1.0 Executive Summary

Name of Project:	Khargone Super Thermal Power Project KSTPP Stage-I (2x660) MW District- Khargone Madhya Pradesh.
Name of Project Proponent:	M/s NTPC Ltd. (A Government of India Enterprise)
Location of the Project:	The project site is located near villages Selda Balabad & Dalchi in Khargone District of Madhya Pradesh. The project site is about about 105 Kms from Indore and about 30 Kms from Sanawad town. The site is approachable from Sanawad on Indore – Khandwa State Highway through PWD road. Nearest Railway Station is Sanawad on Indore – Khandwa meter gauge section is about 32 Kms. Commercial Airport at Indore is located at about 105 Kms from site.
Capacity & Unit Configurations:	1320 MW (2x660 MW)
Land Requirement, Current Land Use and Availability:	Total quantum of land acquired for plant, ash dyke and township is 428.899 Hectares (1059.498 Acres) comprising of 317.19 Hectares (783.7904 Acres) private land and 111.709 Hectares (276.039 Acres) Govt. land and is in NTPC possession. In addition, Make up water pipeline corridor involve land of about 115 Hectares (about 284 acres) and will be acquired under Right of Use (ROU) for which Gazette Notification has already been published in Jan.'2013. Land for make up water pipe line involves about 8.834 Hectares (about 22 acres) of forest land. The proposal has been considered by State Advisory Committee of MOEF in the meeting held on 07.03.2014 the same has been forwarded for approval to MOEF Delhi. Land requirement for Railway siding would be of about 360 acres.
Water Requirement and Availability:	Narmada River is passing at about 15 Kms (North) from the site. Two dams of Narmada Hydro Development Corporation (NHDC) on river Narmada {Maheshwar Dam (North - West) & Omkareshwar Dam (North East) } are located at a distances of about 40-45 Kms. Water is proposed to be drawn from Omkareshwar Dam (North East) constructed on river Narmada. Govt. of Madhya Pradesh vide letter dated 02.02.2010 have

	accorded commitment for 55 Cusecs of water from Narmada river for the project.
Fuel Requirement:	Coal requirement for 1320 MW capacity project is estimated as 7.65 million tonne/annum.
Environmental Setting of the Project	In accordance with the procedure laid down in the EIA Notification of 14th September, 2006, Ministry of Environment & Forests will be approached for obtaining Environmental Clearance (EC).

2.0 Introduction of the Project & Background Information

Power development is one of the key infrastructural elements for the economic growth of the country. National Thermal Power Corporation Limited was set up in November 1975 with the objective of planning, promoting organizing and integrated accelerated development of thermal power in the country. NTPC has diversified into hydro power, coal mining, power equipment manufacturing, oil & gas exploration, power trading and distribution. With an increasing presence in the power value chain, NTPC is well on its way to becoming an "Integrated Power Major." To embody its diverse business operations beyond thermal power generation, the company has been rechristened as NTPC Limited on October 28, 2005. Further, on 21 May 2010, NTPC was conferred Maharatna status by the Union Government of India.

NTPC Limited, the largest power generating major in the country presently has total installed capacity of 43,019 MW. NTPC has embarked on plans to become a 1,28,000 MW company by 2032. NTPC Limited shares about 16% of the total national capacity, it contributes 25.6% of total power generation due to its focus on high efficiency *(reported as on 31.03.2013).*

In pursuance to identification of new green field sites for setting up of large capacity thermal power plants, a team from Engineering visited 4 nos. alternative sites near Indore and Khandwa in MP on 01 & 02-12-2009 for new thermal power project.

2.1 Identification of Project & Project Proponent

The present proposal is for implementation of 1320 MW coal based thermal power plant comprising of 2 (two) nos. super critical units of 660 MW each. The site is located near villages Selda Balabad & Dalchi in Khargone Distt. of M.P.

2.2 Existing Infrastructure/ Social Infrastructure

A detailed analysis of social infrastructure available at site has been undertaken during EIA Study.

2.3 Brief Description and Nature of the Project

Khargone STPP shall be coal fired thermal power project based on super critical, once through boiler parameters. The main components of the projects include:

- ✓ Steam Generator, Turbine Generator and Auxiliary Units.
- ✓ Coal Handling System including Dust Extraction and Suppression System
- ✓ Closed Cycle Cooling System with Cooling Towers.
- ✓ Raw water reservoir, Water & Effluent Treatment System
- ✓ Fire Protection System
- ✓ Air Conditioning & Ventilation System
- ✓ Electrostatic Precipitators
- ✓ Chimney
- ✓ Ash Handling System with Dry Ash Extraction, Storage and Disposal Facilities.
- ✓ Electrical Systems: Generator Bus Duct, Transformers, Switchgears, Switch Yard etc.

2.4 Need for the Project & Its Importance to the Country & Region

Power is one of the key infrastructural elements for the economic growth of a country. The project is being implemented as Regional project for meeting the power demand of States and UT of Western Region.

2.5 Demand Supply Gap

With rapid growth of the economy, power requirement is projected to increase significantly over the next decade. The projected power requirement for FY 2016-17 and 2021-22 is given below:

Projected Power Requirement

Region	Energy Requirement (MU)		Peak Load (MW)	
	2016-17	2021-22	2016-17	2021-22
Northern	422,498	594,000	60,934	86,461
Western	394,188	539,310	62,015	86,054
Southern	357,826	510,786	57,221	82,199
Eastern	163,790	236,952	24,303	35,928
North-Eastern	16,154	23,244	2,966	4,056
Andaman & Nicobar	366	505	67	89
Lakshadweep	52	65	11	18
All India	1,354,874	1,904,861	199,540	283,470

Source: 18th Electric Power Survey (EPS) of CEA

Demand & Supply Scenario at the End of 12th Plan

Demand & Supply Scenario at the end of 12th Plan based on Demand projections in 17th EPS considering capacity addition of 86500 MW is presented in given below:

Demand & Supply Scenario at the End of 12th Plan

Region	Peak (MW)			Energy (MU)		
	Availability	Load/ Demand	Deficit/Surplus %	Availability	Load/ Demand	Deficit/ Surplus (%)
All India	195821	218209	-10.3	1365379	1392066	- 1.9

Source: CEA - 17th Electric Power Survey (EPS)

From the above, it can be seen that there is overall peak deficit of 10.3% and energy deficit of 1.9% exist in the country at the end of 12th Plan and expected to continue beyond 12th Plan Period too.

2.6 Employment Generation (Direct & Indirect) due to the Project

The project will generate direct and indirect employment opportunities as well as opportunities for self-employment. Power projects have mechanized and automated plants. Therefore, the direct opportunities for employment during operation phase are limited. The estimated no. of employees during operation phase of the project is estimated to be about 900. However, during construction phase, the total no. of workers likely to be employed will be much higher (about 2,000). In addition to the people directly involved in construction and operation of the power project, employment opportunities in subsidiary industries and service sectors as well as self employment opportunities shall also be generated.

2.7 Project Description & Process Details

In a thermal power plant, the chemical energy of the fuel (coal) is first converted into thermal energy (during combustion), which is then converted into mechanical energy (through a turbine) and finally into electrical energy (through a generator). The schematic diagram of the process of power generation a coal based thermal power plant is shown in **Exhibit. I**. It has the following steps.

(1) The coal is transferred from the coal handling plant by conveyor belt to the coal bunkers, from where it is fed to the pulverizing mills, which grind it to fine powder. The finely powdered coal, mixed with air is then blown into the boiler by a fan where it burns like a gas.

(2) The process of combustion releases thermal energy from coal. The boiler walls are lined with boiler tubes containing high quality demineralized water (known as boiler feed water). The combustion heat is absorbed by the boiler tubes and

the heat converts the boiler feed water into steam at high pressure and temperature. The steam, discharged through nozzles on the turbine blades, makes the turbine to rotate, which in turn rotates the generator coupled to the end of the turbine. Rotation of generator produces electricity, which is passed to the step-up transformer to increase its voltage so that it can be transmitted efficiently. The power is evacuated via switchyard through a Transmission System.

(3) During combustion, the non-combustible part of coal is converted into ash. A small part of ash (about 20%) binds together to form lumps, which fall into the ash pits at the bottom of the furnace. This part of ash, known as bottom ash is water quenched, ground and then conveyed to pits for subsequent disposal to ash disposal area or sale.

(4) Major part of the ash (about 80%) is in fine powder form, known as Fly Ash, and is carried out of the boiler along with the flue gas. The flue gas, after heat recovery, is passed through the electrostatic precipitators, where the ash is trapped by electrodes charged with high voltage electricity.

(5) The flue gases exiting from the Electrostatic Precipitators (ESPs) are discharged through a tall chimney for wider dispersal of remaining ash particles and gases. The ash collected in the ESP hoppers is extracted in dry form and conveyed to dry ash storage silos from where it is supplied to user industries.

(6) Unused part of fly ash is mixed with water and conveyed to ash disposal area in a slurry form. Ash can also be lifted from ash disposal areas for utilization.

(7) The steam, after passing through the turbines, is condensed back into water in condensers and the same is re-used as a boiler feed water for making steam. The reasons for condensing and reusing the steam are following: -

- The cost of boiler feed water is very high as it is very pure demineralised water hence reuse is economical.
- The use of condenser lowers the temperature at the exit end and hence increases the efficiency of the turbine.

(8) The condenser contains tubes through which cold water is constantly pumped. The steam passing around the tubes of condenser looses heat and condenses as water. During this process, the steam gets cooled while cooling water gets heated up (by about 10^0 C). This hot water is cooled in a cooling tower and recycled for cooling. However, in order to control dissolved solids, a certain amount of blow down is required from the cooling towers, which is used in the plant for other usages such as service water, coal dust suppression etc.

2.8 Requirement of Raw Materials

Coal and Water are the main raw materials proposed to be used in Khargone STPP for power generation. While coal shall be utilized as fuel water shall be utilized by suitable intake system from river Narmada.

In addition, Heavy Furnace Oil/ HPS/ LSHS shall be used during start-up, warm up and low load (up to 30%) operations. Light Diesel Oil (LDO) firing shall be used to facilitate cold start-up of the unit when no auxiliary steam is available for HFO heating and atomization.

2.9 Resource Optimisation, Recycle & Reuse

Land, Water and Coal are the three main natural resources required for setting up of Khargone STPP. With extensive experience in thermal power generation, NTPC shall make the best efforts to optimize the utilization of resources.

Khargone STPP shall be based on super critical boiler parameters, which higher thermal efficiency as compared to conventional pulverised coal has fired units based on sub-critical boiler parameters. The increase in efficiency results in lower coal consumption as well as lower generation of ash and gaseous emissions per unit of electricity generated. NTPC shall make maximum efforts to utilize the ash generated from the project.

While developing the details of water system for the project utmost care shall be taken to minimize water requirement as well as effluent generation. Main features of the water system shall include:

- Re-circulating type C.W. system with cooling towers / Open System complying with MOEF requirements.
- In case of Cooling Towers, utilization of Cooling Tower blow down for Coal dust suppression and extraction system, Service water system, Ash handling and Fire fighting.
- Recycle and reuse of effluents from coal dust suppression and extraction system and service water system.
- Ash water recirculation system.
- Recirculation of filter backwash to clarifier inlet.

2.10 Availability of construction Power

The requirements of the construction power supply for the project would be met from 33kV Sanawad substation of MPSEB (Approx 30 kMs from proposed site) through two (02) nos. of 33 kV lines. Necessary 33/11 kV substation along with 11 kV ring main/LT sub-stations shall be provided for the required power plant area.

2.11 Quantity of Wastes to be Generated

The wastes generated in a coal based power station consist of flue gas and ash generated due to combustion of coal and liquid effluents generated due to cooling, various industrial processes and domestic use of water.

Ash generated due to combustion of coal will be the main industrial/ solid waste generated from the project. About 80% of the ash shall be generated as Fly Ash while 20% of the ash shall be generated as bottom ash.

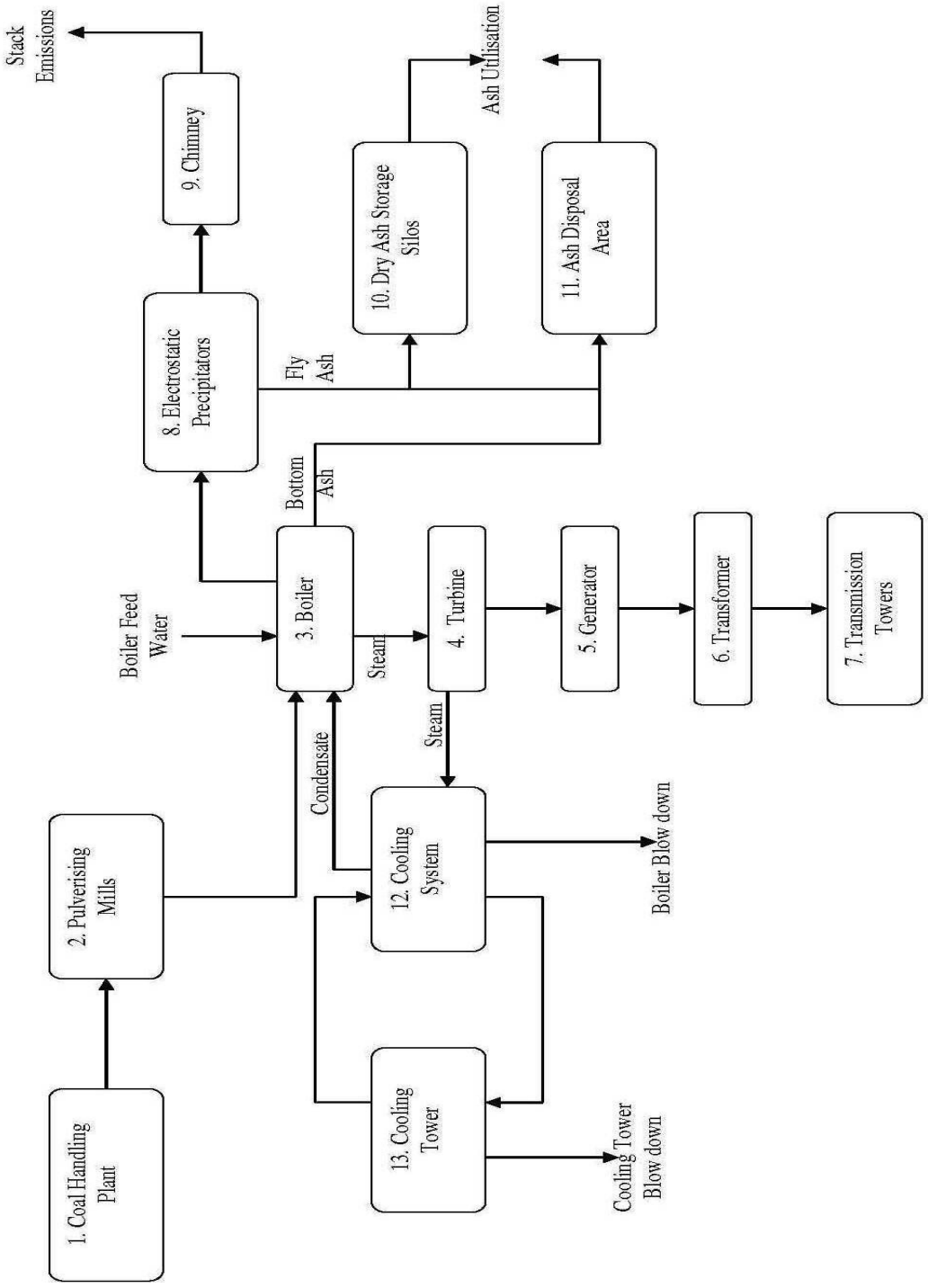

Exhibit-I: Schematic Representation of Thermal Power Generation in Coal Based Thermal Power Plant

3.0 Description of alternate sites

Four alternate sites for the proposed super thermal power project were identified based on siting criteria of MOEF and following considerations:

i. Availability of suitable and adequate land
ii. Distance from reliable source of water
iii. Road and railway access
iv. Availability of infrastructural facilities
v. Environmental aspects

The details of these four sites are as follows:

➢ **SITE 1 : NEAR VILLAGE SELDA**

- **Location and Approach**

The site is located at a distance of about 105 km Longitude (E) $75^0$50' 02" to 75^0 50' 38" and Latitude (N) 22^0 03' 25" to 22^0 04' 01" from Indore towards South of Indore and about 30 km from Sanawad town. Nearest railway head is Sanawad (30 km). The nearest town is Beria about 11 km from the site and is approachable from Barwah on Indore-Khandwa State Highway by 15 Km long PWD road. The proposed area is located near villages Selda and Dalchi. The vicinity map showing the details of the area is placed at **Figure - 3.1.**

- **Land**

Sufficient land is available. As informed by the state Government the land recorded under State Government is 371.40 Ha and non recorded land is 359.45 Ha. As observed there is no forest land in the proposed site. However the site is surrounded by Jamunia, Murala, Bhatiyan and Nalwat Reserve Forest.

- **Water**

Narmada river is approximately at a distance of 15 km (North) from proposed site. Two dams of Narmada Hydro Development Corporation (NHDC) on river Narmada i.e Maheshwar Dam (North - West) and Omkareshwer Dam (North- East) are located at a distance of about 15km and 45km respectively.

- **Environmental Aspect**

The site is generally in conformity to the siting criteria of MOEF. The land is unirrigated and moderately undulating and rocky. No Wildlife Sanctuary/ National Parks or any ecologically sensitive area of national importance exists within 10 km.

radius of proposed site. No archaeological monument of national importance exists within 10 km. area of the proposed site. The site is away from highways (15 Km), railway line (30 Km) and water body (15 Km). Jamunia, Murala, Bhatiyan and Nalwat Reserve Forest exist within 2 km. from the proposed site.

➢ **SITE 2: (NEAR NEPA PAPER MILL, NEPANAGAR)**

- **Location and Approach**

The site is located within the acquired boundaries of Nepa Limited in Burhanpur Distt. The paper mill in Nepanagar was established in early 50s and is approachable from Indore - Burhanpur State Highway through a 16 Km. long State PWD road. Nearest railway station at Nepa Nagar (on Mumbai – Delhi main trunk route) is about 2 km. The vicinity map showing the details of the area is placed at **Figure -3.2.**

- **Land**

Total land available under Nepa Limited is 1867 acres comprising of paper mill area (about 100 acres), township facilities (1100 acres) and forest land about 667 acres. Forest Department has sought payment of NPV and afforestation cost from Nepa Limited for transfer of 667 acres of forest land. A captive Thermal Power Plant of 29.27 MW capacity is under operation at Nepa paper mill.

The topography of the area is highly undulating with rocky hillocks and hence the cost of site development would be very high. The entire areas of township (1100 acres) as well as 667 acres of forest land under possession of Nepa Limited has fully grown trees and scattered habitation and dwelling units. The area free from vegetation and habitation will not be sufficient to accommodate the proposed units.

- **Water**

Intake pump house has been constructed on Tapi river (about 5 Km.) for supplying water to the Paper Mills. Another intake pump house with low height weir 5 Km. down-stream was constructed earlier and the same is abandoned at present.

- **Environmental Aspect**

No Wildlife Sanctuary/ National Parks or any ecologically sensitive area of national importance exists within 10 km. radius of proposed site. No archaeological monument of national importance exists within 10 km. area of the proposed site. The site is away from highways, railway lines and water body. West Mandwa RF (N)

and East Mandwa RF (NW), Samardev RF & Samriya in SW direction are in the vicinity of the proposed site.

➢ **SITE 3: (NEAR KHANDWA TOWN)**

- **Location**

The site is about 4 Km from Khandwa a major town in M.P. The site is approachable through metalled road. The vicinity map showing the details of the area is placed at **Figure - 3.3.**

- **Land**

The total land of about 3000 acres was acquired earlier by Khandwa Municipal Corporation. The identified land is mainly barren with single crop agriculture in some patches. The land is falling within the municipal boundary limit of Khandwa town.

- **Water**

Narmada River is at approx 15 Km from the site.

- **Environmental Aspect**

The land identified is within the boundaries of Municipal Corporation of Khandwa. No Wildlife Sanctuary/ National Parks or any ecologically sensitive area of national importance exists within 10 km. radius of proposed site. No archaeological monument of national importance exists within 10 km. area of the proposed site. The site is away from highways (3 Km), railway line (2 Km) and water body (3 Km).

➢ **SITE 4: (NEAR SALGAON IN KHANDWA DISTRICT)**

- **Location and Approach**

The site is located at a distance of about 105 km towards south of Indore and about 9 km from Sanawad town. Nearest Railway head is Sanawad on Indore – Khandwa meter gauge section (9 km). The site is approachable from Barwah on Indore – Khandwa State Highway by (8 km) long PWD road. The vicinity map showing the details of the area is placed at **Figure - 3.4.**

- **Land**

Sufficient land is available. The identified land is mainly double crop private. Four (4) densely populated villages located within the identified site. Gunjari and Khurgaon Reserve Forest exist within 1 km. from the proposed site.

- **Water**

Narmada River is passing at approx 8 km (North) from the site. Two dams of Narmada Hydro Development Corporation (NHDC) on river Narmada i.e. Maheshwar Dam (North - West) & Omkareshwar Dam (North East) are located at a distance of about 10 – 20 mts. As per discussions with State officials, water could be allocated from these dams.

- **Environmental Aspect**

The land identified is mainly double crop privately owned and four densely populated villages are located in the identified area. No Wildlife Sanctuary/ National Parks or any Ecologically Sensitive Area of national importance exists within 10 km. radius of proposed site. No archaeological monument of national importance exists within 10 Km. area of the proposed site. The site is away from highways (9 km), railway line (9 km) and water body (8km). Gunjari and Khurgaon Reserve Forest exist within 1 km. from the proposed site.

TABLE – 3. 1
COMPARISON OF FOUR ALTERNATE SITES

SR. NO.	DESCRIPTION	SITE-I (SELDA)	SITE-II (NEPANAGAR)	SITE-III (KHANDWA)	SITE-IV (SALGOAN)
1.	Land	➢ Sufficient land is available. ➢ As informed by the state Government the land recorded under State Government is 371.40 Ha and non recorded land is 359.45 Ha. ➢ As observed there is no forest land in the proposed site. ➢ However the site is surrounded by Jamunia, Murala, Bhatiyan and Nalwat Reserve Forest. ➢ In–principle commitment available for 1750 acres of land.	➢ About 1767 acres of land is available. ➢ Township area of (1100 acres) and 667 acres of forest land under possession of Nepa Limited. ➢ Only 500 acres free from vegetation and habitation is available and will not be sufficient to accommodate the proposed units.	➢ Identified land is within the boundaries of Municipal Corporation of Khandwa.	➢ Sufficient land is available. ➢ The identified land is mainly double crop private. ➢ Four (4) densely populated villages located within the identified site. ➢ Gunjari and Khurgaon Reserve Forest exist within 1 km. from the proposed site
2.	Water	➢ Narmada River In–principle commitment available for 55 cusecs of water from Narmada River.	➢ Tapi River	➢ Narmada River	➢ Narmada River

SR. NO.	DESCRIPTION	SITE-I (SELDA)	SITE-II (NEPANAGAR)	SITE-III (KHANDWA)	SITE-IV (SALGOAN)
ENVIRONMENTAL SENSITIVE ZONES (WITHIN 10 KM)					
3	National Parks	NIL	NIL	NIL	NIL
4	Wildlife Sanctuaries	NIL	NIL	NIL	NIL
5	Monuments	NIL	NIL	NIL	NIL
6	Hills / Valleys	NIL	Yes	NIL	NIL
7	Nearest railway station	Sanawad (30 km)	Nepa Nagar (2 km)	Khandwa (2 km)	Sanawad (9 km)
8	Nearest Airport	Indore (105 km)	Indore (180 km)	Indore(127 Km)	Indore (105 km)
9	Nearest town	Beria	Nepa Nagar	Khandwa	Sanawad
10	Nearest water bodies(In-land, coastal, marine or under-ground waters)	Narmada River 15 Km	Tapi River 3 Km	Narmada River 15 Km	Narmada River 8 Km
11	Nearest forest	Jamunia, Murala, Bhatiyan and Nalwat Reserve Forest	West Mandwa RF (N) and East Mandwa RF. Samardev RF & Samriya in SW .	Nil	Gunjari and Khurgaon Reserve Forest

SR. NO.	DESCRIPTION	SITE-I (SELDA)	SITE-II (NEPANAGAR)	SITE-III (KHANDWA)	SITE-IV (SALGOAN)
12	Conclusion	The site is suitable for locating 2 X 660 MW coal based plant and hence selected.	After avoiding vegetation and habitation only about 500 acres of land is available. Hence the site is not suitable for the proposed project.	Not suitable in view of identified land being within municipal limits of Khandwa	Not suitable in view of Four (4) densely populated villages located within the identified site.

Conclusion:

1. The site near Selda (Site - I) has been considered prima-facie suitable for setting up the project based on environmental and technical grounds. The location is generally in conformity to the siting guidelines, sufficient land (devoid of forest land) and water would be available, and the site is in proximity to railhead as well as highway. Furthur state Government has informed that the required land and water at the location can be necessitated.
2. The site at Nepa Limited (Site-II) was not considered suitable that only 500 acres free from vegetation and habitation is available and will not be sufficient to accommodate the proposed units.
3. The site at Khandwa (Site-III) was not considered suitable for siting the project since the identified land is within the boundaries of Municipal Corporation of Khandwa.
4. The site at Salgoan (Site-IV) was not considered suitable for siting the project as Four (4) densely populated villages located within the identified site.

4.0 Environmental Aspects

No Wildlife Sanctuary, National Park, Archeological Monument of National importance, Historical Places and industry exist within 10 Kms. radius.

4.1 Pollution Control Measures

The various environmental measures, pollution control systems and mitigative measures proposed to be adopted for the Khargone STPP are as follows:

4.4.1 Air Pollution Control System

High efficiency electrostatic precipitators (ESPs) of 99.9% will be installed to control the emission of fly ash particles. The precipitators will be designed to limit the particulate emission to 100 mg/Nm^3 under all design conditions.

To facilitate wider dispersion of pollutants one twin flue stack of height 275 m above plant grade level is envisaged for this project. The chimney shall be provided with personal access doors and sampling ports for continuous online monitoring.

Space provision has been kept in the layout for retrofitting Flue Gas De-sulphurisation (FGD) system, if required in future.

For control of fugitive dust emissions within and around the coal handling plant, dust extraction / suppression systems would be provided. Dust suppression system shall also be provided in the coal stockyard.

4.4.2 Water Pollution Control System

An effluent management scheme, consisting of collection, treatment, recirculation and disposal of effluents shall be implemented in order to optimize the make up water requirement as well as liquid effluent generation. The detail of water system for the project is described as follows:

The liquid effluents shall be collected and treated/ recycled as per the following design philosophy:

1. The filter backwash water of PT Plant shall be collected and recycled back to the DM system clarifier.
2. The sludge from clarifiers of Water PT Plant shall be collected in a sump/ pit and shall be pumped to bottom ash slurry sump for disposal to bottom ash dyke.
3. The waste effluents from neutralization pits of DM Plant and Condensate Polishing Plant shall be collected in the respective neutralization pits and neutralized before pumping to the Central Monitoring Basin / Ash slurry sump before final disposal.
4. Re-Circulating type Cooling Water (C.W) system with cooling towers, with C. W. blow down from cold water side to ensure no thermal pollution.
5. Part of CW system blow down would be used for service water system, fly ash handling, bottom ash handling and coal dust suppression. The unused blow down shall be led to Central Monitoring Basin after treating through clarifiers/ tube settlers. The sludge from clarifier/ tube settler shall be disposed off in bottom ash dyke along with bottom ash slurry.
6. A coal settling pond shall be provided to remove coal particles from coal handling plant waste. Decanted water shall be pumped back to the coal dust suppression system.
7. Service water effluent collected from plant drains shall be led to a sump. From the sump the service water shall be pumped up to tube settler/ clarifier for treatment of suspended solids. Treated service water shall be sent back to service water tank to the extent possible for re-use.
8. All the plant liquid effluents shall be mixed in Central Monitoring Basin (CMB) and finally disposed off to the final disposal point.

Efficient operation of various treatment schemes shall be ensured so that the quality of treated effluent from CMB conforms to relevant standards, prescribed by regulatory agencies. The treated effluents shall be released to the existing drainage system.

The sewage from plant and township shall be treated in a sewage treatment plant. The treated effluent conforming to prescribed standards shall be utilized for plantation to the extent possible. The balance effluent shall be discharged.

4.4.3 Noise Pollution

The major noise generating sources are the turbines, turbo-generators, compressors, pumps, fans, coal handling plant etc. from where noise is continuously generated. Acoustic treatment shall be provided to control the noise level below 90 dB (A). Wherever required, the workers shall be provided with protective equipment such as ear plugs/ ear muffs.

4.4.4 Green Belt Development

In any industrial project it is most important to chalk out a long-term approach to keep air clean. One such measure is using the plants for absorbing and trapping the air pollutants. Plants in general and trees in particular, function as sinks for gaseous pollutants and this is achieved through various physiological processes occurring within the plant system. Green belt acts as bio filter for the air pollutants and play a major role in safeguarding the environment and controlling the increasing level of air and noise pollution. It can serve as buffer and shock absorber against transient and accidental release of pollutants from industrial complex.

Plantation and developing green belts are one of the mandatory requirements for establishing industrial units like Thermal Power Plants. The objective of this work is to augment the green cover in addition to reduce air pollution and make the climate in and around the plant more conducive. Restoring water balance, checking soil erosion, attenuate noise pollution and improvement in the overall environment & aesthetics of the plant site are also some of the main objectives of creating plantations in such locations.

Figure - 3.1: Vicinity map showing the details of Site - I

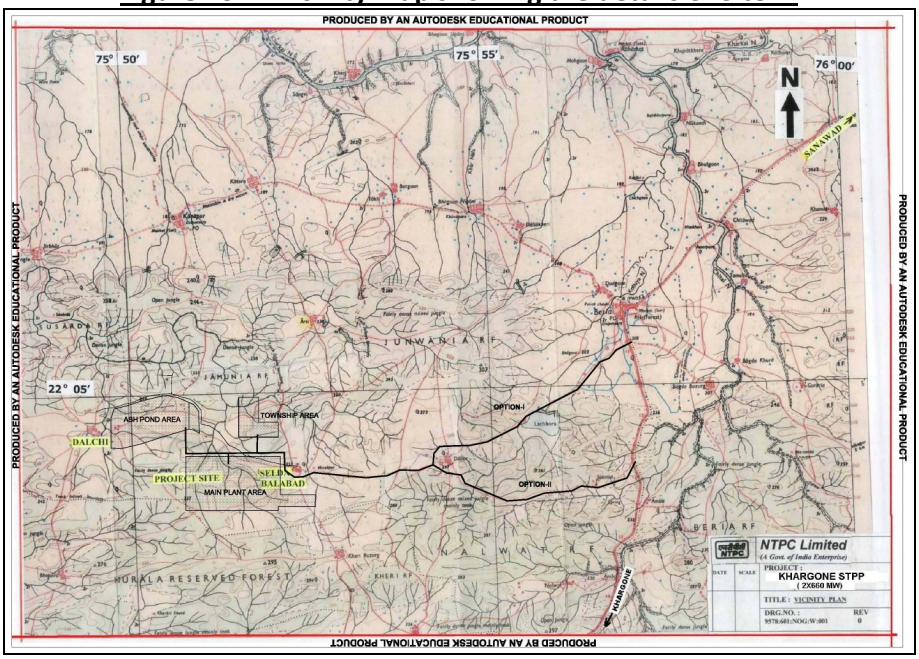

Figure - 3.2 : Vicinity map showing the details of Site – II

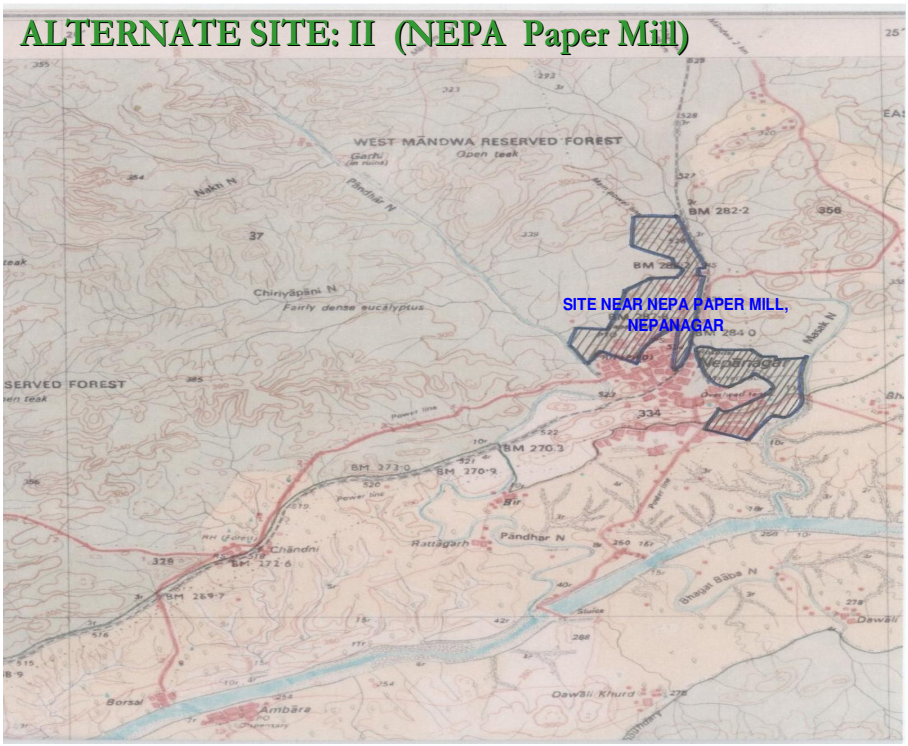

Figure - 3.3: Vicinity map showing the details of Site – III

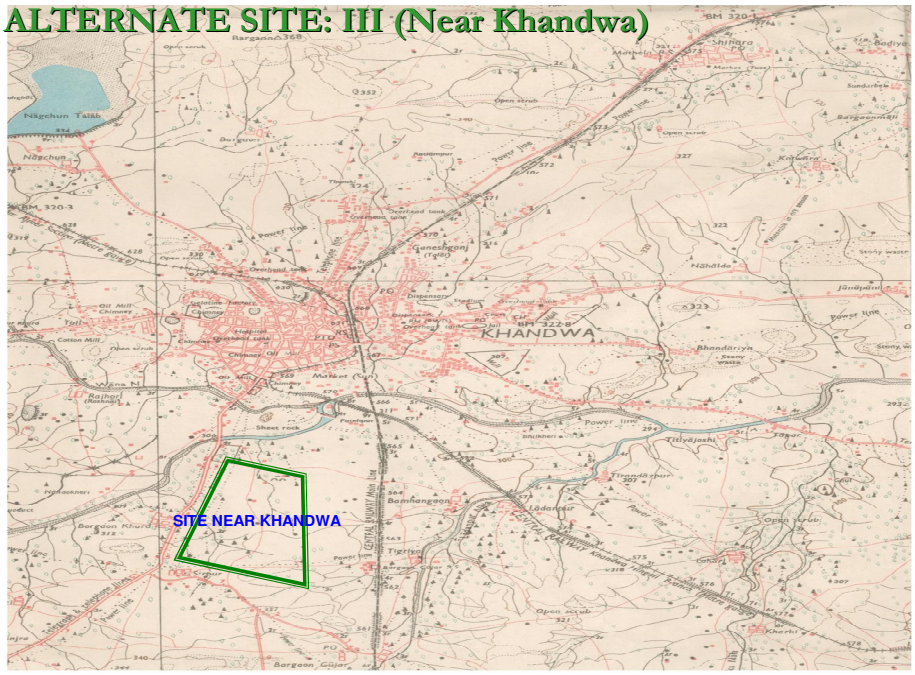

Figure - 3.4: Vicinity map showing the details of Site – IV