.839	0.181	15.168	7.107
101	600m/E	438993.7	2787640	752.7	1.334	0.288	19.166	8.900
102	600m/ESE	438975.1	2787142	709.0	0.605	0.131	9.485	4.484
103	600m/SE	438892.0	2786721	636.8	0.722	0.156	18.671	8.723
104	600m/SSE	438177.9	2786663	685.0	0.419	0.090	7.004	3.252
105	600m/S	437772.9	2786701	681.3	0.419	0.090	5.449	2.533
106	600m/SSW	437369.5	2786666	693.5	0.428	0.092	5.961	2.771
107	600m/SW	436801.8	2786669	706.1	0.322	0.069	6.656	3.078
108	600m/WSW	436350.3	2787051	744.4	0.391	0.084	8.383	3.905
109	600m/W	436311.2	2787640	786.4	0.335	0.072	5.880	2.731

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

Receptor No	Distance (km)/ Direction from plant	Co-ordinates X	Co-ordinates Y	Elev (m)	Ground level concentrations (µg/m³) PM_{10}	$PM_{2.5}$	SO_2	NO_2
110	600m/WNW	436500.8	2788167	815.1	1.148	0.249	12.933	5.988
111	600m/NW	436957.0	2788456	814.2	1.297	0.280	19.322	9.002
112	600m/NNW	437324.0	2788724	799.4	0.899	0.194	9.281	4.396
113	600m/N	437772.9	2789045	736.4	0.455	0.098	6.737	3.140
114	600m/NNE	438440.7	2789253	773.4	0.695	0.150	10.611	4.882
115	600m/NE	439044.4	2788912	754.3	1.179	0.254	23.394	10.892
116	600m/ENE	439188.3	2788227	765.4	0.705	0.152	13.362	6.258
117	600m/E	439194.1	2787640	734.8	1.125	0.243	18.288	8.505
118	600m/ESE	439163.8	2787064	663.0	0.509	0.110	7.231	3.415
119	600m/SE	438836.6	2786577	631.4	0.690	0.149	16.373	8.494
120	600m/SSE	438270.9	2786438	627.7	0.327	0.070	6.329	2.939
121	600m/S	437772.9	2786497	655.7	0.417	0.090	6.511	3.021
122	600m/SSW	437277.7	2786445	652.6	0.384	0.083	5.559	2.575
123	600m/SW	436647.1	2786515	699.4	0.304	0.066	7.053	3.260
124	600m/WSW	436165.2	2786974	744.1	0.367	0.079	8.691	4.039
125	600m/W	436109.8	2787640	785.3	0.306	0.066	5.382	2.499
126	600m/WNW	436313.5	2788245	819.2	0.982	0.212	12.346	5.712
127	600m/NW	436787.4	2788626	819.0	1.357	0.293	18.234	8.489
128	600m/NNW	437246.3	2788912	788.9	0.733	0.158	7.894	3.739
129	1.0km/N	437772.9	2789284	712.0	0.408	0.088	6.986	3.255
130	1.0km/NNE	438520.6	2789445	716.4	0.359	0.077	8.061	3.760
131	1.0km/NE	439187.6	2789055	748.7	1.050	0.226	21.707	10.104
132	1.0km/ENE	439398.3	2788309	782.2	0.622	0.134	13.042	6.083
133	1.0km/E	439394.5	2787640	705.2	0.932	0.201	16.932	7.886
134	1.0km/ESE	439351.0	2786987	640.2	0.443	0.096	6.065	2.863
135	1.0km/SE	438979.9	2786433	621.6	0.661	0.142	17.783	8.224
136	1.0km/SSE	438356.0	2786233	643.4	0.266	0.057	6.116	2.840
137	1.0km/S	437772.9	2786294	612.7	0.407	0.088	6.778	3.142
138	1.0km/SSW	437193.1	2786241	606.0	0.341	0.073	5.107	2.359
139	1.0km/SW	436498.1	2786368	692.0	0.286	0.062	7.050	3.258
140	1.0km/WSW	435980.3	2786898	739.6	0.337	0.073	8.513	3.951
141	1.0km/W	435908.9	2787640	783.5	0.281	0.061	4.932	2.291
142	1.0km/WNW	436127.2	2788322	807.8	0.597	0.129	11.048	5.112
143	1.0km/NW	436631.1	2788782	815.5	1.340	0.289	16.578	7.714
144	1.0km/NNW	437169.1	2789098	763.8	0.602	0.130	7.051	3.338
145	1.2km/N	437772.9	2789517	714.1	0.389	0.084	7.292	3.398
146	1.2km/NNE	438599.4	2789636	693.2	0.297	0.064	7.261	3.388
147	1.2km/NE	439330.2	2789198	739.2	0.931	0.201	19.725	9.179
148	1.2km/ENE	439588.3	2788392	775.0	0.498	0.107	11.514	5.367
149	1.2km/E	439594.8	2787640	686.5	0.836	0.180	16.911	7.824
150	1.2km/ESE	439537.3	2786910	618.5	0.393	0.085	5.218	2.461
151	1.2km/SE	439122.6	2786291	623.6	0.633	0.136	17.047	7.888
152	1.2km/SSE	438437.9	2786035	620.5	0.223	0.048	5.461	2.544
153	1.2km/S	437772.9	2786093	580.4	0.382	0.082	6.206	2.878
154	1.2km/SSW	437111.5	2786044	589.2	0.305	0.066	4.653	2.155
155	1.2km/SW	436351.8	2786219	706.2	0.283	0.061	7.044	3.271
156	1.2km/WSW	435795.4	2786821	728.1	0.305	0.066	8.029	3.724
157	1.2km/W	435708.4	2787640	785.5	0.261	0.056	4.695	2.175
158	1.2km/WNW	435941.4	2788399	793.0	0.360	0.078	9.944	4.601
159	1.2km/NW	436480.3	2788933	819.4	1.253	0.270	15.292	7.112
160	1.2km/NNW	437092.1	2789284	744.2	0.516	0.111	6.469	3.060
161	1.4km/N	437772.9	2789738	702.4	0.358	0.077	7.129	3.322
162	1.4km/NNE	438677.4	2789824	692.9	0.272	0.059	6.591	3.075
163	1.4km/NE	439472.5	2789340	730.8	0.835	0.180	16.023	8.384
164	1.4km/ENE	439788.1	2788475	766.3	0.432	0.093	10.165	4.737

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

Receptor No	Distance (km)/ Direction from plant	Co-ordinates		Elev (m)	Ground level concentrations (µg/m³)			
		X	Y		PM_{10}	$PM_{2.5}$	SO_2	NO_2
165	1.4km/E	439795.2	2787640	678.2	0.789	0.170	17.127	7.932
166	1.4km/ESE	439723.2	2786833	609.5	0.353	0.076	5.137	2.391
167	1.4km/SE	439264.9	2786148	600.2	0.599	0.129	16.304	7.546
168	1.4km/SSE	438518.2	2785841	587.7	0.192	0.041	4.855	2.253
169	1.4km/S	437772.9	2785892	579.8	0.354	0.076	5.551	2.576
170	1.4km/SSW	437028.7	2785844	594.7	0.278	0.060	4.271	1.978
171	1.4km/SW	436206.9	2786074	704.9	0.266	0.057	6.899	3.202
172	1.4km/WSW	435610.6	2786745	741.3	0.288	0.062	7.850	3.638
173	1.4km/W	435508.0	2787640	776.8	0.241	0.052	4.488	2.078
174	1.4km/WNW	435755.9	2788476	790.9	0.327	0.070	9.238	4.274
175	1.4km/NW	436332.4	2789081	809.6	0.788	0.170	13.689	6.363
176	1.4km/NNW	437015.3	2789469	749.1	0.465	0.100	6.302	2.979
177	1.6km/N	437772.9	2789954	692.7	0.331	0.071	6.875	3.204
178	1.6km/NNE	438755.1	2790012	696.6	0.254	0.055	5.988	2.794
179	1.6km/NE	439614.5	2789482	714.5	0.747	0.161	16.239	7.553
180	1.6km/ENE	439985.0	2788557	750.2	0.383	0.083	8.902	4.146
181	1.6km/E	439995.6	2787640	672.5	0.744	0.160	16.961	7.860
182	1.6km/ESE	439908.8	2786756	605.2	0.321	0.069	4.945	2.301
183	1.6km/SE	439407.0	2786006	582.6	0.567	0.122	15.507	7.179
184	1.6km/SSE	438597.5	2785650	571.8	0.173	0.037	4.459	2.069
185	1.6km/S	437772.9	2785691	543.1	0.331	0.071	5.101	2.368
186	1.6km/SSW	436945.6	2785643	594.2	0.255	0.055	3.946	1.828
187	1.6km/SW	436062.9	2785930	707.6	0.250	0.054	6.706	3.110
188	1.6km/WSW	435425.8	2786668	755.4	0.269	0.058	7.521	3.484
189	1.6km/W	435307.7	2787640	768.0	0.225	0.048	4.266	1.976
190	1.6km/WNW	435570.6	2788553	796.5	0.300	0.065	8.633	3.994
191	1.6km/NW	436186.2	2789227	812.0	0.641	0.138	12.554	5.834
192	1.6km/NNW	436938.5	2789655	764.4	0.424	0.091	6.133	2.897
193	1.8km/N	437772.9	2790166	695.6	0.310	0.067	6.675	3.110
194	1.8km/NNE	438832.6	2790199	678.6	0.221	0.048	5.450	2.542
195	1.8km/NE	439756.4	2789624	695.9	0.668	0.144	14.443	6.715
196	1.8km/ENE	440178.9	2788637	712.9	0.342	0.074	7.579	3.528
197	1.8km/E	440196.0	2787640	648.4	0.673	0.145	15.865	7.354
198	1.8km/ESE	440094.2	2786679	590.2	0.293	0.063	4.646	2.162
199	1.8km/SE	439548.9	2785864	555.5	0.534	0.115	14.701	6.808
200	1.8km/SSE	438676.3	2785459	538.6	0.153	0.033	4.021	1.865
201	1.8km/S	437772.9	2785490	533.2	0.311	0.067	4.743	2.203
202	1.8km/SSW	436864.1	2785446	596.9	0.236	0.051	3.672	1.701
203	1.8km/SW	436019.5	2785787	701.4	0.232	0.050	6.359	2.948
204	1.8km/WSW	435241.0	2786592	761.4	0.249	0.054	7.057	3.269
205	1.8km/W	435107.2	2787640	759.4	0.210	0.045	4.041	1.871
206	1.8km/WNW	435385.5	2788629	798.5	0.276	0.059	8.005	3.703
207	1.8km/NW	436041.1	2789372	833.8	1.083	0.234	11.763	5.464
208	1.8km/NNW	436861.8	2789840	750.5	0.379	0.082	5.643	2.664
209	2.0km/N	437772.9	2790375	686.9	0.291	0.063	6.339	2.953
210	2.0km/NNE	438909.8	2790385	672.8	0.203	0.044	4.991	2.328
211	2.0km/NE	439898.3	2789765	654.3	0.503	0.130	12.969	6.028
212	2.0km/ENE	440371.0	2788717	699.1	0.313	0.067	6.853	3.189
213	2.0km/E	440396.4	2787640	616.7	0.607	0.131	14.645	6.789
214	2.0km/ESE	440279.5	2786602	582.8	0.270	0.058	4.356	2.026
215	2.0km/SE	439690.8	2785723	530.2	0.505	0.109	13.942	6.458
216	2.0km/SSE	438754.7	2785270	501.4	0.137	0.030	3.645	1.691
217	2.0km/S	437772.9	2785290	516.8	0.293	0.063	4.458	2.071
218	2.0km/SSW	436783.7	2785252	611.1	0.220	0.048	3.437	1.592
219	2.0km/SW	435776.5	2785644	715.4	0.220	0.048	6.144	2.848

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

Receptor No	Distance (km)/ Direction from plant	Co-ordinates		Elev (m)	Ground level concentrations (µg/m³)			
		X	Y		PM_{10}	$PM_{2.5}$	SO_2	NO_2
220	2.0km/WSW	435056.1	2786515	757.5	0.230	0.050	6.556	3.036
221	2.0km/W	434905.1	2787640	758.3	0.197	0.043	3.820	1.769
222	2.0km/WNW	435200.3	2788706	787.7	0.253	0.055	7.364	3.407
223	2.0km/NW	435896.7	2789517	833.2	1.028	0.222	10.753	4.994
224	2.0km/NNW	436785.1	2790025	727.8	0.342	0.074	5.190	2.460
225	2.5km/N	437772.9	2790891	689.2	0.254	0.055	5.641	2.628
226	2.5km/NNE	439102.4	2790850	669.2	0.170	0.037	4.101	1.911
227	2.5km/NE	440252.5	2790120	648.7	0.508	0.110	11.286	5.245
228	2.5km/ENE	440845.8	2788913	663.2	0.257	0.056	5.395	2.509
229	2.5km/E	440897.3	2787640	577.2	0.511	0.110	12.808	5.939
230	2.5km/ESE	440742.4	2786410	544.7	0.224	0.048	3.632	1.686
231	2.5km/SE	440045.0	2785368	463.7	0.441	0.095	12.298	5.698
232	2.5km/SSE	438949.3	2784800	409.6	0.110	0.024	2.993	1.388
233	2.5km/S	437772.9	2784789	488.9	0.258	0.056	3.912	1.819
234	2.5km/SSW	436585.5	2784774	596.4	0.189	0.041	2.970	1.376
235	2.5km/SW	435420.2	2785288	707.7	0.186	0.040	5.294	2.453
236	2.5km/WSW	434594.1	2786324	735.7	0.191	0.041	5.517	2.555
237	2.5km/W	434401.3	2787640	727.4	0.170	0.037	3.325	1.541
238	2.5km/WNW	434737.8	2788898	756.5	0.209	0.045	6.101	2.824
239	2.5km/NW	435537.9	2789875	845.0	0.910	0.196	8.843	4.105
240	2.5km/NNW	436593.5	2790488	722.4	0.282	0.061	4.512	2.128
241	3.0km/N	437772.9	2791402	707.2	0.226	0.049	5.026	2.341
242	3.0km/NNE	439294.6	2791314	693.1	0.162	0.035	3.484	1.616
243	3.0km/NE	440606.5	2790474	652.4	0.437	0.094	9.964	4.629
244	3.0km/ENE	441316.1	2789108	595.9	0.220	0.047	4.403	2.066
245	3.0km/E	441398.3	2787640	544.0	0.439	0.095	11.257	5.220
246	3.0km/ESE	441204.9	2786219	489.0	0.191	0.041	3.043	1.414
247	3.0km/SE	440399.1	2785014	420.5	0.392	0.085	11.022	5.108
248	3.0km/SSE	439142.8	2784333	438.2	0.101	0.022	2.802	1.299
249	3.0km/S	437772.9	2784288	483.2	0.230	0.050	3.496	1.627
250	3.0km/SSW	436389.7	2784301	587.1	0.166	0.036	2.621	1.214
251	3.0km/SW	435064.4	2784932	697.1	0.159	0.034	4.575	2.120
252	3.0km/WSW	434132.2	2786132	669.7	0.163	0.035	4.731	2.192
253	3.0km/W	433898.7	2787640	759.5	0.150	0.032	2.935	1.360
254	3.0km/WNW	434275.5	2789089	803.4	0.181	0.039	5.273	2.441
255	3.0km/NW	435160.9	2790232	856.9	0.856	0.185	8.248	3.803
256	3.0km/NNW	436402.0	2790950	710.6	0.239	0.052	3.954	1.864
257	4.0km/N	437772.9	2792415	793.6	0.977	0.211	4.050	1.885
258	4.0km/NNE	439678.4	2792241	722.2	0.168	0.036	3.002	1.387
259	4.0km/NE	441314.2	2791182	661.7	0.338	0.073	7.959	3.696
260	4.0km/ENE	442250.5	2789495	364.3	0.171	0.037	3.411	1.593
261	4.0km/E	442399.4	2787640	416.0	0.332	0.072	8.709	4.038
262	4.0km/ESE	442129.6	2785836	394.7	0.147	0.032	2.262	1.060
263	4.0km/SE	441106.8	2784306	218.5	0.319	0.069	9.049	4.195
264	4.0km/SSE	439528.2	2783403	313.4	0.080	0.017	2.300	1.066
265	4.0km/S	437772.9	2783277	467.9	0.189	0.041	2.883	1.343
266	4.0km/SSW	436001.5	2783364	471.3	0.134	0.029	2.129	0.987
267	4.0km/SW	434353.1	2784221	602.8	0.121	0.026	3.485	1.615
268	4.0km/WSW	433208.2	2785750	687.8	0.130	0.028	3.800	1.761
269	4.0km/W	432895.6	2787640	680.4	0.121	0.026	2.378	1.103
270	4.0km/WNW	433351.1	2789472	755.3	0.138	0.030	4.004	1.855
271	4.0km/NW	434469.5	2790944	795.2	0.277	0.060	5.523	2.562
272	4.0km/NNW	436019.0	2791875	780.7	0.185	0.040	3.161	1.469
273	5.0km/N	437772.9	2793423	786.4	0.726	0.157	3.302	1.537
274	5.0km/NNE	440061.7	2793166	757.1	0.216	0.046	3.461	1.603

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

Receptor No	Distance (km)/ Direction from plant	Co-ordinates X	Co-ordinates Y	Elev (m)	Ground level concentrations (µg/m³) PM_{10}	$PM_{2.5}$	SO_2	NO_2
275	5.0km/NE	442021.7	2791889	656.3	0.274	0.059	6.582	3.047
276	5.0km/ENE	443180.6	2789880	623.6	0.142	0.031	2.949	1.369
277	5.0km/E	443400.1	2787640	426.5	0.279	0.060	7.444	3.452
278	5.0km/ESE	443053.9	2785453	447.2	0.120	0.025	1.657	0.862
279	5.0km/SE	441814.3	2783599	256.9	0.273	0.059	7.795	3.614
280	5.0km/SSE	439912.5	2782475	512.1	0.070	0.015	2.025	0.938
281	5.0km/S	437772.9	2782268	188.0	0.161	0.035	2.457	1.145
282	5.0km/SSW	435615.6	2782432	365.9	0.112	0.024	1.798	0.834
283	5.0km/SW	433643.3	2783511	445.3	0.098	0.021	2.815	1.305
284	5.0km/WSW	432284.3	2785367	545.8	0.109	0.023	3.161	1.465
285	5.0km/W	431893.7	2787640	590.4	0.102	0.022	2.001	0.928
286	5.0km/WNW	432426.9	2789855	715.6	0.111	0.024	3.230	1.497
287	5.0km/NW	433759.8	2791653	771.1	0.155	0.034	4.420	2.050
288	5.0km/NNW	435636.2	2792799	884.4	0.649	0.140	10.779	5.066
289	7.0km/N	437772.9	2795432	883.1	1.479	0.319	32.639	15.341
290	7.0km/NNE	440827.8	2795015	693.1	0.102	0.022	1.953	0.905
291	7.0km/NE	443436.3	2793304	660.1	0.203	0.044	4.936	2.291
292	7.0km/ENE	445035.4	2790849	750.9	0.176	0.038	2.560	1.189
293	7.0km/E	445400.9	2787640	517.8	0.211	0.045	5.691	2.639
294	7.0km/ESE	444902.2	2784687	456.8	0.087	0.019	1.328	0.617
295	7.0km/SE	443228.9	2782184	121.5	0.212	0.046	6.081	2.820
296	7.0km/SSE	440679.7	2780623	91.7	0.052	0.011	1.505	0.698
297	7.0km/S	437772.9	2780258	126.5	0.125	0.027	1.906	0.889
298	7.0km/SSW	434846.5	2780575	608.2	0.086	0.019	1.379	0.640
299	7.0km/SW	432225.9	2782093	160.6	0.074	0.016	2.130	0.987
300	7.0km/WSW	430436.5	2784602	511.2	0.082	0.018	2.385	1.105
301	7.0km/W	429691.5	2787640	645.9	0.077	0.017	1.520	0.705
302	7.0km/WNW	430576.8	2790620	730.6	0.081	0.017	2.349	1.089
303	7.0km/NW	432342.7	2793071	743.8	0.112	0.024	3.220	1.494
304	7.0km/NNW	434870.7	2794647	695.3	0.110	0.024	1.929	0.908
305	10.0km/N	437772.9	2798439	951.6	0.943	0.203	26.201	12.161
306	10.0km/NNE	441978.4	2797788	947.2	0.603	0.130	18.333	8.513
307	10.0km/NE	445557.9	2795425	692.3	0.152	0.033	3.683	1.709
308	10.0km/ENE	447812.4	2791799	818.9	0.672	0.145	6.351	2.960
309	10.0km/E	448401.6	2787640	811.3	0.653	0.141	6.642	3.090
310	10.0km/ESE	447874.2	2783539	267.5	0.061	0.013	0.957	0.444
311 (Narpuh RF block-2)	10.0km/SE	445358.6	2780063	257.2	0.160	0.034	4.594	2.131
312 (Narpuh RF block-2)	10.0km/SSE	441829.1	2777648	724.6	0.305	0.066	1.089	0.505
313	10.0km/S	437772.9	2777250	316.4	0.094	0.020	1.437	0.670
314 (Narpuh RF block-1)	10.0km/SSW	433695.6	2777797	637.8	0.064	0.014	1.030	0.478
315 (Narpuh RF block-1)	10.0km/SW	430102.3	2779970	284.2	0.055	0.012	1.587	0.736
316	10.0km/WSW	427664.9	2783453	347.7	0.060	0.013	1.741	0.807
317	10.0km/W	426869.9	2787640	779.5	0.056	0.012	1.118	0.519
318	10.0km/WNW	427806.9	2791768	818.4	0.118	0.025	1.677	0.778
319	10.0km/NW	430219.2	2795194	937.9	0.424	0.091	11.641	5.409
320	10.0km/NNW	433722.5	2797419	1024.2	0.291	0.063	10.015	4.662
Narpuh RF block-1	9.4km/SSW	434097.9	2778653	548.5	0.069	0.015	1.116	0.518
Narpuh RF block-2	7.5km/SE	443478.8	2782308	73.1	0.210	0.045	5.982	2.776
A1: Project Site (Core Zone)	Within	437765.6	2787672	773.7	0.569	0.144	2.535	1.203
A2: Mine Area	0.4km/E	438781.5	2788003	771.5	1.192	0.257	17.697	8.297
A3: Khliejheri Mine	0.8km/NE	439205.6	2788553	767.3	1.124	0.242	20.698	9.712

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

Receptor No	Distance (km)/ Direction from plant	Co-ordinates X	Co-ordinates Y	Elev (m)	Ground level concentrations (µg/m³) PM_{10}	$PM_{2.5}$	SO_2	NO_2
A4: Reservoir, NE of Thangskai Village	1.7km/NE	439787.9	2789800	684.0	0.689	0.149	13.272	6.160
A5: Umlong Village	4.8km/SW	431908.2	2784510	485.5	0.081	0.017	2.342	1.086
A6: Wahiajer Village	0.4km/S	437734.1	2786766	693.2	0.426	0.092	5.109	2.388
A7: Chiehruphi Village	0.4km/N	437024.5	2788441	819.0	1.499	0.323	19.475	9.091
A8: Shiehruphi Village	3.2km/N	437781.6	2791971	707.1	0.202	0.044	4.370	2.035
MAXIMUM OF 24 HRS AVG					**2.743**	**0.591**	**32.839**	**15.341**

STANDARDS FOR AMBIENT AIR QUALITY (MOEF NOTIFICATION G.S. R 826(E) DATED 16/11/2009)

Pollutants	Concentration of ambient air (All concentrations are micro g/m³) for 24 hours average	
	Industrial area, Residential, Rural and Other areas	Ecologically sensitive area (Notified by Central Govt.)
Sulphur Dioxide (SO_2)	80	80
Oxides of Nitrogen as NO_2	80	80
Particulate Matter (size ≤10µm)	100	100
Particulate Matter (size ≤2.5µm)	60	60

The receptors assumed for modelling is shown in Fig 1 and calculated ground level concentrations of PM_{10}, $PM_{2.5}$, SO_2 and NOx from present working plant are shown with contours in Fig 2 to Fig 5 respectively.

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

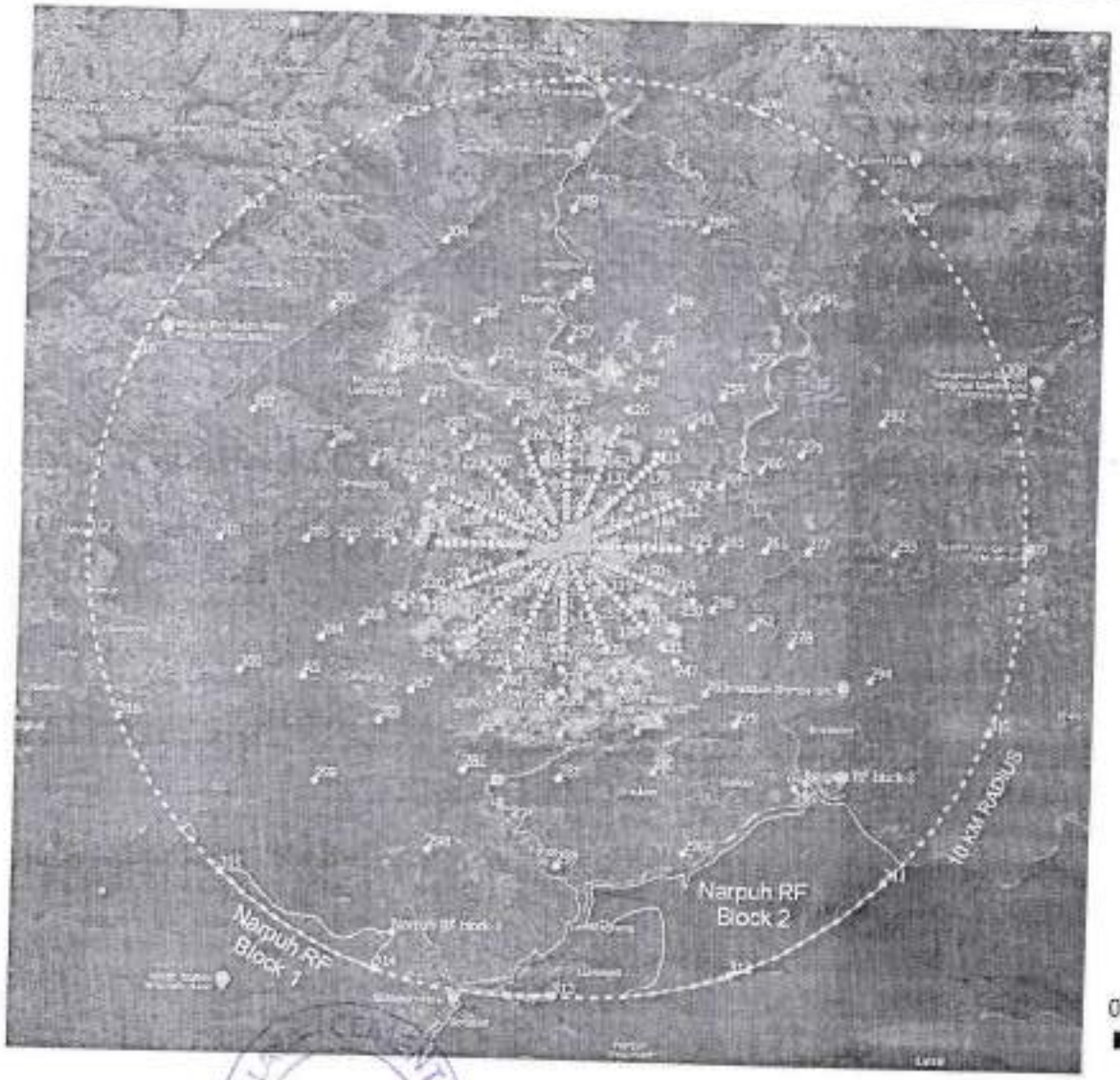
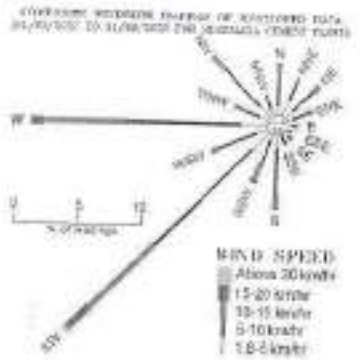


FIG: 1

MEGHALAYA CEMENT PLANT (Present working 2600 TPD Cement & 0.858 MTPA clinker) at village Thangskai, distt. East Jaintia Hills, Meghalaya



LEGENDS

- 10KM RADIUS
- RF boundary
- PLANT AREA
- Receptors

0 2.5 5 7.5 km

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

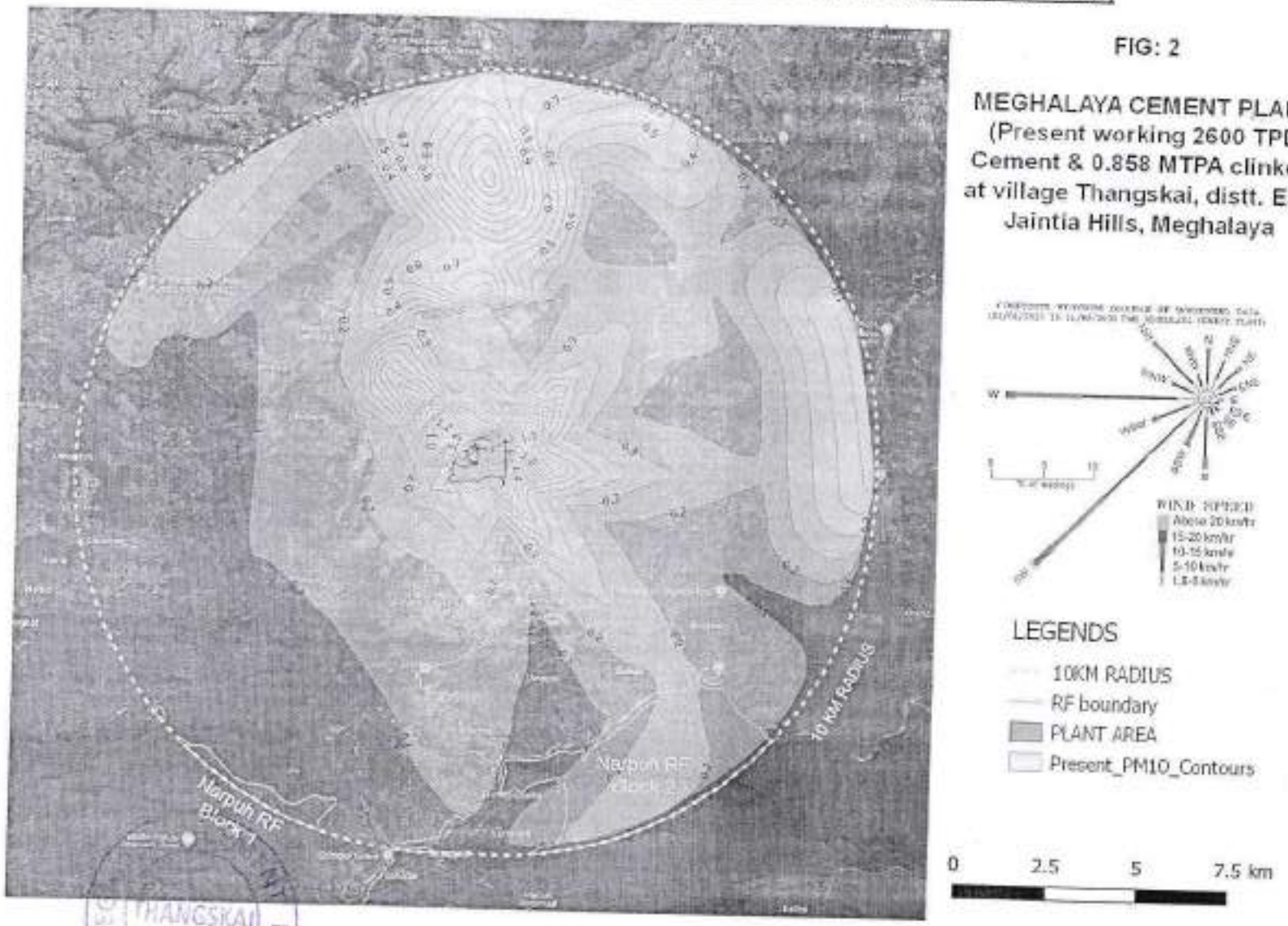


FIG: 2

MEGHALAYA CEMENT PLANT (Present working 2600 TPD Cement & 0.858 MTPA clinker) at village Thangskai, distt. East Jaintia Hills, Meghalaya

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

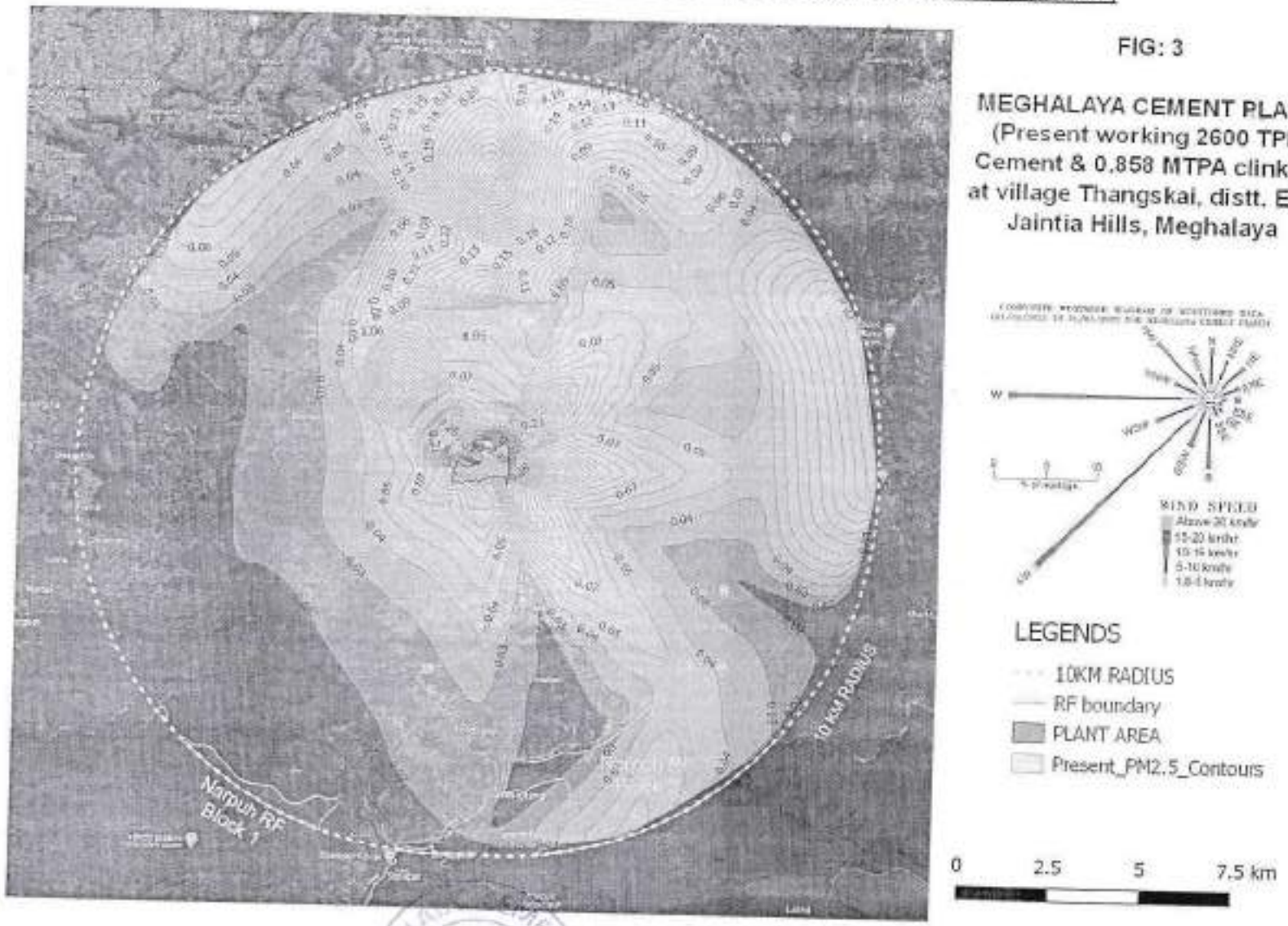


FIG: 3

MEGHALAYA CEMENT PLANT
(Present working 2600 TPD Cement & 0.858 MTPA clinker) at village Thangskai, distt. East Jaintia Hills, Meghalaya

MEGHALAYA CEMENT LTD. THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

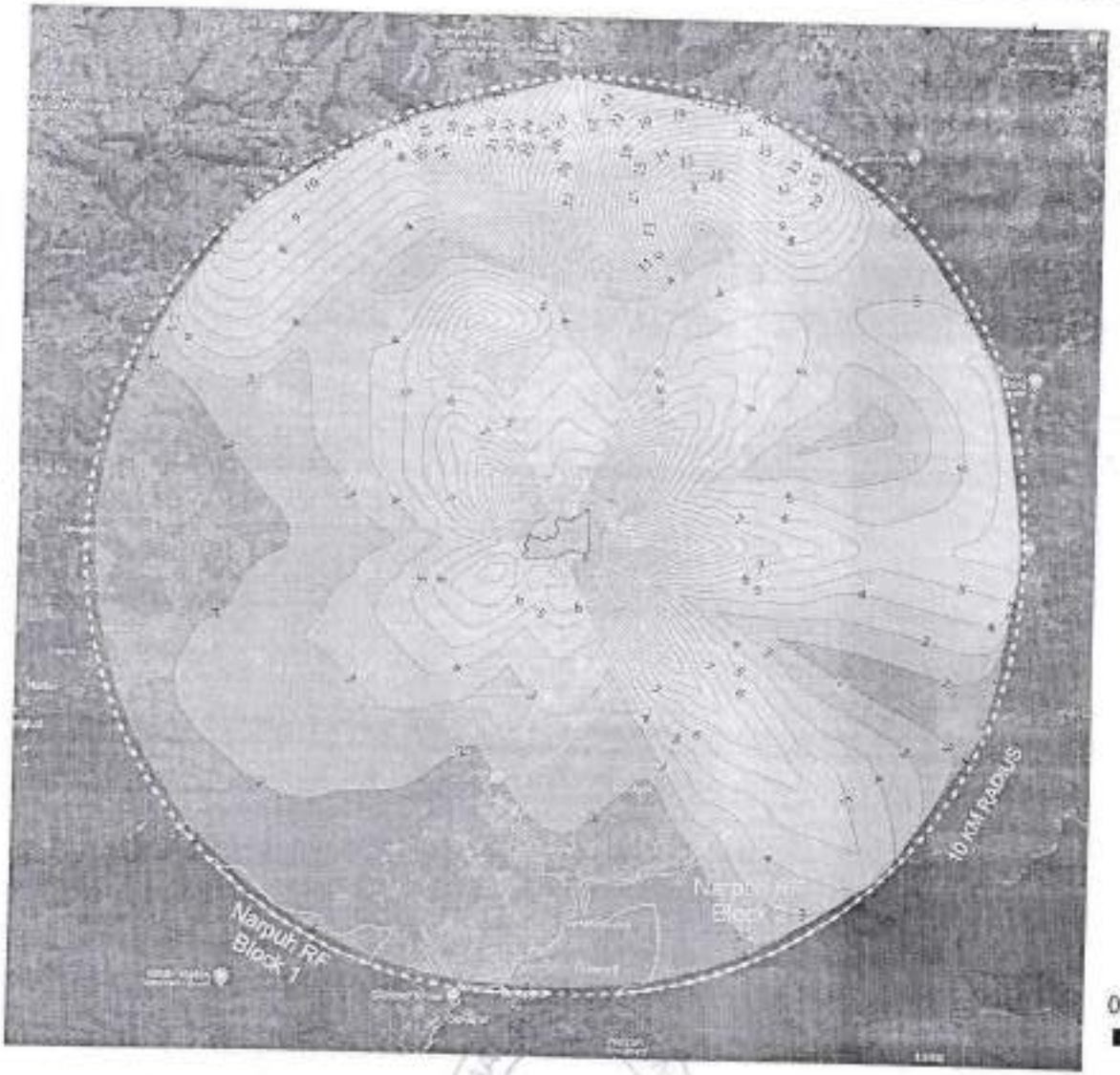
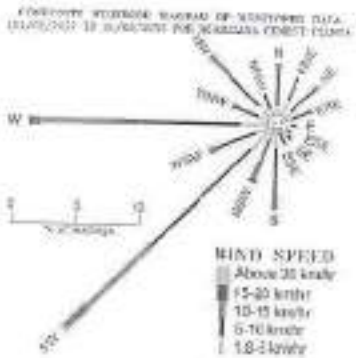


FIG: 4

MEGHALAYA CEMENT PLANT (Present working 2600 TPD Cement & 0.858 MTPA clinker) at village Thangskai, distt. East Jaintia Hills, Meghalaya



LEGENDS

10KM RADIUS
RF boundary
PLANT AREA
Present_SO2_Contours

0 2.5 5 7.5 km

THANGSKAI

ISCST3 model for Meghalaya Cement Plant (2600 TPD Cement & 0.858 MTPA Clinker)

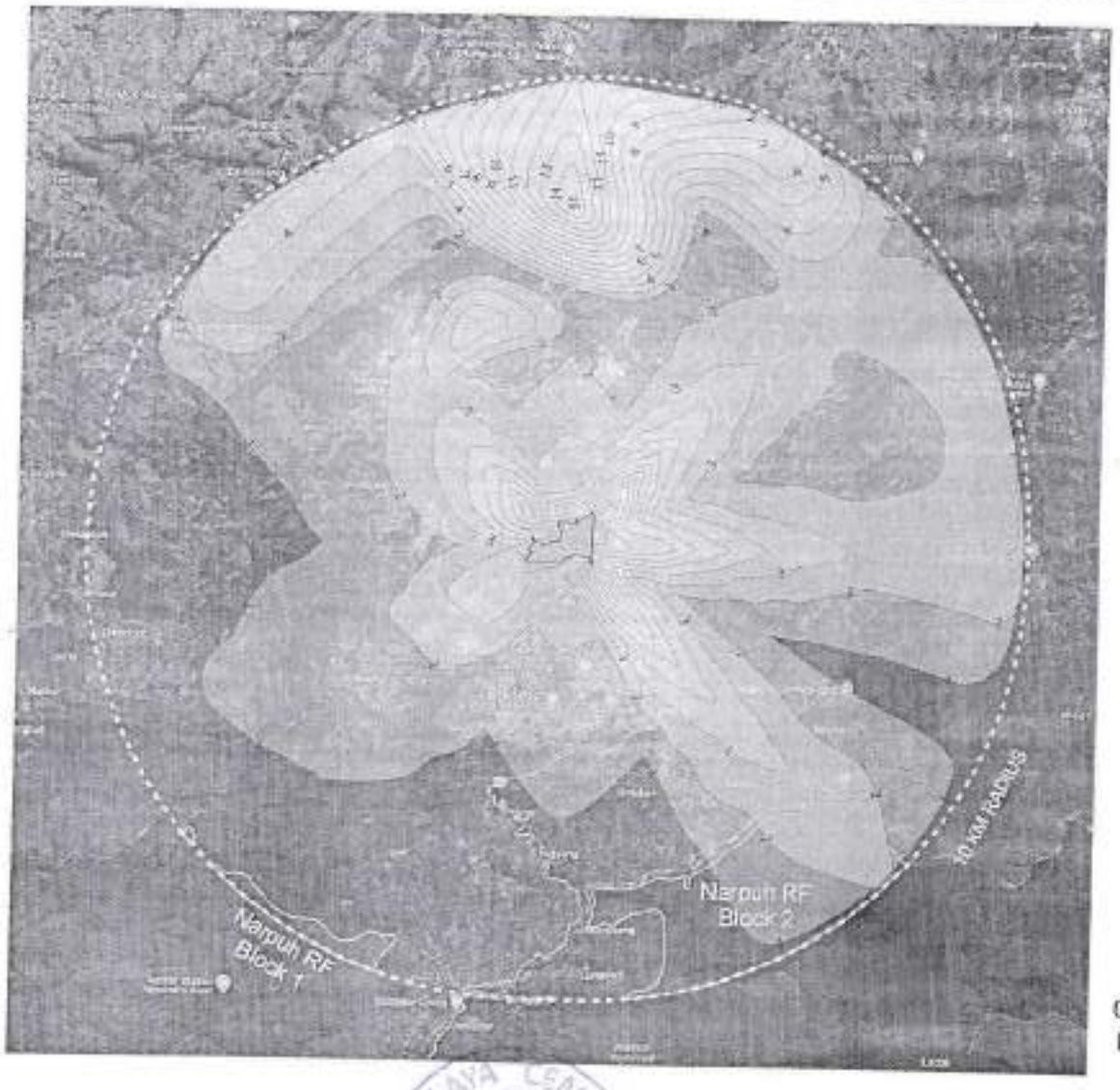
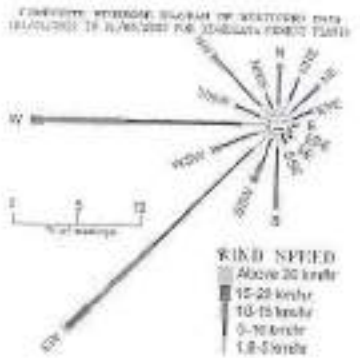


FIG: 5

MEGHALAYA CEMENT PLANT
(Present working 2600 TPD Cement & 0.858 MTPA clinker)
at village Thangskai, distt. East Jaintia Hills, Meghalaya



LEGENDS

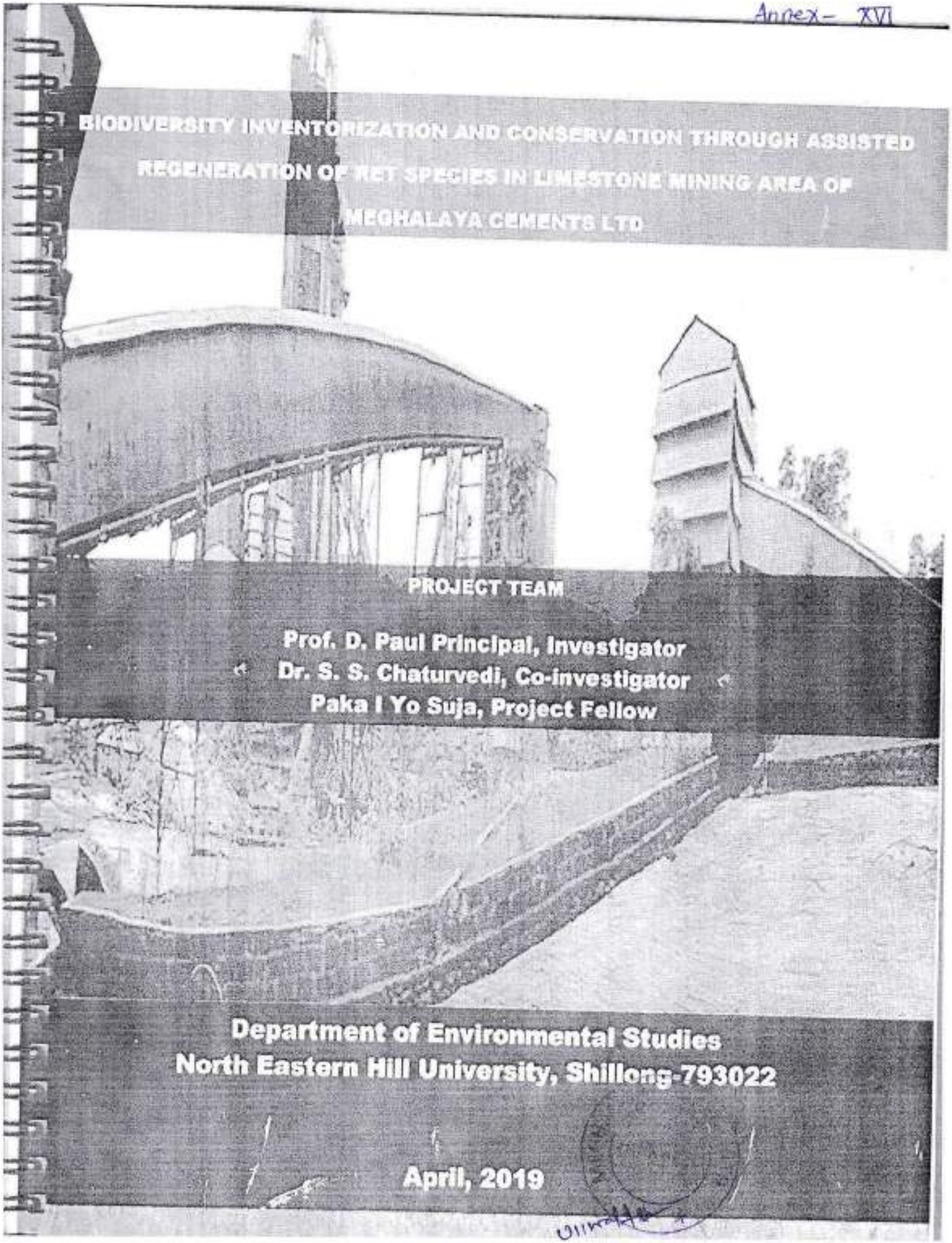
- 10KM RADIUS
- RF boundary
- PLANT AREA
- Present_NOx_Contours

0 2.5 5 7.5 km

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- XVI

BIODIVERSITY INVENTORIZATION AND CONSERVATION THROUGH ASSISTED REGENERATION OF RET SPECIES IN LIMESTONE MINING AREA OF MEGHALAYA CEMENTS LTD



PROJECT TEAM

Prof. D. Paul Principal, Investigator
Dr. S. S. Chaturvedi, Co-investigator
Paka I Yo Suja, Project Fellow

Department of Environmental Studies
North Eastern Hill University, Shillong-793022

April, 2019

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MEGHALAYA CEMENT LTD THANGSKAI

Annex- XVI

Biodiversity inventorization and conservation through assisted regeneration of RET species in Limestone mining area of Meghalaya Cements Ltd.

Final Report

Project Team
Prof. D. Paul: Principal Investigator
Dr. S. S. Chaturvedi: Coinvestigator
Paka I Yo Suja: Project Fellow

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Meghalaya

April, 2019

MEGHALAYA CEMENT LTD. THANGSKAI

Annex- XVI

Acknowledgement

It is a pleasure to place on record, my appreciation for all the help and support received from different quarters towards completion of the project.

I am thankful to Meghalaya Cements Ltd. for reposing their faith in NEHU for undertaking the project. I am especially appreciative of Shri R. K. Pareek (President), Shri Vijay Kumar Pant (Vice President, Technical), and Shri Vikas Saraf (Vice President, Commercial) for their cordial support and fruitful deliberations during the formulation of modalities of the project.

The efforts of Mr. Sunil Kumar Choudhary (Sr. Manager-Environment) and the field station managers and staff of MCL, through their support and hospitality during the field visits, access to documents, and consultations during the course of the project is gratefully acknowledged and appreciated.

I am thankful to my teammate Dr. S. S. Chaturvedi for his valuable observations and inputs, both during field visits, and during compilation of the report.

My confidence in my project staff Mr. Paka I Yo Suja who is a past student of the department has been amply rewarded by the excellent discipline and meticulous work ethics he exhibited during the field work and data collection. I am thankful to him and am confident that this experience would have exposed him to new domains of discourse and enriched his hands on knowledge.

Finally I am extremely grateful to all the respondents of the project area and adjoining villages for their valuable inputs which were indispensable in the fruition of the work and its logical culmination into the present report.

April, 2019

MEGHALAYA CEMENT LTD THANGSKAI

Dibyendu Paul

Annex - XVI

Executive Summary

Meghalaya Cement Ltd. (MCL) is located at Thangskai in District Jaintia Hills, Meghalaya. The area forms a part of the Shillong Plateau characterized by a rugged hilly topography. The geo-tectonic activities in the past have resulted in the development of deep gorges, valleys & steep cliffs, with several streams dissecting the hilly terrain. The elevation of plant area is 754msl.The plateau area around village Thangskai is dissected by numerous streams which drain the area and ultimately join the rivers Prang and Lubha. The company intended to increase the production capacity of its existing plant from 900 TPD clinker to 2,600 TPD clinker along with a 18 MW captive thermal power plant and captive limetone mines including 33.45ha ML. The plant is based on nearby limestone deposits in the villages of Moing, Kheliegari and New Kheliejari, and proposed mines in South Khlehjeri in Jaintia hills district of Meghalaya. The environmental clearance for the expansion was accorded by the State Environmental Impact Assessment Authority (SEIAA), Govt. of Meghalaya, wherein, it was stipulated that an area not less than 2 ha within the green belt of the project area would be year marked to construct a green house. It was also stipulated that a conceptual plan for raising threatened species would be prepared in consultation with a reputed institution.

The Department of Environmental Studies, North Eastern Hill University (NEHU) was entrusted to undertake the stipulations prescribe by SEIAA through a 3 year project entitled "Biodiversity inventorization and conservation through assisted regeneration of RET species in Limestone mining area Meghalaya Cements Ltd."

An extensive survey of the flora & fauna of the project area was undertaken. Line transact and quadrat sampling revealed that the flora of the project area comprised of 54 tree species and 50 species of shrub, herb and climber and species. A questionnaire survey undertaken for fauna documented the presence of 29 animal species comprising Amphibians, Reptiles, Aves and Mammals. However, camera traps failed to document the presence of animals in the project area. In consonance with the stipulations of SEIAA, several species of herbaceous plants and orchid species were collected for establishment in an installed green house and subsequent planting out-

MEGHALAYA CEMENT LTD. THANGSKAI

in the designated plot/s in the project area. Further, seedlings of other indigenous tree species and fruit bearing species have been raised in the green house and/ or procured from the Forest department for planting out in designated plots. The company has been advised to utilize the green house for continuous raising of recommended species which are to be planted out in vacant locations within the project area.

For the eco-development of the project area, it is prescribed that mine spoils are properly stacked and managed with mulches to discourage erosive losses. It is also advised that roads within the project area should have avenue plantations so as to mitigate aerial dispersal of dust due to movement of heavy vehicular traffic within the project area. The mined pits should be appropriately managed for rain water and runoff water harvesting and also as ground water recharge pits. Barren and or open areas should be provided with plant cover through green house raised seedlings of recommended tree and fruit bearing species so as to encourage visitation of fauna.

MEGHALAYA CEMENT LTD THANGSKAI

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MEGHALAYA CEMENT LTD THANGSKAI

Annex- XVI

1. **Preamble :**

Meghalaya Cement Ltd. (MCL) is located at Thangskai in District Jaintia Hills, Meghalaya.The area forms a part of the Shillong Plateau characterized by a rugged hilly topography. The geo-tectonic activities in the past have resulted in the development of deep gorges, valleys & steep cliffs, with several streams dissecting the hilly terrain. The elevation of plant area is 754msl.The plateau area around village Thangskai is dissected by numerous streams which drain the area and ultimately join the rivers Prang and Lubha.

The climate of the Khasi and Jaintia hills districts is uniquely pleasant. It is warm and humid except in winter. The mean monthly minimum temperatures ranges from 5.77°C in January to 18.15°C in July, and the mean monthly maximum temperatures ranges from 15.13°C in January to 24.38°C in June.

The area enjoys an average annual rainfall of 2415 mm. The water immediately flows down from the higher ranges downwards due to steep slopes. These drainage streams and rivulets hold water during most of the year. However, some of them become dry during summer.

Meghalaya Cement Ltd. (MCL) intended to increase the capacity of its existing plant at Thangskai in Jaintia Hills, Meghalaya, India from 900 TPD clinker to 2,600 TPD clinker along with a 18 MW captive thermal power plant and captive limestone mines including 33.45ha ML. The plant is based on nearby limestone deposits in the villages of Moing, Kheliegari and New Kheliejari and proposed mines in South Khlehjeri in Jaintia hills district of Meghalaya.

The environmental clearance for the expansion was accorded by the State Environmental Impact Assessment Authority (SEIAA), Govt. of Meghalaya, wherein, it was stipulated that an area not less than 2 ha within the green belt of the project area would be year marked to construct a green house. It was also stipulated that a conceptual plan for raising threatened species would be prepared in consultation with a reputed institution.

The Department of Environmental Studies, North Eastern Hill University (NEHU) was approached by MCL to undertake the stipulations prescribe by SEIAA. In response, NEHU submitted a proposal for a 3 year project entitled "**Biodiversity inventorization and conservation through assisted regeneration of RET species in Limestone mining area of Meghalaya Cements Ltd.**", the same was sanctioned by MCL in April 2016.

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2. **Work Components:** The duration of the project and the work components are detailed hereunder:-

Project Duration : 3 years (2016- 2019)

1. Survey and inventorization of project area : An extensive survey of the project area will be conducted to create an inventory of the flora (tree species) and fauna (mammals).
2. Setting up of nursery for propagation of species as per TOR and recommendations of SEIAA.
3. Afforestation / regeneration / gap filling of the project area as allocated by MCL.
4. Planting and conservation of bird and mammal food plant species (grasses wild fruit trees etc.) based on assessment of camera trap data
5. Formulation of Eco Development Plan and recommendations for medium/ long term upkeep of project area.

3. **Results:**

Work component 1: Survey and inventorization of project area: An extensive survey of the flora & fauna of the project area was undertaken.

Sampling: Sampling for flora was accomplished using Line transect Method and Quadrat Method.

Line transact method: 500 m line transacts (Measuring tape) were laid out randomly at different locations in the project area and species in contact with the tape were recorded/ collected.

Quadrat method: Quadrats were laid out randomly at different locations in the project area and species falling within quadrats were recorded/sampled. For tree species quadrat size was $10m^2$ and for herbaceous vegetation, the quadrat size was $1m^2$

Preparation of herbaria and identification: Herbaria were prepared with the collected plant samples and identifications were done using existing herbarium collections of NEHU. Samples which could not be identified at NEHU were referred to the BSI for identification The samples identified are listed in **Tables 1 and 2**

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Annex - XVI

Table .1. Tree species in and around the project site

Sl.no	Name	Family	Vernacular name
1.	*Actinodaphne obovata* (Nees) Blume	Lauraceae	Dieng-lakrau (K)*
2.	*Aesculus assamica* Griff.	Sapindaceae	Dieng-dula(K)
3.	*Alchornea tiliifolia* (Benth.) Müll.Arg.	Euphorbiaceae	
4.	*Asplenium phyllitidis* D. Don.	Aspleniaceae	
5.	*Bauhinia khasiana* Baker.	Leguminoseae	
6.	*Callicarpa arborea* Roxb.	Verbanaceae	Dein-lakhoit(J)**
7.	*Caryota urens* L.	Arecaceae	
8.	Caseria sp		
9.	*Castanopsis echinocarpa* Miq.	Fagaceae	Dien-sning(J)
10.	*Castanopsis indica* (Roxb. ex Lindl.)	Fagaceae	
11.	*Castanopsis purpurella*	Fagaceae	Dein-suktap (J)
12.	*Castanopsis tribuloides* (Sm.) ADC	Fagacea	Dien sa-tt (J)
13.	*Cinnamomum bejolghota* (Buch.-Ham.) Sweet	Lauracea	Dieng-pathi (K)
14.	*Duabanga grandiflora* (DC.) Walp.	Lythraceae	Dieng-bai (K)
15.	*Elaeagnus pyriformis* Hook. f.	Elaeagnaceae	Sashang
16.	*Eurya acuminata* DC.	Theacea	Dierpyrchin(J)
17.	*Ficus hirta subsp. roxburghii* (King) C.C.Berg	Moraceae	Spunae (J)
18.	*Ficus semicordata* Buch.-Ham. ex Sm.	Moraceae	
19.	*Lithocarpus elegans* (Blume) Hatus. ex Soepadmo.	Fagaceae	Sarangkhlo (J)
20.	*Lithocarpus fenestratus* (Roxb.) Rehder.	Fagaceae	
21.	*Litsea citrata* Blume.	Lauraceae	Soh-syiang (J)
22.	*Litsea laeta* Wall. ex Nees.	Lauraceae	
23.	*Litsea lancifolia* (Roxb.ex Nees.)	Lauraceae	
24.	*Litsea monopetala* (Roxb.) Pers.	Lauraceae	
25.	*Litsea monsonii* Hook.f.	Lauraceae	
26.	*Macaranga* sp.		Lakhar (j)
27.	*Macropanax dispermus* (Bl.) O.	Araliaceae	Dieng-in-tasi
28.	*Mallotus nepalensis* Müll. Arg.	Euphorbiaceae	Sla-lakhar khlaw (J)
29.	*Melastoma nepalensis* Lodd.	Melastomaceae	Dien-sladong(J)
30.	*Micromelum integerrimum* (Roxb.)Wight &Arn.	Rutaceae	Dieng-tyrpei (J)
31.	*Morinda angustifolia* Roxb.	Rubiaceae	
32.	*Ostodes paniculata* Blume	Euphorbiaceae	Dein-lashitkhlaw(J)
33.	*Persea kingii* Hook.f.	Lauraceae	
34.	*Phyllanthus glaucus* Wall.		Samatan(J)
35.	*Pithecellobium montanum* Benth.	Mimosaceae	
36.	*Pterospermum lanceifolium* Roxb.	Sterculiaceae	Dieng-khoh(K)
37.	*Quercus serrata* Roxb.	Fagaceae	
38.	*Rhus javanica* (L.) Merr.	Anacardiaceae	Dien-sama (J)
39.	*Sapindus attenuate/erecta* Wall.	Sapindaceae	
40.	*Sapium baccatum* Roxb.	Euphorbiaceae	Dieg-jalongeh (K)
41.	*Sarcosperma griffithii* Hook.f. ex C.B.Clarke	Sapotaceae	Dein-pri (K)
42.	*Schima wallichii* (DC.) Korth.	Theaceae	Shyngan (J)
43.	*Solanum melongena* Linn.	Solanaceae	
44.	*Solanum torvum* Sw.	Solanaceae	
45.	*Styrax serrulatum* Linn.	Styracaceae	Deing-jahlpai (K)
46.	*Symplocos glomerata* King ex Cl.	Symplocaceae	Tiewdiengrelong (K)
47.	*Symplocos sp*	Symplocaceae	
48.	*Syzigium formosum* (Wall) Mas.	Myrtaceae	Soh-sliang (J)
49.	*Syzigium macrocarpum* (Roxb.) Balak.	Myrtaceae	
50.	*Syzigium cumini* (L.) Skeels	Myrtaceae	
51.	*Syzygium tetragonum* (Wt.) Kurz.	Myrtaceae	Dien-jabsyrle (J)
52.	*Trevesia palmata* (Roxb.) Vis.	Araliaceae	Dienglakor (K)
53.	*Vernonia volkameriifolia* DC.	Asteraceae	
54.	*Woodfordia tinctoria* (Roxb.) DC.	Rubiaceae	Chamot (J)

***K=Khasi,**J=Jaintia**

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Table.2. Shrubs,Herbs, and climbers in and around the project site

Sl.no	Name	Family	Vernacular name	Habit
1.	*Acacia oxyphylla* Graham ex Craib.	Leguminosae	Mei-aiai(K)	Climber
2.	*Acacia pennata* (Linn.) Willd.	Leguminosae	Jermai-shoh-lyngkshiah (K)	Climber
3.	*Ageratina adenophora* (Spreng.) R.M.King & H.Rob.	Compositae	Sla-tamra(J)	Shrub
4.	*Ageratina riparia* (Regel) R.M.King & H.Rob.	Compositae		Shrub
5.	Amorphophallus			
6.	*Ardisia neriifolia* DC.	Myrsinaceae		Shrub
7.	*Artemisia nilagirica* (Cl.) Pamp.	Compositae		Shrub
8.	*Asplenium phyllitidis* D.Don	Aspleniaceae		
9.	*Boehmeria glomerulifera* Miq.	Urticaceae	Diengsolkhar (K)	Shrub
10.	*Boehmeria macrophylla* D.Don.	Urticaceae		Shrub
11.	*Beaumontia grandiflora* Wall.	Apocynaceae		Climber
12.	*Calamus erectus* Roxb.	Arecaceae		Shrub
13.	*Caryota urens* Linn.	Arecaceae		
14.	*Citrus maxima* (Blume) Merr.	Rutaceae	Soh-pyrman (J)	
15.	*Derris floribunda*	Fabaceae		Climber
16.	*Desmodium triflorum* (L.) DC	Fabaceae		
17.	*Desmos longiflorus* (Roxb.) Safford	Annonaceae		Shrub
18.	*Dicranopteris linearis var. alternans* (Mett.) Holttum	Gleicheniaceae	Tyrkhong (J)	
19.	*Dioscorea sp*	Dioscoreaceae		Climber
20.	*Fissistigma verrucosum* (Hook.f. & Th.) Merr.	Annonaceae	Jynni soh-ram khlaw (K)	Liana
21.	*Gomphandra tetrandra* (Wall.) *Sleumer*	Stemonuraceae		
22.	*Jasminum sp*	Oleaceae		
23.	*Lantana camara* Linn.			shrubs
24.	*Leea alata* Edgew.	Leeaceae		shrubs
25.	*Leea indica* (Burm.f.) Merr.	Leeaceae	Riu-khmgosiang (K)	Shrub
26.	*Lycopodium paniculatum* Desv. ex Poir.	Lycopodiaceae	Tmain-khla (J)	
27.	*Lygodium flexuosum* (L.) SW	Lygodiacea		
28.	*Melastoma nepalensis* Lodd.	Melastomaceae	Dien-sliding (J)	Shrub
29.	*Maesa indica* (Roxb.) Wall.	Myrsinaceae	Dien-pyllein dodin(J)	Shrub
30.	*Paederia foetida* L.	Rubiaceae	Rmi-sma aii(J)	Climber
31.	*Pandanus odoratissimus* (Lamk) Linn.	Pandanaceae	Chhin (J)	Screwpine
32.	*Pericampylus incanus* (Colebr.) Miers.	Menispermaceae		Climber
33.	*Phlogacanthus thyrsiflorus* (Roxb.) Nees.	Acanthaceae		Shrub
34.	*Pothos scandens* L.	Araceae		
35.	*Phrynium pubinerve* Blume	Marantaceae	Sla-met(K)	
36.	Pittosporum	Pittosporaceae		
37.	*Prinsepia utilis* Royle	Rosaceae		Shrub
38.	Pteris	Pteridaceae	Tyrkhang (J)	
39.	*Rhaphidophora calophylla* Scott.	Araceae		
40.	*Rourea minor* (Gaertn.) Leenh.	Connaraceae		Shrub
41.	*Sarcandra glabra* (Thunb.) Nakai	Chloranthaceae	Soh-krismas(J)	Shrub
42.	*Smilax roxburghiana* Wall. Ex A.DC.	Smilaceae	Soh-krat (J)	Shrub
43.	*Stemona tuberosa* Lour.	Stemonaceae		Climber
44.	*Tabernaemontana divaricata* (Linn) R. Br	Apocynaceae		Shrub
45.	*Tetrastigma obovatum* (Laws.) Gagnep.	Vitaceae	Soh-sarpang (J)	Climber
46.	*Tetrastigma bracteatum*	Vitaceae		Climber
47.	*Thysanolaena maxima*	Poaceae	Saro (J)	Grass
48.	*Triumfetta pilosa* Roth.	Liliaceae	Soh-byrthid (K)	Shrub
49.	*Uncaria sessilifructus* Roxb.	Rubiaceae		Climber
50.	*Urena lobata* L.	Malvaceae	Sohnyrtia (J)	Shrub
51.				

(K- Khasi and J - Jaintia)

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the fauna are listed in Table 5. Additionally, camera traps were installed within the project area to record and document the movement of mammals and other fauna in the project area.

Work component 2 : Setting up of nursery for propagation of species as per TOR and recommendations of SEIAA.

For the nursery, a polyhouse with a metal framework was installed and covered with polythene sheet. Soil preparation for the nursery bed was undertaken and soil amendments in the form of dried and powdered cowdung was used. (Plate 1)

The selection of species as per the TOR and recommendations of SEIAA was initiated. The Meghalaya Biodiversity Board was approached for permission to collect *Nepenthes khasiana* but the same was denied. Therefore natural populations of other selected species in accordance to the list provided in TOR was undertaken.

Specimens of *Fimbristylis nigrobrunnea* were collected from Dainthlen, Sohra, East Khasi Hills after detailed reference from the herbarium of Botanical Survey of India, Shillong. The specimens was then transferred to TOPCEM for plantation and rejuvenation and the specimens are being nursed by the concerned Department of Meghalaya Cement limited for acclimatization, before transplanting in the designated area in the project site (Plate 1).

Orchids species were collected from Moopun falls, Mukhaialong, East Jaintia Hills, Meghalaya and Mawsawa, Sohra, Meghalaya. The collected species were then brought to TOPCEM for re-plantation in green house. Jack fruit seedlings for plantation were also collected from Umsning, Ri bhoi, Meghalaya but failed to survive.

Other endemic species : *Phyllanthus emblica* (*Amla*) seeds were germinated for planting out in the project area.

Seed extraction:

Amla fruits were collected from local market. The seeds were extracted by alternate boiling and drying.The fruits were thoroughly cleaned under tap water to remove dust, it was then boiled for about 15 min for easy removal of fleshy parts.

After removing the fleshy pulp, the seeds were sun dried for 2-3 days. When the seed coat broke along the ridges, seed coat and seeds were separated out manually. Seeds were then collected and stored for planting.

A Survey was carried out in Nongwet village, Pynursla and Nonthymmai,Tyrna village East Khasi Hills for locating natural populations of two of the listed rare and endangered species

i.e *Argostemma khasianum* and *Begonia rubrovenia*. *Begonia rubrovenia* was spotted in both the surveyed sites and specimens have been collected for replantation in the project area (TOPCEM). The species that were being nursed and hardened in the greenhouse have survived, and appropriate nursery operations are being undertaken. *Begonia rubrovenea* is being propagated through stem cutting outside green house. Orchids were also transplanted from green house to trees outside the green house (Plate 1).

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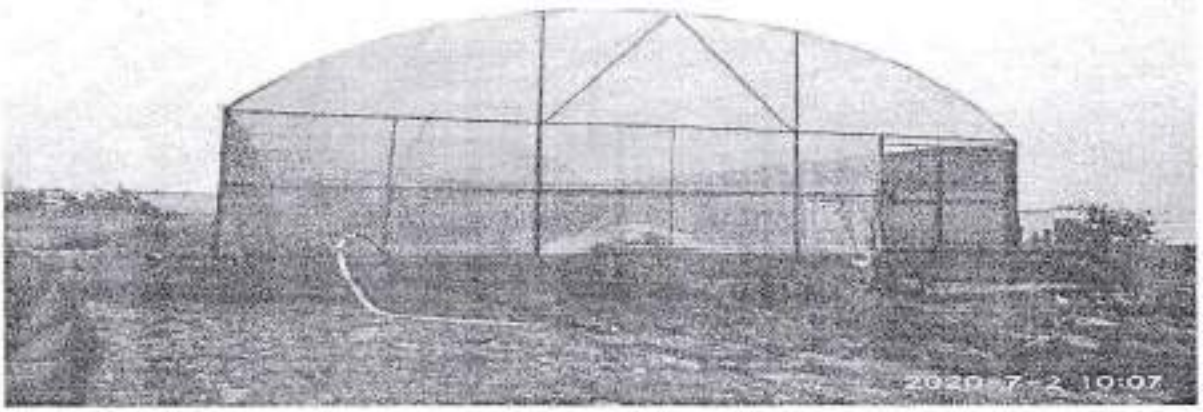

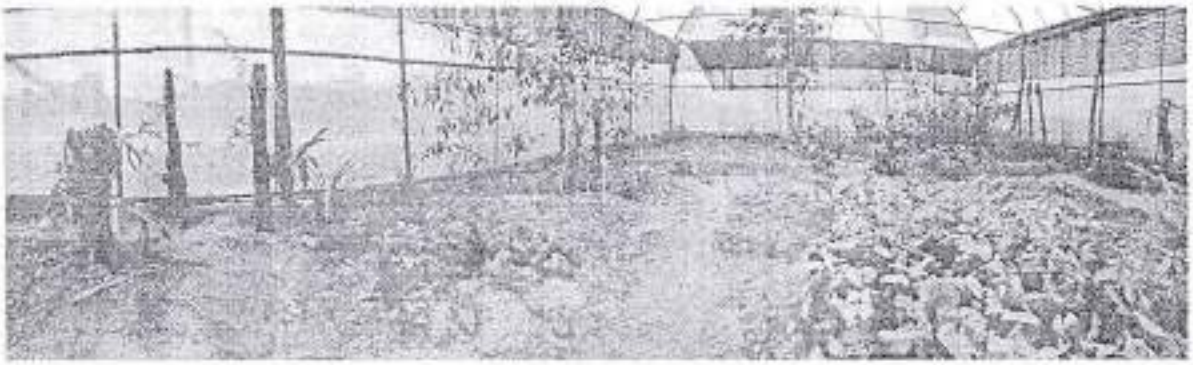

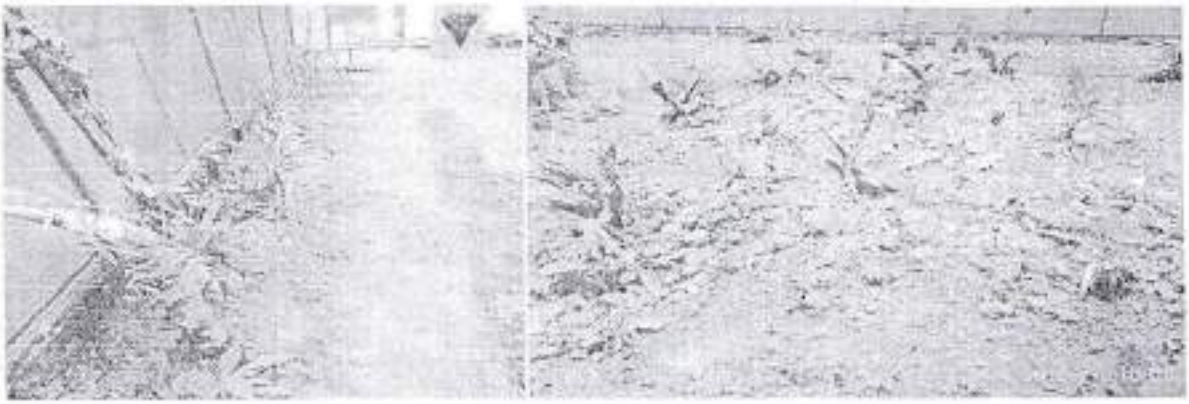

Plate I : The installed Green house and the different species being raised at MCL

Work Component 3. Afforestation / regeneration / gap filling of the project area as allocated by MCL.

The following species (Table 3) are recommended for plantation and gap filling in the project area (as reported earlier).

Table.3 Some of the tree species that are proposed for planting in the project area.

Sl.no	Scientific name
1.	*Alnus nepalensis*
2.	*Syzygium cumini*
3.	*Rhus javanica*
4.	*Schima wallichi*
5.	*Syzigium formosum*
6.	*Grevellia robusta*
7.	*Duabanga grandiflora*
8.	*Phyllanthus emblica*
9.	*Sapium baccatum*
10.	*Actinodaphne obovata*
11.	*Litsocarpus fenestratus*
12.	*Castanopsis tribuloides*

200 saplings of indigenous tree species and fruit species were introduced in the project area. The saplings were collected from the Forest Department Social Forestry, Jowai Range. These saplings were propagated by planting out nursery raised seedlings at a spacing of 1m in 30 cm deep pits (Plate 2). The plantation area has been fenced to ensure that the seedlings/saplings are established without disturbance. Some of the species that were introduced are listed below (Table 4)

Table4. List of species introduced in the project area for gap filling

Sl.no	Scientific name	Family	Common name
1	*Alnus nepalensis* D.Don	Betulaceae	Alder
2	*Chukrasia tabularis* A.Juss	Meliaceae	Indian mahogany
3	*Castanopsis tribuloides* (Sm.) A.DC.	Fagaceae	
4	*Syzygium sp*	Myrtacea	
5	*Terminalia arjuna* (Roxb. ex DC.) Wight & Arn	Combretaceae	Arjun
6	*Grevillea robusta* A.Cunn. ex R.Br.	Proteaceae	Silver oak
7	*Exbucklandia populnea* (R.Br. ex Griff.) R.W.Br.	Hamamelidaceae	Pipli tree
8	*Azadirachta indica* A.Juss.	Meliaceae	Neem

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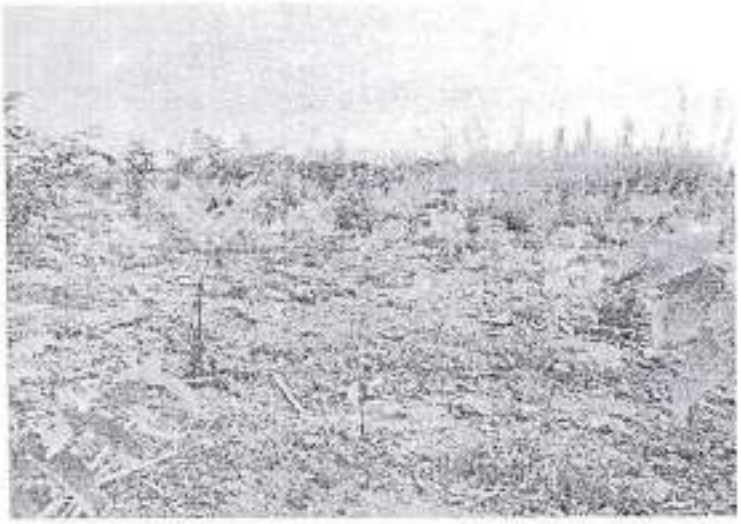

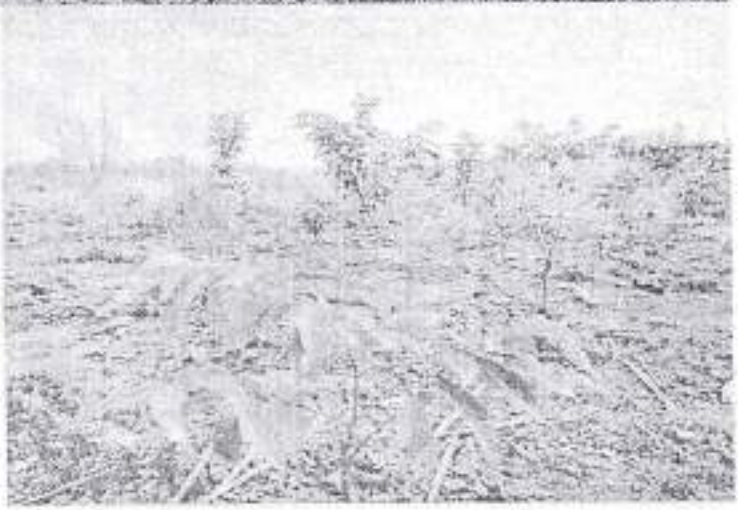

Plate II: Nursery raised seedlings planted out in designated areas within the project site

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Work component 4: Planting and conservation of bird and mammal food plant species (grasses wild fruit trees etc.) based on assessment of camera trap data

A questionnaire survey to account for the existing fauna in the project area and its surrounding area was undertaken and is presented in Table 5. In addition to the questionnaire survey, Camera traps have been installed in the project area (Plate 3) to document the presence of different faunal elements. Till the completion of the project, the camera traps failed to record any movement of wild animals. The authorities at MCL have been advised to raise fruit bearing plants in the nursery for planting out in the project area on a regular basis.

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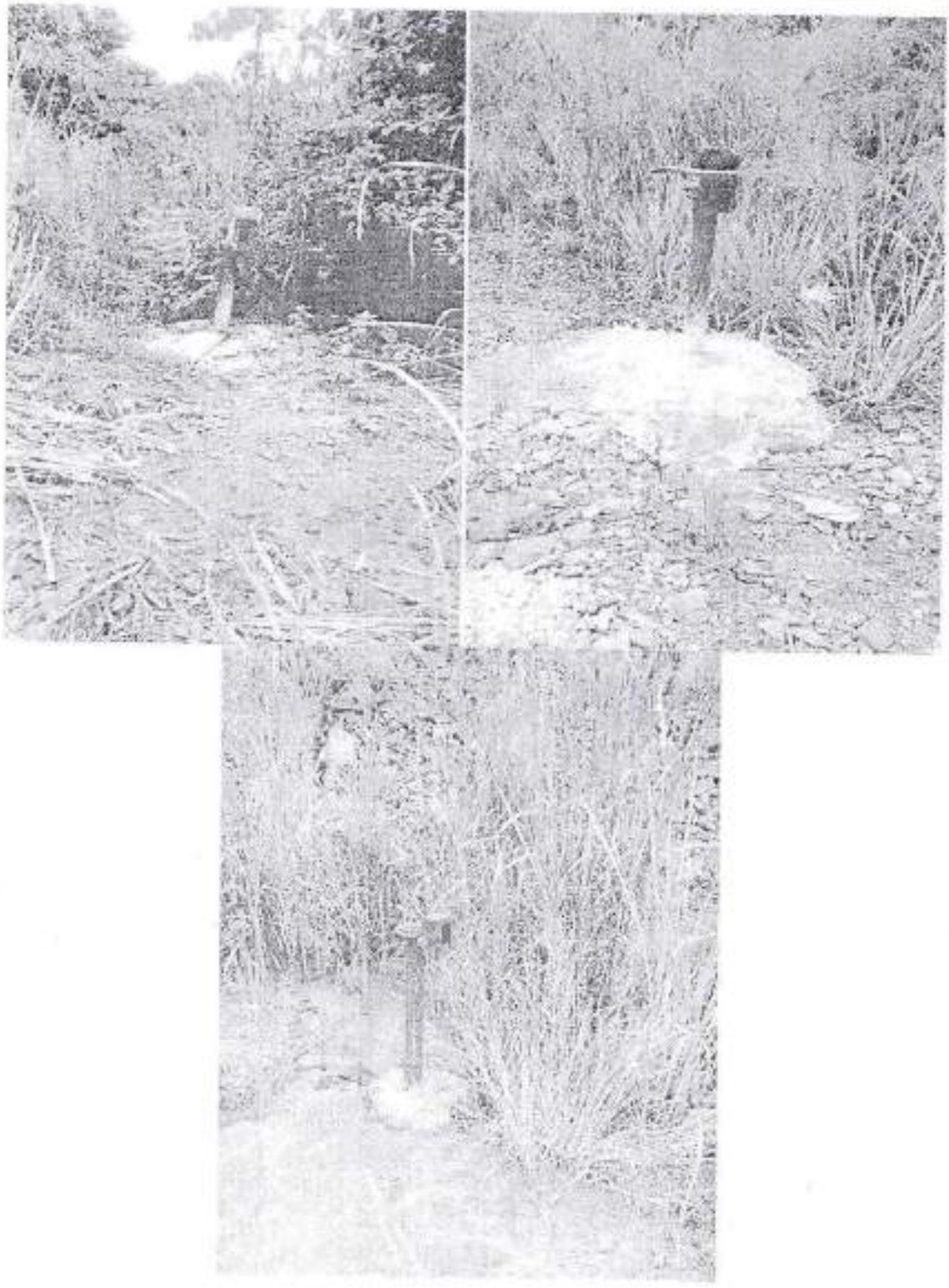

Plate III: The housing for Camera traps at different locations in the project area

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Table 5. List of fauna in the project area generated through questionnaire survey

Sl.no	Scientific name	Vernacular name	Remarks
1	*Bambusicola fytchii hokinsoni*	Chyng-Kiar	Aves
2	Black drongo	Larwat	Aves
3	*Bubo flavipes*	Dhoh	Aves
4	*Bufoides meghalayana*	Khroh Chyrtob	Amphibian
5	*Calotes versicolor*	Chieh Cherko	Reptile
6	*Canomys badius*	Khnae Piahlang	Mammal
7	Indian pangolin	Rbae	Mammal
8	*Colloselurus erythraeus*	Rasang	Mammal
9	*Herpestes edwardsii*	Mongoose	Mammal
10	Himalayan black bear	Dngiem	Mammal
28	*Hoolock gibbon*	Hulu	Mammal
11	Indian muntjac	Skae	Mammal
12	*Kalij pheasant*	Syiar Khloo	Aves
29	Indian Squirrel	Rasang stem kpoh.	Mammal
13	*Mus booduga*	Khne Lum	Mammal
14	*Opheodrys vernalis*	Psain Rngam	Reptile
15	*Panthera pardus*	Krong	Mammal
16	*Passer domesticus*	Chyrkia	Aves
17	*Hystrix sp.*	Ynkhet	Rodent
18	*Presbytis pileatus*	Chrieh	Mammal
19	*Psarisomus dalhousiae*	Purong	Aves
20	*Rana clamitans*	Khroh Rngam	Amphibian
Sl.no	Scientific name	Vernacular name	Remarks
21	*Rana danieli*	Khroh	Amphibians
22	*Rattus rattus*	Khne lung	Mammals
23	Red-vented bulbul	Riah Blong	Aves
24	*Rhinolophus pearsoni*	Labit	Mammal
25	*Suncus murinus griffithi*	Khnae Jit	Mammal
26	*Sus scrofa*	Snlang Bri	Mammal
27	*Varanus bengalensis*	Tyrpit	Reptile
28	*Milvus migrans lineatus*	Khlein	Aves
29	Indian woodpecker		Aves

Work component 5: Formulation of Eco-Development Plan and recommendations for medium/ long term upkeep of project area:

Management and use of mine spoils:

Medium Term Plan: Overburden generated during mining should be properly managed and stacked to discourage erosive losses. Topsoil and/or subsoil should be evenly spread out in areas where plantation activity can be undertaken. Mulches should be provided so as to ensure enrichment of soil fertility, insulation of soil against extreme temperature fluctuations and erosive losses due to impact of rainfall. Mulching shall also ensure accelerated growth of microorganisms

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and reduce evaporative losses. Spoils of larger size dimensions should be crushed so as to generate soil.

Water harvesting and ground water recharge: The mined out pits should be explored for their potential to harvest rainwater and/ or surface runoff through the creations of channels into such mine pits. Such pits can also form effective means for ground water recharge.

Reforestation of barren/open areas:

The listed native species should be propagated in the greenhouse and used for reforesting open areas and/or those affected by mining. Roads used for movement of mining equipment/ heavy vehicles should be subjected to avenue plantations/shelter breaks so as to reduce the movement and aerial dispersion of dust.

It is also advised to plant more fruit bearing species in the project area so as to encourage the increased visitation and roosting of avian species. Open/ sparsely vegetated locations within the project area should be subjected to gap filling with fodder and fruit bearing plants and grasses to encourage visitation of mammals for grazing. The greenhouse should be used for generating more seedlings/saplings on a continuous basis for future plantation programs in the project area. Cultural operations should be undertaken intermittently in the locations where new plantations have been made so as to ensure survival and proper growth of the seedlings/saplings.

Long-term Plan: The sites currently being used for Waste Dump and Soil Dump shall be developed into green zone by planting indigenous plants listed in Table 3 and rare and threatened tree species viz., *Argostemma khasianum, Fimbristylis nigrobrunnea* and *Begonia rubrovenia*. Whereever possible, orchids will be planted with an objective of adding aesthetic beauty as well as conserving the fast dwindling population of orchids in the region. The lands with poor soil may be planted with trees listed in Table 4. The seedlings of such tree species shall be raised in the green house developed for the purpose. In the long run when the mining operations shall be over, the pit shall be filled, as for as possible, with the soil and overburden collected nearby for landscaping the area into a socially acceptable landuse. The remaining part of the pit particularly deeper parts shall be developed into a water bodies. (Pit lake) which shall be used for fisheries, water sport and other recreation purposes. The whole mining area shall be developed into an eco-park for the inhabitants of village Thangskai.

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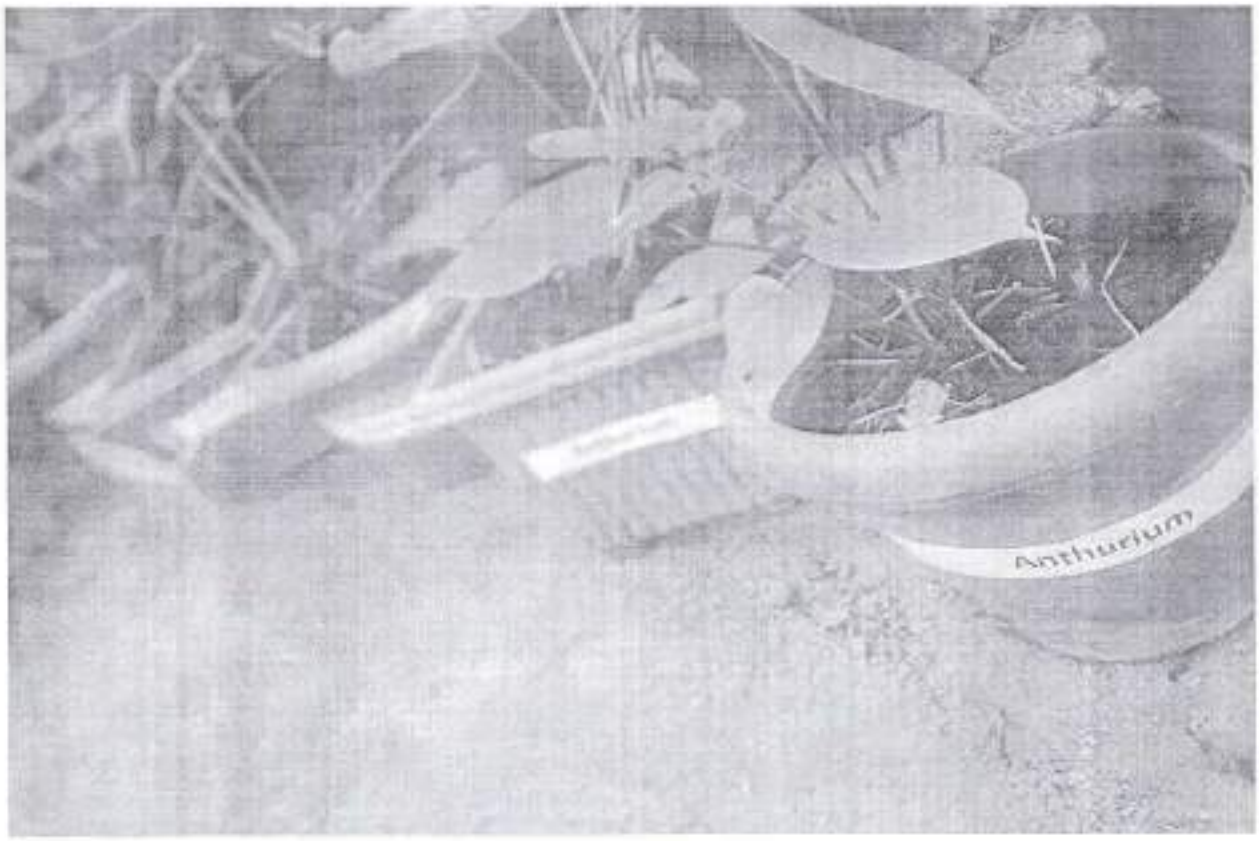
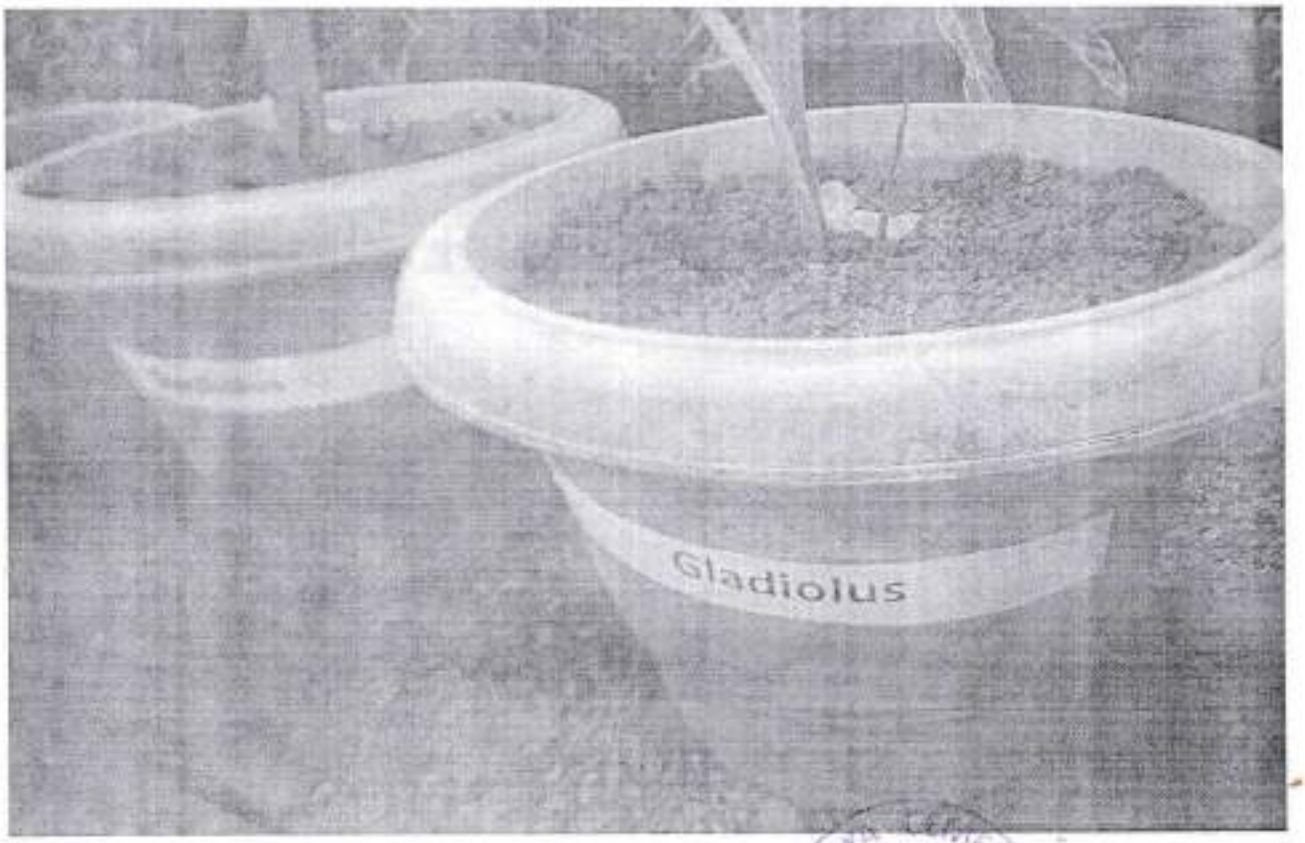
Annex - XVII





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Annex-XVII

MEGHALAYA CEMENT LTD
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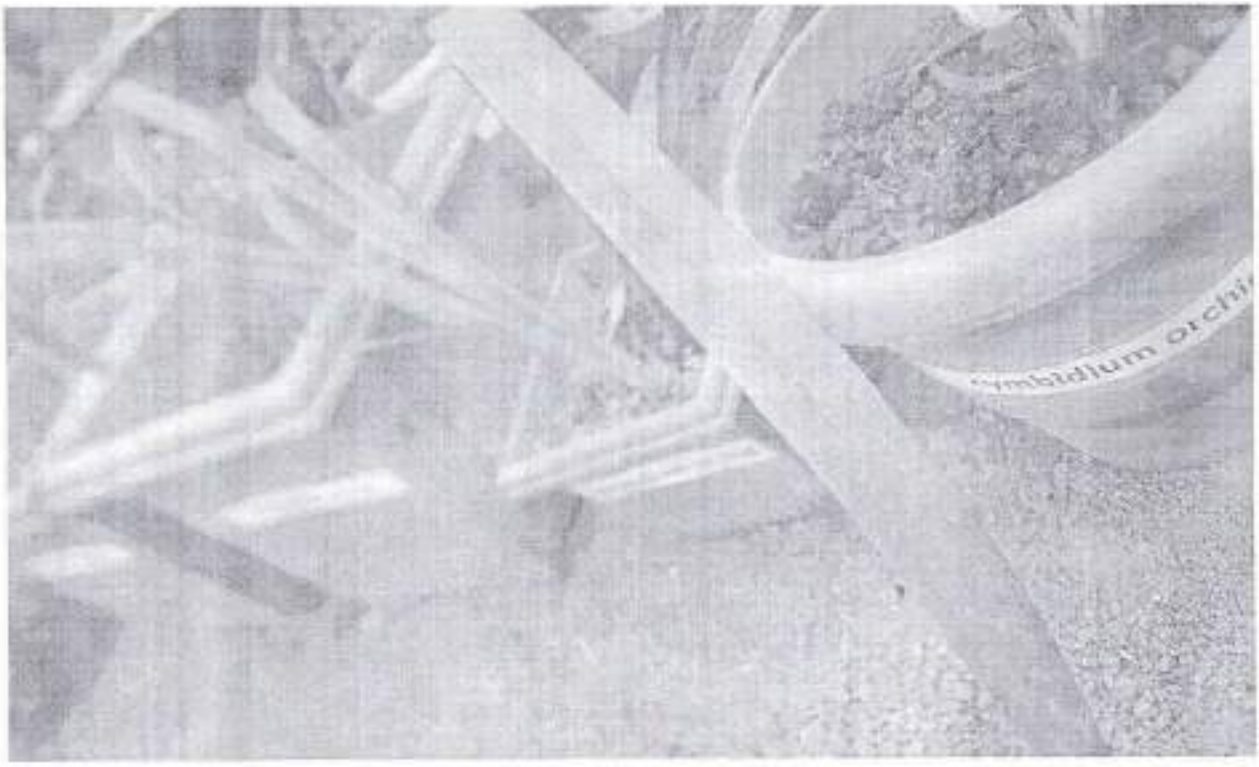
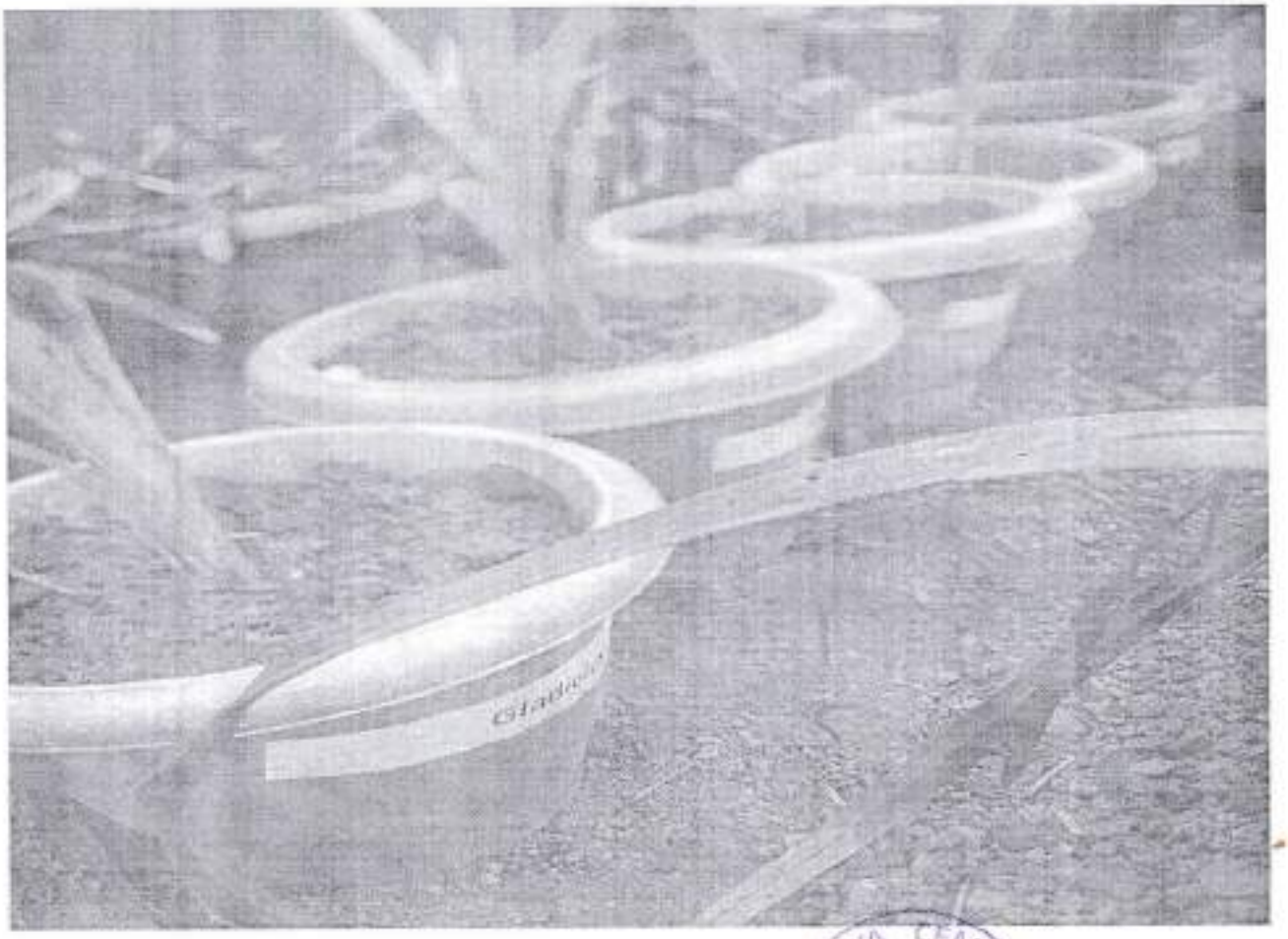
Annex - XVII





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Annex- XVIII

MEGHALAYA CEMENTS LIMITED

CIN: U26942ML2003PLC007125

TOPCEM CEMENT

WORK ORDER

Ref.: MCL/ WO/NEHU/22-23/287
Date: 03rd November 2022

M/s. North-Eastern Hill University
Umshing, Shillong – 793 022
Phone: 0364 2721157
Mobile: 09436732431
Phone: 09928091979
E-mail : paul97@rediffmail.com

Kind Attn.: Prof. D Paul (Principal Investigator)

Sub. : **Work order for Preparation of "Wildlife Conservation Plan" for Meghalaya Cements Limited as per EC No: SEIAA/PROJECT-2/2007/18 dated: 25.03.2009 at Lumshnong, East Jaintia Hills, Meghalaya.**

Ref : **Your Ref No: MCL/Com/NEHU/22-23/152 Dated: 02.11.2022**

Dear Sir/s,

With reference to your aforesaid offer and discussions we had with your goodself, we are pleased to place a work order for **"Preparation of Wildlife Conservation Plan and preparation of reports as per EC No: SEIAA/PROJECT-2/2007/18 dated: 25.03.2009** & Amend EC No: SEIAA/ Project-2/2007/8/1818, DT: 30.09.2020".

A. **Work Order Value:** Total Work Order Value shall be Rs. 2,50,000/- **(Rupees Two Lacs Fifty Thousand only).**

B. **GST:** GST As applicable (18%) shall be extra and will be paid on proper invoicing & TDS as applicable.

C. Project Title: Preparation of Wildlife Conservation Plan

D. Payment terms:

a. 1st Instalment – 30% on Approval and grant of Work Order
b. 2nd Instalment – 30% on Submission of draft plan document
c. 3rd Instalment- 40% on Submission of final plan documents

E. Time Frame

- Submission of draft plan document : (Within 25 Days of grant of Work Order)
- Submission of final plan document : (Within 20 Days of submission of draft plan document)

F. Other Commercial Terms:

- MCL will allow access of project area to PI and team for survey and inventory purposes.
- MCL will provide latest map of project area detailing the different components in project area
- MCL will provide other logistic and transportation support to PI and team as and when necessary.

MEGHALAYA CEMENT LTD THANGSKAI

G. **Consignee & invoice to:**

1. **Meghalaya Cements Limited**
   Village: Thangskai P.O.: Lumshnong
   Dist.: East Jaintia Hills,
   Pin-793210, Meghalaya
   GSTN: 17AADCM8079P1ZM

   Following personnel will be deputed from our site for coordination with NEHU and over all implementation of project in the specified time schedule:

   Mr. Ujjwal Anurag, Dy. Manager Environment (M: +91 7628008458)
   Mail ID: energymcl@topcem.in

   Postal/Communication address:

   Meghalaya Cements Limited
   BE-77, Saltlake City, Sector -1,
   Kolkata – 700 064

   Periodical updates and communication shall be made through mail to:

   For Payments/Accounts related queries: rpaharia@topcem.in, Kolkata@topcem.in
   For Technical/Site related queries: rkpareek@topcem.in; akejriwal@topcem.in
   Mr. Arun Kejriwal (M: +91 9435079311)

Kindly send the acceptance of Work order.

Should you require any further clarification in the matter, please feel free to get in touch with us.

Thanking You,

Yours Faithfully

For Meghalaya Cements Limited

Vikash Saraf
(VP-Commercial)

MEGHALAYA CEMENTS LIMITED Kolkata

MEGHALAYA CEMENT LTD THANGSKAI

Annex- XIX

भारत सरकार
GOVERNMENT OF INDIA
एकीकृत क्षेत्रीय कार्यालय
INTEGRATED REGIONAL OFFICE
पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FOREST AND CLIMATE CHANGE
लॉ-उ-सिब लुमबातनगेन/LAW-U-SIB, LUMBATNGEN,
शिलॉंग/SHILLONG-793021
Tel.: 0364-2537270; Fax: 0364-2536041
E-mail: [illegible]

No. RO-NE/E/WLC/2021-SHI/ 65-97

Date: 1st April, 2021

To,

As per list enclosed.

Sub: Minutes of the Review meeting on implementation of Wildlife Conservation Plan held on 05.03.2021 at the Integrated Regional Office (IRO), MoEF&CC, Shillong-regarding.

Ref: 1. MoEF&CC New Delhi's letter no. IA-11014/1/2021-IA-I dated 05.01.2021,
2. This office letter no. RO-NE/E/WLC/2021-SHI/3752-63 dated 03.03.2020.

Sir/Madam,

In inviting a reference to the above, I am directed to enclose herewith Minutes of the Review Meeting on Implementation of Wildlife Conservation Plan held on 05.03.2021 at the Integrated Regional Office (IRO), MoEF&CC, Shillong.

This is for your kind information and further necessary action.

Yours faithfully,

for (Dr. H. Tynsong)
Scientist 'D'

Encl: As stated.

Copy to:

1. The Principal Chief Conservator of Forests & HoFF, Meghalaya Forest Head Quarter, Sylvan House, Lower Lachumiere Shillong-793001,
2. The APCCF & Chief Wildlife Warden, Govt. of Meghalaya, Shillong Lachumiere, P.O.Shilong-793001,
3. The DFO (T), Jaintia Hills Division, Jowai, 793150, Meghalaya,
4. Shri Sharath Kumar Pallerla, Director, I.A. Division, MoEF&CC, Indira Paryavaran Bhawan, Jor Bagh Road, New Delhi-110003.

for Scientist 'D'

MEGHALAYA CEMENT LTD THANGSKAI

Contd...

Annex- XIX

To,

1. The Plant Head,
M/s Star Cement Ltd.,
Vill. Lumshnong, P.O. Khliehriat,
Dist-East Jaintia Hills-793 210, Meghalaya.

2. The Plant Head,
M/s Meghalaya Cements Ltd.,
Vill: Thangskai, P.O. Lumshnong,
Dist. East Jaintia Hills, 793200, Meghalaya.

3. The Plant Head,
M/s Amrit Cement Limited,
Opposite Horse Shoe Building, Lower Lachumiere,
Shillong-793001, Meghalaya.

4. The Plant Head,
M/s Green Valley Industries Pvt. Ltd.,
Vill. Mustang, Lumare (Old),
Khliehriat, East Jaintia Hills- 793200, Meghalaya.

9. The Chief Executive Officer,
Shyam Century Ferrous
Rajabagan, Byrnihat,
Meghalaya-793010.

5. The Plant Head,
M/s Maweshah Cherra Cements Ltd.,
Taxation Building, Shillong-793001, Meghalaya.

6. The Operations Director,
M/s Lafarge Umiam Mining Pvt. Ltd.,
3rd Floor, Goenka Towers,
Morello Compound, Keating Road,
Shillong-793001, Meghalaya.

7. The Plant Head,
M/s Dalmia Bharat Cement (Formerly Adhunik Cements Ltd.), Unisco Mustang, Thangskai Village,
Lumshnong, East Jaintia Hills, 793210, Meghalaya.

8. The General Manager,
M/s JUD Cement Ltd., Wahiajer (Narpuh),
East Jaintia Hills District,
Pin: 793200, Meghalaya.

for Scientist 'D'

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THANGSKAI

PROCEEDINGS OF THE REVIEW MEETING ON IMPLEMENTATION OF WILDLIFE CONSERVATION PLAN HELD ON 05. 03. 2021 AT INTEGRATED REGIONAL OFFICE, MOEF & CC, SHILLONG

The Integrated Regional Office of MoEF & CC, Shillong, held a Review Meeting on the 5th March, 2021, in the Office Conference Hall to review the implementation of the Wildlife Conservation Plan. The Review Meeting was called in response to the site visits and subsequent report prepared by IRO, Shillong in response to the MoEF & CC, New Delhi letter dated 05.01.2021. Altogether 18 (eighteen) participants including the Officers of IRO, Shillong, PCCF & HoFF, Government of Meghalaya, APCCF and Chief Wildlife Warden (CWLC), Government of Meghalaya and the DFO (T), Jowai, Meghalaya; as well as representatives from industry sectors like M/s Meghalaya Cements Limited, M/s Adhunik Cement Limited, M/s Green Valley Industries Limited, M/s Star Cement Limited, M/s Amrit Cement Limited, and M/s Lafarge Umiam Mining Private Limited participated in the meeting. List of participants is attached in Annexure-I.

The objective of the review meeting was to bring both regulators and user agencies (industry sectors) under one platform for a deliberation on the effective implementation of the Wildlife Conservation Plan (WCP) as stipulated in the Environmental Clearance (EC).

2. The DDGF (C), IRO, Shillong, Ms. Imtienla Ao, welcomed the officials of the State Forest Department as well as the representatives from the industry sector. While initiating the meeting, the DDGF (C) laid emphasis on the objective of the meeting and the need for coordination and cooperation of all concerned to achieve the long term goal of sustainable development and conservation. She stressed on the fact that the effective implementation of the WCP is important not only in compliance to the stipulated EC conditions but also in the interest of conservation of the rich floral and faunal diversity that the region takes pride in. She then requested Dr. H. Tynsong, Scientist 'D', IRO Shillong to give a brief presentation on the current status of the implementation of WCP by various user agencies. She also requested that the presentation be made project-wise followed by discussion on the same.

3. PRESENTATION AND DISCUSSION ON STATUS OF WCP IMPLEMENTATION

3.1. M/s Star Cement Limited:

Dr. H. Tynsong, Scientist 'D' gave a detailed presentation on the present status of implementation of the WCP. He mentioned that Conservation Plan has been prepared and

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approved by the Forest and Environment Department, Government of Meghalaya. The total budget proposed in Conservation Plan is Rs.98.00 lakhs and Rs. 20.00 lakhs (total Rs.118 lakhs). Star Cement Limited vide letter No. SCML/Conservation Plan/2015-16/229 dated 05.08.2015, dated 22.08.2016, dated 23.01.2018, dated 29.04.2019 and dated 09.05.2020 have forwarded cheques to the Divisional Forest Officer (T) Jaintia Hills Forest Division, Jaintia Hills, Jowai altogether amounting to Rs. 89.80 lakhs regarding the payment for the implementation of the Conservation Plan for wild Flora and Fauna and Green Belt Development Plan. Rs. 28.20 lakhs is the balance amount to be paid by the company. However, report on the implementation of the Conservation Plan is yet to be received by the company from the concerned department.

Shri Devendar Bansal, Resident Director of M/s Star Cement Limited while participating in the discussion informed that the balance amount pertaining to WCP and the Green Belt Development Plan has already been deposited by the company with the Govt., of Meghalaya recently. Thereafter, Dr H. Tynsong requested the official of Star Cement Limited to submit the details of payment to IRO, Shillong. The representative of Star Cement Limited informed in the meeting that payment details will be submitted to IRO, Shillong within 30 days.

Shri W. L. Yatbon, DIGF (C), IRO Shillong suggested that the fund pertaining to the Conservation Plan should be deposited with the PCCF & HoFF for better monitoring of fund utilization and implementation.

Responding to the question raised by the DDGF (C) IRO, Shillong regarding non-submission of implementation of WCP and confirming receipt of payment, Shri R Nainamalai, DFO (T) Jowai, informed that payment of Rs.89.80 lakhs have been received from Star Cement Limited. However, he informed that the report on the implementation of WCP could not be submitted as the Monitoring Committee is yet to be formed. He further informed that the Monitoring Committee will soon be constituted to monitor the implementation of WCP. The DDGF (C) requested the **DFO (T) Jowai to expedite constitution of the Monitoring Committee and other related works pertaining to WCP and submit report on the implementation to IRO, Shillong within 1 month time.**

Participating in the discussion, Shri B. K. Lyngwa, PCCF & HoFF, Government of Meghalaya emphasized on the importance of Wildlife as a whole, and opines that the importance should not be given only to the plants (flora), as could be seen in the WCP of Star Cement Limited, and it should also address all wildlife issues. Shri H. C. Chaudhary, APCCF and

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Annex- XIX

CWLW, Govt., of Meghalaya after seeing the content of the WCP prepared for Star Cement Limited felt that the current WCP of Star Cement Limited has not sufficiently addressed many important issues pertaining to the conservation and protection of Wildlife in the area. He further stressed on the idea of a common conservation plan for all the industries established in the area. PCCF & HoFF, Government of Meghalaya expressed support to the idea of having a Common Wildlife Conservation Plan for all industries present in the East Jaintia Hills as the geographical conditions, vegetation type, climate etc., are similar and suggested that the new Conservation Plan proposed may be named as Regional Conservation Plan (RCP). The APCCF and CWLC further elaborated that the RCP will address all issues pertaining to the protection and conservation of Wildlife in the entire mining impacted areas and not individually by different industry. It was further suggested that the RCP will propose budget provision to be spent for various conservation works and the user agencies will have to pay based on a formula to be worked out maybe depending upon the production capacity/generation capacity of the plant. He also informed that the common format, which may not highly rigid, will be prepared for formulation of a RCP in consultation with all User Agencies.

While welcoming the concept of a Regional WL Conservation Plan to address Wildlife and Biodiversity issues at the Landscape level to avoid fragmentation and overlapping of areas and duplication of activities, the DDGF(C) requested the APCCF & CWLC to expedite the modality for formulation of the RCP and submit report within 3 months time.

ACTION: APCCF&CWLW SFD Meghalaya; DFO, Jowai

3.2. M/s Lafarge Umiam Mining Private Limited (LUMPL):

The Scientist 'D' informed that there are two Environmental Clearances accorded to M/s Lafarge Umiam Mining Private Limited. The Action Plan for conservation of flora and fauna has been prepared by the State Government of Meghalaya along with a budget of Rs. 439 lakhs to be spent over the next 10 years for biodiversity conservation. M/s Lafarge Umiam Mining Pvt. Ltd. has deposited the said amount in the CAMPA account of Meghalaya No. SB010 25217 on 5th January, 2012. Further, for the implementation of Addendum Conservation Plans, LUMPL deposited amount of Rs. 41 Lakhs and Rs. 11 Lakhs in the corporation Bank New Delhi through letter dated No.15.01.2013 and a return receipt through letter No.MFG.3/2014/CAMPA/Vol-1/18646 from the Chief Conservator of Forest (FC Act). A report submitted by the State Forest Department, vide their letter dated 22nd March, 2019 during the year 2012-2013 a sum of Rs.

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58,32,000/- was incurred in the implementation of Biodiversity Conservation Plan (BCP). He further informed that IRO, Shillong has requested LUMPI. to submit report on the details of the State Government's activities undertaken under the BCP with regard to expenditure of Rs. 58,32,000/-, and any other activities implemented under BCP during the period 2014-2020.

Ms. Manjuree Rai, Company Secretary, of Lafarge Umiam Pvt., Ltd. clarified that all payments as stipulated in the Biodiversity Conservation Plan have already been deposited with the State Govt.

The DIGF (C), IRO Shillong on observing the delay in the implementation of Biodiversity Conservation Plan and non-submission of report (State Govt has submitted report for the year 2012-13), wanted clarification from the State Forest Department as to why no report have been submitted for other years i.e. from the year 2014 onwards. The PCCF & HoFF, Govt of Meghalaya informed that the delay in the implementation of Biodiversity Conservation Plan may be due to non-release of CAMPA fund as all funds for the purpose was deposited in the state CAMPA. He further informed that the matter will be enquired from the concerned Section in the Department and report will be submitted accordingly.

ACTION: State Forest Department (SFD), Meghalaya.

3.3. M/s Adhunik Cement Limited:

Dr. H. Tynsong stated that the company possesses two EC accorded projects, one for cement plant and one for limestone mining plant. He stated that the Plan was approved by the Chief Conservator of Forests, Wildlife Circle, Meghalaya vide letter no. FWC/G/117 dated 10.11.2010 and fund earmarked for WCP was Rs. 45.998 lakhs. He further informed that the project authorities could not ascertain during site visit whether the proposed amount in the WCP have been remitted by the company to the Forest Department or not. Also for the limestone mining plant, he mentioned that Government of Meghalaya, Office of CCF cum Chief Wildlife Warden, Wildlife Circle of Meghalaya, Shillong vide letter Dated FWC/G/117 Dated 16.11.2010 has approved the Biodiversity Conservation Plan and also confirmed that there are no threatened species except for one species of Schedule-I i.e. *Bambusicola fytchii* (common name Assam Bamboo Partridge) belonging to Avi Fauna observed in study area 10 km radius of the project site. Conservation plan of Assam Bamboo Partridge has been recommended by CCF, Shillong, Meghalaya vide letter No.FWC/G/117/59 dated 10.04.2013 and the same has been submitted to

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MoEF & CC vide letter dated 16.04.2013. A sum of Rs. 12.1 lakhs has been proposed for conservation of Biodiversity and Schedule-I species. However, project authorities could not ascertain during site visit whether the proposed amount have been remitted by the company to the Forest Department or not.

The DDGF (C) IRO, Shillong requested the representative of Adhunik Cement Limited to clarify whether the proposed amount in both the WCPs have been deposited or not to the State Govt. Responding to the same Shri Sanjay Kumar of Adhunik Cement Limited informed that the amount is yet to be deposited by the company for both the plants.

The APCCF and CWLC, Government of Meghalaya contested the WCP of Adhunik Cement Ltd., which recorded only 1 Schedule-I species is available in the area. He informed that as per the recent report, there are more than 20 Scheduled-I species in the area. Shri Chaudhary, hence stressed on the fact that there is a need to recast the WCP of Adhunik Cement Limited and other WCPs with the new RCP. Shri Sanjay Kumar of Adhunik Cement Limited later seeks clarification on whether the company required depositing the earmarked amounts of already approved WCPs in view of the new proposal for RCP. APCCF and CWLC clarified that the company can make the payment to comply with the EC condition; however the amount will be adjusted once the RCP have been finalized.

The DDGF (C) IRO Shillong said that the approved WCPs need to be recasted/ incorporated into the RCP at regional level. She further advised the APCCF and CWLC to formulate all items/parameters to be incorporated in the new RCP, and to recast old plans which have already been approved, and not implemented till date. In this way, a joint monitoring can be carried out jointly both by the user agencies as well as the regulatory agencies.

ACTION: SFD; User Agency

3.4. M/s Shyam Century Ferrous Limited:

The Scientist 'D' stated that Conservation Plan for the conservation of wild fauna in consultation with the State Forest Department has been prepared. He further informed that the Conservation Plan stated that the factory does not have any direct impact on the reserve forests except indirect impacts. Further, it is stated that the company should not discharge any pollutant to the Umtrew River and trees of wildlife importance to be planted in the vacant area of the

MEGHALAYA CEMENT LTD. THANGSKAI

factory for ecological balance. No financial provision has been proposed in the Conservation Plan. However, there were no representatives from the company in the meeting.

The DIGF (C), IRO, requested the PCCF & HoFF, Govt., of Meghalaya to re-examine the Conservation Plan prepared for M/s Shyam Century Ferrous Limited stating that it is impossible to believe that the industry which falls under highly polluting category will not have any impacts on the nearby forests. The APCCF and CWLC also expressed his reservations on the recommendation given by the Department to M/s Shyam Century Ferrous Limited, as charcoal, wood chips etc., are being used in the Ferro Alloy Plant by M/s Shyam Century Ferrous Limited. He requested IRO, Shillong to provide the copy of the recommendation given by the Forest Department issued to M/s Shyam Century Ferrous Limited, to enable the Department to re-examine the same.

ACTION: IRO Shillong; SFD Meghalaya

3.5. M/s Amrit Cement Industries Limited:

Scientist 'D' stated that the Narpuh Wildlife Sanctuary falls within 10 kilometers from the project location. He further stated that Conservation Plan for the conservation of wild fauna in consultation with the State Forest Department has not been prepared and implemented. He also informed that the project authorities reported to IRO Shillong that they did not prepare the WCP as there is no reserve forest in the vicinity. IRO, Shillong during regular monitoring vide letters dated 04.03.2015, 07.06.2016 and 16.07.2018, have requested the project authorities to obtain permission from the State Forest Department regarding impact of proposed plant on surrounding reserve forests as stipulated in the EC condition. The Scientist D concluded that the condition remains non-complied as no official letter has been issued by the State Forest Department that there is no reserve forest in the area.

The APCCF and CWLC, Government of Meghalaya told that it is impossible that the cement plant by M/s Amrit Cement Ltd., will not have any impact on the nearby forests, hence, the company should obtain permission from the State Forest Department, Meghalaya. He further informed that the plant by M/s Amrit Cement Ltd., will also be included in the new RCP.

M/s Amrit Cement Ltd., was directed to prepare the WCP accordingly in consultation with the CWLW, State Forest Department, Meghalaya and report the same to IRO, Shillong.

ACTION: APCCF&CWLC of SFD; User Agency

MEGHALAYA CEMENT LTD. THANGSKAI

Annex-XIX

3.6. M/s Meghalaya Cement Limited:

Dr. H. Tynsong stated that the company possesses two EC accorded projects, one for cement plant and one for limestone mining plant. As per EC condition for cement plant, the Conservation Plan for conservation of wild fauna and fauna needs to be prepared in consultation with a reputed institution such as Wildlife Institute of India, Dehradun. However, the WCP is yet to be prepared though IRO, Shillong during monitoring vide letters dated 25.05.2016, 17.07.2017 and 15.02.2018 have requested the project authorities to comply the same. Also, for the limestone mining the conservation plan is yet to be prepared.

The DIGF, IRO Shillong said that Aranyanak (an NGO based in Guwahati) or the Wildlife Division of the State Forest Department can be an option for project authorities for technical support in preparation of the Conservation Plan.

The APCCF and CWLW, Government of Meghalaya informed that the plant by M/s Meghalaya Cement Limited will also be included in the new WCP.

The User agency was asked to contact and consult with the CWLW on the matter.

ACTION: User Agency, SFD

3.7. M/s Green Valley Industries Limited:

Dr. H. Tynsong stated that a Conservation Plan for conservation of wild fauna in consultation with a reputed Institution such as Wildlife Institute of India, Dehradun has not been prepared and implemented. He also informed that the project authorities have approach WII, Dehradun requesting for guidance and implementation of WCP vide their letter No. GVIL/ENV/2017-18/68 dated 14.03.2018, which WII, Dehradun did not response. He further suggested that project authorities may be requested to approach SEIAA, Meghalaya to amend this condition, where a Conservation Plan may be prepared by the Chief Wildlife Warden of Meghalaya, instead of WII, Dehradun in view of no response from WII, Dehradun.

Participating in the discussion Shri Pawan Joshi, of Green Valley Industries Limited stated that they had earlier approached Wildlife Institute of India (WII) for conservation plan, but had not responded. They also requested that EC Condition pertaining to the same may be amended.

MEGHALAYA CEMENT LTD THANGSKAI

The APCCF and CWLC, Government of Meghalaya informed that the plant by M/s Green Valley Industries Limited will also be included in the new RCP.

ACTION: User agency

3.8. M/s JUD Cements Limited:

Dr. H. Tynsong informed that the plant is currently shut, and not in operation. The plant is in shutdown since June, 2020. A Conservation Plan for conservation of wild fauna is yet to be prepared and IRO, Shillong during monitoring vide letters dated 04.03.2015, 31.05.2016 and 01.08.2018 have requested project authorities to comply the condition. However, till date a conservation plan is yet to be prepared by the project. There were no representatives from the company present in the meeting.

The APCCF and CWLC, Government of Meghalaya informed that the plant by M/s JUD Cements Limited will also be included in the new RCP once they resumed production/operation.

3.9. M/s Mawmluh Cherra Cements Limited:

There were no representatives from the company present in the meeting. In his presentation, Dr. H. Tynsong stated that action plan for conservation of flora and fauna have not been prepared and implemented in consultation with the State Forest and Wildlife Department as stipulated. He also informed that IRO, Shillong has already conveyed to PP during monitoring vide letter No. RO-NE/E/IA/ML/MI/27/6765 Dated 19.03.2014, dated 08.08.2016, dated 03.05.2018, & Dated 20.02.2019 regarding the non-compliance. In response, the MCCL vide their letter No. MCCL/SH/ENVPC/FLORA FAUNA/2018-19/249 Dated 04.03.2019 have approached the APCCF (Wildlife) & Chief Wildlife Warden, Shillong Meghalaya for preparation of action plan for conservation of Flora and Fauna.

However, APCCF and CWLC, Government of Meghalaya informed that he did not remember about the letter of MCCL requesting for preparation of action plan for conservation of Flora and Fauna. The APCCF and CWLC, Government of Meghalaya then requested IRO, Shillong to provide the copy of the quoted letter above for taking necessary action.

The DIGF (C), IRO Shillong after reviewing the status of the project suggested that MCCL may also approach renowned NGO like Aranyanak etc., for preparation of a standard Conservation Plan.

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ACTION: SFD; user agency

4. Key Decisions Taken During the Meeting:

1. The existing fund flow arrangement, wherein the fund is deposited to the DFO who in turn re-appropriates the same to other departmental agencies like the Social Forestry, Wildlife division etc leads to difficulties in project evaluation and monitoring as well as in coordination and reporting. Therefore it was decided that the State Forest Department, Govt. of Meghalaya may work out an appropriate fund flow mechanism and the fund pertaining to the Conservation Plan be ideally deposited with the PCCF & HoFF with the state CWLW playing a key role in Planning & budget management, coordinating various wings of the SFD, maintenance of records and for better monitoring of fund utilization and efficient implementation.

2. The present fragmented approach to wildlife and biodiversity conservation not only fails to address key conservation issues at the landscape level but also leads to inefficient and uncoordinated implementation in a piece meal manner. Therefore for the cluster of industries in East Jaintia Hills impacting the same geographical area, a common Conservation Plan should be prepared and implemented in consultation with concerned user agencies. the APCCF and CWLW, Forest Department, Government of Meghalaya will expedite the formulation of a Regional Conservation Plan, draft a methodology for share funding of the Plan and submit a report within three months.

3. Some delays have been caused in the preparation of the Conservation Plans due to the EC clearance condition wherein User Agency is advised to prepare the plan under the guidance of the Wildlife Institute of India (WII) and the inability of the agencies to rope in the services of WII. However, it is observed that the condition states "in consultation with a reputed institute *such as* WII" , hence it was decided that SFD and User Agencies may take the services of reputed wildlife and conservation NGOs of the North East Region such as Aranyak etc to assist in preparation of the conservation plans.

4. Star Cement Limited to submit payment details of balance amount pertaining to WCP to IRO, Shillong within 30 days.

5. The DFO (T) Jowai to expedite the constitution of the Monitoring Committee and other works pertaining to WCP and submit report on the implementation to IRO, Shillong within 1 month time. .

6. The State Forest Department will send a report to the IRO in Shillong on M/s Lafarge Umiam Mining Private Limited's implementation of the Biodiversity Conservation Plan, as well as details on fund utilization from 2014 onwards.

7. The company can make the payments of already approved Wildlife Conservation Plan to comply with the EC condition subject to the submission of an undertaking to pay the additional amount as per RCP.

MEGHALAYA CEMENT LTD. THANGSKAI

8. IRO, Shillong to provide a copy of the Forest Department's recommendation to M/s Shyam Century Ferrous Limited to the APCCF and CWLC so that the Department could re-examine it.

9. M/s Amrit Cement Ltd., was directed to prepare the WCP in consultation with the CWLW, State Forest Department, Meghalaya and submit the compliance report to IRO, Shillong.

10. The APCCF and CWLC, Government of Meghalaya informed that the plants by M/s Meghalaya Cement Limited, M/s Green Valley Industries Limited and M/s JUD Cements Limited will also be included in the new RCP.

11. The APCCF and CWLC, Government of Meghalaya requested IRO, Shillong to provide the MCCL's letter No. MCCL/SH/ENVPC/FLORA FAUNA/2018-19/249 Dated 04.03.2019 for taking further necessary action.

12. The status of Preparation and Implementation of all Wildlife Conservation Plan will be reviewed on a quarterly basis.

13. Other industries/projects in the East Jaintia Hills District of Meghalaya that have received Environmental Clearance but do not have an EC condition to prepare Wildlife Conservation Plan will be addressed at the next review meeting for incorporation in the RCP.

The meeting ended with vote of thanks to all officials and the Chair.

(Ms. Lintiena Ao)
Deputy Director General of Forest (Central)
MoEF & CC, GoI, IRO, Shillong

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MEGHALAYA CEMENT LTD
THANGSKAI

Annex- XX

MEGHALAYA CEMENTS LIMITED

TOPCEM CEMENT
Mazbooti ka bharosa...hamesha

2600 TPD Cement Plant along with 10 MW Captive Power Plants

MEGHALAYA CEMENTS LIMITED

EAST JAINTIA HILLS, MEGHALAYA

Corporate social responsibility

Report for the period of April to September-2022

MEGHALAYA CEMENT LTD. THANGSKAI

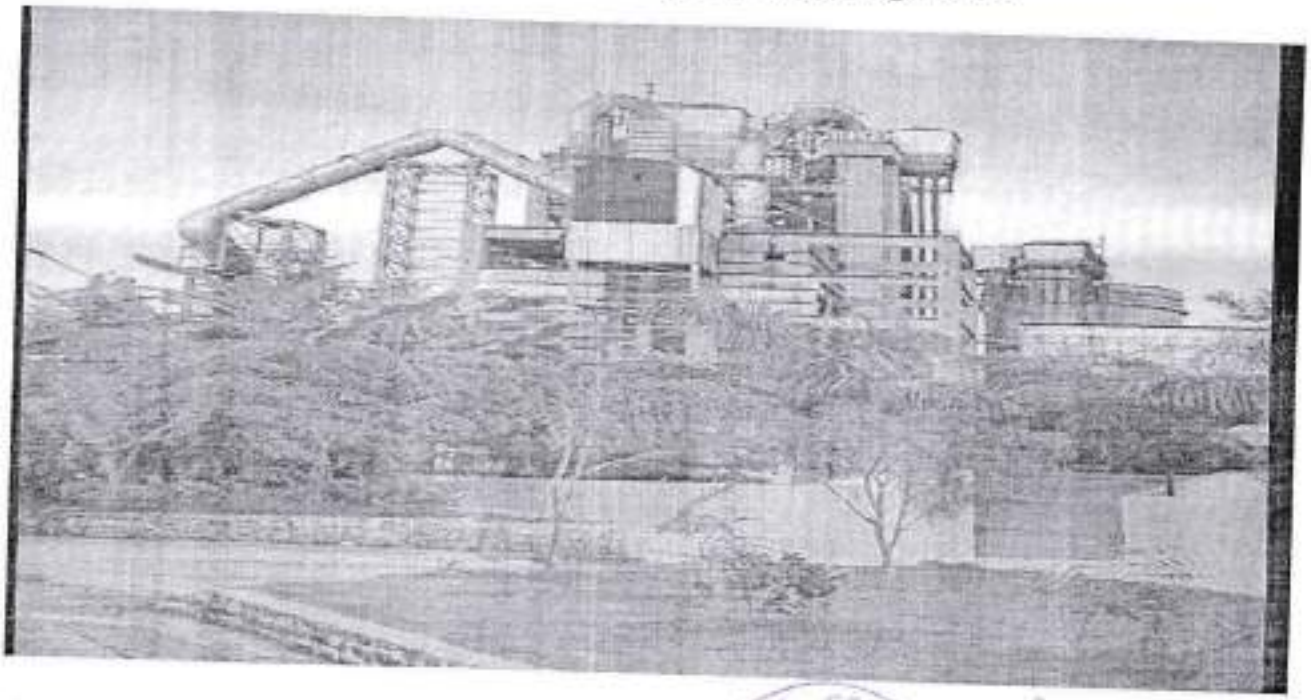
MEGHALAYA CEMENT LTD. THANGSKAI

Introduction and Plant Overview

Meghalaya Cement Limited a leading Cement Manufacturing company in Northeast with Capacity of 858000 MT Clinker production per Annum located at Village- Thangskai, Po- Lumshnong, Dist- East Jaintia Hills, Meghalaya.

The Company initially had a capacity of 900 TPD and reached to 2600 TPD at present. The Cement plant is set up with advanced Dry process Rotary Kiln Technology with twin multistage preheaters and completely atomized through DCS system & the core machinery supplied by Walchandnagar Industries and other equipment by Larsen & Toubro, ABB, Schenk Jenson, & Nicholson, Beumer, Crompton Greaves, Cummins, R.P Alloys etc. The factory is located on the National Highway (NH)-44 about 125 kms away from Shillong on Jowai-Badarpur road.

Major energy requirement is in the area of Pyro - processing of Clinker, which is met using Coal, Pet Coke. Apart from this, plant requires electricity for other processes which is met by 10 MW Captive Power Plant and Gird Supply at 132 kV level from Meghalaya Power Distribution Corporation Limited. The plant has also installed 12 MVA DG Sets as backup power arrangement.



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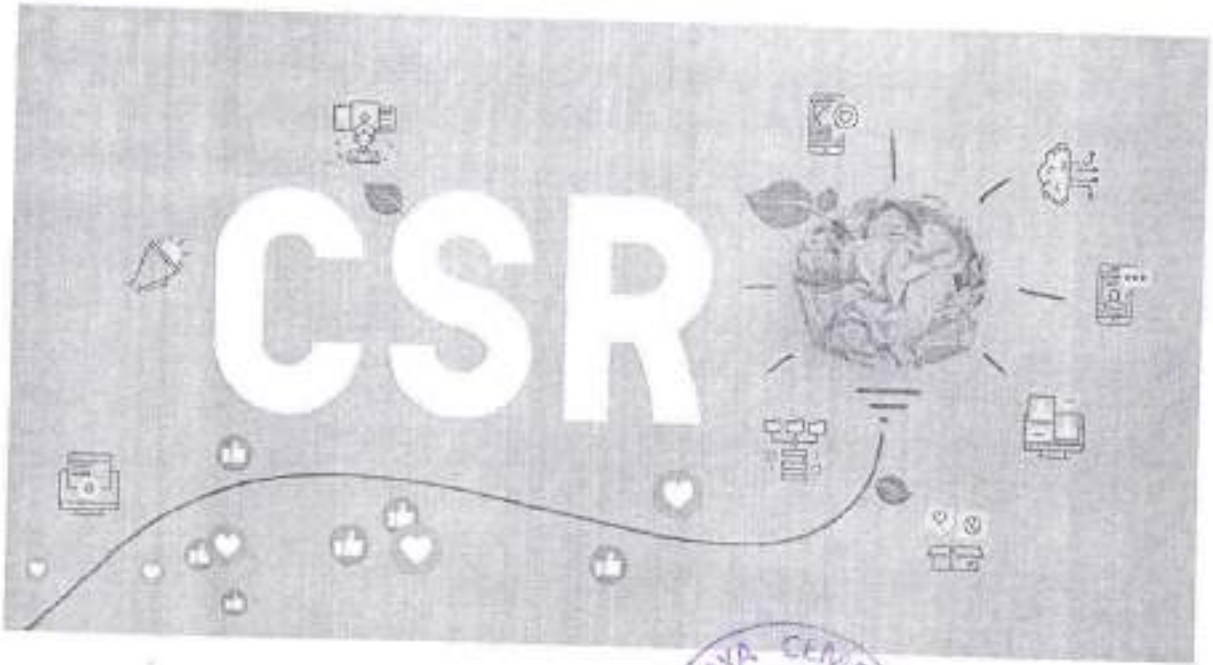
Reference of Environment Clearance

Letter No. - SEIAA/PROJECT-2/2007/18 dated: 25th March'2009 and Amended letter No. - ML/SEIAA/PROJECT-2/2007/937 dated 24th November'2021.

Environment Condition

"A sum of Rs.50 lakh shall be utilized annually by the project proponent till the project subsists towards socio-economic/eco-development activities in the area part of which shall be spent towards distribution of free medicines, malaria eradication program etc. in the nearby villages. A portion of the sum (5%) shall be set apart annually towards creation of employees' welfare fund. Details of expenditure incurred under this Para shall form part of the compliance report to be submitted to the SEIAA/SEAC. Further, a comprehensive long term eco-development plan shall be prepared by the project proponent within six months of receipt of prior Environment Clearance."



MEGHALAYA CEMENT LTD. THANGSKAI

Corporate Social Responsibilities

Corporate social responsibility (CSR) is a self-regulating business model that helps a company be socially accountable to itself, its stakeholders, and the public. By practicing corporate social responsibility, also called corporate citizenship, companies can be conscious of the kind of impact they are having on all aspects of society, including economic, social, and environmental.

To engage in CSR means that, in the ordinary course of business, a company is operating in ways that enhances society and the environment instead of contributing negatively to them.

Key Takeaways':-

- Corporate social responsibility is a business model by which companies make a concerted effort to operate in ways that enhance rather than degrade society and the environment.
- CSR helps both improve various aspects of society as well as promote a positive brand image of companies.
- CSR helps both improve various aspects of society as well as promote a positive brand image of companies.
- CSRs are often broken into four categories: environmental impacts, ethical responsibility, philanthropic endeavors, and financial responsibilities.

Benefits of Corporate Social Responsibility

- As important as CSR is for the community, it is equally valuable for a company. CSR activities can help forge a stronger bond between employees and corporations, boost morale, and aid both employees and employers in feeling more connected to the world around them. Aside from the positive impacts to the planet, here are some additional reasons businesses pursue corporate social responsibility.
- ISO 26000 clarifies what social responsibility is and helps organizations translate CSR principles into practical actions. The standard is aimed at all types of organizations, regardless of their activity, size, or location. And because many key stakeholders from around the world contributed to developing ISO 26000, this standard represents an international consensus.

MEGHALAYA CEMENT LTD THANGSKAI

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Role of Meghalaya Cements Limited towards Corporate Social Responsibilities

Meghalaya Cements Limited is contributing on account of Social Accountability and Social Investment, Ethics and Human Resources, Environment Protection and Suitability and Corporate Governance and Economic Responsibility. In the period of April 2022 to September 2022 Meghalaya Cements Limited has spent Rs. 35.95 Lacs in different activities.

Expenditure Incurred for Socio-Economic Development under CSR for the period of April 2022 to September 2022:-

SL.NO.	HEADING	AMOUNT (In Rs.)
1	Emphasis on Education	66,000
2	Sports Activity	22,000
3	Encouraging/Felicitation prog. For Students.	55,950
4	Polio Immunization Camps, Family planning, etc.	344,604
5	Infrastructure development of Hospitals/Schools	21,000
6	Cement Distribution Programme.	2,540,316
7	Plant Distribution Programme.	32,620
8	Donation to Churches, Road & House / Community Center Repairing etc.	55,200
9	Community Feast	41,469
10	Drinking water supplying scheme.	179,101
11	Village Development Funds.	237,500
12	Corona Pandemic	-
Total		3,595,760

MEGHALAYA CEMENTS LTD. THANGSKAI

1. Emphasis on Education

The level at which teachers place importance on meeting the educational goals of all students. Education provides stability in life, and it's something that no one can ever take away from you. By being well-educated and holding a college degree, you increase your chances for better career opportunities and open up new doors for yourself. For That Meghalaya Cements Limited has sponsored a well trained Teacher to **"Chiehruphi Higher Secondary School"** to meet the educational goals of all students. The deputed professional teacher who teaches students based on national curriculum guidelines within their specialist subject areas. Their duties include assigning homework, grading tests, documenting progress and keeping up with parent communication. The Monthly salary of the Professional Teacher has paid by the Company. The amount of Rs. 66000 has paid for the Teacher as monthly salary.

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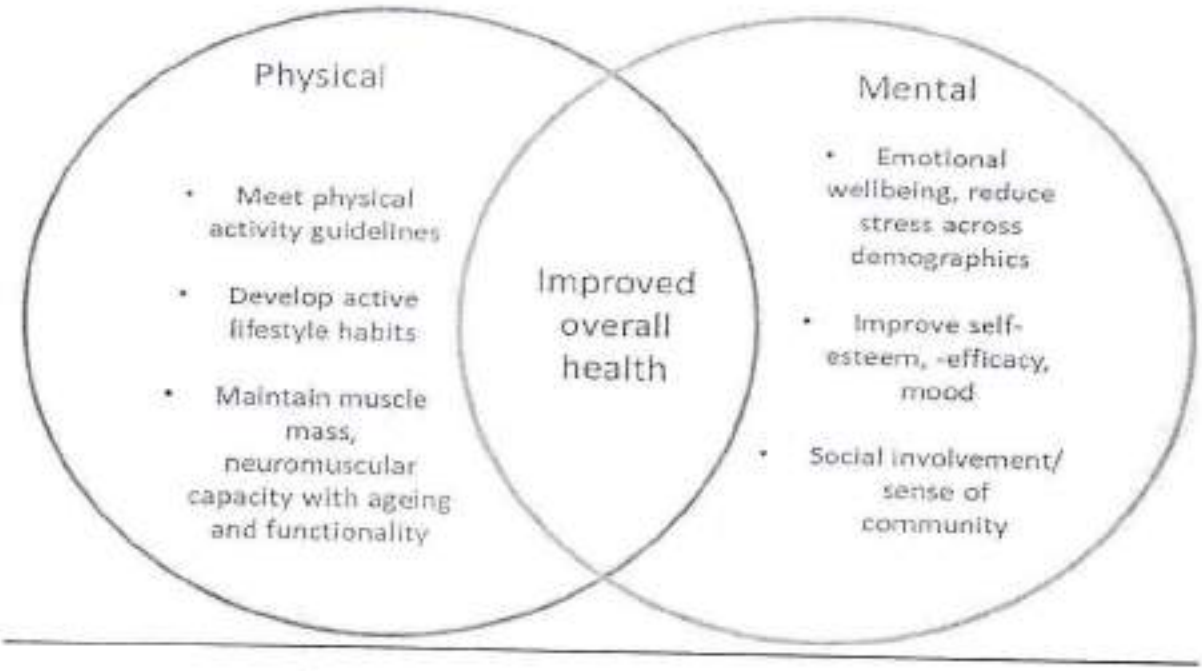
2. Sports Activity:-

Sports are games such as football and basketball and other competitive leisure activities which need physical effort and skill. Being physically active can improve your brain health, help manage weight, reduce the risk of disease, strengthen bones and muscles, and improve your ability to do everyday activities. Adults who sit less and do any amount of moderate-to-vigorous physical activity gain some health benefits.



The Company has helps for Uninterrupted Sports Activities for that Developed a Play Ground located at Lumshnong Village. For the Development of Ground company has spent Rs. 22000 on Manpower and Machineries. Providing a proper playground is beneficial to keep the children fit and healthy. School playground equipment in India positively impacts children's emotional, social, physical, and mental growth. Various other advantages include increased self-esteem, critical thinking skills, and a strong immune system.

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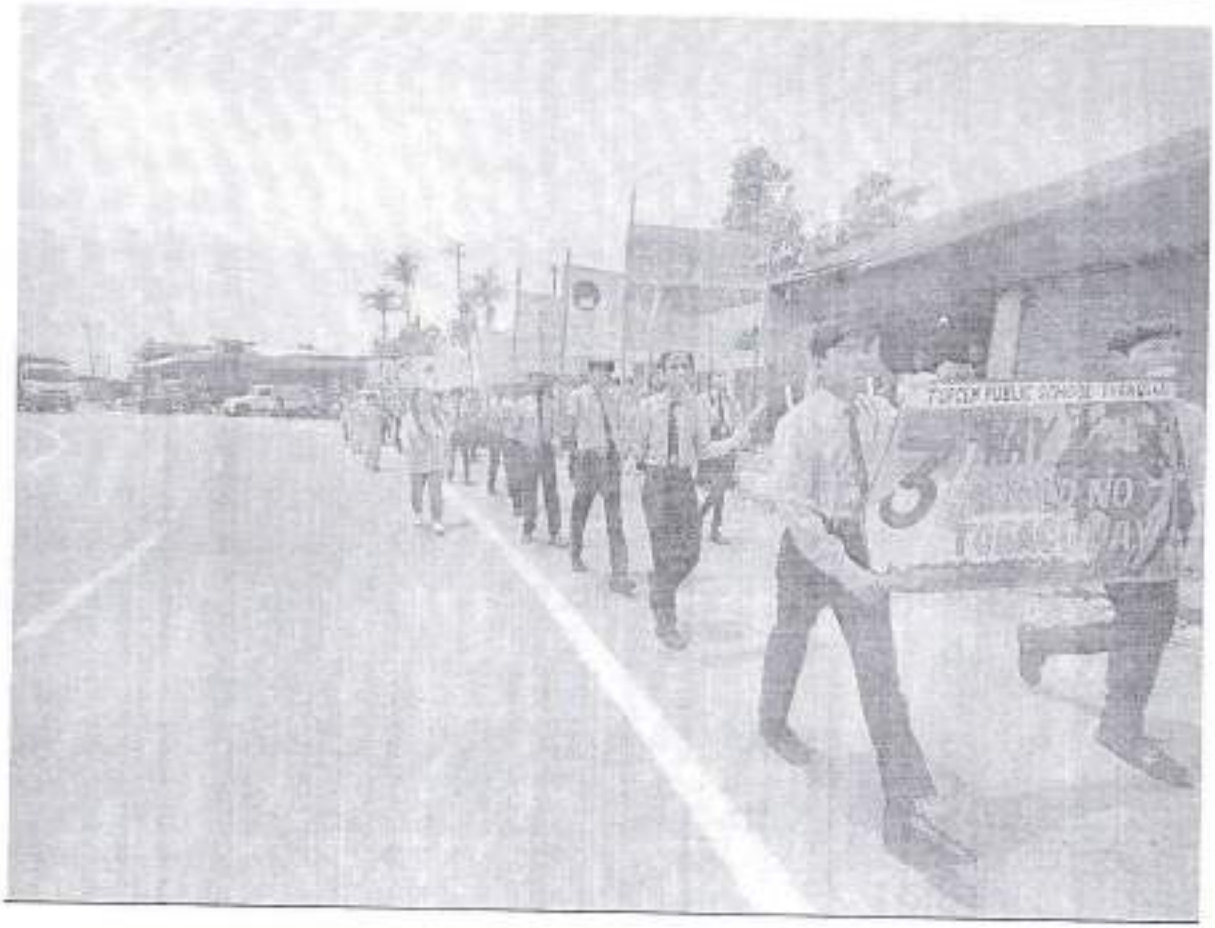
3. Encouraging / Felicitation Programme for Students:-

"Encouragement is a Powerful Force in Education."
Encouraging words and actions are often internalized by students and have the power to motivate them to succeed. Encouragement can even be the difference between students completing school and giving up on themselves. Meghalaya Cements Limited has organized SSLC award programme and financial assistance to the poor students and meritorious student of three villages. On dated 19.09.2022 Company has distributed Rs. 55950 to the 12 meritorious students who done excellent in SSLC examination.

MEGHALAYA CEMENT LTD. THANGSKAI

MEGHALAYA CEMENT LTD. THANGSKAI



4. Polio Immunization Camps, Family planning, etc.:-

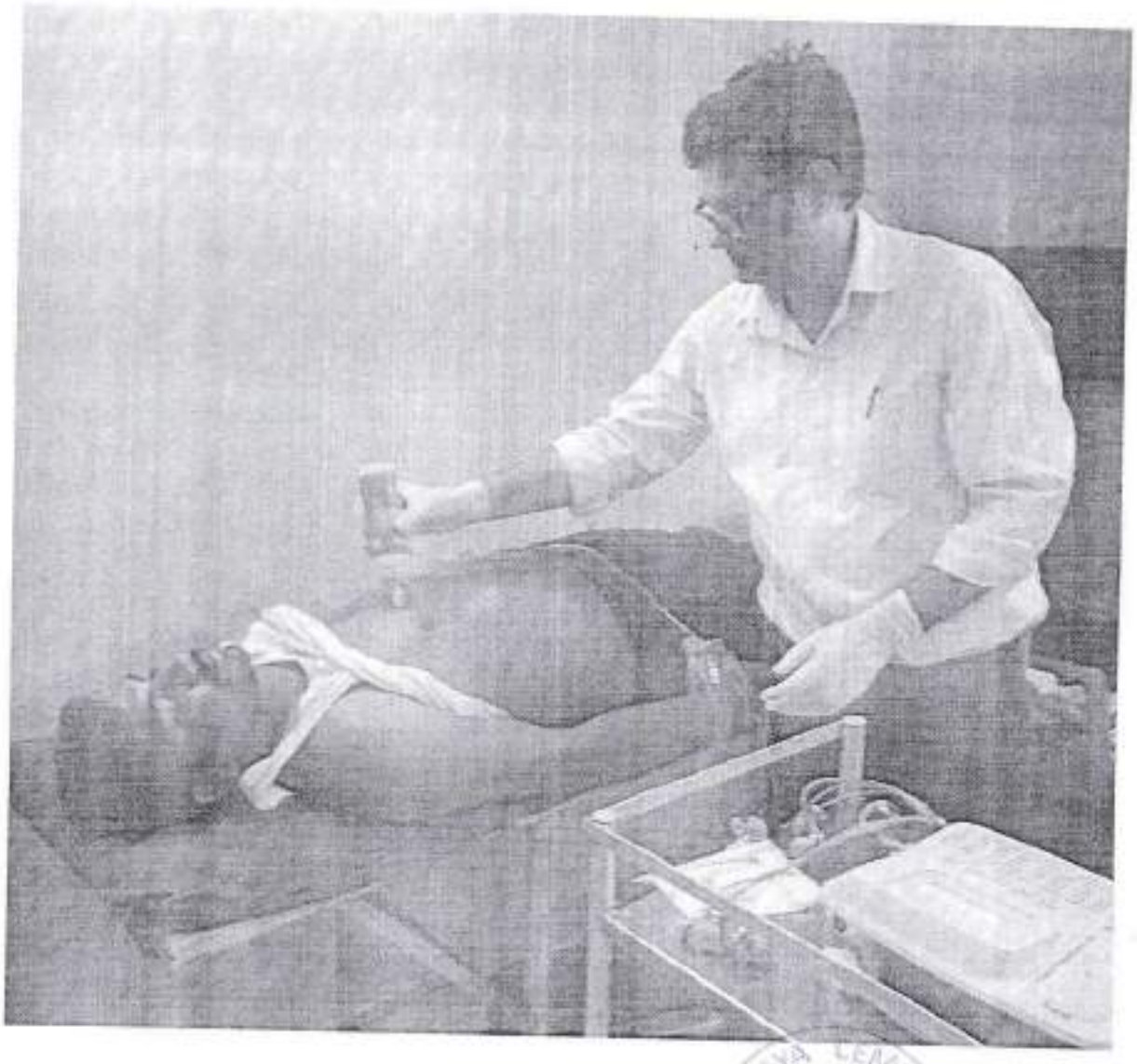
The Pulse Polio Initiative was started with an objective of achieving hundred per cent coverage under Oral Polio Vaccine. It aimed to immunize children through improved social mobilization, plan mop-up operations in areas where poliovirus has almost disappeared and maintain high level of morale among the public. Natural Family Planning (NFP) relies on the ability to track ovulation in order to prevent pregnancy. These methods predict fertile and unfertile days to identify when to avoid unprotected sex and are only used by a small fraction of women. In View of National Health Mission, Company has deputed skilled Nurses for taking care of Child and Woman. Free medicine and Vaccine has distributed among the villagers by the company on periodic. The Salary of Nurses has provided by the company and Rs. 344'604 has been spent for the period of April-2022 to September-2022.

MEGHALAYA CEMENT LTD. THADSKAI

MEGHALAYA CEMENT LTD. THANGSKAI

5. Infrastructure development of Hospitals/Schools:-

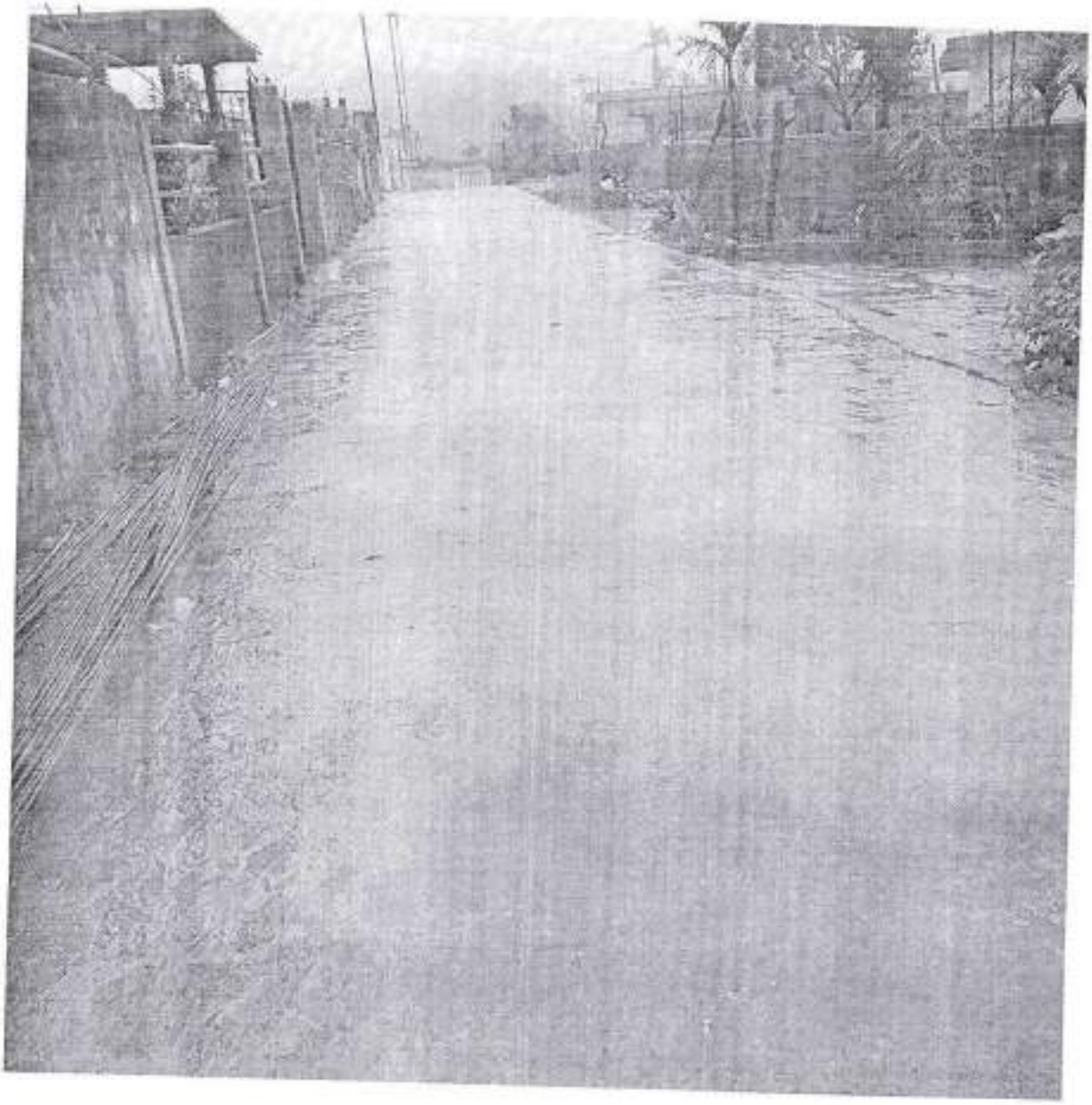
School infrastructure is what influences student learning so that it can run optimally. The improvements focused on stimulation, individualization, and naturalness. Infrastructure as a support system (such as schools, hospital) develops the quality of human capital by imparting quality and technical education and health facilities. This raises the standard and quality of living and helps the economy to eradicate major economic problems like poverty, unemployment and inequality. Meghalaya Cements has contributing major roles towards the developments of Infrastructure. The Company has spent Rs. 21000 for Purchasing of Heath checkup kits for routine check-up of Villagers.



MEGHALAYA CEMENT LTD. THANGSKAI

6. Cement Distribution Programme:-

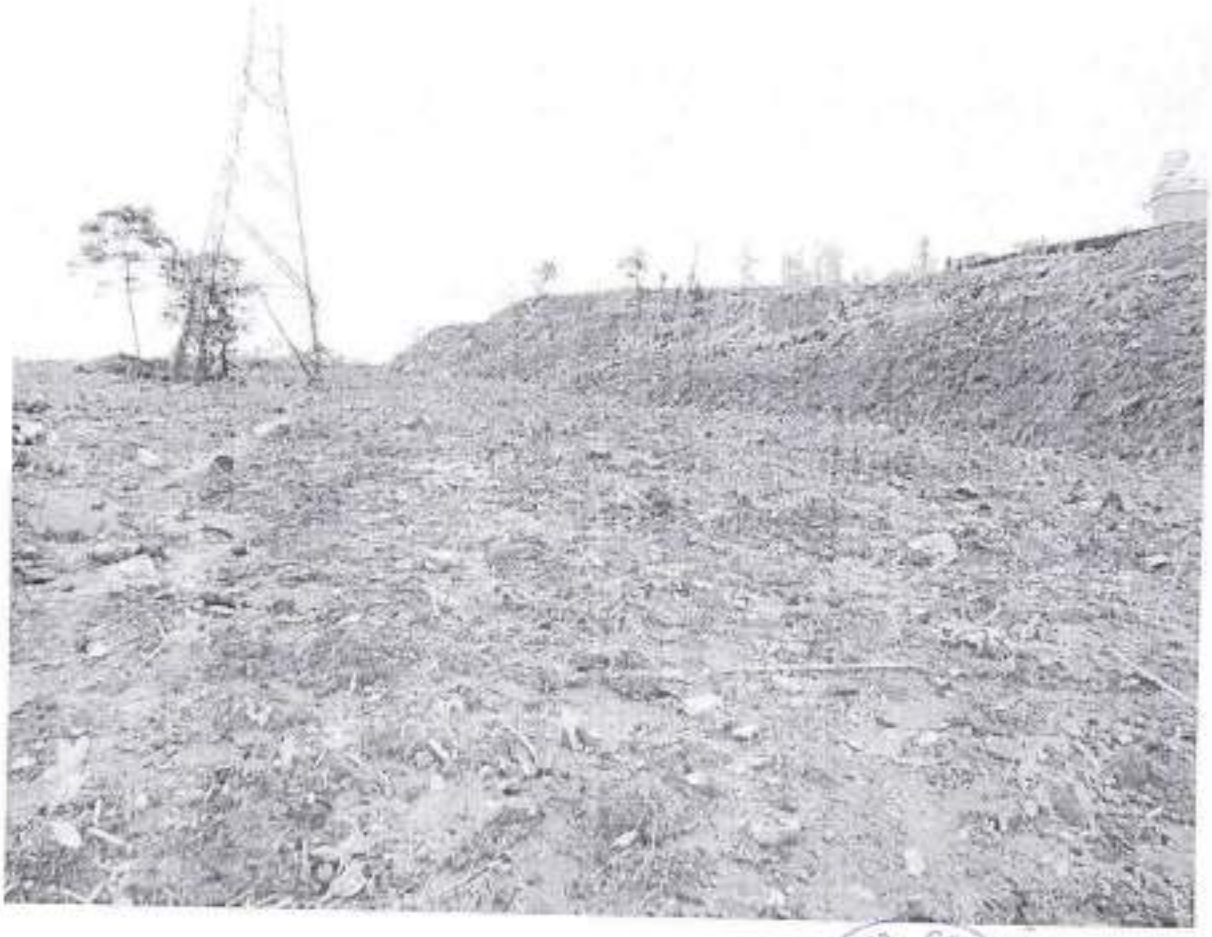
Cement is important material for development of a society. Meghalaya Cements limited has distributed Cement to the Villagers on Cheap rate for development of their society roads, drains, House, Church, Schools and other Infrastructures. Company has distributed Rs. 2,540,316 in terms of cements toward them for development of their available infrastructures on low subsidized rate.



MEGHALAYA CEMENT LTD THANGSKAI

7. Plant (Species) Distribution Programme.

Environmental Benefits: - Trees offer many environmental benefits. Trees reduce the urban heat island effect through evaporative cooling and reducing the amount of sunlight that reaches parking lots and buildings. This is especially true in areas with large impervious surfaces, such as parking lots of stores and industrial complexes. Trees improve our air quality by filtering harmful dust and pollutants such as ozone, carbon monoxide, and sulfur dioxide from the air we breathe. Trees give off oxygen that we need to breathe. Trees reduce the amount of storm water runoff, which reduces erosion and pollution in our waterways and may reduce the effects of flooding. Many species of wildlife depend on trees for habitat. Trees provide food, protection, and homes for many birds and mammals.
In view of the above Meghalaya Cements Limited has distributed Local Species worth of Rs. 32620 in Plantation drive. Total 600 Local species has planted in the period of April-2022 to September-2022.



MEGHALAYA CEMENT LTD. THANGSKAI

8. Donation to Churches, Road & House / Community Center Repairing etc.

Villages Infrastructure like Churches, Roads, House and Cimmunity Centers are very essential requirements for the Villagers. Company has contributed Rs. 55200 for the repairing of Churches, Roads, House and Community Center in the period of April-2022 to September-2022. Also Company has contributed for Funeral Programme for the villagers.

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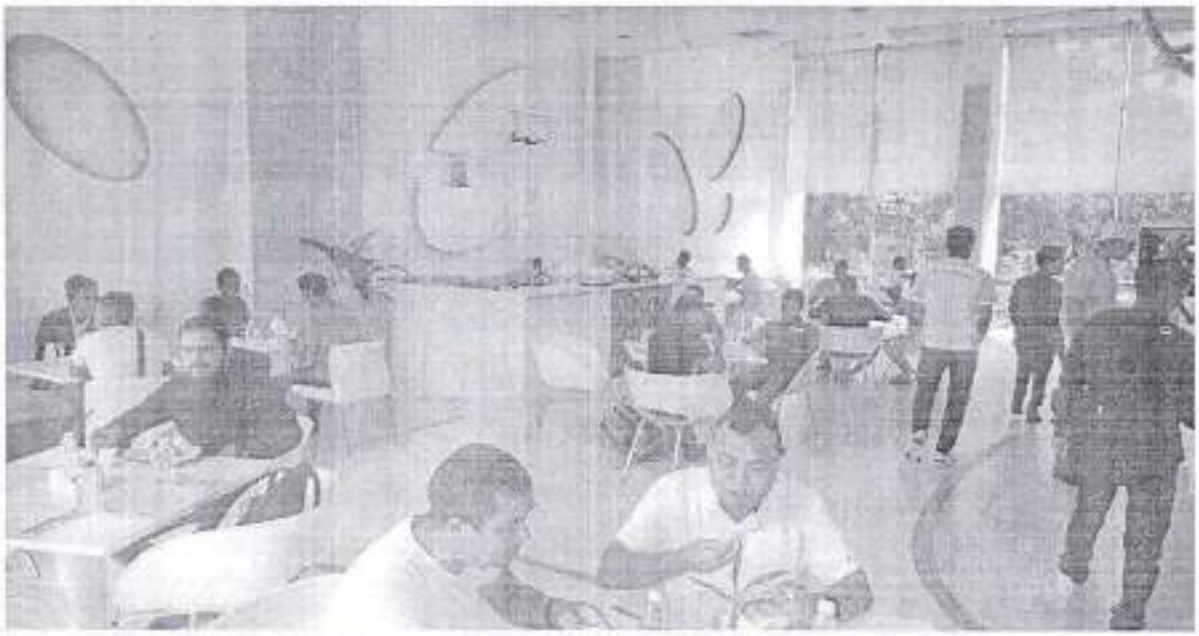
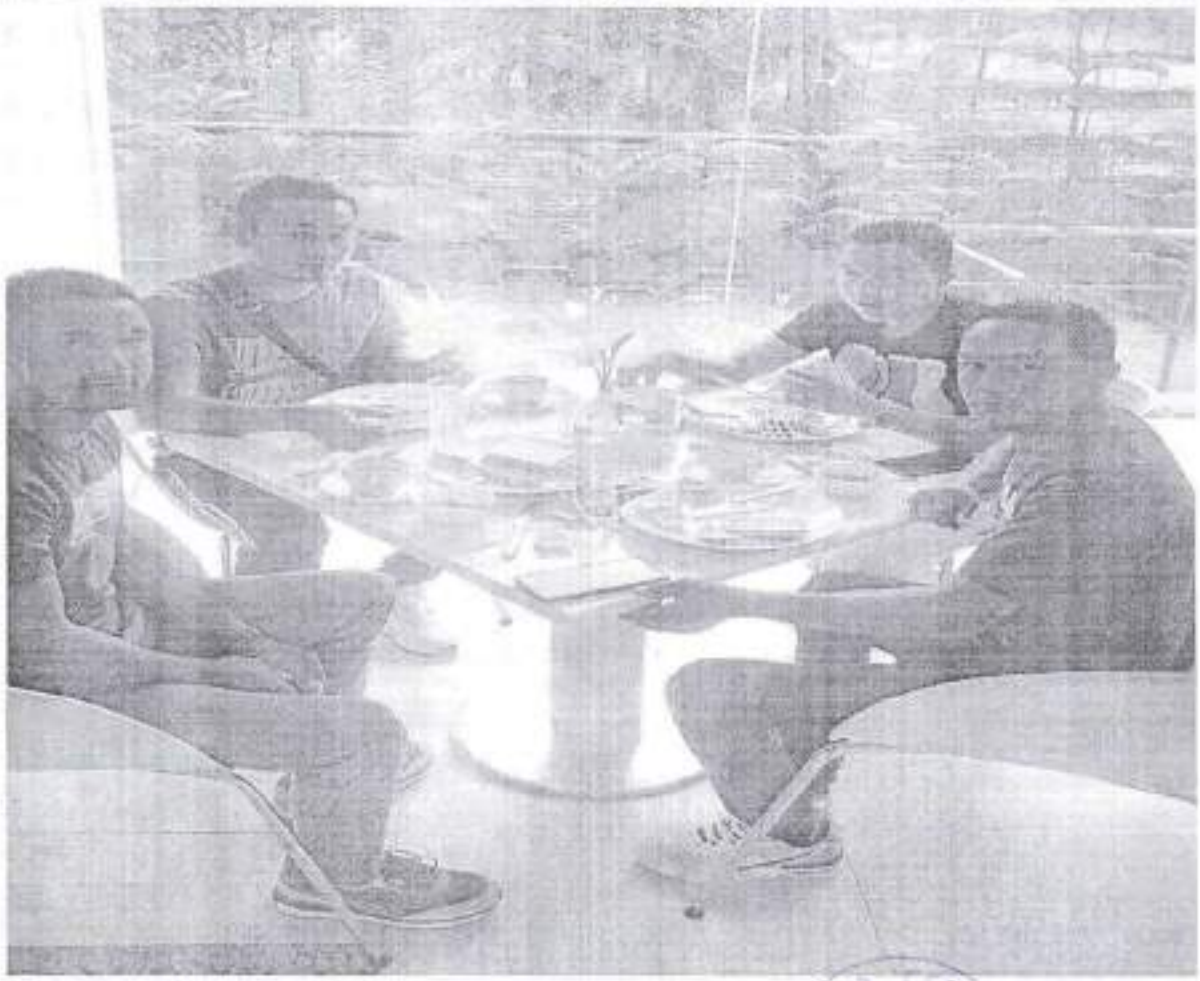
9. Community Feast

Community feast means the provision of ready-to-eat food for an Anishinaabe cultural or spiritual purpose, where no monetary exchange is necessary or expected. Company has organized Community feast for the villagers and spent Rs. 41469 for the same in April-2022 to September 2022.

MEGHALAYA CEMENT LTD THANGSKAI





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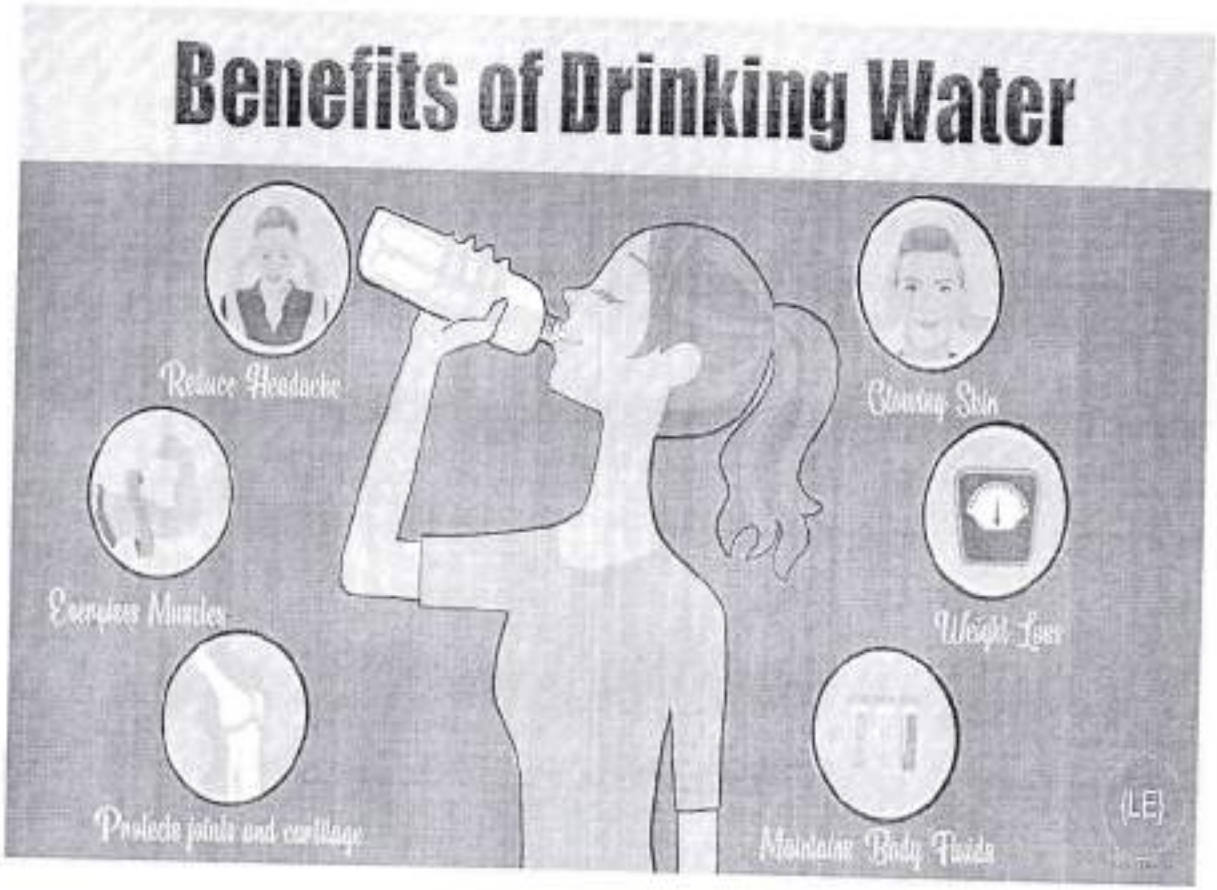
10. Drinking water supplying scheme:-

Getting enough water every day is important for your health. Drinking water can prevent dehydration, a condition that can cause unclear thinking, result in mood change, cause your body to overheat, and lead to constipation and kidney stones. Meghalaya Cements Limited has distrubuted drinking water among the villegers on daily basis and spent Rs. 179,101 for distribution of Drinking Water.



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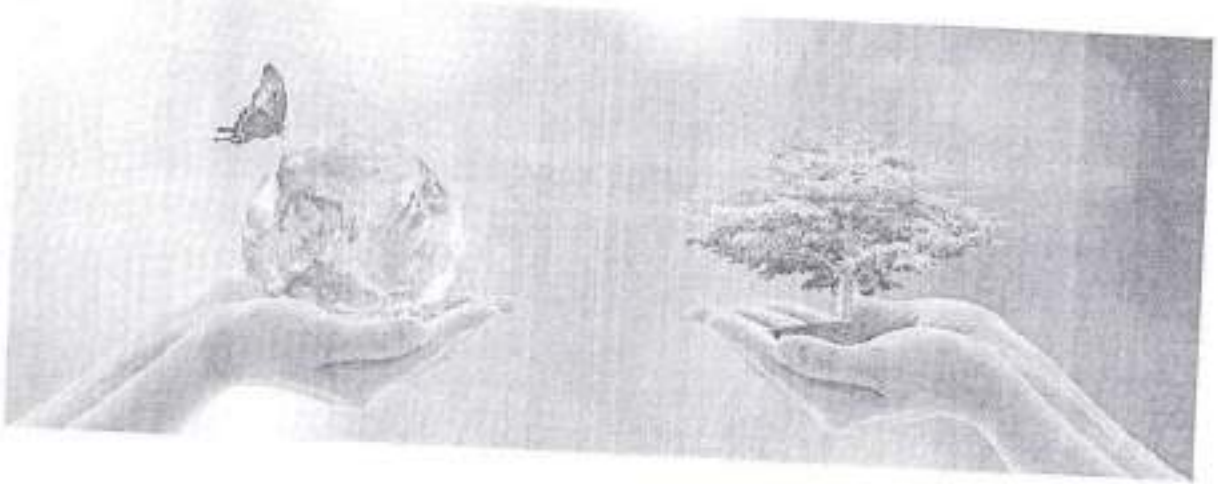
11. Village Development Funds

An action plan for the economic and social upliftment of Villages and It aims at improving the quality of life of people living in Villages, Meghalaya Cements Limited has contributing major role under CSR for Villagers. In the period of April-2022 to September-2022, Company has spent Rs. 237,500 in terms of Free Cement distribution & subsidized cement issued to the villages for Village Road, Church, school development work (Chiehruphi, Thangskai & Whaijer village).



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Annex- XXI

Meghalaya State Pollution Control Board
Forests & Environment Department, Government of Meghalaya
'ARDEN' Lumpyngngad, Shillong-793014
Website: http://megspcb.gov.in
mspcb

No. MSPCB/ATH-27/2007/2021-2022/80 Dated Shillong, the 11 Feb, 2022.

FORM – 2

[See Rule 6(2)]

FORM FOR GRANT/RENEWAL OF AUTHORIZATION BY MEGHALAYA STATE POLLUTION CONTROL BOARD, SHILLONG FOR OCCUPIERS, REPROCESSORS, REUSERS AND OPERATORS OF FACILITIES FOR COLLECTION, RECEPTION, TREATMENT, STORAGE, TRANSPORT AND DISPOSAL OF HAZARDOUS WASTE UNDER THE HAZARDOUS & OTHER WASTES (MANAGEMENT & TRANSBOUNDARY MOVEMENT) RULES, 2016

M/s MEGHALAYA CEMENT LTD. of Thangskai Village, East Jaiñtia Hills District, Meghalaya is hereby granted / renewal of the Authorization to operate a facility for collection, storage and disposal of hazardous waste on its premises situated at Thangskai Village, East Jaiñtia Hills District, Meghalaya with reference to Application No.MCL/Env/ATH/MsPCB/2020-21/23, Dated 1st January, 2020.

The Authorization is granted / renewed to operate a facility for collection, storage and disposal of hazardous waste is in accordance to the hazardous waste management matrix as specified below:-

HAZARDOUS WASTE MANAGEMENT MATRIX

	Hazardous Waste	Quantity	Collection	Reception	Treatment	Transport	Storage	Disposal
1.	Used/ Spent Oil	24.20 KL/A	✓	X	X	X	✓ Leak proof containers	✓ Recycling within the plant premises Sale/auction to registered recycler/refiner
3	Oil Sludge	120L/A	✓	X	X	X	✓ Leak proof containers	Recycling within the plant premises Sale/auction to registered recycler/refiner

MEGHALAYA CEMENT LTD. THANGSKAI

Contact details: Email: memsecy.spcb-megl@gov.in, mspcb2@rediffmail.com, Telephone Numbers: Chairman: 0364-2522172, Member Secretary-2522802, Scientific-2521514, Engineering-2521533, Legal-2520644, Laboratory-2521726, Administration-2520073, Accounts-2522124, Telefax-2521764.

Annex- XXI

The Authorization shall be in force for a period of **5(five) years, i.e., from 31st November, 2020 upto 30th November, 2025.**

The Authorization is subject to the conditions stated below and such conditions as may be specified in the Rules for the time being in force under the Environment (Protection) Act, 1986.

TERMS AND CONDITIONS:

1. The Authorization shall comply with the provisions of the Environment (Protection) Act and Rules made there under.
2. The Authorization shall be produced for inspection at the request of an officer authorized by the Meghalaya State Pollution Control Board.
3. The person authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous waste without obtaining prior permission of the Meghalaya State Pollution Control Board.
4. Any unauthorized change in personnel, equipment and working condition as mentioned in the application by the person authorized shall constitute a breach of this Authorization.
5. The person authorized shall implement Emergency Response Procedure (ERP) for which this authorization is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts and also carry out mock drill in this regard at regular interval of time;
6. The person authorized shall comply with the provisions outlined in the Central Pollution Control Board guidelines on "Implementing Liabilities for Environmental Damages due to Handling and Disposal of Hazardous Waste and Penalty"
7. It is the duty of the authorized person to take prior permission of the State Pollution Control Board to close down the facility.
8. The imported hazardous and other wastes shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.
9. The record of consumption and fate of the imported hazardous and other wastes shall be maintained.
10. The hazardous and other waste which gets generated during recycling or reuse or recovery or pre-processing or utilization of imported hazardous or other wastes shall be treated and disposed of as per specific conditions of authorization.
11. The importer or exporter shall bear the cost of import or export and mitigation of damages if any.
12. An application for the renewal of an authorization shall be made as laid down under these Rules.

MEGHALAYA CEMENT LTD THANGSKAI

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13. Any other conditions for compliance as per the Guidelines issued by the Ministry of Environment, Forest and Climate Change or Central Pollution Control Board from time to time.

14. Annual return shall be filed by June 30th for the period ensuring 31st March of the year.

MEMBER SECRETARY
Meghalaya State Pollution Control Board,
Shillong

Copy to:-

1. The Director of Commerce and Industries, Govt. of Meghalaya, Shillong for kind information.
2. The General Manager, District Commerce & Industries Centre, East Jaintia Hills District, Khliehriat for information.
3. M/s MEGHALAYA CEMENT LIMITED, C/o The Director, Thangskai Village, East Jaintia Hills District for information and necessary action.

MEGHALAYA CEMENT LTD THANGSKAI

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Meghalaya State Pollution Control Board
Forests & Environment Department, Government of Meghalaya
'ARDEN' Lumpyngngad, Shillong-793014
Website: http://megspcb.gov.in
mspcb

No.MSPCB/ATH-27/2007/2021-2022/19 Dated Shillong, the 11 Feb, 2022.

FORM – 2

[See Rule 6(2)]

FORM FOR GRANT/RENEWAL OF AUTHORIZATION BY MEGHALAYA STATE POLLUTION CONTROL BOARD, SHILLONG FOR OCCUPIERS, REPROCESSORS, REUSERS AND OPERATORS OF FACILITIES FOR COLLECTION, RECEPTION, TREATMENT, STORAGE, TRANSPORT AND DISPOSAL OF HAZARDOUS WASTE UNDER THE HAZARDOUS & OTHER WASTES (MANAGEMENT & TRANSBOUNDARY MOVEMENT) RULES, 2016

M/s MEGHALAYA CEMENT LTD. of Thangskai Village, East Jaiñtia Hills District, Meghalaya is hereby granted / renewal of the Authorization to operate a facility for collection, storage and disposal of hazardous waste on its premises situated at Thangskai Village, East Jaiñtia Hills District, Meghalaya with reference to Application No.MCL/Env/ATH/MsPCB/2020-21/23, Dated 1st January, 2020.

The Authorization is granted to operate a facility for Collection, Reception, Storage & Co-Processing of Non-Hazardous Waste in accordance to the hazardous waste management matrix as specified below:-

WASTE MANAGEMENT MATRIX

Sl No	Non-Hazardous Waste	Quantity	Collection	Reception	Storage	Co-Processing
1	HDPE Bags	1.03966 T/A	✓	✓	✓	✓
2	Scrap Tyre & Tube	17.08 MT/A	✓	✓	✓	✓

The Authorization shall be in force for a period of 5(five) years, i.e., from 31st November, 2020 upto 30th November, 2025.

The Authorization is subject to the conditions stated below and such conditions as may be specified in the Rules for the time being in force under the Environment (Protection) Act, 1986.

MEGHALAYA CEMENT LTD. THANGSKAI

Contact details: Email: memscy.spcb-meg@gov.in, megspcb@rediffmail.com; Telephone Numbers: Chairman-0364-2521217; Member Secretary-2522802; Scientific-2521514; Engineering-2521553; Legal-2520044; Laboratory-2520726; Administration-2520075; Accounts-2522124; Telefax-2521264.

Meghalaya State Pollution Control Board
Forests & Environment Department, Government of Meghalaya
'ARDEN' Lumpyngngad, Shillong-793014
Website: https://megspcb.gov.in
mspcb

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TERMS AND CONDITIONS:

1. The Authorization shall comply with the provisions of the Environment (Protection) Act and Rules made there under.
2. The Authorization shall be produced for inspection at the request of an officer authorized by the Meghalaya State Pollution Control Board.
3. Any unauthorized change in personnel, equipment and working condition as mentioned in the application by the person authorized shall constitute a breach of this Authorization.
4. The person authorized shall implement Emergency Response Procedure (ERP) for which this authorization is being granted considering all site specific possible scenarios such as spillages, leakages, fire etc. and their possible impacts and also carry out mock drill in this regard at regular interval of time;
5. The person authorized shall comply with the provisions outlined in the Central Pollution Control Board guidelines on **"Pre-Processing & Co-Processing of Hazardous & Other Wastes in Cement Plant as per Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016".**
6. The imported hazardous and other wastes shall be fully insured for transit as well as for any accidental occurrence and its clean-up operation.
7. The record of consumption and fate of the imported hazardous and other wastes shall be maintained.
8. An application for the renewal of an authorization shall be made as laid down under these Rules.
9. Any other conditions for compliance as per the Guidelines issued by the Ministry of Environment, Forest and Climate Change or Central Pollution Control Board from time to time.
10. Annual return shall be filed by June 30th for the period ensuring 31st March of the year.

SPECIFIC CONDITIONS:

1. It shall be the duty of the receiver and operator of a facility to take adequate steps while handling hazardous & Other Waste to: -
   a. contain contaminants and prevent accidents and limit their consequences on humans and the environment,
   b. provide persons working on the site with information, training and equipment necessary to ensure their safety, and
   c. put up prominent hoardings indicating the nature of wastes/materials handled and precautionary measures taken, besides Do's & Don'ts, for public in case of any mishap.

MEGHALAYA CEMENT LTD. THANGSKAI

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2. The transportation of Hazardous & Other Waste shall be in accordance with the provisions of the Hazardous & Other Wastes (Management & Transboundary Movement) Rules, 2016 and Rules made by the Central Government under Motor Vehicles (Amendment) Act, 2019.
3. The receiver of waste for transportation, storage and co-processing of hazardous waste shall maintain records of such operation in **Form 3**.
4. The receiver of waste shall submit Annual Returns to the Meghalaya State Pollution Control Board in **Form 4** by the **30th June** of every year for the preceding period April to March.
5. The occupier shall provide the transporter with the relevant information in **Form 9**, regarding the hazardous nature of the wastes and measures to be taken in case of an emergency and shall label the hazardous and other wastes containers as per **Form 8**.
6. In case of transportation of hazardous and other waste for recycling or utilisation including co-processing, the sender shall intimate both the State Pollution Control Boards before handing over the waste to the transporter.
7. In case of transit of hazardous and other waste for recycling, utilisation including co-processing or disposal through a State other than the States of origin and destination, the sender shall give prior intimation to the concerned State Pollution Control Board of the States of transit before handing over the wastes to the transporter.
8. The sender of the waste shall prepare seven copies of the manifest in **Form 10** comprising of colour code indicated below and all seven copies shall be signed by the sender:

Copy number with colour code	Purpose
Copy 1 (White)	To be forwarded by the sender to the State Pollution Control Board after signing all the seven copies.
Copy 2 (Yellow)	To be retained by the sender after taking signature on it from the transporter and the rest of the five signed copies to be carried by the transporter.
Copy 2 (Pink)	To be retained by the receiver (actual user or treatment storage and disposal facility operator) after receiving the waste and the remaining four copies are to be duly signed by the receiver.
Copy 2 (Orange)	To be handed over to the transporter by the receiver after accepting waste.
Copy 2 (Green)	To be sent by the receiver to the State Pollution Control Board.
Copy 2 (Blue)	To be sent by the receiver to the sender.
Copy 7 (Grey)	To be sent by the receiver to the State Pollution Control Board of the sender in case the sender is in another State.

MEGHALAYA CEMENT THANGSKAI

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9. The sender shall forward copy 1 (white) to the State Pollution Control Board, and in case the hazardous or other wastes is likely to be transported through any transit State, the sender shall intimate State Pollution Control Boards of transit States about the movement of the waste.
10. No transporter shall accept waste from the sender for transport unless it is accompanied by signed copies 3 to 7 of the manifest.
11. The transporter shall submit copies 3 to 7 of the manifest duly signed with date to the receiver along with the waste consignment.
12. The receiver after acceptance of the waste shall hand over copy 4 (orange) to the transporter and send copy 5 (green) to his State Pollution Control Board and send copy 6 (blue) to the sender and the copy 3 (pink) shall be retained by the receiver.
13. The copy 7 (grey) shall only be sent to the State Pollution Control Board of the sender, if the sender is in another State.
14. The Unit shall report any accident in **Form** 11 immediately to the Meghalaya State Pollution Control Board.
15. The occupier and operator of a facility may file an appeal against an Order passed by the Meghalaya State Pollution Control Board in **Form** 12.

MEMBER SECRETARY
Meghalaya State Pollution Control Board,
Shillong

Copy to:-

1. The Director of Commerce and Industries, Govt. of Meghalaya, Shillong for kind information.
2. The General Manager, District Commerce & Industries Centre, East Jaiñtia Hills District, Khliehriat for information.
3. M/s MEGHALAYA CEMENT LIMITED, C/o The Director, Thangskai Village, East Jaiñtia Hills District for information and necessary action.

MEGHALAYA CEMENT LTD. THANGSKAI

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o/c.

MEGHALAYA CEMENTS LIMITED

CIN- U26942ML2003PLC007125

TOPCEM CEMENT

Mazboot ka bharosa...hamesha

Ref: - MCL/Env./ATH/MsPCB/2022-23/21

Date: 09.08.2022

To,
The Member Secretary,
Meghalaya State pollution control Board,
'ARDEN', Lumpyngngad,
Shillong - 793014.

Sub:- Request for Renewal of the Authorization to operate a facility for collection, Storage and disposal of hazardous waste on its premises situated at M/s Meghalaya cement limited, Thangskai Village, P.O-Lumshnong, East Jaintia Hills District, Meghalaya.

Ref:-Your letter No. MPCB/ATH-46/2017/2017-2018/2; Dated Shillong 15th September, 2017, Shillong, with addendum no. - MPCB/ATH-46/2017/2018-19/4A; Dated Shillong 05th July, 2018.

Dear Sir,

With reference to the subject cited above, we would like to bring your kind notice that above referred Authorization to operate a facility for collection, Storage and disposal of hazardous waste on its premises is valid up to 31st August'2022. In this regard we are here by submitting the filled application (Form-I) along with the detailed compliance report to the terms and conditions as laid down in the format for grant of authorization to operate the facility for hazardous waste generated in our Captive Power Plant.

The Company therefore requests you kindly renew the above mentioned Authorization for further period of five (05) years for smooth operation. We will be highly thankful for your kind co-operation.

Thanking you,

Yours faithfully,
For Meghalaya Cements Limited

Authorized Signatory

Encl: Compliance report & Form-I with annexure

MEGHALAYA CEMENT LTD THANGSKAI

Annex- XXII

Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Environment Management Cell Details

Dept: Environment

Doc. No: MCL/IMS /PA/MR/DS

Sl. No.	Equipments Name	Model	Range	Make
1	B.O.D Incubator -1	BTI - 06 / 73514, Bio Technique India	Site -6 Cu.Ft., Temp. Range – 5° to 60°C., Accuracy - ± 0.5°C	Innovative Instruments & Controls C.P.
2	Stack Sampler	VSS – 1 – PLS / 01-DTH-2016 / Vayubodhan Envirocech Instrumentation	0 to 60 LPM & 0-to 3 LPM	Envirotect Instruments Pvt. Ltd
3	Stack Sampler	APM -620 / 797- DTI-05 / Vayubodhan Envirotech Instrumentation	0 to 60 LPM & 0-to 3 LPM	Envirotect Instruments Pvt. Ltd
4	Stack Velocity Monitor	APM -602 / 835 DTJ - 05 / Vayubodhan Envirotech Instrumentation	0 to 60 LPM & 0-to 3 LPM	Envirotect Instruments Pvt. Ltd
5	Fine Particulate Sampler (03 Nos.)	APM-550 / 583 – DTK-2010, 586-DTK-2010, 563-DTK-2010 / Envirotech Instrumentation	Range of flow Rate – 16.54-16.50,16.56-16.48,16.54-16.52	Envirotect Instruments Pvt. Ltd.
6	Gaseous Pollutant Sampler (02 Nos.)	APM-433 / 1.146 – DTK-2010, 2.150-DTK-2010 / Envirotech Instrumentation	Range -0 to 3 LPL	Envirotect Instruments Pvt. Ltd.
			Range -0 to 10 Micro meter in Diameter.	
7	High Volume Sampler (03 Nos.)	APM-430 / 1.640-DTL-05, 2.641-DTL-05, 3.642-DTL-05 / Vayubodhan Envirotech Instrumentation	Range of Flow rate – 1.1 to 1.7 Cu M^3/ mt	Envirotect Instruments Pvt. Ltd.
8	COD- Digestion	Cat No. CE-HC-011 / 11007 / Commercial	Up to 15°C.,Least Count-1°C	Commercial
9	Hot Air Oven	Internal ID-MCL/Env/HAO-1	Up to 250°C.,Least Count-0.1°C	Commercial
10	Digital Balance	/ 4114676 / Cy.304 CE	0 to 220 grms	Indian Calibration Services
11	S Type Pitot Tube	For Flow measurement	03 to 30 m/s	Envirotect Instruments Pvt. Ltd.
12	L Type Pitot Tube	For Flow measurement	03 to 30 m/s	Envirotect Instruments Pvt. Ltd.
13	Flue Gas Analyzer	Model No. 054218002	For SO2, Nox, Co, Co2 & O2 measurement in Flue gas	Make - KANE

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Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Environment Management Cell Details

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14	Respirable dust samplers	Serial No. 640-DTL-2005, . 641-DTL-2005, . 642-DTL-2005	For Measurement of PM 10 & PM 2.5	Make- Envirotech Inst. (P) Ltd.
15	Automatic station for recording of micrometeorological parameter	DT-	For Rain fall, temperature, RH & wind speed measurement	AIMIL LTD
16	Sound pressure level meter	Model No. 05D101013	For noise level monitoring	Make- Raytheon Tech.
17	Stack monitoring kits	01-DTH-2016	For Measurement of Dust emission form Stacks	Make- Envirotech Inst. (P) Ltd.
19	Automatic station for recording of Ambient Quality Monitoring	Installed near gate no. 03	Form real time monitoring of Ambient air quality	Supplied Swan Environmental
20	Automatic station for recording of Stack Emission Monitoring	For RABH, Cooler ESP, Cement Mills and CFP stack emission monitoring	Form real time monitoring of stack emission	Supplied by Glens
21	Portable Air Quality Analyzer	For Real time Ambient air quality monitoring	Form real time monitoring of stack emission	Supplied by M/s. Swan Environmental
23	Temperature Gun	Model No. IRX-63	Range (-) 50°C to 1850°C	Make- HTC
24	pH Meter	Sl. No. 361/7928	Range 0 to 14	Systronics
25	Nephlo Meter	Sl. No. 1307138	Range 0 to 200 NTU	
26	Conductivity	Sl. No. S/6117-01-17		
27	CHROMIUM VI CHEMICAL TEST KIT	.....	Chromium, Hexavalent Range: 0.0 to 1.0 mg/L Chromium, Hexavalent Resolution: 02. mg/L	HANNA EQUIPMENTS (INDIA) PVT. LTD.

MEGHALAYA CEMENTS LTD. THANGSKAI

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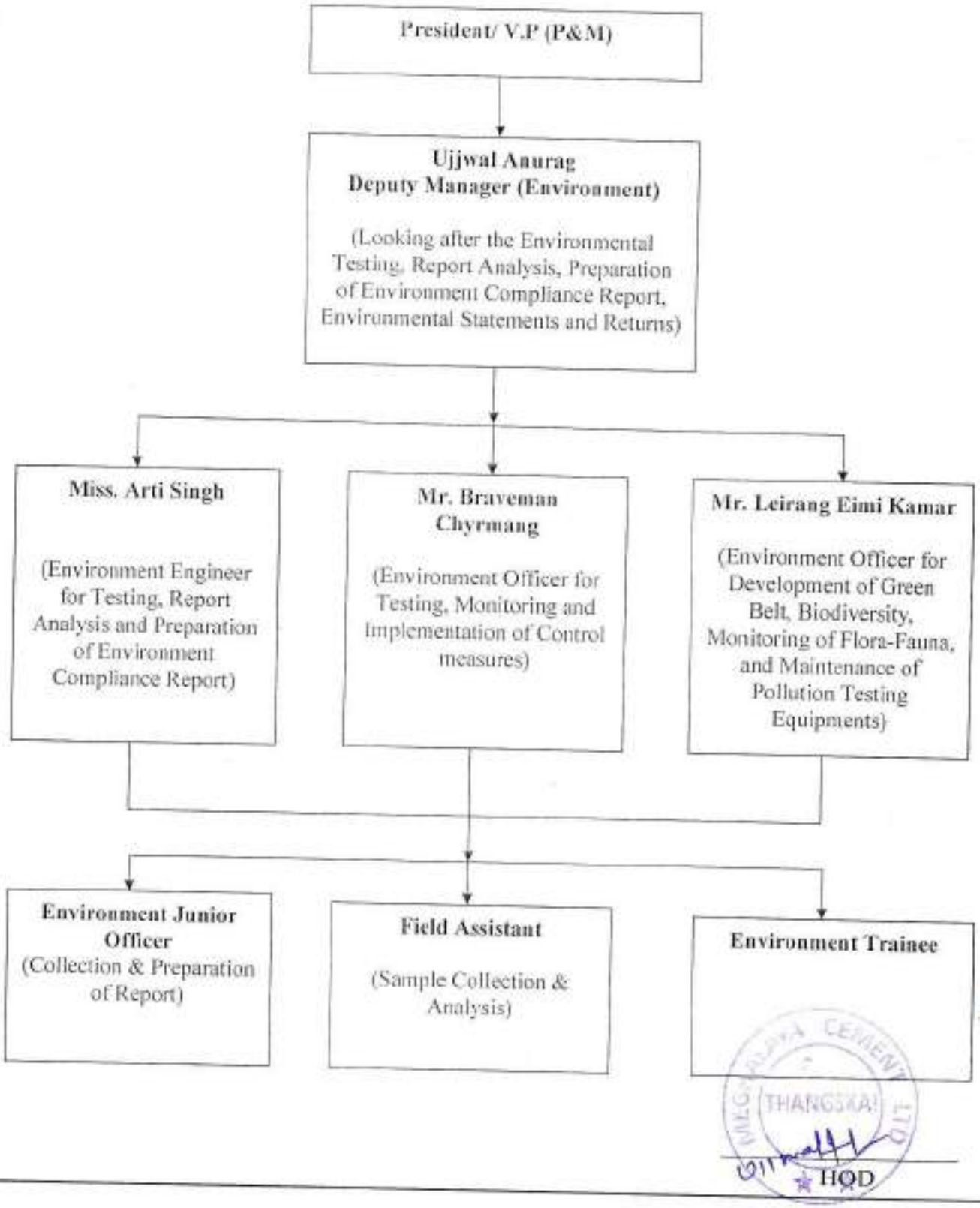
Meghalaya Cements Ltd.

Vill: Thangskai,P.O.Lumshnong, East Jaintia Hills, Meghalaya-793210

Environment Management Cell Details

Dept: Environment

Doc. No: MCL/IMS /PA/MR/DS



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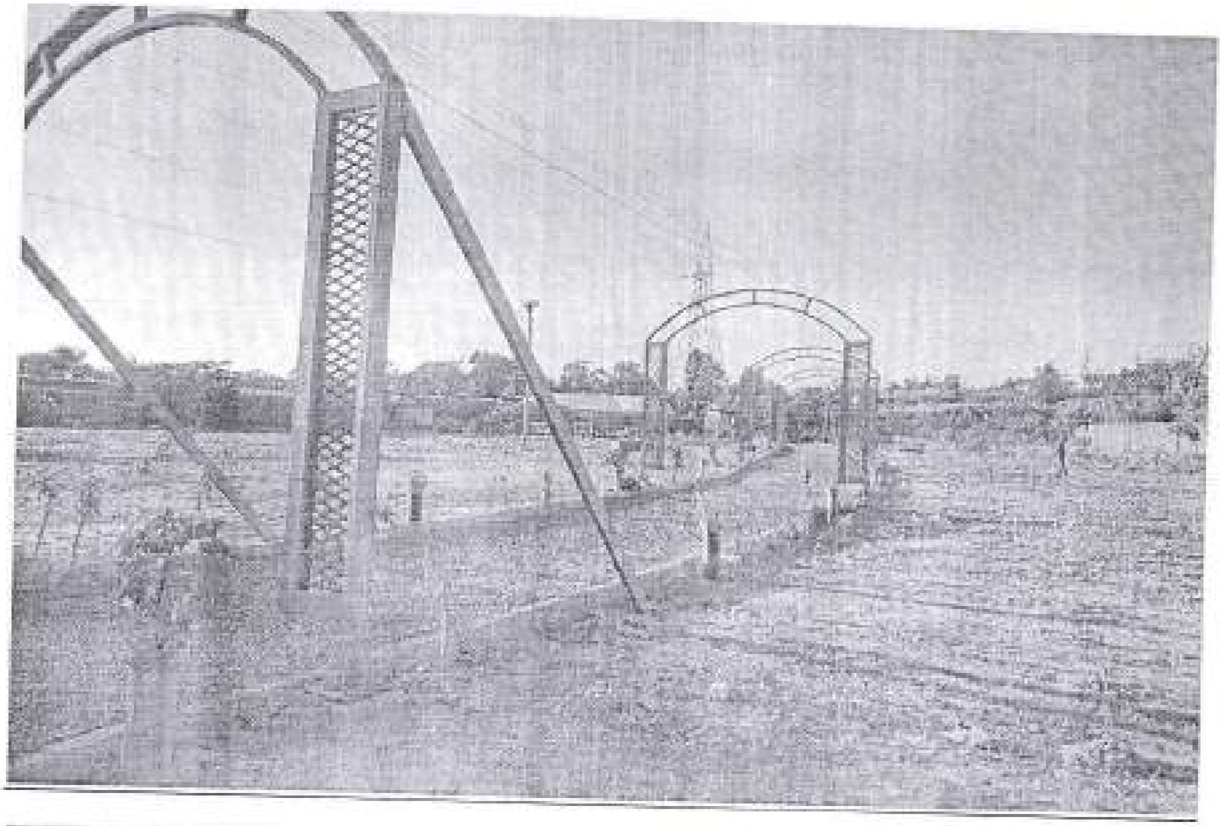

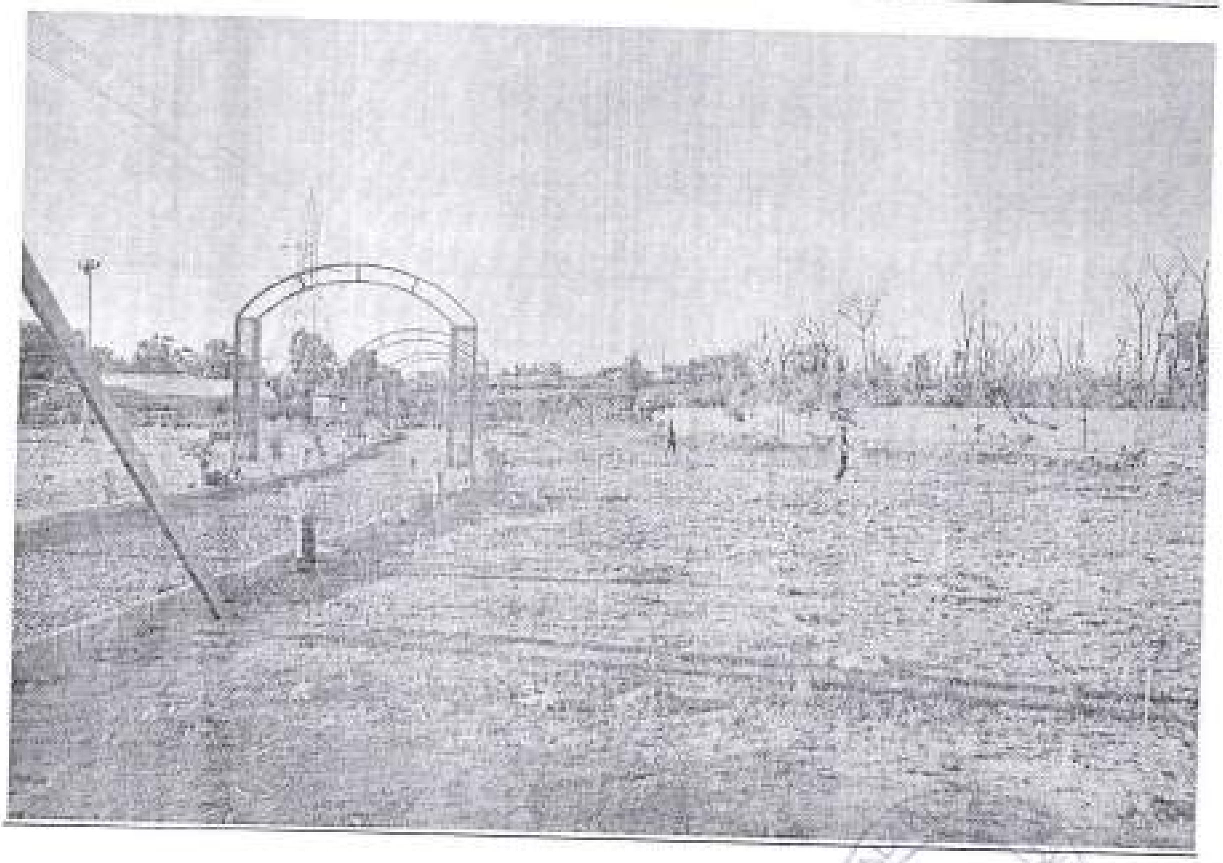

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Artocarpus Heterophyllus

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THANGSKAI

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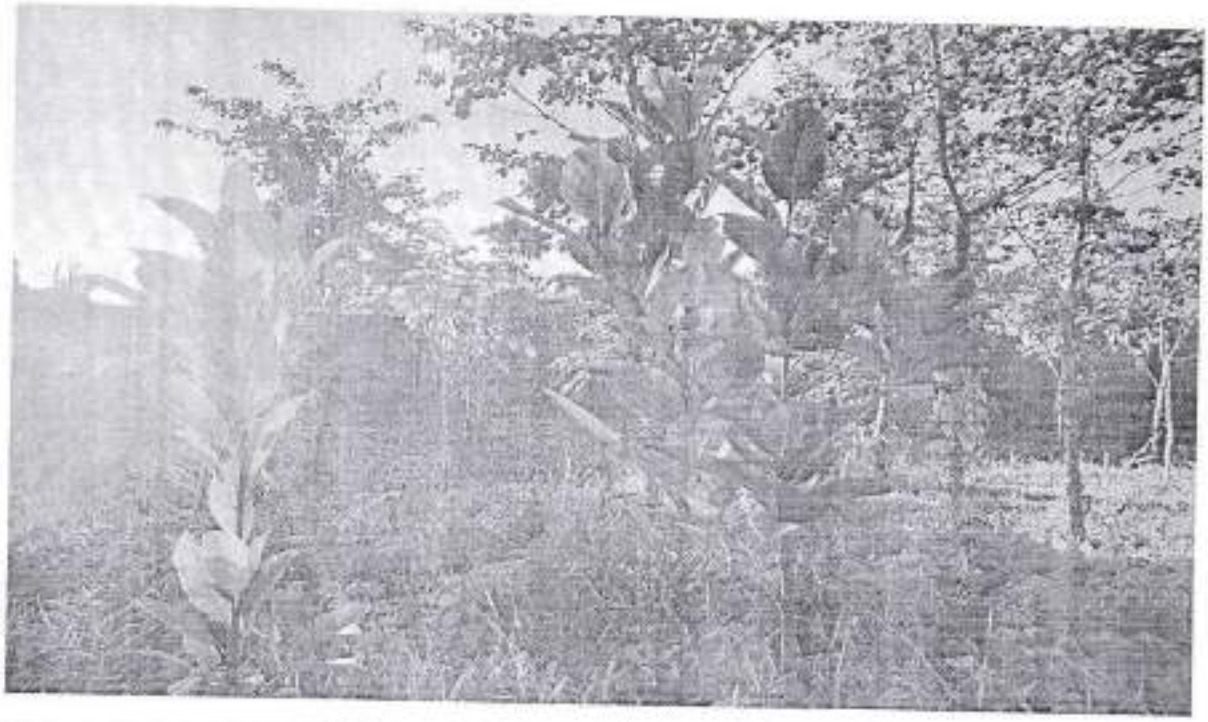

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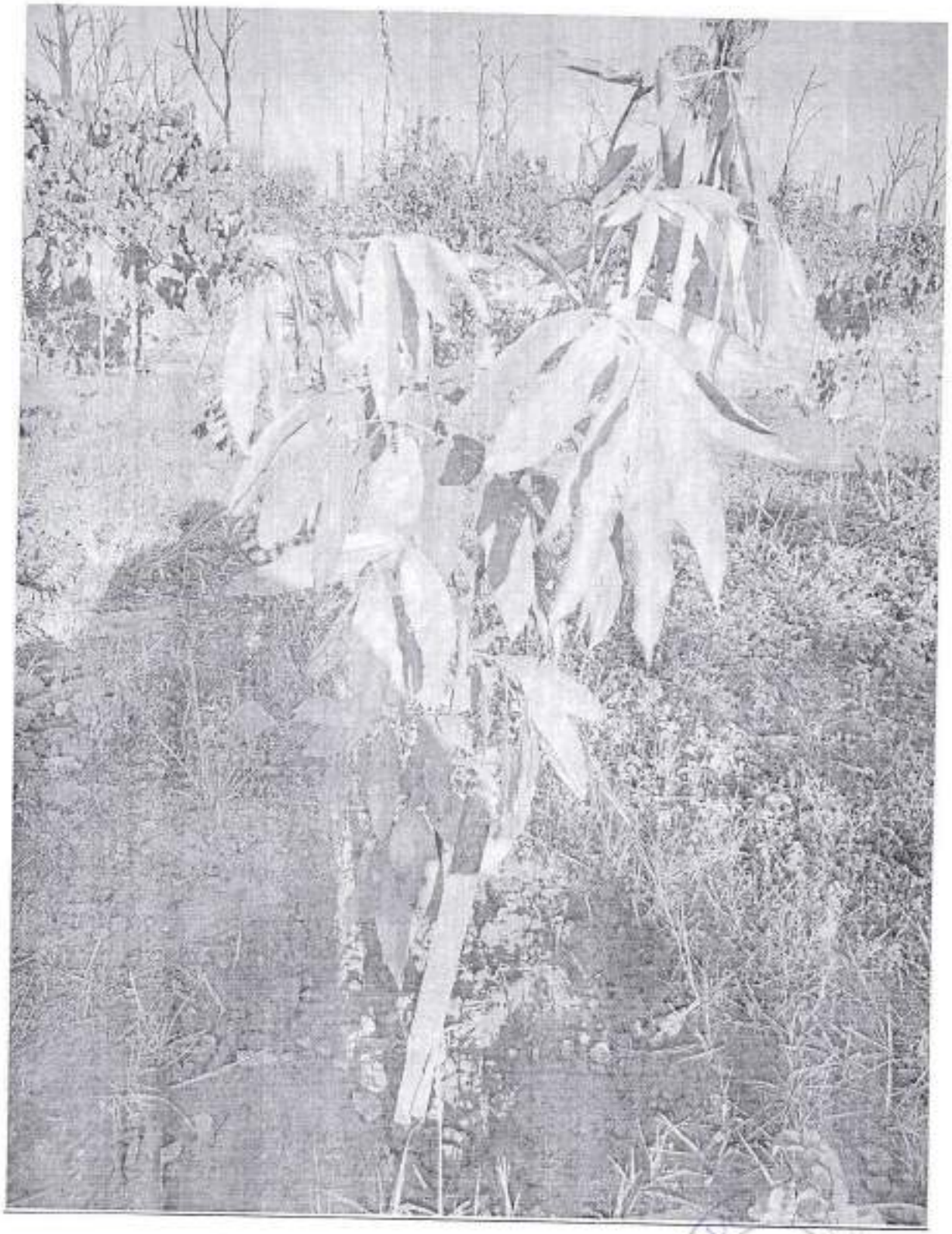
Mesua Ferrea



MEGHALAYA THANGSKAI LTD

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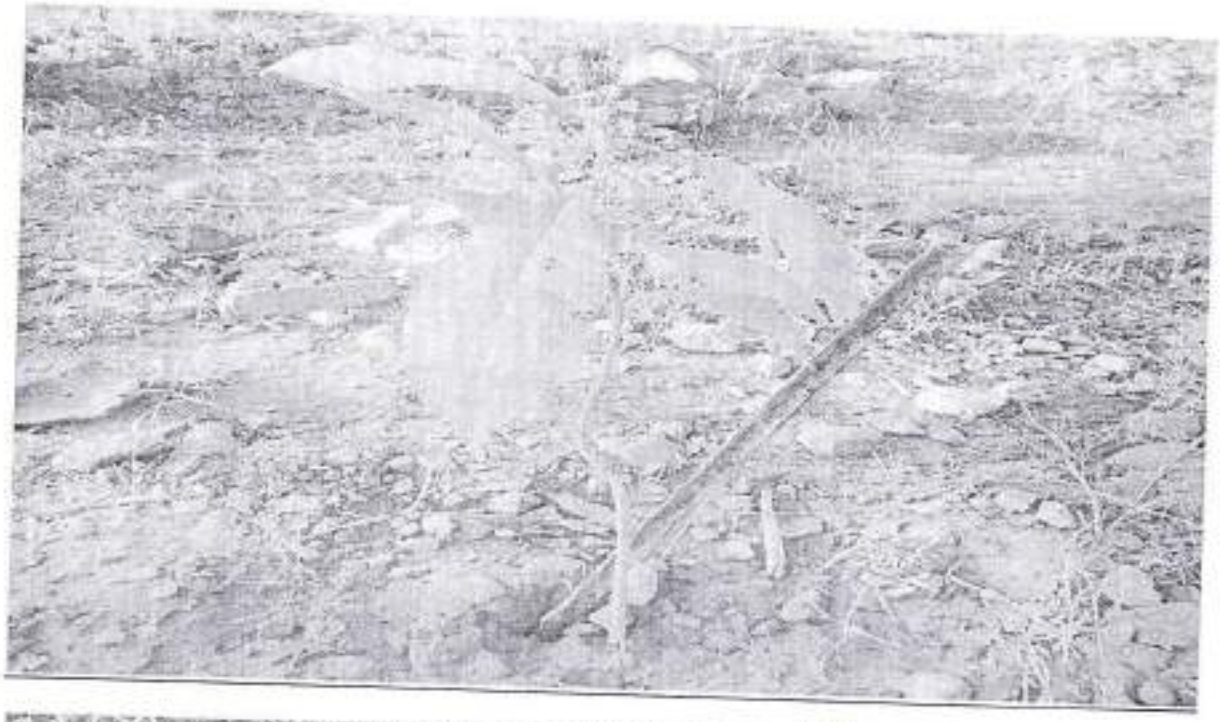
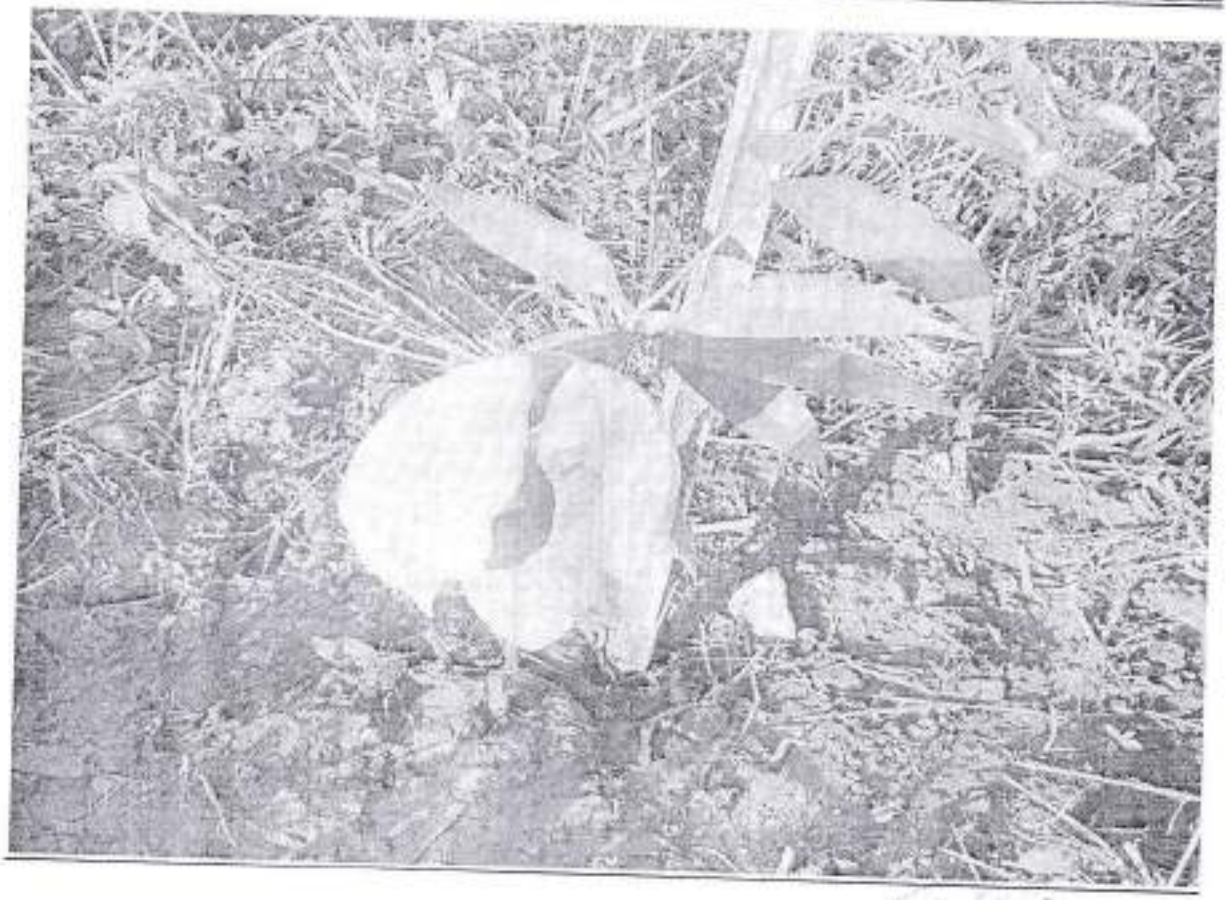
Annex- XXIII

MEGHALAYA TENANCY LTD
THANGSKAI

Annex- XXIII

Michelia Champaka





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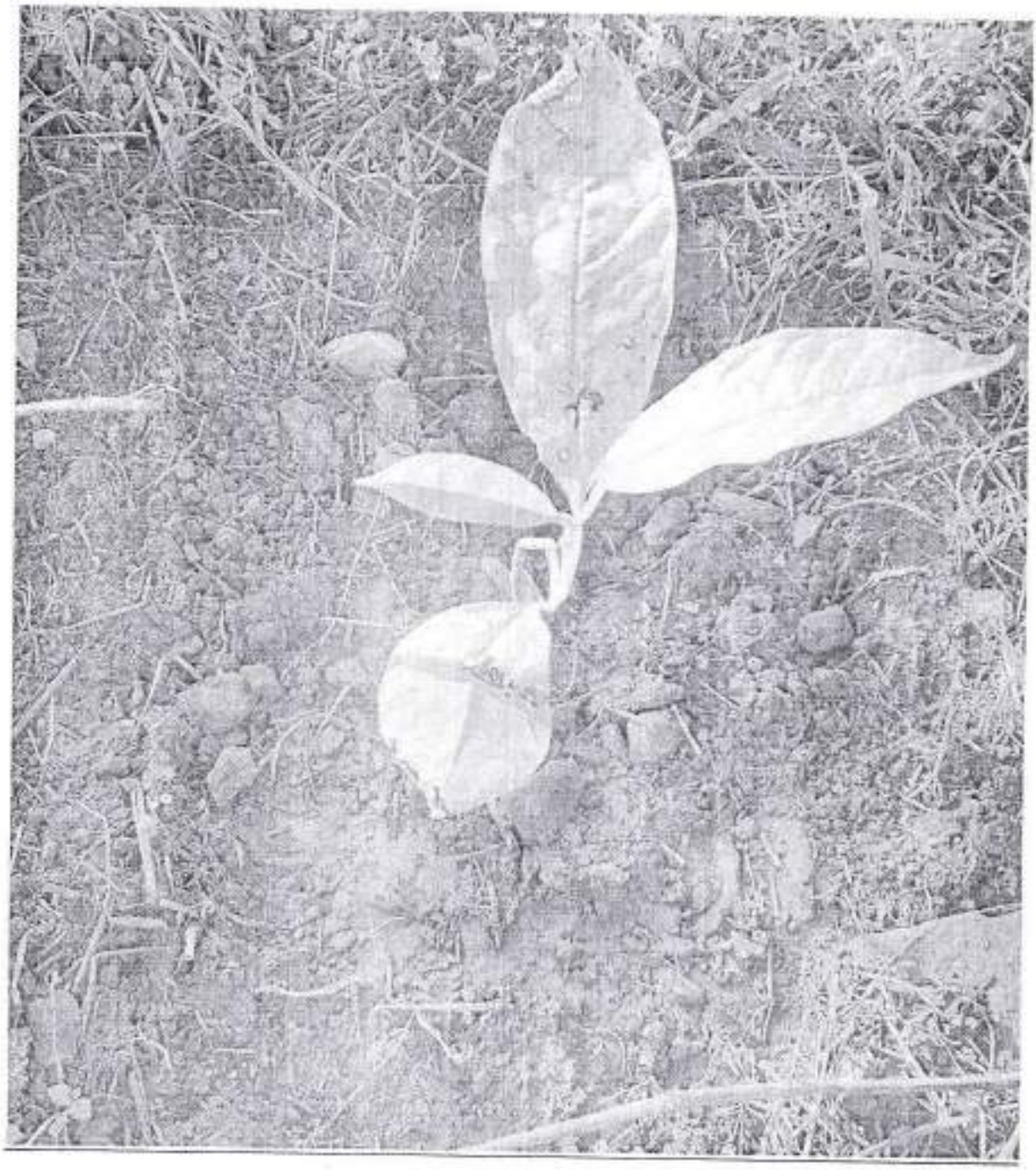

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