Summary

1.0 Introduction

Sanghi group is a progressive industrial house based at Sanghinagar, Ranga Reddy, District of Andhra Pradesh, on the outskirts of Hyderabad, India. The group is one of the leading and diversified Industrial house of India. The group is growing rapidly across sectors like Cement, Steel, Ports, News paper publishing, Hotels and Corporate Agriculture.

Sanghi Industries Limited (SIL) is the Flagship Company of Rs. 3500 Crore Sanghi Group promoted by Shri Ravi Sanghi, Managing Director. The Company has world's largest Single Stream Cement Plant at Sanghipuram in the Abdasa Taluka of Kutch District in Gujarat having production capacity of 4 Million Tonnes Per Annum which will be enhanced to 8.2 Million Tonnes after Commissioning of Second Cement Line in 2009.

Sanghi Energy Limited is also setting up 2 x 660 MW Imported Coal based Super Thermal Power Plant at Village Akri, Taluka Abdasa, District Kachchh, Gujarat for under the MOU signed with the Government of Gujarat. Actions have already been initiated for the implementation of project.

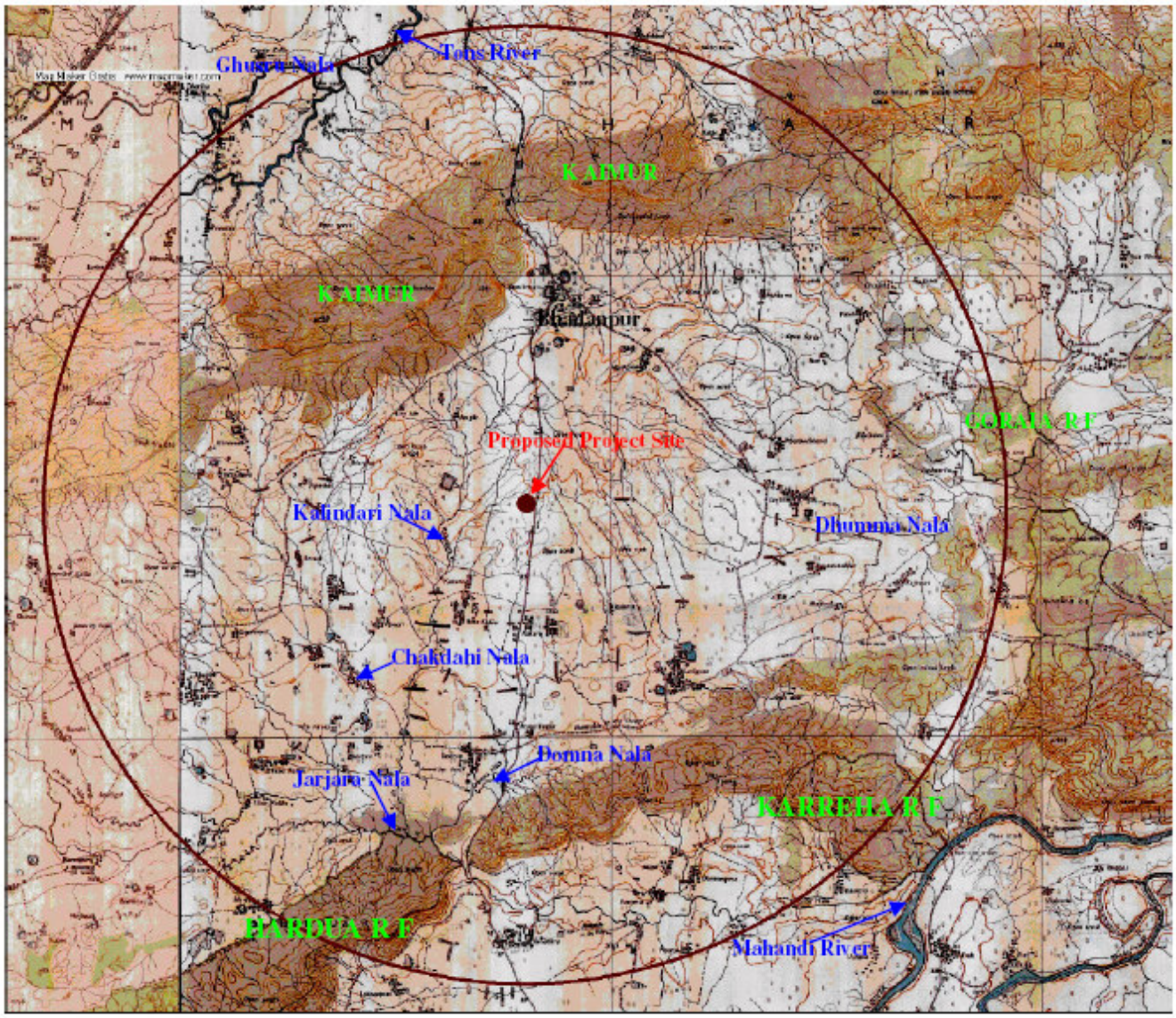
As a part of overall planning and measure of business expansion the Company is planning to set up a Coal based Thermal Power Plant of 405 MW Capacity (3 x 135 MW) deploying the state of the art technology to optimise the cost of Energy. Sanghi Energy Limited has already signed MOU with the Government of Madhya Pradesh on 15th February 2008 at Jabalpur for implementation of the Thermal Power Project.

The present proposal is for the proposed Bhadanpur Thermal Power Project (Bhadanpur TPP) of 3x135 MW coal based thermal power plant(Exhibit 1.1). The project is proposed to be commissioned during early 12th Plan.

Salient features of proposed Bhadanpur TPP are as follows:

Location	Near Bhadanpur and Kakara village
Latitude	24^0 07'30" N
Longitude	80^0 49'00" E
Nearest Railway station	Maihar, 15km
Nearest Town	Maihar, 15km
District	Satna
State	Madhya Pradesh
Nearest Airport	Satna, 55km
Land Requirement	470 hectares
Water Requirement	1985 m^3/hr
Coal Requirement	2.22 MTPA

Exhibit 1.1.1: Vicinity map of the project



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2.0 Inputs

Land Requirement

The land requirement for the project is approximately 470 ha. The entire land is government waste land. In principle clearance of land is available from State Government of Madhya Pradesh.

Fuel Requirement

The total coal requirement would be approximately 2.22 MTPA. Likely coal source for the project is SECL mines –Umaria Coal Mines located within 55 km. The daily maximum coal requirement shall be about 6075.12 tonnes based on gross calorific value of 3600 kcal/kg, 100% plant load factor and 2250 kcal/KWH unit heat rate.

Water Requirement

The source of water for Bhadanpur TPP would be Bansagar Dam and Mahanadi River. The water supply shall be obtained by pumping and conveying through pipe. Normal make up water requirement for Bhadanpur TPP would be about 1985 m^3/hr. Water Resources Department of Government of Madhya Pradesh has accorded in principle commitment for making water available for Bhadanpur TPP from Bansagar Dam and Mahanadi River.

3.0 Project Description

Bhadanpur Thermal Power Project, Stage-I (3x135 MW) shall be a pulverised coal fired thermal power project based on super-critical boiler parameters. The proposal involves construction and operation of three units of 135 MW each. The main components of the proposed project include Steam Generator, Turbine and Auxiliary Units, Coal Handling System including Dust Extraction and Suppression System, Closed Cycle Cooling System with Induced Draft Cooling Towers, Water & Effluent Treatment System, Fire Protection System, Air Conditioning & Ventilation System, Electrostatic Precipitators, Chimney, Ash Handling System with Dry Ash Extraction, Storage, Transformers, Switchgears, Switch Yard etc.

4.0 Environment Impact Assessment Study

In order to identify the environmental impacts due to construction and operation of Bhadanpur TPP, and its associated facilities and draw a suitable environmental management plan to mitigate adverse impacts, if any, Environmental Impact Assessment Study has been undertaken. Terms of Reference (TOR) were prescribed by the SEAC vide letter No 670/PS-MS/MPPCB/SEAC/TOR (29)/2009 Bhopal dated 03/07/2009. Sanghi Energy Limited have retained M/s Vogue Construction and Consultancy Services Pvt Ltd., New Delhi to carry out Environmental Impact Assessment (EIA) Study for Bhadanpur TPP, Stage-I (3x135 MW). The EIA Study covers baseline data generation, predictions and evaluation of impact on various environmental components and formulation of Environmental Management Plan and Disaster Management Plan.

5.0 Baseline Environmental Scenario

5.1 Land use

As per Census Data of 2001, the forest land comprises 29.0% while arable land covers about 10.74% of the land area. 41.59% of the land is available for cultivation and about 18.66% of the land area is cultivable waste. It reflects that the area is predominantly rural and most of the land is occupied by hillocks followed by land under forest cover.

5.2 Demography and Socio Economics

The description of the demographic and socio-economic environment within the study area is based on the Census data of 1991 and 2001. The study area occupies 9150 households distributed over 27 villages as per Census Data of 2001. The total population of the study area stood at 49341 with 940 females for every 1,000 males. During the last decade, the population has increased by 2956 (5.9%). The population of scheduled caste and scheduled tribes constituted 25.3% and 15.7% respectively of the total population of the study area. The literacy rate of the study area was 45.26% in 2001, which has shown an increase of about 21.19% over the last decade. The population of total main workers stood at 16115 accounting 32.6% of the total population. The marginal workers comprised 4604 constituting 9.3% of the total population and the population of non-workers stood at 28622 which is 58.0% of the total population. The study area possesses moderate level of infrastructure.

5.3 Hydrology

The study area is drained by Tons river, tributary of Mahanadi river flowing at a distance of 10.5 km from the proposed Bhadanpur TPP in Northwest direction. It originates from Kandhara Reserved Forest of Hindol Range and joins Mahanadi River at Mugapatna village. The study area falls in the Mahanadi catchment area, drained by Tons/Tamasa river and its tributaries in the northwest flowing at distance of about 9.0 km, Jarjarar nallah in the south, Kalindari nallah and Domna nallah in the west, Dhumma nallah in the east and Chakdahi nallah in the south-western part of the study area. Domna nallah (tributary to Jarjarar nallah) is seasonal stream and get dry during peak summer. The Mahanadi river is located at a distance of 12.5 km from the proposed project site in Southeast direction from the project site.

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Bansagar Dam

The water requirement of Bhadanpur TPP shall be met from the Bansagar Dam located in the southeast. The Bansagar Dam is a multipurpose River Valley Project on Sone River situated in Ganga Basin in Madhya Pradesh envisaging both irrigation and hydroelectric power generation.

The Bansagar Dam across Sone River has been constructed at village Deolond in Shahdol district on Rewa – Shahdol road, at a distance of 51.4 km from Rewa. Bansagar Dam is located at Latitude $24^0$11’30” N and Longitude $81^0$17’15” E.

Salient Features of Bansagar Dam

Parameter	Value
Geographical Location	
Catchment area	18648 km²
Dam Height	67 metre
Dam length	1020 metre
Dam Type	Masonry/Earthen
Full Reservoir Level (FRL)	341.64 m
Spillway capacity	47742 m^3/s
Live Storage	5.41 km^3
Submergence Area	587.54 km^2
Year of Start	1978
Year of Completion	2006
Water Sharing Arrangement:	
Madhya Pradesh	2.5 $x10^9$ m^3
Uttar Pradesh	1.2 $x10^9$ m^3
Bihar	1.2 $x10^9$ m^3

5.4 Water Quality

The study area is drained by Tons river, tributary of Mahanadi river flowing at a distance of 10.5 km from the proposed Bhadanpur TPP in Northwest direction. The Mahanadi river is located at a distance of 12.5 km from the proposed project site in southeast.

Bansagar Dam built across the Sone River is the source of water for industrial and domestic requirements of Bhadanpur TPP which is located at a distance of 42.7 km from the proposed project site.

Treated main plant and sanitary effluents from Bhadanpur TPP shall be discharged into Jarajarar nallah through natural drains leading to Mahanadi river.

The surface water quality was monitored at four locations, two in the Mahnadi River (one at the confluence point of Jarjarar nallah to Mahanadi river and the other one at downstream of discharge point, one location in Jarjarar nallah and one location in Kalindri nallah. Ground water quality was monitored at four locations.

pH of water of Mahanadi River varied between 7.3 to 7.9 which is within the acceptable range of 6.5-8.5. The pH of Jarjarar nallah ranged between 7.6 to 7.8. The Kalindri Nallah is seasonal and rainfed. The pH of Kalindri nallah ranged between 7.6 to 7.7. The The TDS content varied 118 mg/l to 215 mg/l in all the water samples which is well within permissible limit of 2000 mg/l. Total suspended solids ranged from 13.4-89.5 mg/l. Dissolved oxygen levels varied between 3.3–3.9 mg/l. BOD levels ranged between 2.5 to 4.2 mg/l. Nitrate and phosphate content were marginal. The existing levels of BOD, DO and NO_3 do not indicate any perceivable pollution within the monitoring stretch. Iron content ranged between 0.14to 0.19 mg/l which is within the acceptable limits.

Total coliform counts varied in the range of 22-134 MPN/100 ml. Fluoride was also observed in all the water samples (0.02-0.46 mg/l). Oil & Grease and phenolic compounds contents were below detection limit. The degree of hardness varied from 102 to 228 mg/l, which is within permissible limit of 600 mg/l.

The results of physico-chemical analysis of water samples of Mahanadi River, Jarjarar Nallah and Kalindri Nallah indicates marginal variation in water quality. The water quality of Mahanadi River is better than others. The water is fit for drinking after conventional treatment and disinfections.

The result of physico-chemical analysis of groundwater samples indicates marginal variation in the ground water quality among the four sampling locations. However, all the parameters are within the permissible limits for Drinking Water Standards and many parameters are within the desirable limits.

5.5 Meteorology

The climatology of the study area has been established based on long term Climatological data for 1991-2000 of IMD Station, Satna. In addition, site meteorological data is being generated by establishing and operating an automatic weather station at site. The climate of this area is considered as tropical. The area receives 1176.98 mm of annual average rainfall. Winds are light to moderate in force with some strengthening during the period March to June with maximum mean wind speed of 3.18 m/s recorded in the month of April.

5.6 Ambient Air Quality

Ambient Air Quality around the project is being monitored at four locations. On the basis of results presented in Table 5.6 it can be concluded that the concentration of pollutants like SPM, RPM, SO_2, NOx and O_3 in ambient air in the study area are well within the permissible limit of National Ambient Air Quality Standards.

Table 5.6: Ambient Air Quality in the Study Area (December, 2009-February, 2010)

(value in $\mu g/m^3$)

		SPM	RPM	SO_2	NOx	O_3
Overall Area	**Minimum**	90	35	5.9	6.5	15.3
	Maximum	148	62	9.8	10.7	30.1
	Average	118.64	46.85	8.5	8.65	22.7
	98 Percentile	135.92	53.31	9.8	10.9	25.7

5.7 Ecology

The topography of the study area reveals fairly plain land covering stretches of fertile land to hilly terrain of Kaimur Range. The Kaimur Hill Range, dense mixed forest comprising mainly bamboo lies in the North, Goraia Reserve Forest lies towards East, Karreha Reserve Forest lies towards southeast and Hardua Reserve Forest lies towards South south west of the proposed project site.

The vegetation in the study area mostly belongs to Caesalpinaceae and Moraceae. Among the naturally occurring trees, *Madhuca indica*, *Dalbergia sisoo*, *Terminalia arjuna* are present throughout the study area. There is dominance of small bushes of Lantana camara with occasional large avenue trees like *Madhuca indica*, *Butea monosperma*, *Caesalpinia pulcherrima*, *Dalbergia sissoo* etc. *Lantana camara*, a gregarious shrub is commonly found in the study area and creates hurdle in the growth of other species. Among the common trees, *Diospyros melanoxylon*, *Feronia limonia* and *Madhuca indica* are found which are indicators of thick forest in the past. *Convolvulous aruvensis*, *Cassia tora* are among small seasonal shrubs. Among fruit trees, *Feronia limonia*, *Annona squamosa*, *Aegle marmelose*, *Tamarindus indica*, *Eugenia gambolana*, *Ziziphus jujuba* are very common species. *Ficus religiosa* is grown in almost all the villages for religious purposes.

The study area falls under Kaimur Hill range bounded by dense mixed forest comprising mainly bamboo towards the North of the project site, Goraia Reserve Forest towards East, Karreha Reserve Forest towards South East and Hardua Reserve Forest towards South south west. The common animals found in the study area are Mongoose (*Herpestes edwardsi),* Leopard (*Panthera pardus*) and Hare (*Lepus nigricullis*).

The phytoplankton groups consist of families Bacillariophyceae, Chlorophyceae, Myxophyceae and Euglenophyceae. The Bacillariophyceae were mainly represented by *Amphora, Cyclotella, Cymbella, Diatoma, Gomphonema, Melosira, Navicula and Pleurosigma*. Chlorophyceae was represented by *Chlorella, Closterium, Cosmarium, Denticula, Desmdium, Pediastrum, Scenedesmus* and *Spyrogyra*. Similarly, Myxophyceae was represented by *Anabaena*, *Lyngbya, Microcystis, Nostoc, Oscillatoria and Rivularia*. Euglenophyceae was represented by a single group- *Euglena*. The density of phytoplankton ranges between 98 and 642 cells /l.

Among the zooplanktons, Rotifera, Copepoda, Cladocera, Ostracoda and Protozoa were observed. There were 26 species of zooplanktons recorded in the study area. The density of zooplankton ranges between 62-78 cells /l. Among the Zooplankton, the density of Rotifers was higher than the Protozoa, Cladocera, Ostracoda and Copepoda.

The commercially important fishes available in the Mahanadi river are *Catla catla, Labeo rohita, Cirrhina mrigala* etc. The survey also indicated that more than 26 species of fishes are available in the river.

5.8 Soil

The Soil in the region are Mixed Red and Black soil type which are silty clayey in nature. Such soils are typically characteristic feature of Kaimur Hill range, the agroclimatic zone of the study area.

The physical and chemical characteristics and nutrient levels in soil were measured at six locations in the post monsoon season. The results of field monitoring reveal that the soil of the study area is silty clay and alkaline in nature. The soil in the study area possess reasonable amount of organic matter (1.78-2.48%), available phosphorus (24.0-31.0kg/ha), available nitrogen (264.0-340.0 kg/ha) and available potassium (109.0-122.0 kg/ha), which indicate moderate fertility or agricultural potential of the Soil. The levels of other elements are also appreciably good.

5.9 Noise

Noise level measurement was undertaken at ten locations in the study area. The Leq value varied between 39.5 dB(A) to 49.8 dB(A) in all locations. Day time and night time Leq value varied between 38.6 dB(A) to 49.6 dB(A) and 34.4 dB(A) to 41.2 dB(A) respectively. The highest Leq value 45.8 dB(A) was recorded at Kakora village due to vicinity of the road traffic near NH-7 and the lowest Leq value 39.5 dB(A) was recorded at Riwara village. The highest L_{day} 49.6 dB(A) was recorded at Kakora village. The highest value of L_{night} 41.2 dB(A) was also recorded at Kakora village and lowest 34.4 dB(A) at Piperhat village. The noise levels were within the permissible limit of the ambient air quality standards with respect to noise.

6.0 Anticipated Environmental Impacts and Mitigation Measures

6.1 Land Use

470.00 hectares of land comprising government waste land and partially private land has been identified for setting up the Bhadanpur TPP. There will be a change in land use pattern after coming up of the project.

6.2 Water Use and Hydrology

Bhadanpur TPP (3x135 MW) will abstract its entire water requirement from Bansagar Dam built across Sone River. There is enough water available in the reservoir throughout the year. Water Resources Department of Government of Madhya Pradesh has accorded in principle commitment for making water available for Bhadanpur TPP from Mahanadi/Bansagar Dam. It may, therefore, be concluded that the withdrawal of water for Bhadanpur TPP is not likely to cause any adverse impact on the availability of water to downstream users.

The treated main plant and sanitary effluents from Bhadanpur STPP shall be discharged into Jarajarar nallah through natural drains leading to Mahanadi river. Since the quantity of effluents from Bhadanpur TPP is very low (67 m^3/hr) and shall conform to regulatory standards, it is envisaged that there would not be significant impact on surface water hydrology or availability of water.

6.3 Demography and Socio-economics

470 ha of land comprising mostly Government waste land and few hectares of private land has been identified for setting up the Bhadanpur TPP. There is no habitation in the identified land. There will not be any displacement of habitation. Therefore, R &

R, is not required for the project. Government of Madhya Pradesh has already accorded in principle clearance for the land.

However, during construction of Bhadanpur TPP there could be indirect impacts due to immigration of work force. The immigration of work force for construction phase (including contractor' labours) may have marginal impacts on demography (e.g. changes in total population, sex ratio, literacy level, main workers etc.) of the immediate vicinity area. In addition, the socio-economic status of the area may also get affected due to influx of men, material and money.

A number of infrastructural and community development projects shall be implemented by Sanghi Energy Limited around its project sites under Corporate Social Responsibility Programme. SEL would undertake suitable community development activities in the surrounding areas depending upon their needs and requirement.

6.4 Ambient Air Quality

The maximum predicted incremental ground level concentrations (glc's) for SPM, SO_2 and NOx due to operation of the project are 1.98, 10.23 and 13.57 $\mu g/m^3$ respectively and these are predicted to occur in the North-east at distance of about 1.5 km. The maximum resultant glc's for SO_2 and NO_x after implementation of the project (20.03 and 24.27 $\mu g/m^3$ respectively) are estimated to be within the ambient air quality standards for rural and residential areas.

Various measures proposed to be adopted to minimize the pollution from project are as follows:

- High efficiency Electrostatic Precipitators to limit the emission of SPM in stack emissions to 100 mg/ Nm^3
- Combustion Control for NOx
- Provision of Space for retrofitting FGD System in future, if required
- 130 m Tall tri-flue stack
- Dust suppression and extraction system in Coal Handling Plant
- Water cover over ash disposal area
- Green belt around project and afforestation within the project.

6.5 Soil

During operation of a thermal power project, the soils within the deposition zone of pollutants may undergo physico-chemical changes due to deposition of SPM (ash particles) and washout of gases (SO_2 and NOx) during the rains. The impacts on soil due to gaseous emissions from operation of project are likely to be negligible as the incremental SPM and SO_2 levels are in the range of 1.98$\mu g/m^3$ and 10.23$\mu g/m^3$ respectively.

6.6 Water Quality

While developing the water system for the project, utmost care has been taken to maximize the recycle/ reuse of effluents and minimize effluent quantity. All major

water systems of the plant (cooling water system, service water system, coal handling water system and ash water system) have re-circulatory systems. However, discharge of effluents from a power plant cannot be totally eliminated. The quantity of main plant effluents discharged shall be 17m^3/hr, which includes blow down from boiler and DM Plant Regeneration Waste.

A closed cycle cooling system with cooling towers would be adopted for condenser and auxiliary cooling. The system will operate at about 3.5 Cycles of Concentration (COC). The total water under circulation in the condenser and auxiliary cooling system is estimated to be about 113067 m^3/hr and the make-up to the system is estimated to be 1985 m^3/hr. Provision of cooling towers, blow down from the cold side and reuse of entire cooling tower blow down for ash handling shall ensure that there would be no thermal pollution from the unit.

The sludge from clarifier and tube settler shall be discharged in ash disposal area and filter backwash shall be recycled to the inlet of the clarifier.

The effluent stream after being re-circulated and reused shall be routed through a Central Monitoring Basin (CMB), where further equalization will take place. The CMB will have provisions for pH correction and monitoring the water quality of final effluent leaving the plant premises and going into natural drains.

Sanitary effluents from main plant and township (50m^3/hr) will be treated in a sewage treatment plant. The treated effluent will be used for horticulture. However, the excess of treated effluent, if any, will be discharged into natural drains leading to Mahanadi River. Since all the effluents will be accorded treatment before their release into drain and regularly monitored to conform to the discharge standards set by Govt. of India and MPPCB, no significant change in water quality of receiving water body is anticipated.

The following mitigation measures are proposed for the project to contain water pollution:

- Recirculating type CW system with cooling towers has been envisaged for the project. Further, the blow down from CW system will be drawn from cold side *i.e.* from CW. pump discharge, to ensure that there is no thermal pollution.
- Entire CT Blow down shall be utilized for the following:
  i) Fire Fighting ii) Coal Dust Suppression System iii) Service Water System and iv) Ash Handling
- CW system blow down water used for coal dust suppression and service water system shall be treated and recycled so as to minimize the discharge of effluents from the plant.
- Ash water recirculation system has been envisaged for bottom ash disposal.
- For oily wastes, oil water separators shall be provided. The separated oil shall be removed from the top and the water at the bottom shall be recycled or led to the plant effluent drain depending upon its quantity.
- An independent plant effluent drainage system shall be created so as to ensure that plant effluents do not meet with storm water drainage.

- To take care of high-suspended solids from wastewater of coal handling plant, coal-settling ponds have been envisaged. The decanted water from the settling pond shall be either recycled or led to plant drains for disposal depending on requirement.
- Clarifier sludge shall be sent to ash dyke while filter backwash shall be recycled back to the clarifier inlet.
- All the plant effluents before disposal shall be sent to Central Monitoring Basin. From Central Monitoring Basin, the treated effluents shall be disposed off in natural water course leading to Mahanadi river.

6.7 Noise

The operation of these equipments will generate noise ranging between 75 – 90 dB (A). The predicted noise level due to operation of such equipment at a distance of 1.0km from the source is 35.4 dB (A).

The ambient noise level recorded during field studies in the nearby village, Kukara located at a distance of 2.2 km from the project, ranges between 35.7 to 46.5 dB (A). As the ambient noise levels are higher than the predicted noise levels, due to masking effect, no increase in the ambient noise levels during construction phase is envisaged.

However, workers within the construction area and plant area may be affected due to high noise levels. Adequate protective measures in the form of ear-muffs / ear plugs/ masks shall be provided to such persons, which will minimize / eliminate such adverse impacts. In addition, reduction in noise levels shall also be achieved through built-in design requirements to produce minimum noise, proper lay out design, adding the sound barriers, use of enclosures with suitable absorption material etc. Provision of green belt and afforestation will further help in reducing the noise levels.

6.8 Terrestrial Ecology

The major portion of the land identified for Bhadanpur TPP is waste land and partly agricultural land. There will be marginal loss of agricultural land. There is no forest land involved in the project site.

Deposition of fly ash on leaves may interrupt gaseous exchange through stomatal clogging, thereby affecting plant growth However, the impact of project is envisaged to be negligible, and as incremental ground level concentration of SPM due to emissions from the project is predicted to be 1.98 $\mu g/m^3$ only. The predicted maximum incremental ground level concentration of SO_2 due to operation of the project is 10.23 $\mu g/m^3$ resulting in maximum ground level concentration of SO_2 as 20.03 $\mu g/m^3$. This is well within the National Ambient Air Quality Standards. Since most of the tree species occurring in the area are deciduous, they have high Air Pollution Tolerance Index (APTI), and therefore impact of SO_2 will not be significant.

6.9 Aquatic Ecology

As the project will draw water from the Bansagar Dam, fish may tend to get entrapped and impinged in the intake system, smaller organism as phytoplanktons, zooplanktons may get entrained in the intake system. The entrained organism may be subjected to a combination of physico-chemical and mechanical stresses, leading to their

destruction. However, suitable system like trash racks and screens shall be provided to eliminate such impacts. As clarified water shall be used as makeup for CW system, there is no possibility of aquatic organism passing through these systems. Further recirculating condenser cooling water system with natural draft cooling towers has been proposed for the plant. Therefore, there will be no thermal impact on the receiving waterbody.

The quantity of treated effluents from Bhadanpur TPP (industrial effluents: 17 m^3/hr and domestic effluents: 50 m^3/hr), conforming to regulatory standards shall be discharged into natural drains leading to Mahanadi River. However, as the quantity is negligibly small as compared to the water available in reservoir and the effluents shall be fully treated, the water quality of the river is not likely to change significantly. Therefore, no tangible impact on the aquatic ecosystem of Bansagar Dam and Mahanadi River is expected.

7.0 Green Belt Development Plan

The project will be located on the identified land near Bhadanpur. It will have a green belt all around its periphery except the switch yard side. In addition, extensive afforestation activities shall also be undertaken within the project area for developing buffer zones. The green belt development plan for the project is based on "Guidelines for Developing Green Belt" published by Central Pollution Control Board. Shelter belt of 50 metre width in three tier has been proposed all around the periphery of the project premises, except switch yard side. About 90 hectare of land has been earmarked for the green belt. In addition, large scale afforestation and green belt development activities shall be taken within all available spaces in plant and township areas.

The tree species selected for green belt shall include the native species having multipurpose uses. These trees/plants shall be planted in several rows with a tree density of 1500-2000 trees/ha. The interspaces should be planted with grasses, bushes and hedges. The treated sewage effluent from the plant may be used for watering the green belt.

8.0 Ash Utilization

Sanghi Energy Limited– as a socially conscious corporate citizen considers utilization of ash produced at its coal based power station as a thrust area of its activities. The proposed Bhadanpur TPP, Stage-I (3x135 MW) shall produce about 2430 tonnes of ash per day. At this thermal power plant, the entire quantity of ash shall be used in the proposed Sanghi Cement Plant which is to be located about 12 km from the project site.

9.0 Environmental Monitoring Programme

An environmental monitoring programme based on the Impact Assessment for the project, units shall be implemented at site.

The monitoring plan for the project has been drawn with the following broad objectives:

- Assess the changes in environmental conditions, if any, during operation of the Project.
- Monitor the effective implementation of mitigatory measures envisaged for the project.
- Warning of any significant deterioration in environmental quality so that additional mitigatory measures may be planned in advance.

10.0 Risk Assessment and Disaster Management Plan

Risk assessment study has been carried out taking into account the maximum inventory of storage of hazardous materials at site at any point of time. It includes the fire explosion due to storage and use of fuel. Based on the risk contours, safeguard measures has been proposed and details are incorporated in Chapter-6.0

The Draft EIA Report includes a Disaster Management Plan covering elements of emergency planning like organization, communication, coordination, procedure, accident reporting, safety review checklist, on-site emergency plan and off-site emergency plan. A Disaster Management Plan (DMP) for Bhadanpur TPP, Stage-I has been prepared specifying responsibilities at various levels to be discharged in case of an emergency.

11.0 Project Benefits

Commissioning of Bhadanpur Thermal Power Project, Stage-I (3x135 MW) will improve the power supply position in Madhya Pradesh and States/UTs of Western Region, which is vital for economic growth as well as improving the quality of life. The improved power supply will reduce the dependence of general public and commercial establishments on DG Sets thereby reducing the noise pollution as well as air pollution at local levels.

In addition, construction and operation of the project would benefit local people with respect to the following:-

- Increase in employment opportunity in skilled, semi-skilled and un-skilled categories.
- Increase in employment/ self employment avenues in service sector.
- Availability of large quantities of ash for the cement and construction industries, helping in conservation of land resources.

12.0 Environmental Management Plan

Environmental Management Plan (EMP) has been formulated considering the adequacy of various pollution control measures envisaged for the project (presented in Chapter 2.0) in order to mitigate various environmental impacts identified and assessed in Chapter 4.0. EMP has been prepared separately for construction and operation phases. It describes administrative aspects of ensuring that mitigatory measures are implemented and their effectiveness is monitored. A cost provision of Rs 1149.12 million has been kept in Feasibility Report towards implementation of environmental protection measures for the proposed project.