

EXECUTIVE SUMMARY

OF

**2.0 MTPA CEMENT GRINDING UNIT
ALONGWITH
30 MW MULTIFUEL BASED POWER PLANT**

&

**3 X 10.89 DG BASED POWER PLANT
(Emergency Power Supply System)**

Of

JAIPRAKASH ASSOCIATES LIMITED

At

**Village Pandiyana, (Tikri) Near Bagheri, Post Office - Khillian,
Tehsil - Nalagarh, District- Solan, Himachal Pradesh.**

EXECUTIVE SUMMARY

1.0 INTRODUCTION

Jaiprakash Associates Limited (JAL), proposes to setup a 2.0 MTPA Cement Grinding Unit alongwith 30 MW Multifuel Based Power Plant & 3 X 10.89 MW DG Based Power Plant(Emergency Power Supply System) at Village Pandiyana, (Tikri) Near Bagheri, Post Office - Khillian, Tehsil - Nalagarh, District- Solan, Himachal Pradesh.

The proposed grinding unit along with power plant and emergency DG sets will be located within the existing premises of 1.75 MTPA Cement Blending Plant located at Village Pandiyana, (Tikri) Near Bagheri, Post Office - Khillian, Tehsil - Nalagarh, District- Solan, Himachal Pradesh.

The proposed project will involve a project cost of Rs 450 Crores. Of the total cost, about Rs 25 crores will be incurred towards implementation of Environmental Management Plan

2.0 PROJECT LOCATION

The plant site is located at Village Pandiyana, (Tikri) Near Bagheri, Post Office - Khillian, Tehsil - Nalagarh, District- Solan, Himachal Pradesh.

3.0 SALIENT FEATURES OF THE PROJECT

Present raw material requirement of the blending plant the raw material requirement of the grinding unit are given below

RAW MATERIAL REQUIREMENT

	Quantity MTPA	Source
Existing Blending plant		
Ordinary Portland cement	1.14	From cement plants
Flyash	0.87	Thermal Power Plants at Panipat and Yamuna Nagar

Proposed Grinding Unit		
Clinker	1.320	mother Cement Plant at Baga, Solan Dist. (H.P)
Flyash	0.600	Thermal Power Plants at Panipat and Yamuna Nagar
Gypsum	0.080	Rajasthan
Proposed Power Plant		
Coal	0.237	Western Coal Ltd. (SECL)
Or		
Rice Husk	0.219	H.P, Punjab and Haryana
Municipal Solid waste muff	0.03	Chandigarh (from JAL's Municipal Waste Processing Plant.
DG Based Power Plant(Emergency Power Supply System)		
Furnace Oil	7 t/hr	Local depots

The proposed project will be located within the Blending complex which is located in an area of 24.5 ha. JAL has already acquired the required land for location of the power plant. No additional land will be acquired.

Coal, Rice Husk and Municipal Solid Waste (MSW) are the fuels for generation of power. The power plant will be operated on one of the following modes:

- 100 % coal
- or
- Rice husk and Municipal Solid Waste

The quantity of fuel consumption is given below:

FUEL CONSUMPTION

FUEL	QUANTITY		SOURCE
	T/hr	T/day	
Coal	27	650	Madhya Pradesh and Bihar
Or			
Rice husk	25	600	H.P, Punjab and Haryana
MSW	8.33	200	Chandigarh (from JAL's Municipal Waste Processing Plant.

Fuel proposed for use in the DG sets is furnace oil which is about 7.18 t/hr.

The water consumption of the existing blending plant is 100 m³/day and is sourced from borewells located within the complex

The major requirement of water in the power plant is for cooling system. JAL proposes to adopt 100% air cooling system.

The total water requirement of the Grinding unit and power plant (including plant and colony) is estimated to be about 1075 m³/day. This requirement will be met from Borewells (ground water).

Power generated from the power plant will be evacuated through 66 kV lines located nearer to the site.

Present manpower working in blending plant is 160. Additional manpower for grinding unit and power plant is 30. Additionally 200 – 250 persons will work on contract basis. Preference will be given to the locals as per the suitability.

JAL will install complete utilities and other infrastructural facilities in the complex to meet the requirement of grinding unit and power plant.

The staff will be accommodated in the colony proposed at Blending plant The township of blending plant comprising of housing facilities for plant, mine and security personnel and supporting staff along with other amenities such as School, Guest House, Hospital, Shopping Complex etc

4.0 ENVIRONMENTAL IMPACT ASSESSMENT STUDY

JAL has conducted Environmental Impact Assessment study (EIA) of the Grinding Unit in an area of 10 km radius around the plant site.

4.1 SCOPE OF THE STUDY

The study is conducted with a focus on assessment of Environmental Impact on Land, Air, Noise, Water, and Socio-Economic environment and also plan mitigative measures to overcome and minimize the negative impact.

4.2 BASELINE STATUS

As part of Environmental Impact Assessment study, baseline environmental monitoring was carried out for Summer - 2009 season, covering the months of March – May 2009.

METEOROLOGY

The predominant wind direction during this period was from ENE- E-ESE-SE-SSE sector accounting to about 61.62 % of the total time with calm winds of less than 1.7 kmph for about 2.13 %. Wind speeds during this period were varying between 1.7-15 kmph.

AIR ENVIRONMENT

Ambient air quality of the study area has been assessed through a network of 10 ambient air quality locations. These stations are designed keeping in view of the climatologically conditions of the study area.

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.

AIR QUALITY IN THE STUDY AREA

S.NO	POLLUTANT	RANGE OF VALUES	NAAQS STANDARD FOR RESIDENTIAL AREAS
1	SPM	99-119	200
2	RSPM	41-50	100
3	SO ₂	5.4-8.3	80
4	NO _x	76-9.7	80

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

NOISE ENVIRONMENT

Thirteen monitoring locations were selected to assess the noise levels in the study area. Noise levels recorded in buffer zone during night time were found to be in the range of 40.4 – 50.8 dB(A) and day time values were 53.2-68.9 dB(A) in the study area. High values of noise were observed near highway and kiratpur market areas.

WATER ENVIRONMENT

Eleven ground water and two surface water samples were collected within 10 km radius. The parameters thus analysed were compared with IS -10500. The water quality was found to be well within the drinking water standards.

SOIL ENVIRONMENT

Twelve samples were collected to assess the soil quality in the 10 km study revealed soil of medium fertility.

BIOLOGICAL ENVIRONMENT

A study was undertaken to list out Flora & Fauna in the study area. From the study it was observed that there are no endangered, endemic or threatened species in the study area.

4.3 ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN

AIR ENVIRONMENT

The major units of emission from the proposed activity is

- a. Clinker grinding process
- b. Power generation Process

A CLINKER GRINDING UNIT

The major emission source of emission from cement mill. Cement Mill will be provided with a Bag House.

Other sources of particulate system include ventilation systems from Clinker hopper, Clinker storage silo, Weigh feeders for Clinker, Gypsum and Solid flow meter for flyash, Flyash storage silo, Clinker Grinding mill, OPC, PSC and PPC silos and Packing machines. All the above sources are provided with Bagfilters.

All the pollution control equipment in the proposed plant are designed for an outlet emission of less than 50 mg/Nm³. The dust collected from the various pollution control equipment will be recycled in the PPC cement manufacturing process.

B 30 MW CAPTIVE POWER PLANT

The power plant will be based on multi fuel firing. Multi fuels proposed for use are Coal and Rice Husk.

The power plant will be operated in one of the following modes at any given time

- coal
- or
- rice husk and MSW muff

When the power plant is in operation with coal, boiler of 115 tph would be operated to meet the steam requirement. And when the power plant is in operation with rice husk and MSW muff, both the boilers of 115 tph and 30 tph will be put into operation.

GROUND LEVEL CONCENTRATIONS

Predicted maximum ground level concentrations considering 24-hour mean meteorological data of summer season superimposed on the maximum baseline concentrations obtained during the study period to estimate the post project scenario which would prevail at the post operational phase. The Overall Scenario with predicted concentrations over the maximum baseline concentrations is shown below.

OVERALL SCENARIO WITHIN STUDY AREA ($\mu\text{g}/\text{m}^3$)

24-Hourly Concentrations	Suspended Particulate Matter (SPM)	Sulphur Dioxide (SO₂)	Oxides Of Nitrogen (NO_x)
Baseline Scenario	109	6.7	9.6
Predicted Groundlevel Concentration (Max)	1.96	16.89	7.58
Overall Scenario (worst case)	110.96 {200}	23.59 {80}	17.18 {80}

NOTE: The values in parentheses is the CPCB limit for rural and residential areas.

AIR POLLUTION CONTROL MEASURES

A GRINDING UNIT

- Installation of bag filter systems along with ventilation systems to control the fugitive dust generated from the material handling areas.

- All the flue gas outlets will be provided with state of art air pollution control equipment to maintain the particulate emission level below 50 mg/Nm³
- The cement mill will be provided with a Bag House with an outlet emission of less than 50 mg/Nm³
- The dust collected in the pollution control devices is recycled back to the grinding unit.
- The roads in the plant will be paved to prevent dust emissions.
- To control the dust emissions from dropping/transfer points of the belt and bucket conveyors, Bag filters will be provided at various locations of the transfer points.
- All the raw material i.e flyash, clinker and PPC will be stored in the silos provided with bagfilters for control of fugitive dust emissions.

Apart from above, the following additional measures for control of fugitive dust are proposed :

- Automatic dust cleaning system will be employed for removing the dust on the floors
- Cement roads will be constructed inside the plant to avoid dispersion of dust.
- Development of greenbelt all around the plant boundary.

B POWER PLANT

The proposed power plant will be operated on coal where SPM, SO₂ and NO_x are the major pollutants emitted.

The bottom ash generated in the form of clinker is collected in the hoppers. The clinker is ground into ash and used for cement manufacturing.

In order to regulate fly ash emission to atmosphere, JAL proposes to install an ESP. ESP of 99.8% efficiency with required number of fields to arrest the particulate emission will be connected to each boiler. Electro static precipitators will be designed to give a final outlet particulate concentration of less than 50 mg/NM³. Therefore the impact due to particulate emission due to burning of coal leading to raise of suspended particulate concentration in the ambient air is found to be negligible. The fly ash collected in the hopper of ESP will be removed through dry collection system.

Burners of latest design will be incorporated to minimise the emission of Nitrogen oxides from boilers. Burning of coal will result in NO_x emission of about 750 mg/Nm³ 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 groundlevel concentration are well within the limits of NAAQ standards.

JAL will install two tall stacks of 75 m and 30 m height connected to the boiler to exhaust the emissions to the atmosphere.

Fugitive Dust Control

For control of fugitive dust, water spray arrangement will be provided to spray water all round the fuel stock piles to suppress the dust and to wet the coal while compacting to minimise the dust nuisance. Adequate ventilation and dust suppression systems will be implemented in the coal conveyer system.

Vacuum cleaner machines will be used at packing plant for cleaning of floors & Bag cleaning device

Installation and operation of water spray nozzles at truck unloading hopper to reduce the dust emission during unloading.

Unloading of material will be carried out with great care by avoiding dropping of material from height, wetting the material by sprinkling water while unloading.

All raw material storage areas will be covered.

NOISE ENVIRONMENT

During installation of the grinding unit and installation of power plant, no significant impact is envisaged as most of the construction equipment produce noise level below 90 dB(A). The noise generated is expected to be intermittent and of short duration.

During operation, the major noise generating sources are ball mills and steam turbine.

Under any circumstances the noise level from ball mills and turbine will not exceed 90 dB (A).

NOISE POLLUTION CONTROL MEASURES

GRINDING UNIT

Plant machinery like Cement Mill and compressors are the major sources of noise pollution. The following are the noise control measures proposed to be undertaken in the plant.

- Provision of acoustic dampeners in foundations and insulators in the interiors
- A scientifically designed greenbelt will be developed all around the plant boundary to act as noise attenuator.
- In addition personnel working near high noise level generating sources will be provided with earmuffs and ear plugs. Acoustically insulated cubicles will be provided to operators working near high noise generation sources.

- Effective preventive maintenance and vibration measurement of all rotating equipment will help in the improvement of plant life and also reduce noise.

POWER PLANT

All equipment in the power plant would be designed for noise levels not exceeding 90 dB(A).

The steam turbine generator would be provided with acoustic enclosures and silencers in the exhaust. The steam turbines would be housed in a closed building which considerably reduces the noise.

In case of maintenance, the persons working near noise prone areas would be provided with ear muffs & ear plugs.

A thick greenbelt will be developed all around the plant which acts as noise barrier.

WATER ENVIRONMENT

Water consumption of the existing operating blending plant is about 100 m³/day. The water requirement of the proposed power plant is mainly for steam generation and auxiliary cooling. No water will be used for cooling of condensate it proposed to adopt 100% air cooling system. The water requirement for the proposed grinding unit and power plant of 30 MW is estimated to be about 1075 m³/day.

The total water requirement of the complex is 1075 m³/day as given below

- a. Blending plant – 100 m³/day
- b. Grinding unit – 300 m³/day
- c. Power plant – 675 m³/day

The above requirement will be met from borewells. The following table shows the water balance of the plant complex

WATER BALANCE (m³/day)

	Requirement	Loss/use	Wastewater
Existing Blending Plant			
Cooling water	15	15	0
Greenbelt development	15	15	0
Proposed Grinding Unit			
Cooling water	300	300	0
Proposed Power Plant			
Boiled feed	138	70	68
Cooling tower make-up for generator and lube oil system	427	342	85
RO rejects	60	0	60
Domestic Use			
Present use	70	14	56
Additional use	50	10	40
Total	1075	766	309

4.3.1 WASTEWATER GENERATION AND DISPOSAL

No wastewater is generated from the existing blending plant.

In proposed grinding unit, water is used for cooling.

This water is totally absorbed in the process or will undergo evaporation and hence no wastewater will be released.

No wastewater generation is envisaged from the grinding unit.

The wastewater generation from the power plant is estimated to be 309 m³/day as given below:

WASTEWATER GENERATION, M³/DAY

	Wastewater
Proposed Power Plant	
Boiled blowdown	68
Cooling tower blowdown	85
RO rejects	60
Domestic wastewater	
Present	56
Additional	40
Total	309

The domestic wastewater generated from the plant and township (96 m³/day) from various buildings will be treated in sewage treatment plant.

WASTEWATER TREATMENT AND DISPOSAL

The total wastewater generated from various units of the plant is estimated to be about 309 m³/day. The waste water (RO reject – 60 m³/day) generated from RO plant will be neutralized and diluted with boiler blowdown (68 m³/day), cooling tower blowdown (85 m³/day) and treated wastewater of sewage treatment plant (96 m³/day) conforming to GSR 422 (E) onland discharge standards will be used for bottom ash handling, dust suppression and greenbelt development.

4.3.2 LAND ENVIRONMENT

The proposed units will be located within the acquired area of 24.5 ha. The site is free from habitation and hence no displacement of people is envisaged.

JAL proposes to develop an area of 5 Ha under greenbelt development to improve aesthetics, control of dust and noise pollution.

Therefore the overall impact on land environment will be minimum

4.3.3 SOLID WASTE GENERATION

No solid waste will be generated from grinding unit.

The major solid waste generated from the proposed power plant is ash in the form of fly ash and bottom ash. The quantity of ash generation varies with type of fuel.

The maximum ash generation from the power plant is about 293 t/day. Of which 80 % (234 t/day) is flyash and 20% (59 t/day) is generated as bottom ash in the form of clinker.

The flyash requirement of the proposed grinding unit is about 0.6 MTPA. Hence the flyash generated from the power plant i.e 0.085 MTPA will be consumed in the grinding unit where PPC is produced.

Fly ash will be transported pneumatically with the help of dense conveyor to the fly ash silo from Economizer, Air heater and ESP.

The clinker (bottom ash) collected at the bottom of the boiler will be disposed for filling low lying areas

5.0 GREEN BELT DEVELOPMENT

An area of 5 ha will be developed under green belt.

JAL will develop a full-fledged nursery within the plant area for development of saplings.

6.0 SOCIO ECONOMIC ENVIRONMENT

Socio Economic Status in the study area is found to be moderate with respect to livelihood, amenities etc. Employment potential both direct and indirect coupled with business opportunities and strong social commitment of the company in the form of better educational and medical facilities would result in enhancement in the status and standard of living of the local populace resulting in positive impact.

The management of JAL has proposed to give preference to local people for recruitment in semi skilled and unskilled categories.

A total of about 150 persons would be given indirect employment during construction and installation of plant and about 30 persons will be recruited in the operational phase.

Socio Economic Status in the study area is found to be moderate with respect to livelihood, amenities etc. Transport and other infrastructural facilities such as market centers, business establishment, recreation etc in the area will be improved.

Employment potential both direct and indirect coupled with business opportunities and strong social commitment of the company in the form of better educational and medical facilities would result in enhancement in the status and standard of living of the local populace resulting in positive impact.

7.0 BUDGETS FOR IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PLAN.

JAL will incur an amount of Rs 25 crores for implementing Environmental Management Plan.

8.0 CONCLUSION

JAL strongly believes in the concept of eco friendly industrialization.

The proposed eco-friendly operations and various socio economic development activities will bring about overall socio economic development in the area.

The grinding unit and power plant will be installed with state-of- art equipment designed to meet the HPPCB and CPCB standards for environmental protection. The Environmental Management Plan and Monitoring Plan designed by JAL will aid in regulating and maintaining the environment quality as per the standards.