EXECUTIVE SUMMARY

M/S. SPARTA COKE PVT. LTD

(2, 00,000 TPA COKE OVEN & POWER GENERATION)

SUBMITTED BY

M/S. SPARTA COKE PVT. LTD

RAJUPALEM VILLAGE, KIRLAMPUDI MANDAL,

EAST GODAVARI DISTRICT

EXECUTIVE SUMMARY OF M/S. SPARTA COKE PVT. LTD

PROJECT AT A GLANCE

S.No	Parameters	Description
1.	Plant Capacity	Metallurgical Coke – 2 Lakhs TPA Power Generation – 14MW (Waste heat recovery based)
2	Total area proposed	13.0 Acres
3	Location of the project	
	Sy.no. of the land	555/2
	Village	Rajupalem
	Mandal	Kirlampudi
	District	East Godavari
4	Project cost	135.0 Crores
5	Capacity of boilers	33TPH
6	Fuel	Waste heat
7	Water requirement	
	Total Fresh water Process, Cooling & Domestic	300 KLD
	Source of water	Ground water / Bore well
8	Power Requirement	1200 HP
9	Total effluent generation	20KLD Disposal – Re-circulation
10	Green Belt Development	4.29 acres (out of 13.0acres) of greenbelt will be developed in the plant premises.

EXECUTIVE SUMMARY

1.0 Introduction

M/s. Sparta Coke Private Limited (SCPL) is proposed to set up Metallurgical coke Manufacturing unit. The plant capacity is designed for 2 Lakhs TPA of Metallurgical coke and electricity of 14 MW from WHRB power plant at Rajupalem Village, Kirlampudi Mandal, East Godavari (District), Andhra Pradesh (State).

Ministry of Environment and Forests (MoEF), New Delhi issued a new Environmental Impact Assessment (EIA) Notification SO 1533 on 14.09.2006. As per the notification, the proposed project is categorized as Schedule 4(b) which necessitates obtaining the Environmental Clearance from State Environmental Impact Assessment Authority (SEIAA), Hyderabad.

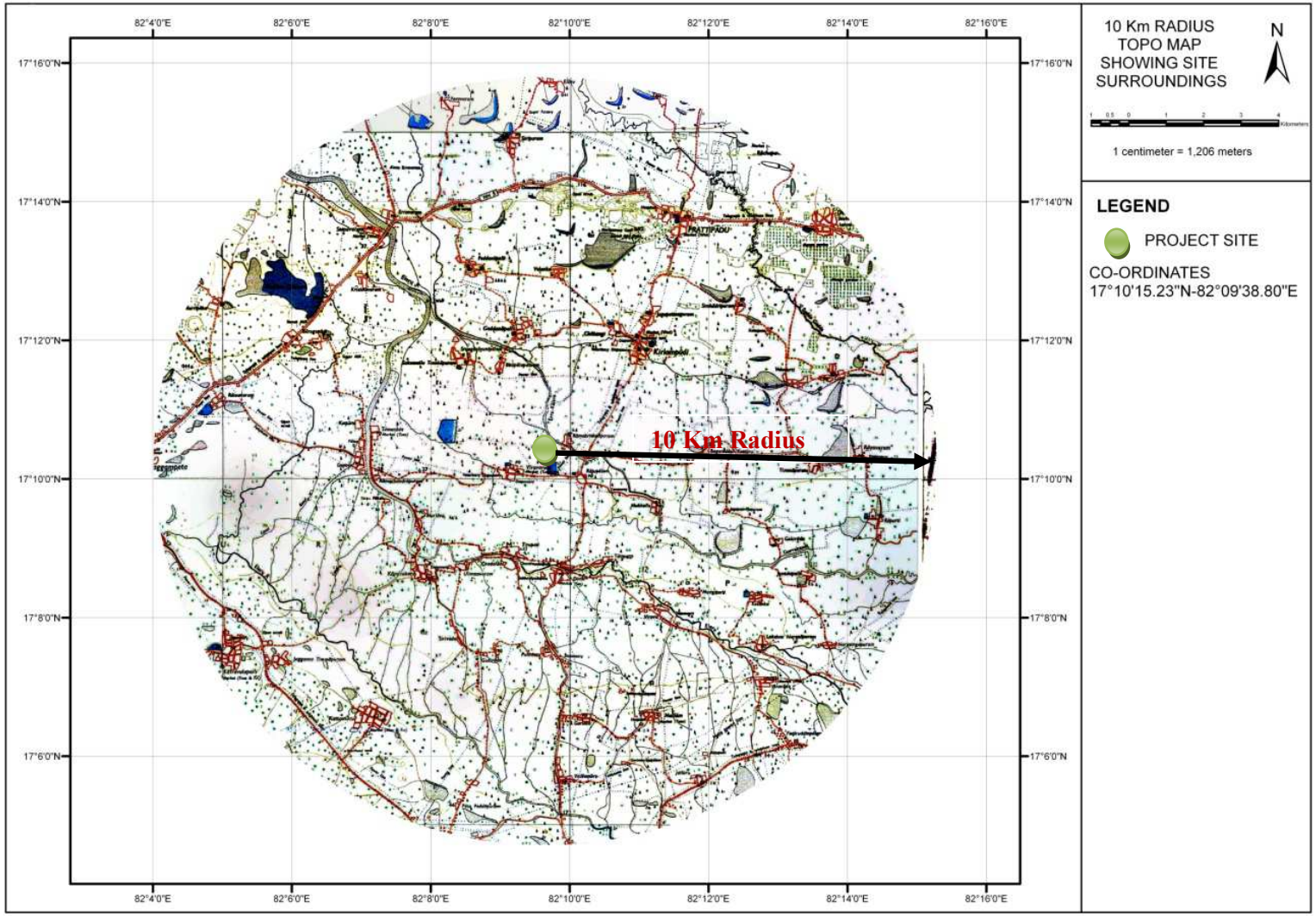
Subsequently the proposal was considered by the State Level Environment Impact Assessment Authority (SEIAA) and issued TOR.

Salient Features of the Project Site

Details of the Study Area	
District & State	East Godavari, Andhra Pradesh
Mandal	Kirlampudi
Village	Rajupalem
Topography of the Area	Plain with gradual slopes
Land Availability	13.0 Acres
Latitude	$17^0$10’15.23” N
Longitude	$82^0$09’38.80” E
Altitude above mean MSL	29 m
Accessibility	
Nearest Highway	National Highway-5 – 09km
Nearest Railway Station	Samalkot Railway Station – 14 km,
Nearest Airport	Rajahmundary – 44 kms,
Nearest City	Kakinada– 27 kms.
Nearest Water body	Yeleru Canal at 5.0 Kms
Nearest Village	Rajupalem – 0.5km
Archaeologically Important Site	None within 10 Km radius

Historically Important Site	None within 10 Km radius
Sanctuaries / National Parks	None within 10 Km radius
Forest Area	None within 10 Km radius
List of Industries (Nearby)	Sri Papers Pvt. Ltd (8.25 Km) Seven hills papers (8.35 Km) Blue Ocean Biotech (8.38 Km) Raja Rajeswari Rice mill (0.51Kms) Giri cold Storage (3.03Kms)
General Climatic Conditions	
Maximum Temperature	45°C
Minimum Temperature	23°C
Annual Rainfall	1050mm

Figure: Study Area Map of 10 Km Radius



EXECUTIVE SUMMARY OF M/S. SPARTA COKE PVT. LTD

Project Description

MANUFACTURING PROCESS FOR COKE OVEN PLANT

Coke is obtained through the heating of coal in the absence of air. This process is known as destructive distillation, or carbonization, of coal. Ovens in which this process occurs remain airtight under negative pressure and cyclic stress of expansion and contraction. Each oven has three main parts: coking chambers, heating chambers, and regenerative chambers. All of the chambers are lined with silica refractory brick. The coking chamber has ports in the top for charging of the coal.

The proposed project is with Non Recovery Coke making process which is a negative pressure technology, resulting in the ambient air being pulled into the Coke Oven at any available intake point and thus eliminating any potential fugitive leaks and pollution. Stamp Charging Station is included for blending low grade coking coal with high grade coking coal to reduce input material cost.

Raw coal is crushed with the help of crusher into powdered and in the stamp charging station, cake is formed and then charged in the oven for the purpose of carbonization. In this process the volatile matter in the raw coal gets released in the form of gas and is burnt in the oven as well as in the flues and after the completion of the carbonization process, within the duration of 46 to 52 hours, the raw coal gets converted in the form of coke.

Coking coal is stacked, either manually or by the pay loader required for the ground bunker and is reclaimed from the bottom of the bunker by a belt conveyor for feeding the crusher. The provision of an electro magnet has been proposed to remove tramp iron from the raw coal.

Crushed coal from crusher is fed into a belt conveyor to carry coal up to the overhead bunker which acts as overhead storage to feed stamp charging car as & when required.

Stamp charging car carried the crushed coal over the rail track to be charged and coal is pushed into the oven through the oven gate. The carbonization starts in the oven at the temperature of 1200 °C to 1350 °C. Leveling is required as the cycle time for carbonization depends upon the charge height of the coal mass to the great extent.

During the cycle time, ovens are checked time to time to determine the completion of the generation of gas. Thus coke mass is ready for withdrawal from oven for quenching. The doors of the ready oven are then lifted and hot coke mass is pushed out by the pusher into the quenching platform and water is sprayed on the hot coke for quenching. Quenched coke is then stacked and dispatched with the help of coke handling system.

The hot quenching water is continuously collected into a setting tank & the coke particles are also being carried out up to the settling tank with water. These particles are allowed to be settled below the settling tank and then the water almost free from suspended particles is allowed to be again used for the purposes of quenching of hot coke mass.

Time to time settled particles are reclaimed and those have the large demand in mini steel plants, briquette plants etc.

The coke is ready for dispatch. The duration of coking depends up to the quality & quantity of raw coal fed into the oven, charge height and thermal condition of the oven. A proper thermal routine will therefore have to be maintained for optimum result and consistency in the charging cycle time.

CAPTIVE POWER PLANT

Waste flue gases generated from Coke Oven used either to produce steam through Waste Heat Recovery Boilers or used directly as fuel for various furnaces. In coal fired power station, the heat of combustion is turned into thermal energy and then to electrical energy

Liquid fuel (HFO/LDO) is used for start up and low load operations for flame stabilization. The steam so generated is fed to turbine, which converts the thermal energy of steam to mechanical energy and drives the generator for producing electricity, which is sent to the consuming points through transmission and distribution network after routed through transformers to suit the voltage.

Exhaust steam from the turbine is condensed by means of water cooled condenser tubes. Condensation is effected by means of cold water re-circulated through cooling

towers. Make-up water is added to compensate the steam losses, drift losses and blow down.

WHRB Based Captive Power Plant

In order to utilize the waste hot gases generated from Coke Oven, WHRB based 14 MW Captive Power Plant is proposed.

The proposed 14MW Coke oven based power plant will consist of 1 x 25~33 TPH (MCR) waste heat boiler which will utilize the sensible heat of waste gas from coke ovens. The flue gas from coke ovens will be connected to one boiler and then go to its chimney. Before the boiler, there is one coke oven gas bypass connected to the chimney.

Coke ovens gas will bypass to the chimney during the shutdown of boiler. Steam from the boiler will be fed to one set of 14MW extraction cum condensing turbine. The turbine exhaust will be condensed in the condenser and the condensate will be taken to de-aerator by condensate extraction pumps.

The condensate will be de-aerated in the de-aerator and the temperature will be raised normally with the help of extracted steam from turbine.

Feed tank will be provided below the de-aerator. The feed water will then be fed to the economizer of the boiler by boiler feed pumps. To extract the heat from the condenser a cooling water system comprising cooling water pumps and cooling tower will be installed. Heat recovery power plant will be designed so as to confirm to modern concepts consisting of safety, reliability and economy of operation and maintenance.

The waste heat boiler is located near the ovens to avoid any loss of sensible heat. The TG building has been located keeping in mind the power evacuation as well as the minimum distance from the boiler to keep the piping and cables minimum. The equipment like turbo-generator, boiler feed pumps, electric switch gear, motor control center, control room etc. are housed in TG building to give them complete protection from weather. The auxiliary units of power plant also have been located considering minimum pipe length will ensure less capital cost as well as less operational cost due to minimum losses in the piping.

Details of Proposed Project:

Land Environment:

SCPL has acquired 13.0 Acres of land in Rajupalem Village, Kirlampudi Mandal, East godavari District. SCPL will develop the plant in 9.0Acres and rest of 4 Acres will be greenbelt and open area.

Water Requirement:

The total water requirement for proposed Met coke plant and power plant is in the order of 300 KLD The Water is only required for quenching purpose. The cooling water is re-circulated by passing through cooling tower. Only make up water is required. The source of water will be bore well.

Power Requirement:

The power requirement for the proposed project facilities will be around 1200 HP, the power consumption for production of one MT of coke is 15 Units (Kwh), which will be met through APEPDCL.

Man Power Requirement:

This plant will keep the manpower from the local village people and get feeding to their livelihood. The estimated manpower requirement is 100.

2.0 Description of the Environment

Collection of base line data is an integral aspect of the preparation of Environmental Impact Assessment report. Base line data reflects the present status of Environment before the initiation of any activity. The 10 Km radial distance from the project site has been considered as study area for Environmental Impact Assessment (EIA) baseline studies.

Air Environment

To establish the baseline status of the ambient air quality in the study area, assessment of air quality was carried out at six locations within 10 km radius for a period of one season. The summary of the Ambient Air Quality monitored is provided in **Table 1** below.

Table 1: Summary of Ambient Air Quality in the Study Area

PM_{10} (µg/m3)	$PM_{2.5}$ (µg/m3)	SO_2 (µg/m3)	NOx (µg/m3)
39.1-49.2	21.7-31.1	10.6-12.7	12.0-14.1

For all locations, maximum concentrations of PM_{10}, $PM_{2.5}$, SO_2, NOx are currently below the permissible limit specified by National Ambient Air Quality Standards (NAAQS).

Ambient Noise Levels

The main objective of noise monitoring in the study area was to establish the baseline noise levels and assess the impact of the total noise expected to be generated by the construction and operation of the proposed plant. The noise monitoring was conducted at six locations in the study area.

Day time and night time noise levels at residential areas varied between 51.4 and 37.7 dB (A) respectively. Noise levels are largely in accordance with the prescribed limits for rural/residential zone, commercial zone and industrial zones.

Water Environment

Information on water resources was collected during the study period. Water samples from ground and surface water sources were collected from six locations within ten kilometers radius around the existing.

Surface Water Quality

Surface water analysis results during the study period indicate the pH of the surface water collected was neutral with pH ranging from 7.03 – 7.27, TDS was found to be 227 - 374 mg/l. Total hardness was found to be 114 - 191 mg/l, Presence of Nitrate was recorded as 0.36 – 0.88 mg/l, DO was observed as 6.4 – 6.8 mg/l, Total coliform in water was 21 – 47 MPN/100ml..

Ground Water Data

The Ground water analysis results during the study period indicate the pH of the groundwater was found varying between 7.06 and 7.58, the total dissolved

solids (TDS) were found to be varying between 751 mg/l and 1876 mg/l, the hardness was found to be varying from 351 mg/l to 535 mg/l.

Fluoride is the other important parameter, which has the desirable limit of 1 mg/l and permissible limit of 1.5 mg/l. However, the optimum content of fluoride in the drinking water is 0.6 to 1.5 mg/l. If the fluoride content is less than 0.6 mg/l it causes dental caries. If it is above 1.5 mg/l it causes staining of tooth enamel, higher concentration in range of 3-10 mg/l causes fluorosis. In the groundwater samples of study area the fluoride values were found to be within a range of 0.71 mg/l to 0.80 mg/l.

Socio-economic Environment

A detailed survey was conducted to assess socio-economic aspects of the region. The data collected from the census book include demographic details, infrastructural facilities, educational status, health status, medical facilities, agricultural status, cattle population, crop pattern etc.

3.0 Anticipated Environmental Impacts & Mitigation Measures

Impact on Environment during Construction Phase

Impact on Land Use:

The total land available with SCPL is 13.0 acres. The proposed plant area is more or less flat which require minimum leveling. No demolition of existing structure will take place during the expansion phase.

Impact on Soil:

The proposed land is having flat profile; therefore the earthwork involved in leveling the land is very less. The maximum topsoil cover thickness at the plant site is about 1m. The topsoil removed during the leveling will be stacked separately and will be used during the greenbelt development. Herbs and shrubs will be removed prior to commencement of bulk earthwork. Removal of trees will be avoided as far as possible based on the construction plan. Medium tree size trees will be uprooted and planted in the designed green belt.

Impact on Air Quality:

Exhaust emissions from vehicles and equipment deployed during the construction phase also result in marginal increase in the levels of SO_2, NOx, PM_{10} & $PM_{2.5}$. It may, therefore, be deduced that construction activities may cause changes in the PM_{10} levels locally. The impact will, however, be reversible, marginal, and temporary in nature.

Impact on Water Quality:

The construction water requirement will be met from existing two bore wells and nearby Yeleru Canal. Impact on water quality during construction phase may be due to sewage generated from the construction work force stationed at the site. As the construction being carried out on the flat terrain and relatively small area, the soil losses will be negligible. Further, the construction activities are more related to mechanical fabrication, assembly and erection, the need of water requirement will be small. Temporary sanitation facilities (soak pits/septic tanks) will be set up for disposal of sanitary sewage generated by the work force as per the prevailing labor laws. The overall impact on water environment during construction phase due to proposed plant is likely to be short term and insignificant and they will be managed by providing drinking water facility and sanitation facilities at the site during construction phase.

Impact on Noise Levels:

Heavy construction traffic for loading and unloading, fabrication and handling of equipment and materials are likely to cause an increase in the ambient noise levels. The areas affected are those close to the site. However, habitation is above 500mt from proposed plant and due to no noise impacts envisaged. At the peak of the construction, marginal increase in noise levels is expected to occur but they are temporary.

Mitigation Measures during construction phase of the project:

- Frequent water sprinkling in the vicinity of the construction activity should be done.
- The industry shall take up tree plantation program around the plant site.

- The construction workers shall be provided with sufficient and suitable toilet facilities to allow proper standards of hygiene.
- Onsite workers using high noise equipment shall adopt noise protection devices. Noise prone activities will be restricted to daytime hours only.
- After completion of construction activities the rubbish shall be cleared and disposed to nearby authorized sites.

Impact on Environment during Operation Phase

Impact on Soil

The generation of solid waste from the proposed project is the likely sources of negative impact on the soil characteristics. The negative impacts will be minimized by proper disposal of solid waste generated in the plant. The solid waste generated from the air pollution control equipment will be collected and disposed off to Brick manufacturing units.

Mitigation measures:

- Dust extraction and suppression measures at the source will significantly reduce this possibility.
- Proposed greenbelt comprising diversified species not only increases the biomass, soil fertility, and productivity but also helps as pollution sinks and control of soil erosion.

Impact on Air Quality

- Operation phase impact is due to release of particulate matter, SOx, NOx, CO and HC from the coke oven gas. Coal handling operations like coal crushing, coal charging and coke handling operations like coke pushing, quenching and crushing are the major sources of fugitive emissions in the coke oven plants.

Mitigation measures for coke oven plants:

Air Pollution Control System

- Uncontrolled fugitive particulate emissions are associated with material handling operations. These operations consist of unloading, storing, grinding / crushing and sizing of coal, and screening, crushing, storing, and unloading of

coke. Dry fog type dust suppression system will be installed in the coal preparation unit including crushers, screens, etc.

- The waste gases released from coke oven will be burnt again as fuel for coke oven and heat will be recovered for power generation. Due to this emissions into atmosphere will be negligible.

- In addition to this a suitably designed combustion chamber will be constructed where any left over combustibles will be burnt completely before entering to the chimney. Stack should be made of appropriate height for distribution of exhaust gas appropriately.

- During charging, the charging emission of the gases as well as SPM (Suspended Particulate Matters) will be controlled by making suitable arrangement in the charging car or attachment to the down comer.

Mitigation measures for captive power plant:

- Gaseous pollutants generated due to combustion of fuel in the boiler will be discharged into atmosphere using 100 ft tall stack calculated as per CPCB formula. The outlet dust concentration will be limited within 50 mg/Nm3. Fugitive dust will be controlled using water sprinkling.

Impact on Water quality:

The water system will be of re-circulating type and no process wastewater will be discharged. The entire process water requirement is kept in closed circuit and no process wastewater is discharged outside the premises. The clean water after the treatment of the blow down water will be reused in dust suppression on roads, fugitive emission suppression in raw material handling area, plantation etc.

Mitigation measures:

- Domestic effluents from the various buildings / sheds of the plant routed to septic tank followed by soak pit. There will not be any process wastewater generation from the proposed plant.

Impact on solid waste:

Major solid waste for project is coal and coke fines, broken refractory mass etc. Coal/Coke fines may be recycled with the coal blend in the yard. Other broken refractory mass will be reused during maintenance of the plant making roads etc.

Mitigation Measures:

- The coal dust and coke dust collected by all dust c ollectors shall be generated which will be sold or returned to the process syste

  m for re-use.

- Suitable collection facilities for safe collection of solid waste pneumatic cleaning,

  dewatered refuses and from settling tanks for washing, thickeners, clarifloccul ator, filter press, silt from settling ponds etc should be planned.

Impact on Noise Environment:

The sources of noise are coal crusher, coke cutter, large turbines, large trucks for transportation of materials and screening and conveying machinery.

Mitigation measures:

- Regular preventive maintenance of mechanical equipments to minimize noise generation at source.
- Acoustic enclosures for DG sets. The acoustic enc losure should be designed to noise standards.
- The DG sets should also be provided with proper exhaust muffler.
- Noise generated due to turbines will be controlled by providing noise enclosure over the turbines. Occasional noise generated from boiler blow

down or steam escapes shall be controlled / reduced using good operating practice.

4.0 Environmental Monitoring Program

Monitoring of various environmental parameters is carried out on a regular basis to ascertain the following:

- State of pollution within the project site and in its vicinity.
- Generate data for predictive or corrective purpose in respect of pollution.
- Examine the efficiency of Pollution Control Systems installed in the complex.
- To assess and monitor environmental impacts.

POST PROJECT MONITORING PROGRAMME

In order to maintain the environmental quality within the standards, regular monitoring of various environmental components is necessary. The proponent will allocate Rs. 150.0 lakhs annual budget towards environmental protection initiatives.

PROJECT COST:

S.No.	PARTICULARS	ANNUAL COSTS
1.	Pollution control & monitoring	100.0 lacs
2.	Plantation/Green belt development	10.0 lacs
3.	Others (Socio economic development)	40.0 lacs
	TOTAL	**150.0 lacs**

5.0 Additional Studies

Risk assessment for proposed project been carried out with the objective to identify the potential hazards from the proposed project, and proposed storage facilities and appropriate disaster management Plan has been designed.

6.0 Project Benefits

Preferential employment to the local people depending upon their qualification and suitability of post. Sparta Coke Pvt. Ltd will employ about 100 persons for carrying out the proposed operations. Apart from the jobs, the company will provide medical and educational facilities to the employees which can also be availed by the people around the project site area. Adequate recreational facilities for the staff of the company and the local people will be created.

7.0 Environmental Management Plan

Any type of development project exerts certain benefits and adverse impacts on the surroundings. The proposed site does not contain any vegetation. The site clearance will involve movement of sub standing quantities of soil producing little quantities of unusable material.

The major objective and benefit of utilizing environmental impact assessment in project planning stage itself, is to prevent avoidable losses of environmental resources and values as a result of Environmental Management Plan. Environmental management plan includes protection/mitigation/enhancement measures as well as suggesting post project monitoring programme. Environmental management plan may often suggest additional project operations that have to be incorporated in the conventional operation.

It has been evaluated that the study area has not been affected adversely as there are no major polluting industries in the study area and likely to get economical fillip. The management action plan aims at controlling pollution at the source level to the

possible extent with the available and affordable technology followed by treatment measures before they are discharged. Environmental Management Plan aims at the preservation of ecosystem by considering the pollution abatement facilities at the mine inception. In the upcoming modern plants, pollution abatement has become an integral part of planning and designs along with techno economic factors.

The following aspects of environmental pollution from this unit have been considered for EMP

Air Quality Management:

i. Point Sources –Dust Control system
ii. Fugitive dust – Sprinklers

Water Quality Management:

i. Recirculation and re-usage of waste water
ii. Control at source

Noise Monitoring:

i. Noise abate measures

The management measures of the above parameters have been visualized both during construction and operation phase. The mitigation measures of different parameters have been planned based on subsequent impact assessment.

Conclusion

1. Coke manufacturing is a non-recovery making process and Power Generation will be by waste heat recovery.
2. Adequate measures will be taken for control of noise at source.
3. Intensive green belt will be developed all around plant premises.
4. Mitigation measures will be implemented to control of fugitive emissions.