



1.0 PROJECT DESCRIPTION

1.1 Identification of Project and Project Proponent

M/s. Neyveli Lignite Corporation Limited (NLC) has formed Joint Venture Company with Uttar Pradesh Rajya Vidyut Utpadan Nigam Limited (UPRVUNL) viz Neyveli Uttar Pradesh Power Limited (NUPPL), Lucknow for setting up a coal based supercritical power plant with a capacity of 1980 MW (3 X 660 MW) at villages Bagariya, Rampur, Bandh, Sidhaul, Lahurimau, Aswar-mau, Dharchhuva and Sirsa in Ghatampur tehsil in Kanpur Nagar district, Uttar Pradesh. The cost of the total project is about Rs. 14858.6 Crores, which includes Rs. 713 Crores for environmental protection measures.

1.1.1 Environmental Setting of the Site

The study area map of 10 km radius around the proposed site is given in **Figure-1**. The environmental setting of the proposed plant site is given as follows:

➤ Site Coordinates

Latitude	Longitude
Proposed Plant Site	
25° 59'36" N	80° 09'36" E
25° 59'40" N	80° 10'37" E
25° 58'52" N	80° 11'27" E
25° 58'41" N	80° 12'00" E
25° 57'59" N	80° 12'19" E
25° 57'51" N	80° 10'49" E
25° 58'07" N	80° 10'18" E
Ash Pond	
25° 59'31" N	80° 09'36" E
25° 59'36" N	80° 10'30" E
25° 58'58" N	80° 10'28" E
25° 58'45" N	80° 10'06" E
Reservoir (Centre)	
25° 58'25" N	80° 10'28" E
Twin Flue Chimney	
25° 58'31" N	80° 11'22" E
Single Flue Chimney	
25° 58'27" N	80° 11'18" E
Township	
25° 57'59" N	80° 11'36" E
25° 58'25" N	80° 12'09" E
25° 57'59" N	80° 12'19" E

- Climate conditions at site (1st December 2011 to 29th February 2012)
 - Maximum temp: 32.5°C, Minimum temp: 5.1°C.
 - Predominant wind directions: W
- Plant site elevation : 132.56 m above MSL
- Ecological sensitive locations : Nil in 15 km radius
- Reserve & Protected Forests: 4 forest blocks present in 10 km radius

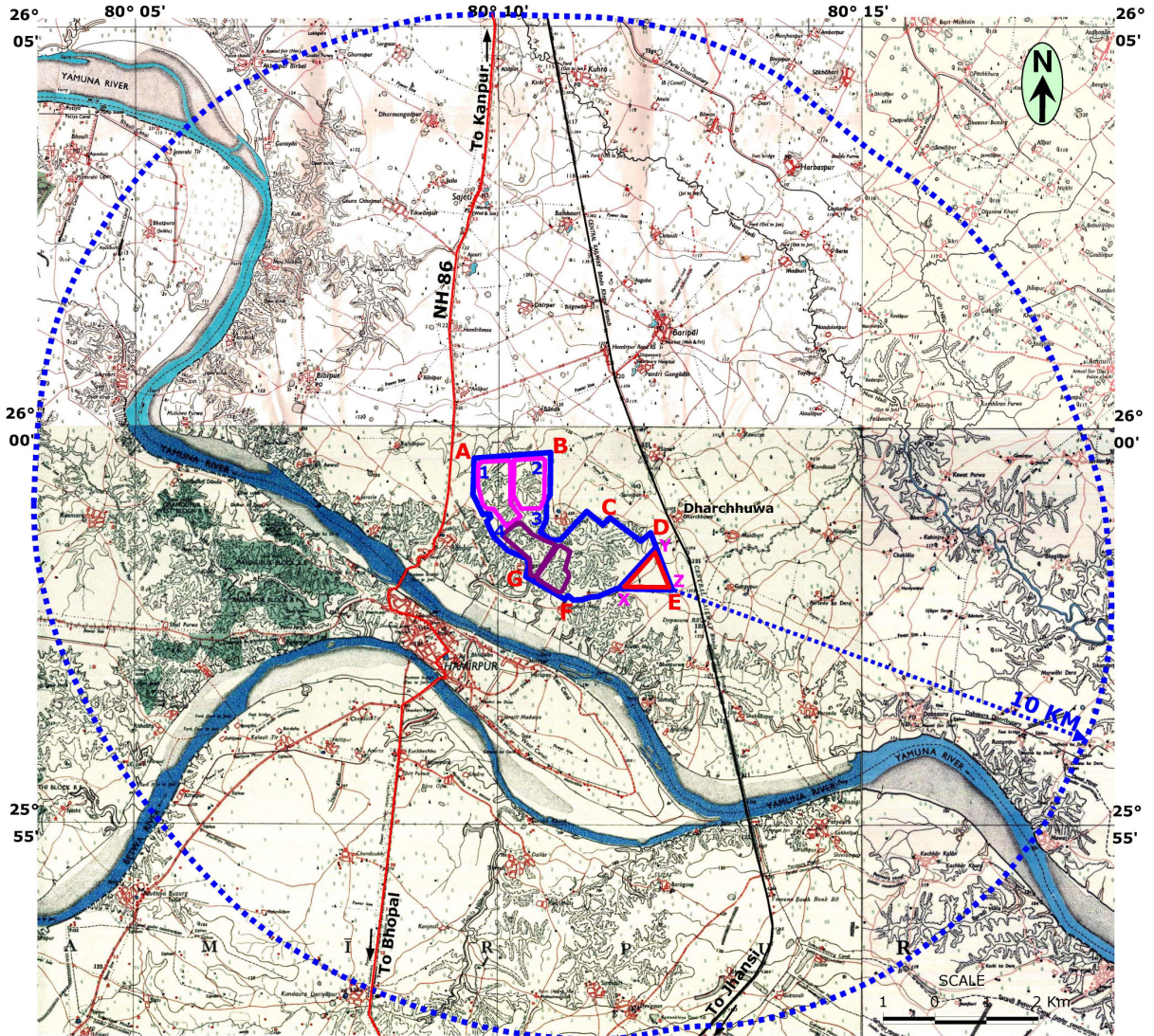
1.2 Details of Proposed Project

The total capacity of proposed power plant will be 1980 MW, three super critical technology based boilers will be installed for power generation. The salient features of the proposed power project are given in **Table-1**.



Environmental Impact Assessment for the Proposed 1980 MW Super Critical Coal Based Thermal Power Plant GTPS - at Ghatampur Tehsil in Kanpur Nagar District, Uttar Pradesh

Executive Summary



Plant Site co-ordinates		Plant Site	
A	25° 59' 36" N 80° 09' 35" E	—	Plant Site
B	25° 59' 40" N 80° 10' 37" E	—	Ash Pond
C	25° 58' 52" N 80° 11' 27" E	—	Township
D	25° 58' 41" N 80° 12' 00" E	—	Reservoir
E	25° 57' 59" N 80° 12' 19" E		
F	25° 57' 51" N 80° 10' 49" E		
G	25° 58' 07" N 80° 10' 18" E		

Ash Pond Site	
1	25° 59' 31" N 80° 09' 36" E
2	25° 59' 36" N 80° 10' 30" E
3	25° 58' 58" N 80° 10' 28" E
4	25° 58' 45" N 80° 10' 06" E

Colony Site	
x	25° 57' 59" N 80° 11' 36" E
y	25° 58' 25" N 80° 12' 09" E
z	25° 57' 59" N 80° 12' 19" E

Reservoir Site	
*	25° 58' 25" N 80° 10' 28" E

FIGURE-1

10 KM RADIUS STUDY AREA OF THE PROJECT SITE

TABLE-1
SALIENT FEATURES OF THE PROPOSED PROJECT

Sr. No.	Features	Description	
1	Capacity	1980 MW	
2	Configuration	3X660 MW	
3	Technology	Super Critical Technology	
4	Power evacuation	Through 400 Kv/765kV PGCIL's grid	
5	Fuel Requirement at 85% PLF	Indigenous coal (100%) 8.511 MTPA	Blended coal(70:30) 7.66 MTPA (Indigenous coal - 5.36 MTPA Imported coal - 2.30 MTPA).
6	HFO/LDO	15000 KL/Annum	
7	Source of Coal	100% Indian F Grade washed coal (captive mines) and if required 30 % imported coal from Indonesia	
	Transportation	Coal by rail and Oil by road tankers. Imported coal will be received at Paradip port and transported by wagons to the site	
8	Sulphur content	Indigenous coal (100%) 0.5%	Imported Coal 0.7%
9	Ash Content in Coal	Indian coal	Blended coal Indigenous:Imported (70:30)
	Ash %	34	Indigenous = 34 Imported = 10
	Ash generation	2.893 MTPA	2.052 MTPA
	Bottom Ash	0.579 MTPA	0.410 MTPA
	Fly Ash	2.314 MTPA	1.642 MTPA
10	ESP efficiency	99.99%	
11	Stack	2 nos. of 275 m tall (One twin flue and another single flue)	
12	Water Requirement	6275 m ³ /hr (61.56 cusecs)	
13	Source of water	Ganga river -West Allahabad Branch Canal near Bidhnu Kasba village adjacent to NH-86	

1.2.1 Technology and Process Description

The power generating units operate on super-critical technology steam parameters. The primary fuel to be used for the power generation will be coal. The mode of transportation of coal will be by rail.

Steam is generated in the boiler of the thermal power plant using the combustion heat of the fuel (coal) burnt in the furnace. The steam generated is passed through steam turbine where part of its thermal energy is converted in to mechanical energy. This mechanical energy is further used for generating electric power. The steam coming out of steam turbine is condensed in the water cooled condenser and condensate is supplied back to the boiler with the help of the boiler feed pumps and cycle is repeated.

The plant heat rate with performance coal, design ambient conditions and cooling water temperature, is estimated to be 2317 kcal/kWh on GCV basis. The steam generator would be of forced circulation, super-critical, once through type, single reheat arrangement for firing 100% with coal (pulverized firing). The steam generator would be of two pass, water tube, radiant super heater, single reheat, balanced draft, semi outdoor type with low NOx burners.



1.2.2 Power Evacuation

The expected power to be exported from the plant will be of the order of 1861.2 MW after accounting for 6.0% (118.8 MW) auxiliary power consumption. The generated power will be at a voltage level of 22 kV or at manufacturers standard voltage at the generator terminals. Initially, it is proposed to evacuate power at 400 kV and in future if required 765 kV switch yard will be considered after consultation with PGCIL/UPPTCL.

1.2.3 Land Requirement

The total land required for the proposed power plant is 1886 acres.

1.2.4 Fuel Requirement

The primary fuel to be used for power generation would be domestic coal. The NUPPL has applied to the competent authority for long term linkage under prevailing policy of Government. The estimated domestic coal requirement for 3x660 MW Power Plant will be 8.51 MTPA domestic coal (GCV-4000 kCal/kg, 85% PLF). As an alternative, blended coal (70% Indigenous + 30% Imported Coal) option is also considered for impact assessment.

1.2.5 Water Requirement

The total water required for the proposed power project will be about 6275 m³/hr which will be met from Ganga River – West Allahabad Branch Canal near Bidhnu Kasba village adjacent to NH-86.

1.2.6 Manpower

The proposed power plant will require skilled and semi-skilled personnel during operation, maintenance and administration of the proposed plant of 3X660 MW. People from neighbouring villages, if found suitable, shall be employed during construction and operational phases. The total manpower of power plant during operational and maintenance (O&M) is estimated to be about 660 persons.

1.3 **Description of Environment**

The 10 km radial distance from the plant boundary has been considered as study area for Environmental Impact Assessment (EIA) baseline studies. Environmental monitoring for various attributes like meteorology, ambient air quality, surface and ground water quality, soil characteristics, noise levels and flora & fauna have been conducted at specified locations and the secondary data collected from various Government and Semi-Government organizations. The baseline environmental monitoring studies were carried out from 1st December 2011 to 29th February 2012 representing winter season.

1.3.1 Land Use

Present land use based on remote sensing satellite imageries were collected and interpreted for the 10 km radius study area for analyzing the land use pattern of



the study area. Based on the recent IRS-P6-LISS-3 dated 27th January, 2012 satellite data, land use/ land cover maps have been prepared.

1.3.2 Soil Quality

A total of six samples within 10 km radius of the plant site were collected for the assessment of soil quality. The sampling was carried out during study period. The pH of the soil varied from 7.1 to 7.9 indicating neutral to slightly alkaline. The nitrogen values range in between 51 kg/ha to 74 kg/ha which is observed to be less in the study area. The phosphorus values range between 48 kg/ha to 60 kg/ha, indicating that the phosphorus content in the study area falls in medium to average sufficient category. The potassium values range between 218 kg/ha to 310 kg/ha. The potassium content in the study area falls in medium to better quantity category.

1.3.3 Meteorology

On-site monitoring was undertaken for various meteorological variables in order to generate the site-specific data. Data was collected every hour continuously from 1st December 2011 to 29th February 2012. The maximum and minimum temperatures recorded during the study period are 32.5°C and 5.1°C. The relative humidity was found varying from 87% to 39%. The predominant winds are mostly from W (23.4%) and NW (12.5%) directions.

1.3.4 Ambient Air Quality

To establish the baseline status of the ambient air quality in the study area, the air quality was monitored at 8 locations. The summary of the ambient air quality monitored is given in **Table-2**.

TABLE-2
SUMMARY OF AMBIENT AIR QUALITY IN THE STUDY AREA

	SPM	PM ₁₀	PM _{2.5}	SO ₂	NOx	CO	O ₃	Hg
Min	101.0	20.2	8.2	7.0	9.3	239	2.4	BDL
Max	170.1	38.8	16.8	13.6	15.5	381	8.7	BDL

Concentrations are expressed in $\mu\text{g}/\text{m}^3$

The concentrations of SPM, PM₁₀, PM_{2.5}, SO₂, NOx, CO, O₃, Hg, Pb, NH₃, C₆H₆, BaP, As and Ni are observed to be well within the standards prescribed by Central Pollution Control Board (CPCB).

1.3.5 Water Quality

Five ground water samples and three surface water samples within the study area were considered for assessment.

- **Surface Water**

The pH of the water samples at all locations were from 7.5 to 8.4. The conductivity was found to be in the range of 520 and 789 $\mu\text{S}/\text{cm}$. Dissolved Oxygen was observed to be in the range of 4.2 to 6.6 mg/l. Total hardness was



observed to be in the range of 200 mg/l and 300 mg/l. Total alkalinity was observed to be 205 to 315 mg/l. Heavy metal concentrations were observed to be well within the prescribed limits.

- **Ground Water Quality**

The pH of the water samples were in the range of 7.4 to 8.1. The conductivity varied from 507 to 829 $\mu\text{S}/\text{cm}$. Total hardness varied from 210 to 350 mg/l. The fluoride was observed to be in the range of 0.4 to 0.6 mg/l. The chloride and sulphates was observed to be in the range from 18-42 mg/l and 3.7-7.7 mg/l. TDS was observed to be in the range from 346-558 mg/l. E. coli are absent in all the ground water samples.

The overall physico-chemical and biological analysis reveals that the water quality at all locations is well within the standards as per IS: 10500 and does not indicate any industrial contamination.

1.3.6 Ambient Noise Levels

The noise monitoring has been conducted for determination of ambient noise levels at seven locations in the study area. The observations are given below:

Day time Noise Levels (L_{day})

The day time noise levels at all the locations were ranged in between 42.1 dB(A) to 46.4 dB(A). The minimum value (42.1 dB (A)) was recorded at Sidhaul village and the maximum value (46.4 dB (A)) was recorded at Hamirpur village.

Night time Noise Levels (L_{night})

The night time noise levels were ranged in between 38.4 dB (A) to 42.0 dB (A). The minimum value (38.4 dB (A)) was recorded at Sidhaul village and the maximum value (42.0 dB (A)) was recorded at Hamirpur village.

It is observed that the day and night time noise levels are in accordance to the prescribed limit of 55 dB (A) and 45 dB(A) for rural / residential areas respectively.

1.3.7 Flora and Fauna

Studies were conducted based on the primary data collected by field visits and based on the secondary data collected as per the records of forest department of Kanpur district and literature survey. Flora and fauna studies have been carried out in and around 10 km from proposed project to assess the composition of status of floral and faunal components. During field survey, maximum 233 number of plant species were recorded from the study area. There are 59 plant species found in agro ecosystems. There are 4 Schedule-I species observed in the buffer zone of study area. 5 numbers Schedule II and the rest are Schedule-III and IV recorded from the study area. About 18 species of phytoplankton were reported in four locations. About 11 zooplankton species are recorded from all the sampling locations.



1.4 Anticipated Environmental Impacts

The environmental impacts during construction and operation phases of the proposed project have been assessed and adequate management plan has been evolved to mitigate the impacts.

1.4.1 Impacts during Constructional Phase

The environmental impacts during the construction stage will be short term, temporary in nature and will be confined very close to project sites. The manpower required for these activities should preferably be deployed from nearby villages.

Land Environment

The land identified for the proposed 3x660 MW power plant is about 1886 acres. About 427 acres of the land will be used for ash disposal. Raw water reservoir and ancillary facilities will occupy about 806 acres of land.

A portion of the project land is covered with rain-fed cultivated land agriculture fields (low to moderate productive) and the remaining part is waste/barren land. Most of this land is under the private ownership and there is no forest or ecological sensitive land within proposed site. The agricultural area in the proposed plant site does not have any irrigation system and is only rain-dependent. Hence, no major loss of agricultural productivity is envisaged.

Impact on Soil

The construction activities will result in loss of vegetation cover, topsoil and earthen material to some extent in the plant area. However, it is proposed to use the soil and earthen material for greenbelt development and levelling of project site. Greenbelt will be developed in phased manner from construction stage onwards.

Apart from localized construction impacts at the plant site, no adverse impacts on soil in the surrounding area are anticipated.

Impact on Air Quality

The main sources of emission during the construction period are the movement of equipment at site and dust emitted during the leveling, grading, earthwork, foundation works and exhaust emissions from vehicles and equipment deployed during the construction phase is also likely to result in marginal increase in the levels of SO₂, NO_x, PM and CO. The impact will be for short duration and confined within the project boundary and is expected to be negligible outside the plant boundaries. The impact will, however, be reversible, marginal and temporary in nature. Proper maintenance of vehicles and construction equipment will help in controlling the gaseous emissions. Water sprinkling on roads and construction site will prevent fugitive dust.



Impact on Water Quality

Impact on water quality during construction phase may be due to non-point discharge of solids from soil loss and sewage generated from the construction workforce stationed at the site. Further, the construction will be more related to mechanical fabrication, assembly and erection; hence the water requirements would be small. Temporary sanitation facilities (septic tanks and soak pits) will be set-up for disposal of sanitary sewage generated by the workforce.

The overall impact on water environment during construction phase due to proposed project is likely to be short term and insignificant.

Impact on Noise Levels

Vehicular traffic, loading and unloading of construction material, 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, the noise will be temporary and will be restricted mostly within plant area.

The noise control measures during construction phase include provision of caps on the equipment and regular maintenance of the equipment.

Impact on Terrestrial Ecology

The initial construction works at the project site involves land clearance. Greenbelt will be developed phase wise during construction to improve the aesthetic value in the area and to screen out the fugitive dust generated during construction.

The removal of vegetation from the soil and loosening of the topsoil generally causes soil erosion. However, such impacts will be confined to the project site and will be minimized through paving and water sprinkling. No major impacts are envisaged on terrestrial ecology.

1.4.2 Impacts during Operational Phase

Impact on Soil

Most of the impacts of power plant project on soils are restricted to the construction phase, which will get stabilized during operational phase. The impact on the topsoil will be confined to the proposed main plant area as all the activities are limited in the project site boundary only.

Impact on Air Environment

The impact on air quality is assessed based on emissions of the proposed power plant. Particulate Matter (PM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) will be the important pollutants emitting from the proposed power plant. The maximum resultant ground level concentrations of PM, SO₂, NO_x and Mercury are given in **Table-3**.



TABLE-3
RESULTANT CONCENTRATIONS DUE TO INCREMENTAL GLC's

Pollutants	Concentration ($\mu\text{g}/\text{m}^3$)			NAAQ Limits
	Baseline	Incremental	Resultant	
PM	38.8	1.3	40.10	100
SO ₂	13.6	Indigenous Coal : 36.56 Imported Coal : 36.86	50.16 50.46	80
NOx	15.5	16.02	31.52	80

A perusal of previous sub-section reveals that the maximum incremental short-term 24 hourly ground level concentrations for particulate matter, SO₂, NOx and likely to be encountered are 36.56 and 36.86 $\mu\text{g}/\text{m}^3$ for indigenous coal and blended respectively occurring - at a distance of about 2.8 km in the ESE direction.

Impact on Water Environment

Proposed project has been accorded allocation of water from Ganga River by Irrigation and CAD of Government of Uttar Pradesh. Hence, no groundwater source is proposed to be tapped for meeting the water requirements during operation of the power plant, no impacts on groundwater resources is envisaged.

Garland drains around the ash pond site will be provided for the collection of run-off water during monsoon season. The wastewater generated will be treated and mixed in central monitoring basin and finally utilised for ash handling system and green belt development.

The guard pond will be suitably lined to prevent percolation into ground. The ash pond will be provided with HDPE lining to prevent any kind of percolation into ground. Therefore the impact on surface and ground water will be insignificant.

Impact of Solid Waste Generation

In the proposed power project either indigenous coal or blended coal will be used. The details of the solid waste generation are given in **Table-4**.

TABLE-4
EXPECTED SOLID WASTE FROM POWER PLANT

Sr. No.	Plant	Quantity of Generation		Mode of Disposal
1	Total Ash (MTPA) Bottom ash (MTPA) Fly ash (MTPA)	Indigenous Coal (34%) 2.893 0.579 2.314	Blended Coal (10%) 2.052 0.410 1.642	Emphasis will be given for supply to potential users in dry form. Remaining ash will be disposed into HDPE lined ash pond.
2	Used Oil	15000 KLPA		Will be supplied to authorized recyclers
3	Domestic Solid waste/Municipal Solid waste	1500 TPA		Organic portion will be dried, composted and used as manure

Major portion of the ash will be utilized by supplying to potential users. Efforts will be made to utilize 100% fly ash as per the Fly Ash Notification, 1999 and as amended later.



It is proposed to collect fly ash from ESP hoppers in dry form and provide/supply to potential ash users depending on the demand. The balance unutilized ash will be disposed off using Lean Slurry Disposal technology.

Impact on Aquatic Ecology

Over land flow of rainfall storm runoff water of the project site is diverted in to sedimentation tank to retain the solids from run-off water. Spillages and fugitives are prevented in reaching the down stream water bodies. The effluents are not envisaged to be discharged into any streams. Hence, no impact is envisaged from the proposed power plant on aquatic bodies.

Impact on Reserve/Protected Forest

The incremental gaseous concentrations and noise generated during operation of the proposed power plant are not likely to cause any major adverse impact on ecology of seven reserve forests with in 15 km radius of the project site.

Impacts of Noise Levels

The noise generating sources are pumps, compressors and boilers. The predicted noise levels will be ranging in between 32 to 39 dB(A) and the same will recede further as the distance increases. Hence, the impact of the noise levels on the surroundings will be insignificant.

Impact on Human Health

The impact from the air emissions is not expected to be significant since the stack design and the atmospheric conditions are such that the ambient air quality at present as well as in future after the proposed facility will be within the prescribed ambient air quality limits set forth by CPCB.

Impact on Public Health and Safety

The impact from the discharge of waste products on public health and safety is not expected to be significant since, the adverse impacts on ambient air, water and soil quality are predicted to be low. Utilization of superior quality machinery and equipment and deployment of work force with adequate knowledge in operation and maintenance of different units shall avoid failures and accidents.

It is predicted that the impacts on public safety will be very low, due to the effective safety system and safety management available in the plant. Overall, the impact on public safety and health from the proposed project activities will be insignificant.

1.5 Environment Management Plan

1.5.1 Environment Management Plan during Construction Phase

During construction phase, the construction activities like site levelling, grading, transportation of the construction material cause various impacts on the surroundings.



✓ Air Quality Management

The activities like site development, grading and vehicular traffic contribute to increase in PM and NO_x concentration. The mitigation measures proposed to minimize the impacts are:

- Water sprinkling in construction area;
- Asphaltting the main approach road;
- Proper maintenance of vehicles and construction equipment; and
- Tree plantation in the area earmarked for greenbelt development.

✓ Water Quality Management

The wastewater from vehicle and construction equipment maintenance centre will contribute to oil and grease concentration. The wastewater from labour colony will contribute to higher BOD levels. The mitigation measures proposed to minimize the impacts are:

- Sedimentation tank to retain the solids from run-off water;
- Oil and grease trap at equipment maintenance centre;
- Packaged STP/Septic tanks to treat sanitary waste at labour colony; and
- Utilizing the wastewater in greenbelt development.

✓ Noise Level Management

Operation of construction equipment and vehicular traffic contribute to the increased noise level. Proposed mitigation measures are:

- Enclosures for noise making units like pumps, compressors etc;
- Good maintenance of vehicles and construction equipment;
- Plantation of trees around the plant boundary to attenuate the noise; and
- Provision of earplugs and earmuffs to workers.

✓ Ecological Management

During construction, vegetation in the plant premises is required to be cleared. The measures required to be undertaken to minimise the impact on the ecology are:

- The felling of trees will be kept at minimum; and
- Development of greenbelt having tree density of 2500 trees/ha will be commenced;

1.5.2 Environment Management Plan during Operation Phase

During operation phase, the impacts on the various environmental attributes should be mitigated using appropriate pollution control equipment. The Environment Management Plan prepared for the proposed project aims at minimizing the pollution at source.



✓ Air Pollution Management

Fugitive and stack emissions from the power plant will contribute to increase in concentrations of PM, SO₂ and NO_x pollutants. The mitigative measures proposed in the plant are:

- Installation of ESP of efficiency more than 99.99% to limit the PM concentrations below 50 mg/Nm³;
- Provision of one twin flue stack and one single flue stack of 275 m height each for wider dispersion of gaseous emissions;
- Provision of water sprinkling system at raw material storage yard;
- Asphaltting of the roads within the plant area;
- Provision of dust extraction systems at dust generating source;
- Developing of greenbelt (50 m wide around ash pond) around the plant to arrest the fugitive emissions;
- Online flue gas monitors as well as flue gas flow rates and temperature measurement shall be provided for all stacks; and
- The fugitive dust emissions shall be controlled by installation of closed conveyor system along with suitable dust suppression measures.

✓ Water Pollution Management

The wastewater will be generated from cooling towers in the power plant. Additionally, domestic wastewater from canteen and employees wash area will also be generated. The recommended measures to minimise the impacts are:

- Recycling of wastewater generated in cooling tower into ash disposal, coal handling and service water requirements;
- The effluent carrying oil spillage in the plant area shall be sent to oil-water separator for removal of oil;
- Coal stock piles and ash ponds shall be provided with garland drains and water shall be treated for suspended / floating solids;
- Adequate treatment of wastewater prior to recycling/reuse to maximum extent;
- Provision of sewage treatment plant to treat domestic sewage generated from plant and township;
- Utilization of treated domestic wastewater in toilet flushing, greenbelt development and dust suppression;
- Lining of effluent pond suitably to prevent any seepage into ground to avoid any groundwater contamination;
- Provision of storm water system to collect and store run-off water during rainy season and utilization of the same in the process to reduce the fresh water requirement; and
- Suitable rainwater harvesting structures to be constructed.

✓ Noise Pollution Management

In the process, various equipments like pumps, cooling tower, compressors etc generate the noise. The recommendations to mitigate higher noise levels are:

- Equipments should be designed to conform to noise levels prescribed by regulatory authorities;
- Provision of acoustic barriers or shelters in noisy workplaces;



- Provision of hoods to noise generating equipments like pumps;
 - Provision of thick greenbelt to attenuate the noise levels;
 - Provision of Personal Protective Equipments (PPE) such as earplugs, earmuffs to the workers working in high noise level area; and
 - Implementation of greenbelt, landscaping with horticulture at power block areas to reduce noise impacts.
- ✓ Solid Waste Management

Solid waste in the form of ash will be generated in a coal based thermal power plant. The total ash generated in the plant will be 2.893 MTPA out of which 20% will be bottom ash i.e. 0.579 MTPA and balance will be fly ash of 2.314 MTPA. The following measures shall be taken for solid waste management:

- In general ash will be given to potential ash users;
- The excess ash will be disposed off using Lean Slurry/ high concentration slurry disposal system to HDPE lined ash pond;
- The generated waste oil shall be explored to be used in boiler furnace with HFO or shall be given to authorized recyclers;
- The organic portion of solid waste generated in the Sewage Treatment Plant (STP) will be used as manure in greenbelt development; and
- Maintaining the data base on solid waste generation such as quantity, quality, treatment/management.

Fly Ash Disposal

The ash will be utilized in various construction materials to the maximum extent and 100% utilization will be achieved.

Greenbelt Development

Greenbelt with a width of 50 m to 100 m will be developed around the plant site. The total greenbelt around the power plant complex including the township will be about 194 ha, which works out to about 38% of total project area.

Cost Provision for Environmental Measures

It is proposed to invest about Rs. 713 Crores on pollution control, treatment and monitoring systems for proposed power plant with a recurring cost of Rs 17.2 Crores per annum.

1.6 Post Project Environment Monitoring Programme

Post project environmental monitoring is important in terms of evaluating the performance of pollution control equipments installed in the project. The sampling and analysis of the environmental attributes will be as per the guidelines of CPCB/UPPCB. The frequency of air, noise, surface water and ground water sampling and location of sampling will be as per the directives of Uttar Pradesh Pollution Control Board.



1.7 Risk Assessment and Disaster Management Plan

The hazard potential of fuel and estimation of consequences in case of their accidental release during storage, transportation and handling has been identified and risk assessment has been carried out to quantify the extent of damage and suggest recommendations for safety improvement for the proposed facilities. Risk mitigation measures based on MCA analysis and engineering judgments are incorporated in order to improve overall system safety and mitigate the effects of major accidents.

An effective Disaster Management Plan (DMP) to mitigate the risks involved has been prepared. This plan defines the responsibilities and resources available to respond to the different types of emergencies envisaged. Training exercises will be held to ensure that all personnel are familiar with their responsibilities and that communication links are functioning effectively.

The HFL data for Yamuna river has been collected from the Hamirpur Station, which is ranging from 93.3 to 108.32 m w.r.t to the plant site elevation of 132.56 m. So the potential flood risk from River Yamuna is not envisaged.

1.8 Project Benefits

The proposed 1980 MW thermal power plant will result in improvement of infrastructure as well as upliftment of social structure in the surrounding villages. The people residing in the nearby areas will be benefited indirectly. The major benefit due to the proposed project will be in the sphere of generating temporary employment for substantial number of personnel. During the construction phase preference will be given to educated, skilled and unemployed persons of near by villages.

NUPPL proposes to participate in various CSR activities in the areas like infrastructure, education, health, agriculture, water and livelihood development.

Implementation of the power project will result in the following benefits:

- Employment will be provided to eligible project affected persons both during construction and operational phase;
- Temporary employment for people from the neighboring villages during construction phase;
- Community development activities such as training of local unemployed youth in various construction skills, english speaking, personality development, development of self help groups for women, providing drinking water facility, strengthening of rural roads, deepening of ponds etc.;
- State will get revenue from payment towards taxes and water cess etc.;
- Providing dispensary with a medicine bank to cater to the health care needs of the surrounding villages; and
- Providing vocational training to women in areas for their self employment.