

Ref: CCCPL/ KAL/ENV/2025-26/EC Compliance /2nd Half

14/05/2026

To
The Director
Ministry of Environment, Forest and Climate Change
Regional Office (SZ),Kendriya Sadan,
4th Floor, E&F Wings, 17th Main Road
Koramangala, II Block, Bangalore – 560 034

Sub: Submission of Half Yearly Environmental Clearance Compliance report for the period **October-2025 to March-2026** (2nd Half) of Chettinad Cement Corporation Private Limited, Integrated Cement Plant (2.5 MTPA), Captive Power Plant (30 MW) and Captive Limestone Mine (4 MTPA) at Kallur Village, Chincholi Taluk, Kalaburagi District, Karnataka -reg

Ref: MoEF letter F.No. J-11011/399/2008-IA-II(I) Dated 18th June, 2010-reg

Dear Sir,

This is with reference to the above cited subject matter; we are here by submitting the Half yearly compliance report of Integrated Cement Plant (2.5 MTPA), Captive Power Plant (30 MW) and Captive Limestone Mine (4 MTPA) at Kallur Village, Chincholi Taluk, Kalaburagi District, Karnataka for the period **October'2025 to March'2026** 2nd Half.

Yours faithfully
For **Chettinad Cement Corporation Private Limited**



N Ravi Kumar
Unit Head

Copy to:

1. The Member Secretary, Karnataka State Pollution Control Board, # 49, 4th& 5th floor, Parisara Bhavana, Church Street, Bangalore – 560 001.
2. The Environmental officer,Karnataka State Pollution Control Board, Plot No 12/2, Sy.No 19/P, Mansafdar Layout, MG Road, Santraswadi, Kalaburagi- 585 101.

Chettinad Cement Corporation Private Limited

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HALF YEARLY COMPLIANCE REPORT FOR ENVIRONMENTAL CLEARANCES (PLANT AND MINES)

(October-2025 to March-2026)



S.No.	EC Number and Date
Plant & Mines	
1	F-No-J-11011-399-2008-IA-II dated 08 th June 2010
Plant	
2	F-No-J-11011-57-2011-IA-II dated 31 st January 2017 & 09 th March 2020
Mines	
3	F-No-J-11015-29-2011-IA-II dated 08 th March 2016

Chettinad Cement Corporation Pvt Ltd.

Unit: Kallur works

Chincholi Taluka, Chandapur S.O

Dist: Kalaburagi, Karnataka-585305

**CHETTINAD CEMENT CORPORATION PRIVATE LIMITED
(Plant & Mines)**

Sangem K & Kallur Villages, Chincholi Taluk, Kalaburagi District, Karnataka

Environmental Clearance (EC) Compliance Report (October'2025 to March'2026)

EC granted by MoEF vide Letter F.No.J-11011/399/2008-IA II (I) dated 18th Jun 2010 & 5th Mar 2012 for Integrated Cement Plant (2.5 million tons per annum), Captive Power Plant (1 x 30 MW) and Captive Limestone Mine (4.0 million tons per annum, Mining Lease Area 422.940 ha)

A. SPECIFIC CONDITIONS

S.No	Specific Condition	Compliance Status
i.	No construction work at the proposed project site should be started without obtaining prior clearances / approvals for the linked mining component from the Indian Bureau of Mines (IBM) and State Government of Karnataka. A copy of the mining lease approval from the Indian Bureau of Mines (IBM) and State Government of Karnataka should be submitted to the Ministry and its Regional Office at Bangalore before initiating any construction work at site related to mining.	Prior clearances / approvals had been obtained before commencing the construction work at Project Site, are as follows: a) Mining Lease from State Government of Karnataka b) Approved Mining Plan from Indian Bureau of Mines c) Consent for Establishment from Karnataka Pollution Control Board The copies of above the mentioned clearances had been submitted to Regional Office of MoEF at Bangalore and MoEF, Delhi.
ii.	Rehabilitation and Resettlement Plan for the project affected population including tribals, if applicable, should be implemented as per the policy of the state Government in consultation with the State Govt. of Karnataka. Compensation paid in any case should not be less than the norms prescribed under the National Resettlement and Rehabilitation Policy, 2007.	There is no Rehabilitation and Resettlement involved in this project. Hence, this condition is not applicable.
iii.	Permission and Recommendations of the State Forest Department regarding impact of Cement Plant and Mining activities on the surrounding Chincholi reserve forest should be obtained and implemented. Further, conservation plan for the conservation of wild fauna in consultation with the State Forest	Conservation Plan for wild fauna has been submitted to State Forest Department, vide our letter dated 7 th Jul 2011, subsequently we have obtained permission from PCCF linked with Wild Life conservation plan with budget of Rs. 10 Crores from State Forest Dept for the span of 20 years and separate plan with budget of 56.80 Lakhs towards afforestation

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	Department should be prepared and implemented.	and vegetation improvement in Unclassified forest for 5 Years + Rs. 50.00 Lakhs towards green belt development between WLS & CCCPL, Subsequently we have paid a payment an amount of Rs.43.096 lakhs towards conservation plan during the period of April-2025 to March-2026 and so far i.e 2012 to 2026. we have paid an amount of Rs. 588.209 Lakhs towards implementation of above said plans.
iv.	The gaseous and particulate matter emissions from various units shall conform to the standards prescribed by the Karnataka Pollution Control Board. At no time particulate emissions from the Cement Plant including Kiln, Coal Mill, Cement Mill Cooler and Captive Power Plant (CPP) should not exceed 50 mg/Nm ³ . Continuous on-line monitors for particulate emissions should be installed. Pyritess, Fluoride and Hg emissions should also be monitored. Interlocking facility should be provided in the pollution control equipment so that in the event of the pollution control equipment not working the respective unit (s) is shut down automatically.	Efficient Bag House/ESP/Pulse Jet Bag Filters had been provided for the stacks/transfer points to control the emission levels below the prescribed standards. Continuous Online Monitors for Particulate Matter have been provided for the Raw Mill/Kiln Stack, Clinker Cooler Stack, Coal Mill Stack, Cement Mill Stack and Captive Power Plant (CPP) Boiler Stack. The photographs of pollution control equipment, continuous Emission monitoring and are enclosed as Annexure-2. Third party monthly stack monitoring report enclosed as Annexure-3. As there will not be any Pyritess and Fluoride emissions from Cement and Captive Power Plant, monitoring of these parameters is not required. However, Hg emissions will be monitored. Interlocking facility had been provided in the pollution control equipment so that in the event of the pollution control equipment not working, the respective unit (s) gets shut down automatically.
v.	Possibilities should be explored for the proper and full utilization of gases generated from the Kiln in Waste Heat Recovery Boiler (WHRB) and a feasibility report should be prepared and submitted to the Ministry and its Regional Office at Bangalore within 3	Waste Heat Recovery Boiler (WHRB) with the capacity of 27 MW (Line-I 7 MW + Line-II 20 MW) is installed to utilize the waste gases heat generated from the kiln. The photographs of the same is enclosed as Annexure-4.

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	months from the date of issue of the letter.	
vi.	Data on Ambient Air Quality (PM ₁₀ , SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bangalore and the State Pollution Control Board/ Central Pollution Control Board once in six months. The critical parameters such as PM ₁₀ , NO _x in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer should be monitored periodically. Further, quality of discharged water should also be monitored [(TDS, DO, PH) and total suspended solids (TSS)]. The monitored data should be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the company in public domain.	Ambient Air Quality Data (PM₁₀, PM_{2.5}, SO₂, NO_x) are being monitored covering the core & buffer zones and reports are being submitted to the MoEF &CC, Regional Office, Bangalore, KSPCB & CPCB, once in six months. The monitoring report of AAQ is enclosed as Annexure-5. As the nearest habitation from the present Mine working location is Kallur Village and is 1500 m away, there will be no adverse effect due to blasting in the mine and therefore peak particle velocities are not being monitored. However, when the mine workings reach 500 m to the boundary, the monitoring of peak particle velocity will be commenced and carried out regularly. As per the numerical estimation done, the peak particle velocity calculated at a distance of 500 m is only 2.5 to 3.0 mm/sec, which is within the permissible limits prescribed by DGMS. There is no discharge of any waste water from the premises. However, the quality of treated water is being monitored for TDS, TSS & pH. The monitored data are has been uploading regularly on the OCEMS and KSPCB portal and also displayed on a display board near the factory main gate. The treated waste water report of STP & ETP is enclosed as Annexure-6.
vii.	The company should install low NO _x burner with Kiln/Calcliner for control of NO _x emissions below 400 mg/Nm ³ .	High efficiency low NO _x burner had been provided for the Kiln to control NO _x emissions below the 800 mg/Nm ³ as per the MoEFCC notification GSR 497 (E) Dt 10.05.2016 applicable for Rotary kiln ILC technology .
viii.	Secondary fugitive emissions should be controlled within the prescribed limits and regularly monitored. Guidelines / Code of Practice issued by the CPCB in	Secondary Fugitive Emissions are being controlled by implementing appropriate control measures as indicated below. Concrete roads for truck movement

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	this regard should be followed.	a. Closed trucks/bulkers/trucks covered with tarpaulin for transporting materials b. Closed storage for Gypsum and Coal c. Closed silos for Fly Ash, Cement & Clinker d. Water Sprinkling arrangements e. Bag Filters at Transfer Points f. Good maintenance of equipment g. Greenbelt has been developed in phased manner. The photograph is enclosed as Annexure-7.
ix.	The National Ambient Air Quality Emission Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 should be followed.	The National Ambient Air Quality Standards issued by the Ministry vide G.S.R. No. 826(E) dated 16th November, 2009 are being followed. Ambient Air Quality (AAQ) monitoring is being conducted on a monthly basis at 9 Air Quality Monitoring Station locations in and around the plant, covering the surrounding 5 villages.
x.	Efforts should be made to reduce impact of the transport of the raw materials and end products on the surrounding environment including agricultural land. All the raw materials including Fly Ash should be transported in the closed containers only and should not be overloaded. Vehicular emissions should be regularly monitored.	All the raw materials are being transported after covering the same with tarpaulin. Fly Ash from other nearby Thermal Power Plant are transported in bulkers only. No overloading permitted and Vehicular emissions is also being monitored.
xi.	Fly ash should be utilized as per Fly Ash Notification, 1999 subsequently amended in 2003. Fly Ash should be stored in ash silo and 100% used in the cement manufacturing.	Fly Ash is being stored in Silo and 100% used in the Portland Pozzolana Cement (PPC) manufacturing.
xii.	The company should make the efforts to utilize the high calorific hazardous waste in the Cement Kiln and necessary provisions should be made accordingly. The company should keep the record of the waste utilized and shall submit the details to ministry's Regional Office at Bangalore, CPCB and SPCB.	Latest and high efficiency multi channel burner has been provided to handle the high calorific hazardous waste in the Cement Kiln and necessary permissions are obtained from CPCB and KSPCB for co-processing of hazardous waste. Also the records were being maintained for the utilized hazardous waste and the details are submitting to MoEF & CC Regional Office, Bangalore, CPCB and KSPCB.

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xiii.	Rainwater harvesting measures should be adopted for the augmentation of ground water at Cement Plant, Colony including check dams at main site. The company must also collect rain water in the mined out pits of Captive Limestone Mine and use the same water for the various activities of the project to conserve fresh water and reduce the water requirement from the ground water. An action plan should be submitted to Ministry's Regional Office at Bangalore within 3 months from date of issue of this letter. Efforts should be made to make use of rain water harvested. If needed, capacity of the reservoir should be enhanced to meet the maximum water requirement. Only balance water requirement should be met from other sources.	Rainwater harvesting measures such as catch drains/garland drains, gully plugs and ponds provided to collect rainwater and separate solid particles. The rainwater collected in the ponds helps to augment ground water. The photographs enclosed as Annexure-8. The rain water collected is being used for various activities like dust suppression, greenbelt development to conserve fresh water and reduce the water requirement from the ground water. The mined out pit will also be used to collect rainwater, once the Limestone is fully excavated from the pit. An action plan to collect & use rain water and conserve water submitted to Regional Office of MoEF at Bangalore. If needed, capacity of the reservoir will be enhanced to meet the maximum water requirement. Only balance water requirement will be met from other sources.
xiv.	Total requirement of the ground water from bore wells should not exceed 900 m³ /day. The water stored in the artificial reservoir made in the mine pit should be used maximum to reduce ground water consumption. No effluent should be discharged from the mine to any water body or nearby river.	The groundwater drawal from bore wells for the existing operations will not exceed 900 m³/day. At present, the actual groundwater withdrawal is maintained below 300 m³/day. The water stored in the pond at the mine pit being used to a maximum extent to reduce ground water consumption. No effluent is getting discharged from the Mine to any water body or nearby river as there is no industrial effluent generation and the domestic effluent is treated in septic tank followed by dispersion trench.
xv.	Detailed hydrological study should be carried out since mining activities are likely to intercept ground water and implementation of recommendations of the detailed hydrological study should be ensured.	Detailed hydro-geological study had been carried out. The recommendations of hydro-geological study are under implementation. The hydrogeological report is enclosed as Annexure-9.
xvi.	Permission should be obtained for	Ground water permission has been obtained

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	drawl of ground water from the State Ground Water Board/Central Ground Water Authority as may be applicable in this case.	vide letter no. DE001145347012 on dated 22.12.2022 from Karnataka Ground Water Authority. The ground water approval is enclosed as Annexure-10 .
xvii.	Top soil, if any, should be stacked with proper slope at earmarked site(s) only with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	The top soil viz., Black Cotton Soil (BCS) is being used for formation of bunds for the rainwater harvesting ponds and also for the formation of bunds along the boundary of the Mining Lease area and the safety zone. The balance BCS will be stacked with proper slope at earmarked site only with adequate measures like retention wall, gully plugs and trenches. The balance BCS available will be used for reclaiming mined out pits. The unclaimed pits will be left as rainwater harvesting pits.
xviii.	The project proponent should ensure that no natural water course should be obstructed due to any Mining and Plant operations. The company should make the plan for protection of the natural water course passing through the plant and mine area premises and submit to the Ministry's Regional Office at Bangalore.	No natural water course will be obstructed due to any Mining and Plant operations. The protection Plan of natural water course includes development of safety barrier of 50 m width along the sides of the seasonal nallah with a bund erected with top soil and development of greenbelt in the safety barrier.
xix.	The inter burden and other waste generated should be stacked at earmarked dump site(s) only and should not be kept active for long period. The total height of the dumps should not exceed 30 m in three terraces of 10 m each and the overall slope of the dump should be maintained to 28°. The inter burden dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry Of Environment & Forests and its Regional Office, Bangalore on six monthly basis.	The generation of inter-burden or other wastes from the mines we have stored separately. In addition to this the balance top soil viz., Black Cotton Soil (BCS), after using for formation of bunds of rainwater harvesting ponds, the safety barriers and bunds along the boundary of the Mining Lease area, will be stacked at specified location adhering to the conditions stipulated by MoEF. The total height of the dumps will not exceed 30 m in three terraces of 10 m each and the overall slope of the dump would be maintained at 38°C. The slopes of the bunds of rainwater harvesting ponds, boundary and the safety barrier will be planted with native species. The balance BCS available, will be used for reclaiming mined out pits. The reclaimed pits

S.No	Specific Condition	Compliance Status
		will be left as rainwater harvesting pits. The reclaimed portion of the mined out pit, will be vegetated and the monitoring & management will be continued till the vegetation becomes self-sustaining. Compliance status is being submitted to the MoEF Regional office, Bangalore on six monthly basis.
xx.	The void left unfilled should be converted into water body. The higher benches of excavated void /mining pit should be terraced and plantation done to stabilize the slopes. The slope of higher benches should be made gentler for easy accessibility by local people to use the water body. Peripheral fencing should be carried out along the excavated area.	The void left unfilled will be finally converted into water body. At the final stage the top benches will be re-graded to form a gentle slope where plantation will also be undertaken. Peripheral fencing will be carried out along the excavated area. Considering the safety of the people, they will not be allowed inside the mines area. As a part of CSR initiative, the supply of water to the nearby villages will be taken up.
xxi.	Catch drains and siltation ponds of appropriate size should be constructed for the working pit, inter burden and mineral dumps to arrest flow of silt and sediment. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted, particularly after monsoon, and maintained properly.	The generation of inter-burden or other wastes from the mines we have stored separately. The mineral viz., Limestone mined will be directly sent to factory and no storage of the same is envisaged. For collecting the rainwater, catch drains of size 0.7m by 0.8 m size, to arrest flow of silt have been provided to prevent solid soil particles reaching rainwater harvesting ponds. The water collected will be utilized for watering the mine area, roads, green belt development etc. The trenches/drains will be regularly desilted, particularly after monsoon, and maintained properly. The silt collected is used in the afforestation works.
xxii.	Garland drain of appropriate size, gradient and length should be constructed for both mine pit and inter burden dumps and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 year data) and	The generation of inter-burden or other wastes from the mines we have stored separately Garland drain of 0.7m width, 0.8m depth with a slope of 1 in 150 have been constructed, which will be extended year after year for the

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	maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.	mines and for the soil stacks. 3 ponds with a total combined capacity of 4,50,000 m³ interconnected by garland drains already have been provided in the Mines area to serve as rainwater harvesting structure. The sump at the bottom of the pit is used to collect the rainwater falling in the pit. The rainwater falling outside the Mine Pit will be directed to rainwater harvesting ponds through the catch drains/garland drains. Thus, adequate rainwater collection facility is available. Pit bottom sump has been provided with adequate retention capacity to allow proper setting of silt material. Since this being a Limestone mine, the Lime particles will act as coagulants for quick settling of particles. Sedimentation pits have been constructed at the corners of the garland drains and desilted at regular intervals.
xxiii.	Dimension of the retaining wall at the toe of inter burden dumps and inter burden benches within the mine to check run-off and should be based on the rain fall data.	The generation of inter-burden or other wastes from the mines we have stored separately. After using the top soil viz., Black Cotton Soil (BCS) for various bund formation, the balance will be stacked at specified location. This top soil stack will be provided with toe wall / rubble walls of 1.50 m height and 1.50 m width.
xxiv.	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers at suitable locations by the project proponent in and around project area in consultation with Regional Director, Central Ground Water Board. The frequency of monitoring should be four times a year-pre-monsoon (April/May), monsoon (August), post-monsoon (November), and winter (January). Data thus collected should be sent at regular intervals to Ministry of	Ground water quality and level are being monitored. The data collected, four times a year as stipulated, are being submitted to Ministry of Environment and Forests & Climate Change and its Regional Office at Bangalore, Central Ground Water Authority and State Ground Water Board one in six months. Also, piezometers have been installed. The data on ground water level is being submitted to Ministry of Environment and Forests & Climate Change and its Regional Office at Bangalore, Central Ground Water Authority

S.No	Specific Condition	Compliance Status
	Environment and Forests and its Regional Office at Bangalore, Central Ground water Authority and State Ground Water Board.	and State Ground Water Board once in six months. The photograph and ground water quality report is enclosed as Annexure-11 .
xxv.	Wet drilling sequential and controlled blasting method and provision for the control air emissions during blasting using dust collectors etc. should be used. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Wet drilling is practiced. The blast holes are fired with Electrical Detonators adopting Trunk Line Detonation system. This system allows only one hole i.e. 80 kg, a fraction of the total explosives to blast at a point of time which minimizes boulder generation, frequent toe occurrence, fly rock generation. The charge per delay in the mine will never exceed 60 kg. As per the numerical estimation done with this charge per delay, the peak particle velocity calculated at a distance of 500m is only 2.5 to 3.0 mm/sec, which is within the permissible limits prescribed by DGMS.
xxvi.	Bench height, width and slope for individual bench should be properly assessed and implemented. Adequate measures should be adopted to stabilize the slope before abandonment. The fencing around the reservoir should be provided to prevent accidents.	The bench height for the soil is maintained at 1.7m and that of Limestone bench is 9m each. Width is about 30 m with a working pit slope angle of around 38°. Adequate measures viz., gentle slope, terracing and plantation will be ensured to stabilize the Slope before abandonment. Fencing around the rainwater harvesting reservoirs will be provided to prevent accidents.
xxvii.	Action plan for the mining, management of over burden (removal, storage, disposal etc.), reclamation of the mined out area and mine closure should be submitted to the Ministry and its Regional Office at Bangalore.	The details of mining and handling of top soil viz., Black Cotton Soil (BCS), as per Mining Plan has been included in the EIA Report submitted to the Ministry and its Regional Office at Bangalore. The final mine closure plan will be submitted, 2 years in advance of mine closure. The average thickness of BCS is 1.7 m. The BCS removed will be used for forming bunds. The balance BCS, after using for formation of bunds of rainwater harvesting ponds, the safety barriers and bunds along the boundary

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		of the Mining Lease area, will be stacked at specified location with adequate control measures. The total height of the dumps will not exceed 30 m in three terraces of 10 m each and the overall slope of the dump would be maintained at 38°C. The slopes of the bunds of rainwater harvesting ponds, boundary and the safety zone will be planted with native species. The balance BCS available will be used for reclaiming mined out pits. The unreclaimed pits will be left as rainwater harvesting pits.
xxviii.	As proposed, greenbelt should be developed in 48 ha in plant & township and 10 ha around the mining area as per the CPCB Guidelines in consultation with DFO.	In consultation with DFO, the greenbelt has been developed over an area of 65.95 ha by planting 97886 saplings in the Plant & township area and over an area of 43.11 ha by planting 68279 saplings in the Mines area, following the guidelines of CPCB.
xxix.	All the recommendations of the Corporate Responsibility for Environment Protection (CREP) for the Cement plants should be strictly followed.	CREP guidelines are complied with.
xxx.	Vehicular emissions should be kept under control and regularly monitored. Measures should be taken for maintenance of vehicles used in mining operation and in transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	The vehicles with Pollution Under Control Certificate only being permitted inside the mining area. Proper maintenance of vehicles also being ensured. Use of tarpaulin to cover the material to be transported has been made mandatory. No overloading of materials will be permitted. The sample vehicle details are enclosed as Annexure-12 .
xxxi.	Risk and Disaster Management plan along with the mitigation measures should be prepared and a copy submitted to the Ministry's Regional Office at Bangalore, KPCB and CPCB within 3 months of issue of environment clearance letter.	Details of Risk and Disaster Management Plan along with the mitigation measures is enclosed as Annexure-13 .
xxxii.	Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Final Mine Closure Plan along with details of Corpus Fund will be submitted to the Ministry of Environment, Forest & Climate Change, 5 years in advance of final mine closure for approval.

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xxxiii.	The company should comply with the commitments made during public hearing held on 30 th December, 2009 and a separate budget for implementing the same should be allocated and information submitted to the Ministry's Regional office at Bangalore.	The commitments made in Public Hearing are implemented under CSR, still we are continuing our efforts under CSR activities i.e Health, Education, Sanitations, Health, Skill Development and infrastructure (<i>copy enclosed as Annexure-14</i>)
xxxiv.	At least 5% of the total cost of the project should be earmarked towards the Corporate Social Responsibility and item-wise details along with time bound action plan should be prepared and submitted to the Ministry's Regional Officer at Bangalore. Implementation of such program should be ensured accordingly in a time bound manner.	As per company's act 2013, at least 2% of the average net profits of the company spent on CSR and the same is being complied. The details of CSR activities carried out during October-24 to March-25 are submitted along with this compliance report <i>is enclosed as Annexure-14</i> .
xxxv.	Provision should be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP. Safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Necessary infrastructure facilities has been provided for housing of labour within the site.

B. GENERAL CONDITIONS

S.No	General Condition	Compliance Status
i.	The project authority shall adhere to the stipulations made by Karnataka State Pollution Control Board (KSPCB) and the State Government.	Stipulations of Karnataka State Pollution Control Board (KSPCB)/State Government are complied with.
ii.	No further expansion or modernization of the plant shall be carried out without prior approval of this Ministry	No further expansion or modernization of the plant will be carried out without prior approval of the Ministry.
iii.	Atleast four ambient air quality monitoring stations shall be installed in the downward wind direction as well as where maximum ground level concentration of PM ₁₀ , SO ₂ and NO _x are anticipated in consultation with the SPCB. Data on ambient air quality and stack emissions shall be regularly submitted to this Ministry including its	Ambient Air Quality (AAQ) monitoring is being conducted at 9 Air Quality Monitoring Station locations in and around the plant, covering the surrounding 5 villages. Data of ambient air quality and stack emissions being regularly submitted to MoEF & CC, Delhi, MoEF& CC Regional Office and SPCB and CPCB, once in six months. Report

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	Regional Office and SPCB and CPCB once in six months	enclosed as Annexure-3&5.
iv.	Industrial Waste water shall be collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December 1993 or as amended from time to time. The treated water shall be utilized for plantation purpose.	The industrial waste water has been collected and treated at ETP and the quality of treated effluent will conform to standards prescribed. Treated water has been using for cement mill purpose.
v.	The overall noise levels in and around the plant shall be kept well within the standards (85dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc., on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under Environmental Protection Act 1986 viz., 75 dBA (day time) and 70 dBA (night time)	For all sources of noise generation, control measures viz., acoustic hoods/silencers/ enclosures provided. The overall noise levels in and around the plant being kept well within the standards. Ambient Noise level is being monitored at 7 stations. These ambient noise levels conform to the standards prescribed 75 dBA (day time) and 70 dBA (night time), <i>the report enclosed as Annexure-15.</i>
vi.	Proper housekeeping and adequate occupational health programme shall be taken up. Occupational health surveillance programme shall be done on a regular basis and records maintained properly atleast for 30 - 40 years. The programme shall include lung function and sputum analysis test once in six months. Sufficient preventive measures shall be adopted to avoid direct exposure to dust	Good housekeeping is being ensured. Occupational health surveillance programme as suggested is being carried out on a regular basis and the records are also being maintained. Sufficient preventive measures viz., Dust mask provided to employees to avoid direct exposure to dust apart from taking precautions and ensuring measures to control dust.
vii.	The company shall undertake eco development measures including community welfare measures in the project area.	Eco-development measures like Rain water harvesting and Community development measures are being carried out attached as Annexure-5&14.
viii.	The project proponent shall also comply with all the environmental protection measures and safeguards recommended in the EIA/EMP	The environmental protection measures and safeguards provided as recommended in EIA/EMP are being implemented.
ix.	A separate environmental management cell with full fledged laboratory facilities to carry out various management and monitoring functions shall be set up under the control of a senior executive	Separate environmental management cell have been put in place, regular Environment monitoring and analysis of samples have been carried out by MoEF recognized laboratory.

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x.	Adequate fund shall be allocated to implement the conditions stipulated by the Ministry of Environment and Forest as well as the State Government. Time bound implementation schedule for implementing all the conditions stipulated herein shall be submitted. The funds so provided shall not be diverted for any other purpose	Capital investment was made and implemented as per the conditions stipulated by the Ministry of Environment and Forest as well as the State Government and separate environment budget has been allocated to address the recurring expenses of environment management. The EMP cost is enclosed as Annexure-16 .
xi.	The project proponent shall also submit six monthly reports on the status of compliance of stipulated EC conditions including results of monitored data (both in hard copies as well as by emails) to the respective Regional Office of MoEF and respective zonal office of CPCB and KSPCB.	Six monthly reports on compliance of stipulated EC conditions, including results of monitored data are being submitted by emails to the Regional Office of MoEF & CC, Bangalore and Hard & Soft copies to CPCB, Bangalore and KSPCB.
xii.	The Regional Office of this Ministry /CPCB/KPCB shall monitor the stipulated conditions. The project authorities shall extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/information /monitoring reports. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	Full cooperation will be extended to the officer (s) of the Regional Office by furnishing the requisite data/information /monitoring reports. Six monthly compliance report and monitored data has been submitting to the Regional Office of MoEF & CC, CPCB and KSPCB regularly.
xiii.	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work	Funds have been invested internally accrued, so there is no need of financial approval of project by any authority and the financial closure. The date of commencement of ground work had been communicated to MoEF & CC, Delhi & MoEF & CC, Bengaluru.
xiv.	No change in the mining technology and scope of working shall be made without prior approval of the Ministry of Environment & Forests. No change in the calendar plan including excavation, quantum of limestone and waste shall be made.	There will be no changes in the mining technology and scope of working without prior approval of the MoEF & CC. Also, no changes in the calendar plan including excavation, quantum of limestone and waste will be made.
xv.	Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM etc., shall be provided	Noise Control Measures has been strictly adhered, Silencers/barriers/acoustic enclosures are provided to control noise levels in the work environment. Workers

S.No	General Condition	Compliance Status
	with ear plugs/muffs	engaged in operations have been provided with ear plugs/muffs.
xvi.	Industrial waste water from workshop and waste water from mine shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) date 19 th May 1993 and 31 st December 1993 or an amended from time to time, Oil and grease trap shall be installed before discharge of workshop effluents.	No waste water is getting generated from the existing Mine. The vehicles and the mining machinery used for the existing mining operations are maintained by the mining contractor at the workshop in Chincholi. No wastewater is being generated from mines. However, a Common Workshop will be provided with oil & grease trap in the Plant premises, adjacent to the Mining Lease Area and the same workshop will cater the requirements of Mine also.
xvii.	Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure of dust and take corrective measures ,if needed	Personal Protective Equipments (PPE's) were provided to the Personnel working in dusty areas. Daily PEP talks and Training on safety and health aspects have also been given on regular basis, Occupational health surveillance program will be undertaken periodically to find out whether any impact due to exposure of dust and Corrective measures will be taken, if needed.
xviii.	The project authorities shall inform to the Regional Office regarding date of final closures and final approval of the project by the concerned authorities and the date of start of land development work	As internally accrued funds had been invested, there was no need of financial approval of project by any authority and the financial closure. The date of commencement of ground work had been communicated to MoEF, New Delhi & MoEF, Bengaluru.
xix.	A copy of clearance letter shall be marked to the concerned Panchayat /local NGO, if any from whom suggestion /representation, if any was received while processing the proposal.	Environmental Clearance copy sent to Gram Panchayat of Miryana and Anwar. The copy enclosed as Annexure-17 .
xx.	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parishad /Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions /representations if any were received while processing the proposal. The clearance letter shall also put up on the website of the company by the proponent.	Environmental Clearance copy sent to Gram Panchayat of Miryana and Anwar. The same has been put up in our company website.
xxi.	The project authorities shall advertise	Advertisement was published in Kannada

S.No	General Condition	Compliance Status
	atleast in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned within 7 days of the issue of clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with its Karnataka State Pollution Control Board and also at website of the Ministry of Environment and Forests at "http://enfor.nic.in and a copy of the same shall be forwarded to the Regional Office of this Ministry.	Prabha & New Indian Express, Bangalore on 26 th Jun 2010 & Kannada Prabha, Gulbarga division on 27 th Jun 2010 that the project has been accorded environmental clearance and a copy of the clearance letter is available with its Karnataka State Pollution Control Board and also at website of the Ministry of Environment and Forests at "http://enfor.nic.in. Copies of the advertisement submitted to MoEF Regional Office, Bangalore vide our letter CHETTINAD CEMENT/MoEF/KAL.PROJ/538 dated 06.07.2010. The copy is enclosed as Annexure-18.
xxii.	The environment statement for each financial year ending 31 st March in Form V is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under Environmental (Protection) Rules 1986 as amended subsequently, shall also be put on the website of the company along with status of compliance of EC conditions and shall also be sent to the respective regional office of MoEF by email.	Environment statement for the year 2024-25 in Form-V submitted vide our letter no CCCPL/KW/Envi.Statement/2024-2025 dated 23/09/2025 and CCCPL/ KW / Envi.Statement/Mines /2024-25 dated 23/09/2025 to KSPCB & MoEF Regional Office, Bangalore and the same also uploaded in the company website. The status of compliance of EC conditions has also been uploaded in the website of our company.

OTHER CONDITIONS

S No	Other Condition	Compliance Status
10	The Ministry or any other competent authority may stipulate any further condition(s) on receiving reports from the project authorities. The above conditions shall be monitored by the Regional Office of this Ministry.	Guidelines noted and the additional conditions stipulated will also be complied with.
11	The Ministry may revoke or suspend the clearance if implementation of any of the above conditions is not satisfactory.	Guidelines noted.
12	Any other conditions or alteration in the above conditions shall have to be implemented by the project authorities in a time bound manner	Guidelines noted. Any other condition or alteration in any condition will also be implemented as applicable.
13	Any appeal against this environmental clearance shall lie with the National	Noted.

S No	Other Condition	Compliance Status
	Environment Appellate Authority, Second Floor, Trikoot-I, Bhikaji Cama Place, New Delhi-110066, if preferred within a period of 30 days as prescribed under Section 11 of the National Environment Appellate Authority Act, 1997	
14	The above conditions shall be enforced, inter-alia under the provisions of the Water (Prevention and Control of Pollution) Act, 1974 the Air (Prevention and Control of Pollution) Act, 1981 the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.	Noted.

Annexure-2

Reverse Air Bag House:



Coal Mill Bag House:



Annexure-2

Electro Static Precipitator (ESP)



Cement Mill Bag House



Annexure-2

Closed Silo and Closed Belt Conveyors:



Annexure-2



Annexure-2

Online Continuous Emission Monitoring System

Line-1 RABH PM, SO_x&NO_x



Annexure-2

Line-1 Coal Mill



Line-1 Cooler



Annexure-2

Line-1 Cement Mill



Line-2 Cement Mill



Annexure-2

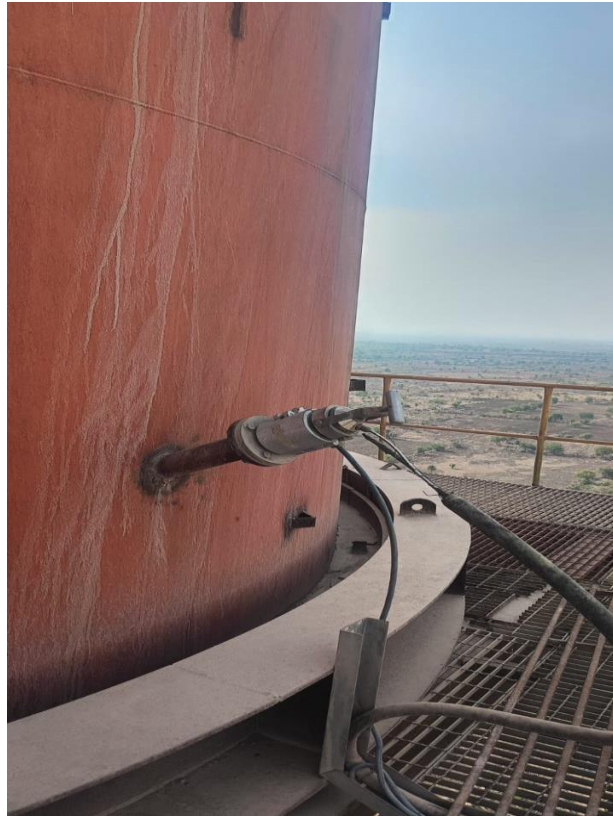
Line-2 Cooler Stack



Line-2 RABH PM, SOx and NOx



Annexure-2



Line-2 Coal Mill Stack



Annexure-2

CPP PM, SO_x & NO_x



Chettinad Cement Corporation Private Limited (Kallur Works)

Sangam K Village ,Kalaburagi District, Karnataka State

Stack Emission Monotoring- Consolidated Report (October-25 to March-2026)

S.No	Stack Connected to	Parameter	UoM	Norms	Min	Max	Avg
1	Raw/Kiln Line-1	Particulate Matter	mg/Nm ³	30	15.4	21.5	18.1
2	Raw/Kiln Line-2				20.2	23.6	21.5
3	Cooler Line-1				12.8	20.4	15.8
4	Cooler Line-2				14.8	18.5	16.5
5	Coal Mill Line-1				14.4	22.0	16.8
6	Coal Mill Line-2				16.2	20.9	19.1
7	Cement Mill-1				13.8	17.5	15.5
8	Cement Mill-2				15.1	21.9	17.9
9	Captive Power Plant - Boiler	Particulate Matter	mg/Nm ³	50	18.8	27.8	23.3

S.No	Stack Connected to	Parameter	UoM	Norms	Min	Max	Avg
1	Raw/Kiln Line-1	SO ₂	mg/Nm ³	100	7.4	18.3	12.1
2	Raw/Kiln Line-2			100	13.7	27.4	19.8
3	Captive Power Plant- Boiler			600	423.0	434.0	428.5

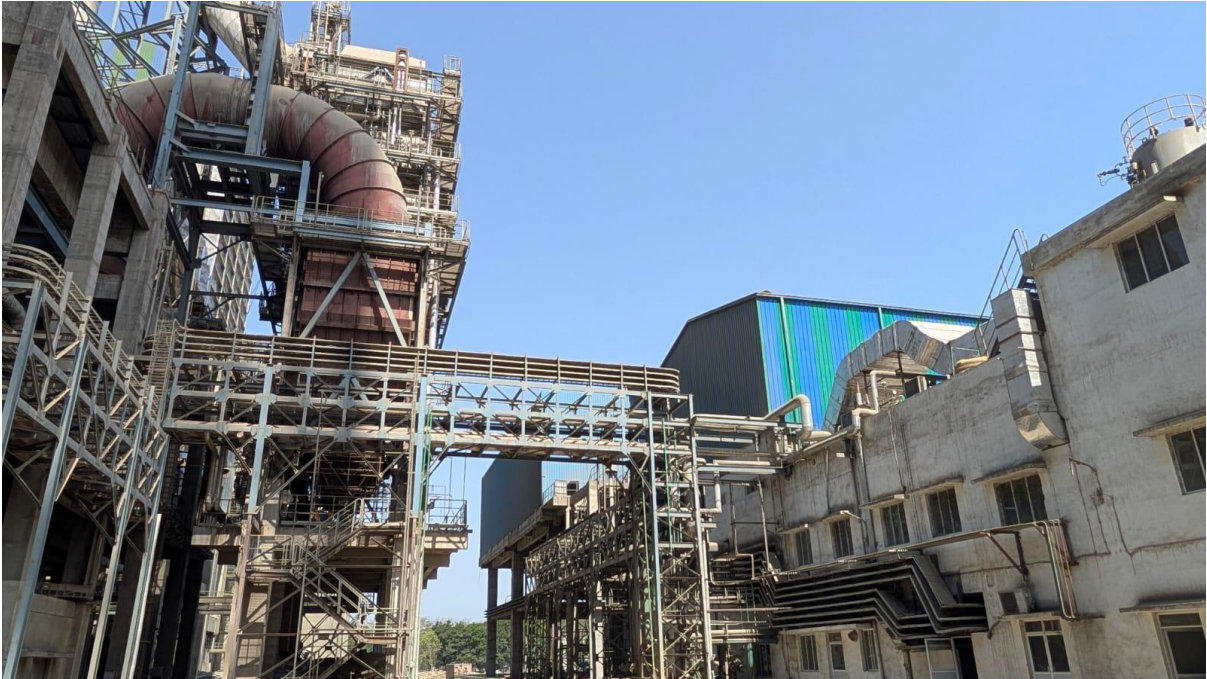
S.No	Stack Connected to	Parameter	UoM	Norms	Min	Max	Avg
1	Raw/Kiln	NOx	mg/Nm ³	800	469.0	541.0	500.4
	Raw/Kiln Line-2			600	475.0	494.0	487.0
2	Captive Power Plant - Boiler			450	170.0	176.0	173.0

for Chettinad Cement Corporation Private Limited


N Ravi Kumar
Unit Head

Annexure-4

Waste Heat Recovery Power Plant



Chettinad Cement Corporation Private Limited (Kallur Works & Mine)													
Sangem K & Kallur Villages, Kalaburagi District, Karnataka													
Ambient Air Quality Monitoring- Consolidated Report (October'2025 to March' 2026)													
S.No	Location	PM ₁₀ (µg/m ³)			PM _{2.5} (µg/m ³)			SO ₂ (µg/m ³)			NOx (µg/m ³)		
		Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
1	Factory Area	58.4	68.7	65.2	26.7	33.2	31.2	13.8	17.3	15.5	15.7	19.1	17.2
2	Near CPP	54.1	72.3	63.5	22.3	36.1	30.4	14.3	18.6	16.6	16.0	20.3	18.2
3	Nera ML Area	65.9	72.3	70.4	34.2	38.8	36.0	14.3	17.3	15.3	16.0	18.9	17.1
4	Colony	60.0	67.3	62.7	27.9	35.2	31.0	14.8	17.3	15.7	16.9	19.3	17.7
5	Miryan Village	48.3	57.8	54.6	24.1	29.9	27.2	14.8	17.9	16.8	16.3	19.7	18.4
6	Polkampalli Village	43.0	58.9	51.9	25.1	30.2	27.8	15.2	18.2	16.7	17.5	20.3	19.0
7	Bhaktampalli Village	41.9	54.9	50.1	23.8	28.9	26.2	14.0	17.9	15.7	15.8	21.6	18.8
8	Sangam Village	44.6	60.1	54.1	22.9	32.4	27.3	14.6	16.9	15.8	16.9	19.5	18.4
9	Kallur Village	45.2	54.2	50.6	25.6	29.3	27.8	15.5	18.2	16.9	17.4	19.9	18.7
Limit		100 µg/m ³			60 µg/m ³			80 µg/m ³			80 µg/m ³		

for Chettinad Cement Corporation Private Limited



N Ravi Kumar
Unit Head

Chettinad Cement Corporation Private Limited (Kallur Works)					
Sangam K Village ,Kalaburagi District , Karnataka					
Treated Industrial & Sewage Effluent Quality Monitoring - Consolidated Report October'2025 to March' 2026					
A. Treated Industrial Effluent					
S No	Paramenter	UoM	Min	Max	Avg
1	pH Value	-	7.7	8.4	7.9
2	Total Suspended Solids	mg/litre	9.0	12.2	11.2
3	Total Dissolved Solids	mg/litre	1089.0	1138.0	1114.0
4	Chlorides as Cl	mg/litre	149.9	169.0	160.3
5	Dissolved Phosphate as P	mg/litre	<1.0	<1.0	<1.0
6	Sulphate as SO ₄	mg/litre	32.8	35.3	34.2
B. Treated Sewage Effluent - Colony					
S No	Paramenter	UoM	Min	Max	Avg
1	pH Value	-	7.23	7.32	7.28
2	Total Suspended Solids, mg/L	mg/litre	8.80	12.00	10.25
3	Biological Oxygen Demand (3days @	mg/litre	6.60	6.80	6.73
4	Chemical Oxygen Demand, mg/L	mg/litre	10.00	20.00	17.50
5	Ammonical Nitrogen	mg/litre	0.72	1.00	0.86
6	Total Nitrogen, mg/L	mg/litre	1.42	1.90	1.72
7	Fecal Coliform, MPN/100 ml	MPN/100ml	32.00	38.00	35.50
C. Treated Sewage Effluent - Plant					
1	pH Value	-	7.52	7.96	7.71
2	Total Suspended Solids, mg/L	mg/litre	8.40	16.00	13.00
3	Biological Oxygen Demand (3days @	mg/litre	<3.0	<3.0	<3.0
4	Chemical Oxygen Demand, mg/L	mg/litre	10.00	20.00	15.00
5	Ammonical Nitrogen	mg/litre	0.32	1.80	1.06
6	Total Nitrogen, mg/L	mg/litre	1.20	3.30	2.46
7	Fecal Coliform, MPN/100 ml	MPN/100ml	Absent	Ansent	Absent

For Chettinad Cement Corporation Private Limited

N Ravi

N Ravi Kumar
Unit Head

Annexure-7

Continuous sweeping machines engaged on the roads to arrest the fugitive emissions.



Annexure-7

Regular Water sprinkling all along the plant road is being carried out and concrete road all along the plant premises.



Annexure-7

Closed Trucks, Bulkers and railway wagons are covered with tarpaulin.



Annexure-7

Closed Shed for Raw Material and AFR.



Annexure-7

Closed Silo's for Cement, Fly Ash, Clinker Storage, Closed belt conveyors and Transfer Towers.



Annexure-7



Annexure-8

Rain Water Harvesting Measures

Garland trenches made



Water passing Garland trenches during rainy season



Annexure-8

Water collation for mine pit



Rain water accumulated in Mine pit



Hydrogeological Study in and around Chettinad Cement's Mines & Plant area - Sangem(K) & Kallur Villages, Chincholi Taluk, Gulbarga District, Karnataka State



Project Proponent



**Chettinad Cement Corporation Private
Ltd.,**

Report Prepared by



V. Pugazhendi,
**Central Ground Water Authority (CGWA) Accredited Ground
Water consultant, For Infrastructure, Industry and Mining Project
with Groundwater Modeling.**

April - 2024

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

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1	Report Prepared by	V. Pugazhendi
2.	Signature of the Consultant(s)	
		V. Pugazhendi

Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages, Chincholi Taluk, Gulbarga District, Karnataka State

1. ABOUT THE PROJECT

1.1 Project Details

Chettinad Cement is operating its Cement business spanning three generations. Since its establishment in 1962 with a wet process Cement Plant at Puliur near Karur, Chettinad Cement has been expanding and making itself versatile in the field of Cement products. Major supplier of Southern India Cement needs, Chettinad Cement supplies the "glue" upon which many residential, commercial and engineering projects are built. Chettinad Cement has established its position in the southern market by innovatively aligning its products and services to the needs of Cement users.

Now Chettinad Cement has operating Integrated Cement Plants at Tamilnadu, Karnataka, Telangana and Andhra Pradesh. The total capacity of Chettinad Cement is 14.7 million tons of Cement with 26 MW Waste Heat Recovery Boiler, 151 MW of Captive Power Generation and 3 MW Solar Power.

Chettinad Cement Corporation Private Limited (CCCPL) has studied expansion ground water prospects and implementation of rain water harvesting in the mines and plant area of Kallur village. The firm has entrusted a job to V. Pugazhendi, CGWA Accredited Consultant, Chennai for study on ground water prospecting and design of rain water harvesting.

1.2 Need for the Study

The present Hydrogeological study of the Mines and Cement plant area depicts the ground water condition of villages falling within the Micro watershed with special reference to the Site area.

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
Client: Chettinad Cement Corporation Pvt. Ltd,		Consultant: V. PUGAZHENDI	

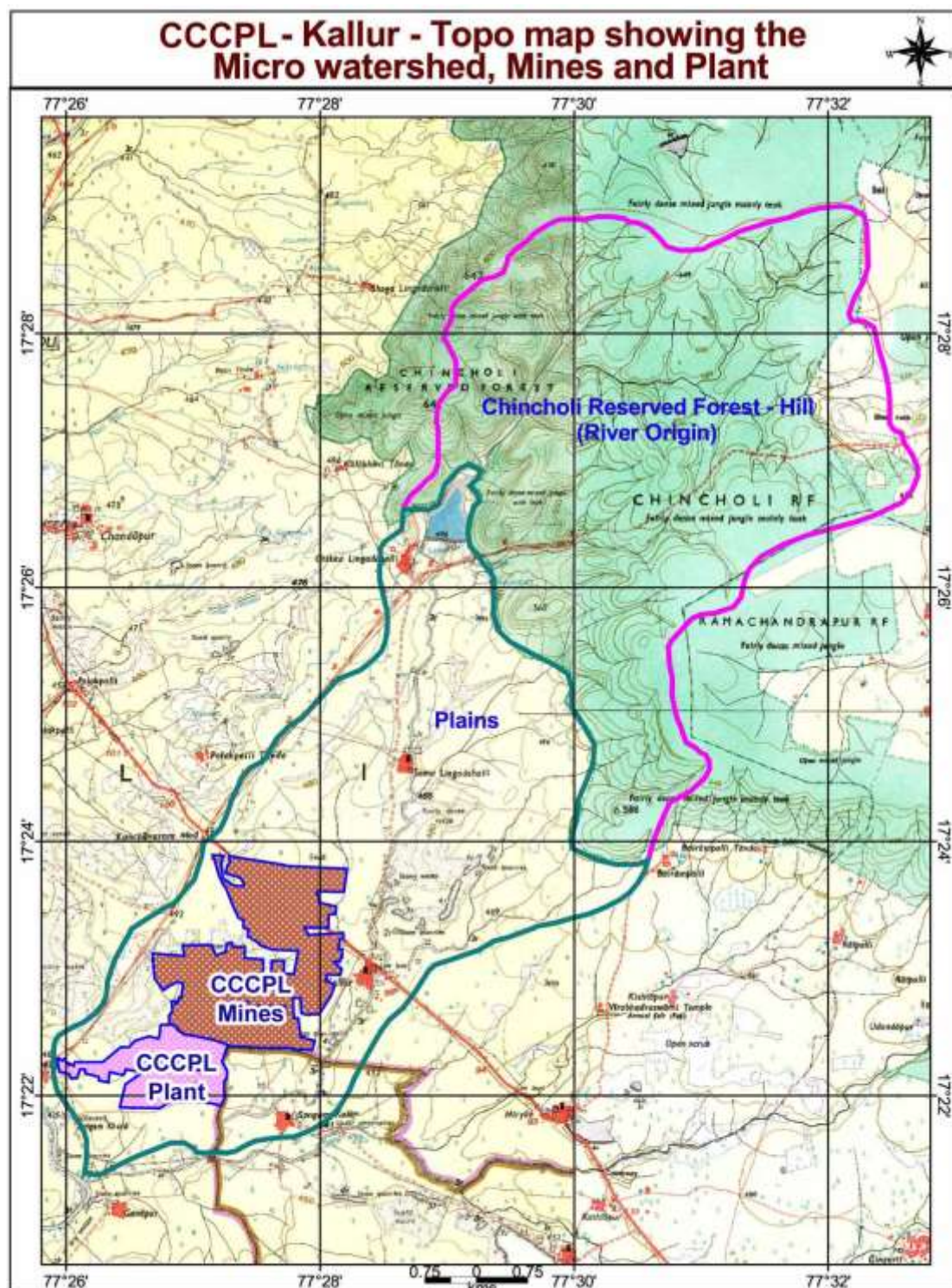
- d) Interpolation and superimposition of the observed data using Statistical and standard hydrogeological methods.
- e) Studying the spacing of existing bore wells within the premises and suggesting measures to avoid Interface between the wells for maintaining a static / pumping water level.
- f) Identifying the effects of water bodies in and around the said site on the groundwater system.
- g) Modeling study to predict the radius of influence due to dewatering of mines water.
- h) Modeling study to determine water inflow into the mines due to mines operation.

1.4 Location of the Project

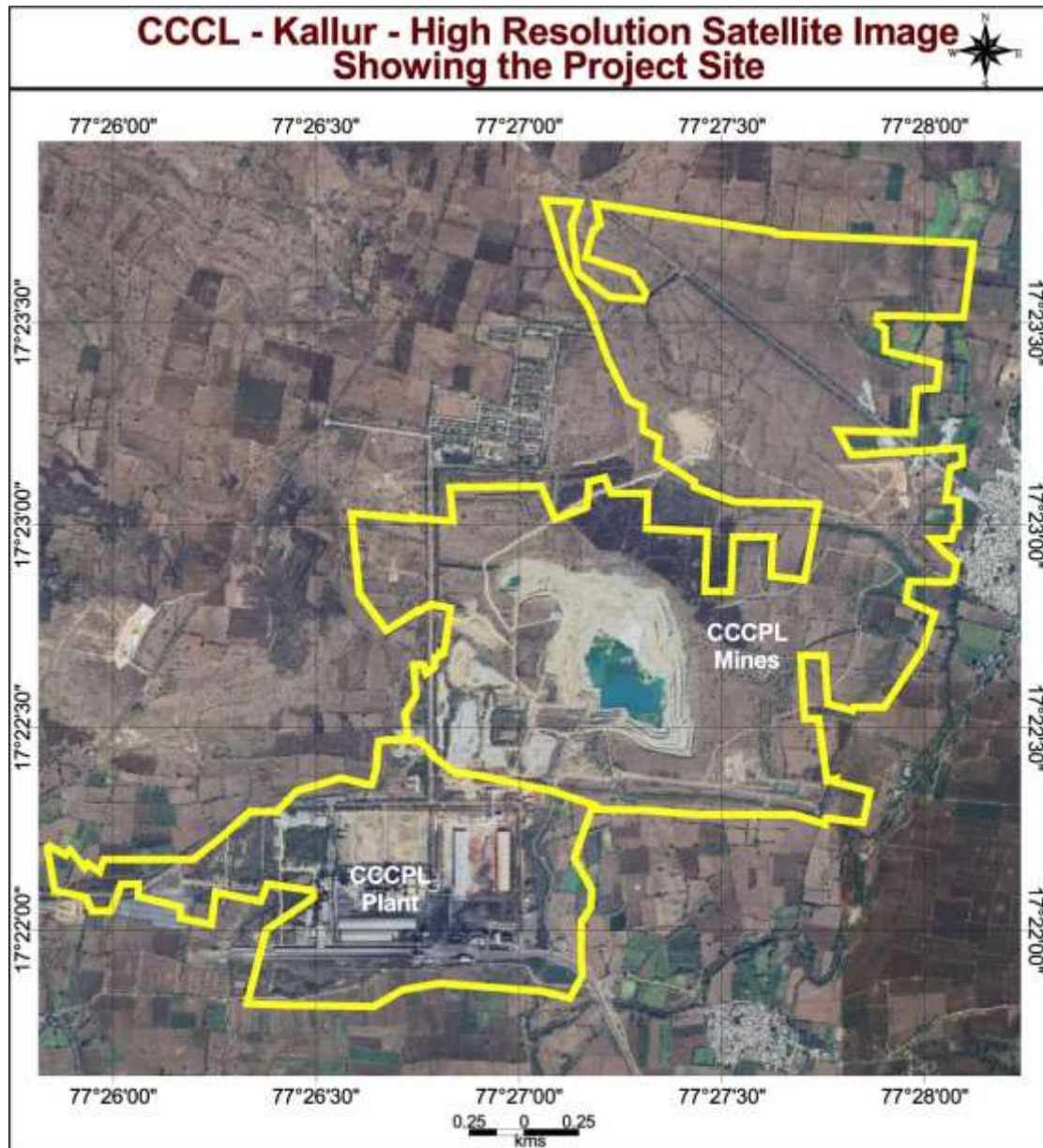
The Administrative unit within micro watershed comprises of parts of Sangam Khurd, Benkeppali, Chikkalingadhalli, Chincholi, Shadipur and Somlingadhali villages in Chincholi Taluk, Gulbarga District, Karnataka State. The study area lies in between North Latitudes of 17° 22' and 17°29' and East Longitude of 77° 26' and 77° 33" and forms part of the Survey of India Toposheet Nos. 56 G/7 and 11. The total extent of the micro watershed is 71.73 Acres. The CCCPL Project site is connected by Road.

The Salient details area as follows:

Feature	Details
Mines and Plant Location	Kallur Limestone Mines and Plant site is located at Sangem (K) & Kallur Villages, Chincholi Taluk, Gulbarga District in Karnataka State
Topography	Plain
SOI Toposheet	56G/7 & 11
Above Mean Sea level in m	Lies in between 447-471 m Contour
Population of the project village As per 2001 Census	Kallur - 3025
Nearest Town	Chincholi – 8.0 Km
Nearest Highway	State Highway – SH-15 7.5 Km,
Nearest Railway station	18.5 Km Tandur
Nearest Railway Junction	106 Km Hyderabad
Nearest Air port	100 Km Hyderabad Air port
Nearest Forest	From Mines : Gingurti RF – 8.1 Kms., Ramchandrapur RF - 6 Kms., Chincholi RF - 3.2 Kms.
Nearest Hill Ranges	Chincholi Hill



Project Site and its Coordinates



The Latitude and Longitude of Plant, Mines and Colony are given below.

No	Longitude	Latitude
Mines		
1	77° 27' 28"	17° 23' 51"
2	77° 28' 10"	17° 23' 50"
3	77° 28' 8"	17° 23' 2"
4	77° 27' 55"	17° 22' 25"
5	77° 26' 55"	17° 22' 25"
6	77° 26' 54"	17° 22' 45"
7	77° 26' 51"	17° 23' 9"
8	77° 27' 2"	17° 23' 0"

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

No	Longitude	Latitude
9	77° 27' 30"	17° 23' 12"
Plant		
1	77° 26' 50.7"	17° 22' 24"
2	77° 27' 10.29"	17° 22' 12.98"
3	77° 26' 23.01"	17° 21' 55.42"
4	77° 25' 52.75"	17° 22' 11.19"
Colony		
1	77° 27' 4.43"	17° 23' 18.84"



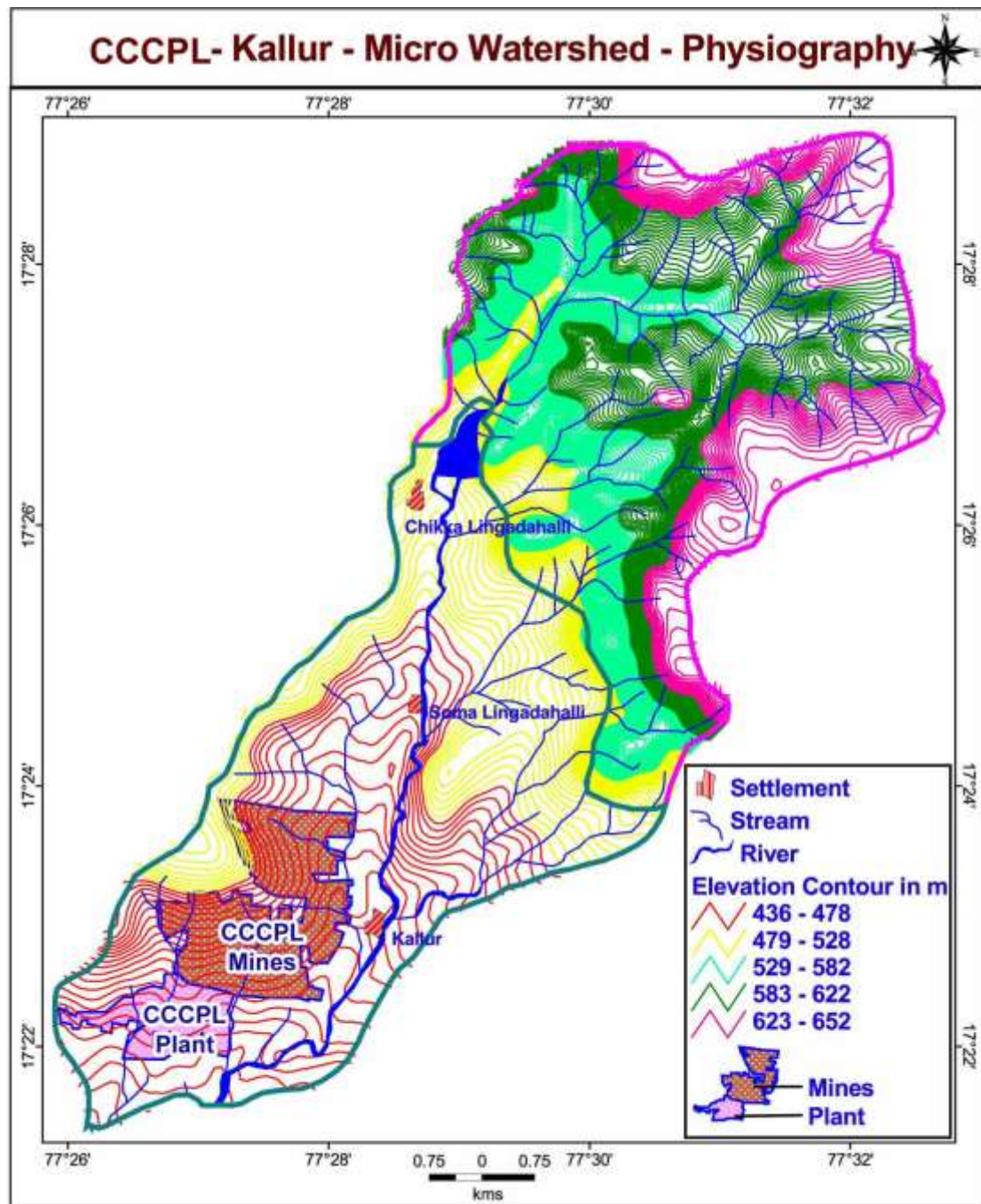
The Project area details are as follows

Plant	Line I (Sq.m)	Line II (Sq.m)	Total (Sq.m)
Built area (Plant) including yards	133522	300000	433522
Road (Plant)	137328	50000	187328
Greenbelt (Plant)	339000	176000	515000
Vacantland	725650		199650
Total	1335500	526000	1335500
Mines			
Built area (Mines)	1860		1860
Roads (Mines)	20380		20380
Greenbelt (Mines)	101400		101400
Mines Area	4105760		4105760
Total	4229400		4229400
Colony			
Built Area (Colony including Roads)	201600	60000	261600
Greenbelt (Colony)	20000	47000	67000
Vacantland	215700		108700
Total	437300	107000	437300
Grand Total	6002200	633000	6002200

1.5 Physiography

The micro watershed exhibits plain terrain in the south west side and relatively elevated hilly terrain in the north east side with a slope towards southwest. The minimum and maximum elevation of the micro water shed is 436 and 652 m amsl (above mean sea level) respectively.

The maximum elevation is noticed in the north eastern side of the micro watershed. Chincholi Wild life Sanctuary is located in the north east of the Mines & Plant and it is the origin of the micro watershed from where the rainfall flows in the streams and river. The minimum and maximum elevation of the mines and plant is 447 and 471 m amsl (above mean sea level) respectively.

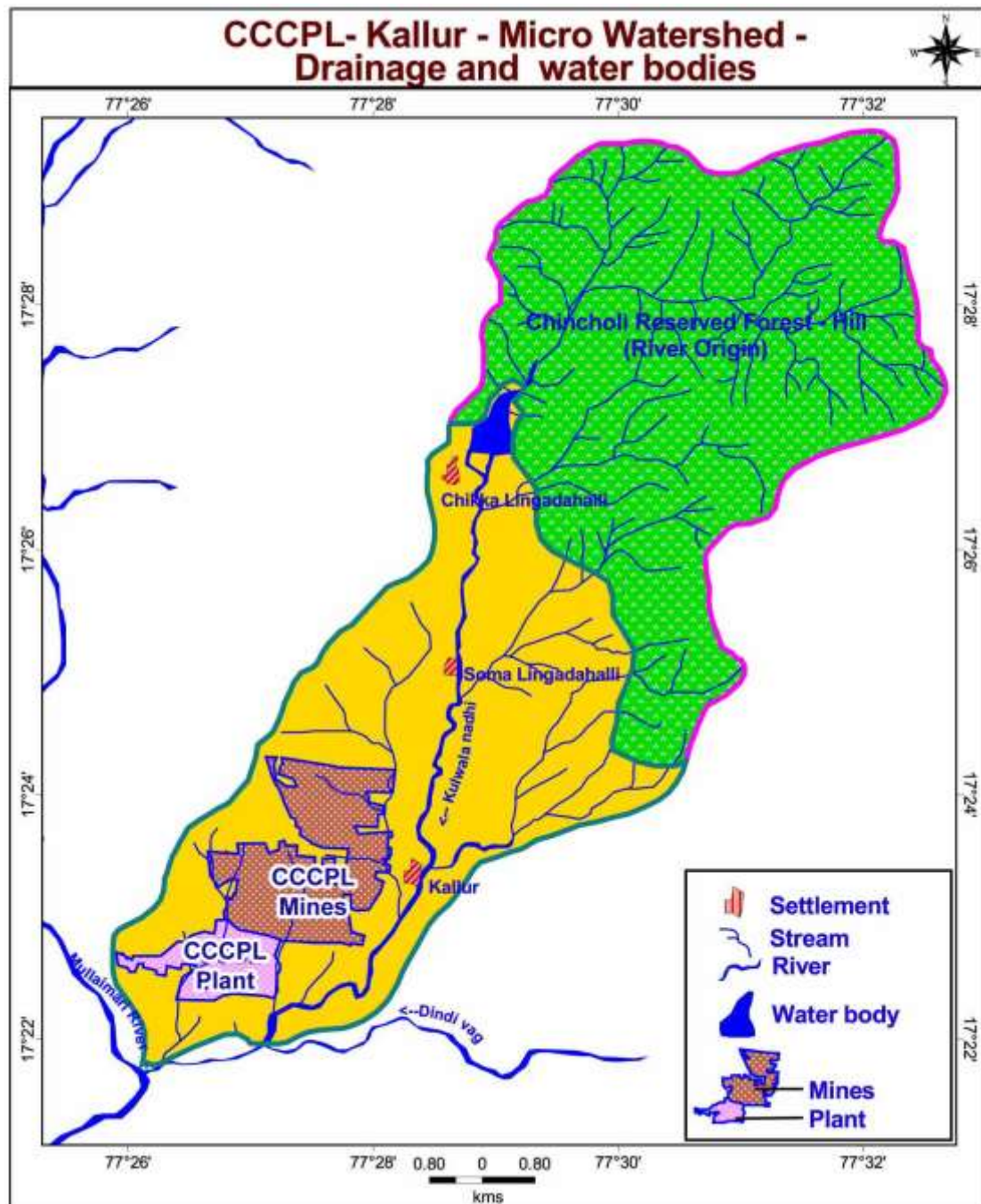


1.6 Drainage and Water bodies

The Kulwala nadhi originates from Chincholi hill and flows towards south west and join with another stream called Dindi Vag flows in the southern side of the plant and the stream rivers confluences with **Mullaimari River at Ganapur. Apart from the above stream, small streams that flows from the site is also confluences with the jungle stream that flows in the southern side of the Plant.** The structural features mostly control the drainage of the micro watershed. Among the different drainage pattern the well-established drainage systems are parallel and sub-parallel. **It is also noticed that a water body is located in the downhill of Chincholi hill in Chilla Lingadahalli Village at a distance of 5 km from the mines. The surplus of the tank flows in the Kulwala nadhi that flows in the western side of the mines and plant and confluences with river mullimari. The mullaimari river is located in the south eastern side of the plant at a distance of 0.4 km. The rivers in the south, west and east act as source of recharge in and around the mines and plant**



High resolution satellite image showing the water body located in the down hill of Chincholli



	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

2. Drainage and Water bodies

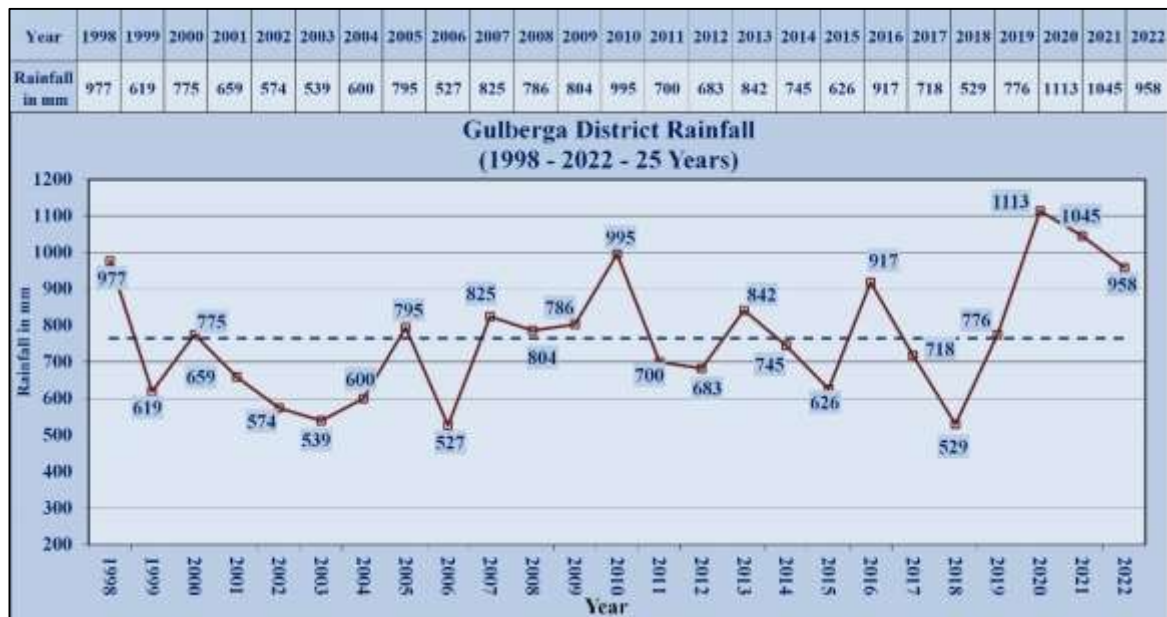
The climate of the study area is semi-arid and characterized by general dryness during the southwest monsoon periods. As per Indian Meteorological Department, the maximum temperature ranges from 40°C to 44°C and the minimum temperature from 19°C to 22°C. The other meteorological parameters are as follows:

Relative Humidity (Percentage)	45-60
Wind velocity in KMPH	8-17
Sunshine hours	7.00
Evaporation in mm	5.10
Evapotranspiration in mm/day	4.80

The micro watershed receives fairly good amount of rainfall during Southwest monsoon. 25 years rainfall of collected for the Gulberga District is presented below:

Year	Jan	Feb	Winter (Jan-Feb)	Mar	Apr	May	Summer (Mar-May)	Jun	Jul	Aug	Sep	South West Monsoon (Jun-Sep)	Oct	Nov	Dec	North East Monsoon (Oct-Dec)	Annual
1998	0.0	0.0	0.0	0.0	9.1	23.2	32.3	85.7	160.5	203.2	276.8	726.1	208.2	10.0	0.0	218.2	976.7
1999	0.0	0.8	0.8	0.5	1.0	85.2	86.7	82.5	91.3	138.0	116.9	428.7	102.2	0.2	0.0	102.4	618.6
2000	0.0	1.4	1.4	0.0	4.7	35.0	39.7	159.1	134.0	211.9	131.5	636.4	97.5	0.5	0.0	98.0	775.4
2001	8.6	0.0	8.6	0.0	21.6	5.6	27.2	93.9	27.7	156.2	215.3	493.2	129.0	1.2	0.0	130.2	659.2
2002	9.2	1.6	10.8	0.5	4.4	25.8	30.6	105.1	77.1	152.4	75.7	410.3	121.3	0.9	0.0	122.3	574.0
2003	0.0	0.3	0.3	16.0	7.0	0.3	23.4	63.2	124.2	192.2	107.3	486.9	28.1	0.2	0.3	28.6	539.1
2004	9.9	0.3	10.2	0.1	28.1	83.9	112.1	53.6	143.7	41.0	157.4	395.7	81.0	1.0	0.0	81.9	599.9
2005	16.3	1.7	18.0	10.1	46.5	15.3	71.9	39.3	217.3	138.8	194.8	610.2	93.1	0.2	1.3	94.6	794.7
2006	0.0	0.0	0.0	23.9	17.7	55.3	96.9	111.0	53.5	72.9	147.2	384.6	27.4	17.9	0.0	45.3	526.8
2007	0.0	0.0	0.0	0.0	10.7	20.0	30.6	221.0	96.3	163.9	284.4	765.6	35.4	13.4	0.0	28.8	825.0
2008	0.0	26.2	26.2	117.8	11.5	18.7	148.0	70.7	112.1	184.9	161.0	528.6	65.8	11.3	6.5	83.6	786.4
2009	0.0	0.0	0.0	7.3	15.4	36.0	58.7	101.9	43.9	211.8	237.6	595.2	111.3	34.8	3.6	149.7	803.6
2010	17.5	5.3	22.9	1.9	13.7	29.7	45.3	109.8	280.0	261.4	137.9	789.0	92.5	43.3	2.0	137.8	995.0
2011	0.0	9.1	9.1	0.3	30.8	23.1	54.3	69.5	205.6	195.5	66.0	536.5	99.8	0.4	0.0	100.3	700.2
2012	0.0	0.0	0.0	0.0	23.6	8.9	32.5	109.8	164.1	177.9	101.9	553.6	74.6	22.0	0.0	96.6	682.7
2013	0.0	13.0	13.0	1.7	27.9	38.9	68.4	106.4	206.9	89.5	258.6	661.3	92.1	6.9	0.3	99.3	842.0
2014	0.0	4.9	4.9	39.5	30.9	74.8	145.2	42.5	106.3	250.4	120.3	519.7	43.5	24.0	8.1	75.7	745.4
2015	8.5	0.0	8.5	38.9	88.4	28.0	155.3	79.7	66.3	114.4	164.0	424.3	32.6	0.8	4.8	38.2	626.2
2016	0.1	1.0	1.1	9.6	10.0	49.6	69.2	185.8	241.1	66.7	307.5	801.0	45.0	0.9	0.4	46.2	917.5
2017	0.0	0.0	0.0	8.0	6.3	20.0	34.3	179.2	53.2	125.4	158.7	516.6	158.5	9.1	0.0	167.6	718.5
2018	0.0	2.5	2.5	0.9	32.3	41.2	74.4	134.1	72.7	119.0	71.6	397.4	40.4	2.3	12.2	55.1	529.3
2019	0.4	0.0	0.4	6.3	9.0	18.4	33.7	117.7	110.0	168.1	195.5	591.2	130.4	16.1	4.0	150.4	775.6
2020	0.9	0.0	0.9	17.4	24.4	35.5	77.3	170.6	139.6	198.7	304.4	813.3	218.3	3.7	0.0	222.0	1113.5
2021	2.3	0.9	3.2	0.8	28.9	61.8	91.5	140.9	241.3	188.2	256.2	826.6	76.7	45.6	1.4	123.7	1045.0
2022	1.2	0.0	1.2	1.8	19.9	65.8	87.5	79.2	306.0	180.2	158.3	723.6	143.1	1.2	1.4	145.7	958.1
Average	3.0	2.8	5.8	12.1	21.0	36.0	69.1	109.3	139.0	160.1	176.3	584.6	93.1	10.7	1.8	105.7	765.1

Graph showing Yearly Rainfall (in mm)



Graph showing Monthly Average Rainfall (in mm)

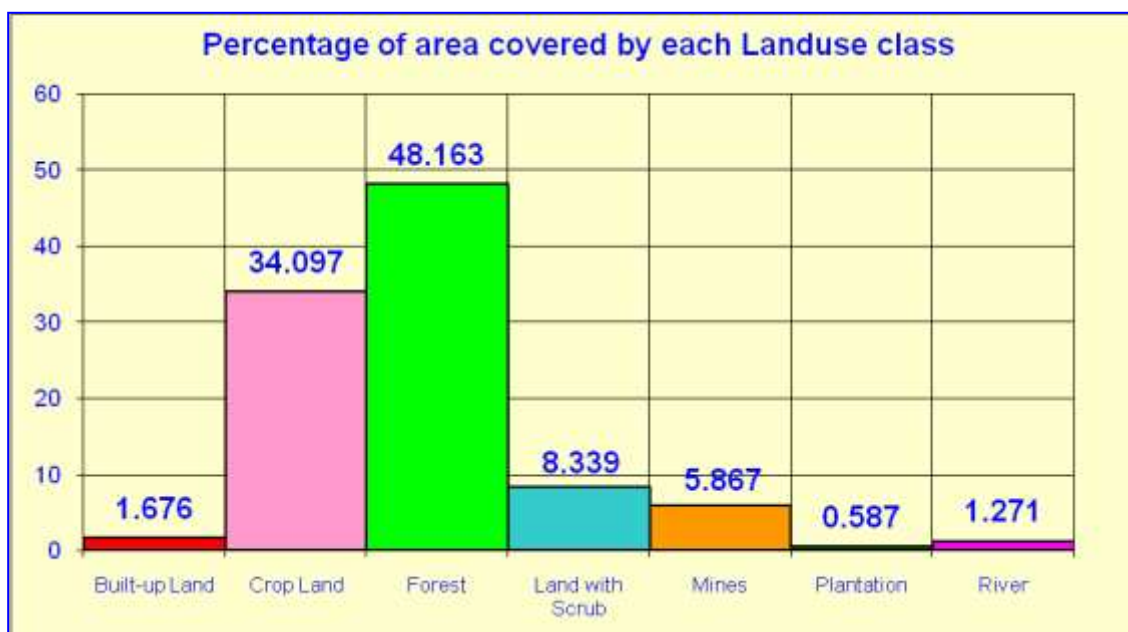


From the monthly average rainfall for the past 25 years it is clear that the south west monsoon is very effective in the micro watershed area. Highest rainfall occurs during September and October

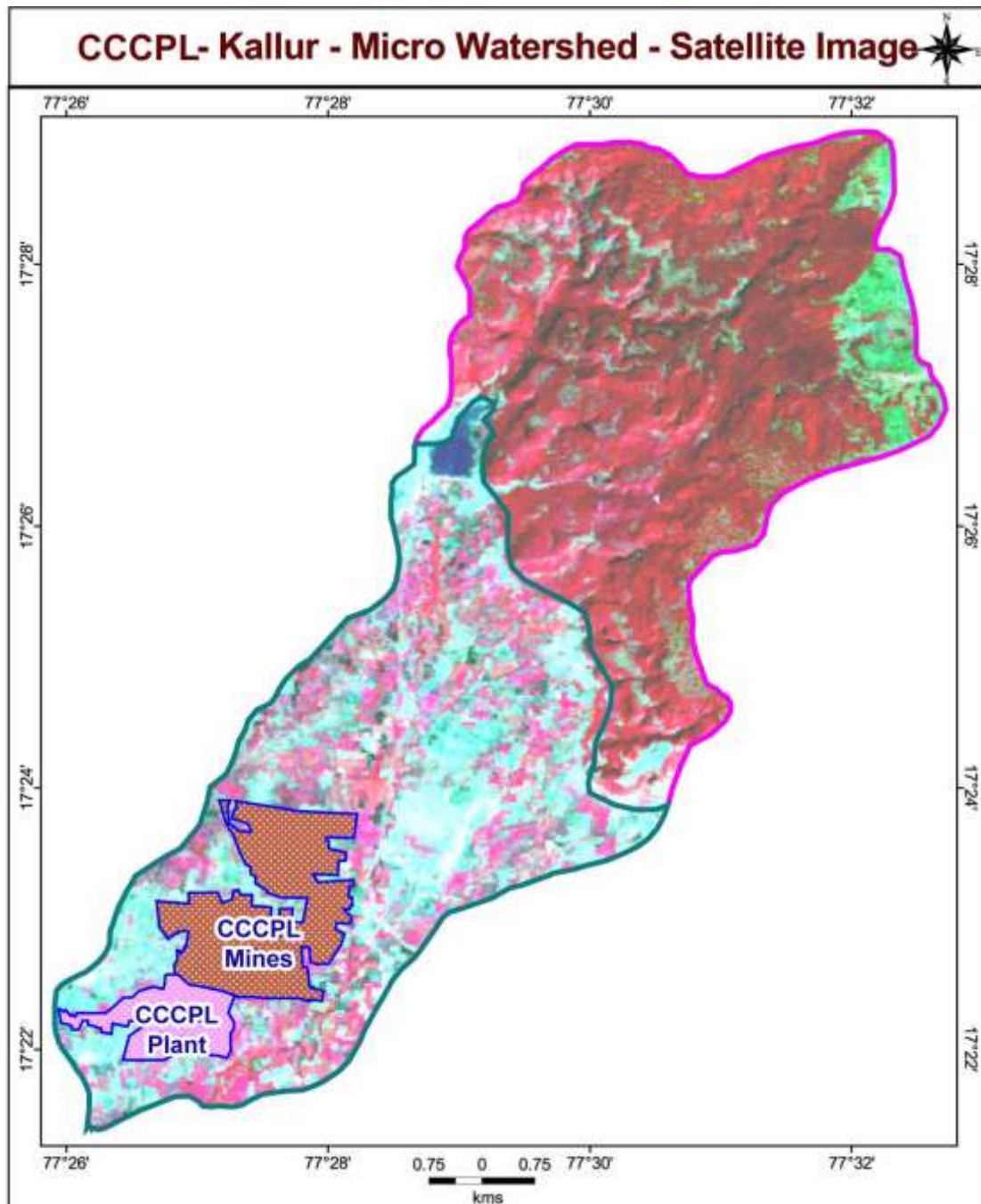
2.1 Land use and Land cover

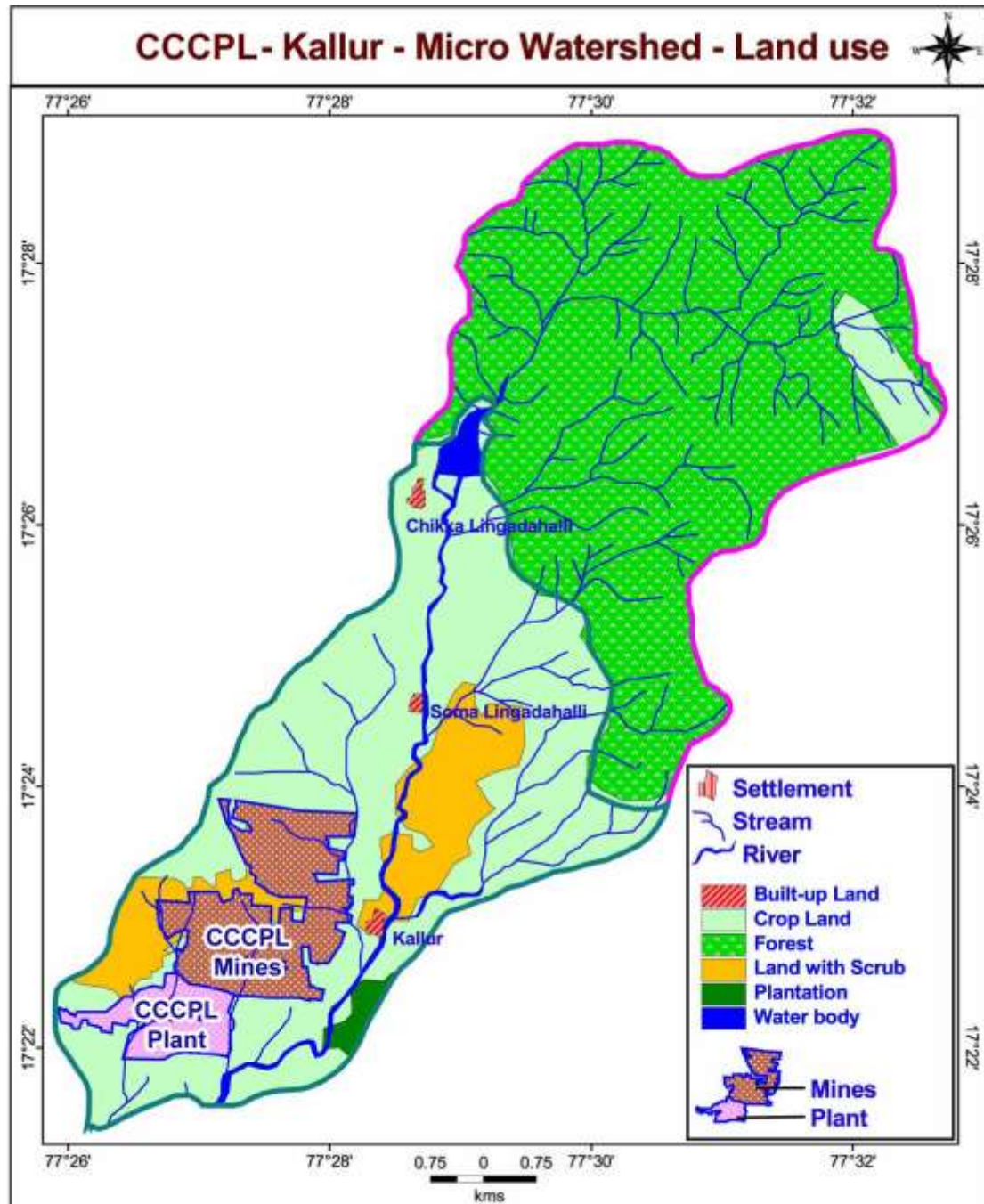
The land use in the village reflects the socio-economic conditions of the people in addition to the natural environmental factors. The land use is also one of the prime parameters to be considered for the ground water estimation. The land use of micro water shed is as follows

Land Use Classification	Area in Sq.Km	Area in %age
Built-up Land	1.2	1.7
Crop Land	24.4	34.1
Forest	34.5	48.2
Land with or without Scrub	6.0	8.3
Mines	4.2	5.9
Plantation	0.4	0.6
River	0.9	1.3
Total	71.6	100.0



From the above it is clear that in the micro watershed area the forest land occupies the major part of the study area which is source for the rain fall runoff of the micro watershed area





2.2 Geology

The limestone formation in Gulberga District belongs to Bhima Series. The lithology of the Gulberba District are metapyroxenite, Hornblende gneiss, Amphibolite, biotite gneiss, Shahabad Limestone, metabasalt and Laterite.

The micro watershed comprises of hornblende gneiss and limestone. The project site is made up of limestone. The black cotton soil found overlying the limestone is having an average thickness is 1.7 m.

2.3 Geomorphology and Structure

The land forms / geomorphic units and structures such as fractures, fissures and faults have been interpreted from the recent satellite image. All the landform / geomorphic units and structures occurring in the study area are mapped. The geomorphology and structures of the area plays the vital role in identifying the ground water potential zones. The following geomorphic units have been interpreted.

- 1) Buried Pediplain – Moderate
- 2) Weathered Pediplain – Shallow
- 3) Weathered Pediplain – Moderate
- 4) Pediment
- 5) Inselberg
- 7) Structural Hills

The Buried pediplain-moderate, weathered pediplain-shallow and weathered-pediplain moderate are good in respect of ground water occurrence and movement. High ground water potential zones are noticed along the river system. The Site is located in the Weathered Pediplain – Shallow which has moderate to good ground water occurrence and movement.

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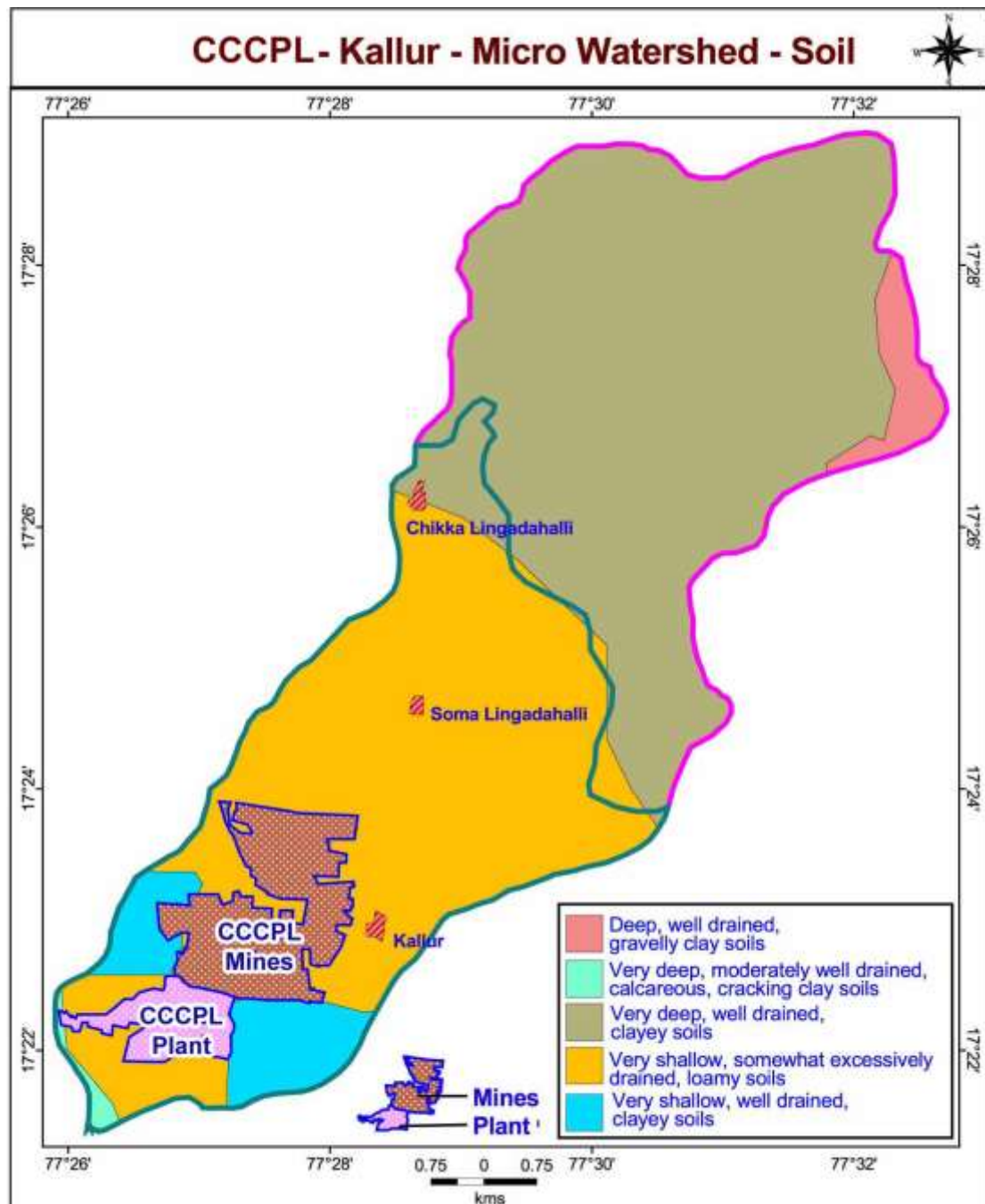
Apart from the above there are numerous fractures occur in and around the project site. The fractures are the good ground water conduit. High yielding bore wells expected in the intersection of fractures. It is also observed that there is no promising fracture aquifer within 1km from the project boundary.

2.4 Soil Classification

Soil type and its fertility of an area are essential to plan for cropping. Soils are primarily derived from parent rocks. The colour, texture and mineral content are normally used to classify the soils. The soils in the study area are classified into 9 types. They are as follows. The soil map of the study area is prepared based on the *National Bureau of Soil Survey and Land use Planning, Nagpur*

Sl. No.	Soil Classification
1	Deep, well drained, gravelly clay soils
2	Very deep, well drained, clayey soils
3	Very deep, moderately well drained, calcareous, cracking clay soils
4	Very shallow, somewhat excessively drained, loamy soils
45	Very shallow, well drained, clayey soils

The mines and plant lies in very shallow, somewhat excessively drained, loamy soils.



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2.5 Regional Hydrogeology

The southern part of the District comprises the Peninsular Gneiss and granites. Central, northeastern and southwestern part comprises of sedimentary formations viz. sandstone, quartzite, shale, slate, limestone and dolomite. Deccan Trap basalts cover northern and northwestern parts. A small portion in the north is covered by alluvium and in the northeastern part by laterite.

Major ground water bearing formations are granite, gneiss, limestone and vesicular basalt. Ground water occurs in weathered, fractured & jointed zones of these formations. In weathered zones ground water occurs in phreatic condition, whereas in the fractured & jointed formation it occurs in semi-confined to confined condition. The main source of recharge to ground water is precipitation, followed by seepage from canals and return flow from irrigation.

Deccan Trap basalts, which comprise different flows, fractures & interstitial pore spaces of vesicular zone, are good repositories of ground water. In limestone, solution cavities are considered to be more potential than weathered and fractured zones. Laterite have primary porosity and are considered to be moderately good aquifer.

CGWB monitors 105 National Hydrograph Station (NHS) dug wells located in Gulbarga District, the depth to water levels recorded during pre – monsoon (May) and post – monsoon (November) periods were in the range of 0.76 to 17.10 mbgl and 0.60 to 14.88 mbgl respectively. The map depicts that a major part of the District has moderate to moderately deep water levels between 5 to 10 mbgl during pre – monsoon period.

Depth to water level in 29 piezometers in the District during pre – monsoon (May) and post – monsoon (November) periods were in the range of 2.50 to 35.48 mbgl and 1.11 to 14.91 mbgl respectively.

Chincholi Taluk is located towards northeastern part of Gulbarga District. Major water bearing formation is Deccan Trap basalt followed by sediments of Bhima Formation. The depths of bore wells drilled by CGWB are within the range 44 to 82 mbgl and drill time discharge is within 0.30 to 9.5 lps.

890 irrigation-dug wells exist, (as per III Census of Minor Irrigation Schemes 2000 – 01), out of which, 889 are functional and in use for irrigation purposes. Water lifting device fitted in dug wells is mainly electric pump of 4 to 6 HP with average pumping of 4 hours.

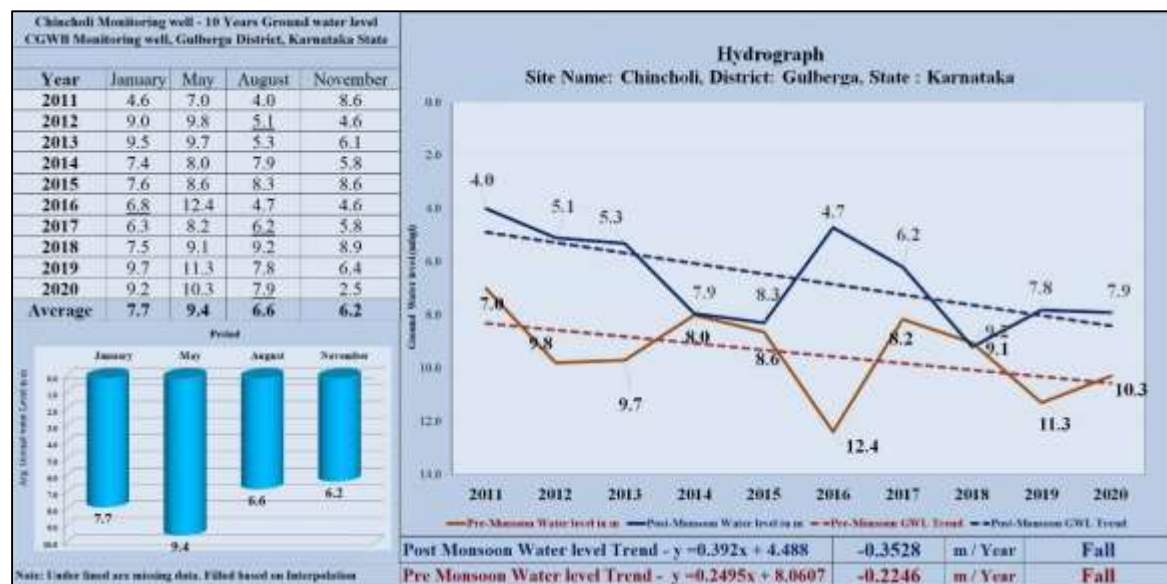
 Chettinad cement	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
Client: Chettinad Cement Corporation Pvt. Ltd,		Consultant: V. PUGAZHENDI	

Season wise irrigation potential created through dug wells is 1606 ha.

Out of 188 irrigation shallow bore wells, 181 are in use. Water is being lifted from these tube wells primarily by electric pumps of 4 to 6 HP, with average pumping of 4 to 8 hours.

Season wise irrigation potential created through bore wells is 362 ha.

Ground water level data for a monitoring well collected from CGWB located in Chincholi indicates that the deepest water level is 11.3 m May 2019 bgl and shallowest water level is 2.5 m November 2020 bgl. The season wise ground water level data collected for Chincholi monitoring well is given in below



It is noticed that the average deepest water level for the period from 2011-2020 is 9.7 m bgl, and the average shallowest water is 6.2 m bgl. The above clearly indicates that the maximum ground water recharge is taking place during south west monsoon

The generalized aquifer parameters of geological formations of Gulbarga District have been estimated by the State Government Department is given below:

Formation	Transmissivity (T) m ² /day
Alluvium	200-1000
Sedimentary	20-300
Hard rock	5 to 120

2.6 Hydrogeology of the micro watershed

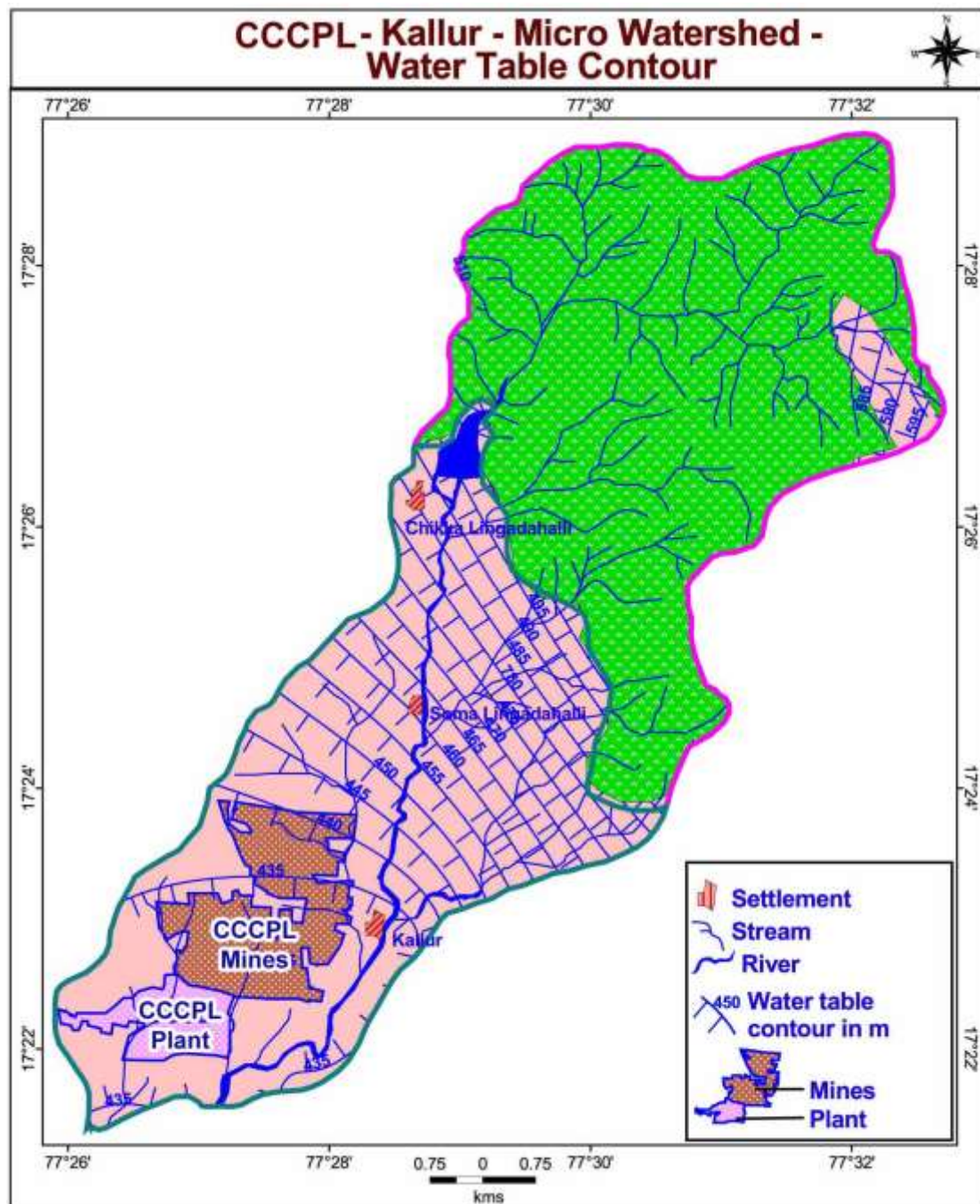
Well census has been taken up in the micro water shed area. During the well census it was observed that most of the study area is irrigated by open well and bore wells.

In order to assess the ground water level condition in the study area, water level measurement in the selected villages was under taken during May 2011. During the ground water measurement, the locations of the wells were captured using GARMIN Global Positioning System (GPS). Using the GPS data, the location were marked on map and the water table contour, ground level zones were generated.

The ground water occurs under water table conditions. The ground water level in the micro watershed varies between 4.4 m to 26.6 m below ground level during the study period.

Sl.No	Village name	Latitude	Longitude	Water Level in m bgl
1	Kallur	77° 28' 31.921"	17° 22' 50.623"	26.6
2	Sangam Kallar	77° 27' 44.588"	17° 21' 45.055"	7.4
3	Soma Lingadahalli	77° 28' 40.278"	17° 24' 37.014"	8.2
4	Chikka Lingadahalli	77° 28' 40.1"	17° 26' 12"	4.4
5	Bhaktampalli	77° 25' 51.468"	17° 22' 9.8"	8.62

Based on the water level data water table contour has been constructed for the study area. The water table contour (water table = Mean Sea Level – water level below ground level) depicts that the ground water moment is towards east. The hydraulic gradient in the plant site is 2.8 m/km



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The details of the bore / open wells are as follows:

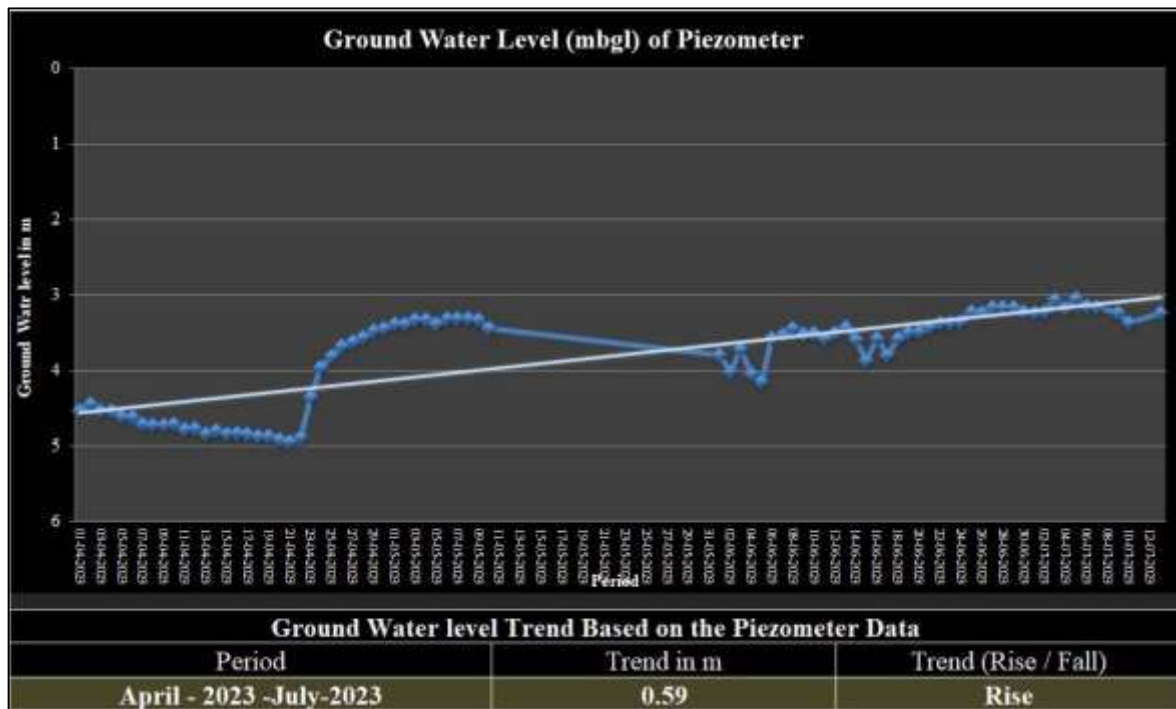
Sl. No	Location	Type of Well	Longitude	Latitude	Depth of bore / open well in m	Dia of bore / open well in mm/ m	Casing depth in m	Slotted Pipe depth m
1	West side of Raw tank area bore well	BW	77° 27' 4.68"	17° 22' 23.16"	120	150 mm	6	114
2	West side of the Raw water tank	BW	77° 27' 2.16"	17° 22' 25.68"	91	150 mm	12	79
3	Bore well at SF 7	BW	77° 26' 31.2"	17° 22' 22.8"	89	150 mm	12	77
4	Bore well at SF 7	BW	77° 26' 8.464"	17° 22' 13.056"	91	150 mm	12	79
5	Ellamatemple area bore well	BW	77° 26' 25.44"	17° 21' 55.8"	62	150 mm	12	50
6	CPP WTP	BW	77° 27' 7.56"	17° 22' 10.56"	121	150 mm	15	106
7	Batching Plant rear side	BW	77° 26' 46.32"	17° 22' 31.08"	62	150 mm	12	50
8	Security shed Oppsite area	BW	77° 26' 23.64"	17° 22' 12.72"	74	150 mm	6	68
9	Tandoor Road	BW	77° 27' 23.79"	17° 23' 45.01"	91	150 mm	12	79
10	Open well 1	OW	77° 27' 42.581"	17° 22' 41.62"	12	3m		
11	Open well 2	OW	77° 26' 25.508"	17° 21' 56.758"	14	3m		

The ground water level data has been collected from the 9 bore wells located in the mines and plant area During July 2023. The data reveals that the water level varies from 1 m - 12.2 m. In some of the bore wells the water levels were collected after pumping (Pumping water level).



2.7 Piezometer Ground water level

In order to study the impact of mining and the recharge structure constructed within the mine lease area the project proponent has installed piezometer. A dedicated bore wells are drilled for installing DWLRs. The piezometers are drilled below the depth of the mines. The Piezometers monitoring data from May 2009 – March-2023 was obtained from the project proponent



The above daily ground water level data collected through the piezometer indicates that there is rise in ground water level of 0.59 m. The above is due the recharge structures constructed in the mine lease area.

2.8 Ground water Quality

Detailed water quality assessment is necessary in areas where there is intensive ground water development, Industrialization and urbanization as it is also subjected to qualitative changes in the environment around. Quality of water is influenced considerably by the quality of its source and occurrence. In order to describe water quality of the micro watershed the Total Dissolved Solids (**TDS**) of ground water were checked using hand held standard TDSscan tester (EUTECH Instruments)

The TDS tested locations with its latitude; longitude and concentration of TDS in ground water are presented in Table -

S.No	Name of Village	Latitude	Longitude	Type of Source	Total Dissolved Solids in mg/litre
1	Kallur	77° 28' 31.921"	17° 22' 50.623"	BW	730
2	Sangam Kallan	77° 27' 44.588"	17° 21' 45.55"	OW	460
3	Polkapalli	77° 28' 40.278"	17° 24' 37.014"	BW	513
4	Chikka Lingadahalli	77° 28' 40.1"	17° 26' 12"	OW	520
5	Bhaktampalli	77° 25' 51.468"	17° 22' 9.8"	BW	523

The ground water quality of the project site (Mines/ Plant) has been assessed. It is observed that the ground water quality is within the permissible limit of drinking water standards. The Total Dissolved Solids vary between 460 – 730 mg/litre and all the other parameters are within the standards. The Total Dissolved Solids of ground water samples from the existing bore well of the site have been tested using field kit.

The results are as follows:

S.No	Location	TDS - mg/litre
1	Near Store	572
2	Ellamatemple area bore well	912
3	CPP WTP	980
4	Batching Plant rear side	588
5	Security shed Oppsite area	588

2.9 Ground water Estimation – Gulbarga Taluk

As per the ground water resource estimation (CGWB Report) the Gulbarga Taluk has been categorized as 'SAFE' taluk, where the stage of ground water development is less than 64%. (2023) The net ground water resource of Gulbarga Taluk is as follows:

Taluk	Net Ground water availability in (HAM)*	Irrigation Draft (HAM)	Domestic And industrial Draft in (HAM)	Total Annual Ground Water Draft in (HAM)	Projected Domestic and industrial Draft in (HAM)	Ground Water availability For future irrigation in (HAM)	Stage of ground water development in (%)	Category
Gulbarga	8298.36	2223.24	2563.18	4806.22	2790.97	2434.51	64.35	SAFE

2.10 Water Requirement

Cement Plant -The water requirement for the different components for the Line II will be 1500 KLD. Out of 1500 KLD of water requirement, 1000 KLD of water is proposed to be met out from the Mines pit for Process, Green belt development and other uses. The fresh water requirement from Ground water sources will be 500 KLD.

Mines- The water requirement for the different components for the project will be 130 KLD. Out of 130 KLD of water requirement, 5 KLD of Drinking water is proposed to be met out from the fresh water requirement from Ground water sources.

Activity	Existing* Ground water requirement (m ³ /day)	Proposed Ground water requirement (m ³ /day)	Total requirement (m ³ /day)	No. of Operational Days in a year	Annual requirement (m ³ /year)
Industrial activity	648	1200	1848	330	609840
Residential / Domestic	187	160	347	365	126655
Greenbelt development/Environmental maintenance	20	15	35	330	11550
Mines	45	125	170	330	56100

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Grand total	900	1500	2400		804145

Existing Ground dept NOC is for 900 m3/day from 8 borewell. NOC copy enclosed

 ಕರ್ನಾಟಕ ಸರ್ಕಾರ		
Karnataka Ground Water Authority		
K.S.F.C Bhavan, Thimmaiah Road, Bengaluru- 560052, Karnataka.		
E-mail: gwdkar@gmail.com, Ph No: 080-22268732		
No: DE0011145347012	Dated : 22-12-2022	
NO OBJECTION CERTIFICATE - FORM 3 A RULE(6)		
Permission For Digging/Drilling A Well/ Borewell/ Extraction Of Groundwater For Industrial/ Commercial/ Entertainment Or Other Use		
M/s Chettinad Cement Corporation Pvt Ltd Sangem K village, Kallur works		
		
Above Person/Company is permitted for extraction of groundwater at below mentioned location(s):		
SL NO.	LOCATION	
1	18/1 TO 251/1, NEAR CRUSHER AREA, Chincholi taluk	
2	18/1 TO 251/1, West side of the Raw water tank , Chincholi taluk	
3	18/1 to 251/1, Back side of stores, Chincholi taluk	
4	18/1 to 251/1, Baktampalli road, Chincholi taluk	
5	18/1 to 251/1, Ellamatemple area, Chincholi taluk	
6	18/1 to 251/1, CPP WTP, Chincholi taluk	
7	18/1 to 251/1, Batching Plant rear side, Chincholi taluk	
8	18/1 to 251/1, Security shed Oppsite area, Chincholi taluk	
From (8) Bore Wells For Other Purpose Use, Subject To The Following Conditions :-		
❖ The firm may abstract 900 m3/day (not exceeding 328500 m3/year) of groundwater through (8) bore wells only. No additional groundwater abstraction structures to be constructed for this purpose without prior approval of the KGWA. ❖ This NOC is valid for 0 years from the date of issue of this letter. ❖ As per the categorization of taluks, Chincholi taluk in Kalburgi district fall under Safe taluk category. Hence, the Groundwater Abstraction/Restoration Charges to be paid is Rs. {{ChargePerDay}} per day. ❖ The Firm at its own cost shall install piezometer/s, at suitable locations and execute groundwater regime monitoring programme in and around the project area on regular basis in consultation with the		

Month	BW3 (Near Batching plant)	BW4 (North West Store)	BW5 (Near Security Shed)	BW6 (Near Lorry Yard Bhatakampalli Road)
January	1540	238	5340	1534
Feb	602	157	5123	1257
March	2155	145	5546	1492
April	2138	206	5293	1626
May	628	342	4715	1591
June	93	330	4337	2195
July	0	611	5682	1928
Aug	0	4369	0	3131

The ground water inflow in to the mine pits indicates that the flow is low in the limestone aquifer. Heavy pumping is not required in the limestone aquifer zone.

Currently the project is withdrawing around 1050 KLD from Brewell and prosed to meet 450 KLD from proposed new bore well. The proponent is meeting balance qty from Mines pit to meet the requirement of 900 KLD.

Status of borewells

- Total approved borewells as per NOC is 8.
- 4 borewells currently in use.
- 3 borewells not utilised but available.
- Total available borewells currently is 7.

3. Estimation of Radius of Influence around the mines due to dewatering

In general the digging of any mine below the water table will create lowering of water table in the surrounding area due to the development of cone of depression. The radius of influence depends on the depth of the water table and the quantum of dewatering of the mines.

In order to calculate the radius of influence, capture zone delineation method, which is the best suitable method for the heterogeneous aquifer as defined in the formula given by Hudak has been adopted.

In Hudak method the pumping rate from the mine pit, the saturated thickness of the aquifer, the duration of pumping, the effective porosity of the lithological unit and the radius of equivalent to the radius of the mine pit are considered in deciding the distance and the influence zone of mine pit dewatering.

The volume of aquifer V_c that contributes water to the mine over a period of time 't' is

$$V_c = Q(t)/n_e \quad 1$$

Where Q is the discharge rate from the mine, and n_e is the effective porosity of the aquifer. The area A_c around the excavated mine that contributes water to the mine is given by

$$A_v = V_c/b \quad 2$$

Where b is the saturated thickness of the aquifer. Combining the equations 1 and 2

$$A_c = Q(t) / [n_e / b]$$

Thus the rate of capture zone around the mine can be estimated as:

$$R = [A_c/\pi]^{1/2} + r_c$$

Substituting the parameters in the formula given by Hudak the following radius of influence has been arrived.

CCCPL Proposed and expansion to go to a depth of 37.7 m for lime stone mining with 5 benches in Kallur Mines. In first year CCCPL proposed and expansion to excavate to a depth of 28.7m and the remaining depth excavation planned from 2 to 5 years.

The radius of influence calculations for each bench is given below:

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

Bench 1 – Depth from 457.7 to 456 amsl = 1.7 m (Cumulative depth 1.7m)	
Mine Dimensions in Sq.m	
Area in Sq.m	480000
rc - the radius or equivalent radius of the mine pit in meters	391
VC = (Q x t) / ne	
Q - Rate of pumping from the mine in m ³ /day	0
t - time of continuous pumping in days	0
ne - the effective fractured or secondary porosity	0.5
Ac - Area of zone influence in the aquifer in sq meters	
AC= Vc / b	
b - saturated thickness of aquifer around the mine	0 (Depth of mine only 1.7 m. No ground water level encounters)
R - Radius of influence in m	
$R = (\sqrt{A_c/\pi}) + r_c$	
R - Radius of influence in m	0

Bench – 2- Depth from 456 to 447 amsl = 9.0 m (Cumulative depth 10.7m)	
Mine Dimensions in Sq.m at 10.7 m	
Area in Sq.m	335000
rc - the radius or equivalent radius of the mine pit in meters	325
VC = (Q x t) / ne	
Q - Rate of pumping from the mine in m ³ /day	197
t - time of continuous pumping in days	350
ne - the effective fractured or secondary porosity	0.11
Ac - Area of zone influence in the aquifer in sq meters	
AC= Vc / b	
b - saturated thickness of aquifer around the mine	3.17
R - Radius of influence in m	
$R = (\sqrt{A_c/\pi}) + r_c$	
R - Radius of influence in m	576
Bench – 3- Depth from 447 to 438 amsl = 9 m (Cumulative depth 19.7 m)	
Mine Dimensions in Sq.m at 28.7 m	
Area in Sq.m	288000
rc - the radius or equivalent radius of the mine pit in meters	310
VC = (Q x t) / ne	
Q - Rate of pumping from the mine in m ³ /day	440
t - time of continuous pumping in days	350

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ne - the effective fractured or secondary porosity	0.05
Ac - Area of zone influence in the aquifer in sq meters	
AC= Vc / b	
b - saturated thickness of aquifer around the mine	12.17
R - Radius of influence in m	
$R = (\sqrt{A_c/\pi}) + r_c$	
R - Radius of influence in m	596

Bench – 4- Detph from 438 to 429 amsl = 9 m (Cumulative depth 28.7 m)	
Mine Dimensions in Sq.m at 28.7 m	
Area in Sq.m	269700
rc - the radius or equivalent radius of the mine pit in meters	290
VC = (Q x t) / ne	
Q - Rate of pumping from the mine in m3/day	728
t - time of continuous pumping in days	350
ne - the effective fractured or secondary porosity	0.04
Ac - Area of zone influence in the aquifer in sq meters	
AC= Vc / b	
b - saturated thickness of aquifer around the mine	21.17
R - Radius of influence in m	
$R = (\sqrt{A_c/\pi}) + r_c$	
R - Radius of influence in m	618

Bench – 5- Depth from 429 to 420 amsl = 9 m (Cumulative depth 37.7 m)	
Mine Dimensions in Sq.m at 28.7 m	
Area in Sq.m	209100
rc - the radius or equivalent radius of the mine pit in meters	252
VC = (Q x t) / ne	
Q - Rate of pumping from the mine in m3/day	1050
t - time of continuous pumping in days	350
ne - the effective fractured or secondary porosity	0.02
Ac - Area of zone influence in the aquifer in sq meters	
AC= Vc / b	
b - saturated thickness of aquifer around the mine	30.17
R - Radius of influence in m	
$R = (\sqrt{A_c/\pi}) + r_c$	
R - Radius of influence in m	679

The ground water level in the proposed and expansion mine area is 7.53 m. Hence the dewatering is required below 7.53 m ie. from bench 2 onwards.

The radius of influence of the above mine pit of Chettinad Cements Ltd is as follows:

S.No	Bench Number and Total Depth	Radius of Influence in m
1	Bench-1- 1.7 m (no seepage)	0
2	Bench-2 – 9m (1.7+9.0 = 10.7m)	576
3	Bench-3 – 9m (9.0+10.7 = 19.7m)	596
4	Bench-4 9m (9.0+19.7 = 28.7m)	618
5	Bench-5 9m (9.0+28.7 = 37.7m)	679

The cone of depression created due to the mining activity is within the limits of the area owned by Chettinad Cements and there will not be any adverse impact on the adjacent lands.



Radius of Influence 679 m – Depth 37.7 m

3.1 Prediction of Ground water inflow in to the Mines

The depletion of shallower deposits has led to a considerable increase in the economic working depth of open pit mining. As a consequence, many surface mining operations are now being carried out below the ground water table.

Excavation of a large open-pit mine below the water table can create number water- related problems that affects the operational efficiency and economic viability of the mining operation. The unexpected water flows in large scale may reduce the production, delay the time of execution and danger the total mine safety

When a pit penetrates in an aquifer, the significant amount of ground water flow occurs to the pit. Therefore, the large volume of water must be pumped to provide a dry mining condition.

Recognition of ground water regime in and around the mine pit and hydraulic prosperities of layers in the mine vicinity is important to control water inflows to mine. To design an effective dewatering system for mine pit, the modeling of water related problems and prediction of water inflow into the mine pit is necessary.

The results of such simulations have been used to develop an appropriate water management strategy in order to minimize the operational problems below the water surface and long-term environmental problems, in the feasibility stage of mine design.

When mining operations are to be carried out below the water table, mine operators potentially face with two important water-related problems.

These are the amount and pressure of groundwater that could flow into an open pit and the effect of pore water pressure on the stability of an open pit are high.

The amount of water inflow into a pit is very important for development of a mine-dewatering program. Numerical models can provide a more realistic representation of the interaction between groundwater systems and mine excavations.

Governing equation of inflow model

The governing partial differential equation for a two dimensional saturated/ unsaturated flow condition can be obtained by coupling the Darcy's law and continuity equation (Freezeand Cherry, 1979) as given below:

$$\frac{\partial}{\partial x} (K_x \frac{\partial h}{\partial x}) + \frac{\partial}{\partial y} (K_y \frac{\partial h}{\partial y}) = C \frac{\partial}{\partial t} (h) + Q$$

where, K_x and K_y are the hydraulic conductivities in the X and Y directions respectively, Q is the recharge or discharge per unit volume, H is the hydraulic head and t is the time. The hydraulic head is correlated to the volumetric water content (θ) using the following equation:

$$\frac{\partial \theta}{\partial t} = C \frac{\partial h}{\partial t}$$

where C is the slope of the water storage curve.

3.1.1 Prediction of groundwater inflow in the mine

In order to predict the groundwater inflow to a deep open pit mine, two analytical equations were used. The first analytical equation was presented by Vandersluis et al. (1995). This equation is used in arid and semiarid areas where precipitation is generally limited and water inflow to a pit in an unconfined aquifer is normally controlled by horizontal groundwater inflow.

Analytical Equation presented by Vandersluis et al. (1995):

$$Q = \frac{366.1 \times K (2H \Delta - h) \Delta h}{\log(R + r) - \log r_o}$$

The second analytical equation quoted in Krusseman and De Ridder (1979) and Singh et al. (1985) is based on well hydraulics and can be used for estimation of steady state inflow rate to an open pit mine. This equation was derived from Thiem-Dupuit equation and can be applied for unconfined aquifer. Analytical Equation presented by Krusseman and De Ridder (1979) and Singh et al. (1985)

$$Q = \frac{\pi K (H^2 - h^2)}{\ln(R/r)}$$

The radius of influence R is reduced to:

$$R = 5755 (HK)^{0.5}$$

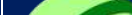
In above equations:

Q = groundwater inflow (m³/day);

K = permeability of the unconfined aquifer (m/day);

H = potentiometric surface or initial water table elevation (m);

R = radius of influence (m);

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O = reduced radius of the open pit by level (m);

h = potentiometric surface elevation at a specific point (m);

p = radius of the pit at the
desired level (m); Δh =
drawdown at the desired level
(m).

The above calculation has been used to evaluate the inflow in to the mine pits in CCCPL Kallur Mines. The results are as follow.

The Ground water level is at 7.53 m below ground level. The depth upto 7.53 m from ground level has been considered as non-inflow zone. The inflow for different benches of the mine pit has been estimated and results are as follows.

Bench 1 – Depth from 457.7 to 456 amsl = 1.7 m (Cumulative depth 1.7m)		
$Q = \frac{\pi K (H^2 - h^2)}{\ln(\frac{R}{r_p})}$		Cumulative Inflow into the Mines
T = Transmissivity of the aquifer in Sq.m/day	0	0
K - Permeability of the unconfined aquifer (m/s)	0	
H = Potentiometric surface or initial water table elevation in m	457.7	
R = Radius of Influence (m)		
h = Potentiometric surface elevation at a specific point in m	456	
rp = Radius of the pit at the desiered level in m	380	
Q = Ground water inflow (Cum/Day)	0	
Bench – 2- Depth from 456 to 447 amsl = 9.0 m (Cumulative depth 10.7m)		
T = Transmissivity of the aquifer in Sq.m/day	0.04	197
K - Permeability of the unconfined aquifer (m/s)	0.0000001	
H = Potentiometric surface or initial water table elevation in m	456	
R = Radius of Influence (m)	576	
h = Potentiometric surface elevation at a specific point in m	447	
rp = Radius of the pit at the desiered level in m	325	
Q = Ground water inflow (Cum/Day)	197	
Bench – 3- Depth from 447 to 438 amsl = 9 m (Cumulative depth 19.7 m)		
T = Transmissivity of the aquifer in Sq.m/day	0.06	
K - Permeability of the unconfined aquifer (m/s)	0.0000001	
H = Potentiometric surface or initial water table elevation in m	447	
R = Radius of Influence (m)	596	
h = Potentiometric surface elevation at a specific point in m	438	

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rp = Radius of the pit at the desiered level in m	300	440	
Q = Ground water inflow (Cum/Day)	243		
Bench – 4- Detph from 438 to 429 amsl = 9 m (Cumulative depth 28.7 m)			
T = Transmissivity of the aquifer in Sq.m/day	0.08	728	
K - Permeability of the unconfined aquifer (m/s)	0.0000001		
H = Potentiometric surface or initial water table elevation in m	438		
R = Radius of Influence (m)	618		
h = Potentiometric surface elevation at a specific point in m	429		
rp = Radius of the pit at the desiered level in m	290		
Q = Ground water inflow (Cum/Day)	288		
Bench – 5- Depth from 429 to 420 amsl = 9 m (Cumulative depth 37.7 m)			
T = Transmissivity of the aquifer in Sq.m/day	0.12	1050	
K - Permeability of the unconfined aquifer (m/s)	0.0000002		
H = Potentiometric surface or initial water table elevation in m	429		
R = Radius of Influence (m)	679		
h = Potentiometric surface elevation at a specific point in m	420		
rp = Radius of the pit at the desiered level in m	252		
Q = Ground water inflow (Cum/Day)	323		

3.1.2 Ground water Cumulative Inflow

Description	Ground water inflow in cum/day	Cumulative Inflow into the Mines in cum/day
Bench 1 – Depth from 457.7 to 456 amsl = 1.7 m (Cumulative depth 1.7m)	-	-
Bench – 3- Depth from 447 to 438 amsl = 9 m (Cumulative depth 19.7 m)	197	197
Bench – 3- Depth from 447 to 438 amsl = 9 m (Cumulative depth 19.7 m)	243	440
Bench – 4- Detph from 438 to 429 amsl = 9 m (Cumulative depth 28.7 m)	288	728
Bench – 5- Depth from 429 to 420 amsl = 9 m (Cumulative depth 37.7 m)	323	1050

The ground water inflow in to the mine pits indicates that the flow is low in the limestone aquifer. Heavy pumping is not required in the limestone aquifer zone.

Stage wise water requirement after utilizing the mines water:

Apart from the above 6 storage cum percolation ponds with a total capacity of **902000 cum** within the mines have been created to harvest the rainwater. Within the percolation ponds it is proposed create recharge trench which would enable to recharge the moderately deeper aquifer in and around the mines area.

If there is any surplus runoff during high rainfall periods, the surplus flow of the storage pond will be let out in to the streams and tanks located outside the project site for ground water recharge.

4. Resistivity Survey and Evalution of Aquifer Parameters

In order to know Hydro geological conditions and to study the fracture pattern, Geophysical survey (Vertical Electrical Sounding) was carried out inside the premises in selected locations. The purpose of electrical surveys is to determine the subsurface resistivity distribution by making measurements on the ground surface. From these measurements, the true resistivity of the subsurface can be estimated. The ground resistivity is related to various geological parameters such as the mineral and fluid content, porosity and degree of water saturation in the rock.

Electrical resistivity surveys have been used for many decades in hydro geological, mining and geo technical investigations. More recently, it has been used for environmental surveys.

Injecting current into the ground through two current electrodes and measuring the resulting voltage difference at two potential electrodes normally record the resistivity measurements. From the current (I) and voltage (V) values, an apparent resistivity (pa) value is calculated. $pa = k V / I$ where k is the geometric factor which depends on the arrangement of the four electrodes.

Resistivity meters normally give a resistance value, $R = V/I$, so in practice the apparent resistivity value is calculated by $pa = k R$. The calculated resistivity value is not the true resistivity of the subsurface, but an “apparent” value, which is the resistivity of a

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homogeneous ground, which will give the same resistance value for the same electrode arrangement.

Based on the Geology and Hydrology the Resistivity **Survey using schlumberger method of configuration** was carried out in order to identify the Hydro geological conditions and the fracture pattern. The data obtained from the resistivity survey were analyzed.

In the site 2 locations have been identified for conducting resistivity survey based on the site condition and hydrogeological conditions. The resistivity survey has been conducted to a depth of 150 m bgl to know the subsurface lithology and the existence of fracture pattern which serves as ground water source.

GROUND WATER EXPLORATION REPORT

S.NO.	DESCRIPTION	DETAIL
1.	Area Of Investigation	Hard Rock
2.	Existing Water Supply	7 bore wells (Current usage 4 bore wells)
3.	Topography Of The Area	Plain topography.
4.	Geology	The site under lain by limestone. The black cotton soil average thickness is 1.7m, below which the lime stone is available
5.	General Hydrogeological Conditions	Ground water occurs in water table condition. The ground water occurrence and movement is controlled by fracture and fissures. The ground water recharge depends mainly on precipitation.
6.	Hydro Geoelectrical Investigation	
	Resistivity Meter Used	IGIS –DDR3
	Electrode Configuration Adopted	Schlumberger.
	Ves Conducted	VES conducted @ 2 locations- AB/ 2 – 150m m
	Soft Wares Used For Interpretation & Analysis Of Ves Data	W-Geosoft – Winsev-6.1 software

The resistivity survey data has been interpreted using W-Geosoft – Winsev-6.1 software. After care full interpretation of the resistivity results, it is ascertained that the fracture system exists within the mines and plant area. The plant area is more favorable for

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development of bore well. As all the bore wells area located in the highly fractured and fissured area the bore well yield copious amount of water which will meet the water requirement of the Plant and Mines.

The depth, estimated yield from the existing abstraction structures are as follows:

S.No	Location	Type of Well	Longitude	Latitude	Depth of bore well in m	Dia of bore well in mm/ m	Yield in Liters / Minutes (LPM)
1	Ellamatemple area bore well	BW	77° 26' 25.44"	17° 21' 55.8"	62	150 mm	650
2	CPP WTP	BW	77° 27' 7.56"	17° 22' 10.56"	121	150 mm	650
3	Batching Plant rear side	BW	77° 26' 46.32"	17° 22' 31.08"	62	150 mm	500
4	Security shed Opposite area	BW	77° 26' 23.64"	17° 22' 12.72"	74	150 mm	700

The ground water is currently being extracted from 4 bore wells without disturbing the aquifer system as the distance between the bore well are sufficiently spaced as per the State Government norms.

4.1 Evaluation of Aquifer Parameters:

Pumping test is the most accurate reliable and commonly used method to evaluate the hydraulic parameters of an aquifer, efficiency of a well / bore well, safer operational rates of pumping and selection of suitable pump. The methods of a pumping test are highly varying in its application. The main objective of pumping test is to determine the aquifer parameters such as Transmissivity (T), Storage co-efficient (S) Hydraulic Conductivity (K), well performance and safe yield for execution of water supply.

The pumping test conducted in the same hydrogeological environment has been collected from the government department. The results are as follows:

4.2 Results of the Pumping test:

Bore Well Depth in m	120
Static Water level in m	9.8
Pump capacity	12.5 HP
Discharge in lpm	800 lpm
Time in min.	320 minutes Stability attained
Drawdown in m	2.3 m

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Specific Capacity lpm per m draw down	347
Transmissivity of the fractured aquifer m ² /day	280
Rate of recovery	In 150 minutes static water level was attained

5. Estimation of Surface water Runoff

Runoff is one of the most important hydrologic parameter used in most of the water resources applications. The predication of quantity and rate of runoff from the land to the streams is very difficult and it requires more time for ungauged watershed.

Rainfall, if it is not intercepted by vegetation or by artificial surfaces such as roofs or pavements, falls on the earth and either evaporates, infiltrates or lies in depression storage. When the loss arising in these ways is all provided for, there may remain a surplus that, obeying the gravitation laws, flows over the surface to the nearest stream channel. The streams coalesce into rivers and the rivers find their way down to sea.

Runoff may consist of surface runoff, subsurface runoff and groundwater runoff. Surface runoff is that part of runoff which travels over the ground surface and through channels into the basin outlet. Groundwater runoff is a portion of groundwater discharged into the streams. Subsurface runoff (Interflow) is that part of precipitation which infiltrates the surface soil and moves laterally through the upper soil horizons towards the streams. The surface runoff assessment is very essential to quantify the water that flows out of the watershed. A portion of the surplus flow can be used for conservation within the watershed.

5.1 Estimation of Runoff: (SCS Method)

The conventional methods of predication of runoff requires considerable amount of hydrological and meteorological data. The Remote sensing and GIS can help to a great extent in runoff assessment. Though there are number of methods are available to assess the runoff from a watershed, The Soil Conservation Services (SCS) method has been dealt elaborately, since it is reliable and more accurate than the other methods.

The most generally available data in India are the amounts measured by non-recording raingauges and for such data, Rainfall-runoff relationship was developed.

Rainfall - runoff relationship, in general form, is given as:

$$Q = (p - I_a)^2 / ((p - I_a) + S)$$

Where Q = actual runoff, P = the rainfall S = potential retention and Ia = initial abstraction during the period between the period of beginning of rainfall and runoff in equivalent depth over the Catchment.

The effect of runoff is based on the antecedent soil moisture condition. The Soil Conservation Services has formulated three antecedent soil moisture conditions viz. AMC I, AMC II and AMC III. Before estimating runoff for a particular rainfall event the curve numbers have to be adjusted according to the season and total 5-day antecedent rainfall.

ANTECEDENT MOISTURE CONDITION (AMC)

AMC	5 days antecedent rainfall in cm	
	Dormant season	Growing season
I	Less than 1.25	Less than 3.5
II	1.25 to 2.75	3.5 to 5.25
III	Over 2.75	Over 5.25

CONDITION OF REGION

Black soil region AMC II

and III Ia = 0.1S Black soil

region AMC I Ia = 0.3S

All other regions Ia = 0.3S

The S values are derived from the Curve Number

(CN) values $CN = 25400 / (254 + S)$

$S = (25400 / CN) - 254$

Using the above equations developed are

$Q = (P - 0.3S)^2 / (P + 0.7S)$ for all

soil regions $Q = (P -$

$0.1S)^2 / (P + 0.9S)$ for

black soil regions

5.2 Runoff curve number for hydrologic soil cover complex

The Land use pattern of the watershed and the hydrological soil group has to be considered to estimate the Curve Number (CN value). The modified curve numbers for AMC-II are given below.

Land use cover	Treatment of Practice	Hydrologic Condition	Hydrologic Soil Group			
			A	B	C	D
Fallow	Straight row	-	77	86	91	94
Cultivated	Straight row	Poor	72	81	88	81
	Straight row	Good	67	78	85	89
	Contoured	Poor	70	79	84	88
	Contoured	Good	65	75	82	86
	Contoured and terraced	Poor	66	74	80	82
	Contoured and terraced	Good	62	71	78	81
Small Grain	Straight row	Poor	65	76	84	88
	Straight row	Good	63	75	83	87
	Contoured	Poor	63	74	82	85
	Contoured	Good	61	73	81	84
	Contoured and terraced	Poor	61	72	79	82
	Contoured and terraced	Good	59	70	78	81
Closed seeded	Straight row	Poor	66	77	85	89
	Straight row	Good	58	72	81	85
	Contoured	Poor	64	75	83	85
	Contoured	Good	55	69	78	83
	Contoured and terraced	Poor	63	73	80	83
	Contoured and terraced	Good	51	67	76	80
Pasture		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
Forest	Dense		26	40	58	64
	Open		28	44	60	67
	Shrub		33	47	64	67
Woodlands		Fair	36	60	73	79
Wasteland			71	80	85	85
Roads (dirt)			73	83	88	90
Hard Surface			77	86	91	93
Water body			0	0	0	0

The AMC I & AMC III have to be taken from the table for the runoff curve number AMC II.

CN Values for conditions		
AMC - II	AMC - I	AMC - III
100	100	100
95	87	98
90	78	96
85	70	94

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80	63	92	
75	57	88	
70	51	85	
65	45	82	
60	40	78	
55	35	74	
50	31	70	
45	26	65	
40	22	60	

5.3 Weighted Curve Number

The land use and soil map have been integrated using ArcGIS software and the integrated land use / soil attribute table has been used for the computation of total area.

weighted curve number of the micro watershed (for AMC II) and from the above table the curve numbers for AMC I and AMC III conditions have been computed.

The Weighted Curve Number for the micro watershed is as

follows:AMC-II = 76.32

AMC-I = 57.64

AMC-III = 88.68

5.4 Estimation of monthly Runoff – Kallur Micro Watershed:

The monthly rainfall data of Chincholi rain gauge station has been collected for the year 2004 and 2012 and the weighted curve number of the micro watershed has been given as input for the calculation of monthly runoff. The monthly runoff of the micro watershed for the year 2004 and 2012 is presented below.

Monthly Runoff from the micro watershed

From the above table, it is clear that there is highest runoff of 55.03 mcm occurred during the year 2010. The lowest runoff of 22.74 mcm occurred during the year 2006. It is also observed that there is copious amount of rainfall available within the watershed for recharge. Check dam, percolation ponds and other recharge structures may be constructed in the suitable locations of the micro watershed area to make the ground water source sustainable.

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Jan									
Feb									
Mar					9079251				
Apr	1050714	4530728						809109	1297258
May	6304755		5028759						
Jun	1574978	3264484	5817432	15802807	3375004	5937407	7288966	4104392	3937808
Jul	10118867	14923368	1285522	4930421	6227003	1158903	16518000	13251200	6632869
Aug	818642	8759125	1486281	9520560	9755557	13058349	16396405	13872746	6160960
Sep	8503144	14830436	9050789	15602585	10902965	19802518	8517362	1491793	4017631
Oct	4586754	7515933	71855		4223043	11716181	5148250	3257583	4580089
Nov						847420	1164117		
Dec									
Total Cum	32957855	53824074	22740638	45856373	43562824	52520777	55033100	36786824	26626615
Total MCM	32.96	53.82	22.74	45.86	43.56	52.52	55.03	36.79	26.63

5.5 Estimation of Monthly runoff from the project site

For the above estimation, 9 years normal rainfall and monthly rainy days have been considered.

Volume of rainwater that can be collected from the project site has been estimated for the monthly normal rainfall.

Vacant & Green belt area, Roof top area and paved area of the project site have been separated for the run off estimation and conservation measures have been suggested.

The details of various areas are as follows:

Plant	Line I (Sq.m)	Line II (Sq.m)	Total (Sq.m)
Built area (Plant) including yards	133522	300000	433522
Road (Plant)	137328	50000	187328
Greenbelt (Plant)	339000	176000	515000
Vacantland	725650		199650
Total	1335500	526000	1335500
Mines			
Built area (Mines)	1860		1860
Roads (Mines)	20380		20380

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

Greenbelt (Mines)	101400		101400
Mines Area	4105760		4105760
Total	4229400		4229400
Colony			
Built Area (Colony including Roads)	201600	60000	261600
Greenbelt (Colony)	20000	47000	67000
Vacantland	215700		108700
Total	437300	107000	437300
Grand Total	6002200	633000	6002200

5.6 Pre-construction Runoff

- Rational method has been used to estimate the runoff for the project site.
- Runoff for after expansion has been estimated
- As the site is an undisturbed land the volume of water that is being generated after natural recharge is about 1354276 CUM/Year.

The predicted pre project runoff is as follows:

Pre Project Runoff				
Month	Rainfall (mm)	Area in Sq.m	Runoff Coefficient	Monthly Pre Project Runoff in Cum
January	4.9	6002200	0.3	8823
February	3.0	6002200	0.3	5402
March	20.8	6002200	0.3	37454
April	28.8	6002200	0.3	51859
May	38.2	6002200	0.3	68785
June	99.6	6002200	0.3	179346
July	139.5	6002200	0.3	251192
August	146.7	6002200	0.3	264157
September	164.8	6002200	0.3	296749
October	84.9	6002200	0.3	152876
November	18.9	6002200	0.3	34032
December	2.0	6002200	0.3	3601
Total Annual Pre Project Runoff in Cum				1354276

5.6 Post-construction Run off

The same rainfall and the land area have been taken up for the estimation of runoff for the prediction from the project site. As the vacant exposed land would be converted in to built up land, the natural recharge that had taken place during the pre-construction period would not occur and hence there would be meager infiltration. The losses such as, Percolation, evaporation and other unforeseen losses has been considered.

Predicted Post Project runoff from different surfaces:

Predicted Runoff from the Project Site						
Location	Area (Sq m)					Runoff Coefficient
Roof Area (m ²)	696982					0.95
Asphalt area and Paved area (m ²)	207708					0.85
Green belt Area (m ²)	683400					0.2
Open area + Mines(m ²)	4414110					0.3
Month	Rainfall in mm	Runoff Roof area Cum	Runoff Asphalt / Paved area Cum	Runoff Green belt area Cum	Runoff Open area Cum	Total Monthly Runoff Cum
January	4.9	3244.45	865	670	6489	11268
February	3.0	1986.40	530	410	3973	6899
March	20.8	13772.36	3672	2843	27544	47832
April	28.8	19069.43	5085	3936	38138	66228
May	38.2	25293.48	6744	5221	50586	87845
June	99.6	65948.44	17585	13613	131894	229040
July	139.5	92367.54	24629	19067	184731	320794
August	146.7	97134.90	25900	20051	194265	337351
September	164.8	109119.50	29096	22525	218234	378974
October	84.9	56215.08	14989	11604	112427	195236
November	18.9	12514.31	3337	2583	25028	43462
December	2.0	1324.27	353	273	2648	4599
TOTAL	752.0	497990	132785	102797	995956	1729527
Total Predicted Annual Runoff from Different Surfaces in Cum						1729527

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

- Total Predicted Post project runoff from the Factory area– 1729527 CUM/Year

6. Feasibility of Rainwater Harvesting

Precipitation is the main source of water to the land. A light gentle rain may be absorbed in the soil. A sharp intense rainfall of short duration may result in a large amount of runoff, because the rainfall range generally exceeds the infiltration rate. The surface characteristics of the area on which waterfalls also play a significant part in estimating the quantity of runoff.

6.1 Rainwater harvesting:

There is lot of surface and subsurface recharging measures available depending upon the site conditions. The specific recharge measures are to be selected depending on the soil characteristics, lithology and nature of the aquifer material, pre and post monsoon ground water level and so on. The average ground water level in the project area varies between

18.6 m (Pre-monsoon) and 6.5 m (Post monsoon), which clearly indicates that the ground water level in the study area during study period is moderately deep. As the ground water level is moderately deep, proposal for **roof top collection. Storage cum percolation pond** has been contemplated. In addition, the above recharge trench has also been suggested inside the pond.

According to the slope of the roof the sump location has been identified. The roof area and the normal monthly rainfall have been considered for designing the capacity of the sump. The estimation of runoff from the project site has been assessed. Based on vacant, roof top area and the monthly rainfall and runoff, the storage structures and percolation pond have been contemplated.

Ground water Clearance obtained from the competent authority for 850 m³/day for the existing capacity of operations. The Ground water Clearance required only for 1500 KLD only.

The pre project runoff is 1354246 cum/year and post project runoff is 1729527 cum/year the Surplus runoff of 375251 cum/year is being generated in the project site during post project. The excess runoff that is being generated can be harvested within the Project area to maintain the hydrological balance.

6.2 Conservation measuresRoof top collection:

- The roof water collection is estimated as 33311 **CUM/Year**
- 10 sumps (Size 10mX10mX3m) with a total capacity of 3000 CUM have been suggested to capture the roof water.

The rainwater that is being collected from the roof is proposed to pass through a filter media. The proposed filter media is multiplayer vertical filters. The size of the filter media is as follows:

- The size of the multiplayer vertical filter is 2m X 2m X 1.2m
- The outlet pipes from the roof area will be connected with 115 mm dia PVC pipeallowing the water to pass through the filter media before storing in the sump

The diagram of the filter media is shown in the figure.

Rainwater Harvesting scheme for the Site - Roof top Collection				
Location	Area (sq m)	Runoff Coefficient		
Total Roof Area	696982	0.95		
Actual Sump Capacity	CUM	3000		
Harvestable water	CUM	497924		
Water harvested	CUM	33311		
Surplus outflow from Sump	CUM	464679		
Month	Rain fall (mm)	Harvestable Water (CUM)	Sump Storage (CUM)	Surplus out flow from Sump (CUM)
January	4.9	3244	3000	244
February	3.0	1986	1986	0
March	20.8	13772	3000	10772
April	28.8	19069	3000	16069
May	38.2	25293	3000	22293
June	99.6	65948	3000	62948
July	139.5	92368	3000	89368
August	146.7	97135	3000	94135
September	164.8	109120	3000	106120
October	84.9	56215	3000	53215
November	18.9	12514	3000	9514

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

December	2.0	1324	1324	0
TOTAL	752.0	497990	33311	464679

Storage Pond and Percolation Pond:

The surplus runoff after roof top collection and from the green belt, asphalt area has been estimated.

Total runoff after roof top collection is - 1696217 CUM/Year

Rainwater water harvesting scheme for the Site - Storage cum Percolation Pond									
Location	Area (Sq m) (A)	Runoff Coeffi- cient(B)	A x B						
Paved area	207708	0.85	176552						
Green belt area	683400	0.2	136680						
Vacant area	4414110	0.3	1324233						
			1637465						
Storage Capacity of the Pond in CUM			902000						
Month	Rain fall (mm)	Runoff excluding Roof area (CUM)	Surplus flow after Roof top collection in CUM	Total Volume of runoff from the Site in CUM (1+2)	Water Stored in the Pond (CUM)	Evaporatio n Losses (CUM)	Estimate d Quantity of water added to the Gournd water Reservoir (CUM)	Water available in Pond after Evapora- tion and Infiltra- tion (CUM)	Sruplus Runoff after Storage (CUM)
1	2	3	4	5	6	8	10	11	12
January	4.9	8024	244	8268	8268	2067	3101	3101	0
February	3.0	4912	0	4912	4912	1228	1842	1842	0
March	20.8	34059	10772	44832	44832	13449	15691	15691	0
April	28.8	47159	16069	63228	63228	22130	20549	20549	0
May	38.2	62551	22293	84845	84845	33938	25453	25453	0
June	99.6	163091	62948	226040	226040	79114	73463	73463	0
July	139.5	228426	89368	317794	317794	95338	111228	111228	0
August	146.7	240216	94135	334351	334351	83588	125382	125382	0

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
	Client: Chettinad Cement Corporation Pvt. Ltd,	Consultant: V. PUGAZHENDI	

September	164.8	269854	106120	375974	375974	93993	140990	140990	0
October	84.9	139021	53215	192236	192236	38447	76894	76894	0
November	18.9	30948	9514	40462	40462	8092	16185	16185	0
December	2.0	3275	0	3275	3275	655	1310	1310	0
TOTAL	752.0	1231537	464679	1696217	1696217	472040	612088	612088	0

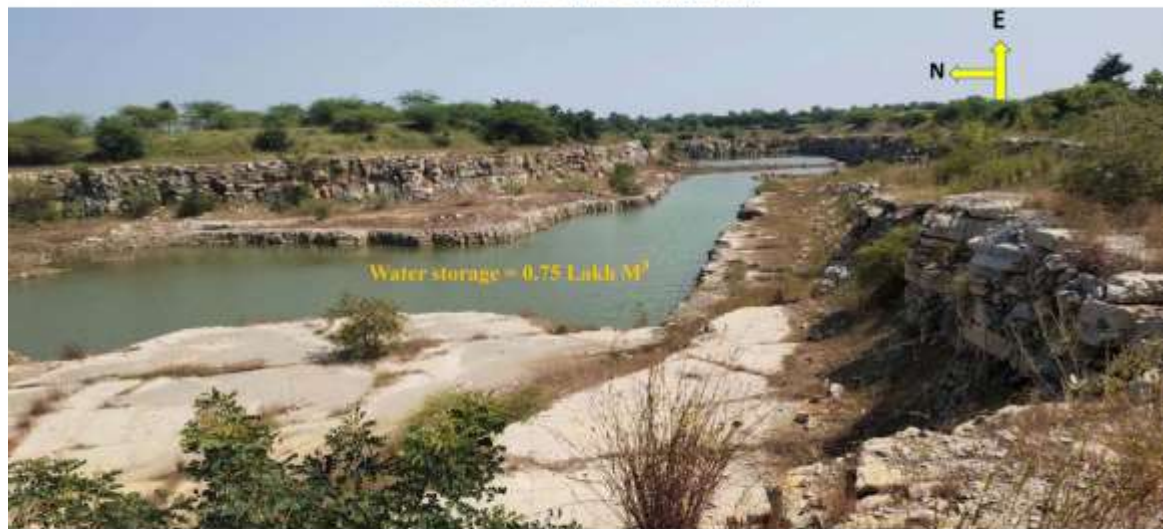
Sl. No.	Description / Location	Size of Pond in mts. (L x W x D)	Capacity in Cum.
1	Pit-1 (Block 'A')	460 x 330 x 2.64	4,00,000
2	Pit No.2 (Block 'A')	115 x 65 x 3.34	25,000
3	Pit No.3 (at Block 'A' BH-60)	250 x 50 x 6.00	75,000
4	Pit No.4 (Block 'B')	130 x 120 x 6.41	1,00,000
	Total Capacity		6,00,000

- The Surface Runoff water captured in the Mining Lease area and storage in the following Ponds.
- Total Total Capacity of the Ponds is 6,00,000 Cum/Year
- The Rainwater from the above area is proposed to take to the storage pond through unlined Open channel with a width of 1.50 m.
- Since inception Garland drains are developed with a cumulative length of 2150 mts.
- The Storage and/ Percolation pond collection is estimated as 6,00,000 Cum./Year
- Evaporation losses (monthly evaporation has been considered 15% to 20%) are estimated as 1,20,000 Cum/Year.
- However, the Inlet water collected through the Rain water Runoff will be (considering 25% to 30%) estimated as 1,60,000 Cum/year
- The surplus from the storage pond is proposed to let out through open channel to the Nallah.

Block - A: Workings along with Rain Water Harvesting Pond at Pit-1



Block-A: Pit No. 2 Water Storage area)



Block-A: Rain Water Harvesting Pond at Pit-3 at BH 60 Area



Block- B: Rain Water Harvesting Pond at Pit-4





Preparation of Garland Drains for catchment of Surface Runoff Water



Recharge Pit at WTP Area



Size=3x3x3

7. Summary and Conclusions

- The water requirement for the different components for the Total project is 2400 KLD. (850 KLD of existing plant requirement +50 KLD for Existing Mines requirement+ Additional requirement for the proposed project is 1500 KLD)
- 850 KLD will be met from the Existing bore well for which we have state ground water department NOC. Additional requirement of 1500 KLD will be met from Mines pit and New bore wells.
- The ground water inflow in to the mine pits indicates that the flow is low in the limestone aquifer. Heavy pumping is not required in the limestone aquifer zone.
- The inflow for bench No 5 of the mine pit is estimated as follows.

Description	Ground water inflow in cum/day	Cumulative Inflow into the Mines in cum/day
Bench – 5- Depth from 429 to 420 amsl = 9 m (Cumulative depth 37.7 m)	323	1050

- The resistivity survey reveals that the fracture system exists within the mines and plant area. The plant area is more favorable for development of bore well. Most of the existing bore wells are located in plant area. As all the bore wells area located in the highly fractured and fissured area the bore well yield copious amount of water which will meet the water requirement of the Plant and Mines.
- The Surface Runoff water captured in the Mining Lease area and storage in the following Ponds.
- Total Total Capacity of the Ponds is 6,00,000 Cum/Year
- The Rainwater from the above area is proposed to take to the storage pond through unlined Open channel with a width of 1.50 m.
- Since inception Garland drains are developed with a cumulative length of 2150 mts.
- The Storage and/ Percolation pond collection is estimated as 6,00,000 Cum./Year
- Evaporation losses (monthly evaporation has been considered 15% to 20%) are estimated as 1,20,000 Cum/Year.
- However, the Inlet water collected through the Rain water Runoff will be (considering 25% to 30%) estimated as 1,60,000 Cum/year
- The surplus from the storage pond is proposed to let out through open channel to the Nallah.

	Hydrogeological Study in and around Chettinad Cement's Mines & Plant area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District, Karnataka State		
Client: Chettinad Cement Corporation Pvt. Ltd,		Consultant: V. PUGAZHENDI	

Request the Ground Water Authority to accord permission for Additional 1500 KLD (Mines pit 1050 KLD + 450 from new borewells)



Accreditation Board of CGWA

Certificate of Accreditation

Mr. V. Pugazhendy

*Has been accredited as Ground Water Professional to prepare reports in the
Functional Areas of*

- *Impact Assessment Report with Modelling.*
- *Hydrogeological Report for mining projects.*

Valid from : 01.10.2021

Certificate No. : CGWA/RGI/042

Valid thru : 30.09.2026

Dated : 30.11.2021



क्षेत्रीय निदेशक
Regional Director
आरजीएनजीडब्ल्यूटीआरआई
RGNGWT&RI



सदस्य
Member
आरजीएनजीडब्ल्यूटीआरआई
RGNGWT&RI



Accreditation Board of CGWA

Certificate of Accreditation

Mr. V. Pugazhendi

*Has been accredited as a Ground Water Professionals to prepare reports in the
Functional Areas of*

- Impact Assessment of Existing / Proposed GW Extraction

Valid from : 15.02.2021

Certificate No. : CGWA/RGI/012

Valid thru : 14.02.2026

Dated : 07.07.2021



क्षेत्रीय निदेशक
Regional Director
आरजीएनजीडब्ल्यूटीआरआई
RGNGWT&RI



सदस्य
Member
आरजीएनजीडब्ल्यूटीआरआई
RGNGWT&RI



Hydrogeological Study in and around Chettinad Cement's Mines & Plant
area -Sangem(K) & Kallur Villages,Chincholi Taluk, Gulbarga District,
Karnataka State



Client:
Chettinad Cement Corporation Pvt. Ltd,

Consultant:
V. PUGAZHENDI

Chettinad Cement Corporation Private Ltd.,



CCCPL/KAL/GW/ENV/2025-26/01

Date:31.07.2025

To
The Senior Geologist,
Karnataka Ground Water Authority,
Kalaburagi-585101

Sub: Request for renewal of NOC for ground water abstraction of 850 KLD for the cement plant M/s. Chettinad Cement Corporation Private Limited Kallur Works, Sangam K Village, Garagapalli Post, Chandapur (SO), Chincholi (TK), Kalaburagi District, Karnataka.

Ref. Ground water approval Letter No. DE0011145347012 dated 22.12.2022

Dear Sir,

Kindly refer to the above subject matter and referred letter. We have applied for ground water renewal of 850 KLD, we have submitted the online application no. KGWAN1492601511 for renewal of ground water of M/s. Chettinad Cement Corporation Private Limited Kallur Works, Sangam K Village, Garagapalli Post, Chandapur (SO), Chincholi (TK), Kalaburagi District, Karnataka.

The following documents is enclosed:

S.No	Enclosed Details	Annexure No's
1	Fee Receipt	Annexure-I
2	Survey no's	Annexure-II
3	Environmental Clearance	Annexure-III
4	Consent For Operation	Annexure-IV
5	Hydrogeological Report	Annexure-V
6	NOC from KGWA	Annexure-VI
7	Rain water pits for recharging ground water	Annexure-VII
8	Water Balance	Annexure-VIII
9	water quality report	Annexure-IX

Therefore, we request your goodself to kindly grant NOC for groundwater abstraction & digging of bore wells for expansion of industrial & domestic purpose.

Yours faithfully,

For Chettinad Cement Corporation Private Limited

K. Saikumar
K Saikumar
Unit Head 31/07

2 copy received
(copy)

Cc: The Director, Karnataka Ground Water Authority, #1/1, 2nd Floor, KSFC Bhavana, Thimmaiah Road, Bengaluru-560052

ಕಿರಿಯ ಭೂ ನಿಜ್ಞಾನಿಯವರ ಕಛೇರಿ
ಜಿಲ್ಲಾ ಅಂತಸ್ತಾಪನಾ ದಿಢೇಶನಾಲಯ.

ಕಿರಿಯ ಭೂ ನಿಜ್ಞಾನಿಯವರ ಕಛೇರಿ
ಜಿಲ್ಲಾ ಅಂತಸ್ತಾಪನಾ ದಿಢೇಶನಾಲಯ.
ದಿನಾಂಕ 01/08/2025

Chettinad Cement Corporation Private Limited

Kallur Works, Sangam K Village
Garagapalli Post, Chandapur (SO)
Chincholi (TK), Kalaburagi (Gulbarga) (DT)
Karnataka, Pin - 585305, India
T - 08475 - 295607
E - kallur@chettinadcement.com

CIN : U93090TN1962PLC004947

Head Office

Meyyammai Building, 17/35,
Gandhi Nagar, 2nd Main Road,
Adyar, Chennai - 600020
Tel +91 44 421 9955, 28292727
F +91 44 4309 0202, 2829 1558

E : info@chettinadcement.com
www.chettinadcement.com



Karnataka Ground Water Authority

K.S.F.C Bhavan, Thimmaiah Road, Bengaluru- 560052, Karnataka.

E-mail: gwdkar@gmail.com, Ph No: 080-22268732

No: DE0011145347012

Dated : 22-12-2022

NO OBJECTION CERTIFICATE - FORM 3 A RULE(6)

Permission For Digging/Drilling A Well/ Borewell/ Extraction Of Groundwater For Industrial/
Commercial/ Entertainment Or Other Use

M/s Chettinad Cement Corporation Pvt Ltd
Sangem K village, Kallur works



Above Person/Company is permitted for extraction of groundwater at below mentioned location(s):

SL NO.	LOCATION
1	18/1 TO 251/1, NEAR CRUSHER AREA, Chincholi taluk
2	18/1 TO 251/1, West side of the Raw water tank , Chincholi taluk
3	18/1 to 251/1, Back side of stores, Chincholi taluk
4	18/1 to 251/1, Baktampalli road, Chincholi taluk
5	18/1 to 251/1, Ellamatemple area, Chincholi taluk
6	18/1 to 251/1, CPP WTP, Chincholi taluk
7	18/1 to 251/1, Batching Plant rear side, Chincholi taluk
8	18/1 to 251/1, Security shed Oppsite area, Chincholi taluk

From (8) Bore Wells For Other Purpose Use, Subject To The Following Conditions :-

- ❖ The firm may abstract **900 m3/day** (not exceeding **328500 m3/year**) of groundwater through (8) bore wells only. No additional groundwater abstraction structures to be constructed for this purpose without prior approval of the KGWA.
- ❖ This NOC is valid for 0 years from the date of issue of this letter.
- ❖ As per the categorization of taluks, Chincholi taluk in Kalburgi district fall under Safe taluk category. Hence, the Groundwater Abstraction/Restoration Charges to be paid is Rs. {{ChargePerDay}} per day.
- ❖ The Firm at its own cost shall install piezometer/s, at suitable locations and execute groundwater regime monitoring programme in and around the project area on regular basis in consultation with the

NO. OF PIEZOMETERS	MONITORING MECHANISM		
	MANUAL	DWLR	DWLR WITH TELEMETRY
2	0	1	1

- ❖ The firm shall submit the water audit report to KGWA through certified auditors within One year of issue of NOC for more than 100KLD Ground water users.
- ❖ The well should not be used for drawing water for any other use other than applied for.
- ❖ The withdrawal of water should be better managed to avoid wastage of water
- ❖ The utilized water should be recycled and reused after necessary treatment
- ❖ The construction of rain water harvesting structures in the vicinity of the well/ bore well shall be as per the technical opinion of Senior Geologist, District Groundwater Office, Groundwater Directorate,**Kalburgi** District.
- ❖ The utilization of water will be subject to the regulation from time to time based on the extraction of water from the well/bore well
- ❖ The pollution of groundwater resources should be avoided
- ❖ Water meter has to be installed and data on groundwater draft is to be maintained and submitted every month to the Authority concerned. The groundwater quality to be monitored twice in a year during pre-monsoon and post monsoon periods.
- ❖ **M/s Chettinad Cement Corporation Pvt Ltd** shall, in consultation with the Senior Geologist, District Groundwater Office, Groundwater Directorate, **Kalburgi** District, implement groundwater recharge measures for augmenting the groundwater resources of the area.
- ❖ The photographs of the recharge structures after completion of the same are to be furnished immediately to the Senior Geologist, District Groundwater Office, Groundwater Directorate, **Kalburgi** District, for verification.
- ❖ The abstraction/restoration charges should be deposited to the Karnataka Groundwater Authority account in the form of DD / Cash.
- ❖ The groundwater monitoring data in respect of Point No. 4 & 12 to be submitted to Senior Geologist, District Groundwater Office, Groundwater Directorate, **Kalburgi** District on regular basis at least once in a year.
- ❖ The permission is liable to be cancelled in case of non-compliance of any of the conditions as mentioned in Point No. 1 to 15.
- ❖ The Karnataka Groundwater (Regulation for Protection of Sources of Drinking Water) Act, 1999 should be followed scrupulously.
- ❖ This NOC is subject to prevailing Central/State Government rules /laws or Court orders related to construction of bore well/ groundwater withdrawal /construction of recharge or conservation structures /discharge of effluents or any such matter as applicable.
- ❖ This NOC does not absolve the applicant / proponent of his obligation / requirement to obtain other statutory and administrative clearances from other statutory and administrative authorities.

BANK ACCOUNT DETAILS ARE GIVEN BELOW	
Bank	: CANARA BANK
Account Holder	: CHAIRMAN, KGWA
Account No	: 0788201052332
IFSC	: CNRB0000788

- ❖ It is also informed that during the renewal of the NOC, depending upon the hydrogeological condition the category of the area and the site conditions, the quantity will vary from permitted quantity. The company should make alternate arrangements for the reducing quantity for sustaining their industrial activity by means of availing water through local bodies or using the urban waste water after proper treatment.
- ❖ The fee that will be levied by the government for the groundwater usage is applicable from the date such orders are issued by the government.
- ❖ The firm is bound to obey the directions of NGT/ court orders that are existing and that may be laid down in future in matters related to Groundwater withdrawal.
- ❖ ADDITIONAL CONDITIONS : 1) M/s.Chettinad Cement Corporation Pvt Ltd is permitted to abstract 850 m3/day for 365 days (not exceeding 310250 m3/year) of groundwater through Eight Borewell (08) for Industrial and Domestic purpose use only. No additional groundwater abstraction structures to be constructed for this purpose without prior approval of the KGWA. 2) This NOC is valid for Three years from 25.11.2022 to 24.11.2025. 3) As per the categorization of taluks, Chincholi, in Kalaburagi district fall under safe taluk category. Hence, the Groundwater abstraction Charges to be paid is Rs.1700 per day at the rate of Rs-2.00 per KLD. 4) The Firm at its own cost shall install one piezometer, at suitable locations and execute groundwater regime monitoring programme in and around the project area on regular basis in consultation with the Senior Geologist, District Groundwater Office, Groundwater Directorate, Kalaburagi District. 5) The firm shall submit the water audit report through certified auditors within one year of completion of the same to KGWA.

This NOC has been issued as per the proceedings drawn from the meeting held under the Chairmanship of Deputy Commissioner, District Groundwater Committee, Kalburgi District on 04-07-2022 and the proceedings drawn from the Karnataka Groundwater Authority meeting held under the Chairmanship of Secretary & Chairman, Minor Irrigation and Groundwater Development Department and Karnataka Groundwater Authority on 22.12.2022..

To,

M/S Chettinad Cement Corporation Pvt Ltd

Sangem K Village, Kallur Works



Copy For Information To,

1. The Deputy Commissioner, Kalburgi District

2. Regional Director, Central Groundwater Board, SWR.

3. The Director, Groundwater Directorate and Member Secretary, Karnataka Groundwater Authority, KSFC Bhavana, Bengaluru

4. The Deputy Director, Groundwater Directorate, KSFC Bhavana, Bengaluru

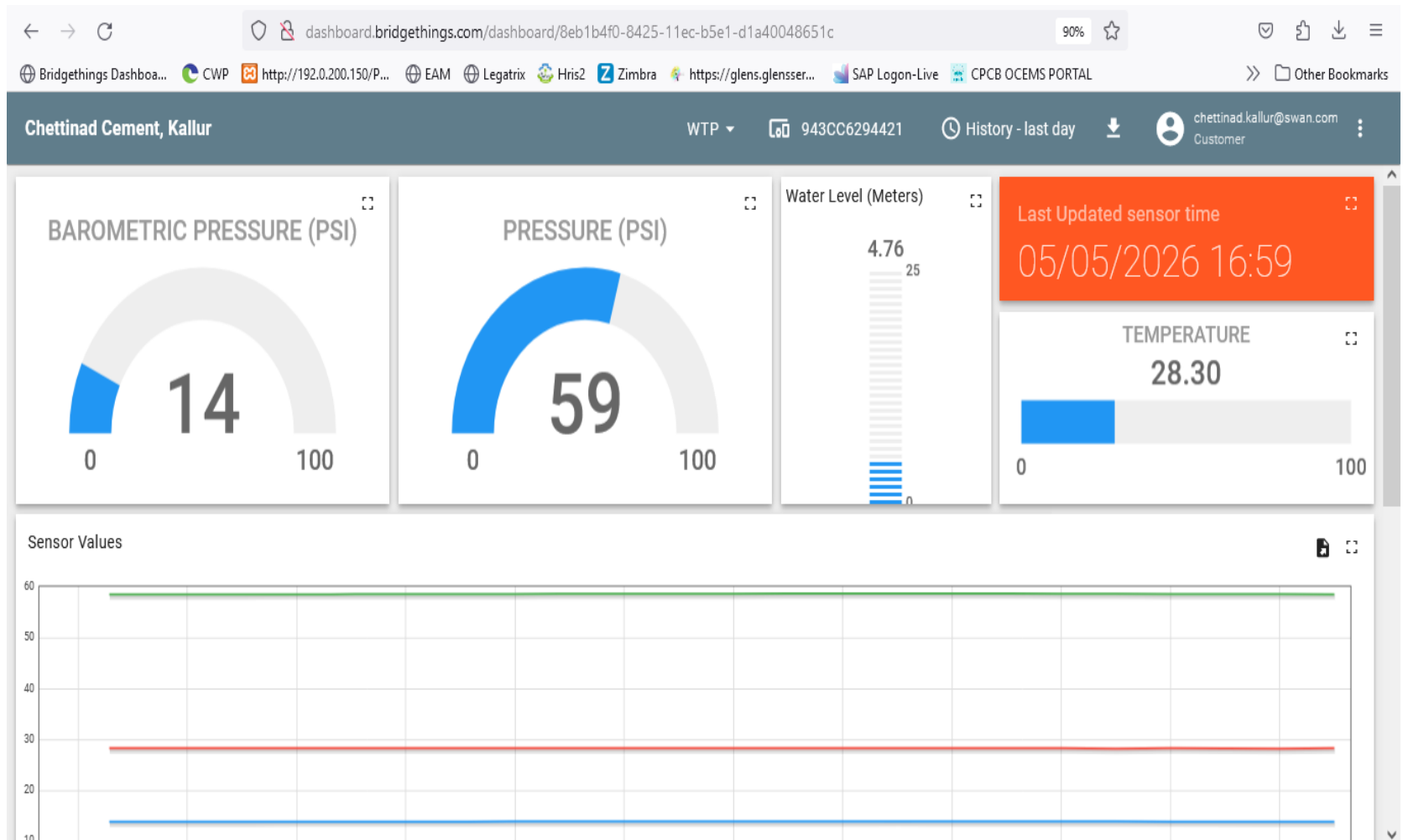
Signature Not Verified

Digitally signed by
Date: 2023.01.13 14:34:53 IST
Reason: Digitally Signed

Place : Kalburgi
Date : 22-12-2022

(E-SIGN SIGNATURE)
Signature of Designated Officer
Karnataka Groundwater Authority

Annexure-11



GROUND WATER LEVEL FLUCTUATIONS

S.No	Location Details		Water level (mbgl)		
	Area of Location		October-2025 to March-2026		
Piezometer			Minimum	Maximum	Average
1	PW1	Near Switch Yard	4.18	5.31	4.81

Chettinad Cement Corporation Private Limited (Kallur Works & Mine)
Sangam K & Kallur Villages, Kalaburagi District, Karnataka

Ground Water Quality Monitoring Report (October'2025 to March' 2026)

S. No	Parameter	GW1	GW2	GW3	GW4	GW5
1	pH @ 25°C	7.7	7.6	7.5	7.4	7.8
2	Total Hardness as CaCO ₃	245.0	145.0	165.0	175.0	425.0
3	Total Dissolved Solids	439.0	292.0	374.0	489.0	1619.0
4	Chlorides as Cl	82.7	44.7	62.4	74.6	444.7
5	Sulfates as SO ₄	44.2	19.6	32.5	43.9	203.9
6	Nitrates as NO ₃	7.8	3.8	3.9	4.5	20.4
7	Fluoride as F	1.2	0.5	0.6	0.7	1.5
8	Colour	1.0	1.0	1.0	1.0	1.2
9	Electrical Conductivity	682.0	447.0	575.0	752.0	2492.0
10	Cadmium as Cd	<0.003	<0.003	<0.003	<0.003	<0.003
11	Chromium as Cr	<0.01	<0.01	<0.01	<0.01	<0.01
12	Copper as Cu	0.0	0.0	0.0	0.0	<0.01
13	Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
14	Iron as Fe	0.1	0.0	0.1	0.1	0.1
15	Manganese as Mn	0.0	0.0	0.0	0.0	0.0
16	Nickel as Ni	<0.01	<0.01	<0.01	<0.01	<0.01
17	Lead as Pb	<0.01	<0.01	<0.01	<0.01	<0.01
18	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
19	Turbidity	3.2	1.4	2.2	1.4	3.0
20	Arsenic as As	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
21	Total Alkalinity	230.0	150.0	185.0	210.0	430.0
22	Mercury as Hg	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
23	Aluminum as Al	0.1	0.0	0.1	0.1	0.0
24	Calcium as Ca	60.8	32.4	36.2	44.2	128.6
25	Magnesium as Mg	25.8	16.8	14.5	16.4	44.6
26	Residual Chlorine	<0.1	<0.1	<0.1	<0.1	<0.1
27	Boron as B	0.1	0.0	0.1	0.0	0.0
28	Sodium as Na	92.5	43.9	66.2	86.3	421.6
29	Potassium as K	9.1	4.7	7.5	9.7	13.5
30	Phenolic Compounds	<0.001	<0.001	<0.001	<0.001	<0.001
31	Cyanide as CN	<0.02	<0.02	<0.02	<0.02	<0.02
32	Anionic Detergents	<0.02	<0.02	<0.02	<0.02	<0.02
33	Mineral Oil	Absent	Absent	Absent	Absent	Absent
34	Arsenic as As	<0.01	<0.01	<0.01	<0.01	<0.01
35	Selenium as se	<0.01	<0.01	<0.01	<0.01	<0.01
36	Zinc as Zn	0.1	0.2	0.1	0.1	0.2
37	Total Coliforms	<2.0	<2.0	<2.0	<2.0	<2.0
38	Pesticides	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01

GW1 - Bore near Batakampalli Road

GW4 -Bore Water Near Security Shed

GW2 - Bore Water Near Batching Plant

GW5- Bore Near CPP Gate

GW3 - Bore Water North West (Store Back Side)

for Chettinad Cement Corporation Private Limited



N Ravi Kumar
Unit Head

Motor - Private Car - Package

पॉलिसी संख्या Policy Number:

610403312510003585

जारीकर्ता कार्यालय Issuing Office

कार्यालय कोड Office Code: 610403

कार्यालय का पता Office Address: BIDAR BUSINESS OFFICE Veerabhadreshwara Chambers, Door No 8-10-135/1 and 1A, Opposite: Nehru Stadium, Bidar, Karnataka, - 585401.

राज्य कोड/State Code: 29, Karnataka

जीएसटीआईएन/GSTIN: 29AAACN967E1ZZ

संपर्क संख्या/Contact Number: 8482 226835

मोबाइल संख्या /Mobile Number: 0

व्यवसाय स्रोत Business Source: 610403

विक्रय चैनल कोड Sales Channel Code: 9800001073

नाम Name: Mr Sudhakar Prahalad

संपर्क संख्या Contact Number: 9902574609

Customer Care Toll Free Number: 1800 345 0330

email: customer.support@nic.co.in



बीमा प्रमाण-पत्र CERTIFICATE OF INSURANCE

समय-समय पर संशोधित केन्द्रीय मोटर वाहन नियम 1989 के फॉर्म 51 Form 51 of the Central Motor Vehicle Rules, 1989 as amended from time to time

प्रमाण-पत्र Certificate No.:

610403312510003585

IXI

बीमित वाहन का विवरण Particulars of vehicle insured

पंजी सं.Reg. Mark, No. & Place of Registration	इ. व चे. सं. Engine No. & Chassis No	बनावट, मॉडल Make, Model & Variant	निर्माण वर्ष Year of Manufacture	बडी का प्रकार Type of Body	सी सी C.C	यात्री क्षमता Seating capacity	प्रीमियम Premium(₹)
KA-32-C-7543/ Gulbarga	D60026494 MC1D4DJA5HP0660 00	Force Motors Limited, Trax Toofan PS & Trax Toofan PS.	2016	SALOON	2596	12	₹ 11,931.00

पंजीयन अधिकारी का नाम Name of Registration Authority

Gulbarga

बीमित का नाम व पता Name & Address of Insured

MR JAGADISH, S/O. BABU BOMBAY, R/O. BAKTMPALLI, CHINCHOLI, CHINCHOLI - GULBARGA, GULBARGA, KARNATAKA, 585307.

वाहन मालिक का मान्य मोबाइल नंबर Validated Mobile number of the vehicle owner

9449775611

भौगोलिक क्षेत्र Geographical Area

India

व्यवसाय या पेशा /Business or Profession

BUSINESS

बीमा के प्रारंभ होने की प्रभावी तिथि Effective date of commencement of Insurance for the purpose of Act.

बजे दिनांक से मध्य रात्रि दिनांक तक From 00:00 O' Clock on 14/10/2025.

बीमा समाप्ति की तिथि Date of expiry of the Insurance

मध्यरात्रि को/Midnight on: 13/10/2026

ड्राइविंग क्लब गाड़ी चलाने के अधिकृत व्यक्ति या व्यक्तियों का समूह DRIVER'S CLAUSE: PERSONS OR CLASS OF PERSONS ENTITLED TO DRIVE

बीमित सहित कोई भी व्यक्ति, बशर्ते कि दुर्घटना के समय ड्राइव करने वाले व्यक्ति के पास प्रभावी ड्राइविंग लाइसेंस हो तथा उसे इस तरह के लाइसेंस प्राप्त करने या धारण करने से अयोग्य घोषित नहीं किया गया हो। बशर्ते यह भी कि यदि व्यक्ति के पास प्रभावी लर्नर लाइसेंस हो तो वह वाहन चला सकता है तथा ऐसा व्यक्ति समय-समय पर संशोधित केन्द्रीय मोटर वाहन नियम, 1989 के नियम 3 की आवश्यकताओं की पूर्ति करता हो। / As Per Policy

प्रयोगार्थ सीमाएं LIMITATIONS AS TO USE

सामाजिक, धार्मिक, शैक्षणिक और आनंदपूर्ण उद्देश्यों तथा बीमाधारक के बीमा व्यवसाय या पेशा हेतु केवल उपयोग करें। पॉलिसी मोटर व्यवसाय के संबंध में किसी भी उद्देश्य हेतु उपयोग या किसी व्यवसाय या किसी व्यापार के साथ भाड़ा या रिवाइड, टूरिंग, रेंजिंग, पेशे में, विद्युत्सनीयता परीक्षण, गति परीक्षण, माल वहन (नमूना या व्यक्तिगत सामान के अलावा) के उपयोग को आवरित नहीं करती है। / As Per Policy

The policy does not cover liability for death, bodily injury or damage as excluded in section 150(2) (a)(i) and (iii); (b) and (c) of the Motor Vehicle Act, 1988 as amended from time to time" समय-समय पर संशोधित मोटर वाहन अधिनियम, 1988 की धारा 150(2) (क) (ii) और (iii) (ख) और (ग) के अनुसार पॉलिसी मृत्यु, शारीरिक चोट या क्षति के लिए देयता को कवर नहीं करती है।

TP RATE REVISION NOTICE

For all policies having an effective date on or after 1st April 2023, the TP premium is subject to revision as may be notified by the IRDAI. The Insured should contact and submit the difference of premium to the policy issuing office on issuance of such notification by IRDAI.

मैं/हम एतद्वारा प्रमाणित करते हैं कि पॉलिसी जिससे यह प्रमाण-पत्र संबंधित है एवं यह बीमा प्रमाण-पत्र समय-समय पर संशोधित मोटर वाहन अधिनियम, 1988 के अध्याय XI के प्रावधानों के अनुसार जारी किये गए हैं। I/We hereby certify that the Policy to which this Certificate relates as well as this Certificate of Insurance are issued in accordance with the provisions of Chapter XI of M.V. Act, 1988 as amended from time to time.

जारीकर्ता कार्यालय का पूरा पता Full address of Issuing Office: BIDAR BUSINESS OFFICE Veerabhadreshwara Chambers, Door No 8-10-135/1 and 1A, Opposite: Nehru Stadium, Bidar, Karnataka, - 585401

जारी करने की तिथि Date of issue: 13/10/2025

कृते नेशनल इन्स्योरेंस कंपनी लिमिटेड कंपनी लिमिटेड For and on behalf of National Insurance Company Limited



जोषी, प्रमोद जी. प्रमोद कृष्ण गोपाळ
Joint Director & Chief Manager
National Insurance Company Limited
Head Office

विधिवत गठित अटॉर्नी (ऑ) Duly Constituted Attorney(s)

पॉलिसी संख्या Policy Number:

610403312510003585

जादी कार्यालय Issuing Office

कार्यालय कोड Office Code: 610403

कार्यालय का पता Office Address: BIDAR BUSINESS OFFICE Veerabhadreshwara Chambers, Door No 8-10-135/1 and 1A, Opposite: Nehru Stadium, Bidar, Karnataka, - 585401.

State Code: 29, Karnataka

जीएसटीआईएन/GSTIN: 29AAACN9967E1ZZ

संपर्क संख्या/Contact Number: 8482 226835

मोबाइल नंबर/Mobile Number: 0

व्यवसाय स्रोत Business Source: 610403

विक्रय चैनल कोड Sales Channel Code: 9800001073

नाम Name: Mr Sudhakar Prahalad

संपर्क संख्या Contact Number: 9902574609

UIN No: IRDAN058RP0034V01100001

Customer Care Toll Free Number:

1800 345 0330

email:customer.support@nic.co.in



Trusted Since 1906

ग्राहक का नाम Customer Name: MR JAGADISH

पता Address: S/O. BABU BOMBAY, R/O. BAKTMPALLI, CHINCHOLI, शहर/City:

CHINCHOLI - GULBARGA, जिला/District: GULBARGA, राज्य/State:

KARNATAKA, पिन/PIN: 585307.

सेल/Cell: *****11

ग्राहक आई.डी Customer ID: 9564433806 पैन PAN:

फोन Phone: *****11

ई-मेल E-Mail: *****pe@gmail.com

पॉलिसी प्रभावी समय घंटे, को Policy Effective from effect time 00:00 hours, on 14/10/2025 की अर्धरात्रि तक to midnight of 13/10/2026

प्रीमियम Premium	₹ 11,931.00	कवर नोट सं. व तारीख Cover Note Number and Date	NA
सीजीएसटी/CGST	₹ 1,074.00		
एसजीएसटी/यूटीजीएसटी/SGST/UTGST	₹ 1,074.00		
आईजीएसटी/IGST	₹ 0.00	प्रस्ताव संख्या व तारीख Proposal Number and Date	8800251013540571 Dt. 13/10/2025
कम: जीएसटी टैडीएस / Less: GST_TDS	₹ 0.00		
वसूली योग्य स्टाम्प ड्यूटी Recoverable Stamp Duty	₹ 0.00	रसीद संख्या व तारीख Receipt Number and Date	610403812510004783 Dt. 13/10/2025
कुल राशि Total Amount	₹ 14,080.00	पिछली पॉलिसी संख्या व समाप्ति तिथि Previous Policy Number and Expiry Date	61090431240100001375 और/and Dt. 12/08/2025

(रुपये/Rupees Fourteen Thousand Eighty केवल Only.)

वाहन का विवरण Vehicle Details

वाहन का आई.डी.वी/Vehicle IDV	₹ 3,00,000.00	पंजी. संख्या Regn. Number	KA-32-C-7543
आई.डी.वी IDV (ट्रेलर Trailer)	NA	इंजन व एस/सी सं. Engine or M/c No.	D60026494
इलेक्ट्रिकल एक्सेसरी Electrical Accessories	NA	चेसिस संख्या Chassis Number	MC1D4DJA5HP066000
गैर इलेक्ट्रिकल उपकरण Non Electrical Accessories	NA	पंजीकरण अधि. Regn. Authority	Gulbarga
फाइबर ग्लास टैंक Fiber Glass Tank	NA	भौगोलिक क्षेत्र Geographical Area	इंडिया India
सीएनजी/एलपीजी यूनिट CNG/LPG Unit	NA	बनावट Make	Force Motors Limited
Total IDV	₹ 3,00,000.00	मॉडल Model	Trax Toofan PS
अति. टोविंग शुल्क Addl. Towing Charges	NA	वैरिएंट Variant	Trax Toofan PS
सी.सी - जी.भी डब्बू CC / GVW	2596	वाहन की श्रेणी/Class of Vehicle	Private Car
ईंधन का प्रकार / Type of Fuel	DIESEL		
लाइसेंस सिटिंग/वाहन की क्षमता क्षमता Licensed Seating / Carrying Capacity	12	द्राचा का प्रकार/रंग Body Type / Color	SALOON/Silver
निर्माण वर्ष Year of Mfg.	2016	खरीदने की तारीख / Date of Purchase	01/03/2016

टैक्स इनवॉयस/TAX INVOICE

Invoice Serial No: 30609A5PE0003585

Invoice Date: 13/10/2025

आपूर्तिकर्ता का विवरण/Details of Supplier:

नेशनल इन्स्योरेन्स कंपनी लिमिटेड/National Insurance Company Limited.,
BIDAR BUSINESS OFFICE Veerabhadreshwara Chambers, Door No 8-10-135/1 and 1A,,Opposite: Nehru Statium, Bidar, Karnataka, - 585401
राज्य/State: 41 , Karnataka
जीएसटीआईएन नंबर/
GSTIN No : 29AAACN9967E1ZZ

आदातार का विवरण Details Of Receiver : MR JAGADISH

पता/Address : S/O. BABU BOMBAY,R/O. BAKTMPALLI,CHINCHOLI
शहर/City: CHINCHOLI - GULBARGA,
जिला/District: GULBARGA,
राज्य/State: KARNATAKA,
पिन/PIN: 585307,

आपूर्ति राज्य का स्थान Place Of Supply State : Karnataka

राज्य कोड/State Code : 41

जीएसटीआईएन नं.GSTIN No : NA

यूआयएन नं.UIN No : NA

सैक कोड/ SAC Code	सेवा का विवरण/ Description of Service	कुल/Total(₹)	छूट/ Disco unt	टैक्स योग्य मूल्य/ Taxable Value(₹)	सीजीएसटी/CGST		एसजीएसटी/यूटीजीएसटी/ SGST/UTGST		आईजीएसटी/IGST		केरला बाढ़ उपकर/ Kerala Flood Cess राशि/Amount(₹)
					दर/ Rate	राशि/ Amount(₹)	दर/ Rate	राशि/ Amount(₹)	दर/ Rate	राशि/ Amount(₹)	
997134	Motor vehicle insurance services	11,931	0%	11,931	9%	1,074	9%	1,074	0%	0	0
कुल TOTAL		11,931		11,931		1,074		1,074		0	0

कुल इनवॉयस मूल्य(अंकों में)/ Total Invoice Value (In figures): ₹ 14,080

कुल इनवॉयस मूल्य(शब्दों में)/ Total Invoice Value (In words) : रूपए/Rupees Fourteen Thousand Eighty Only.

रिवर्स चार्ज के अधीन टैक्स की राशि Amount of Tax Subject to Reverse Charge : No

E.&O.E

कृते नेशनल
इन्स्योरेन्स कंपनी लिमिटेड
For and on behalf of National Insurance Company
Limited

राष्ट्रीय बीमा कंपनी लिमिटेड
National Insurance Company Limited
BIDAR BUSINESS OFFICE

प्राधिकृत हस्ताक्षरकर्ता Authorized Signatory



Motor - Private Car - Package

पॉलिसी संख्या Policy Number:
610403312510003585

जास्टिस कार्यालय Issuing Office

कार्यालय कोड Office Code: 610403

कार्यालय का पता Office Address: BIDAR BUSINESS
OFFICE Veerabhadreshwara Chambers, Door No
8-10-135/1 and 1A, Opposite: Nehru Stadium,
Bidar, Karnataka, - 585401.

राज्य कोड State Code: 29, Karnataka

जीएसटीआईएन/GSTIN: 29AAACN9967E1ZZ

संपर्क संख्या/Contact Number: 8482 226835

मोबाइल संख्या /Mobile Number: 0

व्यवसाय स्रोत Business Source: 610403

विक्रय चैनल कोड Sales Channel Code: 9800001073

नाम Name: Mr Sudhakar Prahalad

संपर्क संख्या Contact Number: 9902574609

Customer Care Toll Free Number: 1800 345
0330

email: customer.support@nic.co.in



प्रीमियम की अनुसूची Schedule of Premium

स्व-क्षति Own Damage	(₹)	विधिक दायित्व Legal Liability	(₹)
स्व-क्षति आवरण (उचित पूरक प्रीमियम के साथ) Own Damage Cover (inclusive of add ons wherever opted for)	3,159.00	कानूनी देयता आवरण/Legal Liability Cover	7,897.00
		No of Workmen for Opt and Maint. (Upto 6+1 Driver) 1-per.	50.00
		CNG/LPG Kit	NA
		व्यक्तिगत दुर्घटना/Personal Accident	825.00
कुल Total	3,159.00	कुल/Total	8,772.00

वाहन स्व-क्षति बीमा विवरण Vehicle Own Damage Insurance Details

नो क्लेम बोनस % No Claim Bonus%	0	CNG/LPG Kit	No
कंपलसरी एक्सेस Compulsory Excess	₹ 2,000.00		

तृतीय पक्ष बीमा विवरण Third Party Insurance Details

पॉलिसी के अनुच्छेद II-I(i) और अनुच्छेद II-I(ii) के तहत Limit of liability under section II- I(i) and section II-I(ii)	समय-समय पर संशोधित मोटर वाहन अधिनियम 1988 की आवश्यकता को पूरा करने के लिए आवश्यक राशि Such amount as is necessary to meet the requirement as per Motor vehicles Act 1988 as amended from time to time
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व्यक्तिगत दुर्घटना बीमा विवरण Personal Accident Cover Details

वाहन का मालिक चालक PA of Owner driver of the vehicle	मूल बीमा राशि CSI
Nominee: LEGAL HEIR, LEGAL HEIR, 50	₹ 15,00,000.00
अनाम यात्री Unnamed passengers	11 व्यक्तियों persons
	₹ 1,00,000.00

प्रामाणिक अनुच्छेद, पृष्ठांकन और वारंटी Clauses, Endorsements and Warranties Applicable: IMT28, 16, 22

आईआरडीआई परिपत्र संदर्भ के अनुसार: IRDAI/NL/CIR/MISC/188/10/2023, दिनांक: 27/10/2023, मध्यस्थता खंड को पॉलिसी से हटा दिया गया माना जाएगा/ As per IRDAI Circular Ref:
IRDAI/NL/CIR/MISC/188/10/2023, Dated: 27/10/2023, Arbitration Clause shall be deemed deleted from the policy

उपयोग की सीमाएं/Limitations as to Use :

पॉलिसी के अनुसार As Per Policy

ड्राइव करने का हकदार व्यक्ति या व्यक्तियों का वर्ग/Persons or Class of Persons entitled to drive: पॉलिसी के अनुसार As Per Policy

The policy does not cover liability for death, bodily injury or damage as excluded in section 150(2) (a)(ii) and (iii); (b) and (c) of the Motor Vehicle Act, 1988 as amended from time to time"

समय-समय पर संशोधित मोटर वाहन अधिनियम, 1988 की धारा 150(2) (क) (ii) और (iii) (ख) और (ग) के अनुसार पॉलिसी मृत्यु, शरीरिक चोट या क्षति के लिए देयता को कवर नहीं करती है।

महत्वपूर्ण सूचना/Important Notice: The insured is not indemnified if the vehicle is used or driven otherwise than in accordance with this schedule. Any payment made by the company by the reason of wider terms appearing in the certificate in order to comply with the Motor Vehicle Act, 1988 as amended from time to time is recoverable from the Insured. See the clause headed "AVOIDANCE OF CERTAIN TERMS AND RIGHT OF RECOVERY"

TP Rate Revision Notice: For all policies having an effective date on or after 1st April 2023, the TP premium is subject to revision as may be notified by the IRDAI. The Insured should contact and submit the difference of premium to the policy issuing office on issuance of such notification by IRDAI.

Motor - Private Car - Package

पॉलिसी संख्या **Policy Number:**
610403312510003585

जातिता कार्यालय **Issuing Office**

कार्यालय कोड **Office Code:** 610403

कार्यालय का पता **Office Address:** BIDAR BUSINESS
OFFICE Veerabhadreshwara Chambers, Door No
8- 10-135/1 and 1A,, Opposite: Nehru Statium,
Bidar, Karnataka, - 585401.

राज्य कोड **State Code:** 29 , Karnataka

जीएसटीआईएन **GSTIN:** 29AAACN9967E1ZZ

संपर्क संख्या **Contact Number:** 8482 226835

मोबाइल संख्या **Mobile Number:** 0

व्यवसाय स्रोत **Business Source:** 610403

विक्रय चैनल कोड **Sales Channel Code:** 9800001073

नाम **Name:** Mr Sudhakar Prahalad

संपर्क संख्या **Contact Number:** 9902574609

Customer Care Toll Free Number: 1800 345
0330

email: customer.support@nic.co.in



उपरोक्त उल्लिखित कार्यालय पते पर विधिवत रूप से प्राधिकृत अधोहस्ताक्षरी को साक्षी मानकर दिनांक 14 October 2025 को हस्ताक्षर किया जा रहा है। वेबसाइट <http://nationalinsurance.nic.co.in> में उपलब्ध इस अनुसूची, संलग्न पॉलिसी, खण्ड, पृष्ठांकन और पॉलिसी शब्दों को एक अनुबंध के रूप में एक साथ पढ़ा जाएगा और पॉलिसी के किसी भी हिस्से या अनुसूची में संलग्न कोई भी शब्द या अभिव्यक्ति, जो विशेष अर्थ प्रकट करता हो, जहां भी प्रकट हो समान अर्थ वहन करेगा। यह वारंटी दी जाती है कि प्रीमियम चेक की अस्वीकृति की स्थिति में, यह पॉलिसी आरंभ होने की तारीख से ही स्वतः निरस्त माना जाएगा।

IN WITNESS WHEREOF, the undersigned being duly authorized hereunto set his/ her hand at the office address mentioned above, this 14 October 2025. This schedule, the attached policy, the clauses, the endorsements and policy wordings as available in the website <https://nationalinsurance.nic.co.in> shall be read together as one contract and any word or expression to which the specific meaning has been attached in any part of this policy or of the schedule shall bear the same meaning wherever it may appear. It is warranted that IN CASE OF DISHONOUR OF THE PREMIUM CHEQUE, THIS DOCUMENT STANDS AUTOMATICALLY CANCELLED 'AB-INITIO'

Ombudsman Details:

Office of the Insurance Ombudsman, Jeevan Soudha Building, PID No. 57-27-N-19
Ground Floor, No.-19/19, 24th Main Road, 1st Phase, JP Nagar, Bengaluru - 560 078.
Tel.: 080 - 26652048 / 26652049
Email: bimalokpal.bengaluru@ciains.co.in.

स्टाम्प ड्यूटी
**Stamp
Duty:**
(₹ 0.50)

कृते
नेशनल इन्श्योरेंस कंपनी लिमिटेड
**For and on behalf of National Insurance
Company Limited**

[Signature]
महानिदेशक / प्रधान कार्यकारी
महानिदेशक / Chief Manager
National Insurance Company Limited
Bengaluru - 560 078

प्राधिकृत हस्ताक्षरकर्ता **Authorized Signatory**



 नॅशनल इन्शुरेन्स National Insurance Trusted Since 1905	NATIONAL INSURANCE COMPANY LIMITED	
	CIN - U10200WB1906GOI001713	IRDAI Regn. No. - 58
	Annexure B	
	CUSTOMER INFORMATION SHEET	

SINØ	TITLE	DESCRIPTION	Policy / Clause No																												
1	Product Name	Private Car Package Policy																													
2	Unique Identification Number (UIN) allotted by IRDAI	IRDAN058RP0034V01100001																													
3	Structure	- Section I - Loss of or Damage to the Vehicle Insured: Indemnity basis - Section II - Liability to Third Parties: As per Motor Vehicle Act - Section III - Personal Accident Cover for Owner-Driver: Benefit basis																													
4	Interests Insured	Private Car																													
5	Sum Insured / Motor Insured Declared Value Scope	Sum Insured, Insured's Declared Value (IDV) The Insured's Declared Value (IDV) of the vehicle will be deemed to be the 'SUM INSURED' for the purpose of this policy which is fixed at the commencement of each policy period for the insured vehicle. The IDV of the vehicle (and accessories if any fitted to the vehicle) is to be fixed on the basis of the manufacturer's listed selling price of the brand and model as the vehicle insured at the commencement of insurance/renewal and adjusted for depreciation (as per schedule below). The schedule of age-wise depreciation as shown below is applicable for the purpose of Total Loss/Constructive Total Loss (TL/CTL) claims only. The Schedule of Depreciation For Fixing IDV of the Vehicle <table><tr><th>AGE OF THE VEHICLE</th><th>% OF DEPRECIATION FOR FIXING IDV</th></tr><tr><td>Not exceeding 6 months</td><td>5%</td></tr><tr><td>Exceeding 6 months but not exceeding 1 year</td><td>15%</td></tr><tr><td>Exceeding 1 year but not exceeding 2 years</td><td>20%</td></tr><tr><td>Exceeding 2 years but not exceeding 3 years</td><td>30%</td></tr><tr><td>Exceeding 3 years but not exceeding 4 years</td><td>40%</td></tr><tr><td>Exceeding 4 years but not exceeding 5 years</td><td>50%</td></tr><tr><td>Exceeding 5 year but not exceeding 7 years</td><td>55%</td></tr><tr><td>Exceeding 7 year but not exceeding 8 years</td><td>60%</td></tr><tr><td>Exceeding 8 year but not exceeding 9 years</td><td>65%</td></tr><tr><td>Exceeding 9 year but not exceeding 10 years</td><td>70%</td></tr><tr><td>Exceeding 10 year but not exceeding 12 years</td><td>75%</td></tr><tr><td>Exceeding 12 year but not exceeding 14 years</td><td>80%</td></tr><tr><td>Exceeding 14 years, if acceptable</td><td>Market Value</td></tr></table> - Depreciation scale to be applied on the manufacturer's listed selling price of the vehicle on the date of commencement of policy - IDV during renewal should be less than last year IDV, unless MSP has increased at the inception of the policy period. Criteria for Constructive Total Loss A vehicle will be considered to be a CTL where the aggregate cost of retrieval and / or repair of the vehicle (without Taxes), subject to terms and conditions of the policy, exceeds 75% of the IDV. However, if the cost of repair of the vehicle (without Taxes) lies within 70% to 75% of the IDV (borderline case), the insured may opt for Constructive Total Basis settlement, in which case, company's liability shall be IDV less Wreck Value of the Vehicle less applicable Excess(es) or Repair Liability assessed	AGE OF THE VEHICLE	% OF DEPRECIATION FOR FIXING IDV	Not exceeding 6 months	5%	Exceeding 6 months but not exceeding 1 year	15%	Exceeding 1 year but not exceeding 2 years	20%	Exceeding 2 years but not exceeding 3 years	30%	Exceeding 3 years but not exceeding 4 years	40%	Exceeding 4 years but not exceeding 5 years	50%	Exceeding 5 year but not exceeding 7 years	55%	Exceeding 7 year but not exceeding 8 years	60%	Exceeding 8 year but not exceeding 9 years	65%	Exceeding 9 year but not exceeding 10 years	70%	Exceeding 10 year but not exceeding 12 years	75%	Exceeding 12 year but not exceeding 14 years	80%	Exceeding 14 years, if acceptable	Market Value	Section I
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Exceeding 10 year but not exceeding 12 years	75%																														
Exceeding 12 year but not exceeding 14 years	80%																														
Exceeding 14 years, if acceptable	Market Value																														

		(without Taxes), whichever is less.																									
6	Policy Coverage	Loss of or Damage to the Vehicle Insured The Company will indemnify the insured against loss or damage to the vehicle insured hereunder and / or its accessories whilst thereon I. By fire explosion self-ignition or lightning; II. By burglary housebreaking or theft; III. By riot and strike; IV. By earthquake (fire and shock damage); V. By flood typhoon hurricane storm tempest inundation cyclone hailstorm frost; VI. By accidental external means; VII. By malicious act; VIII. By terrorist activity; IX. Whilst in transit by road rail inland-waterway lift elevator or air; X. By landslide rockslide Subject to a deduction for depreciation at the rates as mentioned in the Policy Terms & Conditions.	Section I																								
		Liability to Third Parties I. The Company will indemnify the Insured in the event of an accident caused by or arising out of the use of the vehicle against all sums which the Insured shall become legally liable to pay in respect of :- II. Death of or bodily injury to any person including occupants carried in the vehicle (provided such occupants are not carried for hire or reward) but except so far as it is necessary to meet the requirements of Motor Vehicles Act, the Company shall not be liable where such death or injury arises out of and in the course of the employment of such person by the insured. III. Damage to property other than property belonging to the Insured or held in trust or in the custody or control of the Insured.	Section II																								
		Personal Accident Cover for Owner-Driver Section The Company undertakes to pay compensation for bodily injury/ death sustained by the owner-driver of the vehicle in direct connection with the vehicle insured or whilst mounting into/dismounting from or traveling in the insured vehicle as a co driver, caused by violent accidental external and visible means which independent of any other cause shall within six calendar months of such injury	Section III																								
7	Add-on Cover	List of Add ons opted with limit applicable is as stated in the policy schedule		Refer to Policy Schedule																							
		<table><tr><th>Sr No</th><th>Add – On</th><th>Description</th></tr><tr><td>1</td><td>Invoice Protect</td><td>Pays the difference between the Current Invoice Price (Price of vehicle at the time of policy inception) of the Insured Vehicle and IDV along with First time Registration charges, Motor OD Premium paid and Road Tax, subject to a maximum of 10% of Current Invoice Price.</td></tr><tr><td>2</td><td>No Claim Bonus Protect</td><td>The percentage of NCB accrued, shall be maintained for up to two claims admissible under Section I</td></tr><tr><td>3</td><td>Engine Protect</td><td>Extend the Policy to cover repair of Engine /allied assemblies arising out of water ingress due to flood or failure due to leakage of lubricating oil</td></tr><tr><td>4</td><td>Nil Depreciation</td><td>Pays the amount of depreciation deducted on the value of the parts replaced in the event of a partial loss claim</td></tr><tr><td>5</td><td>Nil Depreciation Plus</td><td>Pays the amount of depreciation deducted on the value of the parts replaced in the event of a partial loss claim, without payment of any additional excess.</td></tr><tr><td>6</td><td>Nil Depreciation Plus for Private Car 5-9 years</td><td>Pays the amount of depreciation deducted on the value of the parts replaced in the event of a partial loss claim, without payment of any additional excess.</td></tr><tr><td>7</td><td>Road Side</td><td>Shall arrange to provide services such as Towing.</td></tr></table>	Sr No		Add – On	Description	1	Invoice Protect	Pays the difference between the Current Invoice Price (Price of vehicle at the time of policy inception) of the Insured Vehicle and IDV along with First time Registration charges, Motor OD Premium paid and Road Tax, subject to a maximum of 10% of Current Invoice Price.	2	No Claim Bonus Protect	The percentage of NCB accrued, shall be maintained for up to two claims admissible under Section I	3	Engine Protect	Extend the Policy to cover repair of Engine /allied assemblies arising out of water ingress due to flood or failure due to leakage of lubricating oil	4	Nil Depreciation	Pays the amount of depreciation deducted on the value of the parts replaced in the event of a partial loss claim	5	Nil Depreciation Plus	Pays the amount of depreciation deducted on the value of the parts replaced in the event of a partial loss claim, without payment of any additional excess.	6	Nil Depreciation Plus for Private Car 5-9 years	Pays the amount of depreciation deducted on the value of the parts replaced in the event of a partial loss claim, without payment of any additional excess.	7	Road Side	Shall arrange to provide services such as Towing.
		Sr No	Add – On		Description																						
		1	Invoice Protect		Pays the difference between the Current Invoice Price (Price of vehicle at the time of policy inception) of the Insured Vehicle and IDV along with First time Registration charges, Motor OD Premium paid and Road Tax, subject to a maximum of 10% of Current Invoice Price.																						
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7	Road Side	Shall arrange to provide services such as Towing.																									

		Assistance	Battery Jumpstart, Fuel re-filling, Spot repair etc. through third party service provider	
		8	Lock & Key Protect	Indemnify the Insured for cost of replacing/ repairing of Key(s) and/or Lock(s) of the Insured Vehicle including payment of Reasonable Labour Charges
		9	Consumables Protect	Covers cost of Consumables which are necessarily required to be replaced during the repair
		10	EMI Protect	Indemnify the Insured up to two Equated Monthly Instalments
		11	Loss of Driving Licence and Vehicular Documents	Indemnify the Insured actual amount paid to concerned Gov. auth. for issuance of the duplicate document(s)
		12	Loss of Belongings	Indemnify the Insured in respect of the loss or damage to Personal Belongings whilst kept in the Insured Vehicle
		13	Pick & Drop Facility	Shall extend the Policy to cover cost of towing the insured vehicle from the spot of loss to the nearest authorized service station in case of electric or mechanical breakdown only
		14	Daily Allowance	Pays a fixed daily allowance to the insured in case the repair claim for accidental loss or damage is admitted
		15	National Fuel Flip Flop	Pays the amount incurred by insured in the event of accidental filling of the insured vehicle with any Automobile fuel other than that mentioned under fuel type in the RC
		16	Tyre & Rim Protect	Shall extend the Policy to cover the loss or damage to tyre(s) & to the wheel rim(s) if physically damaged or warped as a result of a Blowout arising out of Accidental external means, although the rest of the vehicle is not damaged.
		Note: Above is the list of all Add-ons available with Private Car Package Policy. The benefit/ coverage for the Add-ons shall be available subject to as opted by the Insured and mentioned in the Schedule.		
8	Loss Participation	Compulsory Deductibles (The amount to be borne by insured for each & every claim) Rs 1000/- for Private cars up to 1500 cc or EVs under 65 KW. Rs 2000/- for Private cars more than 1500 cc or EVs above 65 KW. - Separate Excess for Add-on is applicable only if Add-on is opted by the policyholder. - Voluntary Deductible, if opted, as per the slab applicable.		
9	Exclusions	Any accidental loss or damage and/or liability incurred shall not be covered if, the insured vehicle is used outside the permitted geographical area, violation of the Limitations as to Use or Driver's Clause. Additionally, claims resulting from Consequential loss, wear and tear, contractual liability, liability due to death in the course of employment, or death or injury while entering, riding, or leaving the vehicle are excluded. Any liability arising from war, invasion, foreign enemy actions, or nuclear weapons material shall also not be covered. For detailed section wise exclusions, please refer to the relevant section of the Policy wordings.		
10	Special Conditions and Warranties (if any)	There are no special conditions and warranties other than the conditions given in the policy		
11	Admissibility of Claim	- Claim shall be admissible subject to policy terms and conditions - Company shall disclaim liability to the insured for any claim hereunder and such claim shall not, within twelve calendar months from the date of such disclaimer have been made the subject matter of a suit in a court of law, then the claim shall for all purposes be deemed to have been abandoned and shall not thereafter be recoverable hereunder.		
12	Policy Servicing – Claim Intimation and Processing	Helpline/ Toll free: 1800 345 0330 Website: https://nationalinsurance.nic.co.in/ Details of designated company officials to be contacted in time of claim		

		To contact In-Charge Claim Servicing Office Details of procedure to be followed for cashless service as well as for reimbursement of claim: For both cashless and reimbursement claims, the insured needs to contact the concerned claims hub and provide documents as and when required by NICL. Insured shall readily get cashless if he/she approaches the cashless garages having tie ups with us (list of such garages are available on our website). In both cases, the repair invoice should be in the name of National Insurance Company Limited. In case of reimbursement basis, the amount for repair is to be paid by the insured to the garage first and then NICL shall reimburse the insured of the claim amount upon production of a genuine invoice. In case of cashless claims, the payment will be made directly to the garage by NICL. Link of Cashless garage: https://nationalinsurance.nic.co.in/info-desk/our-networks/cashless-garages Turn Around Time (TAT) <u>Surveyor Appointment</u> – Within 24 hours <u>Survey report to the insurer</u> - Within 15 days of appointment <u>Claim Decision</u> – 7 days from receipt of Survey report or after expiry of fifteen days from allocation of the claim to the surveyor whichever is earlier. Escalation Matrix when TAT is not satisfied <table><tr><td>Ist level</td><td>IIInd level</td><td>IIIrd level</td></tr><tr><td>In-Charge of Claim Servicing Office</td><td>Grievance Dept at RO</td><td>Grievance Dept at HO</td></tr></table>	Ist level	IIInd level	IIIrd level	In-Charge of Claim Servicing Office	Grievance Dept at RO	Grievance Dept at HO	
Ist level	IIInd level	IIIrd level							
In-Charge of Claim Servicing Office	Grievance Dept at RO	Grievance Dept at HO							
13	Grievance Redressal and Policyholders Protection	- State the brief details of Protection of Policyholder's Interest - Circular on Protection of Policyholders' Interests, 2024 as introduced by IRDAI on 5th September 2024. - Details of Grievance Officer of the Insurer - https://nationalinsurance.nic.co.in/info-desk/grievance - Bima Bharosa Portal - https://bimabharosa.irdai.gov.in/ - Ombudsman - https://www.cioins.co.in/							
14	Obligations of the Policyholder	- To disclose all information correctly as sought by the insurer at time of filling the Proposal form and Claim Form - Incorrect or Non-disclosure of material information, including NCB of previous policy may affect the claim settlement. - In case of any change / modification / addition to the already declared information the same shall be brought to the notice of the Insurer immediately. - The vehicular documents and DL of driver of the vehicle at the material time of loss, must be valid and effective.							

Declaration by the Policyholder:

I have read the above and confirm having noted the details.

Place:

Date:

Signature of the Policyholder

Note:

- I. Insurer shall provide a web-link where the product related documents including the Customer Information Sheet are available on the website of the Insurer.
- II. In case of any conflict, the terms and conditions mentioned in the Policy document shall prevail.
- III. Insurer to take confirmation of the Policyholder regarding receiving of the Customer Information Sheet.

REG NO : KA32C7543 FORM-23A
(See Rule 48)

REG. DATE	: 09/11/2016	O.B.L. NO	: 01
CHASSIS NO	: MC1D4DJASHP066000	COLOUR	: SILVER
ENGINE NO	: D60026494	CLASS	: Motor Car
MFR	: FORCE MOTORS LIMITED		
OWNER NAME	: JAGADISH		
SAND OF	: BABU BOMBAY		
ADDRESS	R/O BAKTIPALLI TQ.CHINCHOLI KALABURAGI Gulbarga KA 585307		

MODEL	: TRAX TOOFAN NA 3050 MM BSIII		
BODY	: SALOON	NO. OF CYL	: 04
WHEEL BASE	: 003050	UNLADEN WT	: 001700
MFG. DATE	: 03/2016	SEATING	: 012
FUEL	: DIESEL	STDG/SLPR	: 00
REG/FC UPTO	: 08/11/2031	CC	: 002596
TAX UPTO	: 31/07/2018		

Sahni
Registering Authority
Gulbarga(Ka32)



B.G. : A♦

BADGE NO : 11B4CAB

VALID THROUGHOUT INDIA
COV : LMV 29/02/2012
: MCWG 29/02/2012

S/o : BABU
ADDRESS : R/O BAKTAMPALLI TO CHINCHOLI
CHINCHOLI, GULBARGA 585322

Sign. Of Holder

Sign. Licencing Authority
GULBARGA(KA32)

7.0 Additional Studies

7.1 Risk Assessment

Any new industrial activity involving any hazardous chemical named or classified in the various schedules under the Environment (Protection) Act, 1986/Hazardous Waste (Management and Handling) Rules 1989 attracts compliance with the rules. Though there is no handling of any hazardous chemicals in the proposed Cement Plant or Captive Power Plant, a brief risk assessment study was undertaken for the proposed Storage of High Speed Diesel (HSD) 60 KL Tank (1 No.) within the Plant premises.

The major elements of the Risk Assessment include :

- ❖ Hazard & Operability (HAZOP) Studies for identification of hazards and vulnerable sections of the storage,
- ❖ Consequence Analysis for various release scenarios,
- ❖ Presentation of damage contour for worst damage from fire or explosion,
- ❖ Risk Assessment and
- ❖ Provision of guidelines for emergency preparedness based on the findings of the risk analysis.

The details of the present study are:

1. Hazard Identification and Visualisation of Credible Accident Scenarios

- ❖ Study of Layout Plans of the Plants and Process involved in the storage and handling of HSD,
- ❖ The inventory of HSD stored and handled,
- ❖ Identification of hazards,
- ❖ Analysis of past accident data to develop the credibility of worst accident scenarios and
- ❖ Visualization of Credible Accident scenarios (CAS).

2. Analysis of CAS

Analysis of identified CAS and quantification of effects pertaining to the cases of :

- ❖ Outflow and releases
- ❖ Heat radiation
- ❖ Explosion
- ❖ Application of damage criteria for heat radiation and explosion.
- ❖ Presentation of damage contours for worst damages from fire or explosion.
- ❖ Effect of the proposed project on neighboring areas (including cascade effects if any).

3. Risk Assessment based on the individual Risk Contour Plots and

4. Guidelines for emergency planning and other safety recommendations based on the studies.

7.1.1 Hazard Identification using PHA Techniques

Hazard is present in any system, plant or process that handles flammable materials. The mere existence of hazards, however, does not automatically imply the existence of risk. Screening and ranking methodologies based on Preliminary Hazard Analysis (PHA) techniques have to be adopted at different stages of the project before risk can be evaluated.

The proposed storage has been assessed for its potential to initiate and propagate an unintentional event or sequence of events that can lead to an accident or emergency. The study has covered the following sections :

- ❖ Storage Tank,
- ❖ Unloading and loading points and
- ❖ Road tanker transportation system.

7.1.2 Hazard Classification based on Inherent Hazards of HSD

An inventory of the chemical stored was made and the chemical properties, including flammability and explosion characteristics, have been considered for hazard classification. The hazardous properties of HSD are :

Specific Gravity	0.85	
Specific Heat, kJ/kg. K	0.48	
Boiling point (°C)	285-336	
Flash point (°C)	51	
Heat of Evaporation, kJ/kg	244	
Heat of Combustion, kJ/kg	45586	
NFPA rating*	NH	0
	NF	2
	NR	0
	MF	10
Fire Explosion Index	74.00	(Medium)
Toxicity Index	2.52	(Low)
Threshold Quantity as per GOI for Application of Rules	1000 Tons (Rules 5, 7-15)	50000 Tons (Rules 10-12)

*NFPA classification for Health, Flammability & Reactivity of a chemical on a scale of 0-4 least to worst.

7.1.3 Hazard Classification based on External Factors

The extent of the consequences of an accident in a hydrocarbon installation depends on type and quantity of the product stored and handled, mode of containment, and external factors like location, density of population in the surrounding area, etc. In many cases realisation of hazard and its potential also depend on prevailing meteorological conditions and availability of ignition source. Thus, the most serious consequence would arise from a large inventory of petroleum products located in a densely populated area.

Any petroleum product such as HSD requires interaction with air or oxygen and an ignition source for the hazard to be realised. Under certain circumstances vapours of the product when mixed with air may be explosive, especially in confined spaces.

7.1.4 Analysis of past accidents to establish the credibility of accident scenarios

A scientific analysis of past chemical accidents has been made to establish the credibility of accident scenarios. This helps to check the soundness of the engineering analysis made in the CAS analysis.

7.1.5 Based on Fire & Explosion Index

The next stage of hazard identification involves the estimation of Fire & Explosion Indices for the unit in the facility to give the relative severity of the unit from the fire angle. These are evaluated from the knowledge of the Material Factor, General Process Hazard (GPH) and Special Process Hazard (SPH) factors. Material Factor (MF) is the measure of the energy potential of a particular chemical or its mixture with other chemicals. GPH and SPH are evaluated by taking into account the exotherm or endotherm of a reaction, material handling and transfer hazards, accessibility, severity of process conditions and possibilities, dust and other explosions, inventory level of flammable material, etc. The F&EI value is then calculated as the product of MF, GPH and SPH. Detailed fire and explosion indexing were carried out for the major sections of the proposed plant.

Fire & Explosion Indices (F&EI) for all the storage unit in the Plant have been estimated to give the relative degree of severity of the units using the criteria given below :

<u>Index Range</u>	<u>Degree of Hazard</u>
1-60	Light
61- 96	Moderate
97-127	Intermediate
128-158	Heavy
>159	Severe

7.1.6 Analysis of F&EI Results

A summary of the results including the material factors for each of the chemicals stored on site is given in the following Table.

F& EI Calculations

<u>Units</u>	<u>Max. Qty.</u>	<u>Material Factor MF</u>	<u>Fire & Explosion Index (F&EI)</u>	<u>Degree of Hazard</u>
HSD Tank	0.075 Tons	10	74	Moderate

From the results of the F&EI studies, it can be observed that the storage unit have F&EI values less than 100 and fall under the moderate degree of fire and explosion hazard.

7.1.7 HAZOP Studies

Hazard and Operability Study (HAZOP) is a powerful tool for identifying hidden design inadequacies and understanding operational mistakes that may lead to incidents or accidents. This will, in turn, help in taking suitable remedial measures.

The principle of HAZOP is that accidents occur when operations are conducted under conditions that deviate from the desired intentions. Therefore, HAZOP starts by understanding the design intentions of a particular line or a vessel and finds out meaningful deviations that can occur in the process. The process then is to understand these deviations and the consequences of these deviations, and detect which of these consequences will result in a major hazard.

Shortlisted Cases for HAZOP studies

<u>Sl. No.</u>	<u>Node</u>
1	Pipeline connecting Road tanker and Storage
2	Storage Tank
3	Pipeline from Storage Tank to Filling

The control strategies and built-in safety features of the units were closely examined with the help of their P&I diagrams, operating procedures and safety provisions.

7.1.8 HAZOP Worksheets

Each node was considered for divergences from normal operating practices. The main PARAMETERS, considered along with the applied DEVIATIONS from normal operating conditions, have been presented in the Table.

Details of HAZOP worksheets

<u>Parameter</u>	<u>Deviations</u>	<u>Intention</u>
FLOW	No Flow	To convey HSD at required rate from a) road tanker to Tank b) Tank to pump c) pump to filling point
	More Flow	
	Less Flow	
	Reverse Flow	
PRESSURE	Higher Pressure	To convey HSD at required pressure from a) road tanker to Tank b) Tank to pump c) pump to filling point
	Lower Pressure	
LEVEL	No Level	
	Low Level	
	High Level	
PHASE	Phase Inversion	To maintain HSD in the liquid lines and vapor in the vapor lines
MAINTENANCE	Poor Maintenance	To provide good maintenance for transfer of HSD

The consequences and the corresponding causes as identified in the HAZOP study are summarized here:

Results of HAZOP Study

<u>Node</u>	<u>Causes</u>	<u>Consequences</u>	<u>Hazard</u>		
Tank	• Overfilling • Pressure increase • Instrumentation failure • Operator error • External fire	Catastrophic rupture of tank Release of HSD	BLEVE/ Explosion		
	• Rupture of hose • Leak at flanges • Wrong line-up • Drain line kept open during tanker unloading operations	Release of HSD		Explosion	
	• External fire • Accidental Pullaway • Rupture of hose	Tanker fire Release of HSD			BLEVE/ Explosion Explosion

7.1.9 Cause - Consequence Analysis

Credible accident scenarios (CAS) were initially constructed followed by quantification using Cause-Consequence Analysis (CCA) for the identified scenarios. No explosion is possible as Quantity below explosive limits in all other cases excluding Rupture of the Tank. The results from the analysis have been given below depicting the worst damage.

Consequence output for Pool Fire due to Rupture and outflow of HSD

Service	HSD	
No. of Tank	1	
Quantity	60 m ³	
Probability	4.10 x 10 ⁻⁷	
	<u>Circular Pool</u>	<u>Rectangular Pool</u>
Out flow quantity, m ³	60	60
Diameter/width of Pool, m	2.8	8.0
Intensity of Radiation at the centre of cloud	9.1	10.2
Damage Distances for the Heat Radiation, m:		
i. Severe damage to life & property (within cloud)	-	-
ii. 100% Lethality (37.5 kw/m ²)	0.5	1.0
iii. 50% Lethality (25 kw/m ²)	2.5	1.7
iv. 1% Lethality or severe burns (12.5 kw/m ²)	2.8	1.9
v. First degree burns (4.5 kw/m ²)	9.1	4.9
vi. No discomfort (1.6 kw/m ²)	12.6	8.2
Nearest/Minimum Distance	8.8	-

7.1.10 Probability of Occurrence

The overall probability of occurrence was found to be extremely low (10^{-7}).

7.2 Disaster Management Plan

7.2.1 DMP Cell

Disaster Management Plan for an industrial Unit is necessarily a combination of various actions which are to be taken in a very short time but in a present sequence to deal effectively and efficiently with any disaster, emergency or major accident with an aim to keep the loss of men, material, Plant / Machinery etc. to the minimum. A cell has to be formed for an effective implementation of disaster management plan.

The main functions of the Disaster Management Cell are monitor a detailed disaster management plan which includes :

- ❖ Identification of various types of expected disasters depending upon the type of the industrial unit.
- ❖ Identification of various groups, agencies departments etc, necessary for dealing with a specific disaster effectively.
- ❖ Preparation by intensive training of relevant teams/groups within the organization to deal with a specific disaster and kept them in-readiness.
- ❖ Established of an early detection system for the disasters.
- ❖ Developed of a reliable instant information / communication system.
- ❖ Organization and mobilization of all the concerned departments/ organizations/ groups and agencies instantly when needed

7.2.2 Emergency Planning for Disaster Due to Fire

A major disaster that can be expected in any cement plant might be due to fire. Coal storages, crusher houses, cable rooms, transformer unit, auxiliary transformers, oil tanks, coal bunkers including all conveyor lines etc, within the plant are the likely areas for which plan is outlined to deal with any eventuality of fire. Stores, workshop, canteen and Administration Building have also been included.

Classification of Fires : The various classes of fire, explanation of the classes of fire and the method of fighting the different classes of fire are given below :

<u>Classes of Fires</u>			
Class	Explanation	Method of fire	Fire fighting
A	Solid inflammable material	Carbonaceous fire involving wood, paper, Cloth and other material which will be charred in fire	Water
B	Kerosene	Oil fire involving, oil and Kerosene etc	Foam or dry powder chemical extinguisher
C	Electrical fire		DCP or Co ₂ extinguisher

Establishing a Fire Fighting Group : A small spark of fire may result into lose of machines and conveyors and the damage by fire may be of the order of few crores of rupees. This type of losses is avoided by preventing and controlling the fire instantly for which fire fighting group has been established.

Fire Fighting : Adequate and reliable arrangement is done for fighting the fire with water such as:

- ❖ Source of water and equipping with pumps.
- ❖ Arrangement of pipe lines along and around vulnerable areas.
- ❖ Alternative water supply arrangements to divert the water from one set of pipe lines (connected to another source) or to connect to other source.
- ❖ Provision of valves at appropriate points to enable supply of water at the required place/area or divert the same to another direction/pipe line.

Source of Water : The following two sources of water have been considered for fire fighting:

Source I (Main Source)	-	Borewell Sump
Source II (Secondary Source)	-	Raw water Reservoir.

Each source is equipped with one standby diesel driven pump to serve in case of power failure.

Water Line Arrangement : Water lines are provided at coal handling area along the conveyors and around the stockyards, transformers, oil tanks, crusher house etc. water lines are also provided around other infrastructures in the plant like administration building, canteen, stores and other plant equipment.

Hydrant system is feeding pressurized water to hydrant valves located through out the plant and also at strategic locations. The water pressure is being maintained at 6 to 8 kg/cm² in these lines. By operating a few of the valves water pressure can be increased at one particular place. There are mainly two types of valves. Non-return valves are provided to allow on the unidirectional flow of water. Gate valves are provided for closing or opening the water supply. An adequate number of gate valves are provided at appropriate points to tap water to deal with fire if it breaks out at any point of the plant.

Fire fighting with Fire Extinguishers : To deal with fires other than carbonaceous fires which can be dealt with by water suitable fire extinguishers are required to do the job effectively. It is, therefore, necessary adequate number of extinguishers are kept in readiness at easily approachable places.

Adequate numbers of 'fire station' are established which would house and keep in readiness the following type of equipment and arrangements:

- ❖ Soda Acid Fire Extinguishers
- ❖ CO₂ Extinguishers
- ❖ Dry Powder Chemical Extinguishers
- ❖ Foam Extinguishers
- ❖ Fire buckets
- ❖ 50mm spray hoses upto 150 m length.

Appropriate types of fire extinguishers are provided at conveyor drive heads, crusher house, control rooms, in machines like stacker & reclaimer, electrical yard, sub-station and other infrastructural facilities

within the premises In the transformer yard, automatic fire detecting and quenching system are provided for each transformer. This system will come into operation whenever the temperature of surrounding air exceeds 80°C and spray water over the transformer to prevent spreading of fire and quench the same.

In order to avoid fire in cable galleries, all the power and control cables of FRLS type (Fire Resistant Low Smoke) are used. In addition fire detecting and fire alarm systems are installed in the cable galleries.

Inspection : Fire alarm panel (electrical) would cover the entire plant. Fire Extinguishers in Fire Stations and machines and other places are periodically inspected by the inspection group.

The temperature of the coal mill stack is regularly measured and recorded. If the temperature exceeds 80 °C, inert gas quenching would be carried out.

Emergency telephone number boards are displayed at vital points by the groups. General inspection for fire are being regularly carried out by the group.

Procedure for Extinguishing Fire : The following steps are taken during the fire accident in the system :

- ❖ As soon as the message is received about fire, one of the spray groups in the system will be diverted to the place of the fire accident along with a staff member
- ❖ Simultaneously plant fire station are informed by phone/walkie talkie for fire brigades and fire stations nearby are informed by phone to readiness
- ❖ In the meanwhile, the pipe system are operated to obtain maximum pressure and output. In case cables are within the reach of fire, power supply will be tripped and the cables shifted.
- ❖ Further, other spray groups from the system will be diverted to the spot in case of fire in the belt, belt will be cut near the burning portion, to save the remaining parts.
- ❖ After Extinguishing the fire, the area will be well prepared for re-use.

7.3 Onsite Emergency Plan

To meet any major emergency, the following on site plan are laid down. Emergency personnel's responsibility during normal working hours are as follows:

Site controller : He will retain overall responsibility of the factory and its personnel. As soon as he is informed of the emergency he shall proceed to the control room and meet the communication officer. His duties are:

- ❖ Assess the magnitude of situation and decide for evacuation of staff etc. from their assembly points.
- ❖ Direct operational control over areas other than those affected.
- ❖ Maintain continuous review of possible development and assess in consultation with the incident controller and other responsible persons for further actions.
- ❖ Contact senior officers of fire bridge, police, medical and factory inspector etc.
- ❖ Issue authorized statements to news media and ensure that evidence is preserved for enquiries.

Incident controller : On hearing of the emergency he will rush to the scene of the occurrence and take over all charge and report to site controller.

He will :

- ❖ Direct all operations within the affected area with priorities for safety of personnel, minimum damage to plant, property environment and minimize loss of materials.
- ❖ Pending arrival of site controller assume the duties of his part and in particular direct shutting down, evacuation of plant, areas, ensure that all key personnel and outside help is called in Report all the significant developments to the site controller.

Personnel Officer : He is stationed at the main entrance during the emergency. He is under the direction of site controller, and handle police, press reporters etc. His responsibility are specified to ensure :

- ❖ Casualties receive adequate attention
- ❖ To control traffic movement
- ❖ When emergency is prolonged to arrange for the relief

Fire and Security officer : He is responsible for fighting. On hearing the alarm he will reach at the site immediately and advise fire and security staff in the factory in the incidence zone. He will also contact immediately and advise fire and security staff in the factory in the incidence zone. He will also contact immediately through telephone or messenger the incident and site controllers that an incident has occurred in such and such zone. He will open the nearby gate of incidence area and standby to direct the emergency.

Departmental Heads : They will report to incident controller and provide assistance as required. They will decide which member of their staff, they require at the scene.

Engineer in-charge and Electricians : They will report to the site of incident and close down the services as requested by the incident Controller.

Fire pump attendant : On hearing the fire alarm they will proceed to the pump house and ensure that pumps are operating and standby to maintain them. Emergency personnel's responsibilities outside normal working hours of the factory.

Shift in-charge : Immediately after he becomes aware of the emergency and its location, he will assess the scale of the incident and direct all operations within the affected areas with following properties:

- ❖ Minimize damage to plant, environment, minimize loss of materials
- ❖ Inform other engineers, assistants as to what services will or will not be required.
- ❖ Hand over charge of operations to the incident controller when he arrives on scene.

Fire and security officer : On hearing the alarm, he shall rush to the gate, advise the fire and security staff of the incident zone and cancel the alarm and on advise of the shift in-charge inform the local fire brigade.

He will through messengers / runner/ telephone (if working) on advise shift in-charge tell the staff to evacuate the assembly points open the gate nearest to incident site and standby to direct the emergency. He shall also call out the responsible persons.

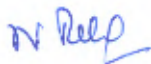
First Aid Team : Member of the first aid team is report to the shift in-charge /incident controller on hearing the alarm. The first aider shall inform the shift executive in-charge, giving the name of the patient and destination i.e. the hospital of doctor's room and request the incident / shift controller to inform the destination (hospital etc.) advising them about the casualties reaching there.

Factory Fire Fighting Team : Under the command of the fire and security officer, the fireman was responsible for fire fighting. On hearing alarm they will proceed to the incident site if known or otherwise to the security office. The man at security office shall find out the location of the emergency and proceed to the state of occurrence. At the incident scene squad members will be checked against roll call sheet by a team member detained for this purpose. At the site all the members will respond to the advise and information given by the incident controller or shift in-charge. On arrival of the outside brigade they will also assist in fire fighting work with the advise of the incident controller.

CSR-2025-26 (from 01-04-2025 to 31-03-2026)

S. No	Village	DETAILS OF ACTIVITIES	Amount (Rs in lakhs)
		EDUCATION	
1	Bhaktampalli, Kallur, Sangam Kalan & Miriyan	Salaries to Guest teacher for Bhaktampalli, Kallur, Sangam Kalan, Miriyan & Garagapalli villages	5.06
		Education Total	5.06
		HEALTH	
7	Miriyan panchayat	Borewells for Miriyan panchayat villages-2 nos	2.06
8	Kallur	Compound wall for Madarasa school	1.92
9	CCCPL	Paver blocks for school	2.15
10	Kalaburgi	Annual sports meet	1.00
11	Kalaburgi	ITF Women's Tennis tournament	7.50
		Infrastructure Total	51.36
		WORK IN PROGRESS	
1	Sangam Kalan	Construction of foot over bridge Sangam Nala	13.00
2	CCCPL	RO water plant for school	1.25
3	Kalaburgi	Digital infrastructure for SP Office, Kalaburgi	5.00
4	Miriyan panchayat	Borewells for Miriyan panchayat villages-1	1.08
5	Karankote	CCTV for Police station	1.59
6	Garagapalli	Providing transformer for electricity connection to Govt. High school	2.42
7	Ganapur	Construction of CC road	4.57
8	Bairampalli	Construction of CC road	3.66
9	Sangam Kalan	Protection of soil water-9th no railway bridge	13.90
10	Sedam	Computerized record rooms-A.C office, Sedam	0.45
		WIP Progress	46.92
		Grand Total	103.34

For Chettinad Cement Corporation Private Limited



N Ravi Kumar
Unit Head

Chettinad Cement Corporation Private Limited (Kallur Works & Mine)				
Sangam K & Kallur Villages ,Kalaburagi District, Karnataka				
Noise Level Monitoring- Consolidated Report (October'2025 to March' 2026)				
S.No	Location	UoM	Day	Night
Outside the Premises				
N1	Miryan village	dB(A)	55.3	48.6
N2	Polkampalli village	dB(A)	53.2	45.3
N3	Bhaktampalli village	dB(A)	52.8	43.4
N4	Somalingadhalli village	dB(A)	50.1	42.7
N5	Kallur village	dB(A)	55.6	44.9
Within the Premises				
N6	Core zone ML Area	dB(A)	67.7	54.4
N7	Factry Area	dB(A)	68.3	53.6
N8	Haulage road	dB(A)	59.4	54.2
N9	Loading point	dB(A)	63.9	53.6
N10	Colony-Canteen	dB(A)	52.3	41.6
Permissible Limits of Ambient Noise Levels as per CPCB Guidelines				
			Leq. Limit dB(A)	
			Day	Night
Silence area			60	40
Commerecial area			65	55
Residential area			55	45
Industrial areas			75	70

for Chettinad Cement Corporation Private Limited

N Ravi Kumar

N Ravi Kumar
Unit Head

Annexure-16

Chettinad Cement Corporation Private Limited

Environmental Management Plan Expenses

SI No	Particulars	Capital expenditure in Lakhs	Recurring expenditure FY2025-2026 in Lakhs
1	Pollution control equipment		
a	Air pollution control Devices (Baghouse, Bag filter, ESP)	6775	21
d	ETP	19	6
c	STP	24	51
2	CAAQMS	120	6
3	CEMS (Stack Online analysers)	116	9
4	Road Sweeping machine	90	67
5	Solar Power Plant	3737	111
6	Flood water drain	500	2
7	Environment monitoring (3rd party)	-	8
8	Greenbelt development	166	15
9	Dust suppression -Water sprinklers/Tanker	53	23
10	Solid waste Management (Collection & Disposal)	4	13
11	Environment awareness and training		1
12	Garland drain & retaining wall	5	1
13	Rainwater harvesting	10	1
14	Piezometer (including Maintenance)	4	0.5
15	Alternative fuel feeding (Solid & Liquid)	2519	30
16	House keeping	-	57
17	Noise Pollution control (acoustic Enclose)	10	2
18	Covered sheds	5457	-
	Total	19609	425

Chettinad Cement/Kallur Proj/MoEF/ 1167
26.06.2010

To

The President,
Panchayat Development Officer,
Gram Panchayat - Miryana,
Tq.Chincholi,
Gulbarga Dist.
Karnataka - 585 305.

C Dear Sir,

O Sub: Environment Clearance received from MoEF, New Delhi, for our Kallur
Project -reg.

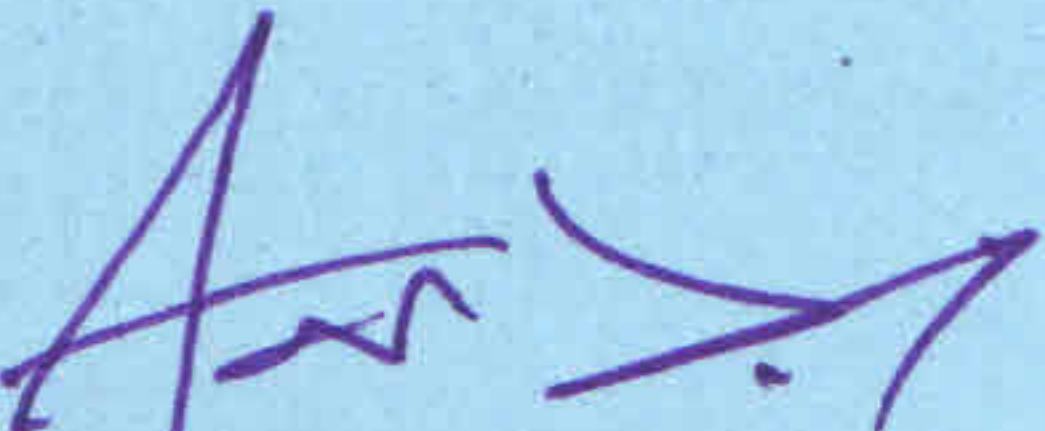
P With reference to the above subject, we are pleased to inform you that we
have received Environment Clearance from MoEF, New Delhi, for our Kallur
Project.

Y Herewith enclose copy of Environment Clearance received from MoEF,
New Delhi.

This is for your kind information please.

Thanking you,

Yours faithfully,
For CHETTINAD CEMENT CORPORATION LTD.,


(A.ANNADURAI)

Asst. Vice President (Operations)

Encl: As above.

CHETTINAD CEMENT CORPORATION LTD.,
KALLUR PROJECT.

Chettinad Cement/Kallur Proj/MoEF/1108
26.06.2010

To

The President,
Panchayat Development Officer,
Gram Panchayat-Anwar,
Tq.Chincholi,
Gulbarga Dist.
Karnataka - 585 305.

Dear Sir,

C Sub: Environment Clearance received from MoEF, New Delhi, for our Kallur Project-reg.

O With reference to the above subject, we are pleased to inform you that we have received Environment Clearance from MoEF, New Delhi, for our Kallur Project.

P Herewith enclose copy of Environment Clearance received from MoEF, New Delhi.

Y This is for your kind information please.

Thanking you,

Yours faithfully,
For CHETTINAD CEMENT CORPORATION LTD.,


(A.ANNADURAI)

Asst. Vice President (Operations)

Encl: As above.

CHETTINAD CEMENT CORPORATION LTD.,
KALLUR PROJECT CEMENT/MoEF/KAL.PROJ/ 538

06.07.2010

To

The Chief Conservator of Forests (Central),
Ministry of Environment and Forest,
Regional Office (Southern Zone),
IV Floor E&F Wings, 17th Main Road,
Kendriya Sadan,
II Block Koramangala,
BANGALORE – 560 034.

Dear Sir,

C Sub: Setting up of Integrated Cement Plant (2.5 MTPA), Captive Power Plant (30MW)
at Sangem-K Village at SF Nos.5-7 and 18-30 and Captive Limestone Mines
(422.94Ha) at SF Nos.18-30, 169-209, 221-225, 227-251, Village Kallur, Taluk
Chincholi, District Gulburga, Karnataka – Environmental Clearance from MoEF –reg.

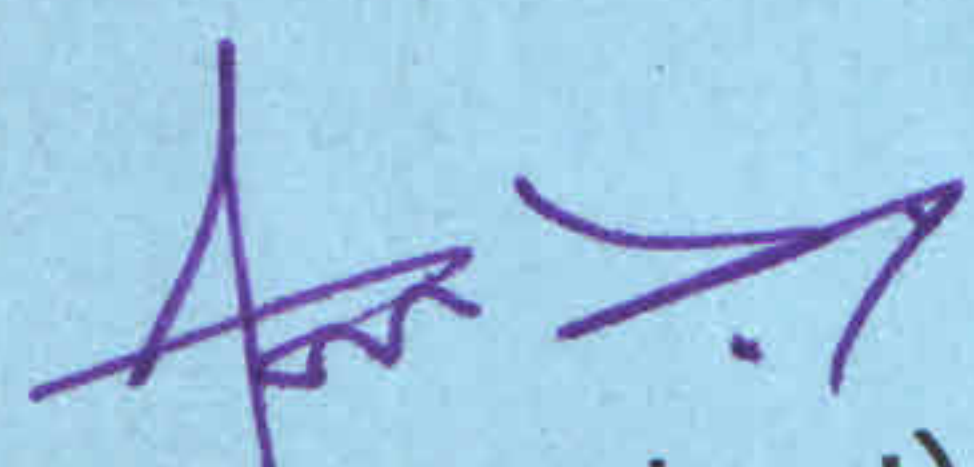
O Ref: Environmental Clearance form MoEF vide letter No.J-11011/399/2008-IA II(I)
dated. 18.06.2010.

P With reference to the above subject, we have received Environmental Clearance for
Y Setting up of Integrated Cement Plant (2.5 MTPA), Captive Power Plant (30MW) at
Sangem-K Village at SF Nos.5-7 and 18-30 and Captive Limestone Mines (422.94Ha)
at SF Nos.18-30, 169-209, 221-225, 227-251, Village Kallur, Taluk Chincholi, District
Gulburga, Karnataka vide letter dated 18.06.2010. As instructed by MoEF we have
informed the public through news paper advertisement.

The copy of the same is herewith enclosed for kind information please.

Thanking you,

Yours faithfully,
For Chettinad Cement Corporation Ltd.,



(A. Annadurai)
Asst. Vice President (Operations)

Encl: As above.

ಸಾರ್ವಜನಿಕ ಸೂಚನೆ

ಈ ಮೂಲಕ ತಿಳಿಯಪಡಿಸುವುದೇನೆಂದರೆ,
ಪರಿಸರ ಮತ್ತು ಅರಣ್ಯಗಳ ಸಚಿವಾಲಯ,
ಭಾರತ ಸರ್ಕಾರ, ನವದೆಹಲಿ, ಇವರು
ಮೆಸರ್ಸ್ ಬೆಟ್ಟನಾಡ್ ಸಿಮೆಂಟ್

ಕಾರ್ಪೊರೇಷನ್ ಲಿಮಿಟೆಡ್‌ಗೆ
ಇಂಟಿಗ್ರೇಟೆಡ್ ಸಿಮೆಂಟ್ ಪ್ಲಾಂಟ್‌ಗೆ (2.5
ಎಂಟಿಪಿಎ), ಕ್ಯಾಪ್ಷಿವ್ ಪವರ್ ಪ್ಲಾಂಟ್
(2X15ಎಂಡಬ್ಲ್ಯು) ಮತ್ತು ಕ್ಯಾಪ್ಷಿವ್
ಲೈಮ್ ಸ್ಟೋನ್ ಮೈನ್‌ಗೆ ಕಲ್ಲುರ ರಸ್ತೆ
ಗ್ರಾಮ ಮತ್ತು ಸಂಗಮ್ (ಕೆ) ಗ್ರಾಮ,
ಚಿಂಬೋಳಿ ತಾಲ್ಲೂಕು, ಗುಲ್ಬರ್ಗ ಜಿಲ್ಲೆ,
ಕರ್ನಾಟಕ ಇವರಿಗಾಗಿ ಪರಿಸರ ತೀರಿಕೆ
ಪ್ರಮಾಣ ಪತ್ರವನ್ನು 18.06.2010ರಂದು
ಪ್ರದಾನ ಮಾಡಿರುತ್ತಾರೆ.

ತೀರಿಕೆ ಪತ್ರಗಳ ಪ್ರತಿಗಳನ್ನು ಕರ್ನಾಟಕ ರಾಜ್ಯ
ಮಾಲಿನ್ಯ ನಿಯಂತ್ರಣ ಮಂಡಲಿ, ಬೆಂಗಳೂರು
ಇಲ್ಲಿ ಪಡೆಯಬಹುದು. ಮತ್ತು ಸಹ ಪರಿಸರ
ಮತ್ತು ಅರಣ್ಯಗಳ ಸಚಿವಾಲಯದ ವೆಬ್‌ಸೈಟ್
<http://envior.nic.in>. ನೋಡಬಹುದು.

ಬೆಟ್ಟನಾಡ್ ಸಿಮೆಂಟ್
ಕಾರ್ಪೊರೇಷನ್ ಲಿಮಿಟೆಡ್
ಚಿನ್ನೆ 600006

Annada
Prabha
GULBURGA
Distion
27/6/10

PUBLIC NOTICE

It is hereby informed that the Ministry of Environment & Forests, Government of India, New Delhi accorded to **M/s Chettinad Cement Corporation Ltd**; the Environmental Clearance on **18.06.2010** for Integrated Cement Plant (2.5 MTPA), Captive Power Plant (2x15 MW) and Captive Limestone Mine at Kallur Road Village and Sangem (K) Village, Chincholi Taluk, Gulbarga District, Karnataka.

The copies of the clearance letters are available with the Karnataka State Pollution Control Board, Bangalore and may also be seen at the website of Ministry of Environment & Forests at <http://envfor.nic.in>.

**CHETTINAD CEMENT
CORPORATION LTD
CHENNAI 600006**

New Indian
Express -
Bangalore Edition -
26/6/10

PUBLIC NOTICE

It is hereby informed that the Ministry of Environment & Forests, Government of India, New Delhi accorded to **M/s Chettinad Cement Corporation Ltd**; the Environmental Clearance on **18.06.2010** for **Integrated Cement Plant (2.5 MTPA), Captive Power Plant (2x15 MW) and Captive Limestone Mine** at Kallur Road Village and Sangem (K) Village, Chincholi Taluk, Gulbarga District, Karnataka.

The copies of the clearance letters are available with the Karnataka State Pollution Control Board, Bangalore and may also be seen at the website of Ministry of Environment & Forests at <http://envfor.nic.in>.

**CHETTINAD CEMENT
CORPORATION LTD
CHENNAI 600006**

Kannada
Prabha,
Bangalore
26/6/10