ENVIRONMENTAL IMPACT ASSESSMENT REPORT

for

Proposed Cement Plant with a capacity of Clinker 3 MTPA, Cement 7 MTPA (0.70 MTPA OPC, 3.50 MTPA PSC & 2.80 MTPA PPC)

at

Bhimnagar village, Sedam taluka, Gulbarga district, Karnataka

Executive Summary in English

Project Proponent:

M/s JSW Cement Limited

503, Ram Sai Enclave, TTD Road,
Srinivasa Nagar, Nandyal – 518 501
Dist. Kurnool, Andhra Pradesh

Environmental Consultants:

Bhagavathi Ana Labs Pvt. Limited

(A Bureau Veritas Group Company)

8-2-248/5/A/42, Venkateswara Hills
Road # 3, Banjara Hills, Hyderabad- 500 034

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10.1 Introduction

JSW Cement Limited proposes to set up a Greenfield Cement Plant adjoining ML area with a production capacity of 3.0 million TPA of Clinker and 7.0 million TPA of Cement located at Bhimnagar village, Sedam taluka in Gulbarga district of Karnataka. The proposed Cement plant area is 303.19 Acres. Out of land area, 33% of the area will be earmarked for green belt development. The total project cost is Rs 2,036 Crores with Cost towards Environment pollution control and other aspects is INR 4575 lakhs and recurring cost every year is 365 lakhs. CSR budget allocated is Rs. 2000 lakhs.

10.2 Proposed Project

JSW Cement Limited proposes to set up a Greenfield Cement Plant adjoining ML area with a production capacity of 3.0 million TPA of Clinker and 7.0 million TPA of Cement located at Bhimnagar village, Sedam taluka in Gulbarga district of Karnataka. The proposed project was presented before Expert Appraisal Committee (EAC) (Industry) and Terms of Reference (TOR) were issued vide letter no F. No. J-11011/271/2012-IA(II),dated 20th February 2013 for preparation of EIA/EMP. However, as the proposed cement plant area was falling in the mineral bearing area within the captive Mine Lease (ML) area, the revised ToRs were obtained vide letter no F.No. J-11011/271/2012-IA II(I), dated 26 May, 2015 for relocation of the proposed project site to an area of 303.19 acres of single crop agricultural land.

The major raw materials for the unit are Limestone, Coal, Bauxite, Gypsum, Slag and Fly ash. The storage will be in Covered Sheds for all the Raw Material. Cement manufacturing involves Raw Material Preparation, Raw Meal Preparation, Clinkerisation, Cement grinding, blending, Cement Packing & Storage. Kiln will be provided with Bag house, ESP for Cooler and Bag filters for Coal mill and Cement will be provided. All transfer points will also have Bag Filters. The emissions from all the Pollution Control Equipment will be restricted to less than 30 mg/Nm^3. It is proposed to manufacture 0.70 MTPA Ordinary Portland cement, (OPC), 3.50 MTPA Portland slag cement (PSC) and 2.80 MTPA Portland Pozzolona Cement (PPC). The water requirement will be 3500 m3/day for cement plant and will be sourced from borewells.

10.2.1 Site Selection Criteria

This site has been selected on the following criteria:

- Availability of adequate plain barren land
- Well connected to Market
- Poor yielding rain fed agricultural lands
- Non Mineral bearing area
- No forest area in the total identified land
- Power evacuation facility
- The Rail Siding feasibility
- No homestead land
- No National Parks, Wildlife sanctuaries in 10-km radius

Table -9.1 Salient Features of Project

S. No	Item	Details
1	Name of the Project	Proposed Capacity of Clinker 3.0 Million TPA Cement 7.0 Million TPA (0.70 MTPA OPC, 3.50 MTPA PSC & 2.80 MTPA PPC)
	Location of Project	
2	Village	Village: Bhimnagar; Taluka :Sedam
3	District & State	District: Gulbarga State : Karnataka
4	Extreme Coordinates of the Plant site	17°9'30.72"N 77°8'43.04"E 17°9'9.70"N 77°8'43.66"E 17°9'18.06"N 77°7'52.52"E 17°9'42.07"N 77°7'46.90"E
5	Elevation	410-420 m aMSL
6	Type of land	Single crop land
	General Climatic Conditions (IMD, Gulbarga)	
7	Mean Maximum Temperature	15.9 °C (December)
8	Mean Minimum Temperature	40.0 °C (May)
9	Relative Humidity	19-82
10	Annual Rainfall	834 mm
11	Predominant Wind Direction	East
12	Road Connectivity	State Highway – 126 (1.4 km, NW) State Highway – 10 (4.6 km, NE)
13	Rail Connectivity	Malkhaid (3.4, ESE) Chitapur (5.6 km, SW)
14	Airport	Hyderabad (135 km, NE)
15	Archaeological/Historically Important Site	None within 15 km radius of the proposed project site.
16	Water bodies	Kagna River (2.2 km, NW) Benithora River (5.8 km, N) Ivni Halla stream (9.1 km, NW)
17	Forest Area	None within 10 km radius
18	Sanctuaries / National Parks	None within 15 km radius
19	Industries	Captive limestone ML area (adjacent to the site); Existing cement plant and mines of Rajshree Cement Works, Ultratech Cement Ltd. (3.5, SE); Orient Cement Ltd (4.5 km, S)
20	Seismic Zone	Zone-II as per IS:1893-2002, GoI

10.3 Outline of the Manufacturing & production process

10.3.1 Cement Plant

The cement plant will adopt Dry Process Technology for Cement manufacturing with Pre Heating and Pre Calciner Technology. The major steps in the manufacture of cement are given hereunder.

10.3.2 Clinker Section

The main steps involved in the process are:

- Limestone Crushing
- Limestone Storage
- Raw Mill Feeding
- Raw Mill Grinding
- Homogenizing and Storage Blending Silo
- Cyclone pre-heater
- Kiln
- Cooler
- Coal Grinding
- Clinker Storage

10.3.3 Cement Manufacturing

The main steps In the Process of the cement Manufacturing are

- Cement Grinding
- Cement Blending
- Cement Storage and Packing

10.3.4 Project Requirements

Raw Materials:

The major raw material requirement for proposed plant will be limestone, bauxite, iron ore, gypsum, slag, fly ash and coal. The details of raw materials requirement, the source and mode of transportation are provided in **Table-10.2**.

Table-10.2: Raw Materials and Source

Raw Materials	Quantity in MTPA	Source	Mode of Transportation
Limestone	4.50	Captive Mine	Tipper/Dumper
Bauxite	0.182	Belgaum	Road/rail
Iron Ore	0.182	Bellary	Road/rail
Gypsum	0.367	RCF Mumbai	Road/rail
Fly ash	0.612	Toranagallu & Ratnagiri	Road/rail
Slag	3.019	Toranagallu	Road/rail
Coal	0.395	Imported from Indonesia	Sea/rail

Source: JSW project report

Utilities

Water

The total water requirement for proposed plant is about 3500 m^3/day which will be met from borewell. The permission for ground water abstraction from CGWA/water resource department is under process. JSW Cements Ltd. has also proposed Rain water harvesting measures for improving the ground water table.

Power

The total power requirement for Cement Plant will be met from 67 MW from Gulbarga Electricity Supply Company Limited (GESCL)/Karnataka Power Transmission Corporation Limited (KPTCL)

Manpower:

Total no. of persons will be 141 in implementation phase out of which 56 person may be taken from contractor viz fabrication, erection & commissioning etc. In operation phase the total no. of persons will be 478 persons, which of 136 person may be taken from contractor works viz Maintenance, Packing etc. JSW Cement Ltd. will provide employment to the local populace and also labour of unskilled and semi-skilled categories will be taken from the nearby villages and towns.

Land:
JSW Cement Ltd. is in the process of acquiring 303.19 acres of land from the private land owners for the proposed integrated cement plant. About 100 acres of land will be developed into greenbelt.

10.4 Baseline Environment

10.4.1Study period:
Baseline environmental studies were carried out during the period March 2013 to May 2013. Study area of 10 km radial distance around the site has been considered for the EIA study.

10.4.2 Meteorology:-
Meteorological data for summer season have been generated close to project site. The predominant wind direction during the study period is from East direction. The average wind speed is 0.7 m/s. daily mean temperature varied from 11.8 °C to 38.0°C. The relative humidity varied from 15 % to 85 %.

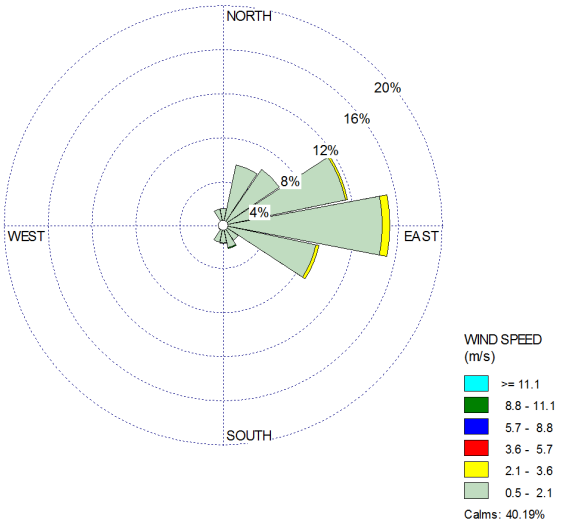

Figure-10.1 Wind rose Diagram During Baseline Study Period (Summer season 2013)

10.4.3 Ambient Air Quality:-

The $PM_{2.5}$, PM_{10}, SO_2, NO_x and PAH levels were monitored at ten locations during the summer season. Predominant upwind and downwind direction, population zone and location where maximum GLC is anticipated have been selected for air quality measurement. The minimum level of PM10 recorded in the study area was 24.9 µg/m³ at Huda and the maximum level recorded was 62.2 µg/m³ at Kanganhalli. The minimum level of $PM_{2.5}$ recorded in the study area was 10.1 µg/m³ at Udgi and proposed Plant site and the maximum level recorded was 27.4 µg/m3 at Chitapur. The minimum level of SO_2 recorded in the study area was 6.7 µg/m³ at Proposed plant site and the maximum level recorded was 13.3 µg/m³ at Murgal. The minimum level of NO_x recorded in the study area was 8.8 µg/m³ at Digaon and the maximum level recorded was 19.9 µg/m³ at Margul. The Poly Aromatic Hydro Carbons (PAH) Including benzene and pyro benzene were found below detectable limit.

10.4.4 Ambient Noise Quality:-

The minimum noise level during day time Ld 44.8 dB (A) at Mudgol and maximum Ld was recorded 55.2 dB(A) at Kanganhalli while the minimum noise level during night time Ln 41.7 dB(A) at Mudgol maximum Ln 52.8 dB (A) was recorded at Huda.

10.4.5 Water Quality

Sample of surface water and samples of ground water have been collected from surrounding villages. The water quality is found to be satisfactory. No metallic contamination or significant pollutants has been found in the surface and ground water samples.

10.4.6 Soil Quality

Soil samples from surrounding agriculture fields were collected for analysis. The soil texture is clay type. The soil contains moderate amount of organic matter, nitrogen, potassium and phosphorus.

10.4.7 Sensitive Ecosystem

No ecologically sensitive area like national park, wildlife sanctuary, wetland, archaeological monuments, marine ecology are present within 10 km radius of the project site. There are no threatened species or endangered animals present in the 10 km study area.

10.4.8 Socio-economic environment

The total 15 villages are there in the buffer zone, total population is 445577 among them 223304 are male and 222673 are female.Non-workers are 58%; the total workers are 42% i.e. main and marginal workers in the study area. The marginalized population of Scheduled Caste (SC) and Scheduled Tribe (ST) in the study area. Among the total population Scheduled Caste (SC) is 137511 and Scheduled Tribe (ST) is 8241, percentage wise 31% of Scheduled Caste (SC) and 2% of Scheduled Tribe (ST) population. As per the 2001 census data the land use pattern is like this total area 123531 hectors comprises in the buffer zone among that Irrigated land is 147.3 hectors, un irrigated land is 16429.73 hectors, cultivable waste 5764.38 hectors, and area not available land for Cultivation is 1067.44 hectors.

10.5 Environmental impacts and mitigation measures

10.5.1 Air

The emissions generated from Cement Plant process are particulate matter, Oxides of Nitrogen (NO2) and Sulphur dioxide (SO2). High efficiency ESP will be installed for cooler, Bag House for Raw Mill and kiln, bag filters/ESP for coal mill and cement mill to control the Particulate Matter emissions to less than 30 mg/Nm^3. Fugitive emission shall be controlled by covered storage facilities for raw material & product. Installation of bag filters and water sprinkling shall be carried out at the material transfer points.

Table-10.3: Stack & Emission Details

S. No.	Stack attached to	Stack Height (m)	Stack Diameter (m)	Velocity (m/s)	Temperature (°C)	Emission rate (g/s)		
						PM	SO_2	NO_2
1	Limestone crusher	30	2	17	45	1.5	-	-
2	Raw Mill/ Klin	120	5.5	20	120	10.8	36	288.3
3	Cooler	60	4	18	280	3.7	-	-
4	Coal Mill	75	2.5	17	63	2.2	-	-
5	Cement Mill – I	60	2	11	78	0.9	-	-
6	Cement Mill – II	60	2	12	76	1.0	-	-
7	Packer I to III	35	1	16	46	0.4	-	-
	Total emissions					**20.5**	**36.0**	**288.3**

10.5.2 Water

No industrial waste water will be generated from cement manufacturing process. However, approx. 50 M^3/day waste water will be generated from the cooling tower as blow down. This waste water will be suitably treated and shall be used for dust suppression. Waste water generated from domestic utilities will be treated and used for plantation. Sludge will be used as manure for green belt development within the plant premises.

10.5.3 Solid Waste/ Hazardous waste

- No solid waste is generated in cement manufacturing process.
- Dust collected from air pollution control equipment is recycled in process.

10.5.4 Noise

During operational phase noise will be generated from compressors, motors, blowers, grinding mills, crushing units etc. in the cement plant. Noise will be controlled by providing silencers, acoustic enclosures and providing sound barriers wherever feasible, Ear plugs/ muffs will be provided to persons working in high noise zone.

10.6 Socioeconomic

The major positive impact on the socio economic environment of the surrounding area of the project site will be increase in the work opportunity. There would be more employment opportunities generated due to the proposed project both during the construction phase and operation phase. In Addition to this industrial and economic development of the area will also take place

No major impact is anticipated on socio economic environment. It is anticipated that the impacts on parameters of human interest could be mitigated by proper implementation of the control measures indicated in the Environmental Management Plan for the proposed project.

An amount of about INR 20 crores has been indicated as CSR budget which as stated by the proponent is indicative only and The detailed budget will be prepared once detailed need based assessment in the study area during EIA/EMP study is carried out.

Table-10.4: CSR budget (Spread over a period of about 10 years)

S. No.	Description	Amount in Rs. Lakhs
1	Social Upliftment & Women Development	250
2	Health and Sanitation	250
3	OPD Clinic & Specialized Camps (Critical Care)	250
4	Health Hygiene Awareness and Training	250
5	Rain Water Harvesting in Nearby Villages	250
6	Rural Infrastructure	250
7	Old Age Homes & Home for Disabled	250
8	Livelihood Programs (Including Skill and Entrepreneurship)	250
Total		2000

Green belt development

Green belt development within the premises will reduce noise levels and dust levels by acting as a barrier between the outside environment of the premises and the inside environment of the premises. To make the green belt effective for this purpose, it is essential to select proper plant species rich in foliage and design the green belt spacing that results in lowering the sheltering effect. They will act like a sieve by separating the suspended particles of the air by offering physical obstruction. In the development of green belts multipurpose plant species should be selected. This will satisfy the ecological requirement of species diversity. The total area to be developed as green belt is 33% i.e. 100 acres. The details regarding the tree are based on the guidelines for developing green belts by the CPCB. The green cover proved beneficial in many ways, such as retention of soil moisture, prevention of soil erosion, recharge of ground water and moderation of the micro-climate of the area. This will help in reducing adverse effect of pollution in general.

Environment monitoring plan

The main attributes for which monitoring shall be carried out are:

- Ambient air Quality
- Stack Emission
- Wastewater Quality
- Noise Level
- Hazardous Waste
- Online monitoring of meteorological parameters

- Health Check up for workers

Regular monitoring of all above parameters shall be carried out as per the guidelines prescribed by the statutory body.

Conclusion

By considering the entire baseline data collected during March-2013 to May-2013 as part of the EIA study conducted in the study area and by evaluating all the possible environment impacts of the project, it can be concluded that project activities during construction and operation phase of this proposed Project by JSW Cement Ltd. will not have any significant negative impact on environment if all the environment management plan, Disaster management plan given is strictly followed. More over this project will have a positive impact on the socio economy of this region as source of employment.