

20(CM) Kadapa  
881/AP

**Bharathi**  
CEMENT

**BHARATHI CEMENT CORPORATION PRIVATE LIMITED**

An IMS Certified Company (ISO 9001, ISO 14001 & OHSAS 18001)

Nallalingayapalli, Kamalapuram Mandal, YSR Kadapa Dist - 516 289,  
Andhra Pradesh, Ph: +91 8563 200 400/200 411

CIN : U26942TG1999PTC031682

Ref. No:- MOEF/BCCPL/2017 -02

To,  
The Regional Director,  
Ministry of Environment & Forest and Climate change, Govt. of India,  
R.O., HEPC Building,  
No - 34, Cathedral Garden Road,  
Nungambakkam,  
Chennai - 600 034.

Dear Sir  
SO/Asst (Env.)  
To be placed  
k. Reddy  
21/11/17

Dear Sir,

**Sub: Compliances reports April 2017 to September 2017 - BCCPL Cement Plant, Lime Stone Mines and Captive Power Plant - Reg.**

With reference to the above subject, we are here with submitting the Compliances reports of Cement Plant, Lime Stone Mines and Captive Power Plant of M/s. Bharathi Cement Corporation Private Limited, Nallalingaya Palli, Kamalapuram Mandal, YSR Kadapa Dist., and Andhra Pradesh for the period of April 2016 to September 2017.

This is for your kind information and Records Please.

Thanking you,

Yours Faithfully

For M/s Bharathi Cement Corporation Private Limited

Sr. Vice President (Works)

Cc: Environmental Engineer APPCB, Tirupati,  
Sr. Environmental Engineer (T.F.), Kurnool.



Corporate Office: 8-2-626, Reliance Majestic, Road No.10, Banjara Hills, Hyderabad - 500 034, Ph: +91 40 3000 6999, Fax: +91 40 3000 6977

Vicat, France

/BharathiCements /BharathiCements

**REPORT ON  
ENVIRONMENTAL DATA  
(April 2017 -September 2017)**

**AT  
BHARATHI CEMENT CORPORATION PVT. LTD.,  
Nallalingayapalli (V) Kamalapuram (M),  
Y.S.R. Kadapa (Dist.)**



**UNIVERSAL ENVIRO ASSOCIATES  
104 & 105 Libra Enclave, Golconda 'X' Roads,  
Musheerabad, Hyderabad – 500 020.  
Ph: 27633361, 27666901**

<p><i>Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008 April-2017 to September-2017</i></p>	<p><b>Introduction</b></p>
---	----------------------------

## **1.0 INTRODUCTION**

### **1.1 The Background**

M/s Bharathi cement corporation Private Limited has set up most modern cement plant with state of the art technology and produces superior quality cement which helps you to set new standards in construction is located at Nallalingayapalli (V), Kamalapuram Mandal, Y.S.R (Kadapa) district of Andhra Pradesh.

This area is known for its superior quality Narzi lime stone deposits, possessing high lime content that gives high early strength and ultimate long term strength. Another characteristic feature of this lime stone is low alkali, magnesia and low chloride contents which are highly desirable parameters for concrete durability. The state of the art technology adopted at the plant consists of Vertical Roller mill of LOESCHE, Germany for grinding of cement to achieve the optimum fineness, and controlled particle size distribution of cement particles

At Bharathi cement corporation Private Limited, the project has been conceived, planned and erected with the latest technology available in the world with a capacity of 5.0 MTPA at Nallalingayapalli village, Kamalapuram Mandal, Y.S.R (Kadapa) District of A.P. This plant requires Limestone as main raw material, and limestone to be mined from Bharathi Cement Limestone Mine, situated at about 0.5 km from the existing plant.

Bharathi cement corporation private Limited has obtained Mine License (ML) over an extent of 632.28 ha falling in T.Sunkesula village and Tippaluru of Yerraguntla Mandal and Nallalingayapalli, Pandillapalli, Turakapalli, Jambapuram, Sadipiralla and Apparaopalli villages of Kamalapuram Mandal, Y.S.R Kadapa District of Andhra Pradesh and developed a large scale mechanized lime stone mining project.

**M/s Bharathi Cement Corporation Private Ltd.** has retained **M/s Universal Enviro Associates., Hyderabad** to undertake Environmental Data Generation for various environmental factors on monthly and seasonal basis, which may be affected due to the likely impact arising out of the existing cement plant and existing Mines. Environmental data has been collected for various environmental components viz. Air, water and Noise quality during October 2106 to March 2017 and prepared compliance to Environmental clearance involved by MOEF vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,2008.

### **1.2 Project Setting**

The plant is located in Nallalingayapalli Village Kamalapuram Mandal, Y.S.R Kadapa District of Andhra Pradesh and the same is identified on the survey of India toposheet no 57J/9, J/10, J/6, J/11 at the Latitude 14°35'26" North and Longitude 78°34'47" East and existing Mines at an elevation of 150 m above Mean Sea Level (MSL)

The Mine is located in Nallalingayapalli Village, Kamalapuram Mandal, Y.S.R Kadapa District of Andhra Pradesh and the same is identified on the survey of



India toposheet no 57J/9, J/10, J/6, J/11 at the Latitude 14°34'02" North to 14°36'28" North and Longitude 78°33'35" East to 78°36'51" East at an elevation of 150 m above Mean Sea Level (MSL)

The area forms a part of the well-known crescent shaped Kadapa Basin with middle Proterozoic sediments and igneous intrusive and flows. The Kadapa Super group comprising mainly arenaceous and argillaceous sediments with subordinate calcareous facies is overlain unconformably by the Kurnool Group with essentially calcareous rocks. The latter is present in three sub-basins viz. the northernmost Palnad, northern Srisailem and middle Kurnool sub-basins.

The Nallalingayapalli village is located at about 1.2 km, ESE and Sunkesula village at about 2.0 km, NW from plant site respectively. The plant can be approached either from Proddutur town or from Kadapa and is well connected by good road network. The plant is located at about 30 km southeast of Kadapa town. The area is generally barren and devoid of vegetation and only shrubs and trees are found in scattered form. The plant area is completely barren and uncultivable land.

The geographical location of the plant and mine is shown in **Figure-1.1**. The topographical features of the project area (within 10 km radius of plant site and Mine Site) are depicted in **Figure-1.2**, **Figure-1.3**.

The area falls a part of Rayalaseema region, which is characterized by semi arid climate and exhibits extreme variations of temperature. The long-term data recorded at India Meteorological Center at indicates temperature in the range of 18.3°C to 45.3°C. The mean total rainfall of 101.5 mm for the six month has been recorded. The relative humidity is generally high during the period from July to December and is least during the summer afternoons.

Winds are generally light with strengthening in force during the South West monsoon. The mean wind speeds are generally higher in the winter and summer months. The predominant wind direction from January to March is west, while in the Pre Monsoon and Post-Monsoon months it changes to East direction.

### **1.3 Process Description**

Cement manufacturing involves principally of grinding and blending in a definite proportion, a material containing calcium oxide (such as limestone, chalk, marl) with a siliceous material (such as clay, shale, sand) along with certain additive or corrective materials (such as bauxite, iron ore) and then burning the mixture at high temperatures in a kiln. The resulting 'clinker' is cooled and then ground with gypsum to produce the finished product, Ordinary Portland Cement (OPC). Gypsum is added to control the setting time of cement. In case of Blended cements viz Pozzolona Portland cement (PPC) and Pozzolona Slag cement (PSC) the Flyash and Slag is being added along with Clinker and Gypsum. The process description is given below.

The raw material, Lime Stone is mined out and crushed to required size at mine site which is 1 km away in North direction to the plant and is transported to reclaimer shed within the plant premises through a series of four belt conveyors. The Lime Stone from different mining faces is stored and blended into stockpiles.

This raw material along with additives viz., Iron Ore and Bauxite etc. is fed in required proportions into two Atox - 50 vertical Raw grinding mills with rated capacity of 375 TPH each with raw meal at a fineness of 20% residue retained on 90 micron sieve with three in one functioning of grinding, classifying and drying.

The fine ground product is finally stored in the CF silo for storage cum blending of the mill products. The raw meal is fed to series of Kiln pre-heater cyclones where the hot air from the Kiln is made to contact counter currently. Then the raw meal is fed from top end and fire/hot gases from burning of coal powder from the lower end are fed into the rotary kiln. After passing through the different stages of heating, calcining, sintering and clinkerization in the kiln, the hot product called clinker which is at 900 - 1000 °C is cooled in Coolax Cooler. The cooled clinker is transported and stored in intermediate silo, Peter silo and an SRC silo.

The clinker and gypsum are fed in required proportions into the Cement Mills, which are in three numbers. Two of them having capacities 230 TPH and one is having capacity of 360 TPH. The final products i.e. CEMENT which is transported and stored in storage silo.

The packing and dispatch section comprises of 8 RCC silos. Six having storage capacities of 6000 MT each & two are having storage capacities 9800 MT each. These silos are further connected to the eight electronic packers.

The Layout of plant is shown in **Figure-1.4**. The surface plan of the Mine Lease Area is shown in **Fig-1.5**. The overall process being adopted cement plant is shown in **Figure-1.6**.

• **Advantages of Pre-calcinator Technology**

Irrespective of the system, Pre-calcinator technology yields substantial advantages over the conventional pre-heater system. The primary advantages so far as Indian cement industry is concerned are:

- \* Possibility of achieving very large outputs from single production line, within the transport limitations of equipment by railway and road network.
- \* Stable kiln operation with improved refractory life and higher equipment availability for production.
- \* Increase of production from the existing dry process kilns to the possible extent.
- \* Feasibility of using lower grade coal/fuels in pre-calciner.
- \* Steadier burning operation leading to sustained quality of clinker over longer period of operation.

**1.4 Mining Methodology and Operations**

The mine is being worked with Opencast Mining method by deploying heavy earth Moving Machinery and adopting deep hole drilling and blasting. The mine is worked with bench heights of 10 to 12 m and widths ranging from 40 to 60 m.

**1.4.1 Mining Operations**

The sequences of mining operations are as under:

- > Removal of Top Soil
- > Drilling
- > Blasting
- > Loading of blasted limestone into dumpers
- > Transportation of limestone to crusher.

**1.4.2 Mine Equipment**

The following equipment is being used at Bharathi Cement Limestone Mine.

**TABLE-1.1  
MAJOR MINE EQUIPMENTS**

S. No	Description	Make	Capacity	Existing
1	Hydraulic excavator	Komatsu	6.5 M <sup>3</sup>	2 nos.
2	Hydraulic Excavator	Komatsu	4.5 M <sup>3</sup>	1 no.
3	Wheel Loader	Komatsu	6.5 M <sup>3</sup>	1 nos.
4	HD 465 Dumpers	Komatsu	55 MT	10 nos.
5	Drill Machine, D-40	Atlas Copco	6.5" dia.	1 no.
6	Bull dozer D 155 A	Komatsu	45 MT	1 no.
7	Water Tanker	Ashok Leyland	10 KL	1 no.
8	Fork Lift	Godrej	5 MT	1 no

**1.4.3 Explosives**

Slurry Explosives along with ANFO explosives are being used for blasting operations. we are doing initiations with NONEL (Non electrical) and Short delay detonators in combination with Sequential Blasting Machine are being used to control the noise, fly rock, vibrations etc.

The Layout of Mine is shown in **Figure-1.5**.

**1.5 Pollution Control Measures**

Mines officials are well versed with their responsibilities and are very keen in undertaking various steps to reduce the pollution from different environmental attributes i.e Air, Noise, Water, etc.

**1.5.1 Air Pollution Control.**

There is a chance of fine dust entering into the atmosphere during the mining operations like drilling, blasting, loading and transportation, become air born, thus leading to increase in dust levels in ambient air. In order to curb the air pollution, mine authorities have taken the following steps.

- The road leading to crusher is concreted and well maintained. The roads in the min pit and other axis roads are sprinkled with water at regular intervals so as to suppress the dust due to vehicular movement.
- Wet drilling is adopted to suppress dust and water is sprayed while loading to reduce the dust emissions from muck piles.
- Dust generation will be controlled using sharp teeth edge for proclainer.

- Dust masks are provided to all the mining employees.

#### **1.5.2 Green Belt Development**

A comprehensive plan is envisaged for development of Green Belt. OB dump has been prepared for the plantation an experienced horticulturist has been engaged for carrying out the plantation programme.

- The Green belt development will help in controlling the dust emissions as well as act as barrier for reducing the noise levels.
- Dense tree belt would be planted around the dust generation points, at the surface of the mine.
- Trees would be planted on either side of the haulage roads used for transportation to arrest the air born dust.
- Afforestation of already mined area would be done as per schedule with minimum gap between excavation and afforestation to fix the dust and prevent getting air borne.

#### **1.5.3 Noise Pollution Control**

- Wearing the ear plugs/ earmuffs for all the employees working with Drill machines dumpers, Excavators and crusher has been made conditional while on job.
- All the equipment chosen were having optimum noise levels, in the operator's cabins, of less than the 90 dB (A) as per OSHA standards for 8 hours shifts.
- Workers are provided with sound insulated chambers for the machines producing higher levels of noise like Excavators and crusher area.

#### **1.6 Scope of the Study**

Under the scope of the study, an area of 10 km radius from the centre of the existing plant was covered in detail for various environmental components air, water, noise and soil based on the guidelines of Ministry of Environment and Forests, Government of India.

##### **1.6.1 Micrometeorological data**

The meteorological and micro-climatic parameters were also recorded simultaneously using automatic weather station in the plant colony located at adjacent to the existing plant. Wind speed, Wind Direction and Relative Humidity were recorded on hourly basis during the study period. Minimum and maximum temperatures were also recorded.

##### **1.6.2 Air Environment**

The baseline status of the existing ambient air quality within the study region has been assessed through a monitoring network of seven Ambient Air Quality (AAQ)

sampling stations during study period October 2016 to March 2017. The monitoring network has been established depending on the available climatological norms of predominant wind directions and wind speeds of the study region in the post monsoon and winter seasons. The baseline status of air environment was monitored for Particulate matter (PM<sub>10</sub>) and gaseous pollutants like Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>).

### **1.6.3 Water Quality**

Information on water resources (ground) was collected during the study period. The parameters of prime importance were selected under physical, chemical, inorganic, chemical organic and heavy metal groups. Samples were collected for basic nutrient demand; toxic parameters and baseline data on bacteriological aspects were also collected from the existing dug and bore wells. Open well and bore well samples were collected within 10 Km around the existing site.

The ground water levels at 10 locations around the plant in 10 km radius were also recorded during the study period.

### **1.6.4 Noise Quality**

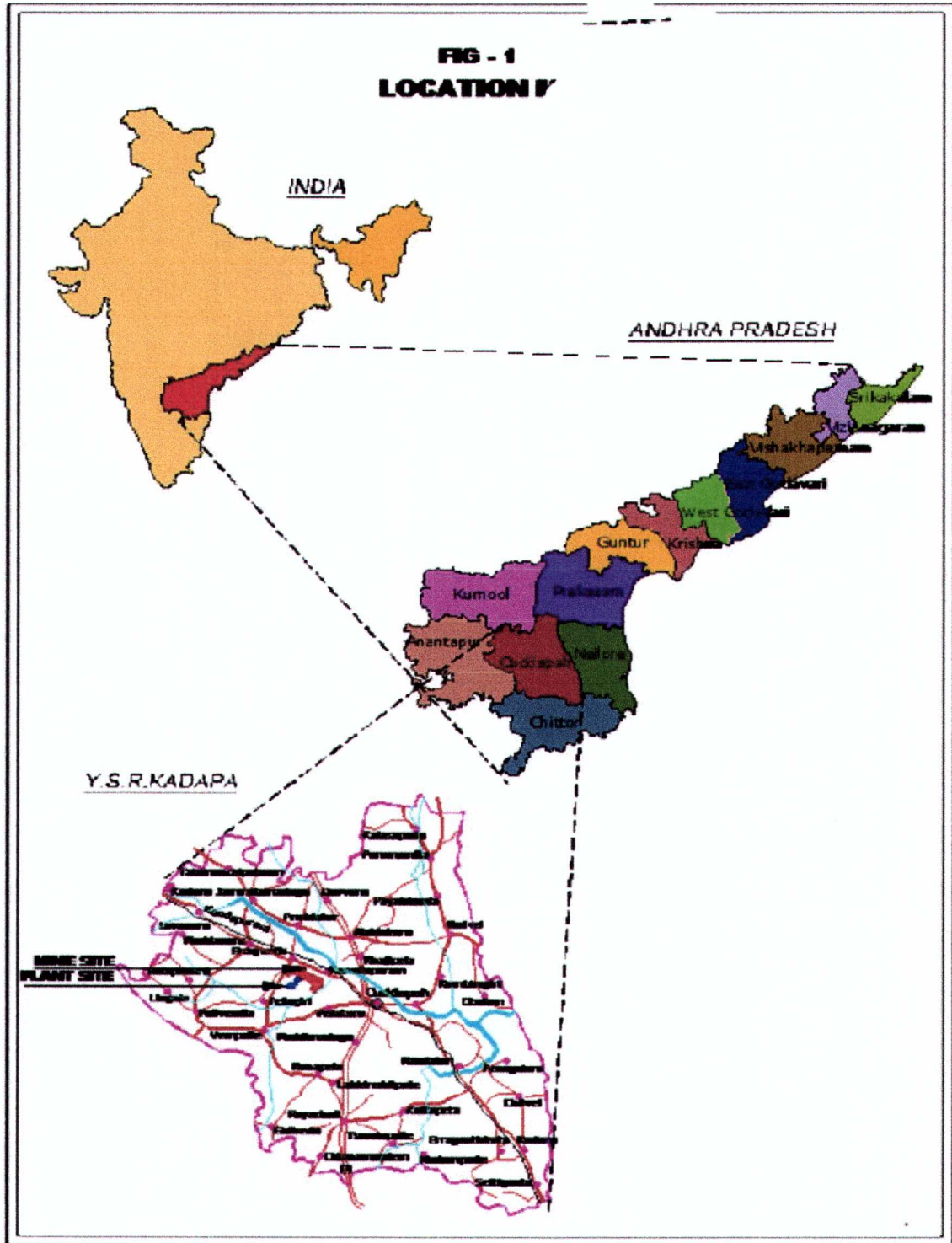
A detailed survey on noise environment was carried out in and around the project site to study the levels of noise, as the high dB (A) levels may cause adverse effect on human beings and associated environment. Spot noise levels were measured using a precision noise level meter, at residential areas, schools, hospitals, bus stands and commercial centers etc. The major noise generating sources were identified in the existing plant and were monitored to study noise environment. Ambient noise levels were measured at 7 locations in 5 Km radial distance.

### **1.7 Compliance to Environmental Clearance obtained Cement Plant Complex vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008.**

Subject: Expansion of cement plant – Increase of Clinker production from 1.485 to 3.3 MTPA, Cement production from 2.25 MTPA to 5.0 MTPA, installation of 2 X 35MW coal based Captive power plant and increase of limestone production from 2.25 to 5.0 MTPA at Y.S.R (Kadapa) District, Andhra Pradesh by **M/s Raghuram Cements limited** –Environment Clearance reg.

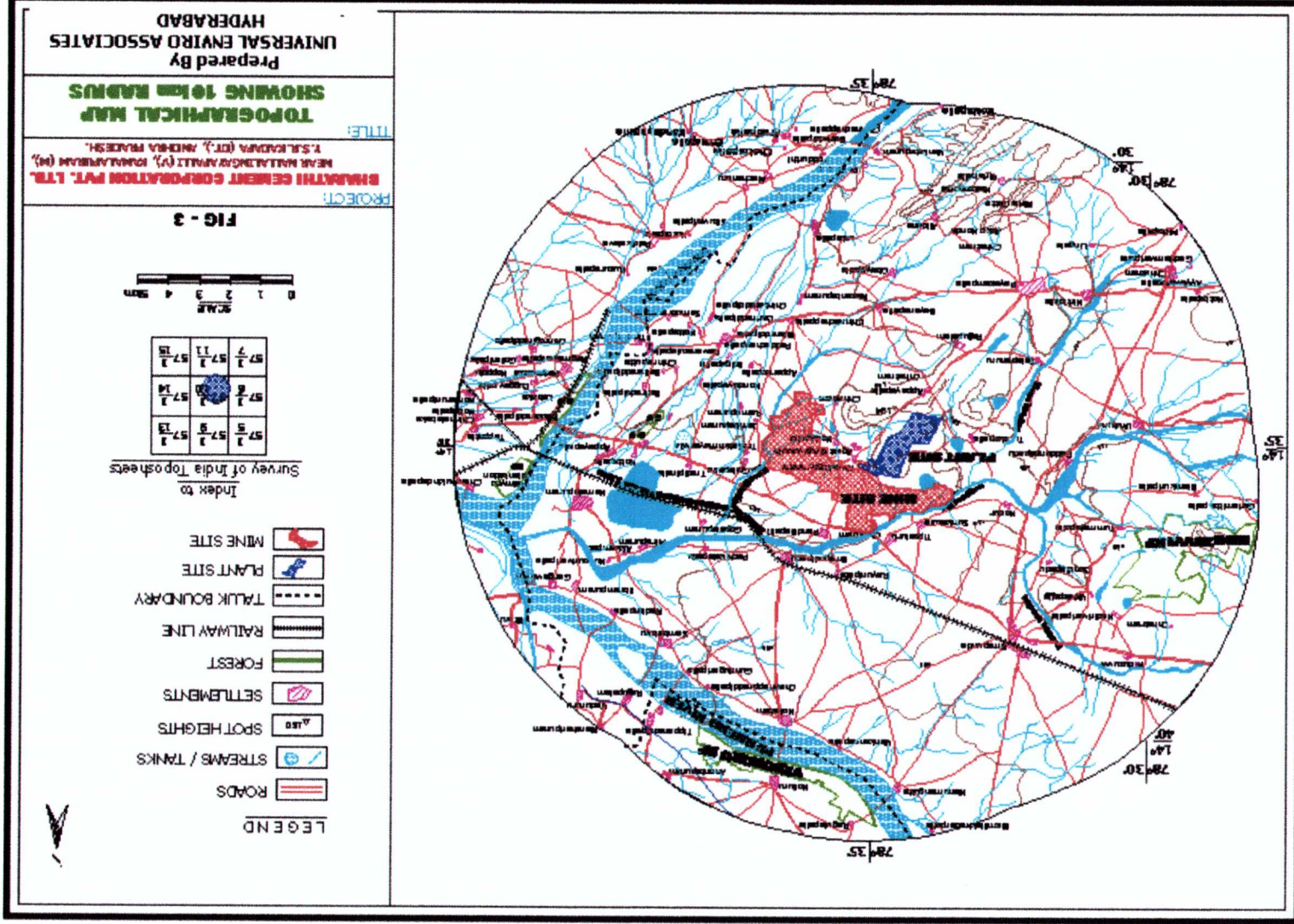
A compliance Statement Report is prepared for April 2016 to September 2016 in **Annexure-I**





**Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I)  
dated 10<sup>th</sup> December, 2008  
April-2017 to September-2017**

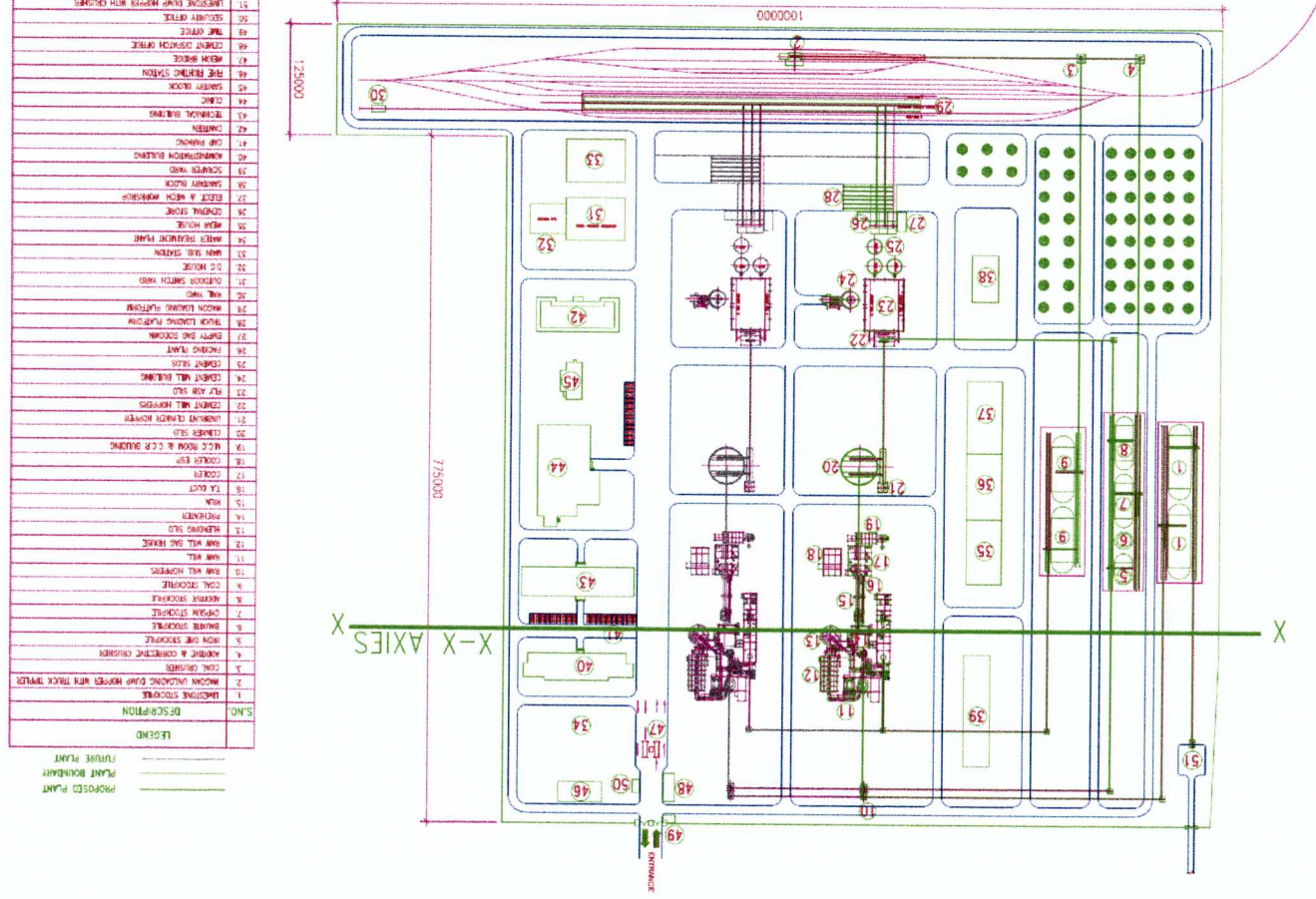
**Introduction**



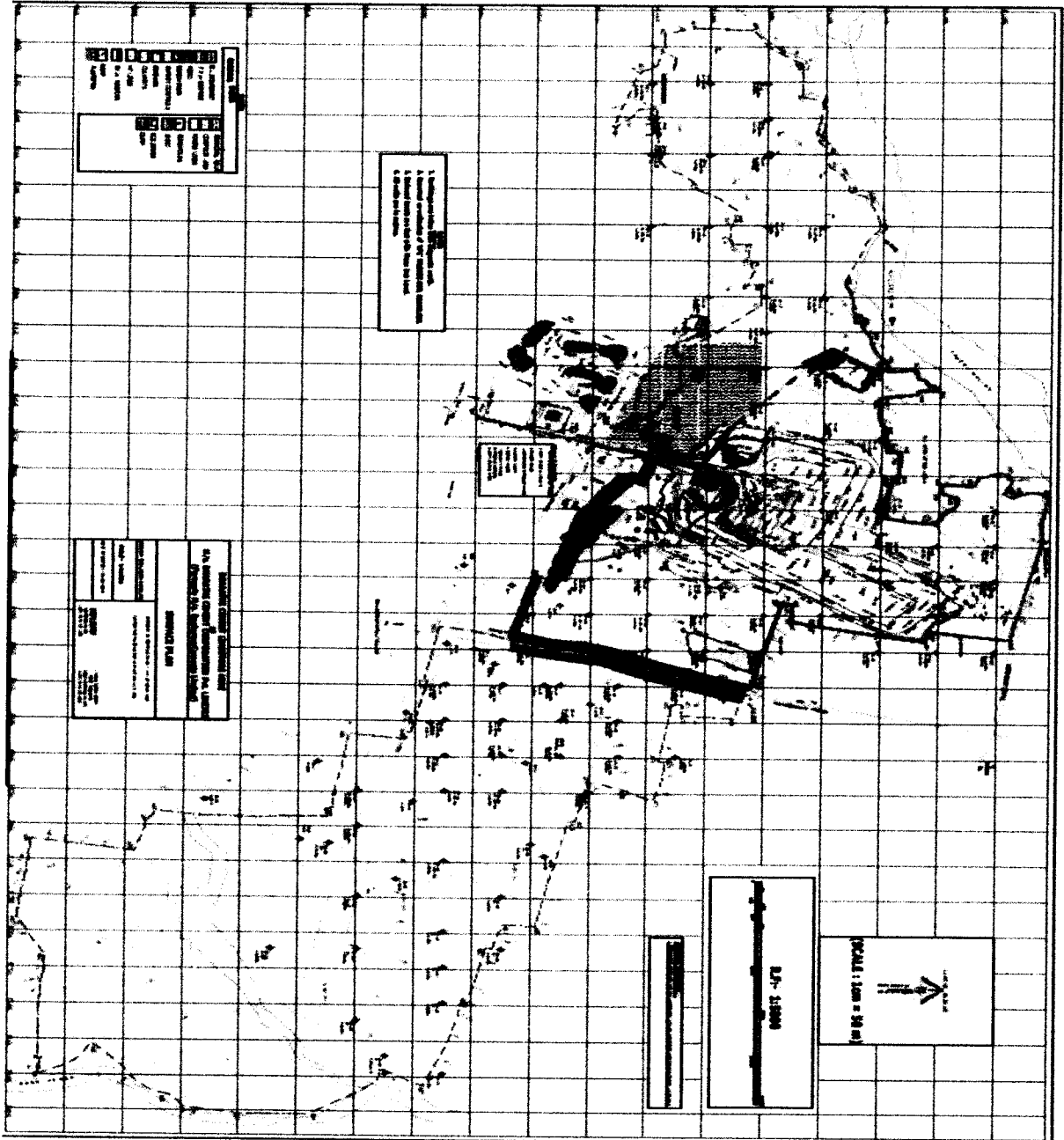
**Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I)  
dated 10<sup>th</sup> December, 2008  
April-2017 to September-2017**

**Introduction**

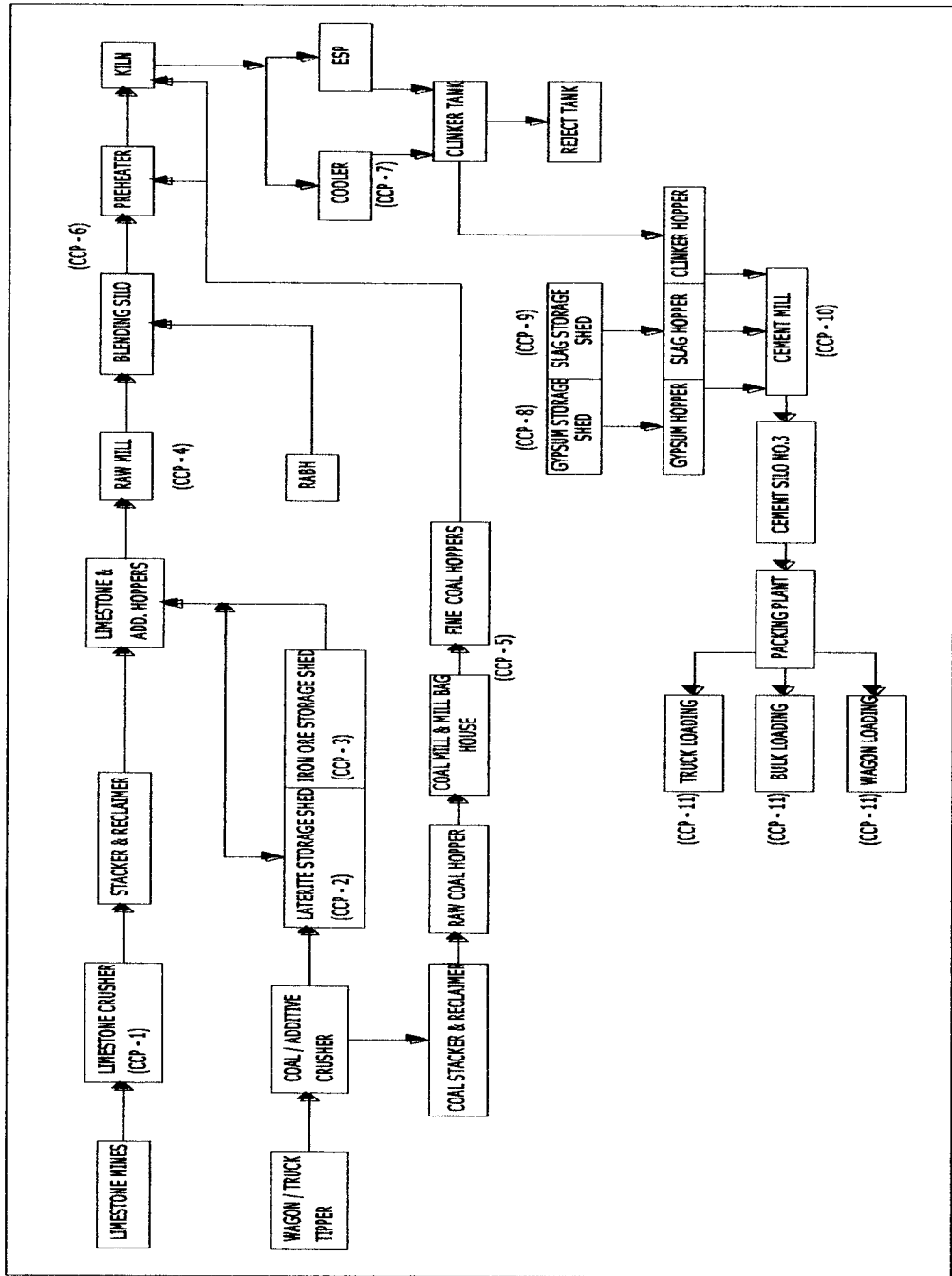
**FIG - 1.4  
TYPICAL LAYOUT OF PLANT**



**FIGURE-1.5  
SURFACE PLAN OF MINE LEASE AREA**



**FIGURE-1.6**  
**PROCESS FLOW DIAGRAM**



**Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008**

**Annexure-I**

**April-2017 to September-2017**

Sr. No.	Condition	Status
<b>Specific Conditions</b>		
<b>(I)</b>	<p>The gaseous and particulate matter emissions from various units will conform to the standards prescribed by the Andhra Pradesh Pollution Control Board. At no time, particulate emissions from the Cement plant including Kiln, Coal mill, Cement mill, Cooler and Captive power plant (CPP) will not exceed 50mg/Nm<sup>3</sup>. Continuous on-line monitors for particulate emissions will be installed. Interlocking facility will 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.</p>	<p>We have installed pollution control equipment's like Bag Filters (Pulsejet) RABH, ESP for all pollution generating process and they are being maintained efficiently. The emission level are found to be less than 30 mg/Nm<sup>3</sup> for Kiln, Coal mill, Cement mill, Crusher and cooler stack as per prescribed standards.</p> <p>Totally we have 09 stacks including cement, captive power plant and all major stacks are connected with online system which monitors suspended particulate matter.</p> <p>These are online measurement and already connected with Andhra Pradesh Pollution Control Board website and Central Pollution Control Board Website. Online performance can be monitored at any point of time at APPCB &amp; CPCB website.</p> <p>we have 130 nos. of bag filters which are installed and interlocked with production process so that without starting the pollution control equipment's, the main equipment cannot be operated <b>Refer Annexure - IA.</b></p>
<b>(II)</b>	<p>Secondary fugitive emissions will be controlled within the prescribed limits and regularly monitored. Guidelines / Code of Practice issued by the CPCB in this regard should be followed. The company will install adequate dust collection and extraction system to control fugitive dust emissions at material transfer points. Atomized Water spray system with reclaimers will be installed in silo used for the storage of ash. Storage of other raw materials will be in closed roof sheds. Covered conveyer belts will be used to reduce fugitive emissions. Concreting of all the roads, Water sprinkling system at limestone and coal handling area</p>	<p>Pollution control equipment's are installed at desired locations and measures are taken to control fugitive emissions.</p> <p>Bag filters at extraction system (suction apparatus) have been installed to control fugitive dust emission at coal and lime stone uploading points, at all the transfer point's stock piles to arrest free release of dust.</p> <p>Closed Coal Re-claimers sheds has been provided to control the fugitive dust emissions from Raw material storage yards and also regular water sprinkling is being carrying out to control to fugitive emissions.</p>

**Compliance Statement Report to Environmental Clearance of M/s  
Bharathi Cement Corporation Private Limited and Limestone Mines  
vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,  
2008  
April-2017 to September-2017**

**Annexure-I**

<b>Sr. No.</b>	<b>Condition</b>	<b>Status</b>
	will be ensured to reduce fugitive emissions.	The dust is collected from the pollution control equipments will be recycled back into the process.
<b>(III)</b>	Ambient air quality including ambient noise levels will not exceed the standards stipulated under EPA or by the State authorities. Monitoring of ambient air quality and will be carried out regularly in consultation with APPCB and data for air emissions will be submitted to the CPCB and APPCB regularly. The instruments used for ambient air quality monitoring will be calibrated time to time.	<p>Seven Ambient Air quality monitoring stations are installed and all the norms are complied as stipulated by APPCB and CPCB. The AAQ stations are being monitored every month for PM<sub>10</sub>, PM 2.5 SO<sub>2</sub> and NO<sub>x</sub>. Weekly twice by third party.</p> <p>Along with seven locations we also arranged 3 CAAQM (Continuous Ambient air quality monitoring stations) are installed and are connected to APPCB website which monitors PM<sub>10</sub>, PM2.5, SO<sub>2</sub> and NO<sub>x</sub> continuously. Connection with CPCB is under process.</p> <p>The Environmental monitoring report is being submitted at stipulated intervals to the concern regional office, Tirupati and also MOEF. The values are presented below and all the parameters are in µg/M<sup>3</sup> From April 2017 to Sep'2017 is enclosed as <b>Annexure-IB</b></p>
<b>(IV)</b>	Efforts will be made to reduce impact of the transport of the raw materials and end product on the surrounding environment including agricultural land.	<p>Complied.</p> <p>The Raw material are transferred from Mines to Lime Stone crusher through dedicated well maintained dumpers, water sprinklers are installed on both sides of the haul road to mitigate the fugitive dust emissions while transportation.</p> <p>Closed conveyors are also installed from Lime stone crusher to the plant to control dust emissions and all the roads in the plant are concreted and the vehicles are covered with tarpaulins to avoid fugitive dust emissions.</p> <p>End product will be transported by wagons as well by trucks with necessary precautionary measures to prevent the flying of materials.</p>
<b>(V)</b>	Fly ash will be utilized as per the provisions of Fly Ash Notification, 1999, subsequently amended in 2003. Fly ash will be stored in ash silo and 100% used in the cement	<p>Complied</p> <p>Fly ash is conveyed pneumatically and stored in closed silo which are having the capacity of 10000 MT. The whole flyash which is generated in Captive power</p>

**Compliance Statement Report to Environmental Clearance of M/s  
Bharathi Cement Corporation Private Limited and Limestone Mines  
vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,  
2008  
April-2017 to September-2017**

**Annexure-I**

Sr. No.	Condition	Status
	manufacturing.	plant is also being utilized in Cement manufacturing process. The fly ash consumption details are being sent to APPCB, Tirupati periodically.
<b>(VI)</b>	The company will make the efforts to utilize the high calorific hazardous waste in the cement kiln and necessary provisions will be made accordingly. The company will keep the record of the waste utilized and will submit the details to ministry's Regional Office at Bangalore, CPCB and SPCB.	<p>We have Installed dedicated feeding systems for feeding of solid &amp; liquid hazardous waste generated from pharmaceutical industries with necessary provisions like storage yards , pipe lines etc.</p> <p>Regular permission for co-processing of hazardous waste has been obtained from Office of CPCB &amp; APPCB and also approved from APPCB for usage of RDF</p> <p>We have also made provisions for usage of Refused Derived Fuels (RDF) and Municipal solid waste.</p> <p>Maintaining the records of wastes/RDF being utilized in our kiln as alternate fuels.</p>
<b>(VII)</b>	Total water requirement will not exceed 8,500m <sup>3</sup> /day from sarvarayasagar reservoir/ bore wells and prior permission from the concerned CGWA/SGWB/State Authority will be obtained. A copy of permission letter will be submitted to Ministry's Regional Office at Bangalore. The treated wastewater from STP and utilities will be reutilized for green belt development and other plant related activities i.e. cooling and dust suppression in raw material handling area etc. after necessary treatment. "Zero" discharge will be strictly adopted and no effluent from the process will be discharged outside the premises.	<p>The Present total water requirement for the plant, Mines &amp; CPP is 2640 m<sup>3</sup>/d (Max) which is met from ground water source and for this permission has been obtained from CGWA -Kadapa.</p> <p>No waste water generation is involved in cement manufacturing process.</p> <p>We have sewage treatment plant with the capacity of 300 KLD and is under operation since 2010. Entire domestic waste water is being treated and utilized in the process for cooling purpose. Hence <b>Zero discharge</b> from the plant is maintained.</p>
<b>(VIII)</b>	Rainwater harvesting measures will be adopted for the augmentation of ground water at cement plant, colony and mine site. Besides, company must also harvest the rain water from the rooftops and storm water drains to recharge the ground water. The company must also collect rain water in the mined out pits of captive lime stone mine and	<p>Complied.</p> <p>We have taken the conservation of water as one of the targets for continual improvement on Resource utilization for water management.</p> <p>Town Ship and Horticulture Township water consumption has been reduced drastically by taking the following precautions.</p>



**Compliance Statement Report to Environmental Clearance of M/s  
Bharathi Cement Corporation Private Limited and Limestone Mines  
vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,  
2008**

**Annexure-I**

**April-2017 to September-2017**

Sr. No.	Condition	Status
	use the same water for the various activities of the project to conserve fresh water and reduce the water requirement pressure from the river. The company will construct the rain water harvesting and ground water recharge structures outside the plant premises also in consultation with local Gram Panchayat and Village Heads to augment the ground water level. An action plan will be submitted to Ministry's Regional Office at Bangalore within 3 months from date of issue of this letter.	Water conservation measures under taken at plant are presented in <b>Annexure-IC</b>
<b>(IX)</b>	The project proponent will modify the mine plan of the project at the time of seeking approval for the next mining scheme from the Indian Bureau of Mines so as to reduce the area for external over burden dump by suitably increasing the height of the dumps with proper terracing. It will be ensured that the overall slope of the dump does not exceed 28°.	The backfilling of mined out area with overburden soil is started. About 3.5Ha so far and the mining scheme is modified accordingly as per guidelines of regulatory authorities.
<b>(X)</b>	Topsoil, if any, will 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.	Top soil is being stocked with proper slope at earmarked site(s) only with adequate safety measures and it is being used for reclamation and rehabilitation of mined out areas and also for green belt development in cement plant, colony etc.
<b>(XI)</b>	The project proponent will ensure that no natural water course will be obstructed due to any mining and plant operations. The company will 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.	Natural water courses are not disturbed by mining and plant operations. Only one seasonal nala is passing through Mining lease area which we are not disturbing with our activities.
<b>(XII)</b>	The inter burden and other Waste generated will be stacked at earmarked dump site(s) only and should not be kept active for long period. 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 will be maintained to 28°. The inter burden dumps should be scientifically vegetated with suitable native species to prevent erosion and	No any inter burden existing in the mine and hence there is no generation of waste.

**Compliance Statement Report to Environmental Clearance of M/s  
Bharathi Cement Corporation Private Limited and Limestone Mines  
vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,  
2008**

**Annexure-I**

**April-2017 to September-2017**

<b>Sr. No.</b>	<b>Condition</b>	<b>Status</b>
	surface run off. Monitoring and management of rehabilitated areas should continue until the vegetation become self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional Office, Bangalore on six monthly bases.	
<b>(XIII)</b>	The void left unfilled will be converted into water body. The higher benches of excavated void/mining pit will be terraced and plantation to be done to stabilize the slopes. The slope of higher benches will be made gentler for easy accessibility by local people to use the water body. Peripheral fencing will be carried out along the excavated area.	Stage wise Reclamation is being done by waste material available in mines and remaining unfilled area will be converted in to the water body. The higher benches of excavated mining pit will be done terracing, plantation will be made bench to bench slopes and the slopes will be made gently for easy accessibility of local people. And total area will be fenced to avoid un authorized entry.
<b>(XIV)</b>	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.	Garland drains are provided around the quarry and dumps with necessary settling tanks. A sump of suitable capacity is developed in the pit to accommodate the surface runoff water if any.
<b>(XV)</b>	Garland drain of appropriate size, gradient and length will 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 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corner of the garland drains and desilted at regular intervals.	Garland drains are provided around the quarry and dumps with necessary settling tanks. A sump of suitable capacity is developed in the pit to accommodate the surface runoff water
<b>(XVI)</b>	Dimension of the retaining wall at the toe of inter burden dumps and inter burden benches within the mine to check run-off and siltation should be based on the rain fall data.	No any inter burden existing in the mine.
<b>(XVII)</b>	Regular monitoring of ground water	Ground water levels are being monitored

**Compliance Statement Report to Environmental Clearance of M/s  
Bharathi Cement Corporation Private Limited and Limestone Mines  
vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,  
2008**

**Annexure-I**

**April-2017 to September-2017**

Sr. No.	Condition	Status
	level and quality should be carried out by establishing a network of existing wells and constructing new piezometers at suitable locations by the projects 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 will be sent at regular intervals to Ministry of Environment and Forests and its Regional Office at Bangalore, Central Ground Water Authority and Central Ground Water board.	on seasonal basis regularly in all seasons. The ground water levels are being measured at eight locations (Bore well) with in the 10 km radius study area. The ground water quality is also measured at 4 locations once in season The Details of Ground Water quality are enclosed as Annexure I. The ground water levels are given below. The Details of Ground Water levels are presented in <b>Annexure-ID</b>
(XVIII)	Blasting operation should be carried out only during day time. Controlled blasting will be practiced. The mitigate measures for control of ground vibrations and to arrest fly rocks and boulders will be implemented.	Blasting operations is being carried out only in day time at specific time. Controlled blasting is being done by Bottom initiation shock tube detonators to mitigate vibrations, fly rock,dust and generation of Boulders etc.
(XIX)	The project proponent will adopt wet drilling	Wet drilling is adopted and will be continued.
(XX)	As proposed, green belt should be developed in 33% in and around the plant as per the CPCB guidelines	Greenbelt has been developed in an area all along the mine lease boundary in stage wise, road barrier zones, inside cement plant, residential colony etc. the details of the plantation are mentioned below. The details of greenbelt developed so far are presented in <b>Annexure IE</b>
(XXI)	All the recommendations of the Corporate Responsibility or Environmental protection (CREP) will be strictly followed	Is being strictly followed and continued.
(XXII)	Vehicular emissions should be kept under control and regularly monitored. Measures will be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles should be covered with a tarpaulin and will not be overloaded.	Vehicular emission is keeping under control and is being monitored. Certain measures are being taken like regular maintenance of vehicles, proper cleaning of air cleaners, proper maintenance of fuel system of equipment used for mining operations and transportation of mineral. The transport vehicles are not being over

**Compliance Statement Report to Environmental Clearance of M/s  
Bharathi Cement Corporation Private Limited and Limestone Mines  
vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,  
2008  
April-2017 to September-2017**

**Annexure-I**

Sr. No.	Condition	Status
		loaded and maintained strictly and muck pile wetting is being done to mitigate the dust emission during transportation.
(XXIII)	Digital processing of the entire lease area using remote sensing technique should be done regularly once in three years for monitoring land use pattern and report submit to Ministry of Environment and Forest and its Regional Office, Bangalore.	Digital processing of the mine lease area is carried out by an authorized agency in the year of 2015 and report was submitted to MoEF Bangalore.
(XXIV)	A 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	A final mine closure plan along with details of corpus Fund will be submitted to the Ministry of Environment and Forest five years in advance of final mine closure, for approval.
(XXV)	The company will comply with all the commitments made during public hearing on 28 <sup>th</sup> August 2008.	Noted and being complied. Total expended for CSR activities for this period (April 2017 - September 2017) is 2,77,00,000/-
(XXVI)	Provision will 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, creche etc. The housing may be in the form of temporary structure to be removed after the completion of the project	Temporary housing facilities have been provided during the construction phase with adequate infrastructure facilities.
B	<b>General conditions</b>	
i.	The project authority will adhere to the stipulations made by State Pollution Control Board (SPCB) and State Government.	Noted and strictly followed.
ii.	No further expansion or modification of the plant will be carried out without prior approval of the Ministry.	Noted and accepted.
iii.	At least four ambient air quality monitoring stations will be established in the down wind direction as well as where maximum ground level concentration of SPM, SO <sub>2</sub> and NO <sub>x</sub> are anticipated in consultation with the SPCB. Data on ambient air quality and stack emissions will be regularly submitted to this Ministry including its Regional Office and SPCB / CPCB once in six months.	Monitoring is being carried out at 07 ambient air quality monitoring stations with in 10 km radius study area from the cement plant complex, with at least four in the downward direction as well as where maximum ground level concentration of PM <sub>10</sub> , SO <sub>2</sub> and NO <sub>x</sub> are measured in consultation with the APPCB. The AAQ stations are listed as below Data on ambient air quality is enclosed as <b>Annexure - IB</b> .
iv.	Industrial waste water will be	Waste water is generated from only

**Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008**

**April-2017 to September-2017**

**Annexure-I**

Sr. No.	Condition	Status
	properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May, 1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. The treated wastewater will be utilized for plantation purpose.	toilets in cement plant and from nowhere else in the plant and the same is being sent to STP of 300 KLD, as the plant is discharging only 120 KLD. The recycled water from STP is being used in Raw-mills, plantation and dust suppressing arrangements in the plant.
v.	The overall noise levels in and around the plant area will be kept well within the standards (85 dBA) by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels will conform to the standards prescribed under Environmental (Protection) Act,1986 Rules,1989 viz. 75 dB(A) (day time) and 70 dB(A) (night time).	The overall noise levels in and around the plant area is maintained well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. for all mills, motors and equipments.
vi.	Proper housekeeping and adequate occupational health programmes will be taken up. Occupational Health Surveillance programme will be done on a regular basis and records maintained properly for at least 30-40 years. The programme will include lung function and sputum analysis tests once in six months. Sufficient preventive measures will be adopted to avoid direct exposure to dust etc.	A full-pledged medical health center has been established with qualified Doctor and Para medical staff, in the colony premises to provide the medical assistance to the employees.  The records at this medical centre show on occupational health related diseases such as respiratory and skin problems. Workers working in the dusty areas are provided with the necessary dust masks. A regular training program is being conducted to create awareness among the workmen on safety and health aspects.
vii.	The company will undertake eco-development measures including community welfare measures in the project area	Plantation is done in and around the project area and is being maintained. A full pledged nursery is established with all the requirements. Green belt is developed in and around the plant and mine lease area as a part of eco-development measures. Green belt developed in mines is 34 ha and in plant, CPP and colony premises are 62.5 ha.
viii.	The project proponent will also comply with all the environmental protection measures and safe guards recommended in the EIA/EMP.	We have taken certain environmental protection measures and safe guards like construction of check dams, green belt development on inactive dumps as recommended by EMP.
ix.	A separate environmental management cell with full fledged laboratory facilities to carry out various management and monitoring functions will be set up under the control of Senior	The organizational setup of the environmental management cell is established with Director level and third party is assigned for all environmental monitoring parameters as they are having full fledged laboratory facilities

**Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008**  
**April-2017 to September-2017**

**Annexure-I**

Sr. No.	Condition	Status
	Executive.	and the services of <b>M/S Universal Enviro Associates</b> , Hyderabad are being utilized for regular and seasonal environmental monitoring under the guidance of environmental management cell. Please refer <b>Annexure - IF</b>
x.	Adequate fund will be allocated to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. Time bound implementation schedule for implementing all the conditions stipulated here in will be submitted. The funds so provided will not be diverted for any other purpose.	We have given a top priority exclusively for environment & Safety. The details of amount spent on Environmental control measures. The details of investment for procuring the additional equipment for successful monitoring of environmental parameters and implementation of control measures are given below Please refer <b>Annexure-IG</b>
xi.	The Regional Office of this Ministry /CPCB / SPCB will monitor the stipulated conditions. The project authorities will 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 will be submitted to them regularly.	Complied and continued for the extended support to the regulatory authorities.
xii.	The Project authorities will inform the Regional Office as well as the Ministry, the date of financial closures and final approval of the project by the concerned authorities and the date of commencing the land development work.	Complied
xiii.	No change in mining technology and scope of working will be made without prior approval of the Ministry of Environment & Forests. No change in the calendar plan including excavation, quantum of limestone and waste will be made.	Noted and strictly followed.
xiv.	Measure should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM etc. should be provided with ear plugs/muffs.	All precautionary measures to be taken to minimize noise levels and necessary PPE is provided to all the persons engaged on mining operations.

**Compliance Statement Report to Environmental Clearance of M/s  
Bharathi Cement Corporation Private Limited and Limestone Mines  
vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December,  
2008**

**Annexure-I**

**April-2017 to September-2017**

<b>Sr. No.</b>	<b>Condition</b>	<b>Status</b>
xv.	Industrial waste water(workshop and waste water from the mine ) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated19th May ,1993 and 31 <sup>st</sup> December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Waste water is properly collected, treated in an oil water separation pit by compartmenting the waste water. The treated water is used for the plantation purposes. Please refer to <b>Annexure-IH</b>
xvi.	Personnel working industry areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Giving top priority for health and safety, Medical checkup and health monitoring is arranged at regular intervals to monitor the workers health.
xvii.	The project authorities will inform to the Regional Office located regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of Land development work.	Complied
xviii.	A copy of clearance letter will be marked to concerned Panchayath / local NGO, if any, from whom suggestion / representation, if any, was received while processing the proposal.	Complied
xix.	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collectors office/ Tehsildar's Office for 30 days.	Complied

COMPLIANCE STATEMENT REPORT TO ENVIRONMENTAL  
CLEARANCE OF M/s BHARATHI CEMENT CORPORATION PRIVATE  
LIMITED AND LIMESTONE MINES VIDE LETTER F.NO:J-  
11011/379/2008-IA II (I)  
DATED 10<sup>TH</sup> DECEMBER, 2008  
April-2017 to September-2017

**Annexure-IA**  
**Pollution**  
**Control**  
**equipment**

**POLLUTION CONTROL EQUIPMENT - CEMENT PLANT**

Adequate and efficient control measures have been installed to keep the dust emission at a bare minimum. The air pollution control equipment installed in the plant area given in the following **Table-3.1**.

**TABLE-3.1**  
**DETAILS OF POLLUTION CONTROL EQUIPMENT - CEMENT PLANT**

SL.NO	Type of equipment	Application
<b>LINE-1</b>		
<b>ADDITIVE, LIMESTONE AND RAW MILL AREA</b>		
1	Reject belt Raw mill - I	Jet pulse filter
2	Reject belt Raw mill - II	Jet pulse filter
3	Additive hopper Dosimat feeder Raw mill - I	Jet pulse filter
4	TT-01	Jet pulse filter
5	Crusher BF	Jet pulse filter
6	TT-02	Jet pulse filter
7	TT-03	Jet pulse filter
8	TT-04	Jet pulse filter
9	Raw mill Hopper top	Jet pulse filter
10	Raw mill Hopper bottom	Jet pulse filter
11	Raw mill Auxiliary	Jet pulse filter
<b>KILN, COOLER AND COALMILL</b>		
12	Coal mill top	Jet pulse filter
13	Reject silo JPF fan	Jet pulse filter
14	JPF (above SC, DUST trprt.)	Jet pulse filter
15	CF silo top	Jet pulse filter
16	Preheater top	Jet pulse filter
17	Extraction from silo	Jet pulse filter
18	SRC silo	Jet pulse filter
19	Pre heater silo	Jet pulse filter
20	Clinker breaker & DDPC - I	Jet pulse filter
<b>CEMENT MILL</b>		
21	Clinker extraction at DDPC	Jet pulse filter
22	CM - I Hopper top	Jet pulse filter
23	CM - II Hopper top	Jet pulse filter
24	Cement transport CTP <sub>3</sub>	Jet pulse filter
25	Silo top - I	Jet pulse filter
26	Silo top - II	Jet pulse filter
27	Silo top - III	Jet pulse filter
28	Silo top - IV	Jet pulse filter
29	Clinker extraction at DDPC	Jet pulse filter
30	Cement transport CTP <sub>4</sub>	Jet pulse filter
31	Cement transport CTP <sub>5</sub>	Jet pulse filter





**COMPLIANCE STATEMENT REPORT TO ENVIRONMENTAL  
CLEARANCE OF M/s BHARATHI CEMENT CORPORATION PRIVATE  
LIMITED AND LIMESTONE MINES VIDE LETTER F.NO:J-  
11011/379/2008-IA II (I)  
DATED 10<sup>TH</sup> DECEMBER, 2008  
April-2017 to September-2017**

**Annexure-IA  
Pollution  
Control  
equipment**

32	Cement transport CTP <sub>2</sub>	Jet pulse filter
33	Clinker Dosimat feeder: Cement Mill -I	Jet pulse filter
34	Roller press Cement Mill -I	Jet pulse filter
35	Fly ash Bin	Jet pulse filter
36	Cement mill - I top	Jet pulse filter
<b>PACKING PLANT</b>		
37	Packer - I	Jet pulse filter
38	Packer - II	Jet pulse filter
39	Packer - III	Jet pulse filter
40	Packer - IV	Jet pulse filter
41	Packer - III BE	Jet pulse filter
42	Packer - IV BE	Jet pulse filter
<b>CLINKER LOADING AND COAL HANDLING</b>		
43	Clinker silo - I	Jet pulse filter

<b>Line 2</b>		
<b>ADDITIVE LIMESTONE AND RAW MILL AREA ADDITIVE</b>		
<b>CRUSHER AREA</b>		
1	Main Bag filter	Jet pulse filter
2	BC 2	Jet pulse filter
3	BC 3	Jet pulse filter
4	Raw mill Hopper Top	Jet pulse filter
5	Raw mill Weigh Feeder	Jet pulse filter
6	Raw mill VRM AUX	Jet pulse filter
7	Raw mill VRM External Circuit	Jet pulse filter
8	Raw Meal VRM Cyclone building	
9	Cyclone top	Jet pulse filter
10	BC 10	Jet pulse filter
11	Below RABH	Jet pulse filter
12	Cyclone Building	Jet pulse filter
<b>KLIN,COOLER AND COAL MILL</b>		
13	Fine Coal Bin	Jet pulse filter
14	BC 1	Jet pulse filter
15	Raw Coal	Jet pulse filter
16	Blending Silo top	Jet pulse filter
17	Blending silo bottom	Jet pulse filter
18	Pre heater top	Jet pulse filter
19	Kiln inlet	Jet pulse filter
20	DDPC Discharge	Jet pulse filter
21	Clinker reject hopper top	Jet pulse filter
22	Clinker silo top	Jet pulse filter
23	BC 24	Jet pulse filter
24	BC 25	Jet pulse filter



**COMPLIANCE STATEMENT REPORT TO ENVIRONMENTAL  
CLEARANCE OF M/s BHARATHI CEMENT CORPORATION PRIVATE  
LIMITED AND LIMESTONE MINES VIDE LETTER F.NO:J-  
11011/379/2008-IA II (I)  
DATED 10<sup>TH</sup> DECEMBER, 2008  
April-2017 to September-2017**

**Annexure-IA  
Pollution  
Control  
equipment**

25	BC 26	Jet pulse filter
26	BC 27	Jet pulse filter
27	Clinker Hopper top 2	Jet pulse filter
28	Clinker Hopper top 3	Jet pulse filter
29	BC 28	Jet pulse filter
30	BC 29	Jet pulse filter
<b>CEMENT MILL</b>		
31	CM-2 Reject Bucket Elevator bottom	Jet pulse filter
32	Weigh feeder venting	Jet pulse filter
33	CM-2 Auxiliaries circuit	Jet pulse filter
34	CM-3 Auxiliaries circuit	Jet pulse filter
35	CM-2 Bag house discharge	Jet pulse filter
36	CM-3 Reject Bucket Elevator	Jet pulse filter
37	CM-2 mill feed	Jet pulse filter
38	Weigh feeder venting CM3	Jet pulse filter
39	CM-3 Bag house discharge	Jet pulse filter
40	CM3 mill feed	Jet pulse filter
41	BC 51	Jet pulse filter
42	Reject building top venting	Jet pulse filter
43	Fly ash weigh feeder venting	Jet pulse filter
44	Fly ash silo extraction	Jet pulse filter
45	Fly ash silo top	Jet pulse filter
46	Fly ash silo bottom	Jet pulse filter
47	Fly ash hopper venting	Jet pulse filter
48	Cement silo 1&3	Jet pulse filter
49	Cement silo 2&4	Jet pulse filter
50	Cement silo 5&6	Jet pulse filter
51	Cement silo 1	Jet pulse filter
52	Cement silo 2	Jet pulse filter
53	Cement silo 3	Jet pulse filter
54	Cement silo 4	Jet pulse filter
55	Cement silo5	Jet pulse filter
56	Cement silo6	Jet pulse filter
57	Silo BE Discharge	Jet pulse filter
58	Cement Silo 7	Jet pulse filter
59	Cement Silo 8	Jet pulse filter
<b>PACKING PLANT</b>		
60	Packer 3	Jet pulse filter
61	Packer 3	Jet pulse filter
62	Packer 4	Jet pulse filter
63	Packer 4	Jet pulse filter
64	Packer 5	Jet pulse filter
65	Packer 5	Jet pulse filter



**COMPLIANCE STATEMENT REPORT TO ENVIRONMENTAL  
CLEARANCE OF M/s BHARATHI CEMENT CORPORATION PRIVATE  
LIMITED AND LIMESTONE MINES VIDE LETTER F.NO:J-  
11011/379/2008-IA II (I)  
DATED 10<sup>TH</sup> DECEMBER, 2008  
April-2017 to September-2017**

**Annexure-IA  
Pollution  
Control  
equipment**

66	Packer 6	Jet pulse filter
67	Packer 6	Jet pulse filter
68	Packer 7	Jet pulse filter
69	Packer 8	Jet pulse filter
<b>Captive Power Plant</b>		
1	Coal Crusher	Jet pulse filter
2	Lime Stone Crusher	Jet pulse filter
3	Coal Bunkers	Jet pulse filter
4	Lime Stone Bunkers	Jet pulse filter
5	Fly Ash Silo top	Jet pulse filter
6	Bed Ash Silo Top	Jet pulse filter
<b>Raw Material &amp; Clinker Handling</b>		
1	ATT-1	Jet pulse filter
2	ATT-3	Jet pulse filter
3	ATT-4	Jet pulse filter
4	CTT-8	Jet pulse filter
5	CTT-9	Jet pulse filter
6	CTT-10	Jet pulse filter
7	Line-II Carbon Feed	Jet pulse filter
8	491TT-2	Jet pulse filter
9	491TT-3	Jet pulse filter
10	Wagon Loading Clinker Hopper Top	Jet pulse filter
11	EDC-1	Jet pulse filter
12	EDC-2	Jet pulse filter
13	EDC-3	Jet pulse filter

01	Cooler-Line 01	ESP
02	Cooler-Line 02	ESP
03	Coal Mill - Line 01	BAG HOUSE
04	Coal Mill - Line 02	BAG HOUSE
05	Preheater- Line 01	RABH
06	Preheater- Line 02	RABH
07	Cement Mill-1 Line 01	BAG HOUSE
08	Cement Mill-2 & 3 Line 02	BAG HOUSE
09	Captive Power Plant	ESP



**COMPLIANCE STATEMENT REPORT TO ENVIRONMENTAL  
CLEARANCE OF M/s BHARATHI CEMENT CORPORATION PRIVATE  
LIMITED AND LIMESTONE MINES VIDE LETTER F.NO:J-  
11011/379/2008-IA II (I)  
DATED 10<sup>TH</sup> DECEMBER, 2008  
April-2017 to September-2017**

**Annexure-IA  
Pollution  
Control  
equipment**

**AIR POLLUTION MANAGEMENT FOR FUGITIVE EMISSION CONTROL AT  
BHARATI CEMENT LIMESTONE MINES**

The present level of mining is not anticipated to raise the concentration of the pollutants beyond the prescribed limits. However, the following measures are being adopted in the existing mining activity to mitigate the SPM levels in ambient air.

- Measures to prevent generation and dispersion of dust.

Dust particles are normally generated during mining operations, become air borne, thus leading to increase in SPM level in ambient air. Another source of dust generation is the transport of the material by trucks. In the existing mining activity adequate control measures are adopted during both, mining operations as well as transportation and dumping of limestone.

The control measures adopted are:

- Dust suppression systems (water spray) are adopted at loading faces.
- Dust generation is reduced by using sharp teeth for shovels.
- Dust suppression system (water spraying) is adopted where the vehicular motion is high.
- Wet drilling is adopted for drilling.
- The blasting is designed properly to minimize the generation of dust and fumes.

**MEASURES TO CONTROL AIR POLLUTION DUE TO AIRBORNE DUST**

The control measures are taken during mining and transport operations, following steps are taken to prevent air pollution due to airborne dust:

- ▲ Dense tree belts are planted around the dust generation points at surface.
- ▲ Trees are planted on both sides of the roads used for transportation to arrest dust.
- ▲ Afforestation around the mine to filter out the dust and preventing it from reaching the residential areas has undertaken.
- ▲ Dust masks are provided to workers, engaged at dust generation points like loading, dumping points.
- ▲ Dust due to drilling is minimized by using wet drilling.



**COMPLIANCE STATEMENT REPORT TO ENVIRONMENTAL  
CLEARANCE OF M/s BHARATHI CEMENT CORPORATION PRIVATE  
LIMITED AND LIMESTONE MINES VIDE LETTER F.NO:J-  
11011/379/2008-IA II (I)  
DATED 10<sup>TH</sup> DECEMBER, 2008  
April-2017 to September-2017**

**Annexure-IA  
Pollution  
Control  
equipment**

- ^ Regular maintenance of vehicles and machinery's is carried out in order to control emissions.
- ^ Dust generated due to traffic on haulage roads is reduced by water spraying at regular intervals.
- ^ Advantage of wind direction and meteorology is taken especially during dry seasons, so that pollutants which cannot be fully suppressed by engineering techniques will be prevented from reaching the residential areas.
- ^ The PPE (Nose mask, goggles and hear plugs etc) are provided to all workers in dusty atmosphere.
- ^ A good Housekeeping and Proper Maintenance is practiced which will help in controlling pollution.



<p><i>Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008 April-2017 to September-2017</i></p>	<p><b>Annexure-IB</b>  <b>Environment al Monitoring Data</b></p>
---	--

## **ENVIRONMENTAL MONITORING DATA**

### **2.0 Meteorology**

Micro - Meteorological data within the project area during the air quality survey period is an indispensable part of the air pollution study. A meteorological station was installed on the top of Plant Colony, which is about 10 m height from the ground level in NE direction to the plant site free from obstructions to free flow of winds.

Wind speed and Wind direction data recorded during the study period are useful for the calculation of relative percentage frequencies of different wind directions and are plotted as wind roses of sixteen directions Viz. N, NNE, NE, ENE, E, ESE, SE, SSE, S, SSW, SW, WSW, W, WNW, NW and NNW for twenty four hours duration respectively.

Maximum and Minimum temperatures including the percentage relative humidity were also recorded simultaneously.

#### **2.1.1 Wind Pattern during April to June 2017**

The area is marked by high wind speeds in the range of calm to 31.5 kmph winds. During the 01-24 hrs, the predominant wind directions were ENE (5.00%), E (2.00%), NE (3.00%) The average wind rose for the study period is shown in **Figure-2.1**.

#### **2.1.2 Temperature and Relative Humidity Levels during April to June 2017**

There is 147 mm rainfall. The maximum temperature and minimum temperature was recorded as 43.7°C and 15.1°C and relative humidity as 100% and 15.5%.

**TABLE-4.1**  
**METEOROLOGICAL DATA GENERATED AT PROJECT SITE**

S. No	Parameters	April to June 2017	
		Max.	Min.
1	Temperature (°C)	43.7	15.1
2	Relative humidity (%)	100	15.5
3	Rainfall (mm)	147.0	



<p><i>Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008 April-2017 to September-2017</i></p>	<p><b>Annexure-IB</b> <b>Environment al Monitoring Data</b></p>
---	---

**2.1.3 Wind Pattern during July to September 2017**

The area is marked by high wind speeds in the range of calm to 34.75 KMPH winds. During the 01-24 hrs, the predominant wind directions were ENE (5.00%), E (3.00%), ENE (1.00%) The average wind rose for the study period is shown in **Figure-2.2**.

**2.1.4 Temperature and Relative Humidity Levels during July to September 2017**

There is 516 mm rainfall. The maximum temperature and minimum temperature was recorded as 41.5°C and 14.2°C and relative humidity as 96.7% and 9.5%.

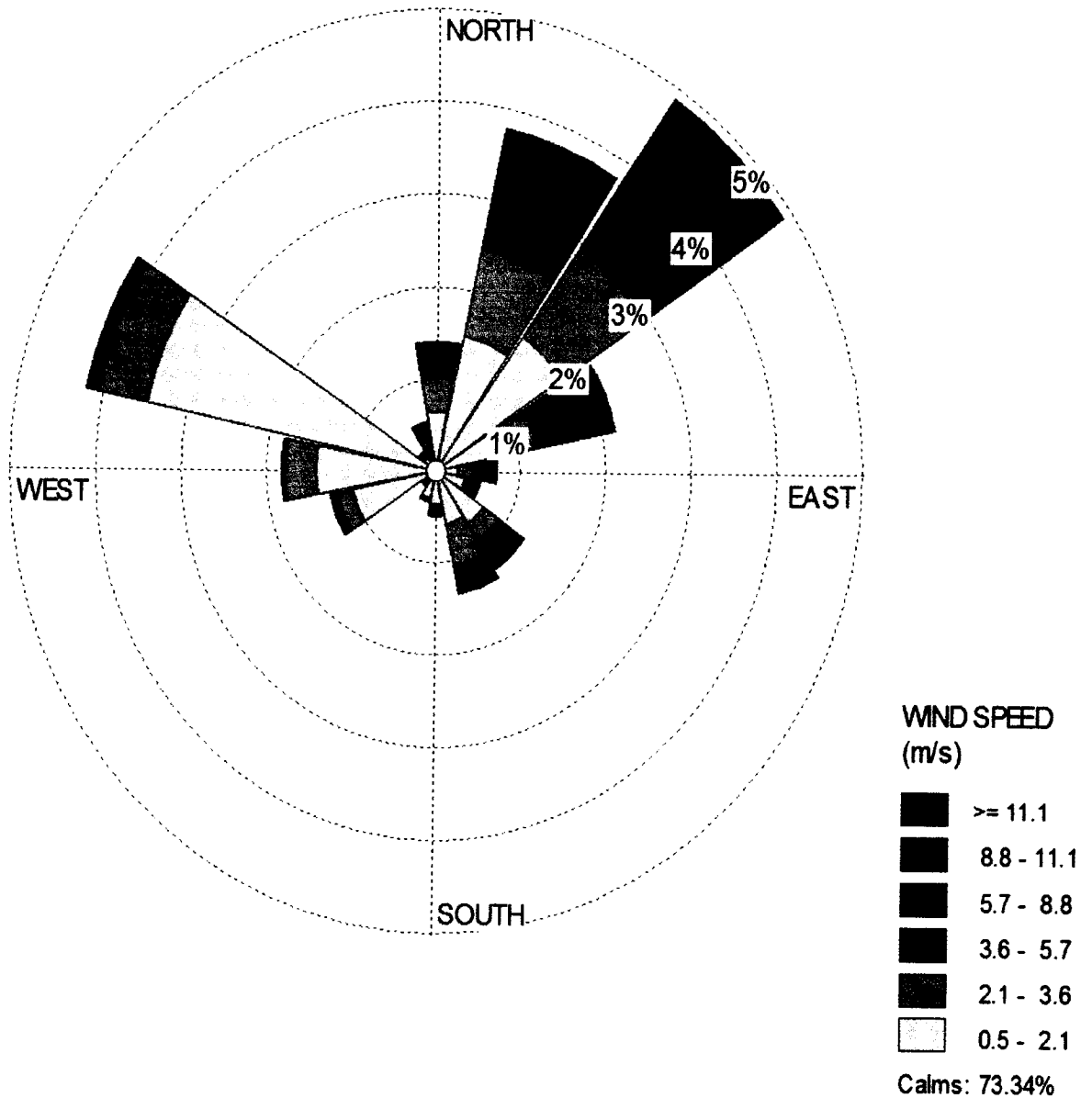
**TABLE-4.2.**

**METEOROLOGICAL DATA GENERATED AT PROJECT SITE**

S. No	Parameters	July To September 2017	
		Max.	Min.
1	Temperature (°C)	41.5	14.2
2	Relative humidity (%)	96.7	9.5
3.	Rainfall(mm)	516.0	---

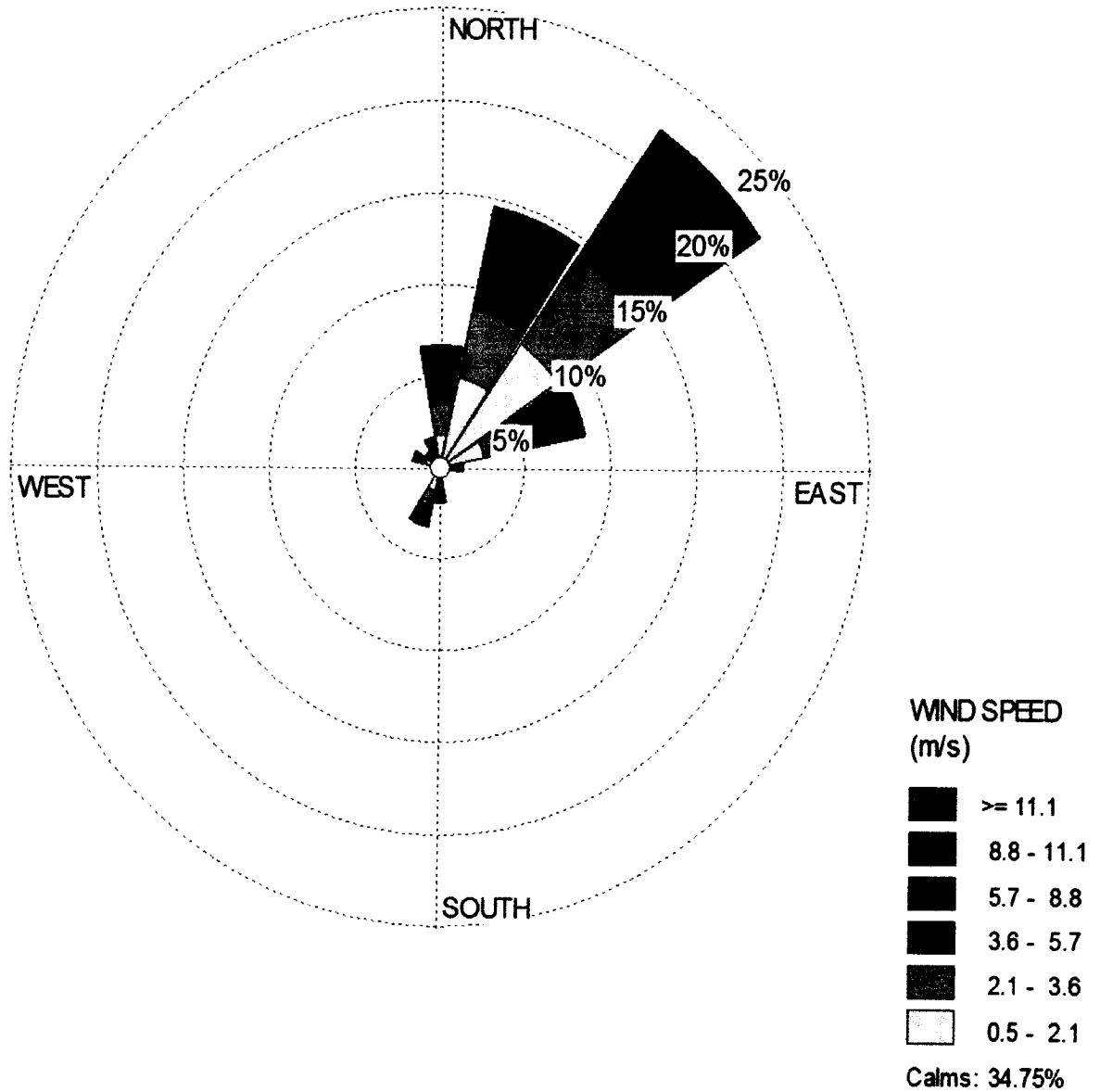


**FIGURE-2.1**  
**WINDROSE - APRIL TO JUNE 2017 (24 HOURS AVERAGE)**





**FIGURE-2.2**  
**WINDROSE - JULY TO SEPTEMBER 2017 (24 HOURS AVERAGE)**



<p align="center"><i>Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008 April-2017 to September-2017</i></p>	<p align="center"><b>Annexure-IB</b>  <b>Environment al Monitoring Data</b></p>
--	---

## **2.2 Ambient Air Environment**

Dispersion of different air pollutants released into the atmosphere has significant impacts on neighborhood air environment of an industrial project. The existing ambient air quality status with respect to the study zone of 10 km radial distance from the plant site has been assessed through a monitoring network of seven AAQ stations during the **April 2017 to September 2017**.

The design of monitoring network in the air quality surveillance programme has been based on the GLC's obtained using long term screening model considering the following:

- (i) Meteorological conditions on synoptic scale;
- (ii) Topography of the study area;
- (iii) Representation of regional background levels;
- (iv) Representation of plant site; and
- (v) Representation of cross sectional distribution in the downward direction.

The existing status of Air environment was monitored for PM<sub>10</sub> (RPM), PM<sub>2.5</sub> and gaseous pollutants like Sulphur dioxide (SO<sub>2</sub>), Oxides of Nitrogen (NO<sub>x</sub>).

Ambient Air Quality Monitoring (AAQM) stations were set up at seven locations with due consideration to the above mentioned points. **Table-4.3** gives the details of environmental setting around each monitoring station. The location of the selected stations with reference to the plant site is given in the same table and depicted in **Figure - 2.3**.

### **2.2.1 Frequency and Parameters for Sampling**

The following frequency has been adopted for sampling:

Ambient air quality monitoring has been carried out with a frequency of two days per week at seven locations. **April 2017 to September 2017**.



<p><i>Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008 April-2017 to September-2017</i></p>	<p><b>Annexure-IB</b> <b>Environment al Monitoring Data</b></p>
---	---

**FIGURE-2.3**  
**AMBIENT AIR QUALITY SAMPLING LOCATIONS**

The baseline data of air environment is generated for the following parameters:

- Respirable Particulate Matter-PM<sub>10</sub>
- Particulate Matter-PM<sub>2.5</sub>
- Sulphur dioxide (SO<sub>2</sub>)
- Oxides of Nitrogen (NO<sub>x</sub>).

**TABLE - 4.3**  
**DETAILS OF AMBIENT AIR QUALITY MONITORING LOCATIONS**

STATION CODE	LOCATION/ VILLAGE	WITH RESPECT TO PROJECT SITE		PARAMETERS
		Direction	Distance (km)	
A1	Plant site	NNE	0.1	PM <sub>10</sub> ,SO <sub>2</sub> ,NO <sub>x</sub>
A2	Agasthalingayapalli	E	0.7	PM <sub>10</sub> ,SO <sub>2</sub> ,NO <sub>x</sub>
A3	Gollapalli	E	4.2	PM <sub>10</sub> ,SO <sub>2</sub> ,NO <sub>x</sub>
A4	Ramapuram	E	5.5	PM <sub>10</sub> ,SO <sub>2</sub> ,NO <sub>x</sub>
A5	Tippaluru	N	1.9	PM <sub>10</sub> ,SO <sub>2</sub> ,NO <sub>x</sub>
A6	Yerraguntla	NW	5.8	PM <sub>10</sub> ,SO <sub>2</sub> ,NO <sub>x</sub>
A7	Turkapalli	W	1.0	PM <sub>10</sub> ,SO <sub>2</sub> ,NO <sub>x</sub>

**C. Duration of Sampling:**

The sampling duration for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub> is one twenty four hourly continuous sample per day. This is to allow a comparison with the present revised standards mentioned in the latest Gazette notification of the Central Pollution Control Board (CPCB) (May 20, 1994).

**D. Method of Analysis:**

The air samples are analyzed as per standard methods specified by Central Pollution Control Board (CPCB), IS: 5182 and American Public Health Organization (APHA).



*Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I)  
dated 10<sup>th</sup> December, 2008  
April-2017 to September-2017*

**Annexure-IB**  
**Environment  
al Monitoring  
Data**

## **2.2.2 Details of the Sampling Locations**

### **AAQ1: PLANT SITE**

The location has been selected to assess the air quality levels in the cross wind direction of the plant site. The sampler was placed on top of a residential building at a height of 2.0 m from ground level free from any obstructions. This location represents in residential activities.

### **AAQ2: AGASTHALINGAYAPALLI**

The monitoring station was installed on top of a residential building at a height of 6 m from ground level at a distance of 0.7 km in the East direction from the plant site. This station was selected to assess the air quality levels in the crosswind direction. This location is situated within rural/residential activities.

### **AAQ3: GOLLAPALLI**

The location has been finalized to assess the air quality levels in the crosswind direction to the plant site. The monitoring station is located at a distance of about 4.2 km E of the plant site. The sampler is installed on a residential building at a height of about 5.0 m from ground level. Rural residential activities surround the station.

### **AAQ4: RAMAPURAM**

The sampling station has been finalized to assess the air quality levels in the down wind direction to the plant site. The monitoring station is located E of the plant site at about 5.5 km. The sampler was installed on top of residential building at a height of about 3.0 m from ground level free from any obstructions. This location is situated in rural/residential activities with village activities.

### **AAQ5: TIPPALURU**

The monitoring station was installed on top of a residential building at a height of 5 m from ground level at a distance of 1.9 km in the N direction from the plant site. This station was selected to assess the air quality levels in the up wind direction. This location is situated within rural/residential activities.

### **AAQ6: YERRAGUNTLA**

The location has been finalized to assess the air quality levels in the upwind direction to the plant site. The monitoring station is located at a distance of about 5.8 km North West of the plant site. The sampler is installed on a residential building at a height of about 4.0 m from ground level. Rural residential activities surround the station.

### **AAQ7: Turakapalli**

The location has been finalized to assess the air quality levels in the upwind direction to the plant site. The monitoring station is located at a distance of about 1.0 km west of the plant site. The sampler is installed on a residential building at a



Eight of about 7.0 m from ground level. Rural residential activities surround the station

### **2.2.3 Selection of Instruments For Air Quality Sampling**

Respirable Dust Samplers of Envirotech instruments are being used for monitoring Particulate Matter of 10 micron size (**PM<sub>10</sub>**), **PM 2.5** and gaseous pollutants like SO<sub>2</sub> and NO<sub>x</sub>.

### **2.2.4 Sampling and Analytical Techniques**

#### **1] Respirable Particulate matter (RPM), and Fine particulate Matter (PM<sub>2.5</sub>)**

Respirable particles below 10  $\mu$  (PM<sub>10</sub>), which are more likely Respirable (Respirable Particulate matter - RPM). Fine particulate matter comprises of particles below 2.5 $\mu$ . Present in ambient air is measured by Gravimetric method by using Respirable Dust Sampler with a cyclone attachment over a period of 24 hours by sucking known quantity of air through glass fiber filters. The mass concentration Respirable Dust (<10 $\mu$ ), (<2.5 $\mu$ ) is computed by measuring weight of collected matter in known volume of air sampled (BIS:5182 part IV, 1973; ASTM D-4096 -91).

#### **2] Sulphur Dioxide**

The most commonly used method for measuring atmospheric SO<sub>2</sub> is based on colorimetry and is known as modified West - Gaeke method. In this method SO<sub>2</sub> from a measured quantity of air is absorbed in a solution of sodium tetrachloromercurate to form a stable and non-volatile dichlorosulphitomercurate complex. This is then reacted with formaldehyde and bleached pararosaniline, yielding magenta - coloured pararosaniline methyl sulfonic acid. The colour intensity of this acid is detected photometrically at 560 nm (A.P.H.A and BIS: 5182 Part-II, 1969).

#### **3] Oxides of Nitrogen**

Concentration of oxides of nitrogen is estimated in ambient air by using Jacob and Hochheiser method. Oxides of nitrogen are collected by bubbling air through a sodium hydroxide solution to form a stable solution of sodium nitrite. The nitrite ion produced during sampling is determined colorimetrically by reacting the exposed absorbing reagent with phosphoric acid, sulfanilamide, and NEDA (1-naphthyl) ethylenediamine dihydrochloride) at 540 nm (BIS: 5182Part-VI, 1975).

The details of the methods used for monitoring studies are presented in **Table-4.4**.

<p><i>Compliance Statement Report to Environmental Clearance of M/s Bharathi Cement Corporation Private Limited and Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I) dated 10<sup>th</sup> December, 2008 April-2017 to September-2017</i></p>	<p><b>Annexure-IB</b> <b>Environment al Monitoring Data</b></p>
---	---

**TABLE-4.4**  
**TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING**

S. No.	Parameter	Technique
1	Particulate Matter (PM <sub>10</sub> )	Respirable Dust Sampler (Gravimetric method)
2	Fine Particulate Matter	Respirable Dust Sampler (Gravimetric method)
3	Sulphur Dioxide	Improved West & Geake
4	Nitrogen Oxide	Modified Jacob & Hocheiser

**Presentation of Primary Data**

Various statistical parameters like 98<sup>th</sup> percentile, average, maximum and minimum values have been computed from the observed raw data for all the AAQ monitoring stations.

**Observations of Primary Data – April 2017 to September 2017.**

Various statistical parameters like 98<sup>th</sup> percentile, average, maximum and minimum values have been computed from the observed raw data for all the AAQ monitoring stations.

**AAQ1] Plant Site**

The maximum concentration for PM<sub>10</sub> is recorded as 82 µg/m<sup>3</sup> with minimum concentration as 56 µg/m<sup>3</sup>. The 98th percentile values are observed as 82 µg/m<sup>3</sup> respectively.

The maximum concentration for PM<sub>2.5</sub> is recorded as 42 µg/m<sup>3</sup> with minimum concentration as 22 µg/m<sup>3</sup>. The 98th percentile values are observed as 42 µg/m<sup>3</sup> respectively

The maximum SO<sub>2</sub> concentration is recorded as 17.5 µg/m<sup>3</sup> with minimum concentration as 13.8 µg/m<sup>3</sup>. The 98th percentile values are observed as 17.5 µg/m<sup>3</sup> respectively.

The maximum NO<sub>x</sub> concentration is recorded as 23.4 µg/m<sup>3</sup> with minimum concentration as 18.7 µg/m<sup>3</sup>. The 98th percentile values are observed as 23.4 µg/m<sup>3</sup> respectively.



*Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I)  
dated 10<sup>th</sup> December, 2008  
April-2017 to September-2017*

**Annexure-IB**  
**Environment  
al Monitoring  
Data**

**AAQ2] Agasthalingayapalli Village**

The maximum concentration for PM<sub>10</sub> is recorded as 72 µg/m<sup>3</sup> with minimum concentration as 39 µg/m<sup>3</sup>. The 98th percentile values are observed as 72 µg/m<sup>3</sup> respectively.

The maximum concentration for PM<sub>2.5</sub> is recorded as 33 µg/m<sup>3</sup> with minimum concentration as 18 µg/m<sup>3</sup>. The 98th percentile values are observed as 32 µg/m<sup>3</sup> respectively.

The maximum SO<sub>2</sub> concentration is recorded as 17.4 µg/m<sup>3</sup> with minimum concentration as 13.6 µg/m<sup>3</sup>. The 98th percentile values are observed as 17.4 µg/m<sup>3</sup> respectively.

The maximum NO<sub>x</sub> concentration is recorded as 25.2 µg/m<sup>3</sup> with minimum concentration as 19.6 µg/m<sup>3</sup>. The 98th percentile values are observed as 25.2 µg/m<sup>3</sup> respectively.

**AAQ3] Gollapalli Village**

The maximum concentration for RPM is recorded as 66 µg/m<sup>3</sup> with minimum concentration as 38 µg/m<sup>3</sup>. The 98th percentile values are observed as 66 µg/m<sup>3</sup> respectively.

The maximum concentration for PM<sub>2.5</sub> is recorded as 33 µg/m<sup>3</sup> with minimum concentration as 18 µg/m<sup>3</sup>. The 98th percentile values are observed as 33 µg/m<sup>3</sup> respectively.

The maximum SO<sub>2</sub> concentration is recorded as 16.2 µg/m<sup>3</sup> with minimum concentration as 13.2 µg/m<sup>3</sup>. The 98th percentile values are observed as 16.2 µg/m<sup>3</sup> respectively.

The maximum NO<sub>x</sub> concentration is recorded as 24.5 µg/m<sup>3</sup> with minimum concentration as 19.4 µg/m<sup>3</sup>. The 98th percentile values are observed as 24.5 µg/m<sup>3</sup> respectively.

**AAQ4] Ramapuram Village**

The maximum concentration for RPM is recorded as 61 µg/m<sup>3</sup> with minimum concentration as 32 µg/m<sup>3</sup>. The 98th percentile values are observed as 61 µg/m<sup>3</sup> respectively.

The maximum concentration for PM<sub>2.5</sub> is recorded as 28 µg/m<sup>3</sup> with minimum concentration as 17 µg/m<sup>3</sup>. The 98th percentile values are observed as 28 µg/m<sup>3</sup> respectively

The maximum SO<sub>2</sub> concentration is recorded as 16.1 µg /m<sup>3</sup> with minimum concentration as 13.4 µg /m<sup>3</sup>. The 98th percentile values are observed as 16.1 µg /m<sup>3</sup> respectively.



*Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I)  
dated 10<sup>th</sup> December, 2008  
April-2017 to September-2017*

**Annexure-IB**  
**Environment  
al Monitoring  
Data**

The maximum NO<sub>x</sub> concentration is recorded as 24.2 µg/m<sup>3</sup> with minimum concentration as 19.4 µg/m<sup>3</sup>. The 98th percentile values are observed as 24.2 µg/m<sup>3</sup> respectively.

#### **AAQ5] Tippaluru Village**

The maximum concentration for PM<sub>10</sub> is recorded as 62 µg/m<sup>3</sup> with minimum concentration as 34 µg/m<sup>3</sup>. The 98th percentile values are observed as 62 µg/m<sup>3</sup> respectively.

The maximum concentration for PM<sub>2.5</sub> is recorded as 32 µg/m<sup>3</sup> with minimum concentration as 18 µg/m<sup>3</sup>. The 98th percentile values are observed as 32 µg/m<sup>3</sup> respectively

The maximum SO<sub>2</sub> concentration is recorded as 16.9 µg/m<sup>3</sup> with minimum concentration as 13.2 µg/m<sup>3</sup>. The 98th percentile values are observed as 16.9 µg /m<sup>3</sup> respectively.

The maximum NO<sub>x</sub> concentration is recorded as 25.4 µg/m<sup>3</sup> with minimum concentration as 18.4 µg/m<sup>3</sup>. The 98th percentile values are observed as 25.4 µg /m<sup>3</sup> respectively.

#### **AAQ6] Yerraguntla Village**

The maximum concentration for PM<sub>10</sub> is recorded as 86 µg/m<sup>3</sup> with minimum concentration as 65 µg/m<sup>3</sup>. The 98th percentile values are observed as 86 µg/m<sup>3</sup> respectively.

The maximum concentration for PM<sub>2.5</sub> is recorded as 49 µg/m<sup>3</sup> with minimum concentration as 25 µg/m<sup>3</sup>. The 98th percentile values are observed as 49 µg/m<sup>3</sup> respectively

The maximum SO<sub>2</sub> concentration is recorded as 22.6 µg/m<sup>3</sup> with minimum concentration as 15.8 µg/m<sup>3</sup>. The 98th percentile values are observed as 22.6 µg /m<sup>3</sup> respectively.

The maximum NO<sub>x</sub> concentration is recorded as 26.7 µg/m<sup>3</sup> with minimum concentration as 20.2 µg/m<sup>3</sup>. The 98th percentile values are observed as 26.7 µg/m<sup>3</sup> respectively.

#### **AAQ7] Turkapalli**

The maximum concentration for PM<sub>10</sub> is recorded as 62 µg/m<sup>3</sup> with minimum concentration as 33 µg/m<sup>3</sup>. The 98th percentile values are observed as 62 µg/m<sup>3</sup> respectively.





*Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II (I)  
dated 10<sup>th</sup> December, 2008  
April-2017 to September-2017*

**Annexure-IB**  
**Environment  
al Monitoring  
Data**

The maximum concentration for PM<sub>2.5</sub> is recorded as 28 µg/m<sup>3</sup> with minimum concentration as 18 µg/m<sup>3</sup>. The 98th percentile values are observed as 28 µg/m<sup>3</sup> respectively

The maximum SO<sub>2</sub> concentration is recorded as 15.7 µg/m<sup>3</sup> with minimum concentration as 13.3 µg/m<sup>3</sup>. The 98th percentile values are observed as 15.7 µg/m<sup>3</sup> respectively.

The maximum NO<sub>x</sub> concentration is recorded as 24.1 µg/m<sup>3</sup> with minimum concentration as 19.7 µg/m<sup>3</sup>. The 98th percentile values are observed as 24.1 µg/m<sup>3</sup> respectively.

#### **2.2.5 Regional Scenario**

The ambient air quality survey was carried out for **April - June 2017** and **July - September 2017** at seven locations in the 10 Km radial distance. The monitoring was carried out for Respirable Particulate Matter (RPM), PM<sub>2.5</sub>, Sulphur dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>).

Various statistical parameters like Maximum, Minimum and 98th percentile have been computed from the observed raw data for all sampling stations. The ambient air quality concentrations of different parameters (PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub> and NO<sub>x</sub>) are presented in **Tables 4.5** and **Table 4.6**.

The AAQ levels observed at all the sampling locations were within the limits specified by CPCB for Industrial/Mixed use and residential/rural use.



*Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA  
II(I) dated 10<sup>th</sup> December, 2008  
April-2015 to September-2015*

**Chapter-IB  
Baseline  
Environmental  
Status**

**TABLE - 4.5**  
**SUMMARY OF AMBIENT AIR QUALITY DATA - (April - June 2017)**  
(Concentrations are expressed in  $\mu\text{g}/\text{m}^3$ )

Location Code	Location	PM <sub>10</sub>			PM <sub>2.5</sub>			SO <sub>2</sub>			NO <sub>x</sub>		
		Min	Max	98th	Min	Max	98th	Min	Max	98th	Min	Max	98 <sup>th</sup>
AAQ1	Plant site	61	82	82	23	42	42	13.8	17.2	17.2	18.7	23.4	23.4
AAQ2	Agasthalingayapalli	47	72	72	19	33	33	14.7	17.4	17.4	20.5	25.2	25.2
AAQ3	Gollapalli	45	66	66	19	33	33	15.3	16.2	16.2	20.1	24.5	24.5
AAQ4	Ramapuram	39	61	61	18	26	26	13.7	16.1	16.1	19.4	24.2	24.2
AAQ5	Tippaluru	42	62	62	18	32	32	13.6	16.9	16.9	19.2	25.4	25.4
AAQ6	Yerraguntla	65	86	86	25	49	49	16.8	22.6	22.6	21.7	26.7	26.7
AAQ7	Turakapalli	38	59	59	18	28	28	13.5	15.7	15.7	20.3	24.1	24.1



*Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA  
II(I) dated 10<sup>th</sup> December, 2008  
April-2015 to September-2015*

**Chapter-IB  
Baseline  
Environmental  
Status**

**TABLE - 4.6**  
**SUMMARY OF AMBIENT AIR QUALITY DATA - (July - September 2017)**  
(Concentrations are expressed in  $\mu\text{g}/\text{m}^3$ )

Location Code	Location	PM <sub>10</sub>			PM <sub>2.5</sub>			SO <sub>2</sub>			NO <sub>x</sub>		
		Min	Max	98th	Min	Max	98th	Min	Max	98th	Min	Max	98 <sup>th</sup>
AAQ1	Plant site	52	81	81	22	36	36	13.9	17.5	17.5	19.7	22.7	22.7
AAQ2	Agasthalingayapalli	39	61	61	18	29	29	13.6	15.8	15.8	19.6	21.7	21.7
AAQ3	Gollapalli	38	59	59	18	23	23	13.2	15.7	15.7	19.5	22.4	22.4
AAQ4	Ramapuram	32	61	61	17	28	28	13.4	15.3	15.3	20.1	22.4	22.4
AAQ5	Tippaluru	34	57	57	21	28	28	13.2	15.8	15.8	18.4	22.2	22.2
AAQ6	Yerraguntla	68	86	86	25	44	44	15.8	17.4	17.4	20.2	24.1	24.1
AAQ7	Turkapalli	33	63	63	18	28	28	13.3	15.6	15.6	19.7	21.7	21.7



### **WATER CONSERVATION MEASURES**

**Water being a scarce item of this arid zone, the focus of Bharathi Cement Corporation Private Limited has always been on water conservation measures since the inception of the plant.**

The Bharathi Cement Corporation Private Limited management has taken up the conservation of the water as one of the targets for continual improvement on Resource utilization.

➤ **Town Ship and Horticulture**

Township water consumption has been reduced drastically by taking the following precautions.

A) Earlier ball valves were provided for drinking water taps. These valves were replaced by push cock type valves. This has eliminated scope of overflow of water and thus eliminating the water wastage.

B) Drip Irrigation system for trees:

The water is given by drops at the basin of the plant, which is very effective and control the weed growth & reduces the water requirement by 90%. Drip systems typically are 90% or higher efficient when compared to basin irrigation.

C) Sprinkler Irrigation for the lawns: The sprinkler irrigation is effective irrigation system that reduces the water requirement by 33%. Sprinkler systems are around 75-85% efficient.

D) Mulching is spreading the dried leaves/ grass in the basin of the tree, which reduces the evaporation losses from the ground and tree basin. It provides humid micro climate around the tree basin, which reduces the water requirement.

➤ Reducing water consumption by recycling the treated wastewater at STP

#### **Sewage Treatment Plant**

Sewage treatment plant has been constructed at plant site for recycling the used water. It is in operation since June 2010 to treat the domestic waste water from the plant and township areas. The treated wastewater from STP after meeting the required standards used for gardening and green belt development.



**Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II(I)  
dated 10th December, 2008  
April-2017 to September-2017**

**Annexure-IC  
Water  
conservation  
measures**

### **Rainwater Harvesting System**

The Kadapa zone lies in Semi-arid climate and the ground water table lies deep in the crust and the rain fall lies more in medium range for every 2 years and a scarcity of water is seen most of the early months of every year i.e. between January to May. The water poured in rain is heavy some times in mid of September and October and the collection & recharging of the ground table will be done in this duration.

M/s. Bharathi Cement Corp. Pvt. Ltd., having a clean vision minded top management has resulted in the construction of ground water recharging pits was taken up very early stage of plant operations. Three recharge pits was on 3 sides of plant, where there is a much prepared scope for water collection. Sufficient ways were drawn into pits to collect each every drop of rain. Two pits of 1 Lac cubic meters and one pit of 3 Lac Cubic Meter. Were built & renovated every year before rains for better catchment of rain water. The results are seen & the yield in the bore well goes tremendously up every year for usage. But the priority of water conservation techniques lies top in the plant.

In addition to the ground recharge pits, the concepts constructed form ponds was introduced and implemented by collecting water into 3 form ponds of an area first one 40IX 40bX3h second one 70IX70bX5h and third one is 100IX100bX7h which collects water of 4800Cu.M, 24500Cu.M and 70000Cu.M respectively. The water harvesting techniques & concepts of form ponds construction has received a great applause from all the senior Govt. officials of concerned Dept. & renowned auditors.



*M/s. Universal Enviro Associates*

**Compliance Statement Report to Environmental Clearance for  
M/S Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No: J-11011/379/2008-IA II (I)  
dated 10<sup>th</sup> December, 2008  
April-2017 to September-2017**

**Annexure-ID  
Ground  
Water Levels**

**TABLE-5.1  
Ground Water Level Fluctuations  
April to June 2017**

<b>Sampling Code</b>	<b>Name of the Location</b>	<b>Ground Water Levels from surface mts</b>	<b>Bore well Details</b>
GWL1	Near Power Station	8.78	Bore well
GWL2	Colony Bore well, Near Hospital	8.21	Bore well
GWL3	Near C-Type Guest house	10.07	Bore well
GWL4	Nallalingayapalli village	7.84	Bore well
GWL5	Kothapalli (Agricultural Land)	7.14	Bore well
GWL6	Pandillapalli (Near Power Station)	7.26	Bore well
GWL7	Tippaluru (village)	7.32	Bore well
GWL8	Tippaluru (Near Temple)	7.89	Bore well

**TABLE-5.2  
Ground Water Level Fluctuations  
July to September 2017**

<b>Sampling Code</b>	<b>Name of the Location</b>	<b>Ground Water Levels from surface mts</b>	<b>Bore well Details</b>
GWL1	Near Power Station	06.95	Bore well
GWL2	Colony Bore well, Near Hospital	08.33	Bore well
GWL3	Near C-Type Guest house	10.14	Bore well
GWL4	Nallalingayapalli village	11.85	Bore well
GWL5	Kothapalli (Agricultural Land)	11.06	Bore well
GWL6	Pandillapalli (Near Power Station)	10.12	Bore well
GWL7	Tippaluru (village)	11.44	Bore well
GWL8	Tippaluru (Near Temple)	09.64	Bore well

**Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA  
II(I)  
dated 10<sup>th</sup> December, 2008  
April 2017 to September 2017**

**Annexure-IE  
Green belt  
development  
program**

**GREEN BELT DEVELOPMENT PROGRAM IN PLANT, MINES & CPP**

Details of Tree Plantation done during **April 2017 to September 2017** in Mines, Cement plant area are presented in below given **Table-6.1**

**TABLE-6.1**

**PLANTATION DETAILS**

Location	No. of Trees	
	OCT 2016 TO MAR 2017	APR 2017 TO SEPT 2017
Mines, Plant, Colony	3000	3500
Total Expenditure Incurred (Rs.)	<b>38,46,733/-</b>	<b>34,85,842/-</b>
Survival Rate	90%	90%
Area Covered in Ha	<b>2</b>	<b>3</b>
<b>Total area covered so far in Ha</b>		<b>96.5</b>

**Green Belt Development for maintaining Ecological balance in and around BCCPL**

- ⇒ Full-fledged horticulture department under the guidance, an experienced horticulturist is carrying out the green belt development programme.
- ⇒ Social forestry development with the active participation of the villagers.
- ⇒ Plant has been playing an important role in afforestation activity and maintaining ecological balance in the mid of industrial development through mass Tree plantation, development of Ornamental gardens and growing economic value fruit trees. The Company has undertaken tree plantation on a large scale in organized manner. Thus surrounding areas has been converted into green belt.
- ⇒ The plantation of trees in and around the company are meant mainly to reduce air pollution caused by plant emissions, to absorb sound, to prevent soil erosion and to maintain aesthetic value for healthy living.
- ⇒ Trees that are native of this area have been chosen for plantation.
- ⇒ The plants are suitable for green belt development based on gaseous exchange capacity of foliage which is ascertained by the following



**Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA  
II(I)  
dated 10<sup>th</sup> December, 2008  
April 2017 to September 2017**

**Annexure-IE  
Green belt  
development  
program**

**Characteristics:-**

- ❖ The plants which grow faster.
- ❖ It has thick canopy cover.
- ❖ It is perennial and evergreen.
- ❖ It has large leaf area index.
- ❖ It is indigenous.
- ❖ It is efficient in absorbing pollutants without significant effects on plant growth.
- ❖ As a positive commitment to the nature, we have taken various positive steps contributing to a greener world.
- ❖ Use of treated water coming out of STP for watering trees and ornamental gardens, which is reducing the environmental pollution.

**Water is being supplied to plants through drip irrigation system.**

- Network of Dripper Liners (Meters) : 153000
- No. Of Drippers : 148000
- Overall saving of Water (Liters/Day) : 886000

**Improvement in existing green belt by gap filling with tree saplings.**

- ⇒ Our cement plant has its own success story of tree plantation, greening activities, horticulture, flower cultivation and water conservation. Tree plantation and green belt development programmes have been extended to cover areas in the vicinity of our plants for the benefit of the local community. Afforestation programmes in used mines have helped transform the barren and dry ambience into lush greenery. Tree plantation is a regular and committed activity at Bharathi Cement. Each One, Plant One is a message that inspires our employees.
- ⇒ As a positive commitment to the nature, we have taken various positive steps contributing to a greener world. Use of treated water coming out of STP for mill operations, watering trees and ornamental gardens; which is reducing the environmental pollution and STP solid waste as manure for plants. Water is being supplied to plants through drip irrigation system. Improvement in existing green belt by gap filling with tree saplings.





**Compliance Statement Report to Environmental Clearance of  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA  
II(I)  
dated 10<sup>th</sup> December, 2008  
April 2017 to September 2017**

**Annexure-IE  
Green belt  
development  
program**

- Plant always joined hands together for the green belt development Programme proposed by Government of Andhra Pradesh and Andhra Pradesh Pollution Control Board. Like Vanam Manam Programme i.e., one Million trees plantation Programme in a single day and Vanamahostavam Programme i.e., two million trees plantation Programme in a single day. we have various plans to maintain ecological balance through the development of new green belts and mass tree plantation as and where place is available and suitable to growth of the trees, we are heading towards the introduction of new varieties of plants which will help in achieving maximum attenuation of air and noise pollutants.

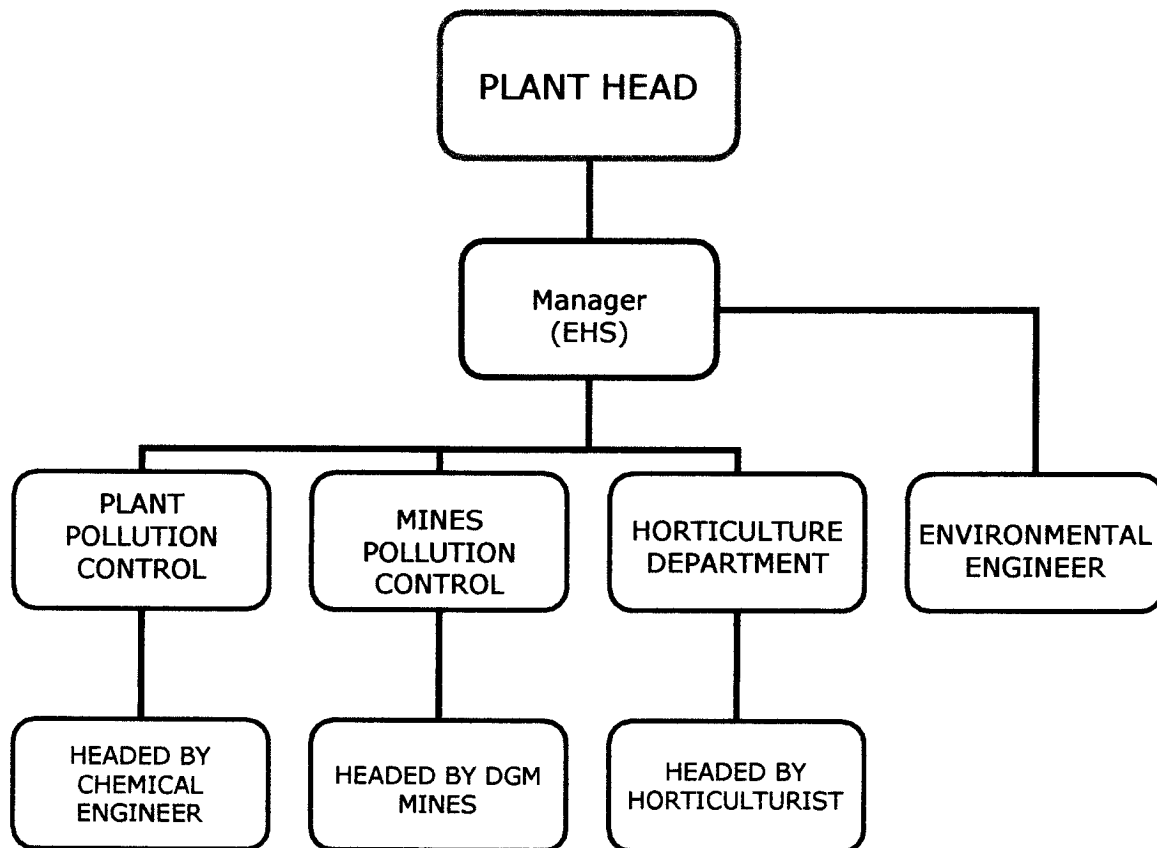
Now we have developed garden in our plant, mines & CPP and the days are now seen where all are seeing our plant and mines into a huge garden!



*M/s, Universal Enviro Associates.*

**FIGURE-3.1**

**ENVIRONMENT CELL**  
**Organizational Chart at Bharathi Cement Corporation Private Limited**



**Compliance Statement Report to Environmental Clearance for  
M/s Bharathi Cement Corporation Private Limited and  
Limestone Mines vide Letter F.No:J-11011/379/2008-IA II  
(I)  
dated 10<sup>th</sup> December, 2008  
April 2017 to September 2017**

**Annexure-IG  
Capital  
Expenditure**

**Capital Expenditure**

The details of investment for procuring the additional equipment for successful monitoring of environmental parameters and implementation of control measures are given below **Table-7.1**

**TABLE-7.1  
ENVIRONMENTAL PROTECTION INVESTMENT COST**

<b>S.No.</b>	<b>Particulars</b>	<b>Total Cost in Rs</b>
1	Bag dust collectors and RABH Bags	39,95,810.00
	<b>Total</b>	<b>39,95,810.00</b>

**Recurring Expenditure:**

Half yearly cost of monitoring and implementation of control measures is given below **Table-7.2**

**TABLE-7.2  
ENVIRONMENTAL PROTECTION RECURRING EXPENDITURE  
April 2017 to September 2017**

<b>SUMMARY</b>	
<b>Description</b>	<b>Amount in Rs</b>
Environmental survey & monitoring	13,75,044/-
Social welfare activities	2,77,00,000/-
Afforestation	29,60,841/-
<b>Total</b>	<b>3,20,35,885/-</b>



**GROUND WATER QUALITY**

Ground waters collected from the Bore wells situated in the Nallalingayapalli and near Crusher area are collected and analyzed as per GSR 422(E) to assess the quality of mine discharge. The analysis results are presented in **Table - 8.1 & 8.2.**

**TABLE - 8.1**  
**GROUND WATER QUALITY (April-June 2017)**

S.NO	PARAMETERS	Nallalingayapalli	Crusher Area	GSR 422E STANDARDS
1	Colour (Hazen units)	< 5	<5	---
2	Odour	Un - Objectionable	Un - Objectionable	---
3	pH	7.81	7.71	5.5-9.0
4	Oil & grease, mg/l	< 1	<1	10
5	Total Suspended Solids, mg/l	27	22	100
6	Dissolved solids, mg/l	875	625	2100
7	BOD for 3 days at 27°C, mg/l	Nil	Nil	30
8	COD,mg/l	Nil	Nil	250
9	Chlorides as Cl, mg/l	223	130	1000
10	Fluoride as F, mg/l	0.84	0.89	2.0
11	Dissolved phosphate as P,mg/l	0.05	0.07	5.0
12	Percent Sodium	22.4	21.9	----
13	Sulphide as S,mg/l	0.06	0.05	2.0
14	Boron as B,mg/l	< 0.1	< 0.1	2.0
15	Residual Sodium Carbonate,mg/l	Nil	Nil	----
16	Sulphates as SO <sub>4</sub> ,mg/l	37	29	1000

# Limits as per GSR 422(E) Inland Surface Waters

\* Source : E.P.Rules, 1989



Compliance Statement Report to Environmental Clearance  
for Bharathi Cement Corporation Private Limited and  
Limestone Mines of vide Letter F.No: J-11011/379/2008-  
IA II (I) dated 10<sup>th</sup> December, 2008  
April 2017 to September 2017

**Annexure-IH**  
**Mine discharge**  
**Water quality**

**TABLE - 8.2**  
**GROUND WATER QUALITY (July-September 2017)**

S.NO	PARAMETERS	Nallalingaypalli	Crusher Area	GSR 422E STANDARDS
1	Colour (Hazen units)	< 5	<5	---
2	Odour	Un - Objectionable	Un - Objectionable	---
3	pH	7.49	7.55	5.5-9.0
4	Oil & grease, mg/l	< 1	<1	10
5	Total Suspended Solids, mg/l	31	21	100
6	Dissolved solids, mg/l	840	665	2100
7	BOD for 3 days at 27 <sup>o</sup> C, mg/l	Nil	Nil	30
8	COD,mg/l	Nil	Nil	250
9	Chlorides as Cl, mg/l	219	154	1000
10	Fluoride as F, mg/l	0.79	0.83	2.0
11	Dissolved phosphate as P,mg/l	0.05	0.07	5.0
12	Percent Sodium	20.6	22.1	----
13	Sulphide as S,mg/l	0.05	0.05	2.0
14	Boron as B,mg/l	< 0.1	< 0.1	2.0
15	Residual Sodium Carbonate,mg/l	Nil	Nil	----
16	Sulphates as SO <sub>4</sub> ,mg/l	43	35	1000

# Limits as per GSR 422(E) Inland Surface Waters

\* Source : E.P.Rules, 1989



M/s. Universal Enviro Associates

**MINE DISCHARGE WATER QUALITY**

Mine discharge collected from the mine sump situated in the mine pit is collected and analyzed as per GSR 422(E) to assess the quality of mine discharge. The analysis results are presented in **Table - 8.3 & 8.4.**

**TABLE - 8.3**  
**WATER QUALITY (April-June 2017)**

S.NO	PARAMETERS	RESULTS	
		Mine Sump Water	GSR 422E STANDARDS
1	Colour (Hazen units)	< 5	---
2	Odour	Un - Objectionable	---
3	pH	7.92	5.5-9.0
4	Oil & grease, mg/l	< 1	10
5	Total Suspended Solids, mg/l	29	100
6	Dissolved solids, mg/l	425	2100
7	BOD for 3 days at 27 <sup>o</sup> C, mg/l	<2	30
8	COD,mg/l	18	250
9	Chlorides as Cl, mg/l	53	1000
10	Fluoride as F, mg/l	0.31	2.0
11	Dissolved phosphate as P,mg/l	0.17	5.0
12	Percent Sodium	3.45	----
13	Sulphide as S,mg/l	0.06	2.0
14	Boron as B,mg/l	< 0.1	2.0
15	Residual Sodium Carbonate,mg/l	Nil	----
16	Sulphates as SO <sub>4</sub> ,mg/l	77	1000
17	Iron as Fe, mg/l	0.19	3.0

**# Limits as per GSR 422(E) Inland Surface Waters**

**\* Source : E.P.Rules, 1989.**



Compliance Statement Report to Environmental Clearance  
for Bharathi Cement Corporation Private Limited and  
Limestone Mines of vide Letter F.No: J-11011/379/2008-  
IA II (I) dated 10<sup>th</sup> December, 2008  
April 2017 to September 2017

**Annexure-IH**  
**Mine discharge**  
**Water quality**

**TABLE - 8.4**  
**WATER QUALITY (July-September 2017)**

S.NO	PARAMETERS	RESULTS	
		Mine Sump Water	GSR 422E STANDARDS
1	Colour (Hazen units)	< 5	---
2	Odour	Un - Objectionable	---
3	pH	7.63	5.5-9.0
4	Oil & grease, mg/l	< 1	10
5	Total Suspended Solids, mg/l	18	100
6	Dissolved solids, mg/l	470	2100
7	BOD for 3 days at 27°C, mg/l	<2	30
8	COD,mg/l	23	250
9	Chlorides as Cl, mg/l	42	1000
10	Fluoride as F, mg/l	0.26	2.0
11	Dissolved phosphate as P,mg/l	0.18	5.0
12	Percent Sodium	3.44	----
13	Sulphide as S,mg/l	0.06	2.0
14	Boron as B,mg/l	< 0.1	2.0
15	Residual Sodium Carbonate,mg/l	Nil	----
16	Sulphates as SO <sub>4</sub> ,mg/l	64	1000
17	Iron as Fe, mg/l	0.23	3.0

# Limits as per GSR 422(E) Inland Surface Waters

\* Source : E.P.Rules, 1989



M/s. Universal Enviro Associates