EXECUTIVE SUMMARY

OF DRAFT
ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Of

1320 MW COAL BASED THERMAL POWER PROJECT

(Based on Supercritical Technology)

Near

Perunthottam & Agaraperunthottam Villages,
Sirkazhi Taluk, Nagapattinam District, Tamil Nadu

Submitted by

Sindya Power Generating Co. Pvt. Ltd

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EXECUTIVE SUMMARY

1.0 INTRODUCTION

Sindya Power Generating Company Pvt Ltd (SPGCPL), promoted by Promoter Directors of Obul Reddy group, proposes to implement a 1320 MW (2 X 660 MW) Coal Based Thermal Power Plant at Perunthottam and Agaraperunthottam Villages, Sirkazhi Taluk, Nagapattinam District, Tamil Nadu. The Terms of Reference (TOR) for carrying out the EIA study was accorded by MOEF vide Letter dated 4-2-2011 for a capacity of 2 x 660 MW.

The Executive Summary of Draft Environmental Impact Assessment (EIA) report highlights the major findings of the proposed 1320 MW (2x660MW) thermal power plant. The draft EIA report was prepared as per the guidelines of MOEF Gazette Notification dated 14th September 2006.

2.0 PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The plant site is located at Perunthottam Village of Sirkazhi Taluk in Nagapattinam District of Tamilnadu with an average msl of about 1.5 to 2.2 m.

Nearest railway line connecting Myladuthurai– Sirkazhi of Southern Railway line is located at a distance of 12 km in Western direction of plant site.

Uppanar drainage Canal flows at a distance of 2.2 km in North. Manikarnikal Canal is at 1.6 km in West. Cauvery River flows at a distance of 5.2 km in South. Sevanar River flows at a distance of 7.5 km in South from the Plant site. Bay of Bengal is at a distance of 1.1 km in the Eastern direction.

Mayiladuthurai is a major town and is located at a distance of 21 km in WSW direction to the Plant site.

Key map showing the location of various features around the plant site is depicted in **Fig – 1.**

The State Highway (SH-22) connecting Tiruvengadu to Nagapattinam is located at a distance of about 4 km in southern direction from plant site. National Highway (NH – 45A) connecting Chidambaram – Tirukadaiyar is located at a distance of 7.8 km in the western direction. The nearest railway station is located at Sirkazhi, the Taluk headquarters at a distance of 12.3 km to the site.

Nearest Settlements from the plant site are:

- Peruntottam –0.7km –W
- Nayakkarkuppam – 1.2 km –E
- Kadaikkadu – 1.3 km –E
- Tiruvengadu – 3.2 km – WSW
- Tirumullaivasal – 3.5 km - N

The nearest airport is Tiruchirapalli at a distance of 130 km and the nearest sea port is Karaikal at a distance of 40 km from the plant site.
The following power plants are proposed within 10 km radius with respect to SPGCPL plant site.

1. 2x660 MW Empee Power - 2.5 km (S)
2. 2x660 MW NSL Power - 6.3 km (S)
3. 2x500 MW Patel Energy - 7.4 km (S)-

There are no National parks, sanctuary, Elephant/Tiger Reserve, migratory routes within 10 km radius of the project site.

SPGCPL proposes to implement the 1320 MW power project. Salient Feature of the project are given below

2.2 SALIENT FEATURES OF THE PROPOSED PROJECT

<table>
<tr><th colspan="3"></th><th>Details</th></tr>
<tr><td colspan="3">Cost of the Project (Rs in Crores)</td><td>6996</td></tr>
<tr><td colspan="3">Land (Acres)</td><td>594</td></tr>
<tr><td colspan="3">Total Capacity (MW)</td><td>1320 (2 X 660 MW)</td></tr>
<tr><td colspan="3">Fuel</td><td>100% Imported Coal
or
Blended coal (70 % Indian Coal and 30 % Imported Coal)</td></tr>
<tr><td rowspan="5">Fuel Consumption</td><td rowspan="2">Imported Coal</td><td>t/day</td><td>15,792</td></tr>
<tr><td>Million TPA (@85 % PLF)</td><td>4.90</td></tr>
<tr><td colspan="3">or</td></tr>
<tr><td rowspan="2">Blend Coal (70% indigenous coal and 30% imported coal)</td><td>t/day</td><td>19,800</td></tr>
<tr><td>Million TPA (@85 % PLF)</td><td>6.15</td></tr>
<tr><td colspan="3">Fuel Supply</td><td>Indian Coal – Mahanadi Coal Fields
Imported Coal – Indonesia</td></tr>
<tr><td colspan="3">Height of Chimney (m)</td><td>Twin flue chimney of 275 m</td></tr>
<tr><td colspan="3">Source of Water</td><td>Bay of Bengal</td></tr>
<tr><td colspan="3">Sea Water Consumption (m^3/day)</td><td>2,67,792</td></tr>
<tr><td colspan="3">Type of cooling</td><td>Closed circuit with cooling</td></tr>
<tr><td colspan="3">Ash Pond (acres)</td><td>195</td></tr>
</table>

2.3 Land

SPGCPL has identified the land falling in the jurisdiction of Perunthottam and Agaraperunthottam Villages, Sirkhazi Taluk, Nagapattinam District, Tamil Nadu.

The proposed Power Plant will be located in an area of about 594.18 acres out of which Government land is 66.90 acres and Private Patta land is 527.28 acres. No forest land is involved.

As on date Sindya Power and its associates procured about 430 acres of private patta land and alienation of 66.9 acres of Govt land is under process.

2.4 Water Source and Requirement

The water requirement of the power plant is 2,67,792 m^3/day. The source of water for the plant is the sea water i.e Bay of Bengal.

2.5 Fuel

The main fuel for the project is Imported coal or blended coal having ratio of 70 % Indigenous coal and 30 % Imported coal.

The imported coal will be sourced from Indonesia and the domestic coal from Mahanadi coalfields or as per the linkage approved by the Government. The total annual requirement of coal at 85% PLF is given below:

Imported Coal	4.9 Million tons per annum
Blend Coal (70% indigenous coal and 30% imported coal	6.15 Million tons per annum

Coal Transportation

Imported and Indian Coal will be transported to the plant through sea.

SPGCPL has proposed to construct a jetty at a distance of 1.2 km from the project site for handling a coal cargo of 9 MT/ Annum with one berth and two cranes. The cranes and conveyor system will evacuate the coal from the jetty to the project coal stockyard. The jetty will be able to accommodate both Panamax type vessel and Cape size vessel.

2.6 Power Evacuation

The power generated from the plant will be stepped up to 400 kV by means of Generator Transformers and evacuated to Power Grid Corporation of India Limited (PGCIL) 400 kV grid through 400 kV GIS substation.

SPGCPL and other power projects have approached Power Grid Corporation of India Limited (PGCIL) to develop Common Pooling Station. PGCIL has agreed to consider the request for providing a common pooling station which is equidistant to all the upcoming Power Projects.

2.7 Manpower

The total manpower requirement for the project is given below.

REQUIREMENT OF MANPOWER

During Construction (Executives and Supervisory Staff)	103
During Construction (Manpower -Peak)	1800
During Operation (unskilled & skilled)	221

Additional employment due to support services like canteen, security, horticulture development, and township will be in the range of 70 people. Local people will be given preference during construction and operation of the power plant.

A township with all essential amenities will be developed outside the plant site in the nearby town.

3.0 BASELINE ENVIORNMENTAL STUDIES

3.1 Baseline Status

The baseline status was monitored in 10 km radius with respect to the project site during the period December 2010 to February 2011.

3.2 Meteorology

Nagapattinam district experiences sub-tropical humid climate. The average maximum temperature is about 32.5°C and minimum is about 19.8°C. The relative humidity ranges from 70 – 77% and it is high during the period of October to November. The annual average rainfall is 1500 mm. Most of the rainfall is received between October and December under the influence of North east monsoon. The predominant wind direction in the study area and study period was from NNE-NE-ENE-E-ESE sector accounting to about 64.11% of the total time. Wind speeds during this period were varying between 1-15 kmph.

3.3 Air Environment

Ambient air quality of the study area has been assessed through a network of 12 ambient air quality locations representing the downwind, cross wind and upwind impact scenario of the project site.

The Ambient Air Quality monitored in the study area was found to be well within the limits of NAAQ standards prescribed for Residential, Rural & Other Areas.

Ambient Air Quality in the study area

S.No	Pollutant	Range of values	NAAQS Standard For Industrial, Rural and Residential areas
1	PM_{10}	25.54-47.08	100
2	SO_2	4.2-7.9	80
3	NO_x	5.8-9.6	80

(All the values are in $\mu g/m^3$)

3.4 Noise Environment

Twelve monitoring locations were selected to assess the noise levels in the study area. The day time noise levels are in the range of 46.7 to 89 dBA and night time in the range of 40.4 to 41.8 dBA.

3.5 Water Environment

Twelve ground water and four surface water samples were collected from in and around the plant site within 10 km radius. The parameters thus analyzed were compared with IS –10500. The water quality showed high TDS, Chlorides and hardness due to proximity of sea.

3.6 Soil Environment

Nine samples were collected to assess the soil quality in the 10 km study area of plant site which revealed low fertile quality. The soil is typically sandy clay.

3.7 Biological & Marine Environment

Based on the physical setting and the kind of distribution of flora and fauna, the study area can be classified into cropland, terrestrial and aquatic ecosystems. There are no forests in the study area. The land proposed for the project does not have much vegetation cover. There are no endangered, threatened, rare plant species recorded during study period.

The marine environment remains more dynamic and turbulent due to persistent action of seasonal wind, high waves and coastal currents. The coastline shows historical degradation. Various results on the chemical and biological parameters indicate that the water is well oxygenated, nutrient rich

and biologically productive at primary and secondary levels. The marine flora and fauna also indicate the existence of diverse population.

3.8 Land Use

The study area has varied land use pattern ranging from human settlements (11.35%), Single crop (16.96%), Double crop (19.48%), Waterbodies (1.86%), Sea (38.53%) and Salt pans including abandoned (6.59%).

3.9 Demography and Socio-Economic status

The total population of the villages in the study area is 1,48,852 as per Census 2001. The total population density of the study area is about 474 persons/sq. km. The average sex ratio in the whole study area is 1004. The literacy percentage of the whole study area is 69.3%, which is higher than state and lower than district level.

Total worker participation rate in the study area is 39.6% of the total population. The main workers in the study area are 30.5% and marginal workers are 9.1%. The employment pattern in the villages suggest that only 4.10% work as cultivators, 24.2% are agricultural labors, 10.6% as other workers and 0.64% as household industries workers.

4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN

4.1 AIR ENVIRONMENT

The proposed operation of the power plant will result in emission of particulate matter, sulphur dioxide and oxides of nitrogen due to burning of coal in the boilers.

The ground level concentrations of Particulate Matter (PM), Sulphur di oxide (SO2) and Oxides of Nitrogen (Nox) were estimated using the site meteorological data and the emission data.

The following table shows the incremental ground level concentrations due to use of imported coal or blend coal:

INCREMENTAL GROUND LEVEL CONCENTRATION, µg/m^3

	PM10	SO_2	NOx
1320 MW SPGCPL plant with operation on Imported coal	0.73	23.57	9.53
1320 MW SPGCPL plant with operation on Blend coal	0.93	23.65	12.09

The overall scenario (baseline + incremental) concentrations is shown below :

OVERALL SCENARIO WITHIN STUDY AREA (µg/m^3)

	PARTICULATE MATTER (PM10)	SULPHUR DIOXIDE SO_2	OXIDES OF NITROGEN NOx
Baseline Scenario (max)	47.08	7.9	9.6
Predicted Ground level Concentration (Max)	0.93	23.65	12.09
Overall Scenario (worst case)	48.01 (100)	31.55 (80)	21.69 (80)

Note : Value in parenthesis is NAAQ standard for Rural and Residential Areas

Cumulative Ground level concentrations computed taking into consideration emissions from the subject power plant of 1320 MW and the following three power plants located within 10 km radius was found well within the limits of NAAQ

1. 2x660 MW Empee Power - 2.5 km (S)
2. 2x660 MW NSL Power - 6.3 km (S)
3. 2x500 MW Patel Energy - 7.4 km (S)

Air Pollution Control Management

The project will use imported coal/blend coal supported by the secondary fuel oil (LDO/HFO) for start-up.

In order to regulate fly ash emission to atmosphere, high efficiency Electrostatic Precipitators (ESP) will be installed to control the emission of ash particles. Two ESPs for two boilers will be provided. One bi-flue stack of 275 m height to meet the guidelines of Pollution Control Board will be installed.

The ESPs will be designed to limit the particulate emission to less than 50 mg/Nm^3. Therefore the impact due to particulate emission due to burning of coal leading to increase of dust level concentration in the ambient air will be minimal. The fly ash collected in the hoppers of ESPs will be removed through dry collection system.

The bottom ash generated in the form of clinker will be collected in the hoppers and will be available for utilization. Unutilized ash will be removed as slurry for further disposal to ash pond.

Dust extraction system of coal crusher and other equipment will be provided with a Bag filter. The outlet will be designed to meet particulate emission of less than 50 mg/Nm^3.

Burning of coal will result in NO_x emission of about 650mg/Nm^3 from the stack of the proposed power plant. This will lead to increase of ambient NO_x level. Predicted NO_x level due to emission from the proposed power plant super imposed on the baseline concentrations showed the ground level concentrations well within the limits of NAAQ standards.

Low NOx burners of latest design and furnace temperature control will be incorporated for the steam generators to minimize the emission of Nitrogen oxides from boilers.

Fugitive Dust Control

For control of fugitive dust, water spray arrangement will be provided to spray water all around the coal stock piles to suppress the dust nuisance. A closed conveyor system will be implemented to control the dust generation during transportation of coal.

6.2 NOISE ENVIRONMENT

All equipment in the power plant would be designed for noise levels not exceeding 90 dB(A). Proper encasement of noise generating sources will be done to control the noise levels.

All operations and maintenance personal working near noise prone areas would be provided with earmuffs & earplugs.

A thick greenbelt in an area of 124 acres will be developed all around the plant with a width of 50 -150 m, which acts as noise and dust barrier.

6.3 WATER QUALITY MANAGEMENT

Total water requirement of the plant is 2,67,792 m^3/day. The total wastewater generation from the plant is 2,01,000 m^3/day. Details of wastewater generation from various areas, their treatment and disposal is given below in table:

WASTEWATER GENERATION (m^3/day)

Unit	Waste Water	Treatment	Reuse/disposal
Cooling tower blowdown	1,78,464	Nil	40800 m^3/day for ash handling 137664 m^3/day discharge to sea from cooling water system
Desalination reject	21,456	Discharge to sea	21456 m^3/day discharge to sea
DM Regeneration	144	Neutralisation following by dilution at CMB	144 m^3/day for dust suppression
Clarifier	840	Nil	840 m^3/day for ash pond
Domestic – Plant & Colony	96	Sewage treatment plant	96 m^3/day used for greenbelt development
Total	**2,01,000**		

6.4 ASH MANAGEMENT

The area identified for ash disposal is about 195 acres, to store ash generated from the 1320 MW power plant. The Fly ash generated would be utilized in dry form. An action plan for utilization of flyash to achieve 100 % utilization within four years will be drawn.

The estimated Flyash generation from the plant is 5386 t/day. SPGCPL has tiedup with M/s. Dalmia Cement (Bharat) Ltd and the India Cements Limited for offtake of flyash generated from the plant.

The unutilized Fly ash, would be disposed off to the ash dump area in slurry form. Ash pond will be provided with 0.5 mm thick LDP lining to prevent leaching.

6.5 IMPACT ON MARINE ECOLOGY

A marine EIA study was carried out by M/s. Indomer Coastal Hydraulics (P) Ltd. This included evaluation of impact of discharging warm water and brine reject to sea and operation of the jetty.

The discharge of treated warm waste water will have minimal impact on the marine ecology as the water will only be 4 Deg "C" warmer than the ambient and will be from the coldend side of cooling tower.

The study recommends that the outfall shall be at a distance of 1500 m from the off shore. This will ensure proper dilution which will result in the temperature reaching 0. 5^0 C above ambient within 50m. Similarly difference in salinity of the waste water reduces to 0.5 ppt within 150 m distance from the outfall

6.6 GREENBELT DEVELOPMENT PLAN

An area of 124 acres around the main plant area and 35 acres around the ash pond area will be developed under greenbelt to improve aesthetics, control of dust and noise pollution.

6.7 LAND ACQUISITION

Power Plant will be located in an area of about 594.18 acres. and the details of category of the land are given below:

Type of Land	Area (acres)
Govt Land	66.90
Private Patta land	527.28
Total	594.18

As on date, Sindya Power and its associates procured about 430 acres of private patta land and alienation of 66.9 acres of Govt. land is under process.

About 93 houses are located within the main plant area of the project (i.e) Meyyan and Mannan street. SPGCPL propose to build 93 houses to rehabilitate the people. Each house will have an area of 352 Sq.ft along with facilities viz , Toilet, Common Overhead Water tank, WBM paved Road, Street Lights etc. SPGCPL also propose to construct Temple for community worship.

The houses will be located at mutually acceptable place. The total rehabilitation and resettlement budget estimated is about Rs. 6.07 Crores which will be borne by SPGCPL.

7.0 COMMUNITY DEVELOPMENT MEASURES

The company has budgeted an amount of Rs 15.20 crores for implementation of the CSR activities during construction period of 4 years. Recurring budget of Rs 1.0 crore/year is earmarked to sustain the CSR activities post commissioning of the plant.

8.0 BUDGET FOR IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN.

A budget of Rs. 635 Crores is earmarked for implementing the Environmental Management Plan for project.

9.0 POST PROJECT MONITORING PLAN

The Company will establish a full-fledged Laboratory equipped with Pollution Monitoring equipment for monitoring all the environmental parameters as per TNPCB/CPCB guidelines.

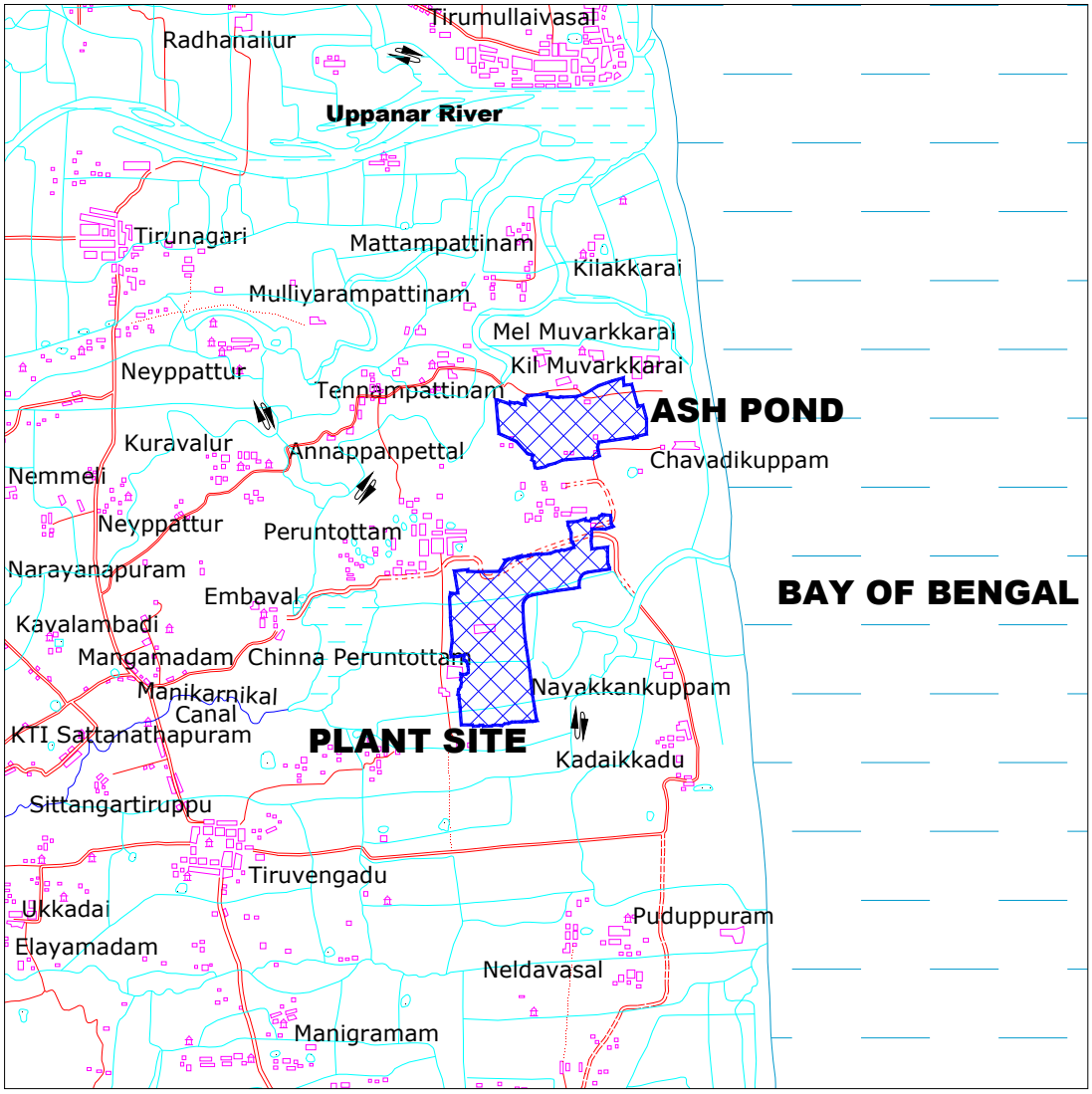
10.0 CONCLUSION

The project will help meet the growth of demand for electricity in Tamil Nadu state. It will strengthen the regional power supply system and stimulate industrial development, and improve living standards of the people.

The technology adopted and the implementation ensures that the impacts due to the proposed power plant are minimum and amenable to technological control and effective environmental management.

The air emissions, noise generated and wastewater quality will be regulated to meet environmental quality standards prescribed by CPCB for thermal power plants.

Apart from eco-friendly operations, the Company will undertake various socio economic development activities in the project and surrounding areas as per the community development plan.



SCALE

0 1 2km

LEGEND

- ROADS
- STREAMS / TANKS
- RIVER
- SETTLEMENTS
- CANALS
- SEA
- PLANT SITE

PROJECT:

SINDYA POWER GENERATING COMPANY PVT. LTD:

2X660 MW COAL BASED THERMAL POWER PLANT

Perunthottam & Agaraperunthottam Village, Sirkazhi Taluk, Nagapattinam District, Tamilnadu

TITLE:

KEY MAP

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