

**EXECUTIVE SUMMARY**

*Of*

**PROPOSED  
NUVOCO CAPTIVE POWER PLANT \_ ARASMETA  
(20 MW COAL BASED CAPTIVE THERMAL POWER PLANT)**

*For*

**ARASMETA CEMENT PLANT**

ARASMETA VILLAGE, AKALTARA TEHSIL  
JANJGIR-CHAMPA DISTRICT, CHHATTISGARH

*By*

**NUVOCO**

**NUVOCO VISTAS CORPORATION LTD.**  
(Formerly Lafarge India Ltd)

## **EXECUTIVE SUMMARY**

### **1.0 PROJECT DESCRIPTION**

**M/s. NUVOCO VISTAS CORP. LTD (NUVOCO)** (formerly Lafarge India Ltd) is operating **Arasmeta Cement Plant** at Arasmeta village, Akaltara Tehsil of Janjgir-Champa District in Chhattisgarh State.

In view of the high power tariff & increasing trend in the tariff of energy by CSPDCL, it is proposed to have captive power generation to meet the power requirement of the cement plant by setting up a 20 MW Coal based captive Thermal Power Plant titled **NUVOCO Captive Power Plant \_ Arasmeta** within the existing cement plant premises. The estimated cost of the proposed 20MW Captive Power Plant is Rs. 126 Crores.

### **2.0 REQUIREMENTS OF THE PROJECT**

#### **2.1 LAND**

The proposed CPP will be located in an area of 2.5 Ha within the existing cement plant complex of 82.00 Ha. No additional land is required for implementing this project.



**Photograph of Proposed Power Plant area within Arasmeta Cement Plant Complex**

## 2.2 FUEL

The proposed 20 MW captive thermal power plant is designed to operate on any one of the following fuels or a combination of fuels at any given time

<b>Fuel</b>	Imported coal 100 %	Indian coal 100 %	Washery reject coal 100 %
<b>Consumption (TPD)</b>	182.09	334.08	521.61

### 2.2.1 SOURCE OF FUEL

#### **Indigenous Coal**

Currently the coal linkage policy is suspended by Govt. of India. NUVOCO will purchase indigenous coal by E-Auction route.

#### **Imported Coal**

The imported coal will be sourced from Indonesia and other countries with the help of coal trading organizations.

NUVOCO is in negotiations with M/s .Ananad Carbo Private Ltd., Kolkata for supply of imported coal for use at 20 MW CPP.

#### **Washery Rejects**

The washery reject will be procured from washeries located in coal mines. NUVOCO is in negotiations with nearest coal washery industries in Chhattisgarh with M/s.Mahavir Coal Wahseries Private Ltd and M/s.Chahtisgarh Power & Coal Beneficiation Ltd., for supply of washery rejects.

### 2.2.2 Transport Of Coal :

Presently the coal for cement plant is being transported to the site by means of rail. Hence coal will be transported to the plant through railway. The imported coal will be handled through Vizag Port and from Vizag Port, coal will be transported by Indian Railways. NUVOCO has tiedup with Vizag Sea Port Private Limited for handling Port Logistics. Adequate railway line and coal handling facilities are

present in the existing cement plant which will be utilized for handling coal in the proposed CPP.

### **2.2.3 Limestone**

The limestone is used for control of SO<sub>x</sub> in the boiler. The annual limestone requirement for power plant is estimated at 5840 t/annum. This requirement will be met from captive limestone mines.

### **2.3 WATER**

The water requirement of Power Plant is estimated to be about 280 m<sup>3</sup>/day with implementation of air cooled condenser system. This water requirement is met from the existing Cement Plant. A 7.0 MW Waste Heat Recovery Power Plant is under implementation which has resulted in savings of water in the existing Cement Plant.

### **2.4 MAN POWER**

The manpower requirement during construction and operation of the power plant is given below:

#### **REQUIREMENT OF MANPOWER**

	<b>Direct</b>	<b>Indirect</b>
During Construction	150	300
During Operation	43	24

A well-developed Colony is existing within the Cement plant which will accommodate the employees of the proposed power plant.

### **3.0 DESCRIPTION OF ENVIRONMENT**

The predominant wind directions during these hours were from WSW-W-WNW-NW sector accounting to about 46.46 % of the time with calm winds of less than 1.0 kmph for about 25.35 % of the time. Wind speed during this period was mostly varying from 1.0 to 15 kmph, and most of the time beyond 15 kmph.

Ambient air quality monitored at eight locations showed all values well within the limits of NAAQ standards specified for Industrial, Rural, Residential & Other areas.

**Air Quality in the study area (All the values are in  $\mu\text{g}/\text{m}^3$ )**

S. No	Pollutant	Range of values (98 <sup>th</sup> percentile)	NAAQ Standards for Residential areas
1	PM <sub>10</sub>	49.8 – 61.2	100
2	PM <sub>2.5</sub>	23.8 – 32.6	60
3	SO <sub>2</sub>	11.8 – 13.4	80
4	NO <sub>x</sub>	13.4 – 14.9	80

*Note: CO values are observed less than 1 ppm during study period.*

Noise levels were monitored at eight locations at villages and were found to be well within the limits.

Ground water samples were collected from six locations and surface water samples were collected from four locations within the study area showed compliance of all parameters with respective standards.

There are no endangered species of Schedule -1 category reported in 10 km radius.

#### **4.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES**

##### **4.1 AIR ENVIRONMENT**

Cumulative impact on air environment has been assessed considering the emissions from proposed NUVOCO 20 MW Thermal Power Plant and other sources.

The Overall Scenario with predicted concentrations over the baseline is shown below.

#### **PREDICTED GROUND LEVEL CONCENTRATIONS AND OVERALL SCENARIO, $\mu\text{g}/\text{m}^3$**

24-Hourly Concentrations	Particulate Matter (PM <sub>10</sub> )	Particulate Matter (PM <sub>2.5</sub> )	Sulphur Dioxide (SO <sub>2</sub> )	Oxides of Nitrogen (NO <sub>x</sub> )
With 20 MW captive power plant and other sources				
Baseline concentration, (Max)	61.2	32.6	13.4	14.9
Predicted Groundlevel Concentration (Max)	3.56	1.10	3.29	13.90
Overall Scenario	64.76{100}	33.7{60}	16.69{80}	28.8{80}

*NOTE: Values in parenthesis are National Ambient Air Quality (NAAQ) standard limits specified for Industrial, Residential, Rural and other areas.*

The ambient air quality values of Captive Power Plant are well within the stipulated National Ambient Air Quality standards.

#### **AIR POLLUTION CONTROL MEASURES**

The ESP shall be designed to provide an outlet dust concentration level of 30 mg/Nm<sup>3</sup> with all fields in service for design basis coals.

It is proposed to inject lime for controlling the SO<sub>2</sub> and limit the emission to 100 mg/Nm<sup>3</sup> in flue gas.

A tall stack of 90 m height is provided for better dispersion.

The CFBC boiler technology generates low NO<sub>x</sub> emission and complies with the standards.

#### **4.2 NOISE ENVIRONMENT**

During construction phase of the power plant, no significant impact is envisaged as most of the construction equipment produce noise level below 90 - 100 dB(A). The noise generated is expected to be intermittent and limited to construction phase only.

Suitable acoustic enclosures will be provided for major noise generating equipment like turbines etc. The existing thick greenbelt all along the project boundary acts as noise and dust barrier.

#### **4.3 WATER ENVIRONMENT**

The water requirement of Power Plant is estimated to be about 280 m<sup>3</sup>/day with air cooled condenser system. This has resulted in substantial savings of water.

About 162 m<sup>3</sup>/day of waste water will be generated from power plant which will be treated and used for greenbelt, dust suppression and ash conditioning. No wastewater will be discharged outside the plant.

About 3.0 m<sup>3</sup>/day of domestic wastewater from the plant will be treated in septic tank followed by soak pit.

Additional 10 numbers of rainwater harvesting pits are proposed in the Power Plant area to enhance recharge capacity of the Arasmeta Cement Plant Complex.

#### **4.4 SOLID WASTE MANAGEMENT**

The major solid waste generation from the proposed power plant is ash in the form of fly ash and bed ash. The ash generated due to use of various fuels is given below.

**TOTAL ASH GENERATION  
(Coal ash + Limestone Injection-Tons/day)**

	<b>Total Ash</b>	<b>Fly ash</b>	<b>Bottom Ash</b>
Imported Coal	39.3	18.4	20.9
Indian coal	160.3	105.5	54.8
Washery Reject	328.6	219.5	109.0

Fly ash will be collected and stored in silos in dry form for utilization in Cement Plant. The clinker (bed ash) collected at the bottom of the boiler will be subjected to grinding and the same will be used in raw mix in the cement plant. Hence the entire ash produced in the Captive Power Plant will be consumed by the Arasmeta Cement Plant.

#### **4.5 GREENBELT DEVELOPMENT**

The power plant will be located within the cement plant complex having Greenbelt already developed in an area of 31.9 Ha. It may be observed that about 7.3 Ha is the vacant area available for greenbelt development in the entire Arasmeta Cement Complex. Out of this about 1.07 Ha will be developed in the Power Plant area excluding the existing greenbelt of 1.43 Ha which will not be disturbed. The balance 4.8 Ha will be developed in the cement complex and after completion of construction of Power plant.

#### **5.0 ENVIRONMENTAL MANAGEMENT PLAN**

A budget of Rs. 2,395 Lakhs and Rs. 172 Lakhs/annum is earmarked towards capital cost and recurring cost respectively for implementing the various pollution control measures as part of the Environmental

Management Plan. The details of the pollution control measures are given below:

**BUDGET FOR IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN**

		Rs. Lakhs	
		Capital Cost	Recurring cost/Annum
<b>Air Environment</b>	Electrostatic precipitator - ESP	351	17
	Limestone Injection /Feeding system	200	20
	Dust Suppression system - Coal Handling area	48	3
	Dust Suppression system - Lime Stone Handling Area	24	2
	RCC chimney – 90 m height	375	4
	Bed Ash collection and Storage system	225	34
	Fly Ash collection and Storage system		
<b>Water Environment</b>	Air Cooled Condenser	845	42
	Waste Water treatment system including RO plant and side stream, ETP	196	40
	Rain water Harvesting	10.0	1
<b>Land Environment</b>	Green Belt Development in Power Plant Area	30.0	3
<b>Occupational Health</b>	Personal protection devices	5.0	1
<b>Stack Emission Monitoring</b>	Online Continuous Stack Emission Monitoring System for Particulate Matter, SO <sub>2</sub> , NO <sub>x</sub> , O <sub>2</sub>	21.0	1
	Continuous Ambient Air Quality Station (1 No.)	65.0	4
<b>Total</b>		<b>2395</b>	<b>172</b>

*Note: \* Inbuilt Feature of CFBC Technology (Hot Cyclone) - Circulating Fluidized-bed combustion (CFBC) is one of the major advanced technological, which has been developed to create combustion systems to minimize NO<sub>x</sub> production, and Sox removal.*

## 6.0 PROJECT BENEFITS

The project is based on Environment friendly CFBC boiler technology to use various combination of fuels and low emissions. The air-cooled condenser technology will help in saving water. The emission from the power plant complies with the new standards.

The project provides direct employment to about 193 people and indirect employment to about 324 people during construction and operation phase.

An amount of Rs. 23.95 Crores is budgeted towards capital cost for implementation of various pollution control measures. This will ensure that the project complies with standards prescribed by MoEF & CC and CECB.

The project deserves Environment clearance based on the above aspects and implementation of mitigation measures.