

**Summary of Environmental Impact  
Assessment & Environmental  
Management Plan**

**For**

**200 TPD Cement Grinding Unit**

**[Portland Pozzolana Cement (PPC)]**

**At**

**Jaliber Village, Mudhol Taluka, Bagalkot District,  
Karnataka**

**Project Proponent**

**JR Super Cement**

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# Executive Summary

## 1 Project description

The JR super cement is proposed to establish cement grinding unit with a capacity 200 TPD for Pozzolana Portland Cement (PPC) production in the survey number 129/5 A, 5 B & 5 D at Jaliber Village, Mudhol Taluka, Bagalkot district of Karnataka.

The proposed project is based on Modern Grinding Technology with zero percentage waste water generation, Air Pollution Control System and zero percentage solid waste generation will be adopted in the process by using advanced pollution control equipment such as reverse pulse jet bag filters. The pozzolana cement grinding unit is meant by utilization of solid waste from steel plants in an eco-friendly manner.

The proposed grinding unit will have an advantage of getting the raw material i.e., clinker from the cement plants which are located in the vicinity. The proposed plant is planned in such a way to utilize the industrial by product Fly ash as one of the raw materials.

The major Raw materials required for the production of Portland Pozzolana Cement are Clinker 33660 TPA, Fly ash 19635 TPA, & Gypsum 2805 TPA.

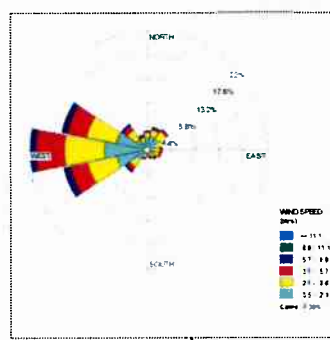
The proposed cement grinding unit has a power demand of 850 KVA, which will be met from Karnataka Power Transmission Corporation Limited (KPTCL)/ Hubli Electricity Supply Company Limited (HESCOM) & 19 KVA DG Set will be installed as standby.

Water requirement for grinding unit will be 15m<sup>3</sup>/day and sourced from the existing pipeline at a distance of 1.5 km from the proposed project site. Water will be used for cooling of machinery, water sprinkling for dust suppression, laboratory, potable purpose and for green belt development.

## 2 Description of Environment

Environmental Study was carried out during March, April & May 2013. The predominant wind direction during the study period is from West.

### Wind Rose Diagram



## Air Environment

Eight locations were monitored for studying baseline ambient air quality. The location of monitoring stations and the values are given in the following table:

**Ambient Air Quality in the Study Area**

Air Quality Station	Code	Particulars	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	SO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	CO mg/m <sup>3</sup>
Proposed Plant site	A1	Minimum	56.6	14.7	13.0	14.1	1.2
		Maximum	69.2	18.0	15.5	18.5	2.0
Mudhol	A2	Minimum	57.0	14.8	13.1	14.2	1.4
		Maximum	69.5	18.1	15.6	18.6	1.7
Jaliber	A3	Minimum	45.4	12.2	10.6	11.9	1.2
		Maximum	52.4	15.7	12.0	14.4	1.4
Sorgaon	A4	Minimum	46.3	12.4	10.8	11.9	1.3
		Maximum	52.8	15.9	12.1	14.5	1.5
Uttur	A5	Minimum	46.3	12.6	11.0	12.0	1.3
		Maximum	53.3	16.0	12.2	14.6	1.4
Rugi	A6	Minimum	57.5	15.4	13.0	14.2	2.1
		Maximum	65.7	19.7	14.6	17.6	2.2
Mudhapur	A7	Minimum	46.0	12.2	10.7	11.6	1.3
		Maximum	52.4	15.7	12.0	14.4	1.6
Ranjanagi	A8	Minimum	46.3	12.6	10.9	11.8	1.3
		Maximum	52.4	15.7	12.0	14.4	1.5

In addition to the above data air, noise, water and soil quality of post monsoon (October, November and December 2013) data is provided in **Annexure – III**.

## Ambient Noise Level

Eight locations were monitored for studying baseline ambient noise levels. The day equivalent values were observed in the range of 49.7–54.2 dB (A) and night equivalents are

40.1–49.3 dB (A) in all locations. The ambient noise levels are well within the permissible limits as per CPCB standards.

### **Water Environment**

The Water requirement for the proposed grinding unit during operation is observed to be nil; but water is required for other purpose such as potable water for office purpose, domestic water for laboratory and green belt is estimated as 15.00 KLD.

The water samples were analyzed as per Standard Methods IS 10500 and for analysis of water and wastewater, American Public Health Association (APHA) Publication.

All the ground water samples collected from the study area were found well within the permissible limits. Most of the heavy metals in all samples are below detectable limits.

### **Biological Environment**

There is no ecologically sensitive in the study are of the proposed project. Jaliber R.F. (1.6 km), Ranjanagi & Uttur R.F. (2.8 km) & R.F. at Chinchakhandi & Budruk (7.5 km).

The mitigation measures for air, water and solid waste management will be followed as a result of that, there would not be any significant impact on biodiversity in the 10 km study area.

### **Land Environment**

Studies on soil characteristics, existing land use and topography, landscape and drainage pattern within the study area.

Estimation of impacts of proposed unit in land use, landscape etc.

Estimation of Impacts of Proposed unit on the agricultural land in the vicinity

### **Soil Quality**

The pH values in the study area are varying from 7.98 to 8.30 indicating that the soils are falling in normal to saline class.

The electrical conductivity in the study area is varying from 140 to 380 umhos/cm indicating that soils falling under Normal category.

The organic carbon in the study area is varying from 0.4 to 0.72 %,

The Nitrates as N value in the study area is varying from 160 kg/ha to 380 kg/ha indicating that it requires addition of nitrates for proper growth.

In the study area Phosphorus is varying from 14 kg/ha to 45 kg/ha.

The Available Potassium in the study area is varying between 190 kg/ha to 337 kg/ha.

### **3 Anticipated Environmental Impacts and Mitigation measures**

#### **Air Environment**

Major sources of air pollution are storage of raw materials and cement milling area.

The ground level concentrations (GLCs) are estimated due to the emissions from the proposed project, EPA approved Industrial Source Complex AERMOD View Model has been employed to predict ground level concentrations (GLCs) due to the stack emissions.

The predicted maximum GLCs for particulate matter (PM<sub>10</sub>) are 0.64µg/m<sup>3</sup>

#### **Mitigative Measures**

- Suitably designed Bag Filters with an efficiency of 99.9% will be placed downstream of the stacks which will separate out the incoming dust in flue gas and limit the dust concentration at its designed outlet concentration to less than 50 mg/Nm<sup>3</sup>
- Stack is proposed to the height of 30 m for an effective dispersion of the pollutants.
- Dust suppression system by water sprinkler at raw material handling area and transfer points.
- Green belt development and afforestation in the plant and surroundings of ash disposal area.

#### **Noise Environment**

The major noise generating activities in the plant site are fans, blowers, compressors, pumps & motors etc.

#### **Mitigation Measures**

To achieve the noise limitations around the equipment, the following mitigation measures will be implemented:

- Provision of Acoustic enclosures
- Small units like condensate and vacuum pumps, will be designed so as to limit noise emission,
- Provision of silencers
- Noise generating items such as fans, blowers, compressors, pumps, motors etc. are so specified as to limit their speeds and reduce noise levels

#### **Water Environment &Wastewater Management**

The plant area will be designed with a network of drains to channel runoff during the rainy season. Surface drainage would be either open RCC rectangular drains or brick lined drains with trapezoidal shape. All drains will be covered in the proposed plant and building areas.

The surface water run-off from the storage yard will be led to a sump for settling and the overflow will be discharged to storm water drain after treatment.

The major impact on ground/surface water quality is insignificant all the wastewater generated from the proposed cement grinding unit will be treated in effluent treatment plant and reused for ash management, dust suppression and green belt development. The treated wastewater will be used for greenbelt development.

### **Solid waste Management**

The solid waste collected in bag filters will be recycled back in the cement mill. There will be no solid waste disposed off from the plant.

## **4. Environmental Monitoring Program**

Environment Management Cell will handle the environmental management system in the unit. The environmental management cell will be headed by Head of Safety (Safety, Health & Environment). HOS will be responsible to HOD (Technical Services). The HOS will be assisted by officers to look after the safety and environmental factors round the clock.

### **Environmental Laboratory Equipment**

The industry has an in-house environmental laboratory for the routine monitoring of air, water, noise, and soil quality. For all non-routine analysis, the plant may utilize the services of external laboratories and facilities.

### **Monitoring System:**

Online stack monitoring system will be installed in the plant premises. Ambient monitoring stations will be suitably located in the plant.

- ❖ The equipment / instruments of the monitoring station will be housed in suitable enclosure / room
- ❖ Power supply to the station will be made from the central UPS system for all plant instrumentation / emergency shutdown systems for process plants
- ❖ The monitoring stations will include sampling & analysis provisions for NO<sub>x</sub>, SO<sub>2</sub>, Particulate Matter (PM<sub>10</sub>& PM<sub>2.5</sub>)

### **Environmental Budget**

JR Super Cement is proposed to adequate measures to mitigate all possible adverse impacts due to the proposed grinding unit and plan to allocate an amount of Rs 140 Lakhs for the environmental protection and Rs. 80 Lakhs for Corporate Social responsibility.

## **Fire Fighting Arrangements**

A fire Hydrant system is proposed to meet the norms, in addition to providing fire extinguishers at respective places wherever required.

- JR Super cement adheres to all fire protection and safety measures as per the requirements
- Fire safety training and Fire drill will be given to all employees
- No open fire is allowed and also smoking is strictly prohibited within the project boundary.
- Proper signboards will be placed as per the requirements
- The fuel storage yards are isolated and maintained properly to avoid any accidental ignition
- The Electrical system will be designed with safety provision with proper insulation.
- JR super cement provides fire fighting equipment at various locations in the factory.

## **5. Additional Studies**

The effective implementation and close supervision of the environmental management to mitigate the environmental impacts, which are likely to arise due to the construction and operation phases of the project could be achieved through a suitable institutional mechanism.

## **6. Project Benefits**

Direct and Indirect employment opportunities to local people in contractual works like housing construction, transportations, sanitation, for supply of goods and services to the project and other community services;

Additional housing demand for rental accommodation will be increased;

Market and business establishment facilities will be increased;

Improvement in communication, transport, education, community development and medical facilities;

## **7. Environmental Management Plan**

### **Air Quality Management**

- Suitably designed reverse jet pulse Bag Filters with efficiency of 99.9% will be installed downstream of the stacks which will separate out the incoming dust in flue gas and limit the dust concentration at its designed outlet concentration of less than 50 mg/Nm<sup>3</sup>.

- For the effective dispersion of the pollutants stack height is proposed about 30 m.
- All vehicles and their exhausts would be well maintained and regularly tested for emission concentration;
- Adequate thickness of insulating material with proper fastening will be provided to control the heat radiation;
- Provision of regular preventive maintenance of pollution control equipment; and
- Stack emissions will be regularly monitored by JR Super Cement/ external agencies on periodic basis.

### **Fugitive Emission Management**

The following measures will be adopted:

- Dust suppression system by water sprinkler at raw material storage area;
- Regular dust suppression with water sprinkler at transfer points;
- Green belt development in the plant.
- Dust suppression/extraction system at raw material handling area to control fugitive emissions.

### **Water Quality Management**

- Continuous attempt to optimize/reduce the use of water in plant.
- Regular record of level and flow of surface water sources;
- Raw water quality will be checked on regular basis for essential parameters under BIS: 10500 before and after treatment;
- All the treated wastewater would be monitored regularly for the flow rate and quality to identify any deviations in performance of wastewater treatment plant.

### **Storm Water Management**

Based on the rainfall intensity of the proposed area, storm water drainage system will be designed and connected to the storm water networks. Storm water drainage system consists of well-designed network of open surface drains and rainwater harvesting pits along the drains so that all the storm water is efficiently drained off without any water logging.

### **Rain Water harvesting System**

The rain (storm) water from the building roofs, non-process area and grade level surfaces will be directed through the open drains to the storm drainage system. All drains will be lined and will be arranged to provide the shortest possible drainage path for efficient drainage.



## **Green Belt Development**

The green belt development will be taken up around plant area, along roadside and pathways. Local species have been selected for plantation. Approximately 1500 trees per ha will be planted in consultation with the local Forest Department. An area of about 1.08 acres of land in the plant area will be developed under greenbelt.

## **Occupational Health and safety**

The precautionary measures, which are followed to reduce the risk due to dust on the workers in and around the material handling area, are

- Training and communication of risk, refresher training will be conducted every year.
- Adequate arrangements for preventing the generation of dust by providing the chutes at transfer points and to reduce the falling height of material, preventing spillage of material maintaining equipment , isolating the high dust generating areas by enclosing them in appropriate housing and dedusting through high efficiency bag filters.
- In most cases all the material handling system will be automatic. The workers engaged in material handling systems are provided with personnel protective equipment like dust masks, respirators, safety shoes, helmets, face shields etc.
- All workers engaged in material handling system are regularly examined for lung diseases such as PFT tests
- Any workers found to develop symptoms of dust related diseases are changed over to other jobs in cleaner areas
- Thermal insulation will be provided wherever necessary to minimize heat radiation from the equipment, piping etc.to ensure protection of workers. Insulation is being done by adequate cleats, wire nets, jackets etc. to avoid loosening. Insulation thickness is so selected that the covering jacket surface temperature by more than 15<sup>0</sup>C. The effect of heat radiation in air will be negligible considering the atmosphere as the ultimate sink.
- Emergency preparedness plan will be carried out. Also mock drills will be conducted at an interval of six months and as per industrial safety guidelines.

## **Conclusions**

The potential environmental, social and economic impacts have been assessed. The proposed cement grinding unit has certain level of marginal impacts on the local environment. With effective implementation of proposed environment management plan, these effects will get marginalized. Implementation of the project has beneficial impact in terms of providing direct and indirect employment opportunities. This will be a positive socio-economic development in the region. Quality of life of the people will improve.

With commitment and dedication, JR Super Cement, undertakes various community welfare measures for the up liftment of the nearby villages of the study area.

## Reasons for zero impact on surrounding atmosphere & fields

1. The proposed standalone minicement grinding unit is a small scale industry having installed capacity of 200 tonnes per day which is mere 2% compared to capacities of existing nearby large plants like JK Cement & Dalmia Cement.
2. The clinker is not manufactured at the proposed site. Hence there is no use of natural resources like stone, clay, coal, iron ore etc in the process. There are no activities like crushing, grinding and burning of raw materials. Therefore there is no question of emission of gases, particulate matters (PM) and fugitive emissions. About 75% of pollution load due to above is reduced to zero compared to conventional cement manufacturing units involving clinker manufacture.
3. The major raw materials for cement grinding are (60%) clinker which is brought in closed trucks from nearby plants (35%) fly ash, which is being waste from thermal power plants is brought in tanker trucks from Kudagi power plant & Jindal power plant and Gypsum (5%) from RCF Mumbai and Tuticorin is brought in covered trucks. In the process, only grinding of above raw materials take place in closed circuit ball mill associated with pollution control equipment like Dust collectors, Bag filters etc. There will be total 18 trucks per day traffic movement due to this process. Adequate parking facilities within the factory premises is provided. The trucks will not be parked outside the factory thus ensuring no impact to the traffic network.
4. The unloading of 6 no of clinked filled truck loads will be done in completely covered sheds fitted with dust collectors and dust extraction system in order to reduce fugitive dust emission due to unloading to almost negligible.
5. The main pollutant from the grinding unit will be particulate matter (dust) SPM. The identified source of dust are: Truck unloading, clinker storage silos, belt conveyors, fly ash storage silos, cement grinding mill, and cement silos with packing machines. The emissions from these sources other than cement mill would be fugitive in nature and proposed bag filters would be adequate to control SPM (dust) less than the standards norms of KSPCB. The emission of particulate matter (PM) from closed circuit grinding mill is controlled by installing filter bags with specific weight of 600 gms/m<sup>3</sup> instead of regular 550 gms/m<sup>3</sup> to improve the filtering efficiency to 99.99%. Holes in the tube sheets of dust collector will be made with laser technology for exact fitment of filter bags to avoid ingress of dust to atmosphere through the gap between tube sheet and bags. The proven emission level of this type of bag filters is very much less than standard norms laid by KSPCB. The dust collected from the various pollution control equipment like bag filters will be recycled in the grinding process itself and hence there is zero solid waste in the proposed project.
6. The clinker, gypsum, and fly ash (raw materials) are stored in storage silos instead in conventional open yard stoning thus reducing fugitive emission due to open storing is reduced to zero.

7. The fly ash brought in tanker trucks is automatically unloaded into fly ash storage silos through pneumatic pumps which ensures zero fugitive emission.
8. The proposed project is ensuring zero emission from vent stacks by installing air wet washers between vents of bag filters and inlet of stacks.
9. No water is used in the grinding process hence zero effluent discharge in the project.
10. The proposed unit will maintain noise levels well within permissible limits to ensure no impact is envisaged.
11. Green belt of 33% of total area will be developed.
12. Due to use of modern closed circuit grinding and use of 35% of fly ash which is being waste and burden on environment reduces energy consumption to 25% to 30% compared to conventional cement grinding units.  
In view of above points, the pollution load due to this small scale GREEN FIELD PROJECT is almost negligible. Hence the zero impact is envisaged on the surrounding atmosphere & fields.