

**Annexure-I**  
**Compliance to TOR Conditions**

**ANNEXURE-I**  
**COMPLIANCE TO TOR CONDITIONS**



**State Level Environment Impact Assessment Authority (SEIAA)**

**Andhra Pradesh**

**Government of India**

**Ministry of Environment & Forests**

**A-3, Industrial Estate, Sanathnagar, Hyderabad- 500 018.**

**Lr. No. SEIAA/AP/GTR- /2012-**

**Dt. 24.07.2012.**

To

Sri. Manoj Gaur, Chairman,  
M/s. Andhra Cements Ltd.,  
Sector - 128, Noida - 201 304,  
Uttar Pradesh.  
Ph: 120-4609000  
e-mail: [manoj.gaur@jalindia.co.in](mailto:manoj.gaur@jalindia.co.in)

Sir,

**Sub:** SEAC, AP – Proposed 30 MW Captive Power plant of Durga Cement Works (a unit of M/s. Andhra Cements Ltd.), Durgapuram (V), Dacheppalli (M), Guntur District – Environmental Clearance – TORs Issued -Reg.

**Ref:** 1. Your lr.dt. 12.05.2012 recd. on 21.06.2012.  
2. T.O.lr.dt. 23.06.2012.

In continuation of the above, the above proposal was examined by the State Expert Appraisal Committee (SEAC) in its meeting held on 04.07.2012. The SEAC observed as following:

*The representative of the project proponent Sri V.S. Bajaj, President; and Sri Shyam Sunder of M/s. Vimta Labs Ltd., Hyderabad, attended and made a presentation before the SEAC.*

*It is reported that the existing cement plant obtained EC from MoE&F, GOI, New Delhi. Now, the proponent approached SEAC /SEIAA for establishment of 30 MW Captive Power plant in the existing premises. The project is considered as an independent project.*

*After detailed discussions the draft TORs proposed by the proponent are approved. In addition to these, the following additional TORs shall be considered for preparing the draft EIA:*

- (i) *All the coordinates of the plant site with topo sheet of Survey of India.*
- (ii) *Land use and land cover map of the study area of 10km radius and a vicinity map of 3km radius shall be prepared using high resolution satellite data. Location of any National Park, Sanctuary, Elephant / Tiger Reserve (existing as well as proposed), migratory routes, if any, within 10 km of the project site shall be specified and marked on the land use and land cover map.*
- (iii) *Land requirement for the project to be optimized. Item wise break up of land requirement and its availability to be furnished. The norms prescribed by CEA should be kept in view. It should also include land to be acquired, if any, for fuel transportation system.*
- (iv) *Quantity of fuel required, its source and transportation. A confirmed fuel linkage (MOU) should be provided on Rs. 100/- Stamp paper under company seals of both the parties.*
- (v) *The source of water, water balance report shall be submitted. The proponent shall examine the feasibility of zero discharge. In case of any proposed discharge, its quantity, quality and point of discharge, users downstream etc. should be provided.*

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- (vi) *Optimization of COC for water conservation. Other water conservation measures proposed in the project should also be given. Quantity of water requirement for the project should be optimized.*
- (vii) *Risk assessment should be carried out. It should take into account the maximum inventory of storage at site at any point in time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be provided.*
- (viii) *All documents to be properly referenced with index, page numbers and continuous page numbering.*
- (ix) *Where data is presented in the report especially in table, the period in which the data was collected and the source should invariably be indicated. In addition to that the standards prescribed by the MoE&F, Govt for the respective parameters shall be indicated.*

*The proponent shall prepare draft EIA considering above mentioned TORs in addition to the TORs submitted by them, undergo the process of public hearing in consultation with APPCB, submit final EIA, minutes of public hearing and response of the proponent to the issues emerged in the public hearing to the SEAC for appraisal. The terms of the reference are valid for a period of TWO years.*

In view of the above, you are requested to prepare draft EIA report considering above mentioned TORs in addition to the TORs submitted, undergo the process of public hearing in consultation with APPCB, submit final EIA, minutes of public hearing and response of the proponent to the issues emerged in the public hearing to the SEAC for appraisal.

Yours faithfully,  
Sd/-  
SECRETARY, SEAC, A.P.

-//T.C.F.B.O//-

**SENIOR ENVIRONMENTAL ENGINEER (EC)**

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Sr. No.	TOR Condition	Compliance Status												
(i)	All the coordinates of the plant site with topo sheet of Survey of India.	The geographical co-ordinates of the plant site are given below: Plant: A: 16° 38'37.36" N to 79° 41.0' 41.15" E B: 16° 39'16.05" N to 79° 42.0' 07.93" E C: 16° 39'09.94" N to 79° 42.0' 38.29" E D: 16° 38'20.69" N to 79° 42.0' 34.28" E E : 16° 39'02.83" N to 79° 42.0' 32.53" E												
(ii)	Land use and land cover map of the study area of 10km radius and a vicinity map of 3km radius shall be prepared using high resolution satellite data. Location of any National Park, Sanctuary, Elephant/Tiger Reserve (existing as well as proposed), migratory routes, if any, within 10km of the project site shall be specified and marked on the land use and land cover map.	Land use details based on satellite data is given in Chapter-3, Section- 3.3.4												
(iii)	Land requirement for the project to be optimized. Item wise break up of land requirement and its availability to be furnished. The norms prescribed by CEA should be kept in view. It should also include land to be acquired, if any, for fuel transportation system.	The land requirement of the project is given in Chapter-2, Table- 2.5  The primary fuel for 30 MW power plant will be Singareni collieries limited and the mode of transportation is by rail route/Indonesia.												
(iv)	Quantity of fuel required its source and transportation. A confirmed fuel linkage (MOU) should be provided on Rs. 100/- Stamp paper under company seals of both the parties.	The primary fuel for 30 MW power plant will be Singareni collieries limited and the mode of transportation is by rail route/Indonesia. The particulars of coal from singereni collieries are given below: <table><tr><td>GCV of Coal Considered(kcal/kg)</td><td>3200</td></tr><tr><td>Power Cycle Heat Rate(kcal/kw-hr)</td><td>2400</td></tr><tr><td>Boiler efficiency(%)</td><td>85%</td></tr><tr><td>Total Cycle Heat Rate(kcal/kw-hr)</td><td>2823.529412</td></tr><tr><td>Coal required for per kw-hr ( kg)</td><td>0.882352941</td></tr><tr><td>Coal required for per kw-hr ( mioTPA)</td><td>0.200117647</td></tr></table> Application of the long term indigenous coal linkage is in progress, it is proposed to use the imported coal as an interim arrangement to meet the coal requirement for the proposed 30 MW CPP. Fuel supply agreement is enclosed as <b>Annexure-XII</b> and details of imported coal are provided in <b>Annexure-XII(A)</b> .	GCV of Coal Considered(kcal/kg)	3200	Power Cycle Heat Rate(kcal/kw-hr)	2400	Boiler efficiency(%)	85%	Total Cycle Heat Rate(kcal/kw-hr)	2823.529412	Coal required for per kw-hr ( kg)	0.882352941	Coal required for per kw-hr ( mioTPA)	0.200117647
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Total Cycle Heat Rate(kcal/kw-hr)	2823.529412													
Coal required for per kw-hr ( kg)	0.882352941													
Coal required for per kw-hr ( mioTPA)	0.200117647													
(v)	The source of water, water balance report shall be submitted. The proponent shall examine the feasibility of zero discharge. In case of any proposed discharge, its	The plant will be operated on zero discharge concept.  The water of 550 m <sup>3</sup> /day will be sourced from mine pit. The schematic diagram of water balance is shown in Chapter-4, Table-4.9 , Figure-4.7												

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	quantity, quality and point of discharge, users downstream etc. should be provided.	
(vi)	Optimization of COC for water conservation. Other water conservation measures proposed in the project should also be given. Quantity of water requirement for the project should be optimized.	The air cooled condensers will be used which optimizes the water requirement and COC maintained is 5.  The break of water requirement is provided in Chapter-2, Section- 2.7
(vii)	Risk assessment should be carried out. It should take into account the maximum inventory of storage at site at any point in time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be provided.	The risk assessment and disaster management plan has been provided in Chapter- 7.

**Annexure-II**  
**Environmental Clearance Letter**

**ANNEXURE-II**  
**EC LETTER**

F No. J-11011/719/2007- IA II (I)  
Government of India  
Ministry of Environment and Forests  
(I.A. Division)

Paryavaran Bhawan  
CGO Complex, Lodhi Road  
New Delhi - 110 003

E-mail : [pb.rastogi@nic.in](mailto:pb.rastogi@nic.in)  
Telefax : 011: 2436 7668  
Dated 20<sup>th</sup> December, 2007

To, ✓  
M/s Andhra Cement Ltd.  
2<sup>nd</sup> Floor, Chanderlok Complex  
111, S.D. Road, Secundrabad-500 003  
Andhra Pradesh.

E-mail : [nalwaya@andhracemments.com](mailto:nalwaya@andhracemments.com) ; Fax No. : 040-27810103, 08649-257429

Subject : Expansion of Cement Production (0.8 to 2.31 MTPA), Clinker Production (1.00 to 2.00 MTPA) at Village Durgapuram, Mandal Dachepalli, District Guntur and Captive limestone mine (1.50 to 3.00 MTPA) at Village Garualapadu, Mandal Dachepalli, District Guntur, A. P. by M/s Durga Cement Works Limestone Mine and M/s Andhra Cements Ltd. - Environmental clearance reg.

Sir,

Kindly refer your letter no. ACU/MOEF/REIA/Plant and mine 2007 dated 21<sup>st</sup> June, 2007 alongwith project documents including Application Form, Questionnaire, EIA / EMP Report and subsequent clarifications furnished vide communications dated 12<sup>th</sup> July, 2007, 1<sup>st</sup> September, 2007 and 6<sup>th</sup> October, 2007 regarding above mentioned cement project.

2.0 The Ministry of Environment and Forests has examined your application. It is noted that M/s Andhra Cements Ltd. have proposed for the expansion of Cement (0.8-2.31 MTPA), Clinker production (1.00-2.00 MTPA) and Captive limestone mine (1.50 to 3.00 MTPA) at Garualapadu, Dachepalli, Guntur A. P. and Limestone Mine at Durgapuram, Dachepalli, Guntur, A. P. by M/s Durga Cement Works Limestone Mine and M/s Andhra Cements Ltd.

3.0 Total land acquired for cement plant is 141.574 ha. Expansion of cement plant will be carried out within the existing premises. Total mine lease area is 170.22 ha. Out of 170.22 ha., 120 ha. will be excavated for mining. No forest land and rehabilitation and resettlement is involved. No national park and wildlife sanctuary is located within 10 km. radius of the cement plant. Gamalapadu RF (0.1-0.4 km.), Madinapadu RF (1.2-1.8 km.), Daida RF (4.7-4.9 km.), Saidulnam RF (3.8-5.0 km.), Ravipahad RF (5.3-6.6 km.) and Warivabad RF (6.2-6.8 km.) are located within 10 km of the cement plant and mine site. Proven and indicated mineral reserves are 33.34 Million tons and 59.39 Million tons respectively. Mineable reserves are 63.56 Million Tons. Rated Capacity of the mine mineral after expansion will be 3.00 MTPA. Life of the mine at the proposed capacity will be 21 years and mining lease is valid for 20 years upto 18<sup>th</sup> January, 2018. However, limestone is excavated @ 1.5 MTPA will last 24 years and proposed @ 3.0 MTPA in next 5 years (till 2013). Out of 120 ha, 55 ha is already broken for mining and

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65 ha is yet to be broken. Mining Plan is approved by the Indian Bureau of Mines vide letter dated 31<sup>st</sup> May, 2007. Total capital cost of the cement and mine plant is Rs 312.70 Crore.

4.0 Ordinary Portland Cement (OPC), Portland Pozzolana Cement (PPC) will be manufactured. Total ground water requirement for cement plant and mining will be 420 and 60 m<sup>3</sup>/day (including 56 m<sup>3</sup>/day mine water) respectively. Mined out area will be developed as artificial reservoir. No wastewater will be discharged.

5.0 Public hearing meeting for the expansion of cement plant and limestone mine was held on 20<sup>th</sup> June, 2007.

6.0 The Ministry of Environment and Forests hereby accords environmental clearance to the above project under the provisions of EIA Notification dated 14<sup>th</sup> September, 2006 subject to strict compliance to the following specific and general conditions.

**A. Specific Conditions :**

- i. Continuous monitoring system to monitor gaseous emissions shall be provided and limit of SPM shall be controlled within 50 mg/Nm<sup>3</sup> by installing adequate air pollution control system and data submitted to the Ministry's Regional Office at Bangalore, A. P. Pollution Control Board (APPCB) and CPCB regularly.
- ii. The company shall install adequate dust collection and extraction system to control fugitive dust emissions at various transfer points, raw mill handling (unloading, conveying, transporting, stacking), vehicular movement, bagging and packing areas etc. Crusher shall be operated with high efficiency bag filters. All conveyers shall be covered with GI sheets. Covered sheds for storage of raw materials and fully covered conveyers for transportation of materials shall be provided besides coal, cement, fly ash and clinker shall be stored in silos. Pneumatic system shall be used for fly ash handling.
- iii. Secondary fugitive emissions shall be controlled within the latest permissible limits issued by the Ministry and regularly monitored. Guidelines / Code of Practice issued by the CPCB shall be followed and data submitted to the Ministry's Regional Office at Bangalore, CPCB and APPCB.
- iv. 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 submitted to Ministry of Environment and Forests and its Regional Office, Bangalore.
- v. Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading points, transfer points and other vulnerable areas. It shall be ensured that the ambient air quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
- vi. Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The vehicles shall be covered with a tarpaulin and shall not be overloaded.



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- vii. /asphalting/concreting of roads and water spray all around the stockyard and loading / unloading areas, in the cement plant shall be carried out to control fugitive emissions.
- viii. Total ground water requirement for cement plant and mining shall not exceed 420 and 60 m<sup>3</sup>/day (including 56 m<sup>3</sup>/d mine water) respectively. All the treated wastewater shall be recycled and reused in the process and/or for ash quenching, dust suppression, green belt development and other plant related activities etc. No process wastewater shall be discharged outside the factory premises and 'zero' discharge shall be adopted.
- ix. 'Permission' for the drawl of ground water from SGWB / CGWA shall be obtained. Mined out area shall be developed as artificial reservoir. The water stored in the artificial reservoir made in the mine pit shall be used maximum to reduce ground water consumption.
- x. Sewage treatment plant (STP) shall be installed for the colony. Treated domestic effluent shall be used for green belt development within the plant premises. Domestic waste from colony and STP shall be segregated into bio-degradable and non-biodegradable. Bio-degradable waste shall be composted and non-biodegradable waste shall be land filled at identified sites. ETP should also be provided for workshop and mineral separation plant wastewater.
- xi. The project proponent shall ensure that no natural watercourse shall be obstructed / due to any mining operations.
- xii. All the bag filter dust, raw meal dust, coal dust, clinker dust and cement dust from pollution control devices shall be recycled and reused in the process and used for cement manufacturing. Sludge from domestic sources shall be used as manure for green belt development. Waste oil shall be sold to authorized recyclers / reproprocessors only.
- xiii. An effort shall be made to use of high calorific hazardous waste in the cement kiln and necessary provision shall be made accordingly.
- xiv. Efforts shall be made to use low grade lime, more fly ash and solid waste in the cement manufacturing.
- xv. Action plan for the mining, management of over burden (removal, storage, disposal etc.), reclamation of the mined out area and mine closure shall be submitted to the Ministry and its Regional Office at Bangalore.
- xvi. The top soil and solid waste shall be stacked separately at specified dumping site with proper safeguards. Top soil shall be used for the plantation / green belt development during reclamation and solid waste for backfilling.
- xvii. The over burden (OB), inter burden and other waste generated from mines, if any, shall be stacked at the earmarked dump sites only and should not be kept active for long period. Backfilled OB dumps shall be scientifically vegetated with suitable native species to prevent erosion and surface run off. Monitoring and management of reclaimed areas shall continue until the vegetation becomes self-sustaining. Regular

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compliance shall be submitted to the Ministry and its Regional Office at Bangalore on six monthly basis

- xxviii. The area for external over burden dump shall be reduced by suitably increasing the height of the dumps with proper terracing. It shall be ensured that the overall slope of the dump does not exceed 28°.
- xix. Garland drains shall be constructed to arrest silt and sediment flows from soil. The water so collected shall be used for watering the mine area, haul roads, green belt development etc. The drains shall be regularly de-silted and maintained properly.
- xx. Suitable rainwater harvesting and conservation measures to augment groundwater resources in the area on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board in cement plant and mining area to augment ground water resources and use for dust suppression and horticulture.
- xxi. Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and new peizometers at suitable locations by the project proponent in and around project area in consultation with Regional Director, Central Ground Water Board during the mining operation. The ground water monitoring shall be carried out 4 times in a year (i.e. pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and data thus collected shall be regularly sent to the Ministry, its Regional Office at Bangalore, Central Ground Water Authority and State Ground Water Board, Bangalore.
- xxii. The project proponent shall take appropriate mitigative measures to prevent pollution of nearby River and other surface water body, if any.
- xxiii. Deep hole wet drilling sequential blasting method shall be adopted and provision for the control air emissions during blasting using dust collectors/ extractors etc. shall be made. Blasting operation shall be carried out during the daytime only and one bench at a time shall be blasted. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders shall be implemented. 'No objection certificate' from the Chief Controller of Explosives shall be obtained.
- xxiv. Out of total 141.574 ha., green belt shall be developed in at least 36 ha. (25 %) in and around the cement plant as per the CPCB guidelines to mitigate the effects of air emissions in consultation with local DFO. In mining, out of 170.22 ha., plantation shall be raised in an area of 46.72 ha. by planting the native species around mining lease area, over burden dumps, around water body, roads etc. in consultation with the local DFO / Agriculture Department. At least, 1,500 trees per year shall be planted with a tree density of 2,000 trees per ha. An action plan shall be submitted in this regard.
- xxv. The void left unfilled shall be converted into water body. The higher benches of excavated void/mining pit shall be terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.

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- xxvi. The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional office within 3 months from the date of issue of this letter.
- xxvii. A final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.
- xxviii. Mechanized open casting shall be adopted and no change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment & Forests.
- xxix. Consent to Operate shall be obtained from APPCB before starting enhanced production from the mine.
- xxx. 'Permission' of the State Forest Department shall be obtained regarding impact of cement plant and mining activities on the surrounding 6 reserve forests viz. Gamalapadu RF (0.1-0.4 km.), Madinapadu RF (1.2-1.8 km.), Daida RF (4.7-4.9 km.), Saidulnam RF (3.8-5.0 km.), Ravipahad RF (5.3-6.6 km.) and Warivabad RF (6.2-6.8 km) and all the recommendations shall be followed.
- xxxi. The company shall obtain necessary clearances / approval from the concerned Departments i.e. Indian Bureau of Mines, State Government, MoEF etc. for the linked mining component before undertaking any construction activity at the project site.
- xxxii. Rehabilitation and Resettlement Plan for the project affected population as per the policy of the State Govt. shall be prepared and implemented.
- xxxiii. Acoustic enclosures shall be provided to control noise wherever necessary. Mine machine shall be provided with silencers. Noise shall also be controlled from cooler fans, compressor house, cement mill and raw mill, cement plant and drilling machines, excavator, blasting at mine site using appropriate noise control measures.
- xxxiv. All the safety norms stipulated by the Director General, Mine & Safety (DGMS) should be implemented.
- B. General Conditions :**
- i. The project authority shall adhere to the stipulations made by Andhra Pradesh Pollution Control Board (APPCB) and State Government.
- ii. No further expansion or modification of the plant shall be carried out without prior approval of this Ministry.
- iii. The gaseous and particulate matter emissions from various units shall conform to the standards prescribed by the T.N. Pollution Control Board. At no time, the particulate emissions from the cement plant shall exceed APPCB limit. Interlocking facility shall

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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

- iv. One ambient air quality monitoring station shall be installed in downwind direction. Ambient air quality including ambient noise levels shall not exceed the standards stipulated under EPA or by the State authorities. Monitoring of ambient air quality and stack emissions shall be carried out regularly in consultation with APPCB and report submitted to the APPCB quarterly and to the Ministry's Regional Office at Bangalore half-yearly.
- v. The company must harvest the rainwater from the rooftops and storm water drains to recharge the ground water and use the same water for the various activities of the project to conserve fresh water.
- vi. The company shall undertake eco-development measures including community welfare measures in the project area.
- vii. The overall noise levels in and around the plant area shall 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 shall conform to the standards prescribed under Environmental (Protection) Act, 1986 Rules, 1989 viz. 75 dBA (day time) and 70 dBA (night time).
- viii. All recommendations made in the Corporate Responsibility for Environment Protection (CREP) for cement plants shall be implemented.
- ix. Proper house keeping shall be taken up. Regular annual medical examination of all the employees shall be carried out from the occupational health point of view and records maintained.
- x. A separate environmental management cell to carry out various management and monitoring functions shall be set up under the control of Senior Executive.
- xi. As proposed in EIA/EMP, Rs. 28.00 Crores and Rs. 0.95 Crores earmarked towards the capital cost and recurring cost/annum respectively for environment pollution control measures for the cement plant and Rs. 35.00 Lakhs and Rs. 23.2 Lakhs earmarked towards the capital cost and recurring cost/annum respectively for environment pollution control measures for the mine shall be suitably used to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government. The funds so provided shall not be diverted for any other purpose.
- xii. The Regional Office of this Ministry at Bangalore / CPCB / APPCB shall monitor the stipulated conditions. A six monthly compliance report and the monitored data alongwith statistical interpretation shall be submitted to them regularly.
- xiii. The Project Authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.

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- (vi) *Optimization of COC for water conservation. Other water conservation measures proposed in the project should also be given. Quantity of water requirement for the project should be optimized.*
- (vii) *Risk assessment should be carried out. It should take into account the maximum inventory of storage at site at any point in time. The risk contours should be plotted on the plant layout map clearly showing which of the proposed activities would be affected in case of an accident taking place. Based on the same, proposed safeguard measures should be provided. Measures to guard against fire hazards should also be provided.*
- (viii) *All documents to be properly referenced with index, page numbers and continuous page numbering.*
- (ix) *Where data is presented in the report especially in table, the period in which the data was collected and the source should invariably be indicated. In addition to that the standards prescribed by the MoE&F, GoI for the respective parameters shall be indicated.*

*The proponent shall prepare draft EIA considering above mentioned TORs in addition to the TORs submitted by them, undergo the process of public hearing in consultation with APPCB, submit final EIA, minutes of public hearing and response of the proponent to the issues emerged in the public hearing to the SEAC for appraisal. The terms of the reference are valid for a period of TWO years.*

In view of the above, you are requested to prepare draft EIA report considering above mentioned TORs in addition to the TORs submitted, undergo the process of public hearing in consultation with APPCB, submit final EIA, minutes of public hearing and response of the proponent to the issues emerged in the public hearing to the SEAC for appraisal.

Yours faithfully,  
Sd/-  
SECRETARY, SEAC, A.P.

-/T.C.F.B.O/-

SENIOR ENVIRONMENTAL ENGINEER (EC)

**Annexure-III**  
**Consent for Establishment**

**ANNEXURE-III**  
**CONSENT FOR ESTABLISHMENT**



**Andhra Cements Limited**

2<sup>nd</sup> FLOOR, CHANDRALOK COMPLEX,  
111, S.D. ROAD, SECUNDERABAD - 500 003, A.P.  
Phones : 27841651, 66260110, 111, 112, Fax : 040-27810163



6<sup>th</sup> February 2010

The Senior Environmental Engineer  
Task Force,  
Andhra Pradesh Pollution Control Board  
Plot No. 41, Sri Kanakadurga Officer's Colony  
Gurunanak Road,  
Vijayawada - 8.

Dear Sir,

Compliance of directions at our Durga Cement Works, Dachepalli.

We thank you very much for giving us time to comply with the requirements of pollution related works by December 2009 vide your Order No. 321/PCB/TF-VJA/2006/383 dated 19.06.09.

We are enclosing herewith a copy of the Compliance Report submitted to AP Pollution Control Board, Guntur on 06.02.10.

We would like to inform you that our Plant was stopped on 27.10.09 to take up all the pollution related jobs including installation of Bag filters etc., and we expect to commence production by 2<sup>nd</sup> week of Feb. 10. We are also enclosing herewith the photographs of each and every work carried out at our plant. We have complied with all the conditions as directed by the Task Force, APPCB, Vijayawada.

In view of the above, we request your good selves to kindly visit our factory and issue appropriate order.

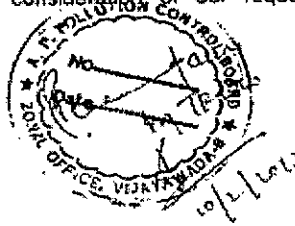
We shall be highly thankful for your kind consideration of our request sympathetically.

Thanking you

Yours faithfully  
For Andhra Cements Limited

P. G. Nallwala  
Managing Director

Enc: as above.



Recd. Office : DURGA CEMENT WORKS

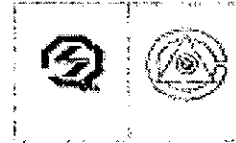
DURGA CEMENT WORKS

**ANNEXURE-III**  
**CONSENT FOR ESTABLISHMENT**



**Andhra Cements Limited**

DURGA CEMENT WORKS  
Plot No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000



Ref: ACL/DCW/P&QC/2009-10.

Date: 5.02.2010.

To  
The Environmental Engineer  
A.P. Pollution Control Board  
Regional Office,  
Door No: 4-4-87, 1<sup>st</sup> Lane  
Chandramouli Nagar,  
GUNTUR - 522 007.

Dear Sir,

Sub: Compliance of your order no: 321/PCB/TF-VJA/2006-225.  
Dated 03-05-2008-Reg

With reference to the above subject, please find enclosed the compliance report on various conditions imposed by APPCB.

The plant was stopped on 27.10.09 to hookup the RABH for Kiln, PC & Raw mills, Jet pulse filter house for Coal mills, ESP for Cooler along with other pollution control equipments and up gradation of plant capacity which is expected to commence production by the second week of February 2010.

We have complied with all the conditions imposed by APPCB and further assure that all the possible care will be taken to prevent air pollution in the surrounding areas.

Thanking you,

Yours faithfully

For Andhra Cements Ltd,  
Durga Cement Works.

(S.C. Ranaoli)  
President (Works)

CC:-Sr.Environmental Engineer. APPCB.  
Task force office, Gurumanak road, Vijayawada.

*[Signature]*

For Andhra Cements Ltd, Durga Cement Works

*[Signature]*  
DURGA CEMENTS



**ANNEXURE-III**  
**CONSENT FOR ESTABLISHMENT**

**DURGA CEMENT WORKS**  
A Unit of Andhra Cements Limited

ACL/DCW/APPCB/CFO/GNT/2012-13/ 26  
The Environmental Engineer,  
APPCB. Regional office, Flat no. 102, Raghavaiah apartment,  
Brundawan garden, GUNTUR-522 006.

Date: 27-4-2012.

Sub:- Application for renewal of CFO of Air & water to our plant & mines for one year, as well as readjustment of earlier charges paid for CFO to plant & mines for further one year (total two years).

Ref:- 1, Our previous application for CFO for air & water to our plant & mines, dt.19-10-2009.  
2, Our lt.no.ACL/DCW/APPCB/GNT/2011-2012/878, Dt.25-01-2012.  
3, Your lt.no.G-41/PCB-RO-GNT/CFO/2012-1326, Dt.25-02-2012.

Dear Sir,

We would like to bring the following facts for favour of your kind consideration on the aforesaid subject:

1. As per the reference no. 1 cited above, we applied for Consent for Operation of air & water to our Durga Cement Works plant and mines (covering letters are enclosed for your ready reference).
2. You are well aware that after a course of time our plant was shut down due to unavoidable circumstances. Now the unit has gone a change of management to M/s. Jaypee group.
3. For running the plant we requested your through out lt. cited in the ref. no. 2, to readjust the amount paid by us as per clause no.1 as we neither could operate the unit, nor we got the CFO for that year (a copy is enclosed for your ready reference). This issue was discussed with you and we were very happy to receive your sympathetic consideration.
4. In response to our said letter, through your office lt. cited in the ref. no.3 you advised us to apply for renewal of consent afresh along with balance sheet and necessary enclosures along with CFO renewal fee at the earliest and obtain the consent order commissioning of the unit. While the issue concerning sl.3 point above gets considered.

As per advice, kindly find here with enclosed dully filled on with required details, Forms, balance sheet and necessary enclosures for Consent For Operation of Air & water to our plant and mines for period of one year. The amount paid in the form of DDs as follows:

a, two DDs bearing nos.: 560969 & 560970, 3-4-2012, each For Rs. 75, 000/-towards the fee for Air & Water to plant.

b, two DDs bearing nos.: 560967 & 560968, 3-4-2012, each For Rs. 30, 000/-towards the fee for Air & Water to mines.

It is, therefore, requested your good self that CFO for Air & water for our DCW plant & mines may kindly be granted for one year.

We, in view of the above circumstances, further, request your kind self to re-evaluate the earlier paid amount as said in the clause no.1 may kindly be issued consent order for further one year in continuation of the above CFO (for total two years) as we proposed to run the unit with in a short time. For which we shall be highly thankful to you for this act.

Thanking you,

*CFO Application for Plant is received with a fee of Rs 1,50,000. Application shall be inwards Subject to the payment of balance CFO fee of Rs 1,50,000.*

Copy to: Member, PCB, Paryavarur Bhawan, Sanathnagar, Hyderabad.



Regd. Office & Factory : Durga Cement Works, Durgapuram, Srinagar (P.O., Dacheppelli - 522414, Guntur District, Andhra Pradesh)  
Ph : 081 - 3962 - 121/400-24 Fax : 01 - 3649-257-01

Yours truly,  
For Andhra Cements Limited,  
Durga Cement Works,  
*R. K. DOODA*  
(R.K. DOODA)  
Sr. VP (Works.).

**Annexure-IV**

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**Methodology Adopted for  
Sampling and Analysis**

**ANNEXURE-IV**  
**METHODOLOGY FOR SAMPLING AND ANALYSIS**

**1.0 Meteorology**

The methodology adopted for monitoring surface observations is as per the standard norms laid down by Bureau of Indian Standards (IS : 8829) and India Meteorological Department (IMD).

**1.1 Methodology of Data Generation**

The Central Monitoring Station (CMS) equipped with continuous monitoring equipment was installed at site at a height of about 10-m above ground level to record wind speed, direction, relative humidity and temperature. The meteorological monitoring station was located in such a way that it is free from any obstructions and as per the guidelines specified under IS:8829. Cloud cover was recorded by visual observation. Rainfall was monitored by rain gauge.

The continuous recording meteorological instrument of Dynalab, Pune (Model No.WDL1002) has been used for recording the met data. The sensitivity of the equipment is as given in **Table-1**.

**TABLE-1**  
**SENSITIVITY OF METEOROLOGY MONITORING STATION**

<b>Sr. No.</b>	<b>Sensor</b>	<b>Sensitivity</b>
1	Wind speed Sensor	± 0.02 m/s
2	Wind direction Sensor	± 3 degrees
3	Temperature Sensor	± 0.2°C

Hourly maximum, minimum and average values of wind speed, direction and temperature were recorded continuously with continuous monitoring equipment. All the sensors were connected to filter and then logged on to datalogger. The readings were recorded in a memory module, which was attached to datalogger. The memory module was downloaded in computer through Dynalab software. The storage capacity of memory module was 256 KB. Data was downloaded every fortnight into the computer. The data was recorded continuously. The recovery of data was about 98%. The rest of 2 % data gaps were filled by referring to IMD data and daily weather reports in the local newspapers. However, Relative Humidity and Rainfall were recorded manually.

**1.2 Ambient Air Quality**

**1.2.1 Method of Analysis**

The air samples were analyzed as per standard methods specified by Central Pollution Control Board (CPCB), IS: 5184 and American Public Health Association (APHA).

**1.2.2 Instruments used for Sampling**

Respirable Dust Samplers APM-451 instruments have been used for monitoring Suspended Particulate Matter (SPM), Respirable fraction (<10 microns) and gaseous pollutants like SO<sub>2</sub> and NO<sub>x</sub>. Charcoal filled glass tubes were deployed for collection of carbon monoxide. Gas Chromatography techniques have been used for the estimation of CO.

**ANNEXURE-IV**  
**METHODOLOGY FOR SAMPLING AND ANALYSIS**

**1.2.3 Instruments used for Analysis**

The make and model of the instruments used for analysis of the samples collected during the field monitoring are given in **Table-2**.

**TABLE-2**  
**INSTRUMENTS USED FOR ANALYSIS OF SAMPLES**

<b>Sr. No</b>	<b>Instrument Name</b>	<b>Make</b>	<b>Model</b>	<b>Parameters</b>
1	Spectrophotometer	HACH	DR 2000; Sl. No. 911016344	SO <sub>2</sub> , NO <sub>x</sub> , O <sub>3</sub>
2	Electronic Balance	Metler	AE 200S; Sl. No M10774	SPM, RPM
3	Gas Chromatograph With FID, pFPD, ECD	GC-3, VARIAN	CP- 3800-44; Sl. No. 8094	CO

**1.2.4 Sampling and Analytical Techniques**

**1] SPM, RPM, SO<sub>2</sub> and NO<sub>x</sub>**

SPM (>10  $\mu$ ) and RPM (<10  $\mu$ ) present in ambient air is drawn through the cyclone. Coarse and non-respirable dust (>10 $\mu$ ) is separated from the air stream by centrifugal forces acting on the solid particles. These separated particulates fall through the cyclone's conical hopper and collect in the sampling cup placed at the bottom of the cyclone. The fine dust (<10 microns) forming the respirable fraction passes the cyclone and is retained by the filter paper. The TSPM is estimated by summing up the SPM and RPM fractions collected separately as above.

A tapping is provided on the suction side of the blower to provide suction for sampling air through a set of impingers. Samples of gases are drawn at a flow rate of 0.2 Liters Per Minute (LPM).

SPM and RPM have been estimated by Gravimetric method (IS: 5182, Part IV). Modified West and Gaeke method (IS-5182 Part-II, 1969) has been adopted for estimation of SO<sub>2</sub>. Jacobs-Hochheiser method (IS-5182 Part-VI, 1975) has been adopted for the estimation of NO<sub>x</sub>.

**Calibration:**

Calibration charts have been prepared for all gaseous pollutants. The calibration is carried out whenever new absorbing solutions are prepared. All the Respirable Dust Samplers are calibrated as per ASTM D-4096. The rotameter is calibrated using soap bubble meter.

**2] Carbon Monoxide**

Charcoal filled glass tubes have been used for collecting the samples of Carbon monoxide. The CO levels were analyzed through Gas Chromatography techniques.

The techniques used for ambient air quality monitoring and minimum detectable level are given in **Table-3**.

**ANNEXURE-IV**  
**METHODOLOGY FOR SAMPLING AND ANALYSIS**

**TABLE-3**  
**TECHNIQUES USED FOR AMBIENT AIR QUALITY MONITORING**

Parameters	Test Method [as per GSR 826(E), Sch-VII]	Minimum Detectable Limit ( $\mu\text{g}/\text{m}^3$ )
Sulphur dioxide ( $\text{SO}_2$ )	Modified West and Gaeke Method	4.0
Nitrogen dioxide ( $\text{NO}_2$ )	Sodium Arsenite Method	9.0
PM10 (Respirable Particulate Matter) and SPM (Suspended Particulate Matter)	Respirable dust sampler/High volume sampling(Gravimetric)	5.0
PM2.5 (Particulate matter size $<2.5 \mu\text{m}$ )	FRM / Low volume sampling (Gravimetric)	2.0
$\text{NH}_3$ , Ammonia	Indophenol Blue method	20.0
Carbon Monoxide (CO) (3 x 8 hr)	Gas Monitor	12.5
Ozone ( $\text{O}_3$ ) (3 x 8 hr)	Spectrophotometric method	2.0
Benzene, $\text{C}_6\text{H}_6$ ( $\text{ng}/\text{m}^3$ )	Solvent extraction followed by GC MS	1.0
Benzo(a)pyrene in Particulate phase ( $\text{ng}/\text{m}^3$ )	Solvent extraction followed by GCMS analysis	1.0
Pb Lead ( $\text{ng}/\text{m}^3$ )	AAS / ICP-MS method after sampling EPM filter paper	GFFA/ICP-MS - 0.05
Ni Nickel ( $\text{ng}/\text{m}^3$ )	AAS / ICP-MS method after sampling EPM filter paper	GFFA/ICP-MS- 0.10
As Arsenic ( $\text{ng}/\text{m}^3$ )	AAS / ICP-MS method after sampling EPM filter paper	GFFA/ICP-MS - 0.20

**Analysis of Collected Matter**

Analysis was carried out at central laboratory. The pH of the water was measured by pH meter. The weight of the total un-dissolved matter was obtained after filtration. The weight of ash was obtained by combustion of the undissolved matter. The weight of the total dried soluble matter obtained from the residue from a measured portion of filtrate after evaporation to dryness.

**1.3 Water Analysis**

Samples for chemical analysis were collected in polyethylene carboys. Samples collected for metal content were acidified with 1 ml  $\text{HNO}_3$ . Samples for bacteriological analysis were collected in sterilized glass bottles. Selected physico-chemical and bacteriological parameters have been analyzed for projecting the existing water quality status in the study area. Parameters like temperature, Dissolved Oxygen (DO) and pH were analyzed at the time of sample collection.

The methodology for sample collection and preservation techniques was followed as per the Standard Operating Procedures (SOP) mentioned in **Table-4**.

**TABLE-4**  
**STANDARD OPERATING PROCEDURES (SOP)**  
**FOR WATER AND WASTEWATER SAMPLING**

Parameter	Sample Collection	Sample Size	Storage/ Preservation
pH	Grab sampling Plastic /glass container	50 ml	On site analysis
Electrical	Grab sampling	50 ml	On site parameter

**ANNEXURE-IV**  
**METHODOLOGY FOR SAMPLING AND ANALYSIS**

Parameter	Sample Collection	Sample Size	Storage/ Preservation
Conductivity	Plastic /glass container		
Total suspended solids	Grab sampling Plastic /glass container	100 ml	Refrigeration, can be stored for 7 days
Total Dissolved Solids	Grab sampling Plastic /glass container	100 ml	Refrigeration, can be stored for 7 days
BOD	Grab sampling Plastic /glass container	500 ml	Refrigeration, 48 hrs
Hardness	Grab sampling Plastic /glass container	100 ml	Add HNO <sub>3</sub> to pH<2, refrigeration; 6 months
Chlorides	Grab sampling Plastic /glass container	50 ml	Not required; 28 days
Sulphates	Grab sampling Plastic /glass container	100 ml	Refrigeration; 28 days
Sodium, Potassium	Plastic container	100 ml	Not required; 6 months
Nitrates	Plastic containers	100 ml	Refrigeration; 48 hrs
Fluorides	Plastic containers only	100 ml	Not required; 28 days
Alkalinity	Plastic/ glass containers	100 ml	Refrigeration; 14 days
Ammonia	Plastic/ glass containers	100 ml	Add H <sub>2</sub> SO <sub>4</sub> to pH>2, refrigeration, 28 days
Hexavalent Chromium, Cr <sup>+6</sup>	Plastic/ Glass rinse with 1+1 HNO <sub>3</sub>	100 ml	Grab sample; refrigeration; 24 hrs
Heavy Metals (Hg, Cd, Cr, Cu, Fe, Zn, Pb etc.)	Plastic/ Glass rinse with 1+1 HNO <sub>3</sub>	500 ml	Filter, add HNO <sub>3</sub> to pH>2; Grab sample; 6 months

Source: Standard Methods for the Examination of Water and Wastewater, Published By APHA, AWWA, WEF 19<sup>th</sup> Edition, 1995

### 1.3.1 Analytical Techniques

The analytical techniques used for water and wastewater analysis is given in the **Table-5**.

**TABLE-5**  
**ANALYTICAL TECHNIQUES**  
**FOR WATER AND WASTEWATER ANALYSIS**

Parameter	Method
pH	APHA-4500-H <sup>+</sup>
Colour	APHA-2120 C
Odour	IS: 3025, Part-4
Temperature	APHA-2550 B
Dissolved Oxygen	APHA-4500 O
BOD	APHA-5210 B
Electrical conductivity	APHA-2510 B
Turbidity	APHA-2130 B
Chlorides	APHA-4500 Cl <sup>-</sup>
Fluorides	APHA-4500 F <sup>-</sup>
Total dissolved solids	APHA-2540 C
Total suspended solids	APHA-2540 D
Total hardness	APHA-2340 C
Sulphates	APHA-4500 SO <sub>4</sub> <sup>-2</sup>
Arsenic	APHA-3120 B/ APHA-3114 B/ APHA-3500 As
Calcium	APHA-3120 B/ APHA-3500 Ca
Magnesium	APHA-3120 B/ APHA-3500 Mg
Sodium	APHA-3120 B/ APHA-3500 Na
Potassium	APHA-3120 B/ APHA-3500 K
Manganese	APHA-3120 B/ APHA-3500 Mn
Mercury	APHA-3112 B/ APHA-3500 Hg
Selenium	APHA-3120 B/ APHA-3114 B/ APHA-3500 Se
Lead	APHA-3120 B/ APHA-3500 Pb
Copper	APHA-3120 B/ APHA-3500 Cu

**ANNEXURE-IV**  
**METHODOLOGY FOR SAMPLING AND ANALYSIS**

Parameter	Method
Cadmium	APHA-3120 B/ APHA-3500 Cd
Iron	APHA-3120 B/ APHA-3500 Fe
Zinc	APHA-3120 B/ APHA-3500 Zn
Boron	APHA-4500 B
Coliform organisms	APHA-9215 D
Alkalinity	APHA-2320 B

#### 1.4 Soil Quality

At each location, soil samples were collected from three different depths viz. 30 cm, 60 cm and 90 cm below the surface and are homogenized. This is in line with IS: 2720 & Methods of Soil Analysis, Part-1, 2<sup>nd</sup> edition, 1986 of (American Society for Agronomy and Soil Science Society of America). The homogenized samples were analyzed for physical and chemical characteristics. The soil samples were collected and analyzed once in each season.

The samples have been analyzed as per the established scientific methods for physico-chemical parameters. The heavy metals have been analyzed by using Atomic Absorption Spectrophotometer and Inductive Coupled Plasma Analyzer.

The methodology adopted for each parameter is described in **Table-6**.

**TABLE-6**  
**ANALYTICAL TECHNIQUES FOR SOIL ANALYSIS**

Parameter	Method (ASTM number)
Grain size distribution	Sieve analysis (D 422 – 63)
Textural classification	Chart developed by Public Roads Administration
Infiltration capacity	Infiltrometer
Bulk density	Sand replacement, core cutter
Porosity	Void ratio
Sodium absorption ratio	Flame colourimetric (D 1428-82)
PH	pH meter (D 1293-84)
Electrical conductivity	Conductivity meter (D 1125-82)
Nitrogen	Kjeldahl distillation (D 3590-84)
Phosphorus	Molybdenum blue, colourimetric (D 515-82)
Potassium	Flame photometric (D 1428-82)
Copper	AAS (D 1688-84)
Iron	AAS (D 1068-84)
Zinc	AAS (D 1691-84)
Boron	Surcumin, colourimetric (D 3082-79)
Chlorides	Argentometric (D 512-81 Rev 85)
Fluorides	Fusion followed by distillation and estimation by Ion selective electrode.

#### 1.5 Noise Levels

##### 1.5.1 Method of Monitoring

Noise level monitoring was carried out continuously for 24-hours with one hour interval starting at 0030 hrs to 0030 hrs next day. The noise levels were monitored on working days only and Saturdays, Sundays and public holidays were not monitored. During each hour  $L_{eq}$  were directly computed by the instrument based on the sound pressure levels.  $L_{day}$  ( $L_d$ ),  $L_{night}$  ( $L_n$ ) and  $L_{dn}$  values were computed using corresponding hourly  $L_{eq}$  of day and night respectively. Monitoring was carried out at 'A' response and fast mode.

**ANNEXURE-IV**  
**METHODOLOGY FOR SAMPLING AND ANALYSIS**

*Parameters Measured During Monitoring*

For noise levels measured over a given period of time interval, it is possible to describe important features of noise using statistical quantities. This is calculated using the percent of the time certain noise levels exceeds the time interval. The notation for the statistical quantities of noise levels is described below:

- Hourly  $L_{eq}$  values have been computed by integrating sound level meter.
- $L_{day}$ : As per the CPCB guidelines the day time limit is between 07:00 hours to 22.00 hours as outlined in Ministry of Environment and Forest Notification S.O. 123 (E) dated 14/02/2000.
- $L_{night}$ : As per the CPCB guidelines the night time limit is between 22:00 hours to 07.00 hours as outlined in Ministry of Environment and Forest Notification S.O. 123 (E) dated 14/02/2000.

A rating developed by Environmental Protection Agency, (US-EPA) for specification of community noise from all the sources is the Day-Night Sound Level, ( $L_{dn}$ ).

$L_{dn}$ : It is similar to a 24 hr equivalent sound level except that during night time period (10 pm to 07 am) a 10 dB (A) weighting penalty is added to the instantaneous sound level before computing the 24 hr average. This nighttime penalty is added to account for the fact that noise during night when people usually sleep is judged as more annoying than the same noise during the daytime.

The  $L_{dn}$  for a given location in a community may be calculated from the hourly  $L_{eq}$ 's, by the following equation.

$$L_{dn} = 10 \log \frac{\left[ \sum_{i=1}^{15} 10^{(L_{eq}^i / 10)} + \sum_{i=1}^9 10^{(L_{eq}^i + 10 / 10)} \right]}{24}$$



**Annexure-V**

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**Applicable Environmental Standards**

**ANNEXURE-V**  
**APPLICABLE ENVIRONMENT STANDARDS**

**1.0 Ambient Air Quality Standards**

National Ambient Air Quality Standards for ambient air has been prescribed by the Environment (Protection) Seventh Amendment Rules, 2009 dated 16<sup>th</sup> November 2009. The prescribed Standards are given below in **Table-1**.

**TABLE-1**  
**NATIONAL AMBIENT AIR QUALITY STANDARDS**

Sr. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual*	50	20	-Improved West and Gaeke -ultraviolet fluorescence
		24 Hours**	80	80	
2	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual*	40	30	-Modified Jacob & Hochheiser (Na-Arsenite) -Chemiluminescence
		24 Hours**	80	80	
3	Particulate Matter (Size less than 10µm) or PM <sub>10</sub> µg/m <sup>3</sup>	Annual*	60	60	-Gravimetric -TOEM -Beta attenuation
		24 Hours**	100	100	
4	Particulate Matter (Size less than 2.5µm) or PM <sub>2.5</sub> µg/m <sup>3</sup>	Annual*	40	40	-Gravimetric -TOEM -Beta attenuation
		24 Hours**	60	60	
5	Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>	8 hours **	100	100	-UV photometric -Chemiluminescence -Chemical Method
		1 hour **	180	180	
6	Lead (Pb) µg/m <sup>3</sup>	Annual*	0.50	0.50	-AAS /ICP method after sampling on EPM 2000 or equivalent filter paper -ED-XRF using Teflon filter
		24 Hours**	1.0	1.0	
7	Carbon monoxide (CO) mg/m <sup>3</sup>	8 Hours	02	02	-Non Dispersive Infra Red (NDIR)
		1 Hour**	04	04	
8	Ammonia (NH <sub>3</sub> ) µg/m <sup>3</sup>	Annual*	100	100	-Chemiluminescence -Indophenol blue method
		24 Hours**	400	400	
9	Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>	Annual*	05	05	-Gas chromatography based continuous analyzer -Adsorption and Desorption followed by GC analysis
10	Benzo(α) Pyrene (BaP)- particulate phase only ng/m <sup>3</sup>	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis

**ANNEXURE-V**  
**APPLICABLE ENVIRONMENT STANDARDS**

Sr. No.	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
11	Arsenic (As) ng/m <sup>3</sup>	Annual*	06	06	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni) ng/m <sup>3</sup>	Annual*	20	20	- AAS /ICP method after sampling on EPM 2000 or equivalent filter paper

Note:

\* Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform intervals.

\*\* 24 hourly or 8 hourly or, 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, the may exceed the limits but not on two consecutive days of monitoring.

## 2.0 Ambient Noise Standards

Ambient standards with respect to noise have been notified by the Ministry of Environment and Forests vide gazette notification dated 26th December 1989 (Amended on January, 2010), Noise Pollution (Regulation and Control) Rules, 2010. It is based on the A weighted equivalent noise level (L<sub>eq</sub>). The standards are presented in **Table-2**.

**TABLE-2**  
**AMBIENT NOISE STANDARDS**

Area Code	Category of Area	Noise Levels dB(A) eq	
		Day time*	Night Time
A	Industrial Area	75	70
B	Commercial Area	65	55
C	Residential Area	55	45
D	Silence Zone**	50	40

Note: - 1. Day time shall mean from 6.00 a.m. to 10.00 p.m.

2. Night time shall mean from 10.00 p.m. to 6.00 a.m.

3. Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places or any other area which is declared as such by the competent authority.

4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

\* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A) Leq, denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

Leq: It is an energy mean of the noise level over a specified period.

**ANNEXURE-V**  
**APPLICABLE ENVIRONMENT STANDARDS**

**3.0 Noise Standards for Occupational Exposure**

Noise standards in the work environment are specified by Occupational Safety and Health Administration (OSHA-USA) which are being enforced by Government of India through model rules framed under Factories Act. These are given in **Table-3** below.

**TABLE-3**  
**STANDARDS FOR OCCUPATIONAL EXPOSURE**

Total Time of Exposure per Day in Hours (Continuous or Short term Exposure)	Sound Pressure Level in dB(A)
8	90
6	92
4	95
3	97
2	100
3/2	102
1	105
3/4	107
1/2	110
1/4	115
Never	>115

*Note:*

1. No exposure in excess of 115 dB(A) is to be permitted.
2. For any period of exposure falling in between any figure and the next higher or lower figure as indicated in column (1), the permissible level is to be determined by extrapolation on a proportionate scale.

**4.0 Wastewater Discharge Standards**

The wastewater discharge standards for "discharge on land for irrigation" are stipulated under the Environment Protection Rules (1993) and are given below in **Table-4**.

**TABLE-4**  
**WASTE WATER DISCHARGE STANDARDS**

Sr. No.	List of Parameters	Units	Standard (On Land Irrigation)
1	Color and Odor	--	All efforts should be made to remove color and unpleasant odor as far as practicable.
2	Suspended Solids	Mg/l	200
3	Particle size of Suspended Solids	--	Shall pass 850 micron IS sieve.
4	pH value	--	5.5 to 9.0
5	Temperature	°C	Not specified.
6	Oil and grease, Max.	mg/l	10.0
7	Total residual chlorine, Max.	mg/l	Not specified
8	Ammonical nitrogen (as N), Max.	mg/l	Not specified
9	Total Kjeldhal nitrogen (as N), Max.	mg/l	Not specified
10	Free ammonia (as NH <sub>3</sub> ), Max.	mg/l	Not specified
11	Biochemical oxygen demand (3 days at 27°C), Max.	mg/l	100.0
12	Chemical oxygen demand, Max.	mg/l	Not specified
13	Arsenic (as As), Max.	mg/l	0.2

**ANNEXURE-V**  
**APPLICABLE ENVIRONMENT STANDARDS**

Sr. No.	List of Parameters	Units	Standard (On Land Irrigation)
14	Mercury (as Hg), Max.	mg/l	Not specified
15	Lead (as Pb), Max.	mg/l	Not specified
16	Cadmium (as Cd), Max.	mg/l	Not specified
17	Hexavalent chromium (as Cr <sup>+6</sup> ), Max.	mg/l	Not specified
18	Total chromium (as Cr), Max.	mg/l	Not specified
19	Copper (as Cu), Max.	mg/l	Not specified
20	Zinc (as Zn), Max.	mg/l	Not specified
21	Selenium (as Se), Max.	mg/l	Not specified
22	Nickel (as Ni), Max.	mg/l	Not specified
23	Cyanide (as CN), Max.	mg/l	0.2
24	Fluorides as F	mg/l	Not specified
25	Dissolved phosphates (as P),Max	mg/l	Not Specified
26	Sulphides as (S), Max.	mg/l	Not specified
27	Phenolic compounds (as C <sub>2</sub> H <sub>5</sub> OH), Max.	mg/l	Not specified
28	Radioactive Materials		
a]	Alpha Emitters, Max.	mC/ml	10 <sup>-7</sup>
b]	Beta Emitters, Max.	mC/ml	10 <sup>-7</sup>
29	Bio-assay test	--	90% survival of fish after 96 hours in 100% effluent.
30	Manganese (as Mn)	mg/l	Not specified
31	Iron (as Fe)	mg/l	Not specified
32	Vanadium (as V)	mg/l	Not specified
33	Nitrate nitrogen	mg/l	Not specified

Note: These standards shall be applicable for industries, operations or processes other than those industries, operations or process for which standards have been specified in Schedule of the Environment Protection Rules, 1989.

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**Annexure-VI**  
**Landuse Pattern**

**ANNEXURE-VI**  
**LANDUSE PATTERN**

Sr. No.	Village Name	Area	Forest	Total Irrigated	Un irrigated	Cultivable Waste	Area not for cultivation
<b>0-3 KM DACHEPALLE MANDAL,GUNTUR (DT) ,AP.</b>							
1	RAMAPURAM	1458	77.33	680.27	133.54	18.13	548.73
2	GAMALAPADU	2135	68.90	978.71	122.01	61.78	903.60
	Sub total	3593	146.23	1658.98	255.55	79.91	1452.33
<b>3-7 KM DACHEPALLE MANDAL,GUNTUR (DT) ,AP. 0</b>							
3	PONDUGULA	3373	1010.00	0.00	1867.64	175.00	320.00
4	BHATRUPALEM	2905	2324.00	0.00	43.00	463.00	75.00
5	NADIKUDI	1996	0.00	739.53	259.00	14.85	982.29
<b>3-7 KM NEREDICHARLA MANDAL,GUNTUR (DT) ,AP. 0</b>							
6	MAHANKALI GUEDEM	1005	716.29	0.00	84.98	140.00	63.94
7	RAVIPAHAD	626	201.53	4.04	174.01	75.00	171.58
<b>3-7 KM GURAJALA MANDAL,GUNTUR (DT) ,AP. 0</b>							
8	PULIPADU	2282	0.00	614.62	1273.62	0.00	393.76
	Sub total	12186.68	4251.82	1358.19	3702.25	867.85	2006.57
<b>7-10 KM DACHEPALLE MANDAL,GUNTUR (DT) ,AP. 0</b>							
9	MUTYALAMPADU	575	0.00	0.00	425.00	80.00	70.00
10	DACHEPALLE	3358	1183.00	0.00	1753.00	367.00	55.00
11	ALUGUMALLIPADU	377	0.00	0.00	125.00	40.00	212.00
12	KESANAPALLE	1734	0.00	0.00	1211.67	100.00	422.33
<b>7-10 KM GURAJALA MANDAL,GUNTUR (DT) ,AP.0</b>							
13	DAIDA	2793	882.00	758.09	512.00	500.00	140.95
14	GANGAVARAM	3237	0.00	1436.43	810.93	430.00	559.64
<b>7-10 KM DAMARACHARLA MANDAL,GUNTUR (DT) ,AP.</b>							
15	IRKIGUEDEM	755	0.00	0.00	360.00	40.00	354.80
16	VADAPALLE	2922	478.40	243.60	1200.00	400.00	600.40
<b>7-10 KM NEREDICHARLA MANDAL,GUNTUR (DT) ,AP.</b>							
17	SUNYA PAHAD	650	151.75	48.55	230.00	80.00	140.02
18	JANAPAHAD	2948	1439.87	380.80	586.79	65.00	475.50
	Sub total	19349.52	4135.02	2867.47	7214.39	2102	3030.64
	Grand total	35129.2	8533.07	5884.64	11172.19	3049.76	6489.54

**Annexure-VII**  
**Ambient Air Quality Levels**



**ANNEXURE-VII**  
**AMBIENT AIR QUALITY LEVELS**

AAQ-1 PROPOSED PLANT SITE								
Date of Monitoring	PM2.5 (µg/m³)	PM10 (µg/m³)	SO <sub>2</sub> (µg/m³)	Nox (µg/m³)	CO			HC (µg/m³)
05.03.2012	20.3	49.5	11.2	13.4	251	326	365	112.4
06.03.2012	21.6	48.1	11.9	12.9	235	318	359	119.3
12.03.2012	22.4	46.3	12.5	13.7	288	331	350	115.3
13.03.2012	23.8	47.8	10.9	12.5	249	277	305	120.4
19.03.2012	22.4	45.1	11.3	12.7	246	266	321	122.8
20.03.2012	21.5	42.6	10.7	12.1	291	328	349	131.3
26.03.2012	20.9	41.7	12.5	14.2	228	330	332	120.7
27.03.2012	22.4	44.2	11.7	13.1	265	335	345	119.4
02.04.2012	19.6	45.9	11.2	12.9	293	316	328	113.7
03.04.2012	21.1	47.6	10.8	11.6	279	312	332	122.8
09.04.2012	20.5	48.9	12.7	13.4	283	350	357	120.4
10.04.2012	22.3	49.2	12.1	13.9	273	348	371	129.5
16.04.2012	20.1	51.3	10.9	11.6	283	320	355	126.8
17.04.2012	19.3	53.4	11.6	13.4	298	327	345	122.1
23.04.2012	18.4	55.6	11.9	12.6	266	351	354	119.2
24.04.2012	15.6	58.4	12.8	14.2	286	335	352	114.3
30.04.2012	17.2	60.7	13.9	14.9	281	337	344	118.3
01.05.2012	19.5	61.3	11.8	12.7	276	285	362	112.7
07.05.2012	20.4	63.7	12.9	14.2	275	297	315	115.1
08.05.2012	21.6	64.8	12.2	13.8	289	320	331	118.9
14.05.2012	22.5	65.9	11.5	12.7	282	307	318	120.4
15.05.2012	20.2	66.1	10.7	11.6	269	343	365	122.7
21.05.2012	18.5	67.3	12.3	13.2	289	346	368	125.8
22.05.2012	15.9	64.8	11.9	12.8	298	312	337	120.4
28.05.2012	16.5	62.2	12.8	13.7	280	319	355	117.3
29.05.2012	17.3	58.8	10.7	11.8	310	298	321	114.2
Max	23.8	67.3	13.9	14.9	371			131.3
Min	15.6	41.7	10.7	11.6	228			112.4
Average	20.1	54.3	11.8	13.1	313			119.9
98 % tile	23.2	66.7	13.4	14.6	366			130.4
AAQ-2 KOTAYYANAGARAM								
Date of Monitoring	PM2.5 (µg/m³)	PM10 (µg/m³)	SO <sub>2</sub> (µg/m³)	Nox (µg/m³)	CO			HC (µg/m³)
01.03.2012	11.9	29.6	8.6	9.8	253	348	365	101.6
07.03.2012	11.4	28.3	8.9	9.4	317	330	360	102.5
08.03.2012	12.3	27.8	9.3	10.6	307	349	355	104.9
14.03.2012	13.4	29.2	9.6	9.3	227	328	350	103.2
15.03.2012	14.8	31.3	10.2	11.6	241	344	367	100.5
21.03.2012	12.6	33.6	8.8	9.6	287	356	366	99.5
22.03.2012	11.8	35.9	7.9	9.2	249	360	368	98.4
28.03.2012	12.6	36.5	8.6	9.5	261	221	337	99.9
29.03.2012	13.7	38.4	9.5	10.9	265	331	359	100.7
04.04.2012	15.2	40.3	9.1	10.2	253	321	345	105.9
05.04.2012	16.4	42.8	8.4	9.7	297	340	352	109.5
11.04.2012	17.1	43.9	8.8	10.1	245	318	325	103.4
12.04.2012	15.2	41.2	9.3	10.9	253	328	344	107.2
18.04.2012	13.6	40.9	7.9	8.5	314	331	369	101.3
19.04.2012	12.7	38.2	8.9	10.3	271	350	360	99.7
25.04.2012	11.4	35.6	9.1	10.9	244	330	364	105.3
26.04.2012	12.8	33.2	8.4	9.6	247	328	358	104.5
02.05.2012	13.9	31.2	7.9	9.9	258	271	348	102.3
03.05.2012	15.1	29.5	8.6	10.1	220	325	329	100.8
09.05.2012	16.3	27.8	9.1	10.5	230	331	356	98.6
16.05.2012	14.9	28.6	7.9	10.2	288	350	362	99.1
17.05.2012	15.2	30.4	8.1	9.6	273	328	359	98.6
23.05.2012	14.5	33.8	8.9	10.9	267	321	365	102.3
24.05.2012	15.6	36.1	9.6	10.5	251	328	349	103.5
30.05.2012	13.8	38.6	8.4	10.9	275	324	357	101.2
31.05.2012	11.6	40.5	7.9	9.6	280	321	365	105.3
Max	17.1	43.9	10.2	11.6	369			109.5
Min	11.4	27.8	7.9	8.5	220			98.4
Average	13.8	34.7	8.8	10.1	316			102.3
98 % tile	16.8	43.4	9.9	11.3	367			108.4

**ANNEXURE-VII**  
**AMBIENT AIR QUALITY LEVELS**

AAQ-3 GAMALAPADU								
Date of Monitoring	PM2.5 (µg/m <sup>3</sup> )	PM10 (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	Nox (µg/m <sup>3</sup> )	CO			HC (µg/m <sup>3</sup> )
05.03.2012	13.2	29.4	8.9	11.1	285	356	367	111.4
06.03.2012	12.8	31.5	9.5	11.6	318	330	342	109.5
12.03.2012	12.1	33.2	9.9	10.9	310	359	367	107.2
13.03.2012	13.5	35.8	10.2	12.1	274	326	332	102.4
19.03.2012	13.9	36.1	9.1	10.6	277	343	361	101.5
20.03.2012	15.2	38.2	10.8	11.9	285	340	372	109.3
26.03.2012	16.4	39.1	9.2	10.8	291	327	347	110.4
27.03.2012	16.9	40.6	9.9	11.2	294	358	362	105.4
02.04.2012	17.7	42.7	10.1	11.6	286	335	350	108.7
03.04.2012	16.1	43.1	9.2	10.4	287	326	355	106.2
09.04.2012	15.4	45.8	8.6	9.9	280	353	375	101.7
10.04.2012	13.2	46.7	8.1	10.3	266	291	350	103.7
16.04.2012	12.4	44.2	9.2	11.4	295	327	349	102.1
17.04.2012	11.9	41.9	9.9	11.3	311	329	362	105.6
23.04.2012	13.2	38.6	8.3	10.4	287	293	315	104.6
24.04.2012	14.1	36.4	8.7	10.9	288	311	322	108.9
30.04.2012	15.8	33.6	9.2	11.9	338	346	370	110.4
01.05.2012	16.2	31.2	9.8	10.8	301	344	348	103.4
07.05.2012	14.3	34.6	10.1	12.7	298	328	338	101.1
08.05.2012	12.7	36.8	8.4	9.6	291	341	351	105.7
14.05.2012	11.9	38.3	8.1	9.9	279	329	349	106.7
15.05.2012	12.8	40.2	9.2	10.8	255	323	348	101.9
21.05.2012	13.4	42.7	9.6	10.5	283	291	315	107.6
22.05.2012	15.3	43.1	10.2	11.2	297	328	336	105.7
28.05.2012	17.1	44.3	8.6	9.9	288	317	332	103.7
29.05.2012	14.2	41.5	8.2	9.9	297	331	345	106.9
Max	17.7	46.7	10.8	12.7	375			111.4
Min	11.9	29.4	8.1	9.6	255			101.1
Average	14.3	38.8	9.3	10.9	323			105.8
98 % tile	17.4	46.3	10.5	12.4	371			110.9
AAQ-4 MADINAPADU								
Date of Monitoring	PM2.5 (µg/m <sup>3</sup> )	PM10 (µg/m <sup>3</sup> )	SO <sub>2</sub> (µg/m <sup>3</sup> )	Nox (µg/m <sup>3</sup> )	CO			HC (µg/m <sup>3</sup> )
01.03.2012	14.3	41.8	9.8	10.6	291	317	328	114.20
07.03.2012	15.6	38.6	10.6	11.2	238	314	362	116.10
08.03.2012	16.3	40.1	9.6	11.9	280	326	337	109.30
14.03.2012	17.1	42.3	10.9	12.1	310	327	339	104.30
15.03.2012	18.4	44.9	9.6	10.6	316	332	352	108.30
21.03.2012	16.8	46.3	9.2	10.9	315	341	360	110.70
22.03.2012	15.1	47.6	8.9	11.1	296	319	362	112.40
28.03.2012	14.2	48.4	9.2	10.7	284	293	307	118.70
29.03.2012	13.5	50.8	9.9	11.9	298	312	337	112.40
04.04.2012	12.3	48.2	10.4	12.1	238	350	367	111.30
05.04.2012	13.6	47.1	11.5	12.9	261	358	368	110.10
11.04.2012	14.2	45.3	10.1	11.5	316	326	335	106.70
12.04.2012	15.1	44.2	9.2	10.3	279	285	316	103.80
18.04.2012	16.7	41.8	9.9	11.9	283	297	310	106.80
19.04.2012	17.2	40.5	10.1	11.1	311	315	319	109.30
25.04.2012	15.4	38.1	10.8	12.1	316	361	368	107.30
26.04.2012	16.6	33.1	9.4	10.3	328	335	346	111.80
02.05.2012	15.1	35.6	10.7	11.9	319	350	360	114.30
03.05.2012	14.3	38.3	9.6	11.1	318	330	351	116.80
09.05.2012	12.6	39.1	9.1	10.8	260	288	329	114.90
16.05.2012	15.8	42.3	8.9	11.4	284	297	330	111.70
17.05.2012	16.4	45.2	9.5	11.9	318	343	358	108.30
23.05.2012	17.2	46.8	9.9	10.6	326	330	344	107.10
24.05.2012	15.3	44.1	10.2	11.7	298	326	345	104.30
30.05.2012	13.2	41.8	10.8	12.3	260	346	351	109.60
31.05.2012	14.5	42.3	9.5	10.9	271	361	371	112.80
Max	18.4	50.8	11.5	12.9	371			118.7
Min	12.3	33.1	8.9	10.3	238			103.8
Average	15.3	42.9	9.9	11.4	322			110.5
98 % tile	17.8	49.6	11.2	12.6	368			117.8

**ANNEXURE-VII**  
**AMBIENT AIR QUALITY LEVELS**

AAQ-5 SHRINAGAR								
Date of Monitoring	PM2.5 (µg/m³)	PM10 (µg/m³)	SO <sub>2</sub> (µg/m³)	Nox (µg/m³)	CO			HC (µg/m³)
05.03.2012	15.9	49.2	11.3	12.8	267	276	331	112.5
06.03.2012	17.2	52.3	11.9	13.4	289	307	315	115.6
12.03.2012	16.3	53.6	12.4	13.9	290	307	320	117.3
13.03.2012	14.8	55.4	12.6	13.5	258	287	331	113.9
19.03.2012	17.3	58.6	13.5	14.9	251	326	365	110.8
20.03.2012	16.2	53.1	11.3	12.6	235	318	359	109.9
26.03.2012	18.6	55.8	10.9	13.1	288	331	350	115.6
27.03.2012	20.4	58.6	10.2	11.9	249	277	305	117.3
02.04.2012	21.2	60.3	10.6	12.5	246	266	321	119.3
03.04.2012	22.2	61.8	11.8	12.9	275	327	348	112.8
09.04.2012	20.4	63.1	12.5	13.6	321	349	358	117.3
10.04.2012	18.3	60.2	10.3	11.9	319	324	345	121.3
16.04.2012	16.4	58.3	11.6	12.4	324	348	352	122.8
17.04.2012	17.2	55.2	12.4	13.6	299	326	335	124.6
23.04.2012	15.4	52.7	12.9	14.1	291	328	349	127.3
24.04.2012	14.8	51.6	11.6	13.4	228	330	332	128.5
30.04.2012	15.1	50.2	10.2	11.8	265	335	345	121.4
01.05.2012	15.9	47.6	10.9	12.3	287	349	369	122.8
07.05.2012	18.2	45.2	11.6	12.9	240	351	357	125.6
08.05.2012	19.6	42.3	11.9	13.7	248	358	372	123.4
14.05.2012	20.2	40.5	12.2	13.1	287	348	351	126.5
15.05.2012	21.1	43.6	12.8	14.3	263	287	331	122.4
21.05.2012	19.9	45.8	11.9	13.8	271	349	368	120.7
22.05.2012	17.5	49.2	12.4	14.1	314	324	344	119.8
28.05.2012	15.5	52.4	11.8	13.1	299	316	332	115.3
29.05.2012	19.7	55.3	10.9	11.9	271	317	329	114.2
Max	22.2	63.1	13.5	14.9	372			128.5
Min	14.8	40.5	10.2	11.8	228			109.9
Average	17.9	52.8	11.7	13.1	315			119.2
98 % tile	21.7	62.5	13.2	14.6	369			127.9
AAQ-6 RAMAPURAM								
Date of Monitoring	PM2.5 (µg/m³)	PM10 (µg/m³)	SO <sub>2</sub> (µg/m³)	Nox (µg/m³)	CO			HC (µg/m³)
01.03.2012	15.6	38.6	9.9	11.4	285	297	350	109.1
07.03.2012	16.8	39.1	10.4	12.1	271	319	362	115.6
08.03.2012	18.2	36.6	10.8	11.9	291	298	332	114.7
14.03.2012	19.3	38.2	11.3	12.7	285	328	362	110.3
15.03.2012	20.3	41.3	11.7	12.9	298	321	355	118.3
21.03.2012	17.2	44.6	12.4	13.7	299	328	347	119.2
22.03.2012	15.4	46.8	11.1	12.8	286	299	360	120.4
28.03.2012	13.4	48.3	10.5	11.8	281	331	351	121.8
29.03.2012	14.1	49.1	10.1	11.1	285	311	331	119.3
04.04.2012	15.9	53.7	9.9	12.8	315	357	362	117.2
05.04.2012	16.7	56.2	9.4	11.6	287	318	351	113.4
11.04.2012	18.4	53.1	10.2	11.4	303	338	348	111.2
12.04.2012	19.3	52.4	10.6	12.8	287	320	329	108.3
18.04.2012	18.4	50.6	11.2	12.1	286	321	345	102.3
19.04.2012	17.3	47.4	10.8	12.5	279	331	347	107.3
25.04.2012	16.8	41.3	9.3	11.6	300	329	341	105.1
26.04.2012	14.6	44.9	10.5	11.9	284	334	349	109.3
02.05.2012	15.7	43.1	11.1	12.6	305	312	328	111.7
03.05.2012	13.4	41.4	9.6	11.7	289	321	332	116.8
09.05.2012	14.8	45.7	9.9	10.8	273	317	337	118.3
16.05.2012	16.2	47.1	10.7	11.9	283	293	328	119.4
17.05.2012	15.6	52.3	11.3	12.6	276	327	339	114.2
23.05.2012	16.9	44.7	10.9	11.8	296	318	332	111.6
24.05.2012	17.2	53.4	10.2	11.4	290	328	332	105.3
30.05.2012	18.7	54.7	9.9	11.3	307	317	350	106.7
31.05.2012	19.1	54.9	10.1	12.4	300	318	322	104.2
Max	20.3	56.2	12.4	13.7	362			121.8
Min	13.4	36.6	9.3	10.8	273			102.3
Average	16.7	46.9	10.5	12.1	318			112.7
98 % tile	19.8	55.6	12.1	13.3	361			121.1

**ANNEXURE-VII**  
**AMBIENT AIR QUALITY LEVELS**

AAQ-7 PONDUGALA								
Date of Monitoring	PM2.5 (µg/m³)	PM10 (µg/m³)	SO <sub>2</sub> (µg/m³)	Nox (µg/m³)	CO			HC (µg/m³)
05.03.2012	15.9	46.1	10.8	11.5	280	292	318	111.4
06.03.2012	16.2	49.9	11.2	12.6	261	286	329	116.8
12.03.2012	18.3	50.1	10.8	11.9	278	296	317	111.3
13.03.2012	19.7	45	10.1	11.2	245	251	328	108.4
19.03.2012	20.5	42.3	9.7	10.4	258	270	328	109.5
20.03.2012	21.6	41.3	9.9	11.6	273	280	301	111.2
26.03.2012	18.4	43.7	11.2	12.3	249	266	328	115.6
27.03.2012	16.3	45.6	11.7	12.9	301	330	340	109.8
02.04.2012	15.1	47.6	10.3	11.6	276	350	355	119.4
03.04.2012	14.1	49.4	9.8	11.9	269	276	354	121.3
09.04.2012	16.7	45.3	10.6	12.4	289	307	329	124.3
10.04.2012	15.5	46.6	11.2	12.9	303	331	338	120.7
16.04.2012	18.3	48.3	11.9	13.4	285	317	349	119.5
17.04.2012	16.9	51.6	12.8	14.3	288	314	332	116.1
23.04.2012	17.2	55.2	11.3	12.8	299	326	340	114.2
24.04.2012	19.3	58.5	10.7	12.4	283	327	344	111.3
30.04.2012	20.4	39.4	10.1	11.9	288	333	357	118.3
01.05.2012	18.4	42.6	9.9	11.2	284	334	338	119.7
07.05.2012	16.4	45.1	10.6	12.1	287	335	345	120.4
08.05.2012	17.5	48.2	10.4	11.3	278	340	352	121.3
14.05.2012	15.8	52.1	11.3	12.9	292	326	339	122.7
15.05.2012	16.4	55.3	11.8	12.5	279	344	351	120.4
21.05.2012	18.2	57.1	10.1	11.7	267	327	340	118.3
22.05.2012	17.2	54.2	11.4	12.3	300	350	362	114.6
28.05.2012	14.9	51.6	10.3	11.9	290	353	355	112.3
29.05.2012	16.9	54.3	9.7	11.2	278	345	354	115.2
Max	21.6	58.5	12.8	14.3	362			124.3
Min	14.1	39.4	9.7	10.4	245			108.4
Average	17.4	48.7	10.8	12.1	313			116.3
98 % tile	21.1	57.8	12.4	13.9	356			123.5
AAQ-8 SRINIVASAPURAM								
Date of Monitoring	PM2.5 (µg/m³)	PM10 (µg/m³)	SO <sub>2</sub> (µg/m³)	Nox (µg/m³)	CO			HC (µg/m³)
01.03.2012	13.8	39.3	8.5	9.5	286	328	351	105.90
07.03.2012	14.5	35.3	10.2	12.1	280	358	372	111.30
08.03.2012	12.7	38.1	9.4	11.5	300	350	355	113.20
14.03.2012	15.6	40.5	8.9	9.9	303	335	351	108.30
15.03.2012	13.2	42.8	10.2	11.8	290	337	350	102.80
21.03.2012	16.5	46.3	9.2	11.1	376	310	325	111.80
22.03.2012	15.3	48.2	9.6	10.6	284	289	321	107.60
28.03.2012	17.4	47.1	10.1	12.1	297	344	352	104.30
29.03.2012	16.9	49.3	9.9	11.6	257	328	350	102.80
04.04.2012	14.2	50.1	9.2	10.7	298	349	362	105.60
05.04.2012	13.6	52.5	8.5	10.1	310	347	358	109.10
11.04.2012	12.7	53.7	8.9	10.6	308	331	349	104.30
12.04.2012	14.1	50.2	9.3	11.3	260	271	321	103.80
18.04.2012	14.9	47.3	9.7	10.7	281	328	341	102.70
19.04.2012	15.6	43.9	10.1	11.3	289	331	351	101.70
25.04.2012	16.8	39.4	8.9	10.5	270	281	354	108.60
26.04.2012	18.2	38.6	9.4	11.4	294	347	360	110.80
02.05.2012	19.1	35.9	8.6	10.6	318	348	362	111.90
03.05.2012	17.5	36.4	9.4	10.9	288	349	359	108.30
09.05.2012	16.4	39.2	10.2	11.3	297	328	345	101.70
16.05.2012	13.2	36.1	9.6	10.7	271	344	364	104.50
17.05.2012	12.7	38.5	8.8	9.9	314	356	364	109.30
23.05.2012	15.5	39.6	9.4	10.5	271	360	375	104.80
24.05.2012	16.2	41.5	9.9	11.3	244	327	369	106.70
30.05.2012	14.1	44.3	10.4	12.1	226	314	345	108.20
31.05.2012	16.9	46.8	11.1	13.5	287	317	327	109.60
Max	19.1	53.7	11.1	13.5	376			113.2
Min	12.7	35.3	8.5	9.5	226			101.7
Average	15.3	43.1	9.5	11.1	323			106.9
98 % tile	18.7	53.1	10.8	12.8	372			112.6

**ANNEXURE-VII**  
**AMBIENT AIR QUALITY LEVELS**

<b>AAQ-1 SHRINAGAR</b>				
<b>Date of Monitoring</b>	<b>PM2.5 (µg/m3)</b>	<b>PM10 (µg/m3)</b>	<b>SO2 (µg/m3)</b>	<b>Nox (µg/m3)</b>
01.06.2012	15.6	52.1	9.5	10.6
02.06.2012	14.3	54.7	9.9	11.7
08.06.2012	13.9	55.3	8.5	9.6
09.06.2012	13.1	58.6	8.1	10.2
15.06.2012	13.5	60.4	8.7	10.9
16.06.2012	12.9	55.1	9.4	11.4
22.06.2012	12.5	52.4	9.8	12.3
23.06.2012	13.2	49.3	10.3	12.8
29.06.2012	13.9	44.3	11.1	13.4
30.06.2012	14.2	46.8	11.9	14.2
06.07.2012	14.6	47.2	10.2	11.9
07.07.2012	14.1	44.1	9.6	10.6
13.07.2012	13.8	41.9	9.1	11.3
14.07.2012	12.5	40.2	8.3	9.6
20.07.2012	13.7	37.6	8.8	10.8
21.07.2012	12.9	33.7	9.5	11.2
27.07.2012	13.1	38.1	9.9	12.1
28.07.2012	14.8	41.2	10.3	11.9
<b>Max</b>	<b>15.6</b>	<b>60.4</b>	<b>11.9</b>	<b>14.2</b>
<b>Min</b>	<b>12.5</b>	<b>33.7</b>	<b>8.1</b>	<b>9.6</b>
<b>Average</b>	<b>13.7</b>	<b>47.4</b>	<b>9.6</b>	<b>11.5</b>
<b>98 % tile</b>	<b>15.3</b>	<b>59.8</b>	<b>11.6</b>	<b>13.9</b>
<b>AAQ-2 RAMAPURAM</b>				
<b>Date of Monitoring</b>	<b>PM2.5 (µg/m3)</b>	<b>PM10 (µg/m3)</b>	<b>SO2 (µg/m3)</b>	<b>Nox (µg/m3)</b>
01.06.2012	11.8	51.3	7.2	9.8
02.06.2012	11.2	53.2	7.6	9.4
08.06.2012	10.9	50.7	8.6	9.9
09.06.2012	10.1	48.2	8.1	9.3
15.06.2012	10.6	45.3	7.4	8.9
16.06.2012	11.2	41.2	7.8	9.6
22.06.2012	11.8	39.5	7.2	9.2
23.06.2012	12.1	35.2	6.9	9.5
29.06.2012	12.9	31.7	7.3	8.6
30.06.2012	11.3	29.4	7.7	9.7
06.07.2012	11.8	28.5	8.1	10.2
07.07.2012	10.6	30.3	8.6	9.4
13.07.2012	10.1	33.2	9.7	10.9
14.07.2012	11.8	35.6	8.4	9.9
20.07.2012	10.4	39.4	8.1	9.6
21.07.2012	11.4	41.3	7.3	9.4
27.07.2012	11.9	45.9	7.7	8.6
28.07.2012	10.8	49.2	8.9	9.9
<b>Max</b>	<b>12.9</b>	<b>53.2</b>	<b>9.7</b>	<b>10.9</b>
<b>Min</b>	<b>10.1</b>	<b>28.5</b>	<b>6.9</b>	<b>8.6</b>
<b>Average</b>	<b>11.3</b>	<b>40.5</b>	<b>7.9</b>	<b>9.5</b>
<b>98 % tile</b>	<b>12.6</b>	<b>52.6</b>	<b>9.4</b>	<b>10.7</b>

**ANNEXURE-VII**  
**AMBIENT AIR QUALITY LEVELS**

<b>AAQ-3 BATRUPALEM</b>				
<b>Date of Monitoring</b>	<b>PM2.5 (µg/m3)</b>	<b>PM10 (µg/m3)</b>	<b>SO2 (µg/m3)</b>	<b>Nox (µg/m3)</b>
01.06.2012	10.5	31.2	7.2	8.6
02.06.2012	10.1	35.6	7.9	9.4
08.06.2012	11.3	37.2	8.1	9.9
09.06.2012	9.9	39.4	7.5	8.4
15.06.2012	10.7	41.6	8.2	9.7
16.06.2012	9.4	44.8	7.6	9.2
22.06.2012	9.9	45.6	7.1	8.3
23.06.2012	10.3	48.3	6.9	8.4
29.06.2012	10.5	49.3	6.5	8.1
30.06.2012	11.2	50.2	7.1	9.2
06.07.2012	11.8	48.2	7.5	9.9
07.07.2012	10.2	44.1	7.9	10.4
13.07.2012	9.4	40.3	8.2	9.7
14.07.2012	9.9	36.8	7.8	9.2
20.07.2012	10.4	33.4	8.9	9.9
21.07.2012	10.8	29.6	8.1	9.3
27.07.2012	9.4	26.3	7.6	9.1
28.07.2012	9.8	24.4	7.1	8.4
<b>Max</b>	<b>11.8</b>	<b>50.2</b>	<b>8.9</b>	<b>10.4</b>
<b>Min</b>	<b>9.4</b>	<b>24.4</b>	<b>6.5</b>	<b>8.1</b>
<b>Average</b>	<b>10.3</b>	<b>39.2</b>	<b>7.6</b>	<b>9.2</b>
<b>98 % tile</b>	<b>11.6</b>	<b>49.9</b>	<b>8.7</b>	<b>10.2</b>
<b>AAQ-4 GAMALAPADU</b>				
<b>Date of Monitoring</b>	<b>PM2.5 (µg/m3)</b>	<b>PM10 (µg/m3)</b>	<b>SO2 (µg/m3)</b>	<b>Nox (µg/m3)</b>
01.06.2012	9.2	31.2	8.6	10.6
02.06.2012	9.9	33.6	9.2	11.2
08.06.2012	9.4	36.8	9.6	11.9
09.06.2012	8.9	39.4	10.5	12.5
15.06.2012	9.6	41.3	9.5	10.6
16.06.2012	10.7	42.9	9.1	10.9
22.06.2012	9.7	39.4	8.6	11.1
23.06.2012	9.2	45.8	8.1	10.7
29.06.2012	9.7	41.7	7.4	9.6
30.06.2012	9.1	37.2	7.9	10.4
06.07.2012	8.9	33.2	7.2	9.1
07.07.2012	9.3	30.4	8.3	10.7
13.07.2012	9.6	28.6	8.9	11.2
14.07.2012	9.9	25.3	9.2	10.6
20.07.2012	9.4	24.1	9.6	11.6
21.07.2012	9.7	22.3	8.8	10.7
27.07.2012	9.1	20.2	9.4	10.4
28.07.2012	9.9	23.9	8.6	9.6
<b>Max</b>	<b>10.7</b>	<b>45.8</b>	<b>10.5</b>	<b>12.5</b>
<b>Min</b>	<b>8.9</b>	<b>20.2</b>	<b>7.2</b>	<b>9.1</b>
<b>Average</b>	<b>9.5</b>	<b>33.2</b>	<b>8.8</b>	<b>10.7</b>
<b>98 % tile</b>	<b>10.4</b>	<b>44.8</b>	<b>10.2</b>	<b>12.3</b>

**Annexure-VIII**  
**Ecological Details**

**ANNEXURE-VIII**  
**ECOLOGICAL DETAILS**

**TABLE-1**  
**FLORISTIC COMPOSITION IN STUDY AREA**

Sr. No.	Technical Name	Family	Life Form
<b>I. Agricultural Crops</b>			
1	<i>Sorghum vulgare</i>	Poaceae	Hemicryptophyte
2	<i>Triticum vulgare</i>	Poaceae	Hemicryptophyte
3	<i>Zea mays</i>	Poaceae	Hemicryptophyte
4	<i>Oryza sativa</i>	Poaceae	Hemicryptophyte
5	<i>Pennisetum typhoideum</i>	Poaceae	Hemicryptophyte
<b>II. Commercial Crops (including Vegetables)</b>			
6	<i>Abelmoschus indicus</i>	Malvaceae	Therophyte
7	<i>Allium cepa</i>	Liliaceae	Geophyte
8	<i>Allium sativum</i>	Liliaceae	Geophyte
9	<i>Annona squamosa</i>	Annonaceae	Phanerophyte
10	<i>Arachis hypogea</i>	Fabaceae	Geophyte
11	<i>Brassica oleracea var botrydis</i>	Cruciferae	Therophyte
12	<i>Brassica oleracea var capitata</i>	Cruciferae	Therophyte
13	<i>Cajanus cajan</i>	Fabaceae	Therophyte
14	<i>Carica papaya</i>	Caricaceae	Therophyte
15	<i>Catharanthes pusillus</i>	Compositae	Therophyte
16	<i>Cicer arietinum</i>	Fabaceae	Hemicryptophyte
17	<i>Citrus lemon</i>	Rutaceae	Therophyte
18	<i>Colocasia esculenta</i>	Areaceae	Geophyte
19	<i>Coreandrum sativum</i>	Umbelliferae	Hemicryptophyte
20	<i>Daucus carota</i>	Umbelliferae	Geophyte
21	<i>Cocos nucifera</i>	Palmae	Phanerophyte
22	<i>Gossypium sp</i>	Malvaceae	Therophyte
23	<i>Lycopersicum esculentus</i>	Solanaceae	Therophyte
24	<i>Mangifera indica</i>	Anacardiaceae	Phanerophyte
25	<i>Memordia charantia</i>	Cucurbitaceae	Therophyte
26	<i>Pisum sativum</i>	Fabaceae	Therophyte
27	<i>Psidium guava</i>	Myrtaceae	Phanerophyte
28	<i>Raphanus sativa</i>	Cruciferae	Geophyte
29	<i>Solanum tuberosum</i>	Solanaceae	Geophyte
30	<i>Trichosanthes anguina</i>	Cucurbitaceae	Therophyte
<b>III. Plantations</b>			
31	<i>Acacia nilotica</i>	Mimosaceae	Phanerophyte
32	<i>Albizia lebbeck</i>	Mimosaceae	Phanerophyte
33	<i>Albizia odoratissima</i>	Mimosaceae	Phanerophyte
34	<i>Albizia procera</i>	Mimosaceae	Phanerophyte
35	<i>Azadirachta indica</i>	Meliaceae	Phanerophyte
36	<i>Bauhinia variegata</i>	Caesalpinaceae	Phanerophyte
37	<i>Bauhinia purpuria</i>	Caesalpinaceae	Phanerophyte
38	<i>Bambusa arundanacea</i>	Poaceae	Phanerophyte
39	<i>Butea superba</i>	Caesalpinaceae	Phanerophyte
40	<i>Butea frondosa</i>	Caesalpinaceae	Phanerophyte
41	<i>Eucalyptus sp</i>	Myrtaceae	Phanerophyte
42	<i>Casuarina equisetifolia</i>	Casuarinaceae	Phanerophyte
43	<i>Delonix regia</i>	Caesalpinaceae	Phanerophyte
44	<i>Leucena leucophloe</i>	Caesalpinaceae	Phanerophyte
<b>IV. Natural Vegetation/Forest Type</b>			
45	<i>Abrus precatorius</i>	Fabaceae	Therophyte
46	<i>Abutilon indicum</i>	Malvaceae	Phanerophyte
47	<i>Acacia nilotica</i>	Mimosaceae	Phanerophyte
48	<i>Acacia Arabica</i>	Mimosaceae	Phanerophyte
49	<i>Acacia auriculiformis</i>	Mimosaceae	Phanerophyte
50	<i>Acacia horrida</i>	Mimosaceae	Phanerophyte
51	<i>Acacia leucophloe</i>	Mimosaceae	Phanerophyte
52	<i>Acacia Senegal</i>	Mimosaceae	Phanerophyte
53	<i>Acalypha ciliata</i>	Mimosaceae	Phanerophyte
54	<i>Achyranthes aspera</i>	Amaranthaceae	Therophyte
55	<i>Aegle marmelos</i>	Rutaceae	Phanerophyte



**ANNEXURE-VIII  
ECOLOGICAL DETAILS**

Sr. No.	Technical Name	Family	Life Form
56	<i>Aerva lanata</i>	Compositae	Phanerophyte
57	<i>Agave wightii</i>	Agavaceae	Phanerophyte
58	<i>Ageratum conyzoides</i>	Compositae	Therophyte
59	<i>Ailanthus excelsa</i>	Simaroubaceae	Phanerophyte
60	<i>Alangium salivus</i>	Alangiceae	Phanerophyte
61	<i>Albizia odoratissima</i>	Caesalpinaceae	Phanerophyte
62	<i>Albizia procera</i>	Caesalpinaceae	Phanerophyte
63	<i>Aloe barbedensis</i>	Agavaceae	Geophyte
64	<i>Alternanthera sessilis</i>	Amaranthaceae	Therophyte
65	<i>Alysicarpus hamosus</i>	Fabaceae	Therophyte
66	<i>Ammania baccafera</i>	Lytharaceae	Therophyte
67	<i>Argemone mexicana</i>	Papevaraceae	Phanerophyte
68	<i>Asparagaus racemosus</i>	Liliaceae	Therophyte
69	<i>Atalantia monophylla</i>	Rutaceae	Phanerophyte
70	<i>Atalantia monophylla</i>	Rutaceae	Therophyte
71	<i>Balanites aegyptica</i>	Simaroubaceae	Phanerophyte
72	<i>Barleria prionoites</i>	Acanthaceae	Therophyte
73	<i>Blepharis asperima</i>	Acanthaceae	Phanerophyte
74	<i>Blepharis madaraspatis</i>	Acanthaceae	Therophyte
75	<i>Blumea lacera</i>	Compositae	Therophyte
76	<i>Boerheavia diffusa</i>	Nyctaginaceae	Therophyte
77	<i>Bombax ceiba</i>	Bombacaceae	Phanerophyte
78	<i>Borreria stricta</i>	Rubiaceae	Therophyte
79	<i>Brassica camprestis</i>	Cruciferae	Therophyte
80	<i>Caesalpina pulcherima</i>	Caesalpinaceae	Phanerophyte
81	<i>Calotropis procera</i>	Asclpiadaceae	Phanerophyte
82	<i>Canna indicda</i>	Cannaceae	Therophyte
83	<i>Capparis aphylla</i>	Capparidaceae	Therophyte
84	<i>Capparis deciduas</i>	Capparidaceae	Phanerophyte
85	<i>Capsicum annulatum</i>	Solanaceae	Therophyte
86	<i>Careya arborea</i>	Palmae	Phanerophyte
87	<i>Carissa carandus</i>	Apocyanaceae	Phanerophyte
88	<i>Carissa spinarium</i>	Apocyanaceae	Phanerophyte
89	<i>Cassia auriculata</i>	Caesalpinaceae	Therophyte
90	<i>Cassia occidentalis</i>	Caesalpinaceae	Therophyte
91	<i>Cassia tora</i>	Caesalpinaceae	Phanerophyte
92	<i>Ceiba pentandra</i>	Bombacaceae	Phanerophyte
93	<i>Cestrum diurnum</i>	Rubiaceae	Theophyte
94	<i>Cestrum noctrunum</i>	Rubiaceae	Therophyte
95	<i>Chrysanthemum sp</i>	Compositae	Therophyte
96	<i>Cissus quadrangularis</i>	Vitaceae	Therophyte
97	<i>Citrus media</i>	Rutaceae	Phanerophyte
98	<i>Cleome gynandra</i>	Capparidaceae	Therophyte
99	<i>Cleome viscose</i>	Capparidaceae	Therophyte
100	<i>Commelina benghalensis</i>	Commelinaceae	Therophyte
101	<i>Cordia dichotoma</i>	Rubiaceae	Phanerophyte
102	<i>Cordia rothri</i>	Rubiaceae	Phanerophyte
103	<i>Crataeva adsoni</i>	Capparidaceae	Phanerophyte
104	<i>Crotalaria burhia</i>	Fabaceae	Therophyte
105	<i>Crotalaria medicagenia</i>	Fabaceae	Therophyte
106	<i>Croton bonplandinum</i>	Amaryllidaceae	Therophyte
107	<i>Cryptostegia grandiflora</i>	Orchidaceae	Hemicryptophyte
108	<i>Cuscuta reflexa</i>	Cuscutaceae	Epiphyte
109	<i>Datura alba</i>	Solanaceae	Therophyte
110	<i>Datura metal</i>	Solanaceae	Therophyte
111	<i>Desmodium triflorum</i>	Asclepiadaceae	Therophyte
112	<i>Echinops echinatus</i>	Compositae	Therophyte
113	<i>Eclipta alba</i>	Compositae	Heliophyte
114	<i>Eclipta prostrate</i>	Compositae	Hemicryptophyte
115	<i>Emblica officinale</i>	Euphorbiaceae	Phanerophyte
116	<i>Emilia lajerium</i>	Compositae	Hemicryptophyte
117	<i>Erythrina indica</i>	Papilionaceae	Phanerophyte
118	<i>Euphorbia acaulis</i>	Euphorbiaceae	Therophyte

**ANNEXURE-VIII**  
**ECOLOGICAL DETAILS**

Sr. No.	Technical Name	Family	Life Form
119	<i>Euphorbia antiquorum</i>	Euphorbiaceae	Phanerophyte
120	<i>Euphorbia geniculata</i>	Euphorbiaceae	Therophyte
121	<i>Euphorbia heyneae</i>	Euphorbiaceae	Therophyte
122	<i>Euphorbia hirta</i>	Euphorbiaceae	Therophyte
123	<i>Euphorbia nerifolia</i>	Euphorbiaceae	Phanerophyte
124	<i>Euphorbia neruri</i>	Euphorbiaceae	Therophyte
125	<i>Euphorbia nivula</i>	Euphorbiaceae	Therophyte
126	<i>Euphorbia parviflora</i>	Euphorbiaceae	Therophyte
127	<i>Euphorbia tricauli</i>	Euphorbiaceae	Hemicryptophyte
128	<i>Evolvulus alsinoides</i>	Convolvulaceae	Therophyte
129	<i>Fagonia cretica</i>	Zygophyllaceae	Phanerophyte
130	<i>Feronia elephantum</i>	Rutaceae	Phanerophyte
131	<i>Ficus benghalensis</i>	Moraceae	Phanerophyte
132	<i>Ficus carica</i>	Moraceae	Phanerophyte
133	<i>Ficus glomerata</i>	Moraceae	Phanerophyte
134	<i>Ficus hispida</i>	Moraceae	Phanerophyte
135	<i>Ficus racemosus</i>	Moraceae	Phanerophyte
136	<i>Ficus religiosa</i>	Moraceae	Phanerophyte
137	<i>Ficus gibbosa</i>	Moraceae	Phanerophyte
138	<i>Flacourtia indica</i>	Flacourtiaceae	Phanerophyte
139	<i>Flacourtia latifolia</i>	Flacourtiaceae	Phanerophyte
140	<i>Fumaria indica</i>	Papilionaceae	Hemicryptophyte
141	<i>Gardenia latifolia</i>	Rubiaceae	Phanerophyte
142	<i>Garuga pinnata</i>	Burseraceae	Phanerophyte
143	<i>Gloriosa superba</i>	Liliaceae	Phanerophyte
144	<i>Gossypium herbaceum</i>	Malvaceae	Therophyte
145	<i>Grewia abutifolia</i>	Tiliaceae	Phanerophyte
146	<i>Grewia salivifolia</i>	Tiliaceae	Phanerophyte
147	<i>Grewia subinaqualis</i>	Tiliaceae	Phanerophyte
148	<i>Gynandropis gynandra</i>	Capparidaceae	Hemicryptophyte
149	<i>Helicteris isora</i>	Rubiaceae	Phanerophyte
150	<i>Heliotropium indicum</i>	Rubiaceae	Hemicryptophyte
151	<i>Hemidesmus indicus</i>	Asclepiadaceae	Phanerophyte
152	<i>Hibiscus gibbosa</i>	Malvaceae	Therophyte
153	<i>Hibiscus micronthus</i>	Malvaceae	Therophyte
154	<i>Hibiscus ovalifolia</i>	Malvaceae	Therophyte
155	<i>Hibiscus rosa-cianensis</i>	Malvaceae	Therophyte
156	<i>Ipomea carnea</i>	Convolvulaceae	Phanerophyte
157	<i>Ipomea coccinea</i>	Convolvulaceae	Therophyte
158	<i>Ipomea tuba</i>	Convolvulaceae	Hemicryptophyte
159	<i>Ixora parviflora</i>	Rubiaceae	Phanerophyte
160	<i>Ixora singapuriensis</i>	Rubiaceae	Phanerophyte
161	<i>Jacarandra jacquimontii</i>	Bignoniaceae	Therophyte
162	<i>Jasminum arborens</i>	Oleaceae	Phanerophyte
163	<i>Jatropha gossypifolia</i>	Euphorbiaceae	Therophyte
164	<i>Justia simplex</i>	Acanthaceae	Therophyte
165	<i>Justia diffusa</i>	Acanthaceae	Therophyte
166	<i>Justicia diffusa</i>	Acanthaceae	Therophyte
167	<i>Lantana camara</i>	Verbinaceae	Phanerophyte
168	<i>Lathyrus sativus</i>	Papilionaceae	Hemicryptophyte
169	<i>Lawsonia inermis</i>	Lythraceae	Phanerophyte
170	<i>Lepidogathis cristata</i>	Acanthaceae	Therophyte
171	<i>Leucas aspera</i>	Labiatae	Therophyte
172	<i>Leucas longifolia</i>	Labiatae	Therophyte
173	<i>Loranthus sp</i>	Loranthaceae	Epiphyte
174	<i>Malvastrum coramandalicum</i>	Malvaceae	Therophyte
175	<i>Maytenus emerginatus</i>	Celastraceae	Phanerophyte
176	<i>Melia azadirachta</i>	Meliaceae	Phanerophyte
177	<i>Momordica diocea</i>	Cucurbitaceae	Therophyte
178	<i>Mimosa hamata</i>	Mimosaceae	Therophyte
179	<i>Mollugo hirta</i>	Aizoaceae	Therophyte
180	<i>Moringa oleifera</i>	Moringaceae	Phanerophyte
181	<i>Murraya exotica</i>	Rutaceae	Phanerophyte

**ANNEXURE-VIII**  
**ECOLOGICAL DETAILS**

Sr. No.	Technical Name	Family	Life Form
182	<i>Murraya koenigii</i>	Rutaceae	Phanerophyte
183	<i>Musa paradisiaca</i>	Musaceae	Therophyte
184	<i>Nerium indicum</i>	Apocyanaceae	Phanerophyte
185	<i>Ocimum americanum</i>	Labiatae	Therophyte
186	<i>Ocimum basilicum</i>	Labiatae	Therophyte
187	<i>Ocimum canum</i>	Labiatae	Therophyte
188	<i>Ocimum sanctum</i>	Labiatae	Therophyte
189	<i>Oldenlandia corymbosa</i>	Rubiaceae	Therophyte
190	<i>Opuntia elator</i>	Cacataceae	Therophyteq
191	<i>Oxalis corniculata</i>	Oxalidaceae	Therophyte
192	<i>Panicum milliria</i>	Poaceae	Hemicryptophyte
193	<i>Parkinsonia aculata</i>	Mimosaceae	Phanerophyte
194	<i>Parthenium hysterophorus</i>	Compositae	Therophyte
195	<i>Passiflora foetida</i>	Passifloraceae	Phanerophyte
196	<i>Pavonia zeylanica</i>	Malvaceae	Phanerophyte
197	<i>Peltophorum ferrusinum</i>	Caesalpinaceae	Phanerophyte
198	<i>Phoenix aculis</i>	Palmae	Phanerophyte
199	<i>Phyllanthus emblica</i>	Euphorbiaceae	Phanerophyte
200	<i>Phyllanthus niruri</i>	Euphorbiaceae	Therophyte
201	<i>Physalis minima</i>	Solanaceae	Therophyte
202	<i>Pithocolobium dulce</i>	Mimosaceae	Phanerophyte
203	<i>Polyalthia longifolia</i>	Annonaceae	Phanerophyte
204	<i>Pongamia pinnata</i>	Fabaceae	Phanerophyte
205	<i>Portulaca oleracea</i>	Portulacaceae	Therophyte
206	<i>Prosopis spicigera</i>	Mimosaceae	Phanerophyte
207	<i>Psidium guava</i>	Myrtaceae	Phanerophyte
208	<i>Punica granatum</i>	Puniaceae	Therophyte
209	<i>Rhus mysoorensis</i>	Rosaceae	Phanerophytes
210	<i>Saccharum munja</i>	Poaceae	Hemicryptophyte
211	<i>Saccharum officinarum</i>	Poaceae	Therophyte
212	<i>Sapindus emarginatus</i>	Sapindaceae	Phanerophyte
213	<i>Sida cordifolia</i>	Malvaceae	Phanerophyte
214	<i>Sida vernanifolia</i>	Malvaceae	Hemicryptophyte
215	<i>Solanum nigrum</i>	Solanaceae	Therophyte
216	<i>Solanum xanthocarpum</i>	Solanaceae	Therophyte
217	<i>Sterculia villosa</i>	Tiliaceae	Therophyte
218	<i>Syzygium cumini</i>	Myrtaceae	Phanerophyte
219	<i>Tagetes sp</i>	Compositae	Therophyte
220	<i>Tamarindus indica</i>	Caesalpinaceae	Phanerophyte
221	<i>Tectona grandis</i>	Verbinaceae	Phanerophyte
222	<i>Tephrosia purpuria</i>	Fabaceae	Therophyte
223	<i>Thespesia populanea</i>	Malvaceae	Phanerophyte
224	<i>Thespesia lampas</i>	Malvaceae	Phanerophyte
225	<i>Tinospora cordifolia</i>	Rhamnaceae	Therophyte
226	<i>Tragus biflorus</i>	Poaceae	Hemicryptophyte
227	<i>Tribulus terrestris</i>	Zygophyllaceae	Therophyte
228	<i>Tridax procumbens</i>	Compositae	Therophyte
229	<i>Triumferta pilosa</i>	Tiliaceae	Therophyte
230	<i>Vernonia cinera</i>	Compositae	Therophyte
231	<i>Vicoa indica</i>	Compositae	Phanerophyte
232	<i>Vitex negundo</i>	Verbinaceae	Therophyte
233	<i>Vitis vermifera</i>	Vitaceae	Therophyte
234	<i>Wrightia tomentosa</i>	Apocyanaceae	Phanerophyte
235	<i>Xanthium strumariumk</i>	Compositae	Therophyte
236	<i>Yucca gloriosa</i>	Agavaceae	Therophyte
237	<i>Zizyphus jujube</i>	Rhamnaceae	Phanerophyte
238	<i>Zizyphus nummularis</i>	Rhamnaceae	Phanerophyte
239	<i>Zizyphus oenoplica</i>	Rhamnaceae	Therophyte
240	<i>Zizyphus rotundus</i>	Rhamnaceae	Phanerophyte
241	<i>Zornia gobbosa</i>	Compositae	Therophyte
<b>V. Grasslands</b>			
242	<i>Cenchrurus ciliaris</i>	Poaceae	Hemicryptophyte
243	<i>Apluda mutica</i>	Poaceae	Hemicryptophyte

**ANNEXURE-VIII**  
**ECOLOGICAL DETAILS**

Sr. No.	Technical Name	Family	Life Form
244	<i>Chloris dolichosta</i>	Poaceae	Hemicryptophyte
245	<i>Cyanodactylon sp</i>	Poaceae	Geophyte
246	<i>Aristida adscensionis</i>	Poaceae	Hemicryptophyte
247	<i>Cenchrus ciliaris</i>	Poaceae	Therophyte
248	<i>Cyperus triceps</i>	Cyperaceae	Therophyte
249	<i>Digetaria stricta</i>	Poaceae	Hemicryptophyte
250	<i>Eragrostis biferia</i>	Poaceae	Therophyte
251	<i>Fibrystylis dichotoma</i>	Poaceae	Hemicryptophyte
	<b>Endemic species</b>	<b>No endemic species recorded/reported as per BSI records</b>	

**TABLE-2**  
**FAUNA IN THE STUDY AREA**

Technical Name	English Name/ Local Name	Conservation status as per Wild Life Protection Act 1972
<b>Mammals</b>		
<i>Herpestes edwardsi</i>	Common Moongoose	Part-II of Sch-II
<i>Vulpes bengalensis</i>	Indian Fox	Part-II of Sch-II
<i>Lepus nigricollis</i>	Indian Hare	Sch-IV
<i>Felis domesticus</i>	Cat	Sch-IV
<i>Rousettus leschenaulti</i>	Fruit Bat	Sch-V
<i>Bandicota indica</i>	Rat	Sch-V
<i>Funambulus palmarum</i>	Squirrel	Sch-IV
<i>Mus rattus</i>	Indian rat	Sch-V
<i>Hystrix indica</i>	Porcupine	Sch-IV
<i>Mus musculus</i>	Common Mouse	Sch-V
<b>Birds</b>		
<i>Milvus migrans</i>	Common Kite	Sch-IV
<i>Corvus corvus</i>	Jungle crow	Sch-IV
<i>Corvus splendens</i>	House crow	Sch-V
<i>Aegithina tithys</i>	Iora	Sch-IV
<i>Pycnonotus cafer</i>	Red vented bulbul	Sch-IV
<i>Pycnonotus jocosus</i>	White browed Bulbul	Sch-IV
<i>Saxicola fulicata</i>	Indian robin	Sch-IV
<i>Columba lividus</i>	Rock Pigeon	Sch-IV
<i>Lalage sykesi</i>	Black headed cochoo Shrike	Sch-IV
<i>Artamus leucorhynchus</i>	Ashy Swallow Shrike	Sch-IV
<i>Dicrurus macrocerus</i>	Black Drongo	Sch-IV
<i>Oriolus oriolus</i>	Indian Oriole	Sch-IV
<i>Oriolus chinensis</i>	Black Headed Oriole	Sch-IV
<i>Temnodactylus pagodarum</i>	Brahmny Myna	Sch-IV
<i>Acridotheres tristis</i>	Common myna	Sch-IV
<i>Ploceus philippinus</i>	Weaver bird	Sch-IV
<i>Uroloncha striata</i>	Spotted munia	Sch-IV
<i>Passer domesticus</i>	House Sparrow	Sch-IV
<i>Cinnyris lotensis</i>	Loten's sunbird	Sch-IV
<i>Cinnyris asiatica</i>	Purple Sunbird	Sch-IV
<i>Megalaima merulinus</i>	Indian Cuckoo	Sch-IV
<i>Eudynamis scolopacea</i>	Koel	Sch-V
<i>Centropus sinensis</i>	Crow Pheasant	Sch-IV
<i>Psittacula krameri</i>	Rose ringed parakeet	Sch-IV
<i>Coryllis vaeralis</i>	Lorikeet	Sch-V
<i>Coracias benghalensis</i>	Indian Roller	Sch-IV
<i>Merops orientalis</i>	Common Bee Eater	Sch-IV
<i>Alcedo atthis</i>	Common Kingfisher	Sch-IV
<i>Caprimulgus asiaticus</i>	Common Indian jar	Sch-IV
<i>Tyto alba</i>	Barn Owl	Sch-IV
<i>Haliastur indus</i>	Brahmny kite	Sch-IV
<i>Milvus migrans</i>	Pariah kite	Sch-IV
<i>Circus aeruginosus</i>	Marsh harrier	Sch-IV

**ANNEXURE-VIII**  
**ECOLOGICAL DETAILS**

Technical Name	English Name/ Local Name	Conservation status as per Wild Life Protection Act 1972
<i>Astur badius</i>	Shikra	Sch-IV
<i>Chalcophaps indica</i>	Emerald Dove	Sch-IV
<i>Lobvanella indicus</i>	Redwattled Lapwing	Sch-IV
<i>Lobpluvia malabarica</i>	Yellow wattled Lapwing	Sch-IV
<i>Bubulcus ibis</i>	Cattle Egret	Sch-IV
<i>Ardeola grayii</i>	Pond Heron	Sch-IV
<i>Anas acuta</i>	Common Teal	Sch-IV
<i>Gallinula chloropus</i>	Moore hen	Sch-IV
<i>Sterna albifrons</i>	Indian River Tern	Sch-IV
<i>Galerida malabarica</i>	Malabar Crested Lark	Sch-IV
<b>Reptiles</b>		
<i>Hemidactylus sp</i>	House Lizard	Sch-IV
<i>Calotes versicolor</i>	Garden Lizard	Sch-IV
<i>Chameleon zeylanicus</i>	Lizard	Sch-IV
<i>Ptyas mucosus</i>	Rat snake	Sch-III
<i>Naja naja</i>	Cobra	Sch-IV
<i>Bungarus candidus</i>	Krait	Sch-IV
<i>Vipera russeli</i>	Viper	Part-II of Sch-II
<b>Butterflies</b>		
<i>Euploca cora</i>	-	Sch-IV
<i>Euploca crassa</i>	-	Sch-IV
<i>Oeuploca dicciotianua</i>	-	Sch-IV
<i>Graphium agamemnos</i>	Tailed jay	Sch-IV
<i>Papilo polymnstor</i>	Blue mormon	Sch-IV
<i>Junonia atlites</i>	Grey pansey	Sch-IV
<i>Juninia almana</i>	Peacock pansey	Sch-IV
<i>Pelopides assemensis</i>	-	Sch-IV
<i>Polytrema discreta</i>	-	Sch-IV
<b>Amphibians</b>		
<i>Rana hexadactyla</i>	Frog	Sch-IV
<i>Rana tigrina</i>	Bull frog	Sch-IV

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**Annexure-IX**  
**Demographic Details**

**ANNEXURE-IX**  
**DEMOGRAPHIC DETAILS**

Sr. No.	Name of the Village	No. of House Holds	Total Population	Total Male	Total Female	SC Population	ST Population	Literates	Male Literates	Female Literates	Total Workers	Main Workers	Marginal Workers	Non Workers
<b>0-3 KM DACHEPALLE MANDAL, GUNTUR (DT), AP.</b>														
1	Ramapuram	1039	4320	2166	2154	636	153	2106	1252	854	2581	2557	24	1739
2	Gamalapadu	990	4127	2105	2022	277	174	1920	1179	741	2216	2195	21	1911
	<b>Sub total</b>	<b>2029</b>	<b>8447</b>	<b>4271</b>	<b>4176</b>	<b>913</b>	<b>327</b>	<b>4026</b>	<b>2431</b>	<b>1595</b>	<b>4797</b>	<b>4752</b>	<b>45</b>	<b>3650</b>
<b>3-7 KM DACHEPALLE MANDAL, GUNTUR (DT), AP.</b>														
3	Pondugula	548	2374	1134	1240	204	94	859	509	350	1595	1583	12	779
4	Bhatrapalem	395	2016	1030	986	251	1330	689	463	226	1101	991	110	915
5	Nadikudi	3616	15505	7806	7699	2300	588	8140	4844	3296	7209	6450	759	8296
<b>3-7 KM NEREDICHARLA MANDAL, GUNTUR (DT), AP.</b>														
6	Mahankali Gudem	340	1444	712	732	320	17	1034	570	464	456	432	24	988
7	Ravipahad	132	605	309	296	92	0	229	135	94	368	368	0	237
<b>3-7 KM GURAJALA MANDAL, GUNTUR (DT), AP.</b>														
8	Pulipadu	1555	6742	3400	3342	1010	152	2888	1826	1062	3989	3914	75	2753
	<b>Sub total</b>	<b>6586</b>	<b>28686</b>	<b>14391</b>	<b>14295</b>	<b>4177</b>	<b>2181</b>	<b>13839</b>	<b>8347</b>	<b>5492</b>	<b>14718</b>	<b>13738</b>	<b>980</b>	<b>13968</b>
<b>7-10 KM DACHEPALLE MANDAL, GUNTUR (DT), AP.</b>														
9	Mutyalampadu	1013	4368	2239	2129	727	258	2203	1377	826	2294	1739	555	2074
10	Dachepalle	3164	14256	7237	7019	1023	403	6576	4091	2485	7506	6309	1197	6750
11	Alugumalipadu	87	333	174	159	14	0	172	106	66	188	186	2	145
12	Kesanapalle	1310	5963	3073	2890	983	215	2793	1848	945	3312	3284	28	2651
<b>7-10 KM GURAJALA MANDAL, GUNTUR (DT), AP.</b>														
13	Daida	683	2839	1389	1450	385	389	1242	768	474	1631	1580	51	1208
14	Gangavaram	636	2709	1370	1339	363	74	1190	793	397	1701	1552	149	1008
<b>7-10 KM DAMARACHARLA MANDAL, GUNTUR (DT), AP.</b>														
15	Irkigudem	316	1360	661	699	138	7	579	367	212	768	721	47	592
16	Vadapalle	1646	7062	3556	3506	1031	1096	3608	2161	1447	2583	2211	372	4479
<b>7-10 KM NEREDICHARLA MANDAL, GUNTUR (DT), AP.</b>														
17	Sunya Pahad	312	1420	703	717	62	1254	487	353	134	854	352	502	566
18	Janapahad	821	3479	1764	1715	305	1862	1390	911	479	2077	1756	321	1402
	<b>Sub total</b>	<b>9988</b>	<b>43789</b>	<b>22166</b>	<b>21623</b>	<b>5031</b>	<b>5558</b>	<b>20240</b>	<b>12775</b>	<b>7465</b>	<b>22914</b>	<b>19690</b>	<b>3224</b>	<b>20875</b>
	<b>Grand total</b>	<b>18603</b>	<b>80922</b>	<b>40828</b>	<b>40094</b>	<b>10121</b>	<b>8066</b>	<b>38105</b>	<b>23553</b>	<b>14552</b>	<b>42429</b>	<b>38180</b>	<b>4249</b>	<b>38493</b>

**Annexure-X**  
**Emission Calculations**



**ANNEXURE-X**  
**EMISSION CALCULATIONS**

**1.0 General Calculations**

**A. Captive Power Plant**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (2.0)^2/4 = 3.14\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/413 = 0.722$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\ (\frac{Nm^3}{s}) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$
$$= 3.14 \times 15.96 \times 0.722 = 36.16\ Nm^3/s$$

**B. Coal Crusher**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (1.0)^2/4 = 0.79\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/343 = 0.869$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\ (\frac{Nm^3}{s}) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$
$$= 0.79 \times 12 \times 0.869 = 8.18\ Nm^3/s$$

**ANNEXURE-X**  
**EMISSION CALCULATIONS**

**C. Raw Mill – I & II**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (3.5)^2 / 4 = 9.62\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/393 = 0.758$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\ (\frac{Nm^3}{s}) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$
$$= 9.62 \times 10 \times 0.758 = 72.92\ Nm^3/s$$

**D. Cooler**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (3.0)^2 / 4 = 7.07\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/493 = 0.604$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\ (\frac{Nm^3}{s}) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$
$$= 7.07 \times 10 \times 0.604 = 42.71\ Nm^3/s$$

**ANNEXURE-X**  
**EMISSION CALCULATIONS**

**E. Coal Mill-I**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (1.0)^2 / 4 = 0.79\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/353 = 0.844$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\ (\frac{Nm^3}{s}) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$
$$= 0.79 \times 14 \times 0.844 = 9.28\ Nm^3/s$$

**F. Cement Mill-I**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (1.25)^2 / 4 = 1.23\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/353 = 0.844$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\ (\frac{Nm^3}{s}) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$
$$= 1.23 \times 12 \times 0.844 = 12.43\ Nm^3/s$$

**ANNEXURE-X**  
**EMISSION CALCULATIONS**

**G. Cement Mill-II**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (1.0)^2/4 = 0.79\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/353 = 0.844$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\left(\frac{Nm^3}{s}\right) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$
$$= 0.79 \times 12 \times 0.844 = 7.95\ Nm^3/s$$

**1.1 Particulate Matter Emissions**

**A. CPP**

$$Emission\ rate = 50\ mg/Nm^3 \times 36.16\ Nm^3/s \times 1/1000 = 1.81\ g/s$$

**B. Crusher**

$$Emission\ rate = 50\ mg/Nm^3 \times 8.18\ Nm^3/s \times 1/1000 = 0.41\ g/s$$

**C. Raw Mill - I & II**

$$Emission\ rate = 50\ mg/Nm^3 \times 72.92\ Nm^3/s \times 1/1000 = 3.65\ g/s$$

**D. Cooler**

$$Emission\ rate = 50\ mg/Nm^3 \times 42.71\ Nm^3/s \times 1/1000 = 2.14\ g/s$$

**E. Coal Mill - I**

$$Emission\ rate = 50\ mg/Nm^3 \times 9.28\ Nm^3/s \times 1/1000 = 0.46\ g/s$$

**F. Cement Mill - I**

$$Emission\ rate = 50\ mg/Nm^3 \times 12.43\ Nm^3/s \times 1/1000 = 0.62\ g/s$$

**G. Cement Mill - II**

$$Emission\ rate = 50\ mg/Nm^3 \times 7.95\ Nm^3/s \times 1/1000 = 0.40\ g/s$$

**ANNEXURE-X**  
**EMISSION CALCULATIONS**

**1.2 Emission Calculations Sulphur dioxide**

**A. CPP**

Coal Consumption                =     23.97 TPH  
   =     23972.6 kg/hr

Sulphur content in coal        =     0.5%  
Sulphur emission factor       =      $(0.5/100) \times (64/32) = 0.01$

SO<sub>2</sub> emission rate               =     Emission factor x consumption of coal in kg/hr  
   =      $0.01 \times 23972.6 = 239.7$  kg/hr  
   =     66.59 g/sec

**B. Raw Mill – I**

Coal Consumption               =     0.04725 TPH  
   =     47.25 kg/hr

Sulphur content in coal        =     0.5%  
Sulphur emission factor       =      $(0.5/100) \times (64/32) = 0.01$

SO<sub>2</sub> emission rate               =     Emission factor x consumption of coal in kg/hr  
   =      $0.01 \times 47.25 = 0.4725$  kg/hr  
   =     13.13 g/sec

**1.3 NOx Emissions**

**A. CPP**

$$260 \times 3200 \times 23.97 \times 4.187 / 10^6 / 3.6 = 23.19 \text{ g/s}$$

**B. Raw Mill – I & II**

$$260 \times 3200 \times 0.04725 \times 4.187 / 10^6 / 3.6 = 6.09 \text{ g/s}$$

**Annexure-XI**  
**Public Hearing Details**



**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**  
**A.P. POLLUTION CONTROL BOARD, REGIONAL OFFICE**  
**FLAT NO. 102, RAGHAVA APARTMENT, BRUNDAVAN GARDENS, GUNTUR-522 006**

K.L.P. Kumar  
Environmental Engineer

Phone: 2215537  
e-mail: gtr.ro.ee@pcb.ap.gov.in

Lr. No. G-0041/PCB/RO-GNT/EPH/2013- 904

Dt. 05-02-2013

To

Sri R K Dooda,  
Sr. Vice President (Projects)  
M/s Andhra Cements Limited (Durga Cement Works)  
Durgapuram (V),  
Dachepalli (M),  
Guntur District -522 426.

Sir,

Sub: APPCB/RO/GUNTUR - M/s. Andhra Cement Ltd., (M/s. Durga Cement Works), Durgapuram (V), Dachepalli (M), Guntur District - proposed to establish Captive Power Plant with capacity of 30 MW at the existing premises of the unit at Dachepalli (V&M), Guntur District - **Public Hearing** conducted on 30.01.2013 - Communication of Minutes of the Public Hearing - Reg.,

- Ref:
1. EIA Notification dt. 14<sup>th</sup> September' 2006.
  2. M/s. Jaypee Groups Management request letter received on 13.12.2012.
  3. Endt. of the District Collector on note file Dt. 22.12.2012.
  4. APPCB, Board Office, Hyd., E-Mail dt. 27.12.2012.
  5. Public Hearing conducted on 30.01.2013.

\* \* \*

With reference to the above, I am here with appending the Minutes of the Public Hearing of M/s. Andhra Cement Ltd., (M/s. Durga Cement Works), Durgapuram (V), Dachepalli (M), Guntur District proposed to establish 30 MW Coal based Captive Power Plant at the existing premises of the cement unit at Durgapuram (V), Dachepalli (M), Guntur District held on 30.01.2013.

You are requested to approach State Level Environment Impact Assessment Authority (SEIAA), A3, Industrial Estate, Sanathnagar, Hyderabad - 500018 for obtaining prior Environmental Clearance as per the procedure indicated under EIA 2006 which was displayed in the web: [WWW.envfor.nic.in](http://WWW.envfor.nic.in) and also requested to apply to the Board after obtaining Environmental Clearance for issuing CFE of Board under Water & Air Acts.

Yours faithfully,

  
ENVIRONMENTAL-ENGINEER

- Encl: 1. Minutes of Public Hearing.  
2. DVDs of Proceedings  
3. Representations received  
4. Attendance sheet

1. *Journal of the American Medical Association*, 1997; 278: 1039-1044.

- 3

**AXI-2**



**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

around 550 KLD with no utilisation of water resources. The industry expects to meet the water requirements from the mine pit without impact on natural resources.


7. The industry proposed to acquire Coal from Singareni and through imports. The industry proposed to consume coal of about 2.1 MTPA having ash generation of 40 % of coal consumption with 100% of ash utilisation in the process of Cement Manufacture. The proposed activity generates employment for 50 Nos. No sensitive, archeological monuments with in 10 Kms. radius.
8. The representative of the Vimta labs continued that the Environmental Impact Assessment Report was prepared by them by studying in the surrounding area with in 10 Km radius of the cement plant from 01.03.2012 to 31.05.2012 in different issues i.e., Air, Water, Soil, Ecological etc. and explained the nitty-gritties of the report is as follows:

**Air Quality:**

Coal will be conveyed through closed conveyers and suppress the dust by sprinkling water, development of Greenbelt and other dust suppression measures. Testing will be done by simulation models when the industry comes into operation. Coal will contain Low NO<sub>x</sub> compounds and also proposed to establish ESP of 99.9% efficiency with a stack height of 77 Mts. Green belt of around 50 mts proposed to be developed to take care of the CO<sub>2</sub> and other Greenhouse Gases.

**Water Quality:**

No utilisation of ground water by the industry, however they are proposed to use the mine pit water for Boiler, dust suppression and domestic purpose. Waste water from the process will be treated and recycled. Domestic waste water will be treated in STP and used for gardening/plantation.

  
ENVIRONMENTAL ENGINEER  
A.P. POLLUTION CONTROL BOARD  
REGIONAL OFFICE, GUNTUR

**AXI-3**

**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

**Noise Quality:**

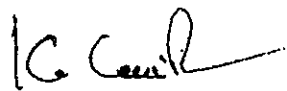
Noise /sound will be maintained between 45 dB- 54 dB as per regulatory authority norms.

**Risk Assessment** : The management will prepare Risk and disaster management plans to meet the emergencies in the event of failure of systems apart from providing water hydrant system around coal yard and diesel stock points.

He promised to maintain Ambient Air Quality as per State Pollution Control Board and MoEF, Govt of India norms. The management proposed to contribute Rs. 16.3 Crores for Pollution control equipment and Rs. 7.2 Crores /Annum for maintenance of operational equipments.

The Joint Collector requested the public to express their views candidly, suggestions and objections if any, on the proposal of M/s. Andhra Cements Limited.

**Sri Maasetti Venkateswarlu**, Srinagar village stated that he hails from farming community and staying at Srinagar. For the past 30 years they are suffering from pollution problems due to operation of the cement plant without adequate pollution control measures as promised and as such the local farmers have lost their produce to the tune of 90 Crores during these years .He expressed anguish that the managements are failing in implementing the technologies and hence the people are suffering. He apprehended that the proposed coal based power project may further aggrieve their sufferings. If the same is continued by the present management also the villagers will be left in lurch with no option but evacuation. While belching fire and brimstone at managements stated that the earlier managements have not provided adequate

  
**ENVIRONMENTAL ENGINEER**  
**A.P. POLLUTION CONTROL BOARD**  
**REGIONAL OFFICE, GUNTUR**

**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

employment to the local people either skilled or unskilled and requested the present management to take local 200 Nos. of labour.

He continued that previously farmers have lost about 25 Acres of land which was given to the company for Mining lease. He apprehended that the shifting of the obsolete power plant equipment from Himachal Pradesh may pose pollution problems in the area and urged the management to instill confidence in the public by explaining the rationale behind the shifting.

He stated that he is not against the project and the people will also favor the project and extend cooperation with the management provided the management ensures the pollution free environment by providing and operating the pollution control equipments efficiently, by providing employment to local people and building credibility and without indulging in Machiavellian machinations failing which it will be detrimental to operation of the industry. And also suggested to explore the possibility of installing the Solar based Power Plant in lieu of Coal.

**Sri Prathipati Rosaiah**, Narayanapuram village: While welcoming the project he expressed anguish that the present management is not providing employment to the local people and as such recruited 80% of the workers from out of state. He also stated that the cement industry started in 1986 anticipating employment to the local persons and regional development. He requested the management to start the Cement plant along with power generation unit by providing employment to the local persons either skilled or unskilled including contract labour.

**Sri. Medara Daniyel**, Gamalapadu Village said that they are not in favour of the project and gave a call for boycott of the proceedings.

**Sri. Modugula Suresh Reddy** Srinagar stated that they are against the establishing of coal based power plant in the Cement plant premises. He argued

**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

that there will be CO<sub>2</sub> emissions even though the industry erects 70 Mts height of stack to the Boiler. He called upon the management to explain the rationale behind the choosing of coal based power project instead of opting Solar Power or Wind Power which is a cleaner technology. It is brought to the notice of the public that the management brought the equipment without obtaining permission from concerned departments. He also wants to let the people know as to how much employment was generated, how much income generated to the government from this industry, as to how the absorption of CO<sub>2</sub> will be carried by the dust infested greenbelt. Management has not taken up any social / economical welfare measures and also not provided drinking water.

**Sri. Sankara Rao**, Srinagar Village said that the Public Hearing should have been arranged either at Srinagar or Gamalapadu village for the convenience of the public and to express their views candidly. There is no drinking water provision and they are suffering for the past 20 years. He requested the management to contemplate the power project only after providing employment to the local people. All the previous managements have sold the industry for their own profits without providing any facilities to the surrounding villages and he gave a call for boycott of the proceedings.

**Smt. Vanga Padmavathi** said that they are not in favour of the project. Human health and live stock will be affected due to this proposed project and the management is employing outsiders rather than local people, who are with the cement plant for the past 30 years.

**Smt. Ramanamma** & others, Srinagar village have expressed dissent over the proposed project.


**Sri Chiluku Chandra Sekhar**, Advocate & AP.Civil Liberties Union requested the gathering that those people who are against the establishment of power plant shall stay and reveal the opinion in the public hearing, otherwise the issue will be same as is the case with "Pulichintala". He opined that the Venue

  
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A.P. POLLUTION CONTROL BOARD  
REGIONAL OFFICE, GUNTUR.

**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

of public hearing should have been outside the JAYPEE Group premises, as it may affect on public hearing. Many people attended in the public hearing were the workers & labour of the factory. The management indulged in hocus-pocus and employed about 700 No. of workers from other state. The earlier managements also deserted the local villagers in providing of employment. He lamented that if this state of affairs continuous with other cement units operating in Palnadu area there will be air pollution resulting in deterioration of environment in this area. Alternative sources such as Solar Power, Wind Power etc., may also be explored and arranged in lieu of coal based project. The management is proposing to develop green belt within the plant premises only and there is no proposal for outside green belt in surrounding villages. The public in general is veered against the establishment of thermal power plants in the state. He also pointed out, that proper assessment has not been done regarding monuments. He opined that the industry can go for expansion in the existing cement plant and not the power plant duly providing employment to the local people. And also contemplate the change of venue of the public hearing in future.

**Sri. K. Nava Jyothi**, Paryavarana Parirakshana Samithi, Nadikudi village said that lime stone deposits in Dachepalli area of palnadu is a boon at one point of time and the same has become bane after commissioning of this type of units. About 1500 Acres are fertile land and new industries vide Chettinadu Cements, Himani Cements, Maha Cements etc., are on the pipe line requiring 100's of Acres of lands. About 400 Acres of cultivated lands is under Andhra Cements management only. Bio-Diversity may be damaged. He wondered as to how the Ministry of Environment is according permissions concentrating the cement plants in a single place. Cement industries are making syndicate business. He emphasized the Right to Live peacefully. He requested to not to consider the Captive Power Plant.

  
ASSISTANT ENVIRONMENTAL ENGINEER  
AIR POLLUTION CONTROL BOARD  
REGIONAL OFFICE, GUNTUR.

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**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

The Joint Collector, then, requested the management to offer comments on the issues raised in the public hearing by the villagers along with clarification & explanation.

**Sri.BMK Sarma** from JAYPEE Groups welcomed the gathering and clarified the following.

1. The JAYPEE Group has taken all the existing on roll employees of Andhra Cements Ltd., as it is without any changes.
2. There are several contract workers working presently. Civil & mechanical workers were inducted in a phased manner, from local eligible only.
3. They have purchased the sick unit and running the same.
4. It is also promised that they will take the loading & unloading contract workers also as per requirement after commencement of production shortly.
5. To run the plant continuously, Captive Power Plant is imperative.

**Sri TGV Krishna Reddy**, MLC special invitee of the Public Hearing welcomed the gathering and said that the incidents that were happened for the past 30 years are bothering the villagers. The present management is not having good public relations. He requested the management to take the existing employees & contract workers in the plant on company rolls. He objected to recruiting of the outside manpower instead of local people. He stressed that providing of employment, taking over loading & unloading labour issues, allotment of 25 Acres of patta land for mining lease are are not linked with this hearing. He informed that AD., Mines Department mistakenly has given permission to the 25 Acres of Patta Lands to the industry which has been referred to the Government for cancellation. These issues have to be discussed by the management for maintaining good relations ship.

He continued, that it is compulsory to develop tall growing trees to arrest the dust problems as this Coal based power plant affects in a radius of 1.5 KM., He suggested the management to take precautions on surrounding environment

  
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**A.P. POLLUTION CONTROL BOARD**  
**REGIONAL OFFICE, GUNTUR**

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**PUBLIC HEARING PROCEEDINGS**

after discussion with technical people as some of the villages and cultivation lands are located in the radius of 1.5 KM. The revenue Department has to ascertain factual status. There is a every need to check the air pollution control measures continuously, whether equipments were having sufficient capacity or not to control the pollution by the authorities.


He requested the management to provide water sprinkling systems at Coal loading & unloading points at Pondugala and in plant, transfer points to suppress the dust nuisance by laying cement road from Pondugala Railway station to Factory. Water treatment plant should be provided for treating the waste water. The management should think about Solar Energy system also. It will be a cost of around Rs. 8-9 Crores/ 1 MW & 270 Crores /30 MW. He suggested to go for solar power which is clean and an Environment Friendly with out pollution and also extend power supply to the surrounding villages. He demanded the management for providing of employment to the local people and expressed solidarity with the vox populi on the project.

**Jangala Singaraya Yadav** said that he is interested in the establishment of Power plant and the exiting cement plant. The management is giving only Rs.300/-per day per labor and at the end expressed solidarity with the opinion of not in favor of the project.

An irascible crowd attended the hearing with Placards and boycotted the proceedings shouting slogans against the project.

About 205 No. of written representations were received expressing their opinions out of which 191 representations in favor of the project and the following 14 nos. against the establishment of the industry in the area. All the representations are enclosed.

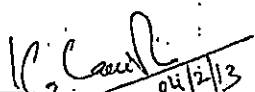
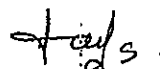
1. Sri B. Ramakrishna Reddy – Ramapuram
2. Sri G.Koti Reddy- Srinagar.
3. Sri G.Venkateswarulu-Pondugala.

  
ENVIRONMENTAL ENGINEER  
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REGIONAL OFFICE, GUNTUR. AXI-9

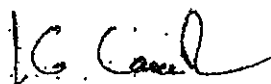
**ANNEXURE-XI**  
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4. Sri M.Suresh Reddy –Srinagar
5. Sri. V. Ramana, & Others, Ex-Sarpanch Ramapuram
6. Sri. K. Srinivasa Rao – General Secretary, PDM Party, Guntur
7. Sri. B. Konda Reddy, General Secretary, PKS Party
8. Sri. S. Subba Rao & Others, Gamalapadu
9. Sri. Venkateswarlu, Ramapuram
10. Sri. B. Kalana Nayak, Bhatrupalem Tanda Villagers
11. Sri. A. Vengala Reddy, Ramapuram
12. Sri. G. Vedamani, President M/s. Chips & Pulverisers Union
13. Sri. C. Chandrapal, Ramapuram
14. Sri. P. Sambalah, Ramapuram

The Joint Collector informed the public that apart from public hearing related petitions some general petitions are also received which will be dealt with concerned departments and concluded the proceedings of the Environmental Public Hearing announcing that all the views, opinions and suggestions expressed by the villagers are recorded and will be submitted to the Ministry for perusal and taking further necessary action.

 Environmental Engineer & Member Convener, APPCB, Regional Office, Guntur.	 Joint Collector Guntur District and Chairman of the Public Hearing Committee
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(2/3)

  
ENVIRONMENTAL ENGINEER,  
A.P. POLLUTION CONTROL BOARD  
REGIONAL OFFICE, GUNTUR



**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

**ప్రజాభిప్రాయ సేకరణ వివరములు - తెలుగు అనువాదము**

ఆంధ్ర సిమెంట్స్ లిమిటెడ్ (దుర్గా సిమెంట్ వర్క్స్) వారు దాచేపల్లి మండలం, గుంటూరు జిల్లా లోని దుర్గాపురం నందు, రాష్ట్రీయ రహదారి-2 ని అనుకుని వున్న శ్రీ దుర్గా దేవాలయం సమీపమున తమ సిమెంట్ ఫ్యాక్టరీ ప్రాంగణములో 30 మేగావాట్ల బొగ్గు ఆధారిత పవర్ ప్లాంటు నిర్మాణము తలపెట్టినారు. కావున పర్యావరణ ప్రజాభిప్రాయ సేకరణ ది. 30.01.2013 న ఉదయం 11.00 గంటలకు దుర్గా మందిరం దగ్గర, రాష్ట్ర రహదారి -2కు అనుకుని దుర్గాపురము గ్రామము, దాచేపల్లి మండలము, గుంటూరు జిల్లా నందు జరిగినది.

దీని వివరములు :-

ఈ క్రింద తెలిపిన ప్యానెల్ సభ్యులు మరియు కంపెనీ ప్రతినిధులు పాల్గొంటిరి.

ప్యానెల్ సభ్యులు :-

1. శ్రీమతి కె.శారదాదేవి, ఐ.ఎ.ఎస్ జాయింట్ కలెక్టర్ & అడిషనల్ డిస్ట్రిక్ట్ మెజిస్ట్రేట్, గుంటూరు జిల్లా & చైర్ పర్సన్, పర్యావరణ ప్రజాభిప్రాయ సేకరణ కమిటీ.
2. శ్రీ కె.ఎల్.పి కుమార్ మెంబర్ కన్వీనర్, పర్యావరణ ఇంజనీరు, ఆంధ్రప్రదేశ్ కాలుష్య నియంత్రణ మండలి ప్రాంతీయ కార్యాలయం, గుంటూరు.

ప్రత్యేక అతిథి :-

1. శ్రీ టి.జి.వి.క్రిష్ణారెడ్డి ఎం.ఎల్.సి

ఆంధ్ర సిమెంట్స్ లిమిటెడ్ యాజమాన్య ప్రతినిధులు

1. శ్రీ పంకజ్ గౌర్ (డైరెక్టర్)
2. శ్రీ నవీన్ కుమార్ సింగ్ (డైరెక్టర్)

ముందుగా పర్యావరణ ఇంజనీరు, ఆంధ్రప్రదేశ్ కాలుష్య నియంత్రణ మండలి, గుంటూరు పర్యావరణ ప్రజాభిప్రాయ సేకరణకు విచ్చేసిన ప్రజలను మరియు అధికారులను ఆహ్వానిస్తూ, ప్రజాభిప్రాయ సేకరణ యొక్క ముఖ్యాంశాలు మరియు కారణములను తెలియజేసెను. భారత ప్రభుత్వము యొక్క పర్యావరణము మరియు అడవుల మంత్రిత్వశాఖ విడుదల చేసిన

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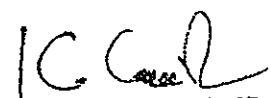
నోటిఫికేషన్ యొక్క ముఖ్యోద్దేశాలను వివరించెను. ఆంధ్రసిమెంట్స్ లిమిటెడ్ (దుర్గా సిమెంట్ వర్క్స్) వారు దుర్గాపురము గ్రామము, దాచేపల్లి మండలము, గుంటూరు జిల్లాలోని తమ సిమెంట్ కర్మాగారము ప్రాంగణములో 30 మెగావాట్స్ బొగ్గు ఆధారిత క్యాప్టివ్ పవర్ ప్లాంట్ ని రూ.136 కోట్ల వ్యయముతో నిర్మించుటకు ప్రతిపాదనను భారతప్రభుత్వము, పర్యావరణము మరియు అడవుల మంత్రిత్వ శాఖ వారి నోటిఫికేషన్ ఎస్.ఓ.నెం.1533 తేది.14.09.2006 ప్రకారము పంపినారు. ఆంధ్ర సిమెంట్స్ లిమిటెడ్ వారి అభ్యర్థన మరియు పర్యావరణ ఇంజనీరు, ఆంధ్రప్రదేశ్ కాలుష్య నియంత్రణ మండలి ప్రాంతీయ కార్యాలయము, గుంటూరు తేది.28.12.2012 ప్రముఖ దినపత్రికలలో ఆంధ్రసిమెంట్స్ లిమిటెడ్ (దుర్గా సిమెంట్ వర్క్స్) వారు దుర్గాపురము గ్రామము, గామలపాడు పంచాయితీ, దాచేపల్లి మండలము, గుంటూరు జిల్లాలోని తమ సిమెంట్ కర్మాగారము అవరణలో 30 మెగావాట్ల బొగ్గు ఆధారిత క్యాప్టివ్ పవర్ ప్లాంట్ నిర్మాణము తలపెట్టినారు గావున ప్రజలయొక్క అభిప్రాయములు, సూచనలు మరియు అభ్యంతరాలు తెలిసికొనుటకు 30.01.2013 తేదినాడు దుర్గామందిరము అవరణ, రాష్ట్ర రహదారి నెం.-2 ప్రక్కన, ఆంధ్ర సిమెంట్స్ లిమిటెడ్ (దుర్గాసిమెంట్ వర్క్స్) దగ్గర, దుర్గాపురము గ్రామము, దాచేపల్లి మండలము, గుంటూరు జిల్లాలో ఏర్పాటు చేయటమైనదని నోటిఫికేషన్ జారీచేసినారు. తరువాత పర్యావరణ ఇంజనీరు జాయింట్ కలెక్టరు గారిని కార్యక్రమానికి అధ్యక్షత వహించి మిగతా కార్యక్రమములు నిర్వహించవలసినదిగా ఆహ్వానించారు.

జాయింట్ కలెక్టరుగారు ప్రజలను సభకు ఆహ్వానిస్తూ ఆంధ్రసిమెంట్స్ లిమిటెడ్ (దుర్గా సిమెంట్ వర్క్స్) వారి అభ్యర్థనను క్లుప్తంగా వివరించారు. ప్రస్తుత పరిస్థితులలో విద్యుత్ యొక్క వినియోగం, అవసరాలు మరియు విద్యుత్ ఉత్పాదన అవసరాల గురించి వివరించారు. తగినంత విద్యుత్ సరఫరా లేని కారణంగా ప్రస్తుతము పెద్ద పరిశ్రమలు నెలకు 21 రోజులు మాత్రమే పనిచేస్తున్నాయి. కావున ప్రభుత్వము కూడా పెద్ద పరిశ్రమలు తమ సొంత పవర్ ప్లాంట్లని నిర్మించుకోవాలని ప్రోత్సహిస్తుంది. అందువల్ల ప్రభుత్వ విద్యుత్ వినియోగం తగ్గుతుందని చెప్పారు. ఈ విధంగా పవర్ ప్లాంట్లని నెలకొల్పే సంస్థలు పర్యావరణ, కాలుష్య కర్మాగారముల పట్టిక పరిధిలోకి వచ్చును కావున ప్రజాభిప్రాయ సేకరణ అవసరము. జాయింట్ కలెక్టరు ప్రజలను తమ పర్యావరణ, కాలుష్య సంబంధిత అభిప్రాయములు, సూచనలు మరియు అభ్యంతరములను నిర్భయముగా ప్రాజెక్ట్ గురించి కర్మాగారము వారు చెప్పిన తరువాత చెప్పవలసినదిగా కోరినారు.

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కర్మాగారము తరుపున వారి కన్సల్టెంట్ అయిన ఎమ్ టా లాబ్స్ ప్రతినిధి సభికులను స్వాగతిస్తూ ఈ క్రింది విధముగా వివరించారు.

1. జె.పి గ్రూప్ దేశములో మూడవ అతి పెద్ద సిమెంట్ ఉత్పత్తి సంస్థ, సుమారు 35 ఎం.టి.పి.ఎ సిమెంట్ ఉత్పత్తిని 2010-11 సంవత్సరములో చేయటం జరిగింది. దాదాపు సంవత్సరమునకు రూ.18,000/- కోట్ల వ్యాపార లావాదేవీలు గల కంపెనీ అని తెలియచేశారు.
2. ఈ జెపి గ్రూప్ జేపి స్వయం సేవాసంస్థ ద్వారా లాభాలు దృష్టితో కాకుండా సేవా దృక్పథంతో చాలా సంక్షేమ కార్యక్రమాలు నిర్వహిస్తుంది. అందులో నిరుద్యోగ నిర్మూలన, విద్యాకార్యక్రమాలు, ఒకేషనల్ ట్రైనింగ్, వైద్యసదుపాయాలు, తాగునీటి వ్యవస్థ మరియు మిగతా సోషల్ & ఎకనమికల్ సంక్షేమకార్యక్రమములను నిర్వహించుచున్నారు.
3. 1986లో నిర్మించబడిన ఆంధ్ర సిమెంట్స్ లిమిటెడ్ (దుర్గా సిమెంట్ వర్క్స్) వారికి రెండు కర్మాగారములు వున్నవి. 2.31 ఎం.టి.పి.ఎ సామర్థ్యంతో దాచేపల్లిలో మరియు 2.0 ఎం.టి.పి.ఎ సామర్థ్యంతో విశాఖపట్టణంలో, మొత్తం 4.31 ఎం.టి.పి.ఎ సామర్థ్యం కలది ఈ మధ్యనే ఆంధ్రసిమెంట్స్ ని జేపి గ్రూప్ వారు తీసుకుని 30 మెగావాట్ల క్యాపిటివ్ పవర్ ప్లాంట్ నిర్మాణము తలపెట్టినారు.
4. ఇంతకు ముందు ఆంధ్ర సిమెంట్స్ లిమిటెడ్ వారు తమ కర్మాగార సామర్థ్య విస్తరణకు సంబంధించిన అనుమతులను (సి.ఎఫ్.ఇ) ఆంధ్రప్రదేశ్ పొల్యూషన్ కంట్రోల్ బోర్డు నుంచి మరియు ఎం.ఓ.ఇ.ఎఫ్ వారి దగ్గర నుండి పొంది ఉన్నదని, విస్తరణ కార్యక్రమాలు ప్రగతిశీలంలో ఉన్నాయని తెలియపరిచారు. ప్రస్తుత యాజమాన్యమైన జేపి గ్రూప్ వారు 30 మెగావాట్ల సామర్థ్యము గల క్యాపిటివ్ పవర్ ప్లాంట్ ను సుమారు రూ.136 కోట్ల వ్యయంతో తమ విద్యుత్ అవసరాల నిమిత్తమై నిర్మించదలచారని ఇంకా మిగులు అవసరమైన 13 మెగావాట్ల పవర్ గ్రిడ్ నుంచి వినియోగించుకుంటారని తెలియచేశారు.
5. ఈ ప్రాజెక్ట్ కు గల పర్యావరణ స్నేహపూర్వక వివరములను వివరించారు. దీనికొరకు అదనపు భూసేకరణ అవసరం లేదని, ఎటాస్పీయరిక్ ఫ్లూయిడైజ్డ్ బెడ్ బాయిలర్ ను ఇన్ స్టాల్ చేయడం ద్వారా పర్యావరణ కాలుష్యమును నియంత్రించటం జరుగుతుందని, ఎయిర్ కూలర్ కండెన్సర్స్ వినియోగం ద్వారా నీటి వినియోగం తగ్గించవచ్చని, అతి ఎక్కువ సామర్థ్యం గల ఇ.ఎస్.పిలను వినియోగించటం ద్వారా పొగ గొట్టంలోని వాయు కణాలను 50 ఎం.జి/ఎస్.ఎమ్<sup>3</sup> కంటే

  
ENVIRONMENTAL ENGINEER  
A.P. POLLUTION CONTROL BOARD  
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- తగ్గించవచ్చని, తద్వారా వాయు ప్రదూర్ణతను తగ్గించు శూన్యంకు తేవచ్చని, మరియు ఈ ప్లాంటులో ఉత్పత్తి కాబడే బూడిదను 100% ఇక్కడే సిమెంట్ ఉత్పత్తిలో వినియోగించటం జరుగుతుందని వివరించారు.
6. ప్రస్తుత క్యాప్టివ్ పవర్ ప్లాంట్ ప్రతిపాదిత ప్రాంతము రాష్ట్ర రహదారి నెం.2 మరియు రైల్వే స్టేషన్ కి దగ్గరగా ఉండటం వలన ఈ ప్లాంట్ స్థాపనకు అవసరమైన 3.0 హెక్టారుల భూమిపై అధనపు భూసేకరణ అవసరం లేదని మరియు 550 కె.ఎల్.డి నీరు అవసరము కాగా తమ పిట్స్ లో గల నీటితోనే ఈ నీటి అవసరము తమకు తీరుతుందని, బయట వనరుల నీటి వినియోగం తమకు అవసరం ఉండకపోవచ్చునని అంచనావేయటం జరిగిందని తెలిపారు.
7. ఈ ప్లాంట్ కి కావలసిన బొగ్గుని సింగరేణి బొగ్గు గనుల నుంచి మరియు బయట దేశాల నుంచి దిగుమతి చేసుకొందురు. 2.1 ఎం.టి.పి.ఎ బొగ్గు ఉపయోగించెదరు. అందులో 40% బూడిద ఉత్పత్తి అవుతుంది. దానిని తిరిగి సిమెంట్ తయారు చేయుటకు ఉపయోగించెదరు. ఈ ప్లాంటువల్ల 50 మందికి ఉద్యోగములు లభించును. ఈ ప్లాంటుకు 10 కిలోమీటర్ల వృత్తములో నాజుకైన మరియు పురాతన కట్టడములు లేవని తెలిపారు.
8. విమ్టా లాభ్య ప్రతినిధి బృందం వారు ది.01.03.2012 నుండి 31.05.2012 వరకు 10 కిలోమీటర్ల వరకు చుట్టుప్రక్కల ప్రదేశాలను తనిఖీ చేసి పర్యావరణ సంబంధిత రిపోర్ట్ గాలి, నీరు మరియు ధ్వనిని దృష్టిలో పెట్టుకుని తయారు చేసినట్లు చెప్పారు.

**గాలి నాణ్యత :-**

బొగ్గును మూసిన కన్వేయర్ ద్వారా పంపుట, నీళ్ళు చల్లటం ద్వారా ధూళిని నియంత్రించటం మరియు హరితవనం ఏర్పాటు చేయటం ద్వారా నియంత్రించటం జరుగుతుంది. ప్లాంటు మొదలు అయినతరువాత సిమెంట్ పద్ధతి ద్వారా పరీక్షిస్తారు. 99.9% సామర్థ్యంగల ఇ.ఎస్.పి ఏర్పాటు చేయడం 77మీటర్ల ఎత్తులో ఒకస్టాక్స్ ఏర్పాటు చేయడం ద్వారా వాయు వ్యర్థాలని నియంత్రించడం. 50 మీటర్ల హరితవనము ఏర్పాటుచేసి CO<sub>2</sub> మరియు మిగతా వ్యర్థ వాయువును నియంత్రించడం జరుగుతుంది.

**నీటి నాణ్యత :-**

భూగర్భ జలాలను వాడరు, గనుల గుంటలలో వున్న నీటిని బాయిలర్, ధూళిని నియంత్రించడానికి వాడుదురు. డొమెస్టిక్ వ్యర్థ నీటిని ఎస్.టి.పి ద్వారా శుద్ధిచేసి హాల్ బయట నీటి బావిలో వదులుతారు.

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అవసరాలకు ఉపయోగించెదరు.

**ధ్వని నాణ్యత :-**

శబ్ద నాణ్యత రెగ్యులేటరీ అథారిటీ వారిచే ఉద్దేశించబడిన 45 డి.బి - 54 డి.బికి లోబడి వుంటుంది.

**ప్రమాద పరీశీలన :-**

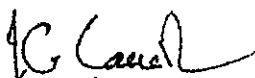
మేనేజ్మెంట్ వారు రిస్క్ అసెస్మెంట్ మరియు డిజాస్టర్ మేనేజ్మెంట్ ప్లాన్ ద్వారా నీటిని పూర్తిస్థాయిలో చిమ్మి పరికరాలని బొగ్గునిల్వవుంచే చోట అమర్చి, ఏమన్నా ప్రమాదాలు జరిగినప్పుడు తక్షణ చర్యలు తీసుకుంటారు.

యం.వో.ఇ.ఎఫ్ మరియు కాలుష్య నియంత్రణ మండలివారు నిర్దేశించిన ప్రకారము ఏంబియంటిక్ ఎయిర్ నాణ్యత (ఎ.ఎ.క్యూ) పాటిస్తారు. మేనేజ్మెంట్ వారు రూ.16.3 కోట్లు కాలుష్య యంత్రాలకు, రూ.7.2 కోట్లు సంవత్సరానికి యంత్రాల మరమ్మత్తులు మరియు రక్షణ కోసం ఉపయోగించెదరు.

జాయింట్ కలెక్టరు ప్రజలని తమ సలహాలు మరియు అభ్యంతరాలను నిర్భయంగా చెప్పమని ఆహ్వానించారు.

శ్రీ మాశెట్టి వెంకటేశ్వర్లు, శ్రీనగర్ గ్రామము, తను ఒక వ్యవసాయ కుటుంబీకుడనని మాట్లాడుతూ గత 30 సంవత్సరములుగా ఈ ప్రాంతములో ఈ సిమెంట్ ప్లాంట్ల వల్ల వచ్చిన వాతావరణ కలుషితము వలన గ్రామ ప్రజలు చాలా ఇబ్బందులు పడ్డారు. ఎందుకంటే కంపెనీలు ముందు చెప్పిన విధముగా కలుషిత నివారణ చర్యలు తీసుకోకపోవటం వలన ఈ ప్రాంత ప్రజలు పంటదిగుబడి సరిగా రాక సుమారు రూ.90 కోట్లు నష్టపోయినారు. మేనేజ్మెంటు వారు చెప్పిన విధముగా పనులు నిర్వర్తించలేకపోతున్నారు. అందువల్ల ఇక్కడి ప్రజలు చాలా ఇబ్బందులు పడుతున్నారని ఆవేదన వ్యక్తం చేశాడు. ప్రస్తుత ప్రతిపాదించిన బొగ్గుతో నడిచే పవర్ ప్లాంటు వల్ల వారి ఇబ్బందులు ఇంకా ఎక్కువ అవుతాయని తెలియచేశారు. ప్రస్తుత మేనేజ్మెంట్ కూడా గతంలోని యాజమాన్యాలలాగే చెప్పిన వాగ్దానాలు నెరవేర్చకపోతే వాళ్ళు గ్రామాలు ఖాళీచేయటం తప్ప వేరే మార్గంలేదని తెలియచేశారు. మేనేజ్మెంటు మీద నిప్పులు వెళ్ళగక్కుతూ స్థానికులైన అనుభవమున్న మరియు అనుభవము లేని వారికి ఉద్యోగ అవకాశాలు కల్పించలేదన్నారు. అందుకని ఇప్పుడు కనీసం 200 మంది కార్మికులను పనిలో పెట్టుకోవాలన్నారు.

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ఇంతకు ముందు రైతులు 25 ఎకరాల భూమిని కంపెనీకి గనులకు లీజు ఇవ్వటం వల్లపోగొట్టుకున్నారు. హిమాచల్ ప్రదేశ్ నుంచి పాత యంత్రసామాగ్రి ఇక్కడికి తెప్పించటం ఇంకా కాలుష్య తీవ్రత పెంచడమేనన్నారు. అందుకని ఇక్కడి స్థానికులతో హిమాచల్ ప్రదేశ్ నుంచి ఇక్కడికి యంత్రపరికరాలను తీసుకురావలసిన కారణాలు విడమర్చి చెప్పాలన్నారు.

తాను ఈ ప్రాజెక్టుకు వ్యతిరేకం కాదు. అని, గ్రామ ప్రజలు కూడా తమవంతు సహాయ సహకారం అందజేస్తారని చెప్పారు. కాని కంపెనీ వాళ్ళు కాలుష్యత లేని పర్యావరణము అందించాలని, కాలుష్య నివారణ యంత్రాలు సరిగ్గా పనిచేయాలని, స్థానికులకి ఉద్యోగ అవకాశాలను కల్పించాలని అందువలన స్థానికులలో కంపెనీ మీద మంచి అభిప్రాయము కలుగునని వివరించారు. ఎటువంటి అనాచార కార్యక్రమములు కంపెనీ చేయరాదు. కంపెనీ బొగ్గు ఆధారిత పవర్ ప్లాంటు కాకుండా వీలుంటే సూర్యరశ్మి ఆధారిత ఎనర్జీ ప్లాంటు పెట్టుకోవలసినదిగా కోరుచున్నాము అని తెలియజేశారు.

శ్రీ ప్రత్తిపాటి రోశయ్య, నారాయణపురం గ్రామము మాట్లాడుతూ ఈ ప్రాజెక్టును స్వాగతిస్తూ, స్థానికేతర వారికి 80% ఉద్యోగములు కల్పించి స్థానికులకు ఉద్యోగములు కల్పించకపోవడాన్ని గురించి తీవ్ర ఆవేదన వ్యక్తం చేశారు. 1986లో సిమెంట్ కర్మాగారము స్థాపించినప్పుడు మేమందరము స్థానికులకు ఉద్యోగ అవకాశాలు వస్తాయి మరియు స్థానికంగా వృద్ధి చెందుతుందని ఆశించాము. స్థానికులైన వారికి స్కిల్డ్, అన్ స్కిల్డ్ మరియు కాంట్రాక్ట్ లేబరు ఇచ్చి సిమెంట్ మరియు పవర్ ప్లాంట్ స్టార్ట్ చేసుకోవలసినదిగా కోరినారు.

శ్రీ మేదర డానియల్, గామలపాడు గ్రామము మాట్లాడుతూ వారు ఈ పవర్ ప్లాంట్ పెట్టుటకు సుముఖంగా లేమని చెప్పి ప్రజాసేకరణ సభ నుంచి వెళ్ళిపోయారు.

శ్రీ మోదుగల సురేష్ రెడ్డి, శ్రీనగర్ గ్రామము మాట్లాడుతూ వాళ్ళు బొగ్గు ఆధారిత పవర్ ప్లాంట్ సిమెంట్ కంపెనీ ఆవరణలో పెట్టుటకు సుముఖంగా లేమని చెప్పారు. 70 మీటర్ల ఎత్తుగల స్టాక్ బాయిలర్ అమర్చినప్పటికి కార్బన్ డైఆక్సైడ్ వ్యర్థాలు వస్తాయని చెప్పారు. ఆయన మేనేజ్ మెంటు వారిని కలుషితము చేయని సోలార్ ఎనర్జీ లేక గాలి (విండ్) ఆధారిత పవర్ ప్లాంట్ కాకుండా బొగ్గు ఆధారిత పవర్ ప్లాంట్ పెట్టుకొనుటకు గల కారణాలని విశదీకరించాలని అన్నారు. మేనేజ్ మెంట్ వారు కావలసిన అనుమతులు లేకుండా పవర్ ప్లాంటుకి కావలసిన యంత్రసామాగ్రిని తరలించినట్లు ప్రజల దగ్గర సమాచారము వుందని చెప్పారు. మేనేజ్ మెంట్ వారు ఈ పవర్

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ప్లాంట్ వల్ల ఎంతమందికి ఉద్యోగములు వచ్చును, ప్రభుత్వము వారికి ఎంత ఆర్థిక సహాయము సమకూరునని అడిగారు, అలాగే కార్బన్ డైఆక్సైడ్ వ్యర్థాలను ఎంతవరకు హరిత వనాలు నివారించగలవో చెప్పాలన్నారు. మేనేజ్మెంటు ఎటువంటి సోషల్ మరియు ఎకనామిక్ సంక్షేమ కార్యక్రమాలు చేయడం లేదని చెప్పారు. అలాగే త్రాగునీటిని సమకూర్చటంలేదని చెప్పారు.

శ్రీ శంకరరావు, శ్రీనగరు మాట్లాడుతూ ప్రజాభిప్రాయ వేదిక శ్రీనగరు లేదా గామాలపాడు గ్రామ పరిధిలో నిర్వహిస్తే అక్కడి ప్రజలు ఎక్కువ మొత్తములో పాల్గొని తమ అభిప్రాయాలను నిరభ్యంతరముగా తెలియచేసే వారని చెప్పారు. వారి గ్రామానికి ఎటువంటి త్రాగునీటి సౌకర్యము లేదని వారు గత 20 సంవత్సరములుగా అవస్థలు పడుతున్నామని చెప్పారు. మేనేజ్మెంట్ వారు స్థానికులకు ఉద్యోగ అవకాశములు కల్పించిన తరువాత మాత్రమే పవర్ ప్లాంట్ మొదలు పెట్టాలని కోరారు. ఇంతకు ముందు మేనేజ్మెంట్ వాళ్ళు వాళ్ళ లాభాలకోసం కంపెనీని అమూలని వాళ్ళు చుట్టు పక్కల గ్రామాల వాళ్ళకి ఎటువంటి ఉపయోగ కరమైన కార్యక్రమాలను చేయలేదని చెప్పి సభనుంచి వెళ్ళిపోయారు.

శ్రీమతి వంగా పద్మావతి మాట్లాడుతూ అమె ఈ ప్రాజెక్టుకు అనుకూలం కాదని, దీని వలన ప్రజల మరియు జీవాల ఆరోగ్యం దెబ్బతింటుందని చెప్పారు మరియు గత 30 సంవత్సరాలుగా ఈ ఫ్యాక్టరీని నడుపుతున్న యాజమాన్యం స్థానికులను అశ్రద్ధ చేస్తూ బయట వారికి ఉద్యోగాలు కల్పిస్తున్నారని చెప్పారు.

శ్రీమతి రమణమ్మ మరియు ఇతరులు మాట్లాడుతూ పవర్ ప్లాంటు నిర్మాణానికి సుముఖంగా లేమని చెప్పారు.

శ్రీ చిలుక చంద్రశేఖర్, ఎడ్వకేట్ మరియు ఏ.పి.సివిల్ లిబర్రీస్ యూనియన్ ప్రజాభిప్రాయ సేకరణకు విచ్చేసిన వారిని ప్రార్థిస్తూ ఎవరయితే పవర్ ప్లాంటు నిర్మాణానికి సుముఖంగాలేరో వారు ధైర్యంగా నుంచుని తమ అభిప్రాయాన్ని వెల్లడించాలని చెప్పారు. లేకపోతే ఇక్కడ కూడా పులిచింతల ప్రాజెక్టు దగ్గర జరిగినట్లే జరుగుతుందని చెప్పారు. ప్రజాభిప్రాయ వేదిక జేపి గ్రూప్ ఆవరణలో కాకుండా బయటపెట్టినట్లయితే బాగుండేది. అనే అభిప్రాయాన్ని వెలిబుచ్చారు. ప్రజాభిప్రాయ సేకరణకి విచ్చేసిన వారిలో చాలామంది కంపెనీ ఉద్యోగులు మరియు కంపెనీ కార్మికులు అని వాపోయారు. మేనేజ్మెంట్ లాల్చీ చేసి 700 మంది బయట రాష్ట్రాల వారికి ఉద్యోగాలు ఇచ్చారని చెప్పారు. ఇంతకు ముందు మేనేజ్మెంట్లు కూడా స్థానికులకు ఉద్యోగ

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అవకాశాలు ఇవ్వకుండా వెళ్ళిపోయాయన్నారు. ప్రస్తుతమున్న పరిస్థితిలో పలనాడులోని మిగతా సిమెంట్ కర్మాగారాల వల్ల గాలి కాలుష్యం బాగాపెరిగి పర్యావరణ ముప్పు ఏర్పడుతుందని చెప్పారు. ప్రత్యామ్నాయాలు అయిన సోలార్ ఎనర్జీ మరియు విండ్ ఎనర్జీ ప్రాజెక్టుల ఏర్పాటు పరీశీలించి బొగ్గు ఆధారిత పవర్ ప్లాంటు స్థానములో ఏర్పాటు చేయవలసినదిగా కోరారు. మేనేజ్మెంట్ వారు హరిత వనాన్ని ప్లాంటు ప్రాంగణములోపల మాత్రమే ఏర్పాటు చేస్తున్నారు కాని చుట్టు ప్రక్కల గ్రామాలలో ఏర్పాటు గురించి ఏమాత్రము చెప్పటం లేదు. ప్రజలు బొగ్గు ఆధారిత పవర్ ప్లాంట్ నిర్మాణాన్ని ఈ రాష్ట్రంలో వ్యతిరేకిస్తున్నారు. పురాతన మాన్యుమెంట్స్ గురించి కూడా సరైన అధ్యయనం చేయలేదు. కంపెనీ వారు తమ సిమెంట్ ప్లాంట్ విస్తరణకి తమకి అభ్యంతరం లేదని చెప్పారు. స్థానికులకి ఉద్యోగాలు ఇచ్చినతరువాత పవర్ ప్లాంట్ కి అనుమతి ఇవ్వాలి. ఇక ముందు ప్రజాభిప్రాయ వేదిక మార్పును కూడా దృష్టిలో పెట్టుకోవాలన్నారు.

శ్రీ కె.నవజ్యోతి, పర్యావరణ పరిరక్షణ సమితి, నడికుడి గ్రామము వారు మాట్లాడుతూ మేము ఇంతకు ముందు దాచేపల్లి పరిసరప్రాంతాలలోని సున్నపుగనులు తమకు వరంగా భావించేవాళ్ళమని కాని అవి ఈనాడు మాకు శాపంగా మారిందని చెప్పారు. ప్రస్తుతము 1500 ఎకరాల పంట భూమి వుంది. దాని కోసం కొత్త కంపెనీలు చెట్టినాడు సిమెంట్స్, హిమాని సిమెంట్స్, మహాసిమెంట్స్ మొదలైన వారు 100 ఎకరాల భూమికోసం ఎదురు చూస్తున్నారు అని చెప్పారు. 400 ఎకరాల సాగుభూమి ఒక్క ఆంధ్రసిమెంట్స్ వారి ఆధీనములో వుందని చెప్పారు. వాతావరణం కలుషితం వలన జీవరాశులకి ముప్పు ఏర్పడుతుందని చెప్పారు. మాకు చాలా ఆశ్చర్యంగా వుంది. పర్యావరణ మంత్రిత్వశాఖ ఒక్కచోటే సిమెంట్ కర్మాగారాల స్థాపనకి ఎలా తమ సంసిద్ధత వ్యక్తం చేస్తుందని అడిగారు. సిమెంట్ పరిశ్రమలు సిండికేట్ ఏర్పాటుచేసుకున్నాయి. ప్రశాంతముగా జీవించడం ఒక ధర్మమన్నారు, కాబట్టి బొగ్గు ఆధారిత పవర్ ప్లాంటు నిర్మాణము వద్దన్నారు.

జాయింట్ కలెక్టరు గారు మాట్లాడుతూ ప్రజలు వ్యక్తం చేసిన అభ్యంతరాలకు మేనేజ్మెంట్ నుంచి ఎవరైనా సమాధానాలు చెప్పాలని సూచించారు.

శ్రీ బి.యమ్.కె.శర్మ, డిప్యూటీ జనరల్ మేనేజర్, జేపి గ్రూప్, సభికులను స్వాగతించి ఈ క్రింది విధంగా వివరణ ఇచ్చారు.

1. జేపి గ్రూప్ యాజమాన్యం బొద్దుతలు చేపట్టిన తరువాత అప్పటి ఆంధ్రసిమెంట్స్ కర్మాగార

జేపి గ్రూప్ యాజమాన్యం బొద్దుతలు చేపట్టిన తరువాత అప్పటి ఆంధ్రసిమెంట్స్ కర్మాగార

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జాబితాలో ఉండిన అందరు ఉద్యోగులను, కార్మికులను ఎటువంటి మార్పులు లేకుండా తీసుకోవటం జరిగిందని

2. ప్రస్తుతము ఎంతోమంది కాంట్రాక్ట్ పనివారు పనిచేయుచున్నారని, అర్హతగల ప్రాంతీయులైన సివిల్ మరియు మెకానికల్ కాంట్రాక్ట్ పనివారిని అందరిని అవసరమైనంతమేరకు దశలవారీగా తీసుకోవటం జరిగిందని తెలిపారు.
3. ఉత్పాదన నిలిపివేసి యున్న సిక్ యూనిట్ను తాము తీసుకుని ఉత్పాదన దిశగా నడుపుతున్నామని తెలిపారు.
4. అతి త్వరలోనే ఉత్పాదన ప్రారంభమైన తరువాత లోడింగ్ మరియు అన్‌లోడింగ్ కాంట్రాక్ట్ కార్మికులను కూడా అవసరమైనంత మేరకు పనిలోనికి తీసుకుంటామని వాగ్దానం చేశారు.
5. నిరంతరముగా కర్మాగారము నడుపుటకు క్యాప్టివ్ పవర్‌ప్లాంట్ ఎంతో అవసరమని నొక్కి ఒక్కాణించారు.

శ్రీ టి.జి.వి.కృష్ణారెడ్డి, ఎం.ఎల్.సి, ప్రత్యేక ఆహ్వానితులు: ప్రజాభిప్రాయ సేకరణకు విచ్చేసిన వారిని స్వాగతిస్తూ, గత 30 సంవత్సరముల నుంచి జరుగుతున్న సంఘటనల వలన ఇక్కడి ప్రజలు భయపడుతున్నారు అన్నారు. ప్రస్తుత మనేజ్‌మెంట్ వారికి ప్రజలతో సత్సంబంధాలు లేవు. మేనేజ్‌మెంట్ వారిని ప్రస్తుత ఉద్యోగులను మరియు కాంట్రాక్ట్ ఉద్యోగులను కంపెనీ రోల్స్‌లో తీసుకోవలసినదిగా అభ్యర్థించారు. స్థానికులను కాకుండా పొరుగు రాష్ట్రాల వారిని ఉద్యోగములలో చేర్చుకొనుటను విభేదించారు. ఉద్యోగ విషయములు, 25 ఎకరముల పట్టాభూమి మరియు లోడింగ్, అన్‌లోడింగ్ కాంట్రాక్ట్ కార్మికుల విషయములు ప్రజాభిప్రాయ సభకు సంబంధించినవి కావని నొక్కి ఒక్కాణించారు. అసిస్టెంట్ డైరెక్టర్, మైనింగ్ డిపార్టుమెంట్ వారు పొరపాటున 25 ఎకరాల పట్టాభూమిని మైనింగ్ కార్యకలాపాలకు నిమిత్తం కంపెనీకి ఇచ్చారని, రైతుల ఫిర్యాదులను పరిశీలించిన తరువాత దాని రద్దు కొరకు ప్రభుత్వానికి నివేదిక సమర్పించారని చెప్పినారు. ఈ అంశాలు అన్ని మేనేజ్‌మెంట్ వాళ్ళు దృష్టిలో పెట్టుకొని స్థానిక ప్రజలతో మంచి రిలేషన్స్‌ని పెంపొందించడానికి కృషిచేయాలి.

కర్మాగారానికి చుట్టూ ఎత్తుగా పెరిగే చెట్లను పెంచడం ద్వారా ప్రద్యూషణను చాలా వరకు నియంత్రించవచ్చని తెలిపారు. పరిసరాలలో 1.5 కిలోమీటర్ల వృత్తం లోపలవున్న వ్యవసాయ పంటలకు నష్టం వాట్లీకుండా తగిన నిపుణుల సలహాలు తీసుకోమని సూచించారు.

  
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రెవిన్యూశాఖాధికారులు తగిన వాస్తవ వివరాలను తెలుసుకొని, కాలుష్యనివారణ చర్యలు తీసుకుని, తగిన పరికరాలను వినియోగించి వాటిని నిరంతరం పర్యవేక్షించే ఏర్పాట్లు చేయడం ద్వారా కాలుష్యాన్ని నివారించవచ్చని చెప్పారు.

నీరు చల్లే యంత్రములను బొగ్గు లోడింగ్, అన్ లోడింగ్ స్థానాలలో వినియోగించడం ద్వారా దుమ్ము, ధూళి, కాలుష్యాన్ని నివారించవచ్చని, బొగ్గు తరలించే మార్గమున పొందుగల రైల్వే స్టేషన్ నుండి కర్మాగారం వరకు సిమెంట్ రోడ్డు నిర్మాణం చేపట్టడం ద్వారా కూడా చాలావరకు కాలుష్యం నివారించవచ్చని కంపెనీ యాజమాన్యాన్ని కోరడం జరిగింది. వ్యర్థ నీరు శుద్ధీకరణ పరికరాలను కూడా వినియోగించాలని సూచించారు. యాజమాన్యం సూర్యరశ్మి ఆధారిత విద్యుత్ ఉత్పాదన దిశగా కూడా ఆలోచించాలని సూచించారు. ఒక మెగా వాట్ సోలార్ విద్యుత్ ఉత్పాదనకు 8 నుండి 9 కోట్లు ఖర్చుగా అంచనావేశారు. 30 మెగావాట్లకు రూ.270 కోట్లు ఖర్చు కాగలవని సూచించారు. దాని ద్వారా కాలుష్యం పూర్తిగా ఉండదని అభిప్రాయపడ్డారు. ప్రాంతీయులకు ఉపాధి కల్పన చేయాలని యాజమాన్యాన్ని డిమాండ్ చేశారు. కర్మాగార స్థాపనకు ప్రజల అభిప్రాయంతో తాను ఏకీభవిస్తున్నట్లు తెలియచేశారు.

జంగల సింగరాయ యాదవ్ మాట్లాడుతూ ప్రస్తుతం వున్న సిమెంట్ కర్మాగార ఆవరణలోనే విద్యుత్ కర్మాగారస్థాపన తనకు సమ్మతమేనని కాని యాజమాన్యం కార్మికులకు రోజుకు రూ.300/- మాత్రమే కూలి చెల్లించుచుండటం వలన కర్మాగార స్థాపనను వ్యతిరేకిస్తున్నట్లు చివరిలో చెప్పారు.

కోపము మరియు అనిశ్చితిగా వున్న కొంత మంది ప్రజలు కర్మాగారమునకు వ్యతిరేకముగా ప్లే కార్డ్స్ మీద శ్లోగన్స్ వ్రాసుకొని ప్రజాభిప్రాయసభ నుంచి అరుచుకుంటూ వెళ్ళిపోయారు.

మొత్తం 205 వ్రాత పూర్వక వినతి పత్రములు స్వీకరించటం జరిగింది.

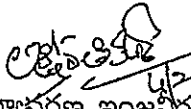
అందులో 191 పత్రాలు కర్మాగార స్థాపనకు సానుకూలంగాను, 14 వ్యతిరేకంగాను ఉన్నాయి. వినతి పత్రాలను జతచేయటం జరిగింది. వ్యతిరేక పత్రాలు ఈ క్రింది వారు సమర్పించినారు.

1. శ్రీ బి.రామకృష్ణారెడ్డి, రామాపురము.
2. శ్రీ జి.కోటిరెడ్డి, శ్రీనగరు
3. శ్రీ జి.వెంకటేశ్వర్లు, పొందుగల.
4. శ్రీ యమ్.సురేష్ రెడ్డి, శ్రీనగరు

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5. శ్రీ వి.రమణ మరియు ఇతరులు, మాజీ సర్పంచ్, రామాపురము.
6. శ్రీ.కె.శ్రీనివాసరావు, జనరల్ సెక్రటరీ, పి.డి.యమ్ పార్టీ, గుంటూరు.
7. శ్రీ బి.కొండారెడ్డి, జనరల్ సెక్రటరీ, పి.కె.ఎస్.పార్టీ
8. శ్రీ ఎస్.సుబ్బారావు మరియు ఇతరులు, గామాలపాడు.
9. శ్రీ వెంకటేశ్వర్లు, రామాపురము.
10. శ్రీ బి.కలన నాయక్, భట్రిపాలెము తండా గ్రామము.
11. శ్రీ ఎ.వెంగళారెడ్డి, రామాపురము
12. శ్రీ జి.వేదముని, ప్రెసిడెంట్, ఎం/ఎస్ చిప్స్ & పల్వరైసర్స్ యూనియన్
13. శ్రీ సి.చంద్రపాల్, రామాపురం
14. శ్రీ పి.సాంబయ్య, రామాపురము.

జాయింట్ కలెక్టరుగారు సభ ముగింపు ఉపన్యాసం ఇస్తూ ప్రజాభిప్రాయసేకరణ సభలో ఇందుకు సంబంధించినవే కాక దీనికి సంబంధించని సాధారణ సమస్యలతో కూడిన విన్నపాలు కూడా వచ్చాయని వాటిని సంబంధిత అధికారులకు పంపుతామని ఈ సభకార్యక్రమమునంతా దృశ్య నిక్షిప్తం చేయటం జరిగిందని (వీడియో గ్రఫీ), అన్ని దస్తావేజులను పొందుపరచి సంబంధిత మంత్రిత్వశాఖలకు తదుపరి చర్యల నిమిత్తము పంపటం జరుగుతుందని చెబుతూ ముగింపు పలికారు.

  
పర్యావరణ ఇంజనీరు &  
మెంబరు కన్వీనర్,  
ఆంధ్రప్రదేశ్ కాలుష్య నియంత్రణ మండలి,  
రీజనల్ కార్యాలయం, గుంటూరు.




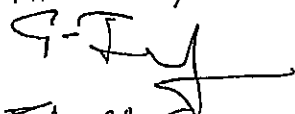
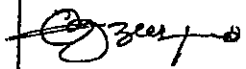
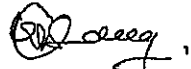



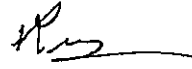
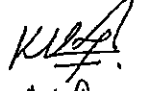

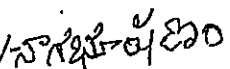
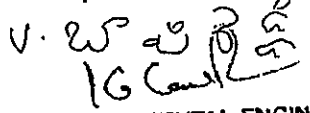
శా 6 ధ 3 .  
జాయింట్ కలెక్టర్, గుంటూరు జిల్లా మరియు  
చైర్పర్సన్, ప్రజాభిప్రాయ సేకరణ కమిటీ.

(3/3)





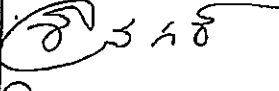
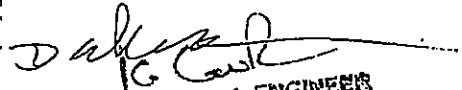
  
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REGIONAL OFFICE, GUNTUR

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S.No	Name and Designation of Official	Signature
15.	N. S. Reddy N.H.O.	
16.	V. Sumantha Reddy	
17.	Dharmathi : N.H.O.	VSA: 
18.	M. VEENKAT REDDY N.H.O.	
19.	G. Vijay Kumar - N.H.O.	
20.	MD. Nazim Ahmed - N.H.O.	
21.	P. Kiran Kumar MRPS	P. Kiran Kumar
22.	K. Vijaya Gandhi	
23.	P. Ravi Kumar - N.H.O. - Hyd.	
24.	P. Ravi Kumar - N.H.O. - Hyd.	
25.	P. Satish Kumar - N.H.O. - WGL	
26.	P. Satish Kumar - N.H.O. - WGL	
27.	B. Shalekar - N.H.O. - Hyd	
28.	T. Rama Krishna - S.R. 300 B	T. Rama Krishna
29.	V. Venkata Rao - S.R. 300 B	
30.	K. SAIDA REDDY SRINAGAR	- K. S. Reddy -
31.	K. Venkatesh Reddy (SRINAGAR)	
32.	K. VENKAT RAO (NARAYANPURAM) DACHEPALLI	 30.1.2013
33.	N. NAGABHUSHANAM SRINAGAR	
34.	V. Venkata Rao - S.R. 300 B	

**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

Sl.No	Name and address of the person	Signature
35	B. Krishna Prasada (Nadikudi)	B. Krishna Prasada
36	బి.కృష్ణ ప్రసాద్ నడికుడి.	బి.కృష్ణ ప్రసాద్
37	Ch. Lunka Durga Rao (Srisailam)	
38	Toteti. Vijayannaiah (Nadikudi)	T. Vijayannaiah
39	Y. Venkateswara. (Nadikudi)	Y. Venkateswara Rao
40	29వ 37వ రోడ్లు వద్ద	
41	కొండ్లపాటి. రామ కృష్ణ	K. Ram
42	G. Nageswara Rao - S. A. P.	
43	బి.కృష్ణ ప్రసాద్ నడికుడి	-
44	Gundam. Venkateswara Rama Puram	G. Venkateswara
45	A. Kumar N.G.O Hyd.	
46	K. Mohan Krishna NDED	K. Mohan Krishna
47	కె. మోహన్ దేవ్	కె. మోహన్
48	CH. సైదు, నడికుడి	
49	గోపాల్ కుమార్, నడికుడి	గోపాల్ కుమార్
50	T. Venkateswara Rao	T. Venkateswara Rao
51	కొండ్లపాటి	
52	B. Rami Reddy.	Srinagar.
53	K. Venkateswara, నడికుడి	

**ANNEXURE-XI**  
**PUBLIC HEARING PROCEEDINGS**

S.No	Name and address of the person	Signature
54	Ch. Sibi. Reddy (Rangapuram)	Ch. Sibi. Reddy
55	Ch. Sibi. Reddy (Rangapuram)	Ch. Sibi. Reddy
56	B. SRINIVASA LAO (Rangapuram)	B. Srinivasa Rao
57	K. Seshi Reddy Srirangar -	K.S.R
58	V. Venkata Reddy (Rangapuram)	V. Venkata Reddy
59	N. Chandra Sekhar (Rangapuram)	N. Chandra Sekhar
60	V. Venkata Reddy (Rangapuram)	V. Venkata Reddy
61	S. Ramesh Kumar (Rangapuram)	S. Ramesh Kumar
62	V. Linga Reddy (Rangapuram)	V. Linga Reddy
63	A. Venkata Reddy (Rangapuram)	A. Venkata Reddy
64	V. Venkata Reddy (Rangapuram)	V. Venkata Reddy
65	P. Venkata Reddy (Rangapuram)	P. Venkata Reddy
66	P. Venkata Reddy (Rangapuram)	P. Venkata Reddy
67	T. Ramesh Kumar (Rangapuram)	T. Ramesh Kumar
68	V. Ramesh Kumar (Rangapuram)	V. Ramesh Kumar
69	V. Ramesh Kumar (Rangapuram)	V. Ramesh Kumar
70	T. Ramesh Kumar (Rangapuram)	T. Ramesh Kumar
71	E. Prasad (Rangapuram)	E. Prasad
72	R. Ramesh Kumar (Rangapuram)	R. Ramesh Kumar
73	R. Ramesh Kumar (Rangapuram)	R. Ramesh Kumar

**Annexure-XII**  
**Particulars of Coal**



**ANNEXURE-XII**  
**PARTICULARS OF COAL**

**1.0 Source of Coal**

Coal requirement will be 0.21 MTPA and is proposed to be sourced from Singareni Collieries. Application for the long terms indigenous coal linkage has been submitted and is in process. Alternatively, it is also proposed to use the indigenous coal to be procured through e-auction which would be of E and F grade quality. The quality of the coal to procure either from Singareni Collieries or through e-auction is expected to be:

**TABLE-1**  
**INDIGINEOUS COAL QUALITY**

<b>Sr. No.</b>	<b>Parameter</b>	<b>Worst Quality</b>
1	GCV, Kcal/kg	< 3000
2	Ash, %	45.0
3	Volatile matter, %	21
4	Moisture, %	15
5	Sulphur content, %	0.5

However, as an interim arrangement to meet the coal requirement for the proposed 30 MW CPP, an MoU has been signed with M/s Rawmet Commodities Pvt. Limited, Kolkata who is a coal import trader would be supplying 0.21 MTPA imported coal from Indonesia and from its associates in various coal producing countries. As per the MoU, the coal is expected to have a GCV of 5000 kcs/ kg and the coal requirement would be 0.146 MTPA (at worst operating conditions). The coal quality is given below:

**TABLE-1A**  
**IMPORTED COAL QUALITY**

<b>Sr. No.</b>	<b>Parameter</b>	<b>Coal Quality</b>
1	GCV, Kcal/kg	>5000
2	Ash, %	8-12
3	Volatile matter, %	42
4	Moisture, %	39
5	Sulphur content, %	0.6

**2.0 IMPACT ASSESSMENT**

Impact prediction has been carried out for use of above imported coal for the proposed 30 MW power plant. Also solid waste and gaseous emissions are calculated based on coal requirement of 0.146 MTPA.

**2.1 Impact on Air Quality**

The major source of emission from the proposed power plant is stack attached to boiler. Particulate Matter (PM), Sulphur dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) are the major pollutants from the proposed power plant. The expected stack emissions and emission loads have been computed based on Imported Coal. The details are given in **Table-2**.

**ANNEXURE-XII**  
**PARTICULARS OF COAL**

**TABLE-2**  
**EXPECTED STACK EMISSION DETAILS**

Sr. No	Stack Dimensions	CPP
1	Stack height (m)	77
2	Diameter (m)	2.0
3	Velocity (m/s)	15.96
4	Temperature (deg C)	140
5	Flow rate (Nm <sup>3</sup> /sec)	36.15
6	Coal Quantity, TPH	16.62
7	Particulate Matter (g/s) (50 mg/Nm <sup>3</sup> )	1.80
8	Sulphur dioxide (g/s) 0.6 % S	55.40
9	Oxides of Nitrogen (g/s) 260 ng/kjoules	26.64

Prediction of impacts on air environment has been carried out by employing **Industrial Source Complex Short Term [ISCST3]** mathematical model based on a steady state Gaussian plume dispersion model designed for multiple point sources for short term.

Air pollution modeling has been carried out by estimating GLCs at about 1200 receptors to obtain an optimum description of variations in concentrations over the site in 10-km radius covering 16 directions. The incremental ground level concentrations for PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> are given in **Table-3**. The incremental GLCs with imported coal have been compared with incremental GLCs with indigenous coal from Singareni collieries (as shown in Section-4.3.5 of Chapter-4).

**TABLE-3**  
**INCREMENTAL GLC's (WORST CASE SCENARIO)**

Pollutant	Due to Domestic Coal (0.5% Sulphur) (µg/m <sup>3</sup> )	Due to Imported Coal (0.6% Sulphur) (Worst Coal) (µg/m <sup>3</sup> )
PM <sub>10</sub>	0.17	0.17
SO <sub>2</sub>	6.4	5.3
NO <sub>x</sub>	2.24	2.58

The resultant GLCs for PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub> are given in **Table-4**.

**TABLE-4**  
**RESULTANT CONCENTRATIONS DUE TO INCREMENTAL GLC's**  
**(WORST CASE SCENARIO)**

Pollutant	Maximum Baseline Concentration (µg/m <sup>3</sup> )	Incremental Concentrations due to Proposed Project (Imported coal with 0.6% Sulphur) (µg/m <sup>3</sup> )	Resultant Concentration (µg/m <sup>3</sup> )	NAAQ Limits specified by CPCB
PM <sub>10</sub>	56.8	0.17	57.0	100
SO <sub>2</sub>	11.6	6.4	18.0	80
NO <sub>x</sub>	14.2	2.24	16.4	80

The above table shows that the resultant concentration of SO<sub>2</sub> of the proposed 30 MW thermal power plant with imported coal is less than with indigenous coal and is well within the prescribed NAAQ limits.

## **ANNEXURE-XII** **PARTICULARS OF COAL**

**There will not be any significant air impacts due to Imported Coal in place of Domestic Coal.**

### **2.2 Impact of Solid Waste**

The details of ash generated due to use of imported coal are given in **Table-5**.

**TABLE-5**  
**EXPECTED GENERATION OF SOLID WASTE**

Type of Solid Waste	Quantity of Generation (MTPA)		Mode of Disposal
	Domestic Coal	Imported Coal	
Ash	0.0945	0.0175	Entire ash will be 100% utilized for pozzolona cement making by the cement plant
Bottom ash	0.0756	0.0140	
Fly ash	0.0189	0.0035	

Ash generation will be reduced significantly with the use of Imported Coal as the ash content in the imported coal will be maximum 12%. However, as the entire ash generated will be used in the cement manufacturing in the 3.5 MTPA operating cement located adjacent to the proposed 30 MW CPP and no on-land storage is proposed, ash generation will not have any impacts on the environment and surroundings whether imported or indigenous coal are used.

### **2.3 Emission Calculations**

#### **2.3.1 Particulate Matter**

- *Area Calculations*

$$Area(m^2) = \frac{3.14 \times (Top\ Stack\ Diameter)^2}{4} = 3.14 \times (2.0)^2/4 = 3.14\ m^2$$

- *Temperature Correction*

Temperature correction is calculated based on standard ambient temperature of 25° C.

$$Temperature\ Correction = \frac{273 + 25^0\ C}{273 + StackTemperature^0\ C} = 298/413 = 0.722$$

- *Volumetric Flow Rate*

$$Volumetric\ flow\ (\frac{Nm^3}{s}) = Area\ (m^2) \times Exit\ Velocity\ (m/s) \times Temperature\ Correction$$

$$= 3.14 \times 15.96 \times 0.722 = 36.16\ Nm^3/s$$

**ANNEXURE-XII**  
**PARTICULARS OF COAL**

2.3.2 Sulphur dioxide

Coal Consumption	=	16.62 TPH
	=	16620 kg/hr
Sulphur content in coal	=	0.6%
Sulphur emission factor	=	$(0.6/100) \times (64/32) = 0.012$
SO <sub>2</sub> emission rate	=	Emission factor x consumption of coal in kg/hr
	=	$0.01 \times 16620 = 199.44 \text{ kg/hr}$
	=	55.40 g/sec

2.3.3 NOx Emissions

$$260 \times 5300 \times 16.62 \times 4.187 / 10^6 / 3.6 = 26.64 \text{ g/s}$$

**Annexure-XII(A)**  
**Fuel Supply Agreement**

**ANNEXURE-XIIIA  
FUEL SUPPLY AGREEMENT**



उत्तर प्रदेश UTTAR PRADESH

BL 237360

**MEMORANDUM OF UNDERSTANDING**

This Memorandum of Understanding ("MOU") made and entered on 26<sup>th</sup> February, 2013 by and between:-

Durga Cement Works (A Unit of Andhra Cements Ltd), a company incorporated in accordance with the Companies Act, 1956 and having its registered office at Village Duggapuram, Dachepalli, Dist Guntur, Andhra Pradesh-522414 (hereinafter referred to as the "Buyer" which expression shall, unless repugnant to the context or meaning thereof, include its successors and permitted assigns) of the ONE PART, and

Raymet Commodities Pvt Ltd a company registered under the Companies Act, 1956 having its registered office at 40/7 Ballygunge Circular Road, Kolkata 700019, West Bengal, India hereinafter called the "Seller, which term shall, unless repugnant to the subject or context, include its successors and permitted assigns, of the OTHER PART.



*R. Gupta*

Raymet Commodities Pvt Ltd

*[Signature]*  
AXIIA-1  
Authorized Signator

**ANNEXURE-XIIA  
FUEL SUPPLY AGREEMENT**

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Anandh Company LTD		
Secured Newelp W.P.		
2 FEB 2013		

2 FEB 2013

**ANNEXURE-XIIA**  
**FUEL SUPPLY AGREEMENT**

Whereas Buyer is setting up a 30 MW Coal based Captive Thermal Project at Village Durgapuram, Dachepalli, Dist Guntur, Andhra Pradesh-522414 to provide electric power within the premises of its Cement Plant.

AND whereas Buyer is desirous of making an arrangement for coal supply of the required quality and in requisite quantity to meet the operational requirement of the Captive Power Project.

AND Whereas Seller is a large importer of Coal to India sourced from Indonesia and from its associates in various coal producing countries.

AND WHEREAS both Parties with intent of exploring opportunities for the purpose of entering into a Fuel Supply Agreement in near future have agreed to enter into a Memorandum of Understanding (MOU) at the following terms and conditions.

**NOW, THEREFORE, IN RECOGNITION OF AGREEMENT IN PRINCIPLE, THE PARTIES RECORD THEIR UNDERSTANDING AS FOLLOWS:-**

- 1) Seller shall source Coal from Indonesia to meet the Coal requirement of Buyer's 30 MW Captive Power Plant, upon commissioning of the Power Plant for a period of 7 to 10 years.
- 2) Seller shall supply coal to Buyer's Power Plant of the specification as given below:-

Coal sourced from Indonesia:	GCV	: 5300 Kcal/kg
	Ash content	: 8-12%
	Moisture content	: 39% (max)
	Volatile Mater	: 42%
	Sulphur	: 0.6% (max)
- 3) Seller shall supply approx 2,10,000 MT per annum Coal.



*St. Gupta*

Rawmet Commodities Pvt. Ltd.

*[Signature]*  
Authorized Signatory

AXIIA-3



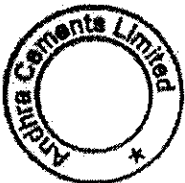
**ANNEXURE-XIIA**  
**FUEL SUPPLY AGREEMENT**

- 4) Both parties should use Platt's coal Index for the purpose of fixing price for supply of Coal.

- 5) They key specification of Coal will be:

Fuel	Ash%	Moisture%	Volatile matter%	Fixed Carbon%	GCV Kcal/Kg
Imported Coal (Indonesia)	8-12% Avg.10%	IM:14% TM:30-39%	30-42%	30% 48%	5300

- 6) This MOU shall remain in effect until the first to occur of the following events:
- (i) Twelve months or any mutually agreed extended period following the date of execution of this MOU; or
  - (ii) The execution by Parties of a detailed Fuel Supply Agreement; or
  - (iii) Agreement of all Parties to terminate or otherwise withdraw from this MOU.
- 7) This MOU shall be framework for possible future negotiations and agreements between the Parties which shall govern the rights and obligations of the Parties.
- 8) This MOU shall be governed and interpreted by, and construed in accordance with the laws of India.
- 9) Any dispute or question arising between the Parties touching the meaning, construction or effect of this MOU or of any clause or thing herein contained or regarding the respective liabilities and rights under this MOU, which cannot be settled amicably by the Parties, by mutual negotiation within 30 (thirty) days of issue of a notice by either Party, then every such dispute or question shall be referred to and finally resolved by Arbitration to be held in accordance with the provisions of Arbitration and Conciliation Act , 1996. For the purpose of arbitration, each Party will appoint one arbitrator and thereafter the appointed arbitrators shall nominate a presiding arbitrator. The place of arbitration or sitting shall be at Delhi in India alone.



*Dr. Gupta*

Rawnet Commodities Pvt. Ltd.

*[Signature]*  
Authorized Signatory

AXIIA-4

**ANNEXURE-XIIA**  
**FUEL SUPPLY AGREEMENT**

- 10) For the purpose of disputes under this MOU, the jurisdiction shall lie at Delhi court competent under law.

In witness whereof the parties have executed this MoU through their authorized representative on the 26<sup>th</sup> day of February month and 2013 year as mentioned at the beginning of this document in Presence of:

On behalf of

**Durga Cement Works**

*A. Gupta*  
26/2/13



Witness

1. *Munish Kapur*  
MUNISH KAPUR  
JA ANNEXE SEC-134
2. *Seemant Yadav*  
SEEMANT YADAV  
JA ANNEXE SEC-134

On behalf of

**M/s. Rawmet Commodities Pvt Ltd.**

Rawmet Commodities Pvt. Ltd.

*[Signature]*  
Authorized Signator

1. *Satish*
2. *Mudit Bedi*