

# **ENVIRONMENTAL MANAGEMENT PLAN**

*For*

**EXPANSION OF EXISTING CEMENT GRINDING UNIT  
CAPACITY FROM 2.0 MTPA to 4.0 MTPA**

*By*

**INSTALLING A NEW GRINDING MILL (UNIT-II)**

**At**

**KRISHNAPATNAM VILLAGE, MUTHUKUR MANDAL,  
S.P.S.R. NELLORE DISTRICT, ANDHRA PRADESH.**

*By*

**M/s. PENNA CEMENT INDUSTRIES LIMITED**

**Prepared By**



**B.S. ENVI-TECH (P) LTD  
Secunderabad - 500 017**

## **1.0 INTRODUCTION**

PCIL is one of the largest privately held cement companies in India, with an installed cement capacity of 7 Million Tonnes Per Annum.

Founded in 1991, Penna Cement has established itself as one of the most trusted cement brands, with significant footprints in southern and western India. Our clientele ranges from small house owners to established real estate developers and from various state governments to global construction majors.

Over the last two decades, **PCIL** have grown organically by developing in-house expertise and capabilities, across the entire value chain in the cement industry. All plants are equipped with state-of-the-art technology, enabling the company to deliver the superior quality products.

On August 10<sup>th</sup> 1994, PCIL commissioned first plant in Talaricheruvu, Ananthpur with an initial capacity of 0.2 MTPA. Over the last two decades, PCIL have installed 4 cement plants and one captive power plant and increased our capacity to more than seven million tonnes. Four cement plants are strategically located, to cater to customers all across Southern India.

PCIL is accredited with ISO: 9001- 2008, IS: 18001:2007 and ISO:14001:2004. It is a professionally managed and well established cement manufacturing company enjoying the confidence of consumers because of its superior quality product and excellent customer service. PCIL is running cement plants and mines with latest eco-friendly technology.

## **2.0 PRESENT PROPOSAL**

Penna Cements Industries Limited is setting up a 2.0 MTPA cement grinding unit at Krishnapatnam Village, Muthukur Mandal, S.P.S.R. Nellore District, Andhra Pradesh. The project has been accorded Environmental clearance by SEIAA. The project is under implementation.

PCIL now proposes to increase the grinding unit capacity of the project by setting up one more line of 2.0 MTPA capacity.

Present proposal is for increase of cement grinding unit from 2.0 Million Tonnes per Annum (MTPA) to 4.0 Million Tonnes per Annum (MTPA) by installing a new grinding circuit (Unit-II) using combination of Modern Roller Press & Ball Mill.

The proposed expansion is within the existing unit which is under construction phase and the details of the survey nos. of site are furnished here below:

S. No	SITE DETAILS
Village Jurisdiction	Krishnapatnam Port
Survey nos.	684,687,688,689,690
Area (Ha.)	6.08

### 3.0 PROJECT COST

The cost of the proposed expansion is Rs. 150 Crores which is inclusive of pollution control activities.

### 4.0 LOCATION OF THE PLANT

The Plant Site is a part of the Survey of India Topo sheet No. 66/B/3. The site falls between 14°16'16.10" - 14°16'27.65" North Latitude and 80°06'48.71" - 80°06'59.27" East Longitude and with an average altitude of 3 m above MSL.

The location map of the Plant site is shown in **Fig - 1**.

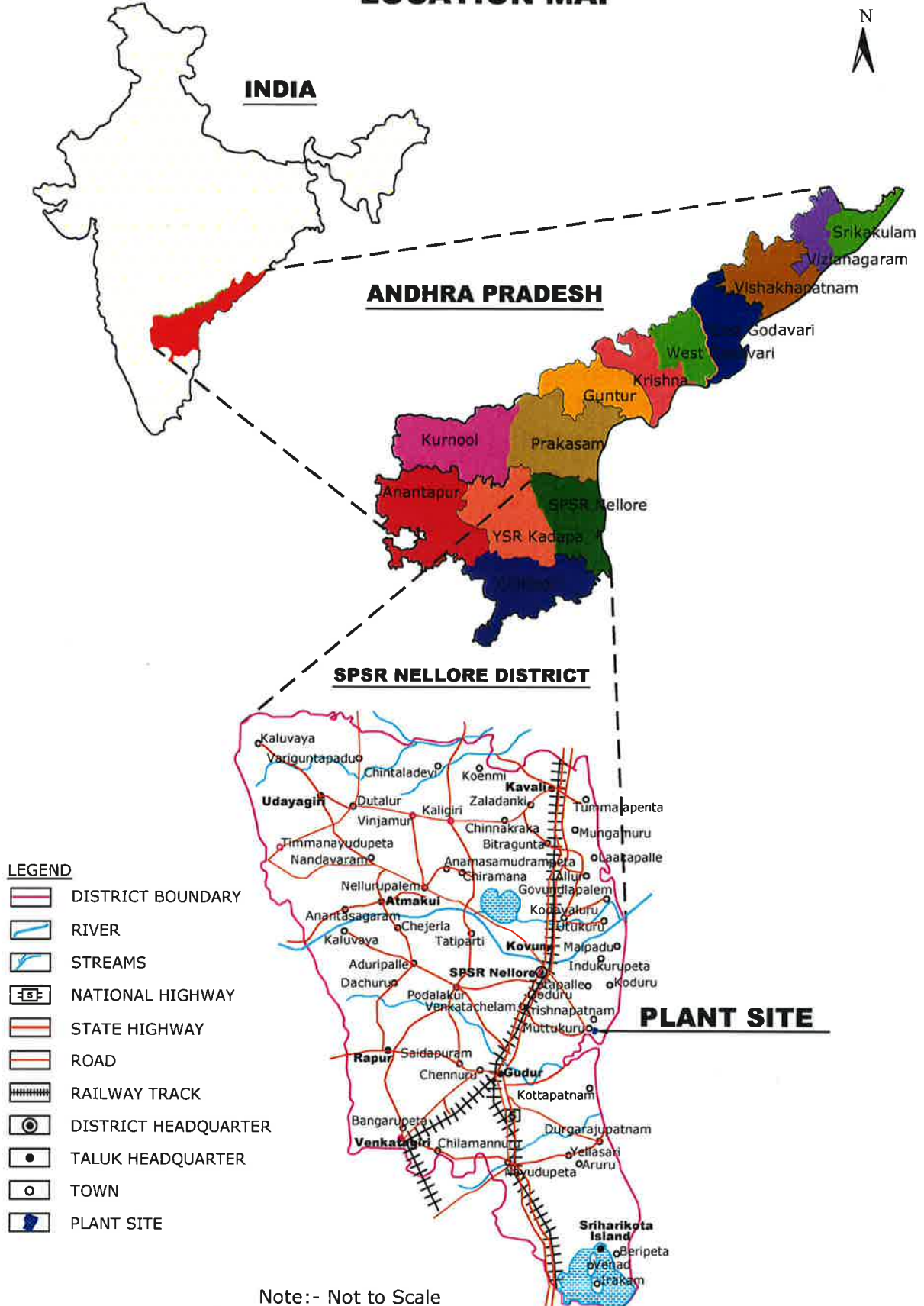
Nearest railway line connecting Nellore – Gudur of South Central Railway line is at 22.7 km to W direction from the site.

Key map showing the location of various features around the Plant site is shown in **Fig - 2**.

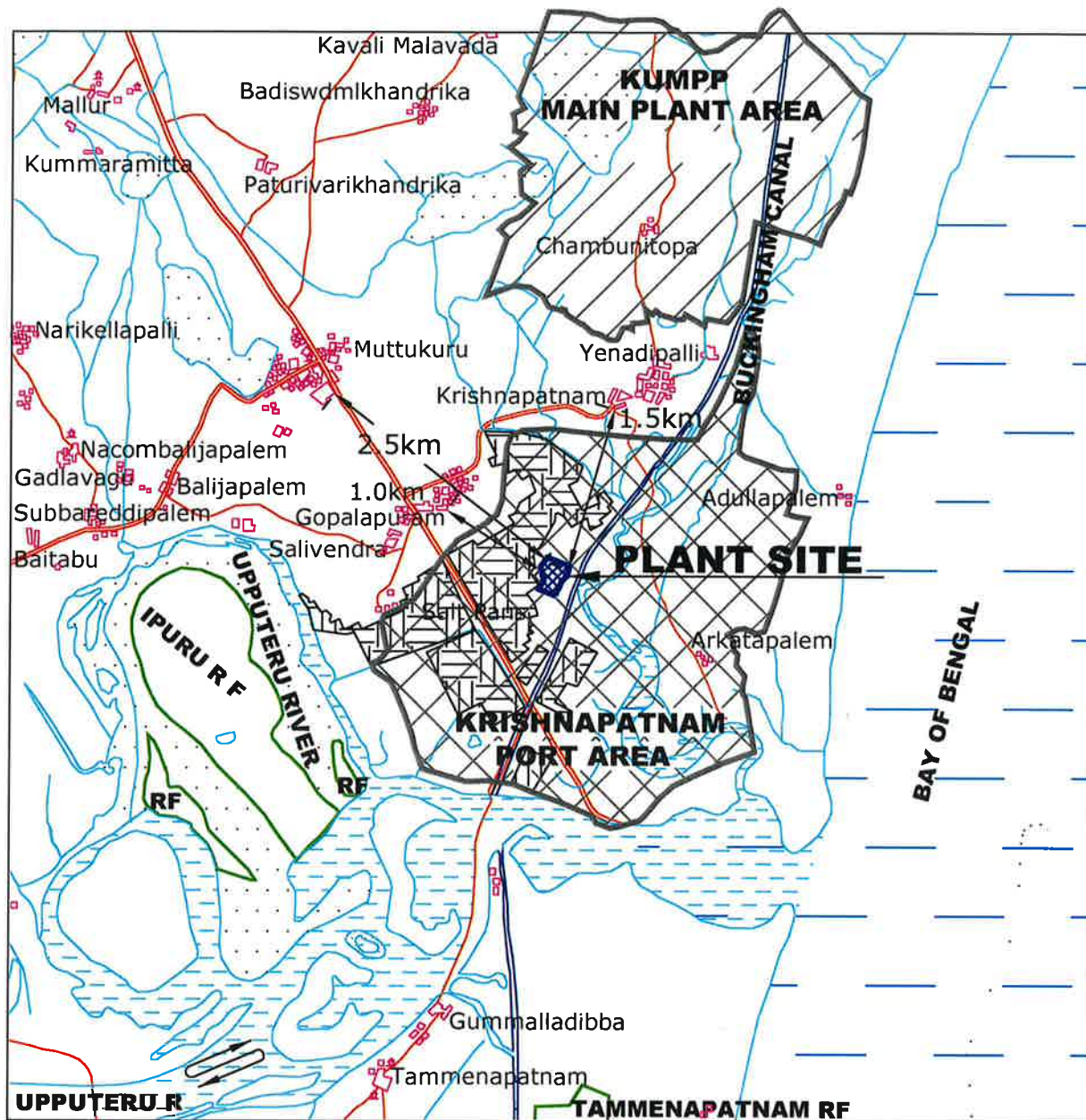
Nellore, major town is located at 23.3 km in NW direction.

The National Highway connecting Kolkatta – Chennai is located at a distance of about 22.3 km in W, The nearest railway station is located at Venkatachalam RS which is 21.0 km in WNW direction.

**FIG - 1**  
**LOCATION MAP**







#### LEGEND

-  ROADS
-  STREAMS
-  SALT PANS
-  CANALS
-  SETTLEMENTS
-  FOREST
-  RIVER
-  BAY OF BENGAL
-  PLANT SITE

#### SCALE

0 1 2km

**FIG - 2**

CLIENT :	<b>M/s. PENNA CEMENT INDUSTRIES LIMITED</b>
PROJECT :	<b>EXPANSION OF CEMENT GRINDING UNIT CAPACITY FROM 2.0 MTPA TO 4.0 MTPA</b>
	Krishnapatnam Village, Muthukur Mandal, S.P.S.R Nellore District., Andhra Pradesh
TITLE :	<b>KEY MAP</b>
	PREPARED BY <b>B.S.ENVI-TECH (P) LTD.,</b> SECUNDERABAD

There are no wild life sanctuaries, national parks, elephant/tiger reserves within 10-km radius of the study area.

Nearest Settlements from the Plant site

- Krishnapatnam – 1.5 km – NNE
- Gopalapuram – 1.0 km – NW
- Muttukuru – 2.5 km – NW

Nearest Reserve Forests from the Plant site

- Tammenapatnam RF - 4.5 km - S
- Ipuru RF - 2.6 km - SE

Salient features of Plant site are given in **Table – 1** and **Fig - 3** shows the study area of 10 km radius around the Plant site

## 5.0 REQUIREMENTS OF THE PROJECT

### 5.1 RAW MATERIAL

Clinker for the above proposed expansion is transported by the railway wagons/trucks from the major clinkerisation units of PCIL situated near to the grinding unit and from the clinkerisation units situated in Andhra Pradesh.

**RAW MATERIAL REQUIREMENT (MTPA)**

S. No	Section	Present	Additional	Total	Source	Mode of transport
1	Clinker	1.30	1.30	2.60	Mother plant at Anantapur district, Andhra Pradesh.	By Rail
2	Gypsum	0.10	0.10	0.20	Coromandel Fertilisers, Visakhapatnam	By Rail
3	Fly Ash	0.60	0.60	1.20	Nearby Power Plant	By Rail

### 5.2 LAND

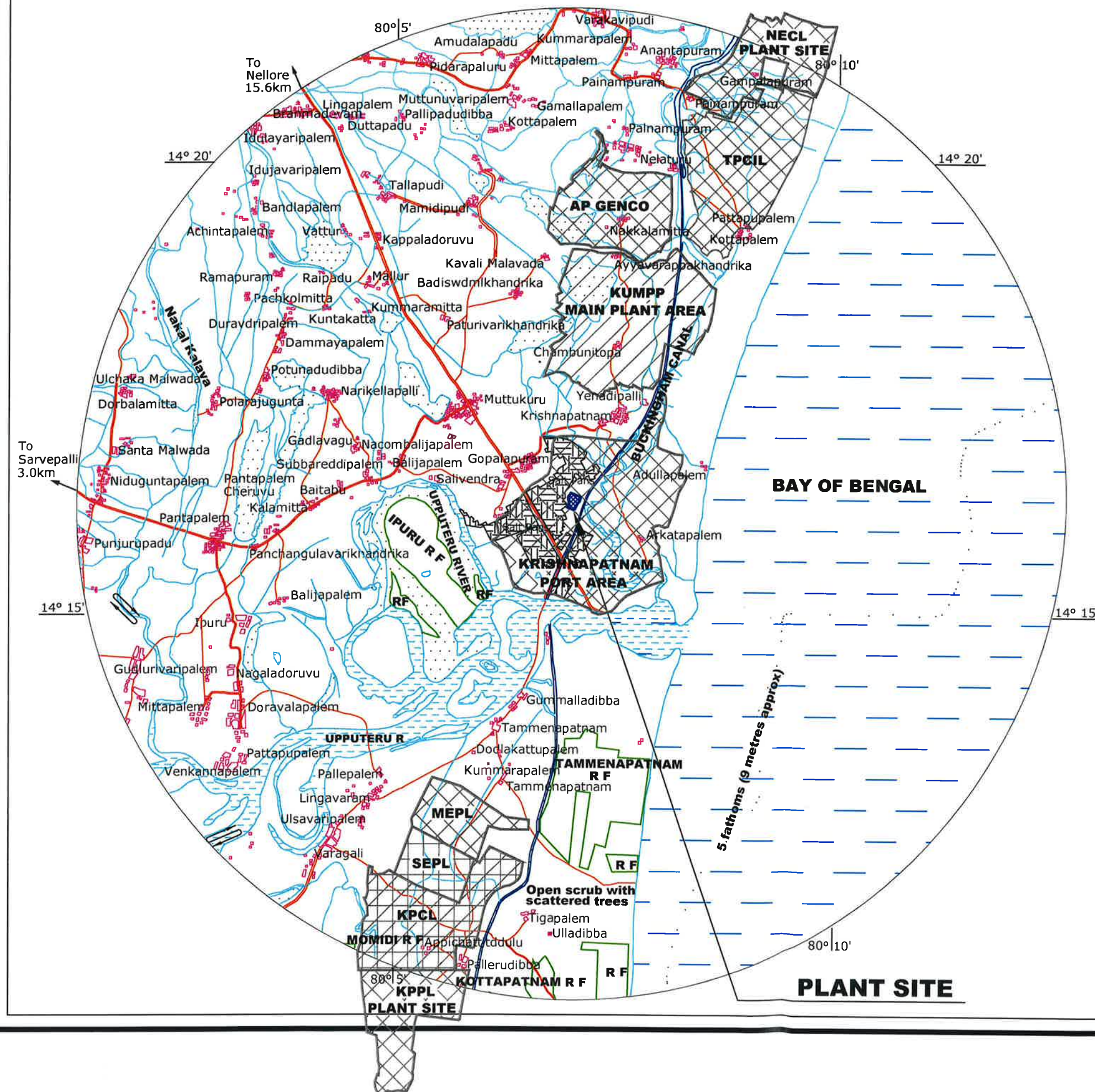
The plant is located near Krishnapatnam Village within the Krishnapatnam Port area. About 6.08 ha of the area have been acquired by **PCIL** for the grinding unit. The existing land is sufficient to accommodate new line of 2.0 MTPA capacity. The land beakup of the project area is shown below

**TABLE - 1**  
**SALIENT FEATURES OF THE PLANT SITE**

<b>Feature</b>	<b>Details</b>
Altitude	3 m above Msl
Latitude	14°16'16.10" - 14°16'27.65" North
Longitude	80°06'48.71" - 80°06'59.27" East
Village, Tehsil, District, State	Krishnapatnam Port, MuthukurMandal, SPSR Nellore District of Andhra Pradesh.
Temp °C	14.4 - 46.7
Relative Humidity %	49 - 87
Annual rainfall	1042.1 mm
Nearest River	Bay of Bengal – 2.6 km - E, Buckingham Canal – 0.1 km - E Upputeru River – 1.8 km - S
Nearest Highway	The National Highway (NH-5) connecting Ongole – Chennai is located at a distance of about 22.3 km in Western direction
Nearest Railway station	Venkatachalam RS which is 21.0 km in WNW direction
Nearest Industries	AP Genco – 5.1 km – N Thermal Power Corporation India Ltd (TPCIL) – 5.6 km – NE NECL – 8.4 km – NE Meenakshi energy Power Ltd (MEPL) – 6.1 km – SSW Simhapuri Energy Private Ltd (SEPL) – 7.3 km – SSW Krishnapatnam Port Company Ltd (KPCL) – 7.1 km – SSW KPPL – 9.8 km – SSW
Nearest Village	Krishnapatnam – 1.5 km – NNE Gopalapuram – 1.0 km – NW Muttukuru – 2.5 km – NW
Nearest Town	Nellore - 23.3 km - NW
Nearest Air port	Renigunta Airport – 95.0 km – SW
Nearest Forest	Tammenapatnam RF - 4.5 km - S Ipuru RF - 2.6 km - SE
Historical places	None within 10 km radius

*\* All distances mentioned in the above table are aerial distances.*







#### LANDUSE BREAKUP (Ha.)

S.No	Land use breakup	Before Expansion	After Expansion
1	Built up area	1.50	2.00
2	Parking area	1.00	1.00
3	Green belt area	2.06	2.06
4	Roads & Others	1.52	1.02
<b>Total</b>		<b>6.08</b>	<b>6.08</b>

**Fig –4** shows the layout of the Grinding Unit.

### 5.3 WATER

The water requirement of the plant increases from 80 m<sup>3</sup>/day to 100 m<sup>3</sup>/day which will be sourced from Krishnapatnam Port.

### 5.4 POWER

The power requirement increases from 15.0 MW to 25.0 MW and will be sourced from Grid.

### 5.5 MANPOWER

Manpower requirement of existing plant is about 30 persons. The proposed expansion will provide employment opportunity to additional 10 persons.

### 5.6 INFRASTRUCTURE

Infrastructure required for proposed expansion of Cement Grinding unit will include clinker silo, gypsum storage, cement mill feed hoppers, fly ash storage silo, cement mill building, weigh bridge, cement silo, packing plant building & empty bag store, truck loading bay, wagon loading platform, wagon tippler, compressor room, laboratory, technical office, general store, workshop & security office.

## 6.0 PRODUCTION DETAILS

Clinker, Gypsum and flyash in a definite proportion are ground for the production of Portland Pozzolana Cement (PPC).

Clinker & Gypsum received through the railway wagons are unloaded by wagon-tippler and transported through belt conveyor system for

storage in Clinker silo & Gypsum covered shed respectively. Clinker and Gypsum are extracted in definite quantity as per the quality requirements to mill feed hoppers.

Clinker is extracted from Silo with multiple electronic controlled feeders provided at Silo bottom to facilitate complete extraction of clinker from silo and fed to clinker Weigh bin for uniform feeding to Roller Press & Ball Mill.

Clinker along with Gypsum is grounded in Roller Press and passed through separator along with air passed through Bag House where final product is collected. Grit particles will recirculate in the Roller Press/ Ball Mill for regrinding.

The final product from Bag House will be transported to Cement Silos through Air Slides and Elevator.

In the Cement Silo the cement is homogenized by fluidization method (for blending) and then extracted through specific equipments installed and fed to Electronic Roto-Packing Machine for packing in bags.

## **6.1 PLANT AND MACHINERY**

**PCIL** Cement Plant comprises the following preparation, processing and handling units:

1. Clinker unloading, handling, storing and retrieval system.
2. Gypsum unloading, handling, storing and retrieval system.
3. Clinker proportioning and feeding
4. Gypsum storage, proportioning and feeding.
5. Clinker and Gypsum Grinding.
6. Fly ash extraction, classification, pneumatic transportation and storing
7. Fly-ash proportioning and feeding
8. Ground Cement Handling and storage
9. Ground Cement Extraction
10. Complete ancillary system of water, power & pneumatic system.

Different sections/components of the above processing units are tabulated as below:

S.No	Processing Unit	Processing Unit comprises Of
1	Clinker unloading, handling, Storing and retrieval system	Truck tipplers, Belt Conveyor, Clinker Silo, Belt Conveyor, drives, instrumentation.
2	Gypsum unloading, handling, storing & retrieval system	Belt Conveyors, stockpile, drives and instrumentation.
3	Clinker Proportioning and Feeding	Belt Conveyors, clinker hopper, clinker weigh feeder, bag filters, drives and instrumentation.
4	Gypsum storage, Proportioning and Feeding	Gypsum Reclaimer, belt conveyors, gypsum hopper, gypsum weigh feeder, drives, instrumentation.
5	Clinker and Gypsum Grinding	Roller Press Mill, Cement Ball Mill, bucket elevator, air slides, separator, bag filters, Roller Press + Ball Mill auxiliaries (lubrication & cooling system), drives and instrumentation.
6	Fly-Ash extraction, classification, pneumatic transportation and Storing.	Flyash pneumatic pumps, classifier, pneumatic conveying equipments, pipeline, Valves, bag filters, drives instrumentation.
7	Fly-Ash Proportioning and feeding	Flyash Hopper, solid flow meter, flow control gates, air slides, drives, instrumentation etc.,
8	Ground Cement Handling & storing	Bucket elevators, Cement Silo, air slides, drives, instrumentation.
9	Ground Cement Extraction	Blowers, air slides, flow control gates, bucket elevators, instrumentation.
10	Complete ancillary system of water, power & pneumatic system, fire hydrant system.	Overhead & underground water tanks, water Pipe lines, Drainage, Water Pumps, Main sub-station, Transformer & Central Control system. Compressor house, compressor, Air pipe lines & control system

## 7.0 ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN FOR CONTROLLING THE IMPACT

Any developing project exerts certain adverse and beneficial impacts on immediate surroundings.

**PCIL** will utilize approximate 1.2 MTPA of Fly-Ash for 4.0 MTPA cement grinding which is otherwise treated as solid waste.

PCIL has incorporated all necessary steps to mitigate the environmental pollution in the design stage itself. Environmental



Management Plan of the plant details the environmental quality control measures proposed by PCIL during construction and operations phase of the project.

## **7.1 ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN - CONSTRUCTION PHASE**

### **(i) AIR ENVIRONMENT**

Setting-up of additional grinding unit will result in the increase of dust concentrations due to fugitive dust. Frequent water sprinkling in the vicinity of the construction sites would be undertaken and will be continued after the completion of plant construction, as there is scope for heavy truck mobility. It will be ensured that both gasoline and diesel powered vehicles are properly maintained to comply with exhaust emission requirements. The outlet emission is restricted to less than 30 mg/Nm<sup>3</sup> for the mill.

### **(ii) NOISE ENVIRONMENT**

There will be marginal increase in noise levels during construction phase, which is temporary. Noise levels during night time are mainly from welding during the construction phase for short duration.

### **(iii) WATER ENVIRONMENT**

During construction, the infra-structural services including water supply, sewage, drainage facilities and electrification will be provided to the construction labour.

### **(iv) LAND ENVIRONMENT**

The site where the plant is proposed is devoid of vegetation. No cutting of tree is envisaged.

Greenbelt in an area of 2.06 ha will be developed inside the plant boundary as per conditions.

### **(v) SOCIO-ECONOMIC ENVIRONMENT**

Local people will be given preference through both direct and indirect employment for the proposed expansion.

## **(vi) SAFETY AND HEALTH DURING CONSTRUCTION PHASE**

Adequate space will be provided for construction of temporary sheds for construction workers mobilized by the contractors. PCIL will supply potable water for the construction workers. The safety department will supervise the safe working of the contractor and their employees. Work spots will be maintained clean, provided with optimum lighting and enough ventilation to eliminate dust/fumes.

## **7.2 ENVIRONMENTAL IMPACTS AND MANAGEMENT PLAN DURING OPERATIONAL PHASE**

### **7.2.1 AIR ENVIRONMENT**

The major sources of emissions from the grinding unit are:

- Clinker grinding process
- Packing plant

### **CONTROL MEASURES PROPOSED FOR BOTH THE UNITS OF 2.0 MTPA CAPACITY EACH ARE:**

- Installation of bag filter systems along 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 30 mg/Nm<sup>3</sup>
- The grinding mill and packer house will be provided with Bag Filters designed for an outlet emission of less than 30 mg/Nm<sup>3</sup>
- The dust collected in the pollution control devices is recycled back to the process.
- 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, unit bag filters will be provided at various locations of the transfer points.
- All the raw material i.e flyash, gypsum and clinker will be stored in the silos provided with bagfilters for control of fugitive dust emissions.
- Cement storage silos will be provided Bag filters.
- Development of greenbelt all around the plant boundary.

Apart from above, PCIL proposes to implement the following additional measures for control of fugitive dust:

### **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 minimize the dust nuisance. Adequate ventilation and dust suppression systems will be implemented in the coal conveyer system.

Installation and operation of water spray nozzles at wagon tippler hopper to reduce the dust emission during unloading of wagons

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.

### **7.2.2 NOISE ENVIRONMENT**

Cement mill is the major sources of noise pollution. The following are the noise control measures which are being implemented and the same will be continued for the new line.

- 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.

### **7.2.3 WATER ENVIRONMENT**

Water consumption in the plan is mainly for process cooling, greenbelt and domestic use.



The present water requirement of the plant is 80m<sup>3</sup>/day which will be sourced from port. Additional Water requirement for expansion is 20 m<sup>3</sup>/day which is totaling to 100 m<sup>3</sup>/day.

#### **WATER CONSUMPTION (m<sup>3</sup>/day)**

<b>Sl.No</b>	<b>Purpose</b>	<b>Existing unit</b>	<b>Proposed</b>	<b>After Expansion</b>
1.	Cooling (industrial cooling)/Water spraying	50	15	65
2	Greenbelt	20	0	20
3.	Domestic	10	5	15
	<b>Total</b>	<b>80</b>	<b>20</b>	<b>100</b>

No wastewater generation is envisaged from the proposed expansion of grinding unit.

Wastewater generation from the proposed expansion is only from domestic use i.e about 12 m<sup>3</sup>/day and the same is treated in septic tanks followed by soak pits.

#### **7.2.4 LAND ENVIRONMENT**

No additional land is required for the proposed expansion.

#### **7.2.5 SOLID WASTE GENERATION**

Dust collected from air pollution control equipment is 100% recycled in process and no solid waste is generated from cement plant.

The waste oil generated from the machines will be stored in barrels. About one barrel per year of waste oil will be generated from the plant. This oil will be disposed to authorised vendors.

#### **7.2.6 HAZARDOUS WASTE MANAGEMENT RULES**

PCIL will store the hazardous waste in a designated area. This area will be isolated from the other utility areas.

Spent Oil from the gear boxes and automobile batteries will be disposed to the authorized vendors as per the Hazardous Wastes (Management and Handling) Amendment Rules, 2016.

### **7.2.7 TRANSPORTATION**

The Clinker required for the cement manufacturing, i.e. about 2.6 million tonnes will be totally moved in rail rakes (100%). The Finished product i.e. cement will also be moved through rail and ship to various destinations. Thus the quantum of material movement through rail and ship amounts to more than 90%.

### **7.2.8 GREEN BELT DEVELOPMENT**

The total plant area is 6.08 Ha, of this about 2.06 Ha will be developed under green belt. The species (like casuarina etc.,) that have history of good survival and growth under similar site conditions will be planted.

### **7.2.9 SOCIO ECONOMIC ENVIRONMENT**

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.

Manpower requirement of existing plant is about 30 persons. The proposed expansion will provide employment opportunity to additional 10 persons. 50 persons will be indirect employment.

All infrastructure facilities such as education, health facilities and other social facilities are adequate at nearby commercial area i.e., Pune

**PCIL** has well-defined Corporate Social Responsibility (CSR) policy to Carryout social development and welfare measures in the surrounding villages. Under CSR activity PCIL will initiate community development projects, in the fields of health, education and environmental preservation, in and around the plant.

### **8.2.10 OCCUPATIONAL SAFETY & HEALTH MANAGEMENT**

PCIL will provide all necessary provisions under Factory Act. In addition a Safety committee will be formed and manned by equal participants from Management and Workers.

Safety shoes, helmet & uniform will be issued to each worker. Other safety equipment will be used according to the nature of job involved. PCIL has established a first aid center with necessary medicines.

## **9.0 BUDGET FOR EMP**

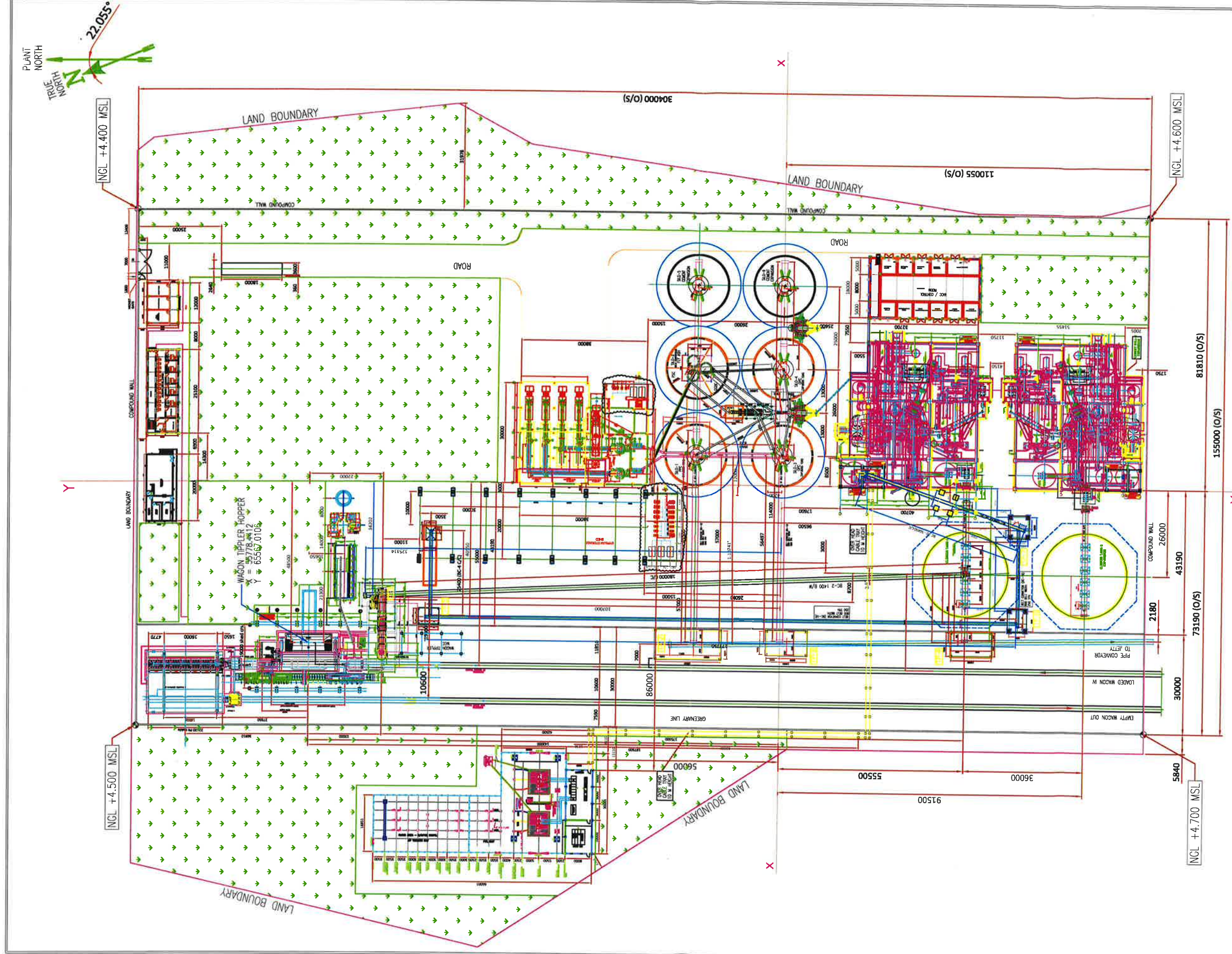
The cost of the proposed expansion is Rs. 150 Crores and incur about Rs. 310 lakhs for implementing the Environmental Management Plan.

### **BUDGET FOR ENVIRONMENT MANAGEMENT PLAN**

	<b>Amount in Rs Lakhs</b>
Pollution Control Equipment	250
Online Monitoring Equipment	50
Greenbelt development	10
<b>TOTAL</b>	<b>310</b>



FIG - 4



NO.	REVISION	DATE	BY	CHKD.	APPD.
1	ISSUED FOR PERMIT	10-05-2017	A		
2	FOR PRELIMINARY DESIGN	10-05-2017	A		
3	FOR PRELIMINARY DESIGN	10-05-2017	A		
4	FOR PRELIMINARY DESIGN	10-05-2017	A		
5	FOR PRELIMINARY DESIGN	10-05-2017	A		
6	FOR PRELIMINARY DESIGN	10-05-2017	A		
7	FOR PRELIMINARY DESIGN	10-05-2017	A		
8	FOR PRELIMINARY DESIGN	10-05-2017	A		
9	FOR PRELIMINARY DESIGN	10-05-2017	A		
10	FOR PRELIMINARY DESIGN	10-05-2017	A		
11	FOR PRELIMINARY DESIGN	10-05-2017	A		
12	FOR PRELIMINARY DESIGN	10-05-2017	A		
13	FOR PRELIMINARY DESIGN	10-05-2017	A		
14	FOR PRELIMINARY DESIGN	10-05-2017	A		
15	FOR PRELIMINARY DESIGN	10-05-2017	A		
16	FOR PRELIMINARY DESIGN	10-05-2017	A		
17	FOR PRELIMINARY DESIGN	10-05-2017	A		
18	FOR PRELIMINARY DESIGN	10-05-2017	A		
19	FOR PRELIMINARY DESIGN	10-05-2017	A		
20	FOR PRELIMINARY DESIGN	10-05-2017	A		

NOTE:  
TOTAL AREA = 15 ACRES  
GREENEY AREA : 5.16 ACRES

1. ALL DIMENSIONS ARE IN MM

SITE LEVELS

- 1. JETTY TOP : +4.300 MSL
- 2. GRINDING UNIT BUILDING FFL IS +4.900 MSL (±0.000 M)

PENNA CEMENT INDUSTRIES LIMITED  
KRISHNAPATNAM (V), NELLORE (DIST), ANDHRA PRADESH

PLANT LAYOUT OF  
CLINKER GRINDING UNIT

DATE	SCALE	PROJECT NO.	SHAWING NO.	REVISION
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO
30.04.2014	1:2500	NO	NO	NO

PROPOSED 2.0 MTPA  
CLINKER GRINDING UNIT

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