PRE - FEASIBILITY REPORT

FOR

Proposed Cement Plant (Dalmia DSP Unit)
Clinker (3.0 MTPA), Cement (2.25 MTPA),
WHRS (10 MW) and D.G. Set (1000 KVA)

At

Village & Tehsil: Rajgangpur,
District: Sundergarh (Odisha)

APPLICANT

M/s. OCL India Limited
Hansalya Building, 12th Floor,
15, Barakhamba Road, New Delhi - 110 001
Phone No. - +91 98900 15746
Fax No. : 011-23313303
E-mail: amandeep@ocl.in

October, 2016

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ABBREVIATIONS

APCE's	Air Pollution Control Equipments
CPCB	Central Pollution Control Board
CRZ	Central Regulation Zone
CSR	Corporate Social Responsibilities
DG	Diesel Generator
DSP	Dalmia Special Product
ESP	Electrostatic Precipitator
ESE	East of South East
EIA	Environmental Impact Assessment
FY	Financial Year
Ha	Hectare
KVA	Kilo-Volt-Ampere
KLD	Kilo Littre Per Day
KM	Kilo Meter
Kg	Kilogram
MW	Mega Watt
LS	Limestone
MTPA	Million Tonnes Per Annam
ML	Mining Lease
MoEF & CC	Ministry of Environment, Forest & Climate Change
NW	North West
NE	North East
NH	National Highway
NNE	North of North East
OPC	Ordinary Portland Cement
OCL	Odisha Cement Limited
PF	Protected Forest
PPC	Portland Pozzolana Cement
PH	Pre-Heater
RF	Reserved Forest
R&R	Rehabilitation and Resettlement
ROM	Run of Mine
SW	South West
SSW	South of South West
STP	Sewage Treatment Plant
SH	State Highway
TPD	Tonnes Per Day
TPA	Tonnes Per Annum
VRM	Vertical Roller Mill
WHRS	West Heat Recovery Boiler

PRE - FEASIBILITY REPORT

1.0 EXECUTIVE SUMMARY

M/s. OCL India Limited is proposing Cement Plant (Dalmia DSP Unit) - Clinker (3.0 MTPA), Cement (2.25 MTPA), WHRS (10 MW) and D.G. Set (1000 KVA) at Village & Tehsil: Rajgangpur, District: Sundergarh (Odisha).

Table - 1
Salient Features of the Project

S. NO.	PARTICULARS	DETAILS		
A.	*Nature & Size of the Project*	**S. No.**	**Particulars**	**Proposed Capacity**
		1.	Clinker (MTPA)	3.0
		2.	Cement (MTPA)	2.25
		3.	WHRS (MW)	10
		4.	D.G. Set (KVA)	1000
B.	*Category of the Project*	As per EIA Notification dated 14th Sept., 2006, as amended from time to time; this project falls under S. No. 3 (Material Production), Project Activity '3 (b)' Cement Plants.		
C.	*Location Details*			
	Village	Rajgangpur		
	Tehsil	Rajgangpur		
	District	Sundergarh		
	State	Odisha		
	Latitude	22° 11' 52.69" N to 22° 12' 18.28"N		
	Longitude	84° 34' 25.20" E to 84° 34' 50.62" E		
	Toposheet No.	73 B/7, 73 B/8, 73 B/11 & 73 B/12		
	Location Map has been shown in Figure - 1			
D.	*Area Details*			
	Total Plant Area	97.06 acres		
	Greenbelt / Plantation Area (ha)	32.02 acres (i.e. 33% of the total plant area) will be developed under Greenbelt / Plantation.		
E.	*Environmental Setting Details (with approximate aerial distance and direction from the project site)*			
1.	Nearest Town	Rajgangpur (0.5 km in East direction)		
2.	Nearest City	Rourkela (30.0 km in ENE direction)		
3.	Nearest National Highway / State Highway	SH - 10 (1.0 km in North direction)		
4.	Nearest Railway station	Rajgangpur (1.5 km in SSE direction)		
5.	Nearest Airport	Birsa Munda Airport, Ranchi (145 km in NE direction)		

S. NO.	PARTICULARS	DETAILS
6.	Archaeological important site	None within 10 km radius
7.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, within 10 km radius	No National Park, Wildlife Sanctuary, Biosphere Reserve falls within 10 km radius of the project site.
8.	Reserved Forests (RF) / Protected Forests (PF) etc. within 10 km. radius	o Gurhiali RF (~1.5 km in West direction) o Chhatam RF (~6.0 km in SW direction) o Chudia RF (~7.0 km in SSE direction) o Khatang RF (~7.0 km in WNW direction) o Datarampur RF (~7.5 km in NNE direction) o Reserve Forest (~7.5 km in NNE direction) o Rathuria RF (~7.5 km in NNE direction) o Luhuraberni RF (~8.0 km in WSW direction) o Laing RF (~8.5 km in NE direction) o Laimura RF (~9.0 km in ENE direction) o Kumaria RF (~9.0 km in SE direction) o Datani RF (~9.0 km in NNE direction) o Chhatam RF (~9.5 km in SSE direction)
9.	River / Water Body (within 10 km radius)	o Pada Nadi (~0.5 km in North direction) o Phakoroparha Nadi (~1.0 km in WSW direction) o Nakti Jor (~3.0 km in NWW direction) o Silikudar Nala (~3.5 km in SSW direction) o Mandria Nala (~4.5 km in ENE direction) o Gentijoria Nala (~5.5 km in WSW direction) o Dalki Nala (~5.5 km in North direction) o Peru or Pichhra Nadi (~6.5 km in NE direction) o Kansbahal Dam (~7.0 km in SE direction) o Jharia Nala (~7.5 km in SSE direction) o Dumari Nala (~8.0 km in SSE direction) o Barhajor Nala (~8.0 km in ENE direction) o Rircha Nala (~8.5 km in ENE direction) o Mandira Reservoir (~9.0 km in NE direction) o Shukha Nala (~9.0 km in SSE direction) o Barhajor Nadi (~9.0 km in SSE direction) o Sankh River (~9.5 km in ENE direction)
10.	Seismic Zone	Zone - II [as per IS 1893 (Part-I): 2002]
F.	*Cost Details*	
	Total Cost of the Proposed Project	Rs. 1874 Crores
	Cost for Environment Management Plan	) Capital Cost - Rs. 95 Crores) Recurring Cost - Rs. 5 Crores / annum.

S. NO.	PARTICULARS	DETAILS	
G.	*Basic Requirements for the project*	*Requirements*	*Source*
	Water Requirement (KLD)	3170	Nakti Nallah
	Power Requirement (MW)	45	State Electricity Board / Grid
	Man Power Requirement	365	Unskilled / Semi-skilled - local area and Skilled - outside / local

2.0 INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

(i) Identification of Project and Project Proponent

Dalmia Bharat Group has substantial presence in entire South India through its cement business; the cement plants in the South are located in Tamil Nadu (Dalmiapuram & Ariyalur) and Andhra Pradesh (Kadapa), with a capacity of 9 million tonnes per annum. The group have significant operations in the North East with a total current capacity (along with its subsidiaries and associate) of 17 million tonnes which will be soon expanded to 22 million tonnes after completion of expansion projects.

M/s OCL India Limited is the flagship company of 'Dalmia Group' of companies, set up and operating from eastern India. The OCL India Limited (formerly Odisha Cement Limited) commonly known as "OCL" was incorporated in the year 1949 and the first wet process Cement Plant with installed capacity of 500 TPD was commissioned in the year 1951. This was one of the first industries in the state of Odisha to have been commissioned during that time. OCL commissioned its Refractory Plant in the year 1954, which today has grown into one of the largest composite Refractory Plants in the country. It manufactures Silica, Basic Burnt Magnesia Carbon, Fireclay & High Alumina Bricks, Continuous Casting, Slide Gate Refractories, Castables and Precast blocks Basic, Silica high alumina Ramming Mases/Mortars.

The company changed its name from Orissa Cement Ltd, to OCL India Limited w.e.f. 15.01.1996 to reflect its multifarious activities.

OCL's Cement Plant is one of the most modern dry process cement plants in India. 'Konark' brand cement manufactured by OCL is the market leader in the State of Odisha and has emerged as a brand synonym of premium quality cement. Presently, its installed capacity for the factories located at Rajgangpur Cement Works, Kapilas Cement Works and Bengal Cement Works is 6.7 Million Tonne per annum.

(ii) Brief description of nature of the project

M/s. OCL India Ltd. is proposing Cement Plant (Dalmia DSP Unit) - Clinker (3.0 MTPA), Cement (2.25 MTPA), WHRS (10 MW) and D.G. Set (1000 KVA) at Village & Tehsil: Rajgangpur, District: Sundergarh (Odisha).

As per EIA Notification dated 14th September, 2006, as amended from time to time; this project falls under S. No. 3 (Material Production), Project Activity '3 (b)' Cement Plants.

(iii) Need for the project and its importance to the country and or region

The Indian cement industry is large, growing and with consumption of just 185kg/capita/yr in 2011 (compared to global average of ~300 kg/capita/yr) the country itself has the capacity to demand significantly more cement as it develops.

Cement is an essential ingredient for the modern building construction. The new generation cement plant in India now employs the latest technology for better efficiency, energy conservation and economics of large capacity production. The improved market conditions witnessed recently, after a grip of recession over a long period, are expected to continue due to high priority being given by the Government to housing and infrastructure and also in view of the massive investment proposed in industry and rural sectors. Therefore, there is an urgent need to increase the cement production capacity in the country in spite of severe resource constraints

Cement is the most important construction material manufactured in Odisha accounting for about 90% of the gross value of production of non-metallic building materials. The cement industry is a pioneer modern manufacturing industry in Odisha.

Now with the government of India giving push to various infrastructure projects, housing facilities and road networks, the cement industry in India is currently growing at an enviable pace and further growth in the Indian cement industry is expected in the coming years. Therefore, there is an urgent need to increase the production capacity in the country.

Hence, the proposal of Cement Plant by M/s. OCL India Ltd. with the new plant to cater the increased demand of cement in the eastern region of India.

(iv) Demand- Supply Gap

India's cement demand is expected to reach 550-600 million tonnes per annum (MTPA) by 2025. Demand - Supply projection for cement on National and State basis reveals that there exists an imbalance between availability and demand of cement particularly in eastern region. Cement is the most important construction material manufactured in Odisha accounting for about 90% of the gross value of production of non-metallic building materials. The cement industry is a pioneer modern manufacturing industry in Odisha. Under these circumstances to bridge the gap, M/s. OCL India Ltd. is Cement Plant (Dalmia DSP Unit) - Clinker (3.0 MTPA), Cement (2.25 MTPA), WHRS (10 MW) and D.G. Set (1000 KVA).

(v) Imports vs. Indigenous Production

The proposed project will utilize locally available raw material namely Limestone & other additives. However, some imports will be required for Coal and Petcoke.

(vi) Export Possibility

Export of finished product to neighbouring Countries will depend upon opportunities available in future.

(vii) Domestic / Export Markets

Domestic market mainly includes Odisha, West Bengal, Jharkhand, Bihar and Chhattisgarh.

(viii) Employment Generation (Direct and Indirect) due to the project

M/s. OCL India Limited will employ maximum possible staffing from nearby area. Only where skills are not available locally, staff will be hired from outside. The proposed project will generate both direct & indirect employment. Approx. 365 Persons will be provided employment during operational phase of the project. In addition, approx. 500 contract labours will also be employed during operation / maintenance etc., which will be sourced from nearby villages.

Table - 2

Manpower Requirement

Particulars	Requirement
Skilled	40
Semi-skilled	36
Unskilled	289
Total	**365**

3.0 PROJECT DESCRIPTION

(i) Type of Project including interlinked and independent projects if any

M/s. OCL India Ltd. is proposing Cement Plant (Dalmia DSP Unit) - Clinker (3.0 MTPA), Cement (2.25 MTPA), WHRS (10 MW) and D.G. Set (1000 KVA) at Village & Tehsil: Rajgangpur, District: Sundergarh (Odisha).

Interlinked and Independent Projects:

Interlinked Project:

Lanjiberna Limestone and Dolomite Mine (ML Area: 873.057 ha) with expansion in Production Capacity from 4.2 to 17.0 Million TPA (ROM) At Villages- Alanda, Blhabandh, Jhagarpur, Kesarmal, Ralberna, Katang, Dhauradha, Lanjiberna and Kukuda Tehsil-Rajgangpur and Kutra, District-Sundergarh (Odisha).

Environmental Clearance for the existing capacity has already been obtained from MoEF, New Delhi vide their letter No-J-11015/372/2007/-IA.II (M) dated 28th April, 2010.

Independent Project: There is no independent project.

(ii) Location (map showing general location, specific location, and project boundary & project site layout) with coordinates

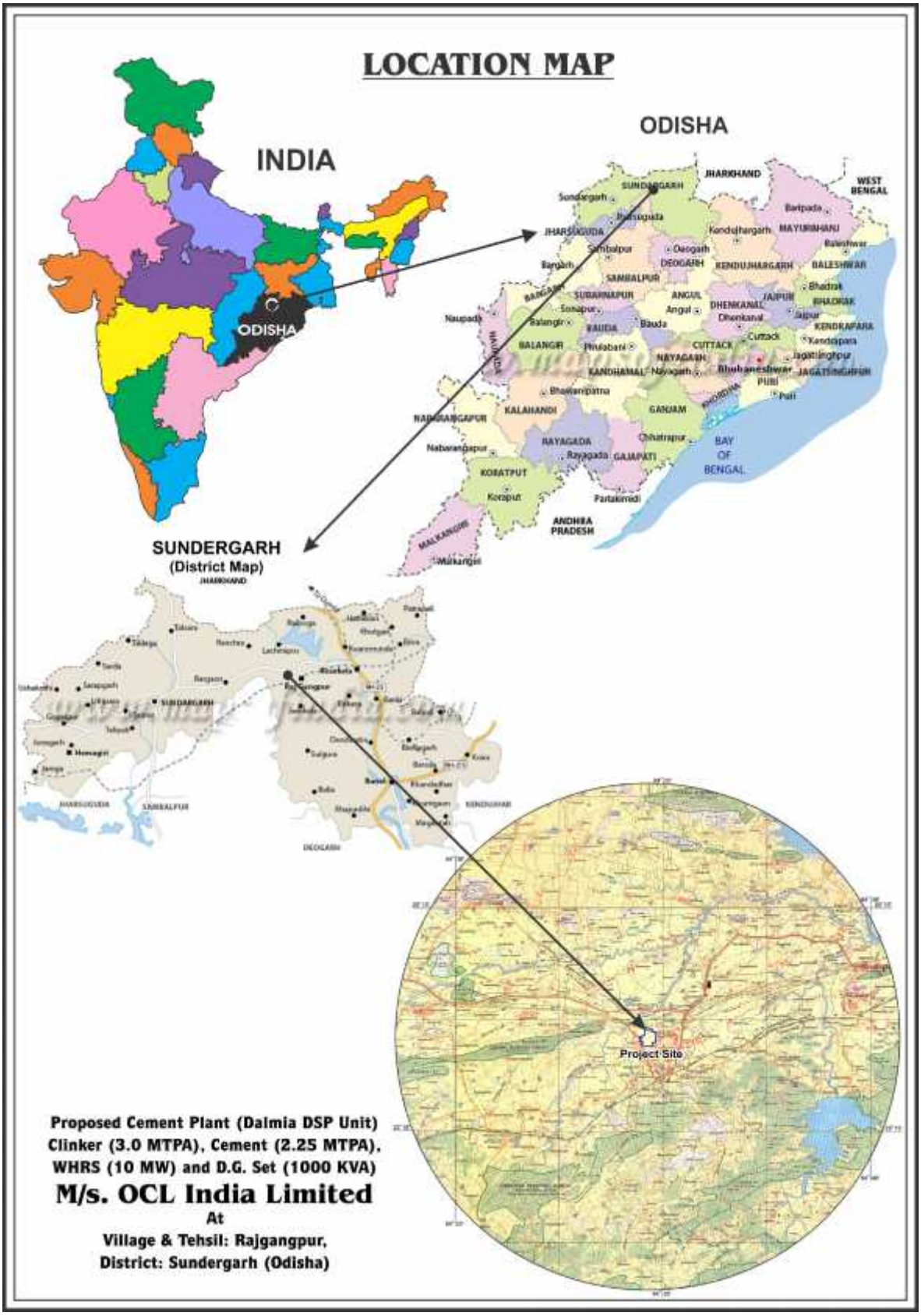


Figure - 1: Location Map

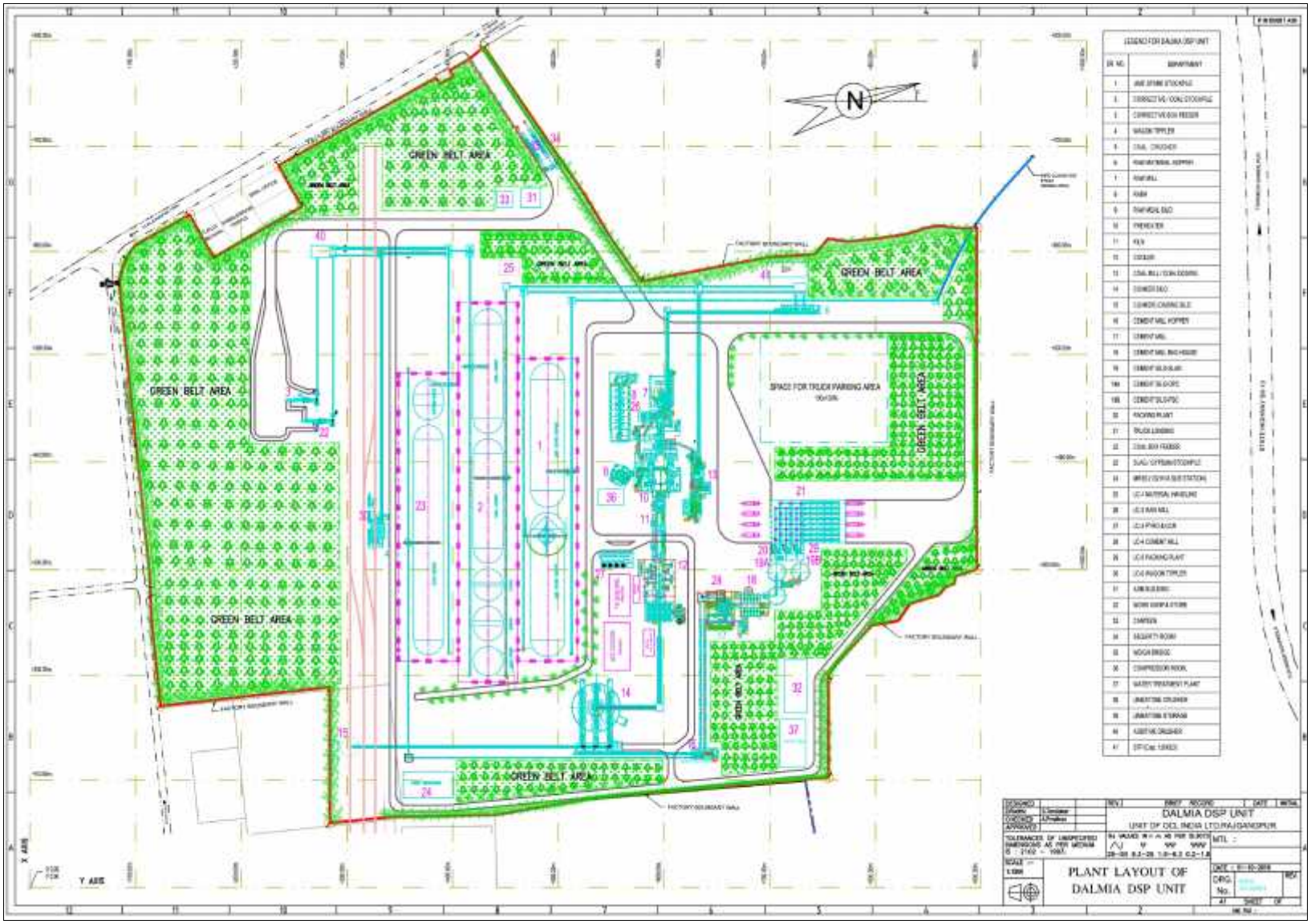


Figure - 2: Plant Layout

(iii) Key Plan

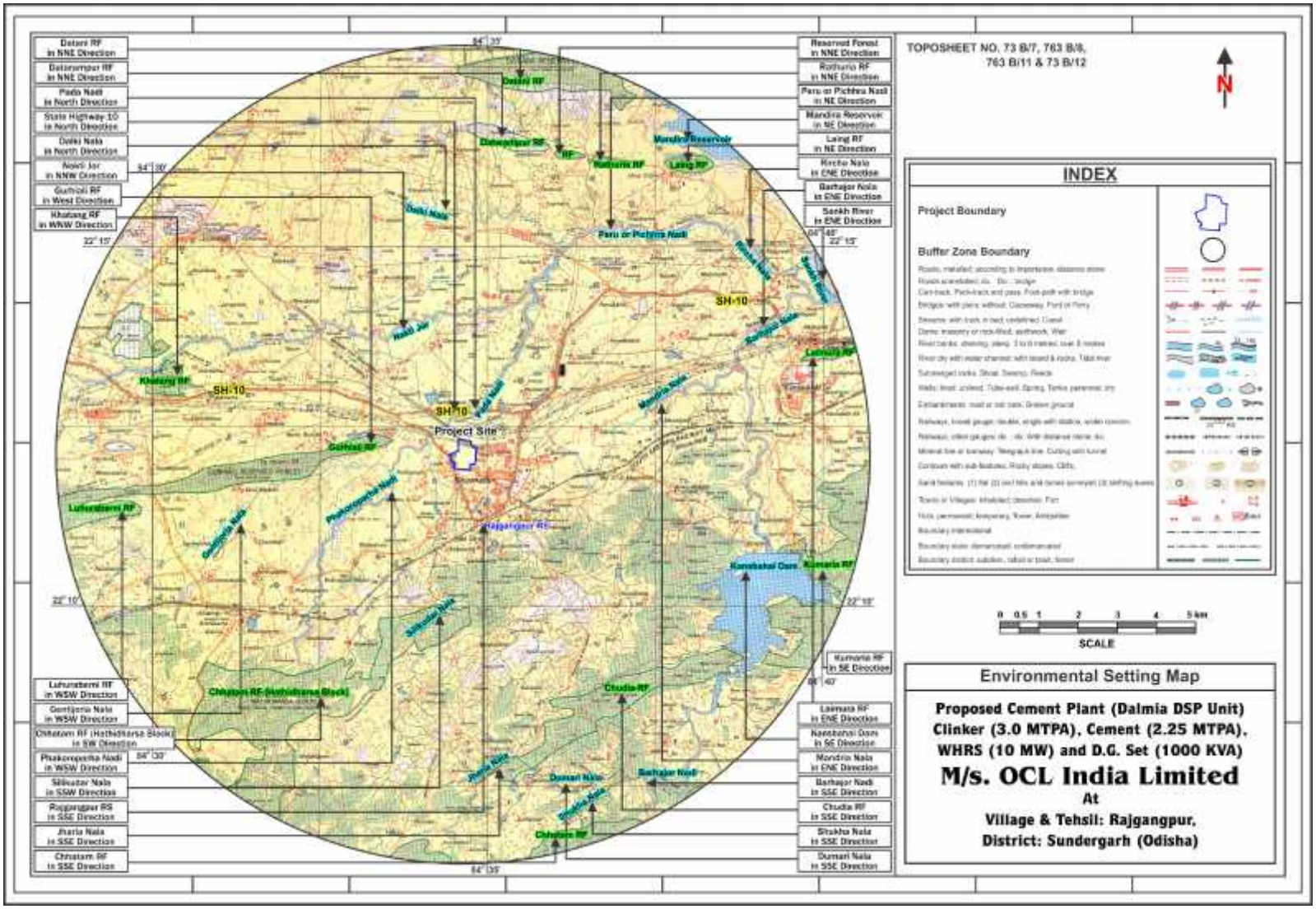


Figure - 3: Key Plan

(iv) Details of alternative sites consideration and basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

Since, the Proposed Cement Plant site (Dalmia DSP Unit) has been considered near the existing mines of sister unit of M/s. OCL India Limited; therefore, no alternative site is examined.

(v) Size or magnitude of operation

M/s. OCL India Ltd. is proposing Cement Plant - Clinker (3.0 MTPA), Cement (2.25 MTPA), WHRS (10 MW) and D.G. Set (1000 KVA) at Village & Tehsil: Rajgangpur, District: Sundergarh (Odisha).

As per EIA Notification dated 14th Sept., 2006 as amended from time to time, this project falls under S. No. 3 (Material Production), Project Activity '3 (b)' Cement Plants.

(vi) Project description with process details (a schematic diagram/ flow chart showing the project layout, components of the project etc. should be given)

Project Description

S. No.	Particulars	Proposed Capacity
1.	Clinker (MTPA)	3.0
2.	Cement (MTPA)	2.0
3.	WHRS(MW)	10
4.	DG Set (KVA)	1000

Process Description

<u>Cement Plant</u>

The process involves in cement production largely comprises of the following steps:

- Transport of excavated limestone from mine site via covered conveyer belt.
- Raw Mix Preparation & Homogenization
- Fuel preparation (Coal/Petcoke/Alternative Fuels)
- Calcination
- Clinkerization & storage
- Cement Grinding, Packing & Dispatch

✓ ***Transport of excavated limestone from mine site***

Limestone of required size will be transported to Cement Plant from Lanjiberna Limestone Mines through Covered Conveyor Belts.

✓ ***Raw Mix Preparation & Homogenization***

- *Raw Material Reclaiming and Transport-* The crushed limestone will be transported to limestone yard through a series of belt conveyors and stored in a pile through automatic stacker machine. Once the pile of required quantity and quality is achieved then reclaimer is used to reclaim the stockpile material. By using stacker and reclaimer machines, pre-blending takes place to minimize fluctuation in crushed limestone quality. The pile of LS is continuously

reclaimed, when raw mill is in operation and stored in hopper at raw mill section. Magnetic separators are installed over the belt conveyers to remove any foreign materials.

- *Raw Mill Feed* -The Limestone along with additives will be transported from their respective feed bins via weigh feeders and belt conveyor to the raw mill system.
- *Raw Meal Grinding Process* - Raw Mill will be used to grind the raw mix which is capable to meet the production needs. The raw grinding section comprises of Mills, fans, separators & cyclones as well as all ductwork and control dampers. The ground product from raw mill is known as 'Raw Meal'.
- *Raw Meal Transport and Storage* - From the separator cyclones the raw meal is/ will be transported via air slides and a bucket elevator to the homogenizing silo.

  Homogenizing silo will be prerequisite for raw meal blending to achieve consistent quality of Kiln feed. This will also ensure regulated feed with minimum variation in quality for smooth operation of Kiln. A continuous blending silo of RCC construction of required capacity will be used for the same. The silo capacity would be suitable for the required daily clinker production.

✓ ***Clinkerization & Clinker Production***

- *Raw Meal Transport to Kiln Feed*- From the homogenizing silo the raw meal will be extracted to the Kiln feed bin below the silo.
- *Kiln Feed*-From the Kiln feed bin the material will be transported through mechanical conveyors with measurement and control of kiln feed rate.
- *Pre-heating* - The pre-heating equipment will be comprised of the multi stage cyclone system connected with gas ducts and meal chutes, the down comer duct and the ID fan. In cyclone pre-heater system, an efficient heat transfer takes place to finally disperse the raw material particles, when they come in contact with hot gases from kiln.

  The raw meal, which is fed into the top stage gas duct, is carried by hot gas steam into cyclone. The material gets separated from gas in cyclones and then travels downwards and through meal chute is discharged into next lower stage gas duct. In this way, material comes into contact with high temperature gases and gets pre-heated and partially calcined and then enters the pre-calcinator.

  The calciner will provide sufficient residence time for efficient combustion of not only conventional coal but also for Petcoke and other alternate fuels which are difficult to handle. The calciner will be equipped with multi firing points for the above said requirements.

  The preheater will be equipped with induced draught fan for ensuring counter current heat transfer from the kiln through the calciner& the series of cyclones.

  The exit hot gas from the preheater will be utilized for Waste Heat Power recovery system and drying of raw material in Raw Mill & drying of coal / Petcoke in Coal Mill and for Clinker / slag grinding with/without fly ash/gypsum for Cement production.

- *Pre-calcining and Kiln* - These groups consist of an in-line low NO_2 pre-calciner, tertiary air duct from the kiln hood and a rotary kiln.

  In the pre-calcinator, further Calcination takes place by firing pulverized coal/pet coke to provide the necessary heat in the kiln and the Pre-calciner located at the bottom of the pre-heater. Calcined material from bottom stage cyclone is fed to the kiln. The feed travels down as the kiln rotates. The complete chemical reaction takes place when the material reaches the burning zone and cement clinker is formed.

- *Clinker Cooler* - This equipment recuperates heat from hot clinker, which reduces the consumption of fossil fuel and other fuels required for cement clinker making. It is a spillage-free and high efficiency third generation clinker cooler with roller crusher, ESP (electrostatic precipitator) including fan and stack, WHRS (waste heat recovery system) for cooling clinker to 65 degree Centigrade plus ambient.

  Hot clinker discharged from the Kiln drops on the grate cooler and gets cooled.

- *Clinker Transport and Storage* - The clinker leaving the clinker cooler and crusher will be transported with deep pan/bucket conveyor to the main clinker silo of designed capacity.

✓ ***Cement Grinding, Storage, Packing & Dispatch***

- *Cement Grinding & Storage* - Clinker and gypsum with fly ash and mineral components according to requirement are extracted from their respective hoppers and fed to the Cement Mill. Cement Mill grind the feed to a fine powder and the cement, so provided is transported to RCC Cement Silos for dispatch.
- *Cement Packing & Dispatch* - Cement extracted from cement silos is packed in bags by rotary packing machines and dispatched to consumers by road/ rail.

Process flow chart is shown in Figure - 4.

<u>Waste Heat Recovery System</u>

M/s OCL India Limited is proposing installation of Waste Heat Recovery System (WHRS) of 10 MW for re-utilization of the exhaust gases from the Pre-heater/ Cooler to generate electric power and consequently reduce consumption of grid power through fossil fuel. The project will contribute to the more efficient use of energy and will reduce reliance on exhaustible fossil fuel.

The PH boiler will be a vertical configuration single drum boiler. AQC boiler will be vertical single drum boiler. Both the boilers are top supported, outdoor Unit suitable for the specified Pre-heater and clinker Cooler exhaust of cement plant.

The Waste Heat coming out of Pre-heater and cooler from present kilns and proposed kiln will be used in Waste Heat Recovery Boiler to produce low pressure steam which is fed to turbine to produce power of 10 MW. WHR boiler will be based on steam rankine cycle and envisaging recovery of heat from exhaust gases at two points viz. pre-heater and clinker cooler (tapping at exhaust or mid-cooler). Steam generated in the boiler will be used in the turbine to generate electricity in the generator. ***Process flow chart is shown in Figure - 5.***

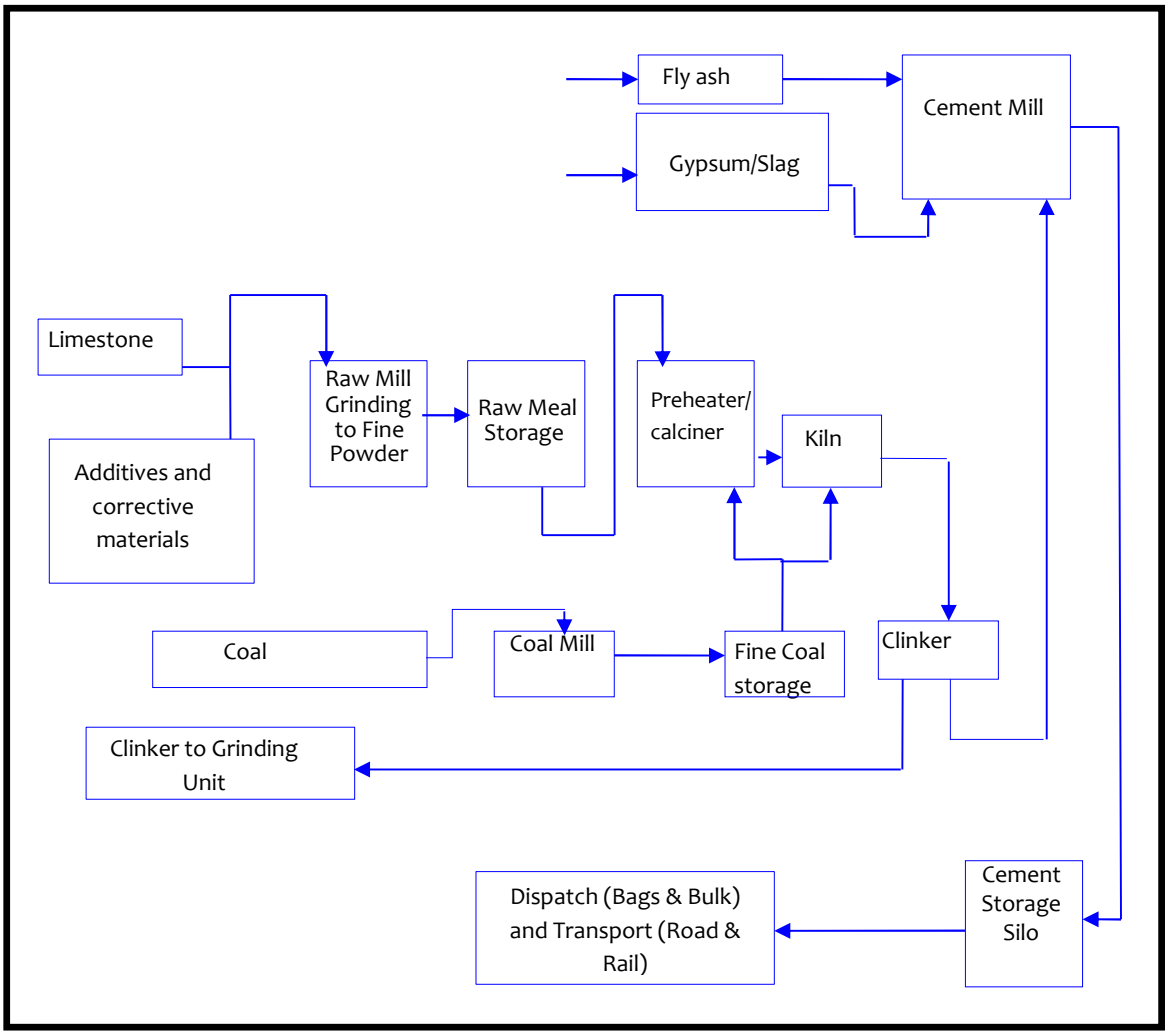


Figure - 4: Process Flow Chart of Cement Plant

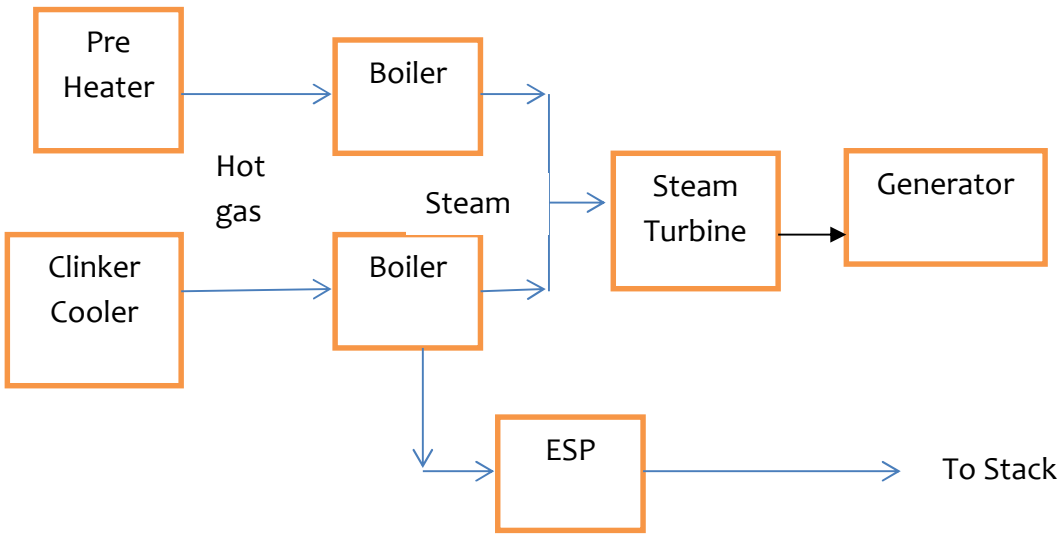


Figure - 5: Process Flow Chart of WHRS

D.G. Sets

M/s. OCL India Limited is proposing installation of DG sets of 1000 KVA for use in case of shutdown or non supply of State Electricity Board/Grid and in case of emergency.

(vii) Raw material required along with estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product.

a) Raw Material Requirements:

Details reg. raw material is given in Table - 3 and reg. fuel in Table - 4:

Table - 3

Raw Material Requirement, Source & Transportation

S. No.	Raw Material	Requirement (MTPA)	Source	Distance / Mode of Transportation
1.	Limestone	4.6	Lanjiberna Limestone Mine	10 km/ Covered Conveyer belts
2.	Morrum	0.1	Uparbahal	12 km / Road
3.	Clay / Shale Stone, Non-Magnetic Char, Cinder and Sandstone	0.15	Rajgangpur	2 km / Road
4.	Fly Ash	0.08	Rajgangpur, OISL Jampali, Rourkela Steel Plants, Jindal Steel Angul, HINDALCO Hirakud, IB Thermal Baharpali, Aditya Alumina Lapanga	01 to 190 km / Road
5.	Granulated Slag	1.46	Raurkela Steel Plant; Bhushan Steel & Power Ltd. Lapanga; Nilanchal Ispat Nigam, Dubari; SAIL-Bhilai Steel Plant; Tata Steel -Jamshedpur; Tata Steel-Kalinganagar; Jindal Steel & Power, Angul; RINL Vizag	45 to 635 km / Rail
6.	Chemical Gypsum	0.075	Coromondal Fertilizer Ltd., Vizag; TATA Chemical Ltd., Haldia; Paradeep Phosphates Ltd. Paradeep)	438 to 630 km / Rail
7.	Mineral Gypsum	0.035	⟩ FCI, Jodhpur ⟩ Imported OMAN/IRAN	⟩ 1988 km / Rail ⟩ 469 km / Rail

Table - 4

Fuel Requirement

S. No.	Name of Fuel	Quantity Required (MTPA)	Calorific value (Kcal./kg)	% Ash	% Sulphur	Source	Distance & Mode of Transportation
1.	Coal-Indigenous	0.54	4000 - 4500	40 - 55	0.4 - 1.5	MCL	Rail
2.	Coal-Imported	0.43	5100 - 5600	18 - 23	0.4 - 1.5	South Africa/ Indonesia	Rail
3.	Petcoke	0.28	7600 - 8100	2 - 6	6 - 12	Saudi/US/India	Rail

b) Marketing Area and Mode of transportation of Final Product

The primary markets of interest for M/s. OCL India Limited are eastern region of India. No cement export is envisaged. Mode of transportation for final product will be road / railways.

(viii) Resources optimization/ recycling and reuse envisaged in the project, if any, should be briefly outlined.

- No solid waste generated from cement manufacturing process.
- In cement plant, water used for cooling at various stages will be totally absorbed in the process or will be subjected to evaporation & recycling and hence, no waste water will be discharged from the cement plant.
- Domestic wastewater generated from Plant will be treated in proposed STP and the treated effluent will be utilized for greenbelt development/ plantation.

(ix) Availability of water its source, energy /power requirement and source should be given.

a) Water Requirement and Source

Water requirement for the proposed Cement Plant (Dalmia DSP Unit) is 3170 KLD; which will be sourced from Nakti Nallah. Break - up of water requirement is given in Table - 5.

Table - 5
Water Requirement

Purpose	Proposed Requirement (KLD)
Cement Plant	2240
WHRS	130
Domestic	200
Greenbelt / Plantation	600
TOTAL	**3170**

b) Power Requirement and Source

The power requirement for the proposed Cement Plant is 45 MW; which will be sourced from State Electricity Board / Grid.

(x) Quantity of waste to be generated (liquid and solid) and scheme for their management/disposal

- In cement plant, water used for cooling at various stages will be totally absorbed in the process or will be subjected to evaporation & recycling and hence, no waste water will be discharged from the cement plant.
- Domestic wastewater generated from Plant will be treated in proposed STP and treated effluent will be used for greenbelt development / plantation.
- No solid waste will be generated from the cement manufacturing process.
- Sludge generated from STP will be used as manure in greenbelt development/ plantation.
- Small quantity of used oil and grease will be generated, which will be disposed / sold to the CPCB authorized recyclers.

4.0 SITE ANALYSIS

(i) Connectivity

The site is well connected to SH - 10 (~1.0 km in North direction from the project site). Nearest city to the project site is Rourkela (~30.0 km in ENE direction from the project site). Nearest Railway Station is Rajgangpur (~1.5 km in SSE direction from the project site) and nearest Airport is Birsa Munda Airport, Ranchi (~145 km in NE direction from the project site).

The site is well connected with communication facilities like telephone, fax, wireless and telex and as such, no constraints are envisaged in this aspect as the Tehsil and District headquarters are near to the site.

(ii) Land form Land use and land ownership

Total land area is required for the Cement Plant is 97.06 acres; which is under the possession of M/s. OCL India Limited. No forest land is involved.

The plant area break- up is given in Table - 6:

Table - 6
Plant Area Break- Up

S. No.	Unit	Area (Acres)
1.	Plant facilities	49.27
2.	Storage facilities	10.02
3.	Approach Roads	5.75
4.	Greenbelt / Plantation	32.02
	Total Plant Area	**97.06**

(iii) Topography

Sundergarh district of Odisha at an elevation of about 219 meters above mean sea level. The area of Rourkela is 200 square kilometres approximately. Being situated on Howrah-Mumbai rail track, Rourkela had an added advantage of the steel plant being set up there. Red and laterite soils are found here which are quite rich in minerals. The area near Rourkela is rich in iron-ore hence a steel plant is situated in Rourkela. Bolani and Barsuan are the two most prominent mines situated near the town. Rourkela is situated in a hilly region. A small hill range named Durgapur runs from the heart of the town dividing it into plant area and the steel township. Some seasonal Nallah and rivers are flowing in the area.

(iv) **Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forests, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the gazette notification should be given**

Table - 7

Environmental Settings of the Area

S. No.	Particulars	Details *(with approx. aerial distance & direction from the project site)*
1.	Nearest Town	Rajgangpur (0.5 km in East direction)
2.	Nearest City	Rourkela (30.0 km in ENE direction)
3.	Nearest National Highway / State Highway	SH - 10 (1.0 km in North direction)
4.	Nearest Railway station	Rajgangpur (1.5 km in SSE direction)
5.	Nearest Airport	Birsa Munda Airport, Ranchi (145 km in NE direction)
6.	Archaeological important site	None within 10 km radius
7.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, within 10 km radius	No National Park, Wildlife Sanctuary, Biosphere Reserve falls within 10 km radius of the project site.
8.	Reserved Forests (RF) / Protected Forests (PF) etc. within 10 km. radius	o Gurhiali RF (~1.5 km in West direction) o Chhatam RF (~6.0 km in SW direction) o Chudia RF (~7.0 km in SSE direction) o Khatang RF (~7.0 km in WNW direction) o Datarampur RF (~7.5 km in NNE direction) o Reserve Forest (~7.5 km in NNE direction) o Rathuria RF (~7.5 km in NNE direction) o Luhuraberni RF (~8.0 km in WSW direction) o Laing RF (~8.5 km in NE direction) o Laimura RF (~9.0 km in ENE direction) o Kumaria RF (~9.0 km in SE direction) o Datani RF (~9.0 km in NNE direction) o Chhatam RF (~9.5 km in SSE direction)
9.	River / Water Body (within 10 km radius)	o Pada Nadi (~0.5 km in North direction) o Phakoroparha Nadi (~1.0 km in WSW direction) o Nakti Jor (~3.0 km in NWW direction) o Silikudar Nala (~3.5 km in SSW direction) o Mandria Nala (~4.5 km in ENE direction) o Gentijoria Nala (~5.5 km in WSW direction) o Dalki Nala (~5.5 km in North direction) o Peru or Pichhra Nadi (~6.5 km in NE direction) o Kansbahal Dam (~7.0 km in SE direction) o Jharia Nala (~7.5 km in SSE direction) o Dumari Nala (~8.0 km in SSE direction) o Barhajor Nala (~8.0 km in ENE direction) o Rircha Nala (~8.5 km in ENE direction) o Mandira Reservoir (~9.0 km in NE direction)

S. No.	Particulars	Details *(with approx. aerial distance & direction from the project site)*
		o Shukha Nala (~9.0 km in SSE direction) o Barhajor Nadi (~9.0 km in SSE direction) o Sankh River (~9.5 km in ENE direction)
10.	Seismic Zone	Zone - II [as per IS 1893 (Part-I): 2002]
11.	Soil Type	Lateritic soils, Red sandy soils and red loamy soils

(v) Existing Infrastructure

There is no existing infrastructure.

(vi) Soil Classification

Soils predominate in the area: Lateritic soils, Red sandy soils and red loamy soils.

(vii) Climatic Data from Secondary Sources

Odisha being a maritime state in the east coast of India is cyclone prone and any storm formed in the Bay of Bengal mostly movement towards east coast during the storm season (March, April, May) and October, November, December). During the months of October-December & March-May the atmospheric pattern is favourable for movement of Cyclonic storm towards east coast of India. More number of Cyclonic Storms has the tendency to cross during to cross Odisha May and October-November in addition to monsoon months of June-September.

(viii) Social Infrastructure available

Telephone and medical facilities are available in the nearby towns. Educational Institutions, Technical Institute for skill up-gradation, Dispensary etc.

Almost all the villages in the buffer zone are electrified. Unser the Corporate Social Responsibilities, village's development will be undertaken.

5.0 PLANNING BRIEF

(i) Planning Concept (type of industries, facilities, transportation etc.) / Town and country Planning/ Development authority classification.

The proposed project is cement industry (Red Category). Transportation of materials will be done by road / rail / covered belt conveyors. Operational workers will be accommodated in Rajgangpur (nearest town to the project site); thus, no transportation facility will be required for them.

(ii) Population Projection

Marginal population influx is designated for the proposed project.

(iii) Land use planning

Proposed project area is 97.06 acres; which is under the possession of M/s. OCL India Limited. Out of the total plant area, 32.02 acres (33% of the total project area) will be developed under greenbelt / plantation.

(iv) Assessment of infrastructure demand (Physical & Social)

M/s. OCL India Limited has assessed the demand of infrastructure (Physical & Social) within the plant & in nearby area of the plant site and development activities will be undertaken under corporate social responsibilities program for rural development initiatives for the upliftment of the nearby communities from time to time.

(v) Amenities/Facilities

Ms. OCL India Limited will be providing all the amenities like dispensary, shopping complex, canteen etc. for the permanent and contract employees.

OCL will develop the amenities/facilities in nearby area of the plant site as per requirement of local people of the nearby area under corporate social responsibilities programme.

6.0 PROPOSED INFRASTRUCTURE

(i) Industrial Area (Processing Area)

The required land of 97.06 acres for proposed project is already under the possession of M/s. OCL India Limited. Following infrastructure will be provided as following:

- **Workshop**

  Adequately equipped workshops have been envisaged for all disciplines i.e. mechanical, electrical, electronic computer maintenance etc. at proposed cement plant.

- **Warehouse and Spare Parts Store**

  A store building will be constructed as warehouse or spare parts store. Fenced open-air yard with sheds will be built for storing heavy machinery parts.

- **Elevators, Cranes, Hoists and Maintenance Tools**

  Elevators, maintenance cranes/ hoists and all required specially designed maintenance tools for equipment and plant will be provided.

- **Technical & Administrative office**

  A suitable technical office & administrative office will be constructed for the project activities and operation phase.

- **Time and Security office**

  At the entrance of the main plant, a time office and a security office will be constructed.

- **Dispensary (Hospital)**

  A dispensary with first aid facilities will be provided in the plant premises.

- **Weighbridge**

  Two Electronic weighbridges will be provided to take care of the incoming and outgoing materials at the plant.

- **Bags go down**

  Space will be provided in the packing plant area for the storage of bags.

- **Parking**

  Adequate parking space will be provided in the plant premises for the parking of vehicles.

(ii) Residential Area (Non processing area)

All the facilities are available in Rajgangpur (nearest town to the project site) and operational workers will accommodate there only.

(iii) Greenbelt

Out of the total Plant area (97.06 acres), 32.02 acres (i.e. 33% of the total plant area) will be covered under greenbelt / Plantation.

(iv) Social Infrastructure

Proposed project will result in growth of the surrounding areas by increased direct & indirect employment opportunities in the region including ancillary development and supporting infrastructure.

(v) Connectivity

The site is well connected to SH - 10 (~1.0 km in North direction from project site). Nearest city to the project site is Rourkela (~30.0 km in ENE direction from the project site). Nearest Railway Station is Rajgangpur (~1.5 km in SSE direction from the project site) and nearest Airport is Birsa Munda Airport, Ranchi (~145 km in NE direction from the project site).

The site is well connected with communication facilities like telephone, fax, wireless and telex and as such, no constraints are envisaged in this aspect as the Tehsil and District headquarters are near to the site. All communication facilities such as telephone, telefax & internet are available in the vicinity of the project site.

(vi) Drinking Water

Domestic water requirement for the proposed Cement Plant is 200 KLD, which will be sourced from Nakti Nallah.

(vii) Sewerage system

Domestic waste water generated from plant will be treated in proposed STP and treated effluent will be used for greenbelt development/ plantation. STP sludge will be used as manure in greenbelt development/ plantation.

(viii) Industrial waste management

- No waste water will be generated from cement manufacturing process, as it is based on dry process technology.
- Water used for cooling at various stages of cement manufacturing will be partially evaporation and partially recycled; hence, no waste water will be discharged from the cement plant.
- Domestic waste water generated from Plant will be treated in STP and treated effluent will be used for greenbelt development/ plantation.

(ix) Solid waste management

- No solid waste will be generated from the cement manufacturing process.
- Sludge generated from STP will be used as manure in greenbelt development/ plantation.

(x) Power requirement and source

The power requirement for the proposed Cement Plant is 45 MW; which will be sourced from State Electricity Board / Grid.

7.0 REHABILITATION AND RESETTLEMENT (R & R) PLAN

(i) Policy to be adopted (Central/State) in respect of the project affected persons including home oustees, land oustees and landless labourers

R & R Plan is not applicable to the proposed project as the land area is already under the possession of M/s. OCL India Limited.

8.0 PROJECT SCHEDULE AND COST ESTIMATES

(i) Likely date of start of construction and likely date of completion

The project will start only after obtaining Environmental Clearance and all other required clearances from the statutory authorities.

(ii) Estimated project cost

- Capital Cost of the project: 1874 Crores.
- Environment Management Protection Cost:
  - Capital Cost of the project: 95 Crores
  - Recurring Cost/annum: Rs. 5 Crores/annum.

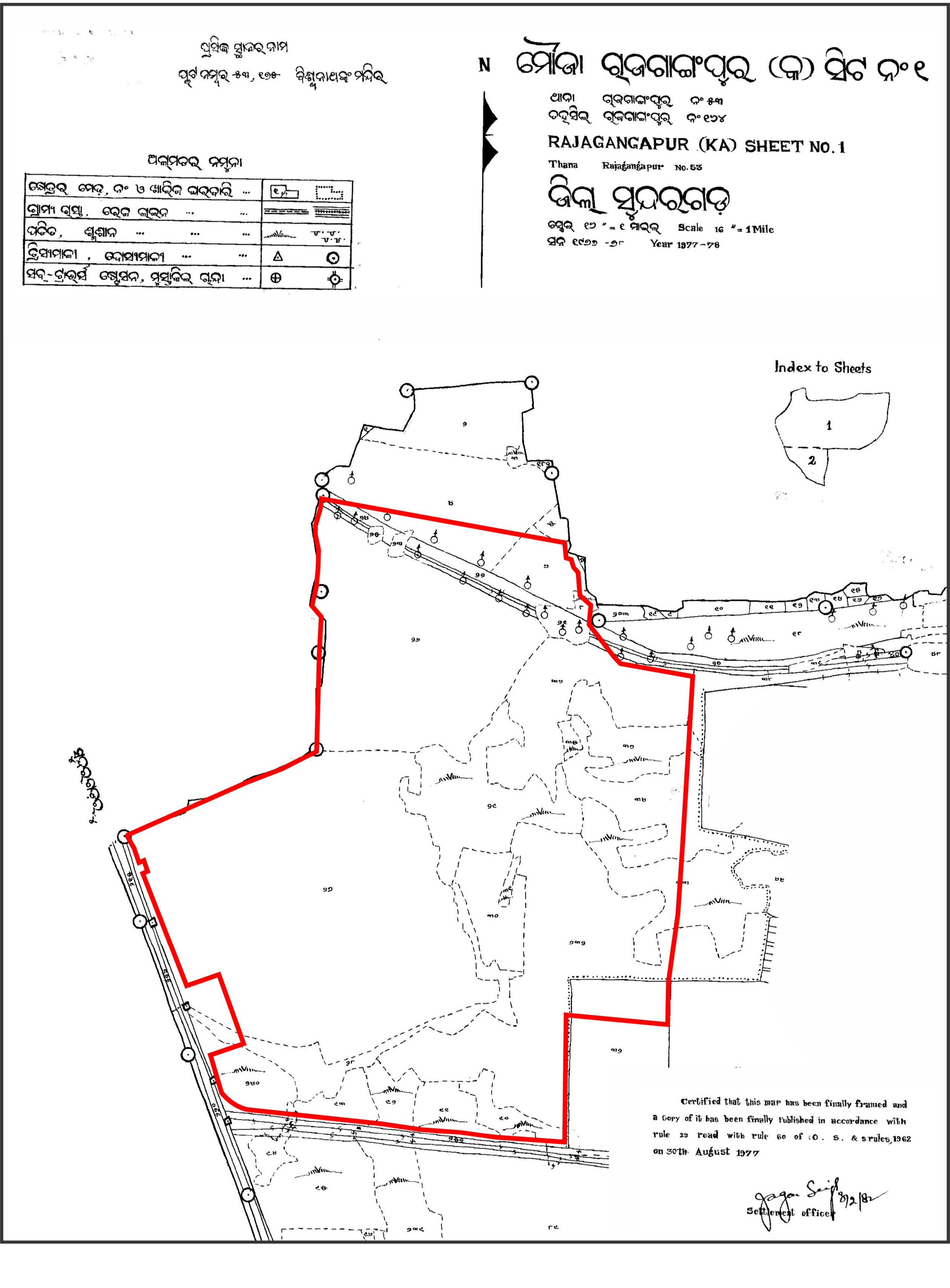
9.0 ANALYSIS OF PROPOSAL

(i) Financial and social benefits with special emphasis on the benefit to the local people including tribal, population, if any in the area

Proposed project will result in growth of the surrounding areas by increasing direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Special emphasis on Financial and social benefits will be given to the local people including tribal population, if any, in the area.

Development of social amenities will be in the form of medical facilities, education to underprivileged and creation of self help groups.

Odisha state will get revenues in terms of taxes and local people will get direct & indirect employment. Business opportunities for local community will be available like transport of cement to market, fly ash transport from power plant, maintenance & house-keeping contract work etc.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ମୌଜା ରାଜଗାଙ୍ଗପୁର (କ) ସିଟ ନଂ ୧
RAJAGANGAPUR (KA) SHEET NO. 1
Thana Rajagangapur No. 53
ଜିଲା ସୁନ୍ଦରଗଡ଼
Scale 16" = 1 Mile
Year 1977 - 78
Index to Sheets
1
2
Certified that this map has been finally framed and a copy of it has been finally published in accordance with rule 29 read with rule 60 of O. S. & S rules, 1962 on 30th August 1977
Settlement officer

Khata No.	Plot No.	Area (Ac.)	Kisam
51	21	0.570	Rail Line
	25	0.100	Rail Line
	29	5.640	Patit
	31	0.160	Patit
	33	5.300	Patit
	35	0.200	Patit
	37	2.500	Patit
	90	1.130	Patit
	92	1.160	Patit
Total		16.760	

50	26	15.400	Goda-II
	27	30.950	Goda-II
	30	2.310	Goda-II
	34	3.020	Goda-II
	36	6.000	Goda-II
	38	1.370	Goda-II
	91	1.520	Goda-II
	93	1.210	Goda-II
	32/232	15.290	Goda-II
	95/240	2.130	Goda-II
	44	1.100	Goda-II
Total		80.300	

Grand Total	97.060