FEASIBILITY REPORT

FOR

EXPANSION OF CEMENT PRODUCTION FROM 1.0 MTPA TO 1.15 MTPA

At:
Vill.: Kalyanpur
P.O.: Banjari
Dist.: Rohtas
(Bihar)

OF

M/s KALYANPUR CEMENTS LTD.
MAURYA CENTRE
1, FRASER ROAD
PATNA – 800 001

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Chapter – 1

EXECUTIVE SUMMARY

1.1 General Details:

'Kalyanpur Cements Ltd." (KCL), a Public Limited Company originally incorporated as Kalyanpur Lime & Cement Works Ltd. in Aug.'1937 and subsequently renamed in 1988 as Kalyanpur Cements Ltd.

'Kalyanpur Cements Ltd." (KCL) has been manufacturing cement at its Rohtas District plant in Bihar since 1946 and has been investing in expansion and technical enhancement repeatedly. The current production line was ordered and erected in 1991. Now KCL intends to expand its cement production capacity from 1 MTPA to 1.15 MTPA. KCL proposed to debottleneck its existing production process to increase its annual production upto 1.15 MTPA. There is no qualitative production process change envisioned. The machinery has enough spare capacity to deliver the extra production. KCL is the only running large industrial unit in this backward area of Bihar that is also naxal influenced, leading to significant job and value creation in the region. The expanded capacity would sustain KCL's economic viability for the near future.

1.2 Location:

The factory of 'Kalyanpur Cements Ltd." (KCL) is located in village Kalyanpur, P.O. Banjari ,Distt. Rohtas in Bihar . The area falls in survey of Topo sheet 63 P/14, Latitude : 24^{o} 40' 10", Longitude :83^{o} 59' 30". All seasonal road is available between Dehri –On- Sone and the plant site. Banjari is 35 Kms by road South of Dehri One Sone Railway Station [Grand Chord Eastern Railway] . About 1 Km East of Plant, River sone takes its course downstream to North to Join River Ganges near Patna. "Arjuna Hills", part of Kaimur Range of mountains proudly guard the area on other side of the plant.

1.3 RAW MATERIALS :

Lime stone is main raw materials for cement . The company has own captive lime stone quarries which cater to the requirement of lime stone for Factory. Coal, as main fuel, is obtained from Central and Eastern coal field Gypsum, Slag, Pozzolana, Blue dust are other raw materials which are procured from different sources, lime stone is a sedimentary rock consisting of carbonates of calcium and magnesium with silicates.

1.4 WATER REQUIREMENT:

At present 425 KLD water is being utilized at the proposed project with existing capacity. After proposed expansion 250 KLD additional water will be required and total water requirement will enhance upto 675 KLD. Domestic water requirement will be fulfilled by tubewells & plant water requirement will be fulfilled by Mines water discharge of KCL Captive Limestone Mines.

1.4 POWER REQUIREMENT:

At present power requirement of KCL is 13 MW which is being supplied by BSEB Sub Station Samhuta. KCL proposes to install a cogeneration power plant to fulfill the power requirement alongwith proposed expansion.

1.6 Pollution Control Measures:

1.6.1 Air Pollution:

KCL has installed various air pollution control equipment like ESPs in Raw Mill, Cooler and Cement Mill and bag filters in coal mill, Raw mill , grinding section following a strict monitoring and maintenance regime so that emission will be well below the permissible level mentioned by the regulatory agencies. For kiln, precalcinator and cooler KCL selected Electro Static Precipitator (ESP) with 99% efficiency. The total dust collected are fed back to the system and processed. Before entering hot gas in ESP it is drawn for drying raw materials, slag and coal, thus residual heat value is utilized and ESP dust loading is minimized. To improves the efficiency of ESP a Lechler's gas conditioning tower has been provided to bring down the temperature of the hot gasses from 320 to 150 ^{0}C.

KCL also installed Gas analyzer to ensure complete burning of coal and reducing CO at zero level. Presently we are monitoring CO, O_2, NOx and SO_2 with the help of FUJI Electric Gas Analyser.

Total numbers of bag filters installed at KCL are 33. The bag filters are completed with casing hopper, supporting structure, maintenance platform , access ladder, filter bags, single / double flap valve, rotary air lock system, purging by solenoid operation. These are installed at discharge of belts, bucket elevator, roller press, packer machine, coal mill etc. The centrifugal fan are attached with bag filter for discharge of clean air. Maximum capacity of bag filter is 80,000 m^3/hr and minimum 5500 m^3/hr. at different installations.

1.6.2 Water Pollution:

In order to neutralize the domestic effluents & waste water it is proposed to lead these effluents to a neutralizing pit where acid or alkali shall be dozed depending upon the type and concentration of effluent. The treated effluent shall be used for development/maintenance of the green belt. An effluent disposal pump shall be used for this purpose.

1.7 PROJECT COST:

Estimated cost of proposed expansion project is about Rs. 7.1 Crores.

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Chapter – 2

INTRODUCTION OF THE PROJECT / BACKGROUND INFORMATION

2.1 IDENTIFICATION OF PROJECT & PROJECT PROPONENT ;

NAME OF THE PROJECT:

Kalyanpur Cements Ltd.
Expansion of Cement Production from 1.0 MTPA to 1.15 MTPA
Village-Kalyanpur,
P.O.: Banjari
Dist- Rohtas, Bihar

LOCATION OF THE PROJECT:

The factory of 'Kalyanpur Cements Ltd." (KCL) is located in village Kalyanpur, P.O. Banjari ,Distt. Rohtas in Bihar . The area falls in survey of Topo sheet 63 P/14, Latitude : 24^{o} 40' 10", Longitude :83^{o} 59' 30". All seasonal road is available between Dehri –On- Sone and the plant site. Banjari is 35 Kms by road South of Dehri One Sone Railway Station [Grand Chord Eastern Railway] . About 1 Km East of Plant, River sone takes its course downstream to North to Join River Ganges near Patna. "Arjuna Hills", part of Kaimur Range of mountains proudly guard the area on other side of the plant.

IDENTIFICATION OF THE PROJECT:

'Kalyanpur Cements Ltd." (KCL) has been manufacturing cement at its Rohtas District plant in Bihar since 1946 and has been investing in expansion and technical enhancement repeatedly. The current production line was ordered and erected in 1991. Now KCL intends to expand its cement production capacity from 1 MTPA to 1.15 MTPA.

2.2 BRIEF DESCRIPTION OF NATURE OF PROJECT:

KCL proposed to debottleneck its existing production process to increase its annual production upto 1.15 MTPA. There is no qualitative production process change envisioned. The machinery has enough spare capacity to deliver the extra production.

2.3 NEED FOR THE PROJECT AND ITS IMPORTANCE TO THE COUNTRY AND OR REGION

KCL is the only running large industrial unit in this backward area of Bihar that is also naxal influenced, leading to significant job and value creation in the region. The expanded capacity would sustain KCL's economic viability for the near future.

2.4 DEMAND SUPPLY GAP:

KCL is the only large cement producer in the state of Bihar. KCL's rated capacity is 1 Million TPA whereas the total cement demand in the state is expected to be 8 Million TPA up to 2011-12. This extra demand is being met by shipping of cement from various states with an average distance of over 500 km.

2.5 IMPORTS VS INDIGENOUS CONSUMPTION :

Bihar's cement market is not serviced through imported cement.

2.6 EXPORT POSSIBILITY:

Cement from Bihar can be exported to Nepal keeping in mind commercial considerations. KCL used to export a portion of its produce to Nepal till 2002-03.

2.7 DOMESTIC/IMPORT MARKET:

KCL sells approx. 80% of its production in Bihar and the balance is split between Eastern Uttar Pradesh and Northern Jharkhand. The incremental production is expected to be distributed in a similar manner.

2.8 EMPLOYMENT GENERATION (DIRECT & INDIRECT)

Higher indirect employment engagement is expected to be generated in areas of transport and mines contractor.

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Chapter – 3

PROJECT DESCRIPTION

3.1 TYPE OF PROJECT INCLUDING INTERLINKED AND INTER DEPENDENT PROJECT:

KCL proposed to debottleneck its existing production process to increase its annual production upto 1.15 MTPA. There is no qualitative production process change envisioned. The machinery has enough spare capacity to deliver the extra production.

As part of expansion plan a captive power plant and waste heat recovery units are envisaged.

3.2 LOCATION:

Village	:	**Kalyanpur**
P.O.	:	**Banjari**
District	:	**Rohtas**
State	:	**Bihar**

3.3 DETAILS OF ALTERNATE SITES CONSIDERED AND THE BASIS OF SELECTING THE PROPOSED SITE, PARTICULARLY THE ENVIRONMENT CONSIDERATION GONE INTO SHOULD BE HIGHLIGHTED.

No alternate site considered as it is the expansion project within existing premises.

3.4 SIZE OR MAGNITUDE OF OPERATION:

KCL proposed to debottleneck its existing production process to increase its annual production upto 1.15 MTPA. There is no qualitative production process change envisioned. The machinery has enough spare capacity to deliver the extra production.

3.5 PROJECT DESCRIPTION WITH PROCESS DETAILS: (A SCHEMATIC DIAGRAM/FLOWCHART LAYOUT, COMPONENTS OF THE PROJECT)

KCL intends to expand its cement production capacity from 1 MTPA to 1.15 MTPA. KCL proposed to debottleneck its existing production process to increase its annual production upto 1.15 MTPA. There is no qualitative production process change envisioned. The machinery has enough spare capacity to deliver the extra production.

MANUFACTURING PROCESS ;

The manufacturing process for cement is combination of many activities at different points . The major portion of the process is continuous round the clock.

CRUSHER

Lime stone of maximum one cubic meter size is reduced to -90 mm pieces by crushing in impact crusher.

RAW MILL

Crushed lime stone [-90mm] is further reduced to fine powder by grinding in high pressure grinding roller .

BLENDING SILO

Fine powder from HPGR Raw mill is stored in large silo. Compressed air blowing is done to achieve suitable blending and homogeneity in silo .

KILN

Raw meal from blending silo is pumped and fed to modern 5 stage preheater kiln. The kiln is a rotating long cylindrical tube in which fine powder coal is fired . Burning temperature at firing end is 1,400 to 1,450 ^{0}C. Raw meal is calcined and burnt to form nodules called clinker.

CLINKER YARD

The clinker from kiln is stored in clinker yard.

CLINKER GRINDING

Clinker from kiln or from yard is fed to HPGR clinker grinding unit with gypsum. Fine grinding take place with assistance of roller and high efficiency separators. Ground material stored in ground clinker silo.

HPGR GRINDING UNIT - FOR CLINKER/RAWMEAL GRINDING

Stand by unit for clinker as well as Limestone grinding. Grinding take place with the assistance of roller and high efficiency separators. The fine powder stored in silo.

CEMENT BLENDING PLANT

Ground clinker & fly ash drawn from respective silos and mixed mechanically.

CEMENT SILOS

The out put of cement blending plant is stored in large vertical silos.

PACKING PLANT

Cement from silos is drawn by automatic packing machine for packing in bags after packing, each bag weight 50 Kg . These bags are loaded in trucks ready for dispatch to different destinations.

BY-PRODUCTS

There are no by-products in this factory.

3.6 RAW MATERIAL REQUIRED ALONG WITH ESTIMATED QUANTITY, LIKELY SOURCE, MARKETING AREA OF FINAL PRODUCTS, MODE OF TRANSPORT OF RAW MATERIAL & FINISHED PRODUCT.

Lime stone is main raw materials for cement . The company has own captive lime stone quarries which cater to the requirement of lime stone for Factory. Coal, as main fuel, is obtained from Central and Eastern coal field Gypsum, Slag, Pozzolana, Blue dust are other raw materials which are procured from different sources, lime stone is a sedimentary rock consisting of carbonates of calcium and magnesium with silicates.

Raw material	Estimated quantity		Source	Mode of transporting
	Existing	***Proposed expansion***		
Limestone	9,00,000	10,25,000	Own captive mines	By road

Coal	98,000	1,1`6,000	CCL,Meghalaya	Rail/Road
Gypsum	25,000	29,000	Rajasthan,Bhutan	Rail/Road
Fly ash	3,50,000	4,02,500	M.P.,Jharkand& U.P.	Road
Blue Dust	30,000	35,000	Orissa	Road

3.7 RESOURCES OPTIMIZATION/RECYCLING AND REUSE ENVISAGED IN THE PROJECT, IF ANY, SHOULD BE BRIEFLY OUTLINED.

A waste heat recovery unit is planned along with the expanded capacity that will supply upto 20% of the cement plant's electrical power requirement. The cement process proposed is based on blended cement using fly ash, a waste material.

3.8 AVAILABILITY OF WATER ITS SOURCE, ENERGY / POWER REQUIREMENT AND SOURCE SHOULD BE GIVEN ;

Water Requirement	***Existing***	***Proposed***
Domestic Requirement	860 KLD	900 KLD
Plant Requirement	425 KLD	675 KLD

3.9 QUANTITY OF WASTE TO BE GENERATED (LIQUID AND SOLID) AND SCHEME FOR THEIR MANAGEMENT/DISPOSAL

No Solid waste will be generated from the proposed project.

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Chapter – 4

SITE ANALYSIS

4.1 CONNECTIVITY:

The factory of 'Kalyanpur Cements Ltd." (KCL) is located in village Kalyanpur, P.O. Banjari ,Distt. Rohtas in Bihar . The area falls in survey of Topo sheet 63 P/14, Latitude : 24^{o} 40' 10", Longitude :83^{o} 59' 30". All seasonal road is available between Dehri –On- Sone and the plant site. Banjari is 35 Kms by road South of Dehri One Sone Railway Station [Grand Chord Eastern Railway] .

4.2 LAND FORM, LAND USE & LAND OWNERSHIP ;

The proposed expansion project of KCL is being carried out inside the existing premises. Entire project area is under the ownership of KCL.

4.4 EXISTING LAND USE PATTERN (AGRICULTURAL NON AGRICULTURAL FOREST, WATER BODIES)ARE AWAY FROM THE MINIMUM DISTANCE FROM THE PERIPHERY OF THE PROJECT TO PERIPHERY OF THE FORESTS, NATIONAL PARK, WILD LIFE SANCTUARY, ECO-SENSETIVE AREAS WATER BODIES, CRZ ETC. ;

Forest	▪ Kaimur Wildlife Sanctuary (1.5 km.)
River/Nala/ Reservoir	▪ About 1 Km East of Plant, River Sone ▪ About 2.5 Km West of Plant, River Ausane
Village	▪ Samhauta (1 km. S), Lebura (1.5 km. N), Banjari (3 km. NE), Kalyanpur (1 km. E)
Road	▪ All seasonal road is available between Dehri –On- Sone and the plant site. Banjari is 35 Kms by road South of Dehri One Sone Railway Station [Grand Chord Eastern Railway]
Railway	▪ The nearest railhead is at Dehri-on-Sone at a distance of 35 Km from the project area.

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Chapter – 5

PLANNING BRIEF

5.1 PLANNING CONCEPT (TYPE OF INDUSTRIES, FACILITIES, TRANSPORTATION ETC) TOWN AND COUNTRY PLANNING/DEVELOPMENT AUTHORITY CLASSIFICATION.

It is an Cement Production unit. It is already under operation for more than five decades to produce Cement. Cement is the basic raw material for construction & infrastructure development.

KCL is the only large cement producer in the state of Bihar. KCL's rated capacity is 1 Million TPA whereas the total cement demand in the state is expected to be 8 Million TPA up to 2011-12. This extra demand is being met by shipping of cement from various states with an average distance of over 500 km.

KCL sells approx. 80% of its production in Bihar and the balance is split between Eastern Uttar Pradesh and Northern Jharkhand. The incremental production is expected to be distributed in a similar manner.

Dehri-on-Sone township is the nearby town to the proposed project area. Though Kalyanpur is a very backward village, the project authorities intends to develop the area equipped with all the facilities like water supply, electric supply, dish antenna, mobile communication tower, medical dispensary etc.

5.2 POPULATION PROJECTION :

Higher indirect employment engagement is expected to be generated in areas of transport and mines contractor.

5.3 LAND USE PLANNING (BREAK UP ALONG WITH GREEN BELT ETC.) :

Total Land (Existing)	**100.75 Acres**
Plant Area (Existing + Proposed)	**35.75 Acres**
Green Belt Area (Existing + Proposed)	**65.0 Acres**

5.4 ASSESSMENT OF INFRASTRUCTURE DEMAND (PHYSICAL & SOCIAL) :

Road & Electrical Supply condition of the study area is very poor. Good Roads & Regular Electric Supply is major infrastructure demand of the study area.

5.5 AMENITIES/FACILITIES :

As it is an operative industry, all the amenities/facilities arrangement are already present. At present it is only necessary to enhance the arrangement as per the proposed target production.

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Chapter – 6

PROPOSED INFRASTRUCTURE

6.1 INDUSTRIAL AREA (PROCESSING AREA):

'Kalyanpur Cements Ltd." (KCL) has been manufacturing cement at its Rohtas District plant in Bihar since 1946 and has been investing in expansion and technical enhancement repeatedly. The current production line was ordered and erected in 1991. Now KCL intends to expand its cement production capacity from 1 MTPA to 1.15 MTPA. KCL proposed to debottleneck its existing production process to increase its annual production upto 1.15 MTPA. There is no qualitative production process change envisioned. The machinery has enough spare capacity to deliver the extra production.

6.2 RESIDENTIAL AREA (NON PROCESSING AREA) :

No Residential Area envisaged

6.3 GREEN BELT

Green belt will be developed in 65.0 Acres of area.

6.4 SOCIAL INFRASTRUCTURE:

Road:- All seasonal road is available between Dehri –On- Sone and the plant site. Banjari is 35 Kms by road South of Dehri One Sone Railway Station [Grand Chord Eastern Railway]

Sports Activity:- Distribution of indoor and outdoor sports material like Ring rubber, skipping rope, Ludo, Football, Football Jersy, Volley ball, sports shoe etc are regularly supplied for the sports activity of Kalyanpur village.

Medical: - Dehri-on-Sone hospital is the nearby hospital to the project area.

6.5 DRINKING WATER:-

The project authorities will make arrangement of drinking water for the villagers of nearby villages also.

6.6 SEWERAGE SYSTEM:

Waste water will be treated through Sewage Treatment Plant. Sewage sludge will be generated, which will be vermin-composted and used as manure for greenbelt development

6.7 INDUSTRIAL WASTE MANAGEMENT:

No Industrial waste will be generated.

6.8 SOLID WASTE MANAGEMENT:

No Solid waste will be generated

6.9 POWER REQUIREMENT & SUPPLY/SOURCE:

At present power requirement of KCL is 13 MW which is being supplied by BSEB Sub Station Samhuta. KCL proposes to install a cogeneration power plant to fulfill the power requirement alongwith proposed expansion.

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Chapter – 7

REHABILITATION & RESETTLEMENT (R & R) PLAN

Kalyanpur Cements Ltd." (KCL) has been manufacturing cement at its Rohtas District plant in Bihar since 1946 and the entire project area is under the company ownership. No additional land is being acquired for the proposed expansion project, therefore, there is no need of any Rehabilitation and Resettlement (R&R) Plan.

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Chapter – 8

PROJECT SCHEDULE & COST ESTIMATES

8.1 Likely date of start of construction and likely date of completion (Time Schedule for the project to be given)

This project will be started after obtaining Environment Clearance from Ministry of Environment & Forests (MoEF).

8.2 Estimated Project cost along with analysis in terms of economic validity:

Modified Capacity of Preheater Fan	**1.00 Crore**
Modified Capacity of ESP Fan	**0.8 Crores**
Modified Capacity of Cooler Fan	**0.8 Crores**
Change of ESP to Bag House	**4.5 Crores**
TOTAL COST OF THE PROJECT	**7.1 Crores**

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Chapter – 9

ANALYSIS OF PROPOSAL (FINAL RECOMMENDATION)

9.1 **(FINANCIAL & SOCIAL BENEFITS WITH SPECIAL EMPHASIS ON THE BENEFIT TO THE LOCAL PEOPLE INCLUDING TRIBAL POPULATION, IF ANY, IN THE AREA.) ;**

In the proposed expansion project it is proposed to produce 1.15 Million TPA Cement. This will create some financial & social benefit, which is as follows:

a) From target production of 1.15 Million TPA the Government will get more Royalty.

b) Higher indirect employment engagement is expected to be generated in areas of transport and mines contractor.

c) Moreover the Project Authorities (PA) will made the following arrangement for social welfare of the core zone as well as buffer zone ;

i) Medical facilities :

The PA will arrange medical camp in different village. Occupation health study will be done in core zone. For the purpose of malaria eradication proper steps will be taken by the PA, which include sprinkling of bleaching power, distribution of mosquito net etc.

ii) Drinking Water :

The PA will make the arrangement of drinking water to the core zone as well as buffer zone. The arrangement of drinking water include drilling of bore wells fitted with submersible pumps, construction of over head water tanks then supply of water through pipe line.

iii) Construction of culvert and bridges on the existing roads. Repairing of transport road.

iv) Construction of school building & supply of reading materials to school children etc.

v) Arrangement of sports material for local villagers, promotion of sports & tournament.

vi) Arrangement of Environmental camp, distribution of saplings for fruit bearing trees, digging of rain water harvesting ponds, arrangement for roof top rain water harvesting etc. So in conclusion this project will be beneficial for the people of the area.

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