

# MINING PLAN

(Under Rule 22(4) of MCR-1960)

With

## **PROGRESSIVE MINE CLOSURE PLAN**

(Under Rule 23B(1) of MCDR, 1988)

Of

# Wahpynkon Limestone Deposit

Over an area of 13.58 Hectares  
In East Jaintia Hills District, Meghalaya

Forest land – Nil

Non-forest & Non-agricultural land – 13.58 hecets

Category of Mine – ‘A’-FM

Period of Lease - 30 years

for & on behalf of

**M/s Cement Manufacturing Company Ltd.**

Applicant

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APPROVED

Prepared by:



**GEOMIN CONSULTANTS PVT. LTD.**

An ISO 9001:2008 Certified Company

102, Royal Residency, Plot No. VIP-48, IRC Village, Nayapalli, Bhubaneswar-751015, Odisha  
Tel. : 0674-2551080, Fax : 0674-2551687, E-mail : geomingeo@gmail.com



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Over an area of 13.58 Hectares  
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द्वारा पत्र सं / Vide Letter No.  
102/10/11/1/MEH/JNH/Lst/MP-59  
दिनांक / Dated.. 11/05/2015



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*11/5/15*

क्षेत्रीय खान नियंत्रक  
Regional Controller of Mines  
भारतीय खान ब्यूरो  
Indian Bureau of Mines  
कोलकाता/ Kolkata

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**APPROVE**

*(H.S. Sarangi)*  
Key Person

M/s. Geomin Consultants (P) Ltd.  
Regn. No. - RGP/CAL/167/22/5

CEMENT MANUFACTURING COMPANY LTD.

**CONSENT LETTER FROM APPLICANT**

The Mining Plan in respect of **Wah-Pynkon Limestone Deposit** over an area of **13.58 hectares** for limestone in Lumshnong village, District : East Jaintia Hills, State : Meghalaya has been prepared by M/s Geomin Consultants (P) Ltd. Regd. No. RQP/CAL/167/92-B.

I request **Junior Mining Geologist and Officer in -charge, IBM, Guwahati** to make further correspondence regarding any modification of the Mining Plan with the said recognized company on the following address.

M/s Geomin Consultants (P) Ltd.  
102 - Royal Residency  
Plot No .VIP-48, IRC Village,  
Nayapalli, Bhubaneswar - 751 015, Odisha.  
Tel: 0674-2551080, Fax : 0674-2551687  
E mail : geomingeo@gmail.com

I hereby undertake that all the modifications so made in the Mining Plan by the recognized company be deemed to have been made with my knowledge and consent and shall be acceptable to me and binding on me in all respects.

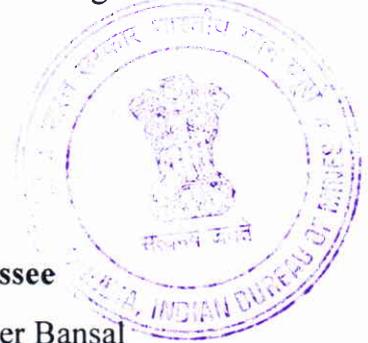
Place : Lumshnong

Date : 13<sup>th</sup> Oct' 2014

**Signature of the Lessee**

Name : Shri Devender Bansal

Designation : Nominated Mines Owner



**APPROVAL**



### CERTIFICATE – I

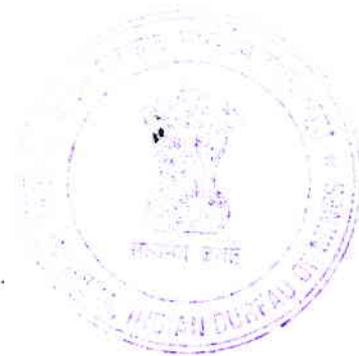
Certified that the provisions of Mineral Conservation & Development Rules, 1988 have been observed in Mining Plan on **Wah-Pynkon Limestone Deposit** over an area of **13.58** hectares in East Jaintia Hills district, Meghalaya and whatever specific permission are required the applicant will approach the **Indian Bureau of Mines (IBM)**.

Certified that the information furnished in the mining plan are correct to the best of our knowledge.

 24.04.15  
(H. S. Sarangi)

#### Key Persons

M/s. Geomin Consultants (P) Ltd.  
Geological & Mining Consultants.  
Regd. No. RQP/CAL/167/92-B.



APPROVE

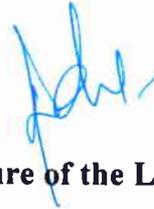
CEMENT MANUFACTURING COMPANY LTD.

**CERTIFICATE – II**

The provisions of Mines Act, Rules and Regulations made there under will be observed in the Mining Plan of **Wah-Pynkon Limestone Deposit** over **13.58** hectares in East Jaintia Hills district, Meghalaya belonging to CMCL and where specific permission are required, the applicant will approach the DGMS. Further, standards prescribed by DGMS in respect of miner's health will be strictly implemented.

Place : Lumshnong

Date : 29<sup>th</sup> July, 2013



**Signature of the Lessee**

Name : Shri Devender Bansal

Designation : Nominated Mines Owner

Address : M/s Cement Manufacturing Co. Ltd.,

Village – Lumshnong, P.O-Lumshnong,

P.S.-Khliehriat, District – East Jaintia Hills,

Meghalaya – 793 210

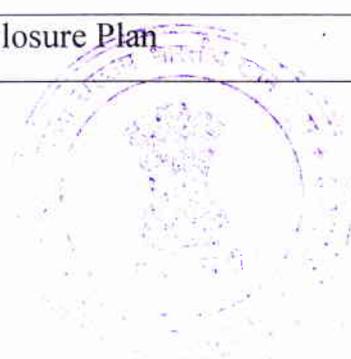


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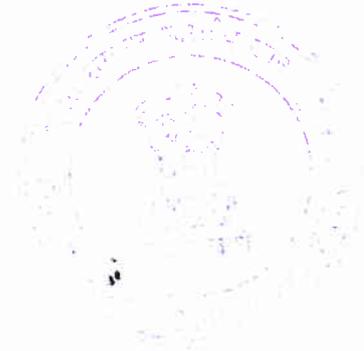


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Key Person  
M/s. Geomin Consultants (P) Ltd.  
Regn. No.- RGP/CAL/167/S2/B

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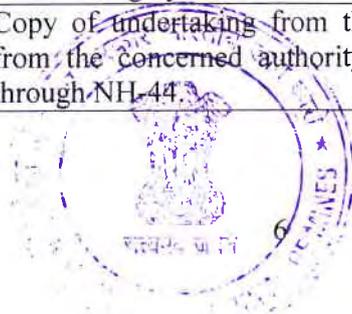
**APPROVE**

Key Person  
M/s. Geomin Consultants (P) Ltd.  
Regn. No.- RQP/CAL/167/92/B

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6/11/2018



M/s. Geomin Consultants (P) Ltd.  
Regn. No.- RQP-DAL/11/102/B

## INTRODUCTION

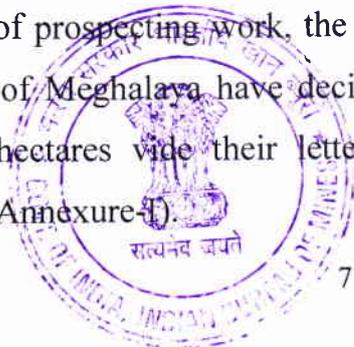
Cement Manufacturing Company Ltd (CMCL) is a ISO9001:2000 certified Public Limited Company with Registered office and works at Lumshnong, *East Jaintia Hills* district, Meghalaya. CMCL was granted licence for setting up a 900 TPD cement plant at Lumshnong village, East Jaintia Hills district Meghalaya by the Govt. of Meghalaya in the year 2002 and subsequently was granted for expanding the capacity to 3000 TPD in the year 2003.

The cement plant with the present production capacity of 2400 TPD consists of dry process coal fired kiln with 5 stage suspension pre-heater system. The main components of plant consist of Crusher (Primary & Secondary) to reduce size of ROM limestone, Ball Mill for grinding raw mix, coal grinding mill, rotary kiln with grate cooler and cement mill of suitable capacities to manufacture 2400 tonnes of clinker / cement. The entire ROM as proposed in the mining plan will be used for manufacture of clinker/cement in this CMCL cement plant as it is a captive source. The plant is provided with the latest state-of-the-art pollution control equipment. A full fledged laboratory, workshop, stores etc. are provided. Township for the employees of CMCL along with social infrastructure like hospital, school, canteen, recreation centre etc. are provided at the plant site.

The share of production of limestone from this mine vs total plant feed will be approximately 30%.

For sustained supply of limestone to the cement plant CMCL obtained Prospecting License (P.L) over an area of 13.58 hectares in Wah Pynkon area of Lumshnong village. The P.L was granted by Govt. of Meghalaya vide letter no 109/2005/88-A dated 20<sup>th</sup> March 2006.

On completion of prospecting work, the company applied for ML over the said area and Govt. of Meghalaya have decided in principle to grant ML over the area of 13.58 hectares vide their letter MG-96/2007/82 dated shillong, the 22<sup>nd</sup> July 2010 (Annexure-1)



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The status of P.L/M.L applied/granted is as follows :

Sl. No.	Lease reference No. & Date	Area in Hectares	Postal address/location	Types of minerals	Remarks
1	MG.47/2004/100, dated 20-12-2004 (ML – I)	4.96 Ha.	M/s Cement Manufacturing Co. Ltd. Lumshnong-Village, P.O. Lumshnong, P.S.- Khliehriat, East Jaintia Hills District, Meghalaya-793 200	Limestone & Sandstone	Mining Lease granted and executed on 17-01-2005
2	MG.21/2003/438, dated 14-01-2006 (ML – II)	4.70 Ha	Same as above	Limestone & Sandstone	Mining Lease granted and executed on 02.06.2006. Amalgamation of both MLs over 4.96 & 4.70 Ha approved by Govt. of Meghalaya and MP & PMCP approved by IBM.
3	MG.21/2003/437, dated 14.01-2006	4.85 Ha	Same as above	Limestone	Mining Lease granted and executed on 02.06.2006
4	MG.54/2009/190, dated 22-12-2009 (ML – III)	70.00 Ha	Same as above	Limestone	Formal grant of ML vide letter MG. 54/2009/190 dt 22.12.09.issued by Govt. of Meghalaya. MP & PMCP approved by IBM vide letter no. 314(3)2010-MCCM(CZ)/MP-37 dtd 10-06-2011
5	MG.96/2007/82, dated 22-07-2010	13.58 Ha	Same as above	Limestone	Formal grant of ML vide letter MG. 96/2007/82 dt. 22.07.10 Govt. of Meghalaya.
6	MG.4/2008/87-A dtd 09-06-2010	9.47 Ha	Same as above	Shale	PL granted and executed on 07.07.2010; application for ML filed vide letter no. CMCL/ML-9.47 Ha/2011-12 dtd 19-10-2011.
7	CMCL/PL/LS-6(a)2008-09, dated 10-09-2008	155.158 Ha	Same as above	Limestone	PL applied, yet to be granted

This mining plan under Rule 22(4) MCR 1960 is being prepared for obtaining approval from IBM, as one of the statutory requirement for grant of mining lease in favour of M/s Cement Manufacturing Company Ltd.

## CHAPTER - I

### 1 GENERAL

#### 1.1 Name of the Applicant With Complete Address :

M/s Cement Manufacturing Company Ltd. Copy of Certificate of incorporation of the Company is enclosed vide Annexure - XII.

#### Name & Designation of the Nominated owner

Name : Sri Devender Bansal

Designation : Resident Director / Designated owner of the Mine

#### Address:

Cement Manufacturing Company Ltd.  
Village-Lumshnong, P.O. Lumshnong,  
P.S-Khliehriat  
Dist--East Jaintia Hills  
Meghalaya-793 210  
Phone No.-03655-278214-18  
Fax-03655-278217  
Email : lumshnong@cmcl.co.in



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#### 1.2 Status of the Applicant:

The applicant is a public limited company registered under company Act. 1956. Copies of Photo ID of lessee (Annexure - IX), address with documentary proof of nominated owner (Annexure - X), list of Board of Director (Annexure - VIII) copy of power of Attorney Holder (Annexure- VII) and Board of Directors Resolution for nominated owner (Annexure – VIIA) have been enclosed.

#### 1.3 Mineral(s) which are occurring in the Area and which the Applicant intends to mine:

The applicant intends to mine limestone which is occurring in the M.L area.

#### 1.4 Period for which Mining Lease is granted/renewed:

The M.L area over 13.58 hectares granted by Govt. of Meghalaya for a period of 30 years. (Ref. application for grant of ML, Annexure XIII).

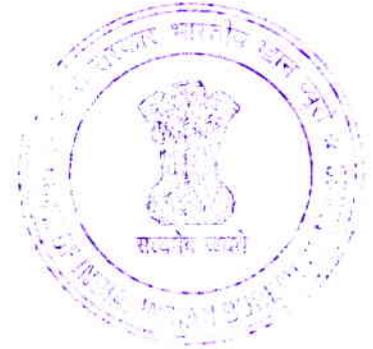
**1.5 Name, Address and Registration of RQP Preparing Mining Plan**

M/s Geomin Consultants (P) Ltd.  
102, Royal Residency,  
Plot No.- VIP 48, IRC Village, Nayapalli,  
Bhubaneswar -751015  
Tel : 0674 – 2551080  
Fax : 0674 – 2551687  
E-mail: geomin@satyam.net.in  
Regd No. RQP/CAL/167/92-B.  
First date of grant - 17.08.1992  
Date of last Renewal - 17.08.2010  
Valid up to - 17.08.2020

**Key persons of Company:**

Dr. S.K. Sarangi  
Mr. H.S. Sarangi  
Mr Binod Chandra Patnaik  
Mr. M.N. Rahangdale  
Mr. B.P. Mishra

Copy of certificate enclosed as Annexure – IV.



**1.6 Name of Prospecting Agency & Address:**

M/s Cement Manufacturing Company Ltd.

**Permanent Address:**

Village-Lumshnong, P.O. Lumshnong,  
P.S-Khliehriat  
Dist-East Jaintia Hills,  
Meghalaya-793 210  
Phone No.-03655-278214-18  
Fax-03655-278217  
Email : lumshnong@cmcl.co.in

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Copy of the prospecting report enclosed as Annexure - V.

**1.7 Ref. No. & Date of Letter from the state Government:**

Mining lease will be granted for a period of 30 years. The term & condition letter from State Govt. (MG-96/2007/82 Dt. 22.07.2010) regarding grant of mining lease is enclosed as Annexure - I.

## CHAPTER – II



### 2.0 LOCATION AND ACCESSIBILITY:

#### 2.1 Details of the area (with location map)

District & State	:	District: East Jaintia Hills State: Meghalaya
Taluka	:	Khliehriat
village	:	Lumshnong
Khasra No/Plot No/Block	:	Ref. Plate-I
M.L area	:	13.58 hectares



#### Existence of public road/railway line, if any nearby & approximate distance.

The ML area is situated to SE of Lumshnong village ( $25^{\circ}10'16''N$  and  $92^{\circ}22'52''E$ ) at a distance of about 5km. There is no public road or railway line within the M.L area. The lease area is situated on the eastern side of NH-44 connecting Shillong to Silchar and the distance of the south-western boundary of the lease area varies from 40m to 200m from 129km stone. The nearest railway station at a distance of 80km from Lumshnong is Badarpur on Guwahati-Lumding-Silchar meter gauge section of N.E.F. Railway. Nearest Airport at Silchar is 130km and Guwahati at about 250km from Lumshnong village.

#### Toposheet No. with Latitude and Longitude:

The Wah Pynkon Limestone deposit over 13.58 hectares falls within the Survey of India toposheet No: 83C/W on a scale of 1:50,000 (restricted).

### Land use Pattern:

The M.L area over 13.58 hectares is coming under non-forest land i.e. barren rocky land.

Land use pattern as per the land schedule is as follows.

Classification of land	Village/ District	Total area in Hects.
Total Private Land (non-forest & barren rocky land)	Lumshnong/Jaintia hills	13.58

The copy of land schedule of the applied M.L area along with sale deeds is enclosed vide annexure – II.

### 2.2 Area Boundaries and Existing & Proposed Access Routes with General Location and Vicinity Map.

The Wah Pynkon ML area is plotted in a map on a scale of 1:10,000 showing all surrounding features like road, village site etc (Ref: Plate - I). The boundary description of the applied M.L area with respect to 129km stone is enclosed (Ref. Plate-II & Annexure-III).

### 2.3 Infrastructure:

The Wah Pynkon Limestone deposit under report has got adequate infrastructural facilities. This lease area is situated within a distance of 200m to east of National Highway No. 44 connecting Shillong to Silchar. The nearest railway station (Badarpur) is at a distance of 80km from Lumshnong Village and the nearest airport (Silchar) is at a distance of 130km. Guwahati airport is at a distance of about 250 kms from the area. Lumshnong Village is at a distance of 125km from Shillong, the state capital and 65km from Jowai, the district headquarters. The Inspection Bungalow at Suropi is around 8km from the lease area.

## CHAPTER - III

### 3.0 GEOLOGY & EXPLORATION.

#### 3.1 Topography, drainage, general geology & local/mine geology of the mineral deposit.

##### 3.1.1 Topography

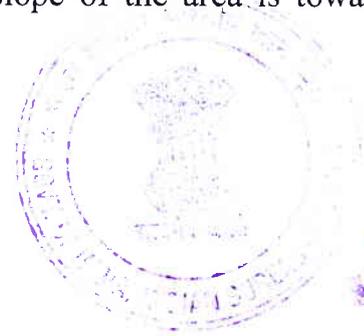
The ML area extends in NE-SW direction. Topography of the ML area and its surroundings are rugged and mountainous. The maximum and minimum contours passing through the area are 387mRL and 273 mRL respectively. North-western part of the area is at a higher elevation with respect to south-eastern part. The general slope of the area is towards south and south-east.

##### 3.1.2 Drainage:

There is no water body in the ML area.

##### 3.1.3 General Geology / Regional Geology:

The State of Meghalaya covers an area of 22,429 sq.km and divided into eleven administrative districts. The north and eastern borders are covered by Assam State and south and west by Bangladesh. Shillong, the State Capital is at an elevation of 1800m and located in the central part of Khasi hills. The rock formations of the area fall under Jaintia Series of Eocene age.



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The Regional Stratigraphy of the area is as follows:

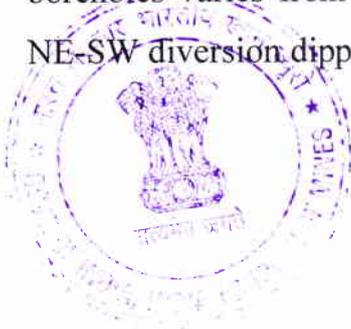
Age	Group/Series	Stage	Beds
Oligocene	Barail Series	----	Sandstone & Shale
Upper Eocene	Garo Group	Kopili Formation	Grey shale with alternate layers of Sandstone & Siltstone
Lower to Middle Eocene	Jaintia Group	Sylhet Limestone	Prang Limestone Narpuh Sandstone Umlatdoh Limestone Lakadong Sandstone Lakadong Limestone
Palaeocene	----	Therria Sandstone	Sandstone

The Lakadong sandstone and Narpuh sandstone distinctly and sequentially separate the Lakadong, Umlatdoh and Prang limestone bands in the area.

### Local Geology

The present area under report falls in part of Survey of India Toposheet No. 83 C/W (scale 1:50,000) and located near village Lumshnong (25°10'16'' N and 92°22'52'' E). The minimum and maximum elevation of the area varies from 273 m to 387m above M.S.L. The different lithounits of the area belong to Jaintia Series of Eocene age. The limestone unit belongs to Sylhet Stage of Jaintia Series of Middle Eocene age.

The area under report has been explored in detail by geological mapping, surface sampling, drilling and analysis of surface samples and core samples. It is observed that the entire area is covered by top limestone band known as prang limestone beds. The top surface shows rough and jagged outcrops and fractured filled with clayey brown sandy soil locally. The thickness of this limestone band as encountered in the drilled boreholes varies from 29.10m to 54.20m. The limestone bed extends in NE-SW diversion dipping 42° to 50° south easterly.



### Description of Prang Limestone:

This is fine to medium grained textured fossiliferous limestone. The major mineral constituent is calcite and accessory minerals are quartz and iron oxide. Subhedral calcite grains are well distributed in the rock. Anhedral quartz grains are corroded on the margins and subhedral iron oxide grains has rounded grain margins. The groundmass is carbonate rich. The average grade of limestone based on the composite sample analysis of bore hole cores is computed to be as follows:

SiO<sub>2</sub> - 2.47%, Al<sub>2</sub>O<sub>3</sub> - 0.75% , Fe<sub>2</sub>O<sub>3</sub> – 0.71% , CaO-52.28%,  
MgO-0.67% and LOI-41.72%.

Further, four representative surface composite samples collected from the area have also been analysed by NABL accredited laboratory. The analysis report is enclosed vide annexure - XVIII.

### Geological study

During P.L stage reconnaissance study followed by geological mapping, topographical survey, surface sampling and analysis were done by a team of CMCL. As many as 20 surface samples collected from different limestone exposures in the area (SS-01 to SS-20) have been analysed for CaO and MgO. The result of analysis confirmed that the reserve is suitable for cement manufacturing. Based on this, surface geological map as well as topographical map have been prepared and detailed exploration by drilling was carried out followed by sampling and analysis of core samples. The copy of the geological prospecting report is enclosed vide annexure-V.



### 3.2 Geological Plan:

The M.L area over 13.58 hectares was prospected by topographical survey and geological mapping. A geological plan is prepared on a scale of 1:1000 with contour interval of 3m (Ref. Plate-III).

### 3.3 Geological Sections.

A total of six (6) numbers of geological sections are prepared at strategic points on 1:1000 scale to show the position of Limestone and various geological formations to estimate the reserve of Limestone in various categories. [Ref Plate-III (A) ]

### 3.4 Broad indication of the year wise exploration programme.

#### i) Exploration already carried out.

The M.L area over 13.58 hectares was explored in detail during the period from May'06 to Dec'06 by Cement Manufacturing Company Ltd. The quantum of work done is as follows :

1. Topographical Survey (1:1000 scale) = 13.58 Ha.
2. Geological mapping (1:1000 scale) = 13.58 Ha.
3. Drilling- 4 nos. of BH with spacing of 145m to 240m.  
Total meterage drilled - 191.30m.

The top and bottom R.L of the bore holes are as follows:

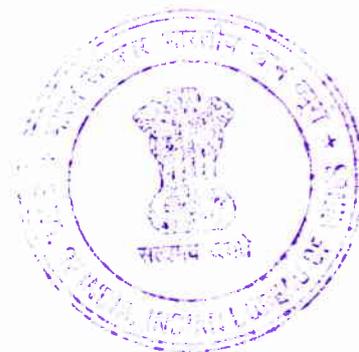
BH NO.	Depth	Top RL	Bottom RL
5	50m	384.69m	334.69m
6	60.20m	339.879m	279.679m
7	50m	355.097m	305.097m
8	31.10m	326.21m	295.11m

#### 4. Sampling and analysis

- (i) Surface samples = 20 nos  
(ii) Core samples = 131 nos  
(iii) Composite core samples = 34 nos.

The ranges of chemical characteristics, viz. Cao, MgO, SiO<sub>2</sub> are as follows:

CaO%	=	49.91 to 54.67
MgO%	=	0.4 to 1.2
SiO <sub>2</sub> %	=	0.52 to 2.58



Based on the results of geological study of the ML area as well as nearby areas four numbers of vertical bore holes were drilled along the strike direction at an interval of about 145m to 240m. All the boreholes were closed within Prang limestone. In order to establish the thickness and quality of this limestone band further detailed exploration will be taken up in phased manner.

The surface exposures of different lithological units of the insitu body were plotted on the surface contour plan with dip (varying from 42<sup>0</sup> to 50<sup>0</sup> SE) and strike (NE-SW) and thus the geological plan was prepared on a scale of 1:1000.

The details of litho logs of the 4 bore holes with chemical analysis results as well as composite sample analysis and analysis results of twenty surface samples are furnished in the geological prospecting report enclosed (Annexure- V). Besides, summary of boreholes data is enclosed (Annexure – VA).

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**ii) Exploration Proposed to be done.**

An exploration schedule consisting of 12 nos of bore holes in 100m x 100m grid is proposed to be done during 1<sup>st</sup> year of planned period covering the entire lease area in order to establish the reserve of limestone in G1 stage, as per the norms of UNFC.

The exploration schedule is reflected in the geological plan (Plate-III) and the details of bore holes with location and tentative depth has been indicated in table no. 3.1.

**3.5 Geological and Recoverable Reserves and Grade:**

**3.5.1 Method of Estimation of Reserves:**

The limestone deposits have been demarcated in the geological plan based on geological mapping, surface sampling supported by the bore hole data. A total of six numbers of cross sections from boundary to boundary have been prepared. Reserve of limestone deposit has been estimated by cross sectional area method. Cross sectional area measured in sections is multiplied with the respective length of influence of each section and bulk density to arrive at geological resource under measured, indicated and inferred categories.

**3.5.2 Basis of Reserve Estimation**

The resource / reserve estimation have been done as per the UNFC norms for G<sub>1</sub>, G<sub>2</sub> & G<sub>3</sub> category.

**Resource under G<sub>1</sub> (331) category**

Influence of BH-6 and BH-8 along section BB' & CC' are taken.

- Drilled depth of BH-6 & BH-8 are considered
- Lateral influence of 25m on both the sides of BH is considered.
- This area is marked as 'A'.

### Resource under G<sub>2</sub> (332) category

- This zone is considered between BH-5 & BH-7 and between BH-7 & BH-8
- Lateral influence of 25m is considered.
- The sections considered are DD', EE' & FF'.
- For the section DD' & FF', the depth is considered as 50% of towards the nearer BH.
- This area is marked as 'B'.

### Resource under G<sub>3</sub> (333) category

- Rest of the area beyond G<sub>1</sub> & G<sub>2</sub> are booked under G<sub>3</sub> as there are no bore hole.
- Influence around section (AA') are completely booked under G<sub>3</sub> in the eastern part with depth upto 50% of the nearer BH8.
- This area is marked as 'C'.

The exploration carried out so far with four bore holes (BH-5, 6, 7 & 8) as well as surface limestone exposures with detailed analysis have been duly considered for demarcating the area under G<sub>1</sub>, G<sub>2</sub> & G<sub>3</sub> axis as per UNFC Norms. Thus three blocks have been earmarked based on the above criteria, the details of which are as follows:

Axis	Block	Area (Hect)	No. Bore holes	No. Surface sample	Bore hole spacing
G1	Block-A	1.00	02	4	145m
G2	Block-B	1.72	02	2	240m
G3	Block-C	10.86	--	14	--
<b>Total</b>		<b>13.58</b>			

UNFC code under G<sub>1</sub>, G<sub>2</sub> & G<sub>3</sub>.

UNFC Code	Resource	Quantity of Resource (MT)
331	Measured	848531.25
332	Indicated	1310265.00
333	Inferred	8831722.50

Based on the available data for economic and feasibility for this lease area the above resources (331,332 & 333) have been booked under measured, indicated & inferred resource. The justification of UNFC classification to different axis is indicated in Para 3.7.

The measured resources (331), indicated resources (332) have been further updated as follows :

Under 331

<b>Proved Mineral Reserve (MT)</b>  <b>(111)</b>	<b>Feasibility Mineral Resources (MT)</b> (Reserves blocked due to ultimate pit slope and 50m barrier on either side of HT lines)  <b>(211)</b>
41535	806996.25

Under 332

<b>Probable Mineral Reserve (MT)</b>  <b>(122)</b>	<b>Pre-feasibility Mineral Resource (MT)</b> (Reserves blocked due to 7.5m safety zone & ultimate pit slope )  <b>(222)</b>
388620	921645

**3.5.3 Parameters considered for estimation of proved and probable mineral reserves of Limestone by cross sectional area method are :**

Sections considered - BB', CC', DD', EE' & FF'

	<u>Geological</u>	<u>Mineable</u>
Length of influence	BB' - 85m CC' - 95m DD' - 105m EE' - 100m FF' - 120m	--- 65 105 100 110
Incidence factor	- 0.90*	
Bulk density (insitu)	- 2.50	

\* A factor of 0.10 (10%) has been considered as loss due to cavity.

**3.6 Reserve & Grade**

As indicated in Plate-III & III(A) and Table – 3.2 & 3.3, the summarized reserve of limestone is given in para 3.6.1 and 3.6.2. The cut-off grade for limestone ore have been taken as + 45%CaO, based on the chemical analysis report of the bore-holes drilled in the proposed M.L area. The ranges of chemical characteristics as per the composite analysis report for CaO, MgO and SiO<sub>2</sub> are 49.91% to 54.67%, 0.4% to 1.2% and 0.52% to 2.58% respectively.

Further, it is proposed to carry out composite analysis of proposed bench height in the proved zone and assessment of feed grade limestone during the plan period. Accordingly the saleable, sub grade & rejects will be worked out and will be projected in the scheme period.

### 3.6.1 Summary of Geological Resource

Type	Quantity of ore(MT)	Grade
G <sub>1</sub>	848531.25	+ 45% CaO
G <sub>2</sub>	1310265.00	
G <sub>3</sub>	8831722.50	
<b>Total</b>	<b>10990518.75</b>	

### 3.6.2 Summary of Mineable Reserve (Proved + Probable Mineral Reserve)

Type	Quantity of ore(MT)	Grade
Proved (111)	41535	+ 45% CaO
Probable (122)	388620	
<b>Total</b>	<b>430155</b>	

### 3.7 UNFC Classification

#### (a) Geological Axis (G<sub>1</sub>)

Detailed geological mapping has already been carried out on a scale of 1:1000.

Detailed topographical-cum-geological map including all surface geological features, extent of deposit, and location of bore holes, dip & strike is already prepared for the said deposit. Copy of prospecting report is enclosed as annexure- V.

Bore holes are already drilled by the applicant during PL stage & detailed as well as composite samples are analyzed accordingly from respective bore holes.

Considering all the geological aspects, the mine comes under detailed exploration i.e. code G1.

**(b) Feasibility Axis: (F<sub>1</sub>)**

- (i) The M.L area is already proved with good grade limestone & bore holes have been drilled by Cement Manufacturing Company Limited (CMCL). The mining activities within this deposit is cost effective & feasible in all aspect.
- (ii) Study of socio economic impact, reclamation & detailed land use will be carried out in due course of mining. Rehabilitation & resettlement proposal is not required since there is no human habitation within the lease area.
- (iii) A copy of feasibility report is enclosed vide annexure- XI.
- (iv) Details of infrastructure & services, is available around the applied M.L area.

Considering above aspect the proposed deposit is feasible in all aspect & receives code 1 for feasibility axis.

**(c) Economic Axis (E<sub>1</sub>)**

The economic axis for this deposit has been considered as E<sub>1</sub> because of the following reasons.

- (i) The said deposit will be a captive source for lessee's own cement plant located at about 3km from the applied ML area.
- (ii) The deposit is having suitable grade of limestone to cater to the need of Lessee's own plant.
- (iii) Land details are available.
- (iv) Besides two working mines (ML-I and ML-II amalgamated) of the applicant on the western side of the NH-44 are being operated successfully.

**Therefore the proved reserve of Wah-Pynkon limestone deposit receives the UNFC code as 111.**

The probable reserve is indicated under the Code 122 for the following reasons:

- E<sub>1</sub> - This deposit will be a captive source for lessee's own Cement Plant located near by, and it is having suitable grade of limestone required for the plant. Besides, two working mines (ML -I and ML - II amalgamated) of the applicant located at about one km west of this deposit are being operated successfully.
- F<sub>2</sub> - Copy of the Feasibility Report is annexed (Ref. Annexure - XI). Since part of the area is covered by widely spaced boreholes, this axis is kept under F<sub>2</sub>.

G<sub>2</sub> - The area between boreholes (BH-5 & BH-7 and BH-7 & BH-6) are widely spaced. Thus the reserve for this area has been taken under probable category. Accordingly the reserve is estimated by cross-sectional area method by considering lateral influence of 25m on both sides of boreholes leaving out 7.5m barrier and ultimate pit slope.

Remaining Resources (211, 222 & 333).

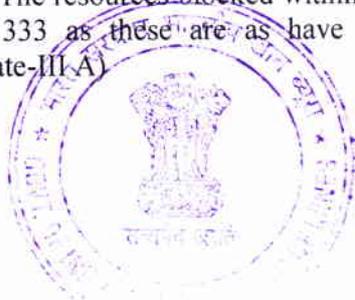
The non-mineable portion due to ultimate slope as well as 50m barrier on either side of HT line which are booked under Remaining resources (211). The non-mineable portion due to 7.5m. safety zone and ultimate pit slope are booked under remaining resource (222).

Further inferred mineral resource (333) have been considered beyond the G<sub>1</sub> & G<sub>2</sub> area as there are no boreholes. The non-mineable resources including 7.5m safety zone is based on the available exploration data at present (Ref. Para 3.5.2)

Thus the UNFC classification based on the aforesaid considerations is indicated as follows:

Classification	Code	Quantity (MT)
<b>A. Mineral reserve</b>		
1) Proved Mineral Reserve	111	41535
2) Probable Mineral Reserve	121	Nil
Probable Mineral Reserve	122	388620
<b>Total (A)</b>		<b>430155</b>
<b>B. Remaining Resource</b>		
1) Feasibility Mineral Resources*	211	806996.25
2) Pre-feasibility Mineral Resources	221	Nil
Pre-feasibility Mineral Resources	222	921645
3) Measured Mineral Resources	331	Nil
4) Indicated Mineral Resources	332	Nil
5) Inferred Mineral Resources	333	8831722.50
6) Reconnaissance Mineral Resources	334	Nil
<b>Total (B)</b>		<b>10560363.75</b>
<b>Total Resource (A+B)</b>		<b>10990518.75</b>

Note: \* The resources blocked within 7.5m. safety zone have been only accounted for 222 & 333 as these are as have non been supported by G<sub>1</sub> stage exploration. (Ref. plate-III A)



**Table – 3.1**

**PROPOSED EXPLORATION SCHEDULE**  
(Grid interval 100m x 100m)

Year	Proposed Bore Hole	Grid Location	Depth
1st year	PBH-1	200W / 140S	The depth of the borehole will be drilled upto the end of mineralization or upto 60m depth which ever is earlier.
	PBH-2	100W / 100S	
	PBH-3	0/0 / 100S	
	PBH-4	325W / 90S	
	PBH-5	0/0 / 0/0	
	PBH-6	0/0 / 100N	
	PBH-7	100E / 0/0	
	PBH-8	100E / 200N	
	PBH-9	200E / 100N	
	PBH-10	200E / 200N	
	PBH-11	300E / 150N	
	PBH-12	300E / 240N	

**Remarks :** The proposed bore hole to be drilled is reflected the geological plan (Plate-III) in a 100m x 100m grid pattern. The first phase bore hole will be drilled in first six months of 1<sup>st</sup> year in the G<sub>2</sub> area as marked in the plan. Then the 2<sup>nd</sup> phase bore hole will be drilled last six month of 1<sup>st</sup> year in the G<sub>3</sub> area for conversion of resource to reserve of G<sub>1</sub> category.



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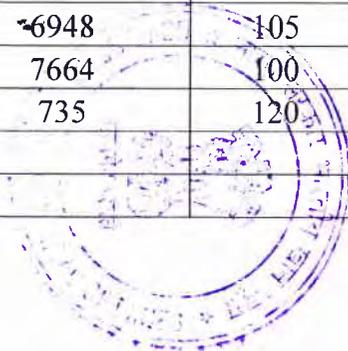
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Key Person  
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Regn. No.- RQP/CAL/167/92/B

**TABLE NO. - 3.2**  
**GEOLOGICAL RESERVE**

Category	Section Considered	Cross sectional Area (m <sup>2</sup> )	Length of Influence (m)	Volume (m <sup>3</sup> )	Incidence Factor (90%)	Tonnage Factor (m <sup>3</sup> /MT)	Quantity of Ore (MT)
G1(331)	BB'	1437	85	122145	109930.5	2.5	274826.25
	CC'	2684	95	254980	229482	2.5	573705
<b>Sub-Total</b>				<b>377125</b>	<b>339412.5</b>		<b>848531.25</b>
G2(332)	DD'	1676	105	175980	158382	2.5	395955
	EE'	2746	100	274600	247140	2.5	617850
	FF'	1098	120	131760	118584	2.5	296460
<b>Sub-Total</b>				<b>582340</b>	<b>524106</b>		<b>1310265</b>
<b>Total</b>				<b>959465</b>	<b>863518.5</b>		<b>2158796.25</b>
G3(333)	AA'	2620	125	327500	294750	2.5	736875
	BB'	2475	85	210375	189337.5	2.5	473343.75
	CC'	18981	95	1803195	1622875.5	2.5	4057188.75
	DD'	6948	105	729540	656586	2.5	1641465
	EE'	7664	100	766400	689760	2.5	1724400
	FF'	735	120	88200	79380	2.5	198450
<b>Sub-Total</b>				<b>3925210</b>	<b>3532689</b>		<b>8831722.50</b>
<b>Total</b>				<b>4884675</b>	<b>4396207.5</b>		<b>10990518.75</b>

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Geological & Mining Consultants.

M/s CMC Ltd.  
Applicant

**TABLE NO. -3.3**  
**MINEABLE RESERVE**

Category	Section Considered	Cross sectional Area (m <sup>2</sup> )	Length of Influence (m)	Volume (m <sup>3</sup> )	Incidence Factor (90%)	Tonnage Factor (m <sup>3</sup> /MT)	Quantity of Ore (MT)
G1(111)	CC'	284	65	18460	16614	2.5	41535
G2(122)	DD'	572	105	60060	54054	2.5	135135
	EE'	328	100	32800	29520	2.5	73800
	FF'	726	110	79860	71874	2.5	179685
<b>Sub-Total</b>				<b>172720</b>	<b>155448</b>		<b>388620</b>
<b>Total</b>				<b>191180</b>	<b>172062</b>		<b>430155</b>



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## CHAPTER – IV



### 4.0 MINING

#### Method for developing or working

Fully Mechanized method with the deployment of machines / equipments / vehicles like wagon drill, air compressor, hydraulic excavator, tippers etc on a single shift basis will be adopted to develop the south-western part of the lease area. Mining is envisaged taking into consideration the lead distance to nearby approach road & much flatter terrain to work within the initial stage of mining. Further with the progress of mining operation and input during planned period of five years the benches will be advanced systematically.

Benches will be developed systematically following the terrain condition of the area to attain the production of limestone at around 40,000MT per annum from 2<sup>nd</sup> year to 49,000MT in 5<sup>th</sup> year based on the availability of mineable reserve. The height and width of the benches will be kept at 3m & 4.5m respectively. The individual bench faces will be kept nearly vertical where as the overall quarry slope angle is proposed to be kept at around  $<45^{\circ}$  with the horizontal. Massive hard limestone strata will be loosened through drilling and blasting. Drilling will be carried out by means of 115mm dia wagon drill. For secondary breaking hydraulic excavator with rock breaker will be deployed. Thus secondary drilling and blasting are eliminated. Blasting will be carried out with the help of explosives (slurry type), cast boosters and ANFO and Class-VI explosives (TLD, DTH, electric detonators and detonating fuse).

Six (6) meter wide haul road is proposed to be developed with the gradient of 1:16 to 1:20 for easy movement of machineries & transportation of ore.

Trucks / tippers will be loaded by mechanized means and will enter into the working benches of the proposed quarry from the haul road and return after taking load through the same haul road.

Whenever the concealed voids and cavities will be noticed during the future exploration (bore holes logs) in the mine, a suitable study will be carried out by us to ascertain the exact dimension of the concealed sub-surface voids and to keep any possible subsidence on the surface under control due to the existence of the above voids vis-à-vis movement of heavy earth moving machineries and blasting. However, a Geophysical study will be carried out before the opening of the 1<sup>st</sup> bench. An undertaking to this effect by the lessee is enclosed vide Annexure-XXII.

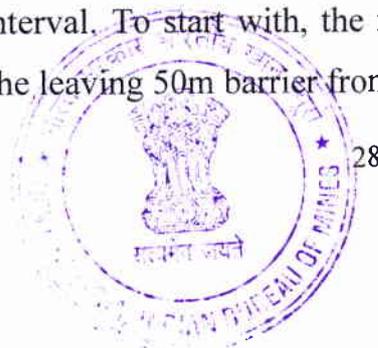
Separate year wise development of the limestone for the first five years has been projected with systematic development of benches. The generation of limestone ore has been described in detail in the following paragraphs.

#### **4.1 Year wise development for the planned period of five years:**

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##### **4.1.1 Development during First year of Planned Period [Ref. Plate-IV(A)]**

Based on the nature of topography and for the sake of systematic mining it is proposed to initiate the mining from top downwards by cutting slice at 3m interval. To start with, the mining block is selected in the central part of the leaving 50m barrier from the H.T line.



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Geological & Mining Consultants

During 1<sup>st</sup> year it is proposed to cut the first five slice i.e above 345m, 345-342, 342-339m, 339-336m & 336 – 333 level. The direction of advancement will be towards east-west with benches in almost N-S direction.

The level/bench wise excavation of ore / development during 1<sup>st</sup> year of planned period is given in Table no 4.1.

Section Considered-CC'

Description	Proposed Quarry
Level considered	Above 345 upto 333m level
No. of benches to be developed	Five
Floor RL of benches(m)	333
Direction of advancement	East-West
Height & width of benches(m/m)	3/4.5
Quarry slope	<45 <sup>0</sup>
Production of ore (ROM)	30127.5MT

**Note:** The production schedule is drastically reduced owing to revised mineable portion of G1 & G2 category as pr the scrutiny comments. The drilling programme is chalked out in Para 3.4 (ii) of mining plan for conversion of G3/G2 stages to G1 stage in the 1<sup>st</sup> year of plan period along with mining activity. After completion of exploration in the 1<sup>st</sup> year of plan period the reserve / resource of the area will be re-estimated & modification of mining plan with enhanced production will be submitted.

#### 4.1.2 Development during Second year of Planned Period [Ref. Plate-IV(B)]

During 2<sup>nd</sup> year it is proposed to develop another slice 333 – 330m around section CC' and 4nos. slice (above 357 to 348m) around section DD' touching the ground profile at 348m.

The level/bench wise excavations during 2<sup>nd</sup> year is projected in table no. 4.1.

##### Section Considered-CC' & DD'

Description	Proposed Quarry
Level considered	Upto 330m (CC') Upto 348m (DD')
No. of additional benches to be developed	One (CC') four (DD')
Floor RL of benches(m)	330 (CC') & 348 (DD')
Direction of advancement	East-West
Height & width of benches(m/m)	3/4.5
Overall quarry slope	<45 <sup>o</sup>
Production of ore (ROM)	41,647.50 MT

#### 4.1.3 Development during Third year of Planned Period [Ref. Plate-IV(C)]

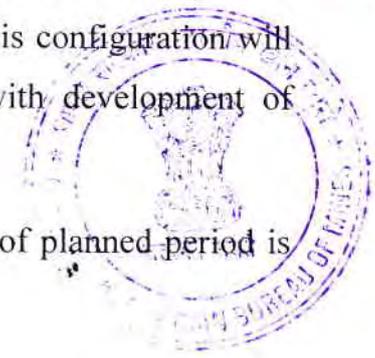
During 3<sup>rd</sup> year it is proposed to develop another two no. slice (348m-345m & 345m-342m) from the 2<sup>nd</sup> year position. This configuration will give a systematic shape to the proposed quarry with development of benches along southern direction.

The level/Bench wise excavation of during 3<sup>rd</sup> year of planned period is projected in table no. 4.1.

##### Section Considered-DD'

Description	Proposed Quarry
Level considered	348-345m 345-342m
No. of additional benches to be developed	Two
Direction of advancement	East-West
Height & width of benches(m/m)	3/4.5
Overall quarry slope	<45 <sup>o</sup>
Production of ore (ROM)	35,673.75 MT

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#### 4.1.4 Development during Fourth year of Planned Period [Ref. Plate-IV(D)]

During 4<sup>th</sup> year, it is proposed to develop another new quarry in western part of the M.L area with slice cutting at 3m interval above 381m level around section FF’.

The details of bench/level wise excavation during 4<sup>th</sup> year of planned period is indicated in Table no.- 4.1.

##### Section Considered-FF’

Description	Proposed Quarry
Level considered	Above 381m upto 378m
No. of additional benches to be developed	Two
Direction of advancement	East-West
Height & width of benches(m/m)	3/4.5
Overall quarry slope	<45 <sup>0</sup>
Production of ore (ROM)	36787.5 MT

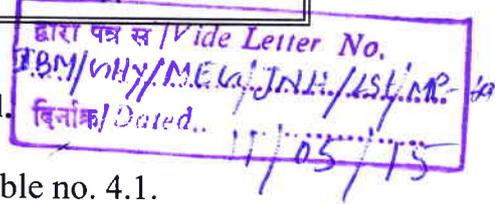
#### 4.1.5 Development during Fifth year of Planned Period [Ref. Plate-IV(E)]

It is proposed to develop another three slice (benches) with bench floor at 375m, 372m and 369m RL from the 4<sup>th</sup> year position.

The level/bench wise excavation during 5<sup>th</sup> year of planned period is indicated in Table no.- 4.1.

##### Section Considered-FF’

Description	Proposed Quarry
Level considered	378-375m 375-372m 372-369m
No. of additional benches to be developed	three
Direction of advance	East-West
Bench height/width (m)	3/4.5
Overall quarry slope	<45 <sup>0</sup>
Production of ore (ROM)	49275MT



#### 4.2. Year wise Tonnage & grade of production expected.

Year wise production of limestone are indicated in Table no. 4.1.

However, the summarized figures of production of limestone are given below:

Year	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year	Total
Proposed production (MT)	30127.5	41647.5	35673.75	36787.5	49275	193511.25

#### 4.3 Separate Year wise plan & sections of the development:

Year wise development plan & sections of pit layout for proposed quarry have been shown in Plate – IV(A),IV(B),IV(C),IV(D) & IV(E).

#### 4.4 Proposed rate of production when the mine is fully developed.

The proposed rate of production of limestone when the mine will be fully developed has been kept at around 40,000MT per annum.

#### 4.5 Conceptual Mining Plan: (Ref. Plate No. VIII & VIII-A)

During planned period, the average depth of working of limestone is 70m from the surface level. The conceptual planning for limestone mining has been projected laterally and depth ward around the ore zone.

Mineable reserve estimated : 430155 MT  
Production planned for five years : 193511 MT  
Hence reserve available for conceptual mining  
= 430155 MT-193511 MT  
= 236644 MT

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केन्द्रीय खान नियंत्रक  
Regional Controller of Mines  
भारतीय खान ब्यूरो  
Indian Bureau of Mines  
कोलकाता/ Kolkata

Keeping tentative production of 60,000 MT per year from sixth year onwards, the life of the mine will be around another 3.94 years or say 4 years.

**\* Land use Pattern**

During the life of the mine 3.28 hectares will be utilized for mining, infrastructure development, plantation etc.

The details of land use pattern will be as follows:

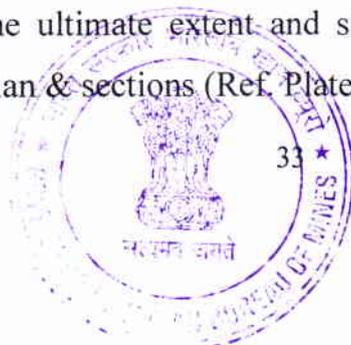
(Area in hectares)

Sl. No.	Pattern of Utilisation	Existing	Planned 5 year	Beyond Planned Period	Total
A	Mining	Nil	1.12	1.48	2.57
B	Dumping of overburden	Nil	--	--	--
D	Top soil storage	Nil	--	--	--
E	Sub-grade ore storage	Nil	--	--	--
G	Infrastructure (Rest-shed, office, first-aid center)	Nil	0.01	--	0.010
H	Construction of road	Nil	0.20	--	0.200
I	Magazine	Nil	--	--	--
J	Green belt	Nil	0.50	--	0.500
	<b>Sub-Total</b>		<b>1.83</b>	<b>1.45</b>	<b>3.28</b>
K	Safety zone (7.5m around ML boundary)				1.30
L	Safety barrier due to HT line				3.07
M	Area untouched				5.93
	<b>Total</b>				<b>13.58</b>

**4.5.1 Ultimate extent and size of the pit :**

The H.T. line passes through the ML area in NNE-SSW direction in the eastern part. For this, safety barrier of 50m on either side of the HT line is left. Accordingly ultimate pit limit have been projected in the central part & western part.

Conceptual quarry will be developed laterally and depth ward around the ore zone. The ultimate extent and size of the pit has bee reflected in conceptual plan & sections (Ref. Plate- VIII & VIII-A).



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#### 4.5.2 Final slope angle at the close of mine:

The final slope angle would be kept at around 45° at the close of the mine [Ref. Plate – VIII (A) ].

#### 4.5.3 Ultimate pit limit boundaries:

Ultimate pit limit boundaries have been marked leaving the statutory area along the lease boundary as well as safety barrier due to presence of H.T. line. (Ref. Plate-VIII).

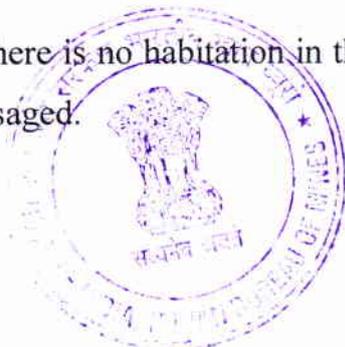
#### 4.5.4 Ultimate capacity of dump:

As observed from some boreholes patchy occurrence of overburden soil is seen in the north-eastern part of the lease area. As the limestone is high grade the small patches of soil in the ROM will serve as a corrective material for manufacture of clinker. So there will not be any necessity for creating a dump for the meager overburden available in the deposit.

#### 4.5.5 Reclamation & Rehabilitation Measures:

As the proposed quarries or part thereof have not been fully exhausted, no reclamation programme has been felt at present during the planned period of five years. However, due to some land degradation, afforestation programme during the proposed mining period has been suggested along the lease boundary to restore the eco-balance and also to increase the greenery of the M.L area. During conceptual period an area of 3.28 hectares will be degraded/utilized due to quarry, road, infrastructure and afforestation. Out of these, 1.83 hectares will be degraded/utilized during planned period and 1.45 hectares beyond the planned period. The above area will be progressively reclaimed depending upon the availability of the exhausted quarry or part thereof.

As there is no habitation in the ML area, Rehabilitation measures are not envisaged.



#### 4.5.5.1 Reclamation Measures of Mined out area.

##### **During Planned Period**

During planned period limestone will not be exhausted within any part of the proposed quarry. Therefore no reclamation proposal has been envisaged during this year. However, owing to certain land degradation, a total of 800 saplings are proposed to be planted over an area of 0.50 hectare near the south-western and northern side of the ML area during first five years.

##### **During Conceptual Period**

A total of 2.57 hectares will be degraded for mining during conceptual period. (Ref. Plate no-VIII).

The ultimate quarry depth may change. However, considering present exploration data, the total conceptual area computed to be 2.57ha. However, this is a dynamic process and it will change with the degree of exploitation at the later stage. Hence no reclamation at this stage is envisaged.

#### 4.5.5.2 Reclamation / Rehabilitation Measures of Other Areas.

##### **Planned Period**

During the planned period, 0.71 hectares of land will be utilized for infrastructure development, road construction & plantation etc. During planned period no proposal has been envisaged for reclamation.

As the ML area is not habitated, no Rehabilitation measures are involved.

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### Conceptual period

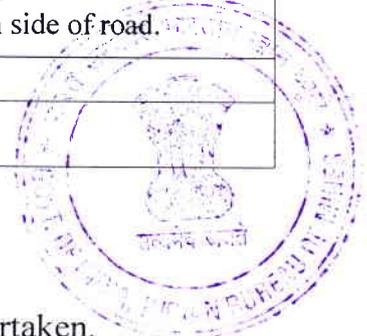
A total of 0.71 hectare of land will be utilized for infrastructure development, road construction, greenbelt development.

The details of reclamation will be as follows:

Pattern of utilization	Area to be reclaimed (in hectares)	Method of reclamation
Infrastructure development	0.01	The temporary rest shed will be removed & reclaimed by means of plantation.
Road	0.20	The road will be left for public use. Plantation will be carried out on both side of road.
Plantation	0.50	Plantation
<b>Total :</b>	<b>0.71</b>	

#### 4.5.6 Safety & Environmental Measures:

- Comprehensive post plantation care is to be undertaken.
- Schedule of monitoring for ambient air, noise, dust and water are to be regulated properly.
- Proper maintenance of the road surface will be done by spraying water periodically.
- Blasting will be carried out using NONEL (Non electric delay detonator) to reduce fly rock, noise & ground vibration.
- Proper manuring and watering at the plantation site will be done to achieve 80% survival of planted saplings.



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#### 4.6 Opencast Mines (Mode of working):

The proposed quarry will be operated by open cast method in a fully-mechanized manner. Loosening of hard strata will be effected through drilling and blasting. Excavation and loading will be done by mechanized means.

##### 4.6.1 Geometry of Benches:

Height of benches	:	3m
Width of benches	:	4.5m
Overall pit slope	:	<45°

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##### 4.6.2 Haulage Design:

Haul roads will be provided at 1:16 to 1:20 gradient. Width of the roads will be maintained at 6m.

##### 4.6.3 Drain Design:

##### 4.7 Underground Mines:

Not applicable

##### 4.8 Extent of Mechanization:

##### 4.8.1 Drilling:

The ore will be excavated by drilling and blasting. Drilling of blast holes will be done by Crawler drills. . The quantity of boulders generated by Primary Blasting will be broken by Rock Breaker which will be to the tune of 5 – 10%.



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#### 4.8.1.1 Specification of crawler Drills :

Diameter of drill	-	100 mm
Consumption of the compressed air	-	9 cu.m/min
Pressure of the air supplied to	-	10.5 kg/sq.cm

#### 4.8.1.2 Drilling Parameters:

##### For Crawler drill

*	Burden	=	1.25m
*	Spacing	=	1.50m
*	Bench Height	=	3m
*	Total depth of hole	=	3.3m (including sub-grade drilling)
*	Output / hole	=	Burden x Spacing x Depth of the hole
		=	1.25 x 1.50 x 3.3
		=	6.18 Cu.m
		=	6.2 Cu.m

#### 4.8.1.3 Holes Required per Day:

*	Yearly max excavation (5 <sup>th</sup> year)	=	21,900 m <sup>3</sup>
*	Vol. required to be blasted (80% of the total excavation)	=	17520 m <sup>3</sup>
*	Average daily excavation at 300 annual working days	=	17520 m <sup>3</sup> /300 = 58.4 m <sup>3</sup>
*	No. of holes required/day	=	58.4/6.2 = 9.4 nos.

#### 4.8.1.4 No. of Crawler Drills required for limestone:

*	Speed of drill	=	7.5 m/hr
*	Effective drilling hour for 1 shift working	=	6 hrs
*	Meterage required to be drilled	=	9.4 x 3.3= 31.02m
*	Meterage to be drilled per day (Considering additional 10% as inventory)	=	31 x 1.1 = 34m

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- \* No. of crawler drills required to be in operation =  $34/7.5 \times 6 = 0.76$
- \* Overall efficiency assumed = 80%
- \* Crawler drills required in fleet =  $0.76/0.8 = 0.95$  say 1

Type	No.	Dia of Hole	Make
Crawler drill	1	100mm	Atlas Copco

#### 4.8.1.5 Compressor Requirement:

- Number of Crawler drills will be in operation = 1 no
- Dia of each Crawler drill = 100mm
- One 115 mm dia Crawler drill requires compressed air = 9 cu.m/min
- Compressor unit required = 1 nos.

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#### 4.8.2 Excavation & Loading

Hydraulic shovels of 0.9 cu.m bucket capacity are proposed to be used.

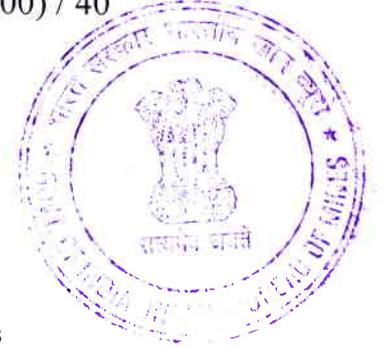
##### 4.8.2.1 Excavating Parameter

- C = Nominal Bucket Capacity = 0.9 cu.m
- F = Bucket fill factor = 0.8
- S = Swell factor = 0.71
- t = Time cycle per pass at 90° swing = 40 sec
- e = Overall efficiency for one working shift = 0.75  
(minimum working is 6 hrs. per shift of 8 hrs, so,  $6/8 = 0.75$ )
- T = Seconds per hour = 3600 sec
- n = Number of working shifts / day = 1
- h = Hours per shift = 6
- w = Working days in a year = 300 days.



### Rate of Production:

$$\begin{aligned}\text{Output / shovel / hour} &= (C \times F \times S \times T) / (t) \\ &= (0.9 \times 0.80 \times 0.71 \times 3600) / 40 \\ &= 46 \text{ m}^3 \\ \text{Output / shovel / year} &= 46 \times h \times n \times w \times e \\ &= 46 \times 61 \times 300 \times 0.75 \\ &= 62100 \text{ m}^3\end{aligned}$$



### Number of Excavators

Maximum handling of material required = 21,900 m<sup>3</sup>

$$\begin{aligned}\text{No. of excavator (shovels) required} &= (21,900 \times 1.05) / (62100 \times 0.75) \\ &= 0.49 = 1\end{aligned}$$

(Considering 5% as rehandling and 75% availability)

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Type	No.	Size / Capacity	Make
Hydraulic shovels (Back Hoe)	1	0.9 m <sup>3</sup> bucket	Tata Hitachi Ex-100

**Note :** Additional Handling and re-handling will be taken care off by the extra capacity of the above Excavator.

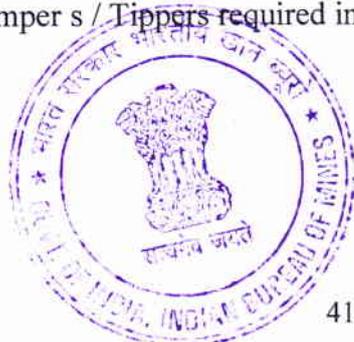
## 4.8.3 Transportation

### 4.8.3.1 Transportation of Marketable Ore

- i Annual rate of limestone ore to be produced = 21900 m<sup>3</sup> or 54750 MT
- ii Material to be handled ( 5 % Re-handling) = 57488 MT
- iii Daily quantum of ore to be transported = 57488 / 300  
= 191.6 say 192 MT
- iv Capacity of dumper/tipper = 10 MT

- v Effective Capacity of Dumper / Tipper =  $10 \times 0.9 = 9$  MT
- vi Required no. of trips/day =  $192 / 9$   
= 21.33 or say 22
- vii No. of passes required for one trip  
Nominal tipper capacity / bucket capacity x bucket fill factor x swell factor x material factor (bulk density)  
=  $10 / (0.9 \times 0.9 \times 0.71 \times 2.5) = 6.95$  or say 7 passes.
- viii Tipper cycle  
Includes loading, hauling, unloading, returning and spotting.
- a. Loading time = Number of passes x time cycle per pass  
=  $10 \times 30 = 300$  seconds
- b. Hauling time = Lead(km) / Average Haul Speed (KMPH)  
=  $3 / 15 = 0.2$  hours or 720 seconds
- c. Unloading time = 60 seconds
- d. Returning time = Lead(km)/Average empty travel speed (KMPH)  
=  $3 / 20 = 0.15$  hr or 540 seconds
- e. Spotting time = 30 seconds
- Tipper cycle time = Loading time + hauling time + unloading time + empty travel time + spotting time  
=  $300 + 720 + 60 + 540 + 30$   
= 1650 seconds or 27.5 minutes
- ix No. of trips can be transported per tipper per day =  $2.2 \times 6$   
(Effective operating hrs in a shift per day)  $\approx 13.2$
- x No. of tippers required per day (10 tonne capacity) =  $22 / 13.2$   
= 1.67 nos.
- xi Availability factor = 0.75
- xii Dumper s / Tippers required in fleet =  $1.67 / 0.75$   
= 2.2 say 3nos.  
(Considering some miscellaneous jobs)

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**4.8.3.2 List of Machineries**  
(Proposal during plan period)

Sl. No.	Machines	Size / Capacity	No. of Machineries
1	Crawler drills	100 mm	1
2	Compressor for Crawler drills XAH210 of ATLAS COPCO	9 cu.m/ min	1
3	Table Hitachi Ex-100	0.9 cu.m	1
4	Dumper/tipper	10 MT	3
5	Rock breaker HM 1200	.....	1
6	Komatsu D-155 Dozer	.....	1
7	Explosive van	.....	1
8	Ambulance	.....	1
9	Maintenance Van	.....	1
10	Water tanker	10 kl	1
11	Jeeps / light vehicle	.....	As per requirement

**Note:** All the production machines (Drill, Excavator & Dumpers) are having surplus capacity. Hence the miscellaneous jobs like stock handling, mine maintenance etc can be taken care -off by the same machines and no extra machine has been planned for these types of jobs.



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M/s CMC Ltd.  
Applicant

**TABLE NO. – 4.1**  
**PRODUCTION SCHEDULE**  
**(Yearwise Excavation of Limestone)**

Year	Section Considered	Contour level / Bench R.L (m)	Cross-Sectional area (m <sup>2</sup> )	Length influence (m)	Volume of ore (m <sup>3</sup> )	Volume of ROM at 90% incidence (m <sup>3</sup> )	Bulk density	Quantity of ore (MT)
1 <sup>st</sup> Year	CC'	Above 345	25	65	1625	1462.5	2.5	3656.25
		345-342	39	65	2535	2281.5	2.5	5703.75
		342-339	29	65	1885	1696.5	2.5	4241.25
		339-336	48	65	3120	2808.0	2.5	7020.00
		336-333	65	65	4225	3802.5	2.5	9506.25
	<b>Sub-total</b>				<b>13390</b>	<b>12051</b>		<b>30127.5</b>
2 <sup>nd</sup> Year	CC'	333-330	78	65	5070	4563	2.5	11407.5
	DD'	Above 357	10	105	1050	945	2.5	2362.5
		357-354	22	105	2310	2079	2.5	5197.5
		354-351	39	105	4095	3685.5	2.5	9213.75
		351-348	57	105	5985	5386.5	2.5	13466.25
	<b>Sub-total</b>				<b>18510</b>	<b>16659</b>		<b>41647.5</b>
3 <sup>rd</sup> Year	DD'	348-345	71	105	7455	6709.5	2.5	16773.75
		345-342	80	105	8400	7560.0	2.5	18900.00
		<b>Sub-total</b>				<b>15855</b>	<b>14269.5</b>	
4 <sup>th</sup> Year	FF'	Above 381	98	75	7350	6615	2.5	16537.5
		381-378	120	75	9000	8100	2.5	20250
		<b>Sub-total</b>				<b>16350</b>	<b>14715</b>	
5 <sup>th</sup> Year	FF'	378-375	114	75	8550	7695	2.5	19237.5
		375-372	104	75	7800	7020	2.5	17550.0
		372-369	74	75	5550	4995	2.5	12487.5
		<b>Sub-total</b>				<b>21900</b>	<b>19710</b>	
<b>Total</b>					<b>86005</b>	<b>77404.5</b>		<b>193511.25</b>

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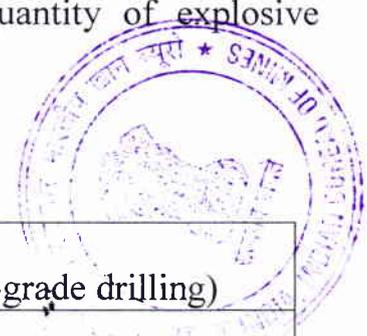
## CHAPTER – V

### 5.0 BLASTING

Blasting is one of the most critical activities of mining operation. Therefore blasting parameters have been developed taking into account different aspects generally adopted in similar cases to optimize the efficiency of blasting keeping the associated hazards at minimum. It is however, proposed to adjust the same by carrying out a number of trial blasts with varying parameters before adopting there on a regular basis. Hard limestone will be dislodged by drilling & blasting prior to excavation & loading. The quantity of materials likely to be blasted is 80% of total excavation. There is no proposal for construction of magazine within M.L area as the requirement of explosive shall be met from the existing magazine of the lessee located at a distance of about 5km west of the present M.L area. The broad blasting parameters, type of explosive & quantity of explosive required are as follows:

#### i) Broad Blasting Parameters:

Average depth of the blast holes	-	3.3 m ( Including Sub-grade drilling)
Burden	-	1.25m
Spacing	-	1.50m
Diameter of the hole	-	100mm
Powder factor of the explosive	-	2.4 Cu.m/kg
Length of the explosive cartridge	-	Depending upon the blast hole design & nature of the strata
Volume yield per hole	-	Burden x Spacing x Depth of hole
	=	1.25 x 1.5 x 3.3m
	=	6.18 or say 6.2 Cu.m



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**ii) Type of Explosive:**

To carryout blasting operation, Class-II (Slurry Cap & Non Cap Sensitive & ANFO with cast boosters /special gelatin 80% strength) and Class-VI explosive (detonating fuse & Electric detonator) to be utilized in the mine.

**iii) Explosive Consumption:**

- ❖ Yearly Excavation ( Maxm in 5<sup>th</sup> Year) = 21900 m<sup>3</sup>
- ❖ Volume required to be Blasted = 17520 m<sup>3</sup>  
(80 % of total excavation will require blasting).
- ❖ Volume require per day = 17520/300  
= 58.4 m<sup>3</sup> per day

**(No of Working Days per Year = 300)**

- ❖ Powder Factor = 2.4 m<sup>3</sup>/ Kg ( i.e. 6 T / Kg of Explosives)
- ❖ Requirement of Explosive per day = 58.4 /2.4 = 24.3 Kg
- ❖ Total Explosives consumption per day for Primary Blasting = 24 Kg

**Note :** There will not be any secondary Blasting as the rock breaker will be used for breaking of big boulders.



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## CHAPTER – VI



### 6.0 MINE DRAINAGE:

The main source of water is surface run off rain water. The general slope of the area is towards south-east. There has been no water body or perennial nalah passing through the lease area.

All the sides of the benches adjacent to the natural slope will be provided with berm of suitable height and width and the surface run-off will be diverted through the garland drain around the proposed quarry down the slope to outside the M.L area via settling tank which can also serve the purpose of rain water harvesting and water can be used for the plantation.

The ground water level (GW level) of the ML area is observed to be at 200 mRL. The highest and lowest altitude of the M.L area is observed to be at 387mRL and 273 mRL. The ultimate working depth is at 265 mRL. Hence there will be no impact due to ground water in the M.L area.

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## CHAPTER – VII

### 7.0 STACKING OF MINERAL REJECTS & DISPOSAL OF WASTE.

There will be no waste generation from this mine. So, waste dumping & its management in the area is not envisaged.



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## CHAPTER – VIII

### 8.0 USE OF MINERALS

8.1 All ROM will be transported from the mines to the crusher by 10 MT tonne tippers. The crusher is located at a distance of about 2.5km near the cement plant site outside the M.L area.

Average grade of ROM on the basis of composite analysis of bore hole samples is  $\text{SiO}_2$ -2.47%,  $\text{Al}_2\text{O}_3$ -0.75%,  $\text{Fe}_2\text{O}_3$ -0.71%,  $\text{CaO}$ -52.28%,  $\text{MgO}$ -0.67%,  $\text{LOI}$ -41.72%. Since ROM will be + 45%  $\text{CaO}$ , the raw mix design will be limestone : 85% and correctives : 15%



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## CHAPTER – IX

### 9.0 OTHER INFORMATION:

#### 9.1 Site Services:

It is proposed to construct statutory and essential infrastructure like blasting shed, rest shed, office and drinking water facilities during planned period of 5 years.

#### 9.2 Employment Potential:

Sl. No.	Designation/Post	No.
<b>Managerial &amp; Supervisory:</b>		
1	Manager (Mines)	1
2	Asst. Manager	1
3	Geologist	1
4	Mining Engineer	1
5	Mines Surveyor (part time)	1
6	Mines Foremen	1
7	Mining Mate	1
8	Mines Blaster	1
9	Engineer Maintenance	1
<b>TOTAL</b>		<b>09</b>
<b>Others</b>		
1	Operators (for excavator, 10 MT dumpers/Tippers, W. drills etc.) & Mechanic	05
2	Semi-skilled (Blasting & HEMM helper)	04
3	Clerical Staff	1
4	Peon/Tea boy	1
5	Plantation Gang	1
<b>TOTAL</b>		<b>12</b>

## CHAPTER – X

### 10.0 MINERAL PROCESSING:

The entire ROM limestone raised from the mining lease area will go to the crusher after breaking the oversized boulders by rock breakers. The crusher is located near the cement plant at a distance of 2.5km to north of the ML area.



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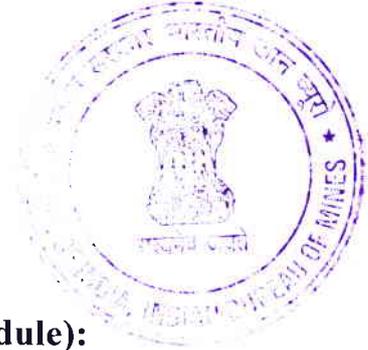
## CHAPTER –XI

### 11.0 ENVIRONMENTAL MANAGEMENT PLAN

#### 11.1 Baseline Information:

##### 11.1.1 Existing Land-use Pattern (As per the land schedule):

District/ State	Village	Khasra No/ Plot No/ Private Land	Area in (hects)
East Jaintia Hills/ Meghalaya	Lumshnong	Private Land ( non- forest & barren rocky land)	13.58



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##### 11.1.2 Water Regime:

There is no water body in the lease area. The main source of water is surface run off rain water. The general slope of the area is towards south.

##### 11.1.3 Flora & Fauna:

###### Flora:

The common flora present out side the M.L area and within the buffer zone around a radius of 10 km of ML area are Actinodaphne obovata, Albizzia, Aralia nenfolia, Ardisia nerifolia and Bambusa tulda etc.

###### Fauna:

The fauna of common occurrence around the M.L area are mainly Bamboo Rat, Squirrel, House rat, Coral snake etc.

There is no reported species of endangered flora & fauna within the M.L area.

#### 11.1.4 Quality of air, ambient noise level and water:

Regular monitoring of air and noise level will be carried out once the mining activities in the lease area starts.

#### 11.1.5 Climate:

##### Rainfall

The meteorological data shows that the area experiences a moderate/ extreme climate with abundant rainfall during monsoon months. More than 70% of the rainfall is received during June to September. The nearest location for data on meteorology is Silchar and CMCL Lumshnong. Analysis of meteorological data over a period of 5 years (2006 to 2010) shows that annual average rainfall is 6360.06 mm. The maximum annual rainfall during 2010 i.e. 9732.10 mm. and minimum annual rainfall was during 2006 i.e. 3807mm.

##### Temperature:

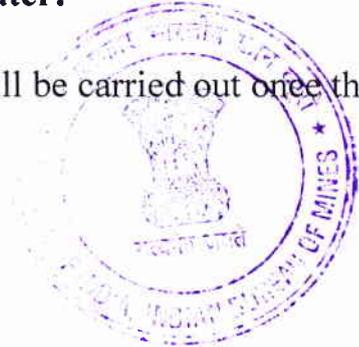
The temperature generally ranges from 14.0°C to 29.5°C.

##### Humidity

Relative humidity varies between 66.0% to 96.0% during Summer season.

##### Predominant wind direction:

Pre-dominant wind direction is due south-east and maximum speed of the wind as recorded during 2007 and 2008 is 19.30km/hr and 20.70km/hr respectively.



### 11.1.6 Human Settlements:

The study area i.e within 10km radius around M.L area comprises of 19 villages. The socio-economic and details of the study area is as follows :

Socio-economic environment includes description of demography, available basic amenities. The M.L. area lies in Khliehriat community development block of East Jaintia Hills District of Meghalaya. The district of East Jaintia Hills lies in the eastern part of the Meghalaya and bounded on the east by the state of Assam, on the north and west by West Jaintia Hills and shares a common international boundary with Bangladesh in south.

The 10 km radius study area around the M.L. area comprises of 19 villages as per Census 2001 & 2011. The socio-economic profile of the study area is presented based on site visits, discussions with the villagers and the secondary data available from various agencies. The demography details, occupational pattern and basic amenities available based on Census 2001 are given hereunder.



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## Population

All the villages in the study area are grouped into eight population size classes as follows:

### Classification of the Villages Based on Population Size

SL. No.	Village Group	Population Range	Number of villages
			Census 2001
1	Diminutive villages	Below 50	2
2	Diminutive villages	50 – 99	3
3	Diminutive villages	100 –199	3
4	Small villages	200 –499	9
5	Medium villages	500 –1999	2
6	Large villages	2000 –4999	Nil
7	Very large villages	5000 –9000	Nil
8	Special villages	10,000 +	Nil
<b>TOTAL</b>			<b>19</b>

Most of the villages in the study area have the population less than 500 and only two villages in the study area have population more than 1000. No village has been found having population more than 2000.

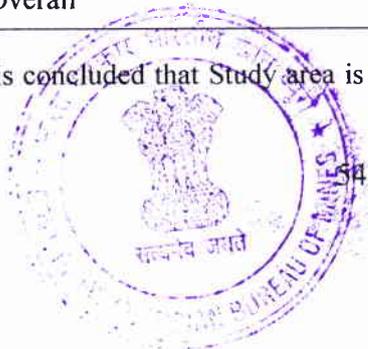
Demographic details of the study area are summarized as follows :

### Demographic Details of the Study Area

SL. No.	Particulars	Census 2001	Census 2011
1	Total Population	6148	8984
	Population density (persons per sq.km)	19.58	28
2	Sex Ratio (nos. of female per thousand males)	947	1000 : 967
3	Household	1160	1627
4	Schedule Castes	3.76%	11%
5	Schedule Tribes	89.13%	98.02%
6	Literacy rate		
	Male	38.74%	49.45%
	Female	35.27%	49.77%
	Overall	37.05%	49.61%

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From table, it is concluded that Study area is mainly dominated by schedule tribes and schedule castes.



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### Literacy Rate

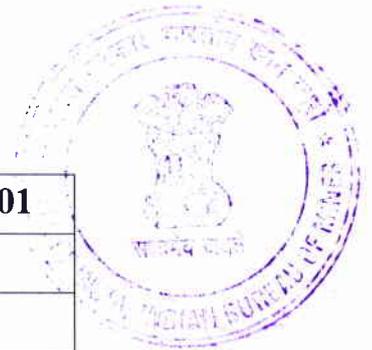
As per census 2001, overall literacy rate of the study area is 37.08% while literacy rate among male and female are 38.74% and 35.27% respectively.

### Occupational Structure

The distribution of workers in the study area is summarized as follows :

#### Occupational Pattern of the Study Area

Sl.No.	Particulars	Census 2001
1	Main workers	42.8%
	Cultivators	68.21%
	Agricultural labourers	13.29%
2	Marginal workers	5.2%
3	Non- workers	52.0%
<b>TOTAL</b>		<b>100.0%</b>



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Main workers of the study area are mainly contributed cultivators and agricultural labourers.

### INFRASTRUCTURAL FACILITIES

The study area is well equipped with educational and medical facilities, drinking water supply, post offices, approach roads etc. Details of the available infrastructural facilities are discussed below:

### **Education**

Almost all the villages (78%) had education facilities up to primary level and based on the survey made in the study area, it was found that the educational facilities have been further strengthened in the study area.

### **Medical and Public Health**

Only three villages were having medical facilities otherwise, it was available within 10 km. Based on the survey made in the study area, medical facilities have been further strengthened now and number of private doctors are also practicing in the study area.

### **Drinking Water**

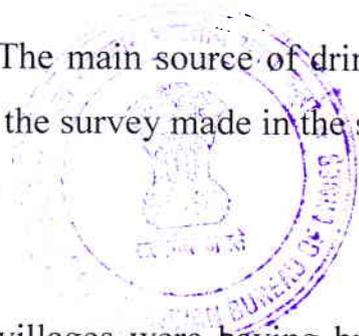
Drinking water is available in all the villages. The main source of drinking water was through springs and others. Based on the survey made in the study area, facilities have been further improved now.

### **Post Offices**

The study area had good postal network. All villages were having branch post offices either at door or within 10 km. Based on the survey made in the study area, maximum distance of availability of the facility has been reduced to less than 5 km.

### **Communications**

Apart from P/T services, transport is the main communication linkage in the study area. About 45% villages in the study area had access to bus service and private taxi services. Otherwise facilities were available within 05 km. At present, transport facilities in the study area have been improved significantly.



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### **Road Network**

Transport and Communication facilities are considered an administrative necessity as well as a public convenience. However, a well-knit transportation system is a pre-requisite for the social and economic development of any district. The linking of one place with the other by road is very essential to provide good transport system. The study area had good road network. About 55% of the villages had pucca approach road. Based on the survey made in the study area, facilities have further improved now.

### **Power and Electricity**

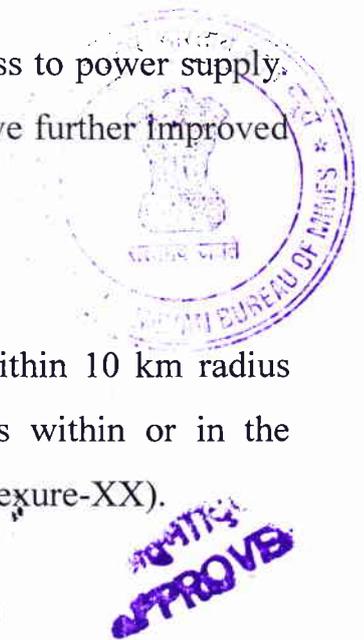
Almost all the villages (67%) in the study area had access to power supply. Based on the survey made in the study area, facilities have further improved now.

### **Historical /Tourist /Archaeological Places**

There are no historical / archaeological sites present within 10 km radius around the project site. Further no cave system exists within or in the vicinity of the mine. (Copy of certificate enclosed as Annexure-XX).

#### **11.1.7 Public Buildings, Places of Worship and Monuments:**

A Church, school buildings are located in Lumshnong village and a temple in CMCL's township. No historical monuments are located within 5km radius of the M.L area.



## 11.2 Environmental Impact Assessment Statement:

### 11.2.1 Area likely to be degraded:

During plan period of five years for mining and allied activities 1.83 hectares will be utilized.

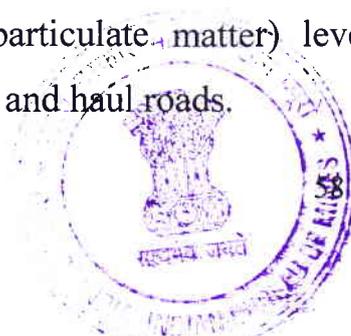
The details of proposed land use pattern due to mining and allied activities will be as follows:

(Area in hectares)

Sl. No.	Pattern of Utilisation	Existing	Planned 5 year	Beyond Planned Period	Total
A	Mining	Nil	1.12	1.45	2.57
B	Dumping of overburden	Nil	--	--	--
D	Top soil storage	Nil	--	--	--
E	Sub-grade ore storage	Nil	--	--	--
G	Infrastructure (Rest-shed, office, first-aid center)	Nil	0.01	--	0.010
H	Construction of road	Nil	0.20	--	0.200
I	Magazine	Nil	--	--	--
J	Green belt	Nil	0.50	--	0.500
	<b>Sub-Total</b>		<b>1.83</b>	<b>1.45</b>	<b>3.28</b>
K	Safety zone (7.5m around ML boundary)				1.30
L	Safety barrier due to HT line				3.07
M	Area untouched				5.93
	<b>Total</b>				<b>13.58</b>

### 11.2.2 Impact on Air Quality:

There shall be certain impact of mining activities on air environment as the ensuing mining activities will be done by mechanized means. During excavation and hauling / transport there is likely to be increase in SPM (suspended particulate matter) level but the impact will be limited to working area and haul roads.



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*[Handwritten Signature]*

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Regn. No: ROP/CAL/167/92/B

### 11.2.3 Impact On Water Quality :

There is no water body in the lease area. The main source of water is surface run off rain water. The general slope of the area is towards south. There is no top soil in the area and so there will be no impact on water quality due to mining.

### 11.2.4 Impact on Noise Levels:

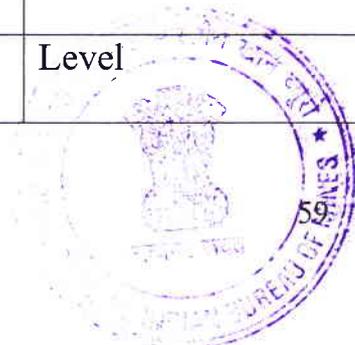
The noise level during mining operation will increase due to operation and movement of machineries. However, increase of general noise level is marginal, except close to the operating equipment. The impact of noise due to blasting is for a very short duration.

### 11.2.5 Vibration Levels (due to blasting):

Ground vibration levels will be monitored with Minimates regularly and the charging pattern of blast holes will be designed accordingly to reduce vibrations.

Various measures to monitor environmental parameters is given as follows

Environmental Domain	Parameter	Frequency
Air	SPM, PM10, SO <sub>2</sub> and NO <sub>x</sub>	Monthly twice (continuously for 24 hours) in 4 locations.
Water	As per CPCB Guide line	2 samples from ground water 2 from surface water source in a quarter.
Noise	Level	24 hours in a quarter in 4 locations.



### 11.2.6 Impact On Water Regime :

There is no water body in the lease area. The main source of water is surface run off rain water. The general slope of the area is towards south. There is no top soil in the area and so there will be no impact on water regime due to mining.

### Impact on Socio-economics:

There will be no displacement of human settlement due to the proposed mining activities. Mining activities will have a positive effect on the socio-economic condition of the people residing nearby as the mining activity shall provide a steady source of income to them. With the continuation of mining operation, communicational & medical facilities and employment opportunity will be improved further.

### 11.2.7 Impact on Historical Monuments:

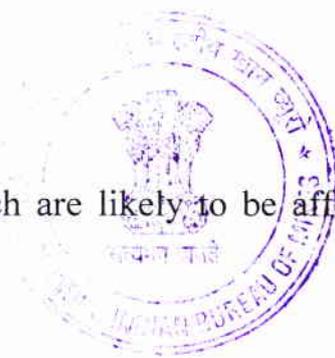
There are no historical monuments nearby which are likely to be affected due to the proposed mining activities.

### 11.3 Environmental Management Plan:

As mentioned above, mining activities will have certain adverse effects on the existing environment. Therefore, it is essential to adopt suitable measures in order to mitigate the environmental damage.

#### 11.3.1 Temporary storage and utilization of top soil:

The generation of top soil is nil. So there will be no storage of top soil for the plan period of five years.



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### 11.3.2 Proposal for reclamation of land affected by mining:

During planned period of 5 years around 1.83 hectares of land will be degraded due to mining & allied activity. Reclamation programme at present is not envisaged since ore body shall not be exhausted. Beyond planned period 1.45 hectares will be degraded due to mining activities after which reclamation can be taken up.

### 11.3.3 Programme of Afforestation :

As mentioned in land use pattern, the total area degraded due to the proposed mining activities is restricted to 1.83 hectares. It has been proposed to have plantation along the ML boundary at South-Western & Northern side (Ref. Plate No. VII). The details of year wise plantation is given in the Table no -11.1.

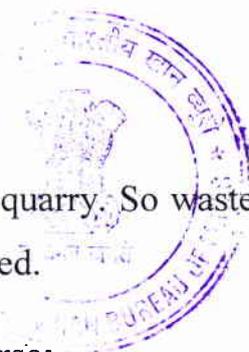
### 11.3.4 Stabilization and Vegetation of Dumps:

The overburden wastes generated is nil from the proposed quarry. So waste dumping & its management in the mines area is not envisaged.

### 11.3.5 Measures to control erosion/sedimentation of water course:

However, there is no water body in the lease area. The main source of water is surface run off rain water. The general slope of the area is towards south. There is no top soil in the area and so there will be no impact on water regime due to mining.

A garland drain will be developed around the proposed quarry to channelise the muddy water towards a settling tank for releasing clear water to the natural drainage.



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### 11.3.6 Treatment and disposal of water from Mine :

Water table, in the mineable area, is expected to be at a depth of 200 m above msl. Therefore, quarry floor will not be water logged by the seepage water as the depth of quarrying will not be more than 70m during proposed plan period. However, the gully cutting within the proposed quarry will be diverted & joined with the surface drainage to restrict entry of outside water into the quarry zone. Further, surface drainage will be made around the quarry with a number of settling tank to settle the wash offs before discharge to out side of the M.L area.

### 11.3.7 Measures for minimizing adverse effect on water regime:

There is no water body in the lease area. The main source of water is surface run off rain water. The general slope of the area is towards south. There is no top soil in the area and so there will be no impact on water regime due to mining. However, garland drain shall be developed around the proposed quarry with settling tanks to channelize the surface water so that clean water will be released to natural drainage out side the quarry area. Besides this, regular monitoring of surface & ground water will be done to know the quality.

### 11.3.8 Protective Measures for ground vibration caused by blasting:

Loosening of rock mass will be done by the help of 3m deep and 83mm dia holes. Burden & spacing are proposed to be kept at 1.2m and 1.5m respectively. There is no human settlement nearby the M.L area.

However, on the basis of vibration study, burden & spacing and charge in the blast holes can be varied to minimize ground vibration while blasting the above mentioned blast holes.



**11.3.9 Measures for protecting historical monuments and for rehabilitation of human settlement likely to be disturbed due to mining activity:**

Historical monuments are not found within 5km radius of the M.L area. Planning for resettlement, rehabilitation is not required in the absence of human settlements in the lease area.

**11.3.10 Socio Economic Benefits:**

With the continuation of mining activity in the lease area, there will be further improvement in the infrastructural facilities; employment potential, trade and commerce will be improved further. Hence there will be an overall improvement of socio-economic status of the people of surrounding areas.



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Regn. No.- RGP/CAL/157/92/B

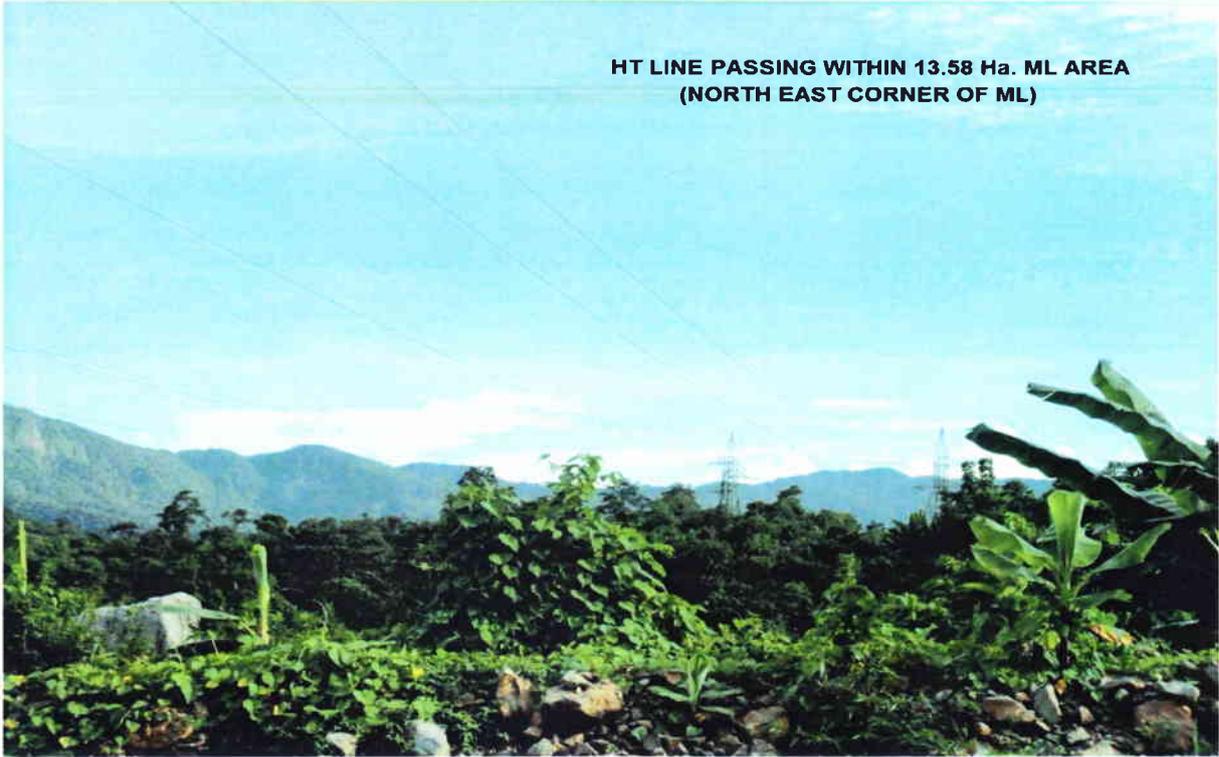
**Table-11.1**  
**PLANTATION SUHEDULE**  
(along 7.5m lease boundary)

Year	Area to be planted (m2)	Spacing	No. of Saplings	Type of Species to be planted	Location
1 <sup>st</sup> Year	1000	2.5	160	Mixed species as champa, mahaneem, jackfruit etc.	Afforestation to be carried out in south-western and northern side of the M.L boundary (Ref. Plate-VII)
2 <sup>nd</sup> Year	1000	2.5	160		
3 <sup>rd</sup> Year	1000	2.5	160		
4 <sup>th</sup> Year	1000	2.5	160		
5 <sup>th</sup> Year	1000	2.5	160		
<b>Total</b>	<b>5000</b>		<b>800</b>		

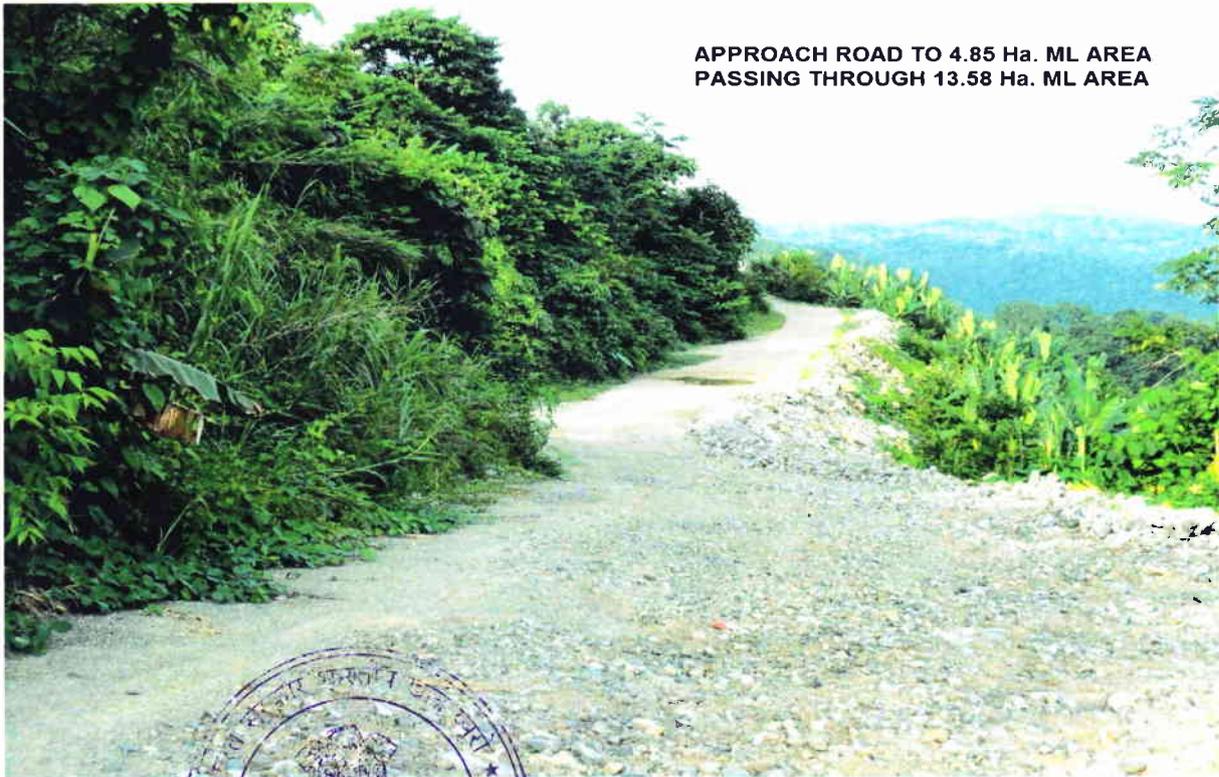


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Key Person  
M/s. Geomin Consultants (P) Ltd.  
Regn. No. TGP/CAL/167/92/B.



**HT LINE PASSING WITHIN 13.58 Ha. ML AREA  
(NORTH EAST CORNER OF ML)**



**APPROACH ROAD TO 4.85 Ha. ML AREA  
PASSING THROUGH 13.58 Ha. ML AREA**



65

  
K. G. Person  
M/s. Geomin Consultants (P) Ltd.  
Regn. No. > BQP/CAL/167/92/B

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LIMESTONE EXPOSURES WITHIN  
13.58 Ha. ML AREA



LIMESTONE EXPOSURES WITHIN  
13.58 Ha. ML AREA

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*(Handwritten signature)*

Key Person  
M/s. Gemma Consultants (P) Ltd.  
Regn. No. - ROP/CAL/167/92/8

# PROGRESSIVE MINE CLOSURE PLAN

In Respect Of

## Wah Pynkon Limestone Deposit

Over an Area of 13.58 Hectares  
In East Jaintia Hills District, Meghalaya

(Submitted under Rule 23B(1) of MCDR, 1988)

Forest land – NIL

Non-forest land & Non-agricultural land – 13.58 Hects

for & on behalf of

**M/s Cement Manufacturing Company Ltd.**

Applicant

ACCEPTED  
APPROVED



*Prepared by:*

**GEOMIN CONSULTANTS PVT. LTD.**

An ISO 9001:2008 Certified Company

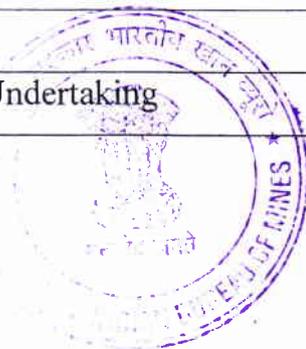


102, Royal Residency, Plot No. VIP-48, IRC Village, Nayapalli, Bhubaneswar-751015, Odisha  
Tel. : 0674-2551080, Fax : 0674-2551687, E-mail : geomingeo@gmail.com



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↓

Key Person  
M/s. Certain Consultants (P) Ltd.  
Regn. No. 10/2017/167/12/B

## 1.0 INTRODUCTION:

### \* Name & Address of the Applicant.

Sri Devender Bansal, Authorised Signatory, on behalf of Cement Manufacturing Co. Ltd.

### Address

Village - Lumshnong  
P.O. - Lumshnong  
District - East Jaintia Hills  
State - Meghalaya  
PIN - 793 210  
Telephone No. - 03655 – 278214 -18  
Fax No. - 03655 - 278217  
Email : - lumshnong@cmcl.co.in



### \* Location and extent of the lease area (Non-forest)

Geologically the rock formations of the area belong to Jaintia Series of Eocene Age. Limestone unit belongs to Sylhet Stage of Jaintia Series of Middle Eocene Age. Limestone exposures are seen throughout the area. The lessee proposes to mine limestone from this area and the total ROM will be supplied to its own Cement Manufacturing Plant near Lumshnong village. The distance from mines to the plant is about 2.5km. The ML area (13.58 ha) under report comes under village Lumshnong in the district of East Jaintia Hills of Meghalaya State. The area falls in parts of Survey of India toposheet No. 83C/W (restricted) on scale 1:50,000. The area is situated on the eastern side of National Highway No. 44 and close to 129km stone and about 5km south-east of village Lumshnong.

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The details of land covered in the M.L area has been indicated in the prescribed proforma below:

District / State	Village	Plot No. / Private land	Area in hecets
East Jaintia hills / Meghalaya	Lumshnong	Private land (Non-forest & barren rocky land)	13.58

**\* Present Land use pattern**

The ML area over 13.58 hectares is coming under non-forest land i.e Barren rocky land. The details of proposed land use pattern due to mining and allied activities will be as follows:

(Area in hectares)

Sl. No.	Pattern of Utilisation	Existing	Planned 5 year	Beyond Planned Period	Total
A	Mining	Nil	1.12	1.45	2.57
B	Dumping of overburden	Nil	--	--	--
D	Top soil storage	Nil	--	--	--
E	Sub-grade ore storage	Nil	--	--	--
G	Infrastructure (Rest-shed, office, first-aid center)	Nil	0.01	--	0.010
H	Construction of road	Nil	0.20	--	0.200
I	Magazine	Nil	--	--	--
J	Green belt	Nil	0.50	--	0.500
	<b>Sub-Total</b>		<b>1.83</b>	<b>1.45</b>	<b>3.28</b>
K	Safety zone (7.5m around ML boundary)				1.30
L	Safety barrier due to HT line				3.07
M	Area untouched				5.93
	<b>Total</b>				<b>13.58</b>

**\* Method of Mining**

Method of mining will be opencast and fully mechanized on single shift basis. Machineries to be deployed are, Air compressors, Crawler drills, Excavator cum-loaders, Rock breakers, Tippers etc.

**\* Mineral Processing**

No mineral processing is envisaged at the mines site. Only the oversized boulders to be generated during mining shall be broken by deploying rock breakers & the entire ROM limestone shall be transported to the plant site for crushing to required size for captive use in the company's cement plant.

13/4/2011  
13/4/2011

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## 1.1 Reasons for closure:

### \* Predictable

It is expected that during five years of planned period, limestone will be available upto 70m from the surface level which may further increase after detailed exploration. Since the entire lease area is limestone bearing life of the mine shall continue till exhaustion. Therefore we don't fore see any eventuality to close the mine.

### \* Unpredictable

Closure may be possible due to natural calamities, mine related accident, local issues etc

## 1.2 Statutory Obligations:

Progressive Mine Closure Plan is required under rule 23 B (1) of MCDR, 1988 for fresh grant of mining lease vide notification GSR 330(F) dated 10.04.2003.

## 1.3 Closure Plan Preparation.

### \* Name & Address of the Applicant.

Sri Devender Bansal, Nominated Owner  
M/s Cement Manufacturing Company Ltd.

#### Address

Village-Lumshnong, P.O. Lumshnong  
P.S-Khliehriat, Dist- East Jaintia Hills  
Meghalaya- 793 210

Phone No.-03655-278214-18, Fax-03655-278217

Email : lumshnong@cmcl.co.in

### \* Name & Address of the RQP Preparing Progressive Mine Closure Plan.

#### M/s Geomin Consultants (P) Ltd.

267, Kharavela Nagar,

Bhubaneswar – 751 001

Phone: 0674-2392080, Fax: 0674-2390687

Email : geomin@satyam.net.in

Regd. No. RQP/CAL/167/92-B

First date of grant: 17.08.1992

Date of Last Renewal: 17.08.2010

Valid up to: 17.08.2020

### \* Name of the Executing Agency

Closure plan will be implemented by the Applicant  
M/s Cement Manufacturing Company Ltd.



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Key Person  
M/s. Geomin Consultants (P) Ltd.  
Regn. No.- RQP/CAL/167/92/B

## 2.0 MINE DESCRIPTION

### 2.1 Geology:

#### Topography

Topography of the proposed ML area and its surroundings are rugged and mountainous. Maximum and minimum contours passing through the area are 387m and 273 m respectively. North-western part of the area is at higher elevation with respect to south-eastern part. The general slope is towards south and south-east. There is no public road within the M.L area. It is located on the eastern side of NH-44.

#### Drainage:

The area is devoid of any natural drainage course or nala.

#### General Geology / Regional Geology:

The State of Meghalaya covers an area of approximately 22,429 sq.km and divided into eleven administrative districts. The north and eastern borders are covered by Assam State and south and west by Bangladesh. Shillong, the State Capital is at an elevation of 1800m and located in the central part of Khasi hills. The rock formations of the area fall under Jaintia Series of Eocene age.

The Regional Stratigraphy of the area is as follows:

Age	Group/Series	Stage	Beds
Oligocene	Barail Series	----	Sandstone & Shale
Upper Eocene	<b>Garo Group</b>	Kopili Formation	Grey shale with alternate layers of Sandstone & Siltstone
Lower to Middle Eocene	Jaintia Group	Sylhet Limestone	Prang Limestone Narpuh Sandstone Umlatdoh Limestone Lakadong Sandstone Lakadong Limestone
Palaeocene	----	Therria Sandstone	Sandstone

The Lakadong sandstone and Narpuh sandstone distinctly and sequentially separate the Lakadong, Umlatdoh and Prang limestone bands in the area.

### Local Geology

The area under report has been explored in detail by geological mapping, surface sampling, drilling and analysis of surface samples and core samples. It is observed that the entire area is covered by top limestone band known as prang limestone beds. The top surface shows rough and jagged outcrops and fractured filled with clayey brown sandy soil locally. The thickness of this limestone band as encountered in the drilled boreholes varies from 29.10m to 54.20m. The limestone bed extends in NE-SW diversion dipping  $42^{\circ}$  to  $50^{\circ}$  south easterly.

### 2.2 Reserve & Grade

As indicated in Plate-III, III(A) and Table – 3.2 & 3.3, the summarized reserve of limestone is given in para 3.6.1 and 3.6.2. Further it is proposed to carry out composite analysis of proposed bench height in the proved zone and assessment of feed grade limestone during the plan period. Accordingly the grade will be worked out and will be projected in the scheme period.

#### Summary of Geological Reserve

It may be modified as per the changes made in the Mining Plan.

Type	Quantity of ore(MT)	Grade
G <sub>1</sub>	848531.25	+ 45% CaO
G <sub>2</sub>	1310265.00	
G <sub>3</sub>	8831722.50	
<b>Total</b>	<b>10990518.75</b>	

#### Summary of Mineable Reserve

Type	Quantity of ore(MT)	Grade
Proved (111)	41535	+ 45% CaO
Probable (122)	388620	
<b>Total</b>	<b>430155</b>	

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## UNFC Classification

The UNFC classification based on various considerations is indicated as follows:

Classification	Code	Quantity (MT)
<b>A. Mineral reserve</b>		
1) Proved Mineral Reserve	111	41535
2) Probable Mineral Reserve	121	Nil
Probable Mineral Reserve	122	388620
<b>Total (A)</b>		<b>430155</b>
<b>B. Remaining Resource</b>		
1) Feasibility Mineral Resources	211	806996.25
2) Pre-feasibility Mineral Resources	221	Nil
Pre-feasibility Mineral Resources	222	921645
3) Measured Mineral Resources	331	Nil
4) Indicated Mineral Resources	332	Nil
5) Inferred Mineral Resources	333	8831722.50
6) Reconnaissance Mineral Resources	334	Nil
<b>Total (B)</b>		<b>10560363.75</b>
<b>Total Resource (A+B)</b>		<b>10990518.75</b>

### 2.3 Mining Method

#### \* Method of Mining

Method of mining will be opencast and fully mechanized on single shift basis. Machineries to be deployed are, Air compressors, Crawler drills, Excavator cum-loaders, Rock breakers, tippers etc.

#### \* Quarries under Working

There is no mining activity since this is a fresh lease area. During the planned period of 5 years the proposed quarry would be developed for production of limestone of 30127.5 MT in the 1<sup>st</sup> year with peak production of around 49275 MT during 5<sup>th</sup> year.

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\* Bench Geometry

Height & width of the benches will be maintained at 3m and 4.5m for limestone ore. Strata are hard & compact. Overall quarry slope will be maintained less than 45° with the horizontal.

\* Drilling & Blasting

Drilling and blasting will be done by crawler drills.

\* Loading

Loading will be done by mechanized means.

\* Transportation

Dumpers / tippers will be deployed for transportation of limestone to the cement plant of the company for captive use.

\* Machines under Deployment:

Hard rock mass will be loosened by drilling & blasting. Large size limestone boulders will be fragmented by rock breakers. The shovels will do excavation and loading. Transportation of ore will be carried out by dumpers / tippers.

The list of machineries is given below in tabular form:

(Proposal during plan period)

Sl. No.	Machines	Size / Capacity	No. of Machineries
1	Crawler drills	100 mm	1
2	Compressor for Crawler drills XAH210 of ATLAS COPCO	9 cu.m/ min	1
3	Table Hitachi Ex-100	0.9 cu.m	1
4	Dumper/tipper	10 MT	3
5	Rock breaker HM 1200	.....	1
6	Komatsu D-155 Dozer	.....	1
7	Explosive van	.....	1
8	Ambulance	.....	1
9	Maintenance Van	.....	1
10	Water tanker	10 kl	1
11	Jeeps / light vehicle	.....	As per requirement



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\* Production Level

Year	1 <sup>st</sup> year	2 <sup>nd</sup> year	3 <sup>rd</sup> year	4 <sup>th</sup> year	5 <sup>th</sup> year	Total
Proposed production (MT)	30127.5	41647.5	35673.75	36787.5	49275	193511.25

## 2.4 Mineral Processing

The limestone raised from the mining lease area will go to the crusher after breaking the oversized boulders by rock breakers. The crusher is located near the cement plant at a distance of 2.5km to north of the ML area. Whatever blending is needed will be done by deploying one excavator to the desired low lime content to get overall feedable grade or acceptable grade by Quality Department.

## 3.0 REVIEW OF IMPLEMENTATION OF MINING PLAN/SCHEME OF MINING INCLUDING FIVE YEARS PROGRESSIVE CLOSURE PLAN UP TO THE FINAL CLOSURE OF THE MINE.

Preparation of Progressive Mine Closure Plan (PMCP) came in to force vide the notification GSR 330 (E) dated 10.04.2003. Therefore, this is the first PMCP which is supposed to be reviewed while preparing PMCP as a component of scheme of mining for next five years.

## 4.0. CLOSURE PLAN

### 4.1 Mined out Land

**Proposed:**

During five years of plan period it is proposed to work over 1.12 hectares of land which will be utilized for the production of limestone.

The mined out land during ensuing five year plan period are given as follows in a tabular format.

### Year-wise breakup of mined out land

(Area in hectares)

Year	Pit No.	Mined out area at the beginning	Additional area proposed during the year	Total area	Area reclamation and rehabilitated during the year	Mined out land at the end of the year.
1 <sup>st</sup> year	Limestone	Nil	0.31	0.31	Nil	0.31
2 <sup>nd</sup> year		0.31	0.32	0.63	Nil	0.63
3 <sup>rd</sup> year		0.63	0.14	0.77	Nil	0.77
4 <sup>th</sup> year		0.77	0.25	1.02	Nil	1.02
5 <sup>th</sup> year.		1.02	0.10	1.12	Nil	1.12

#### Conceptual period:

A total of 2.57 hectares of land will be degraded during conceptual period due to mining activities only.

#### Reclamation and Rehabilitation measures:

As the proposed quarry or part thereof has not been fully exhausted, no reclamation programme has been felt at present during the planned period of five years. However, due to some land degradation, afforestation programme during the proposed mining period has been suggested along the lease boundary to restore the eco-balance and also to increase the greenery of the M.L area. During conceptual period an area of 3.28 hectares will be degraded/utilized due to quarry, road, infrastructure and afforestation. Out of these, 1.83 hectares will be degraded/utilized during planned period and 1.45 hectares beyond the planned period. The above area will be progressively reclaimed depending upon the availability of the exhausted quarry or part thereof. As there is no habitation in the ML area Rehabilitation measures are not envisaged.



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*(Signature)*

Key Person  
M/s. Geomina Consultants (P) Ltd.  
Regn. No. - RQP/CAL/157/92/B

## Reclamation Measures of Mined out area.

### During Planned Period

During planned period Limestone ore will not be exhausted within any part of the proposed quarry. So no reclamation proposal has been envisaged during this year. However, owing to certain land degradation of a total of 800 saplings are proposed to be planted over an area of 0.50 hectares at near the south-western side of the M.L area during first five years.

### During Conceptual Period

A total of 2.57 hectares will be degraded for mining during conceptual period. The ML area is explored by Core type drilling. After detailed proposed exploration through core drilling up to end of the mineralization, the depth of ultimate quarry may change. However, considering present situation, the total conceptual area over 2.57 hectares will be reclaimed by means of bench plantation at the slopes of ultimate quarry.

Details of the location, area & types of reclamation/rehabilitation measures have been given below:

Name of the quarry	Period of Reclamation & Rehabilitation Measures	Location	Area (hects)	Type of Reclamation & Rehabilitation Measures
Limestone	During conceptual period	Total mined out area (Ref. Plate-VIII)	2.57	Bench plantation

## Reclamation / Rehabilitation Measures of Other Areas.

### Planned Period

During plan period 0.71 hectare of land will be utilized for infrastructure development, road construction & plantation etc. During planned period no proposal has been envisaged for reclamation.

## Conceptual period

A total of 0.71 hectare of land will be utilized for infrastructure development, road construction & plantation. The details of reclamation / rehabilitation measures will be as follows:

Pattern of utilization	Area to be reclaimed (in hectares)	Method of reclamation
Infrastructure development	0.01	The temporary rest shed will be removed & reclaimed by means of plantation.
Road	0.20	The road will be left for public use. Plantation will be carried out on both side of road.
Plantation	0.50	Plantation
<b>Total :</b>	<b>0.71</b>	

## 4.2 Water Quality Management

There is no water body in this proposed mining area and surface run off during monsoon period will gravitate to the down slope (southern direction) through garland drain where the same will be arrested in the water settling tanks as shown in the environment management plan.

Periodical water sampling and its analysis will be done at CMCL laboratory and accordingly its quality management will be undertaken. It may be said that limestone doesn't contain any toxic component.

For water quality management following precautionary measures are to be taken care of.

- Working benches will be kept free from loose overburden / waste materials particularly on monsoon months.
- Garland drains around the mine will be constructed to arrest silt from the water flowing out of mining area.
- These drains are to be cleared of accumulated silt periodically.
- Direct precipitation of rain water in the mine in rainy season will be channelised to garland drains via settling tanks. The same can be used for horticulture purposes and other uses after desilting.
- Ground water table at (195AMSL) will not be disturbed as the working depth of mine (324 ASML) is much higher than that of ground water.

The details of garland drain & settling tank for the arrest of wash offs during plan period are tabulated below :

Year	Location	Garland drain			Settling tank*		
		L(m)	B(m)	D(m)	L(m)	B(m)	D(m)
1st Year	Around the proposed quarry	300	2	1	10	2	1
2nd Year		Maintenance			Maintenance		
3rd Year		Maintenance			Maintenance		
4th Year		Maintenance			Maintenance		
5th Year		Maintenance			Maintenance		
<b>Total</b>		<b>300</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>2</b>	<b>1</b>

\*Two settling tank of 10mx2mx1m dimension will be constructed around the proposed quarry.

### 4.3 Air Quality Management

#### \* Existing Air Quality Status

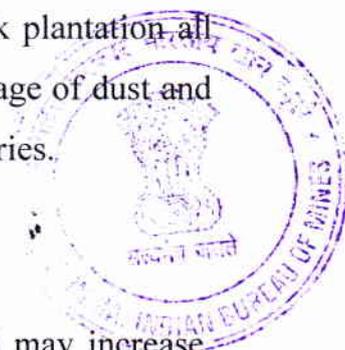
The mining in the applied M.L is to be carried out afresh. Existing air quality is free from any pollution. The mining operation will be adopted by mechanized method which is likely to cause dust pollution. To control the dust pollution water will be sprayed over the mine approach road, haul road, mineral dump area etc. Thick plantation all along the working sector will also arrest certain percentage of dust and fumes produced by movement of heavy mining machineries.

#### \* Corrective Measures

##### - Monitoring

After the initiation of mining operation, pollution level may increase. Therefore, air & noise level will be monitored/measured periodically.

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**\* Management**

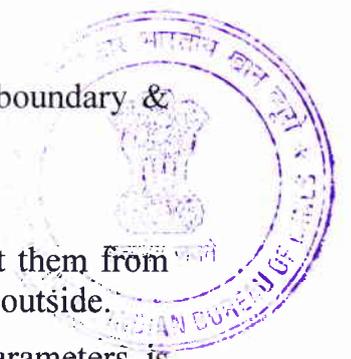
An area of 0.50 hectare is proposed to be planted with 800 saplings for up-gradation of air quality.

Year	Area to be planted (m2)	Spacing (m)	No. of saplings	Type of species to be planted	Location
1 <sup>st</sup> Year	1000	2.5	160	Champa, Mahaneem, jackfruit etc.	Afforestation to be carried out in south-western & northern side of the M.L boundary.
2 <sup>nd</sup> Year	1000	2.5	160		
3 <sup>rd</sup> Year	1000	2.5	160		
4 <sup>th</sup> Year	1000	2.5	160		
5 <sup>th</sup> Year	1000	2.5	160		
<b>Total:</b>	<b>5000</b>		<b>800</b>		

Further measures to be taken up and suggested for air quality management are as follows:

- Controlled blasting to limit the dust within the pit limit.
- Dust collection system, dry fogging sprinkling of water on haul roads and other dust generating areas.
- Proper & regular maintenance of all diesel equipments to decrease emission.
- Construction of well-compacted roads.
- Provision of Green-belt (thick foliage) along lease boundary & road.
- Regular water spraying on roads by tankers.
- Provision of enclosed cabins for operators to protect them from dust and noise, along with use of PPE when working outside.
- Various measures to monitor the environmental parameters is given as follows:

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Environmental Domain	Parameter	Frequency
Air	SPM, PM10, SO <sub>2</sub> and NoX	Quarterly twice (continuously for 48 hours) in 4 locations.
Water	As per CPCB Guide line	2 samples from ground water 2 from surface water source in a quarter.
Noise	Level	24 hours in a quarter in 4 locations.

*[Handwritten signature]*  
Key Person  
M/s. [Company Name] (P) Ltd.  
[Address/Reference]

#### 4.4 Waste Management

Total ROM to be excavated from the M.L area will be dispatched to the cement plant. The quality of limestone being of high grade will require other additive materials for dilution.

#### 4.5 Topsoil Management

Likely generation of top soil is nil. Therefore, there will be no storage, preservation & reuse of top soil for the plan period.

#### 4.6 Tailing dam Management

As there is no proposal for processing plant within the lease area, management of tailing dam does not arise.

#### 4.7 Infrastructure

There has been proposal for the development of infrastructure during the planned period of 5 years.

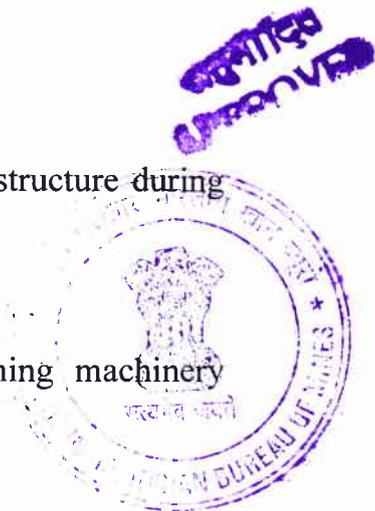
#### 4.8 Disposal of Mining Machinery

There is no possibility of decommissioning of mining machinery during the planned period of five (5) years.

#### 4.9 Safety & Security

There is no possibility of abandonment of quarries, dumps etc during planned period of five (5) years. However, during mining, the following measures have been proposed for safety and security.

- Mine working will be fenced off to prevent falling down of man and animals.
- A guard will be employed to prevent pilferage or theft and to keep the explosives in safe & secure.
- Blasting danger zone will be identified and indicated to the concerned mine people and nearby locality to avoid inadvertent trespassing.
- Whistle or siren will be blown at the time of blasting to make aware the man & animals for not entering in to the blasting danger zone.



#### 4.10 Disaster Management and Risk Assessment

- Climatic hazards such as Landslide, subsidence and inundation are not expected due to opencast mining.
- Though earthquake is felt at times damage to man & materials have not been severe.
- Small scale fire may be possible which can be extinguished by fire extinguisher.

#### 4.11 Care and Maintenance during Temporary Discontinuance:

Temporary discontinuance may happen due to various causes such as :

- Court order
- Natural calamities
- Accident (mine related)
- Slope failure
- Failure in fulfillment of statutory requirement
- Local issues or
- Any other unforeseen circumstances



If there will be temporary discontinuance, the following measures can be undertaken depending upon the causes:

- Intimation to local mine & legal administrative authorities regarding the discontinuance.
- Listing of the machines & materials
- Care and maintenance of machinery as per the machine operating manuals.
- Tightening of the security to keep the machine and materials safe & secured.
- Preparation of plans & sections at the time of discontinuance.
- Repair & maintenance of haul road
- Regular monitoring of air, water, noise etc in the permitted area.

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**5.0 ECONOMIC REPERCUSSIONS OF CLOSURE OF MINE AND MANPOWER RETRENCHMENTS.**

**5.1 Number of local residents employed in the mine, status of continuation of family occupation.**

Not applicable

**5.2 Compensation given or to be given to the employees connected with sustenance of himself and their family member.**

Not applicable.

**5.3 Satellite occupations connected to the mining industry number of persons engaged there in, continuance of such business after mine closes.**

Not applicable.

**5.4 Continued engagement of employees in the rehabilitated status of mining lease area and any other relevant activities.**

Not applicable.

**5.5 Envisaged Repercussions on the Expectation of the Society around due to closure of mine.**

Not applicable.



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Key Person  
M/s. Gemini Consultants (P) Ltd.  
Regn. No.- RQP/CAL/197/92/B

## 6.0 TIME SCHEDULING FOR ABANDONMENT

### 1<sup>st</sup> year Proposal for Item no. 6 & 7 of PMCP.

Items	Details	Area (ha.)	Quantity	Expenditure (Rs.)	Remarks
		Proposed	Proposed	Proposed	
A) Reclamation & Rehabilitation of Mined out area.	i) Backfilling				There is no possibility of abandonment of quarries or part thereof during ensuing 5 years.
	ii) Afforestation on the backfilled area.				
	iii) Others (please specify) eg. Afforestation on exhausted benches.				
	iv) Pisciculture				
	v) Converting into water reservoir				
	vi) Picnic Spot				
B) Stabilization & rehabilitation of Dumps (With Lease)	i) Terracing / Pitching	---		---	
	ii) Construction of Parapet Walls / Retaining wall at toe of dumps	---		---	
	iii) Construction of Check dams along slope of valley etc	---		---	---
	iv). Construction of settling ponds, Garland drain etc.)	0.06		15,000	Ref. 7.5(i)
	v) desilting of settling ponds, channels.			10,000	
	vi) Afforestation on dump	---		---	
	vii) Others( diversion of nala)				
C) Rehabilitation of Barren area within lease	i) Afforestation (Green belt )	0.10	160	2000	(Ref. Plate – VII).
	ii) Others (Please specify)				
D) Environmental monitoring (Core zone & Buffer zone separately)	i) Ambient air quality			1,00,000	
	ii) Water quality			30,000	
	iii) Noise level survey			20,000	
	iv) Ground vibration			30,000	
	v) Others (Please specify)			---	
<b>Total :</b>				<b>2,07,000</b>	

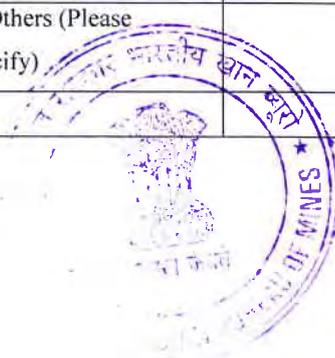
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2<sup>nd</sup> year Proposal for Item no. 6 & 7 of PMCP.

Items	Details	Area (ha.)	Quantity	Expenditure (Rs.)	Remarks
		Proposed	Proposed	Proposed	
A) Reclamation & Rehabilitation of Mined out area.	i) Backfilling				There is no possibility of abandonment of quarries or part thereof during ensuing 5 years.
	ii) Afforestation on the backfilled area.				
	iii) Others (please specify) eg. Afforestation on exhausted benches.				
	iv) Pisciculture				
	v) Converting into water reservoir				
	vi) Picnic Spot				
B) Stabilization & rehabilitation of Dumps (Within Lease)	i) Terracing / Pitching	---		---	
	ii) Construction of Parapet Walls / Retaining wall at toe of dumps	---		---	
	iii) Construction of Check dams along slope of valley etc	---		---	
	iv). Construction of settling ponds (Garland drain etc.)	Maintenance		5000	
	v) desilting of settling ponds, channels.	Maintenance		3000	
	vi) Afforestation on dump	.....		....	
	vii) Others(diversion of nala)				
C) Rehabilitation of Barren area within lease	i) Afforestation (Green belt)	0.10	160	2000	(Ref. Plate -- VII).
	ii) Others (Please specify)				
D) Environmental monitoring (Core zone & Buffer zone separately)	i) Ambient air quality			1,00,000	
	ii) Water quality			30000	
	iii) Noise level survey			20000	
	iv) Ground vibration			30000	
	v) Others (Please specify)			---	
<b>Total :</b>				<b>1,90,000</b>	



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Ministry of Mines  
New Delhi

**3<sup>rd</sup> year Proposal for Item no. 6 & 7 of PMCP.**

Items	Details	Area (ha.)	Quantity	Expenditure (Rs.)	Remarks
		Proposed	Proposed	Proposed	
A) Reclamation & Rehabilitation of Mined out area.	i) Backfilling				There is no possibility of abandonment of quarries or part thereof during ensuing 5 years.
	ii) Afforestation on the backfilled area.				
	iii) Others (please specify) eg. Afforestation on exhausted benches.				
	iv) Pisciculture				
	v) Converting into water reservoir				
	vi) Picnic Spot				
B) Stabilization & rehabilitation of Dumps (Within Lease)	i) Terracing / Pitching	---		---	
	ii) Construction of Parapet Walls / Retaining wall at toe of dumps	---		---	
	iii) Construction of Check dams along slope of valley etc	---		---	
	iv). Construction of settling ponds (Garland drain etc.)	Maintenance		5000	
	v) desilting of settling ponds, channels.	Maintenance		3000	
	vi) Afforestation on dump	.....		....	
	vii) Others(diversion of nala)				
C) Rehabilitation of Barren area within lease	i) Afforestation (Green belt)	0.10	160	2000	(Ref. Plate – VII).
	ii) Others (Please specify)				
D) Environmental monitoring (Core zone & Buffer zone separately)	i) Ambient air quality			1,00,000	
	ii) Water quality			30000	
	iii) Noise level survey			20000	
	iv) Ground vibration			30000	
	v) Others (Please specify)			---	
<b>Total :</b>				<b>1,90,000</b>	



**भारतीय खान ब्यूरो**  
**INDIAN BUREAU OF MINES**

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Key Person  
M. Swamin Consultants (P) Ltd.  
Bldg. No. 307/308/1/1/32/8

**4<sup>th</sup> year Proposal for Item no. 6 & 7 of PMCP.**

Items	Details	Area (ha.)	Quantity	Expenditure (Rs.)	Remarks
		Proposed	Proposed	Proposed	
<b>A) Reclamation &amp; Rehabilitation of Mined out area.</b>	i) Backfilling				There is no possibility of abandonment of quarries or part thereof during ensuing 5 years.
	ii) Afforestation on the backfilled area.				
	iii) Others (please specify) eg. Afforestation on exhausted benches.				
	iv) Pisciculture				
	v) Converting into water reservoir				
	vi) Picnic Spot				
<b>B) Stabilization &amp; rehabilitation of Dumps (Within Lease)</b>	i) Terracing / Pitching	---		---	
	ii) Construction of Parapet Walls / Retaining wall at toe of dumps	---		---	
	iii) Construction of Check dams along slope of valley etc	---		---	
	iv). Construction of settling ponds (Garland drain etc.)	Maintenance		5000	
	v) desilting of settling ponds, channels.	Maintenance		3000	
	vi) Afforestation on dump	.....		....	
	vii) Others(diversion of nala)				
<b>C) Rehabilitation of Barren area within lease</b>	i) Afforestation (Green belt)	0.10	160	2000	(Ref. Plate – VII).
	ii) Others (Please specify)				
<b>D) Environmental monitoring (Core zone &amp; Buffer zone separately)</b>	i) Ambient air quality			1,00,000	
	ii) Water quality			30000	
	iii) Noise level survey			20000	
	iv) Ground vibration			30000	
	v) Others (Please specify)			---	
<b>Total :</b>				<b>1,90,000</b>	



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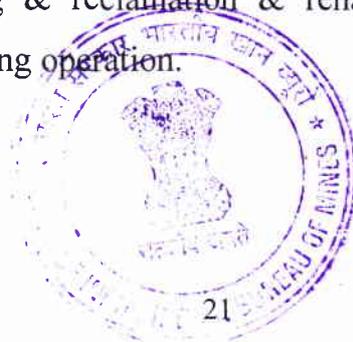
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Key Person  
M/s. Geomix Consultants (P) Ltd.  
Regn. No.-RGP/CAL/167/92/B

5<sup>th</sup> year Proposal for Item no. 6 & 7 of PMCP

Items	Details	Area (ha.)	Quantity	Expenditure (Rs.)	Remarks
		Proposed	Proposed	Proposed	
A) Reclamation & Rehabilitation of Mined out area.	i) Backfilling				There is no possibility of abandonment of quarries or part thereof during ensuing 5 years.
	ii) Afforestation on the backfilled area.				
	iii) Others (please specify) eg. Afforestation on exhausted benches.				
	iv) Pisciculture				
	v) Converting into water reservoir				
	vi) Picnic Spot				
B) Stabilization & rehabilitation of Dumps (Within Lease)	i) Terracing / Pitching	---		---	
	ii) Construction of Parapet Walls / Retaining wall at toe of dumps	---		---	
	iii) Construction of Check dams along slope of valley etc	---		---	
	iv). Construction of settling ponds (Garland drain etc.)	Maintenance		5000	Ref. 7.5(ii)
	v) desilting of settling ponds, channels.	Maintenance		3000	
	vi) Afforestation on dump	.....		....	
	vii) Others(diversion of nala)				
C) Rehabilitation of Barren area within lease	i) Afforestation (Green belt)	0.10	160	2000	(Ref. Plate – VII).
	ii) Others (Please specify)				
D) Environmental monitoring (Core zone & Buffer zone separately)	i) Ambient air quality			1,00,000	
	ii) Water quality			30000	
	iii) Noise level survey			20000	
	iv) Ground vibration			30000	
	v) Others (Please specify)			---	
<b>Total :</b>				<b>1,90,000</b>	

One year will be required tentatively for the purpose of decommissioning & reclamation & rehabilitation to be done after cessation of mining operation.



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M/s. Geomin Consultants (P) Ltd.  
Regn. No.- ROP/CAL/167/92/B

## 7.0 ABANDONMENT COST

There is no possibility of abandonment of quarries or parts thereof during ensuing 5 years.

However, tentative cost of each of the important activity of abandonment e.g. decommissioning, reclamation & rehabilitation etc have been indicated to have an idea about the funds that may be required for the final closure.

(1). Decommissioning / Demolition:

Not applicable

(2). Removal of infrastructure:

Not applicable

(3). Removal of equipments and heavy machineries:

The mining lease area will neither have any foundation work for crushing/beneficiation plant etc nor the deployment of any heavy machinery. Therefore, there will be no additional expenditure in respect of the above.

(4). Site Safety:

Fencing will be done around the high wall side. Therefore, an amount of Rs.50, 000/- will be required for the purpose.

(5). Remediation / Mitigation measures:

Cost required for constructing garland drain and settling tank etc. are calculated as follows:

i) Providing garland drain:

Taking an average length of 300m, total amount required will be **Rs.15,000/-** @Rs.50/- per meter. Dimension of the garland drain will be of 950m (length) x 2m (width) x 1m (depth).

ii) Two settling tanks of dimension 10m x 2m x 1m will be made. An amount of **Rs.10,000/-** may be kept for the purpose.

iii) Total amount required under item no. i, & ii comes to be Rs.15,000/- + Rs. 10,000/- = Rs.25,000/-

iv) Standard cost norm for enrichment of plantation per hectare is as under:



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a) **PRE-PLANTING & NURSERY**

Sl. No.	1600 plants/hectare Item of work	Wage rate Rs.150/-	
		Mandays required	Amount (in Rs.)
1	Site preparation	5	750.00
2	Alignment & stacking	5	750.00
3	Cost of stacking materials	Lump sum	1000.00
4	Nursery cost of 800 seedlings @Rs.5.00	-----	4000.00
5	Pitting	10	1500.00
<b>Sub Total :</b>			<b>8000.00</b>

b) **CREATION AND MAINTENANCE**

1.	Carriage & planting	10	1500.00
2.	Weeding, soil working and manuring (thrice)	18	2700.00
3.	Application insecticides (thrice)	3	450.00
4.	Fire line tracing inspection path	4	600.00
5.	Cost of fertilizer & insecticides	Lump sum	2000.00
6.	Watch & ward	30	4500.00
<b>Sub-Total :</b>			<b>11,750.00</b>
<b>Grand total (a + b) :</b>			<b>19,750.00</b>

(6). Reclamation and rehabilitation of workings:

- i) Cost required for leveling and compaction of 2.57 hectares mined out area @ Rs.10,000/- hectare. = 2.57 x Rs.10,000  
= Rs.25,700/-
- ii) Cost required for rehabilitation by way of vegetation over 2.57 hectare @ Rs.20,000/- hectare = 2.57 x Rs.20,000/  
= Rs.51,400/-
- iii) Total amount required for reclamation and rehabilitation = Rs.25,700/-+ Rs.51,400/-  
= Rs.77,100/-

(7). Maintenance / monitoring during and after closure operation :

Not applicable

(8). Retrenchment and relocation cost:

Not applicable

(9). Research and development:

Not applicable

(10). Administrative/management:

- i) Fees to be paid for preparation of closure plan procurement of information and data from various institution/organization is **Rs.50,000/-**.
- ii) Salary and wages of at least two (2) supervisory and managerial personnel for maintenance and monitoring activities for one year is **Rs.3,60,000/- @ Rs.15,000/- per month per person on an average.**
- iii) Total amount requirement under administrative expenditures is **Rs.50,000/- + Rs.3,60,000/- = Rs.4,10,000/-**.

Therefore, the funds required for abandonment is [Ref. 7(4), (5), (6) & (10)] = **Rs.50,000/- + Rs.25,000/- + Rs.77,100/- + Rs.4,10,000/- = Rs.5,62,100/- or say 5.62 lakhs.**



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Key Person  
M/s. Geonin Consultants (P) Ltd.  
Regn. No. - RLP/CAL/157/92/B

**8.0 FINANCIAL ASSURANCE**  
(Circular No. 4/2006)

आय पत्र नं./ Vide Letter No.  
IBM/CR/11/ME/11/1st/MP/69  
दिनांक/Dated. 11/05/15 (Area in hecets)

Sl. No.	Head	Area put on use at start of plan	Additional requirement during plan period	Total e c=(c+d)	Area considered as fully reclaimed & rehabilitated f	Net area considered for calculation G G=(e-f)
a	b	c	d			G=(e-f)
1.	Area to be excavated	Nil	1.12	1.12	Nil	1.12
2.	Storage for topsoil	Nil	--	--	--	--
3.	Overburden/ dump	Nil	--	--	--	--
4.	Mineral storage	Nil	--	--	--	--
5.	Infrastructure (Workshop, rest-shed, office )	Nil	0.01	0.01	--	0.01
6.	Roads	Nil	0.20	0.20	--	0.20
7.	Railways	Nil	--	--	--	--
8.	Green belt	Nil	0.50	0.50	--	0.50
9.	Tailing pond	Nil	--	--	--	--
10.	Effluent treatment plant	Nil	--	--	--	--
11.	Mineral separation plant	Nil	--	--	--	--
12.	Township area	Nil	--	--	--	--
13.	Others, to specify	Nil	--	--	--	--
	<b>Total :</b>	<b>Nil</b>	<b>1.83</b>	<b>1.83</b>	<b>Nil</b>	<b>1.83</b>

The mine is proposed to be worked as Group-A (FM) mine. Therefore, financial assurance is 1.83 hecets x Rs.25,000/- = Rs.45,750/- @ Rs.25,000/- per hectare. However as per rule 23(F) of MCDR 1988 for FM category mines the minimum financial assurance is Rs.2,00,000/- which will be deposited to IBM.

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11/5/15

क्षेत्रीय खान नियंत्रक  
Regional Controller of Mines  
भारतीय खान ब्यूरो  
Indian Bureau of Mines  
कोलकाता/ Kolkata



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अनुमोदित  
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Key Person  
M/s. Geomix Consultants (P) Ltd.  
Regn. No. - RCN/CPL/157/92/B.

**9. CERTIFICATE & UNDERTAKING:**

A Copy of Resolution, Certificate & undertaking duly signed by the nominated owner of the company to implement the progressive mine closure plan in a time bound manner is enclosed.

**10. PLANS, SECTIONS ETC.**

The plans and sections submitted along with the Mining Plan may please be referred (Ref. Plate- I to IX).

समाप्त  
10/11/2018



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Key Person  
M/s. Sharda Consultants (P) Ltd.  
Regn. No. MCP/CAJ/167/92/B

CEMENT MANUFACTURING COMPANY LTD.

**EXTRACT FROM THE MINUTES OF THE MEETING OF THE BOARD OF DIRECTORS OF CEMENT MANUFACTURING COMPANY LIMITED DULY CONVEYED, HELD AND CONSTITUTED ON THE 24TH DAY OF APRIL, 2013 AT THE REGISTERED OFFICE OF THE COMPANY AT VILL: LUMSHNONG, KHLIEHRIAT, JAINTIA HILLS, MEGHALAYA-793200 AT 3.00 P.M.**

**“RESOLVED THAT the measures proposed by M/s GEOMIN Consultants (P) Ltd., Bhubaneswar, Odisha, in this Progressive Mine Closure Plan under Rule 23B(1) of MCDR, 1988 in respect of Wah-Pynkon Limestone Deposit over an area of 13.58 hectares in East Jaintia Hills district, Meghalaya will be implemented in a time bound manner..”**

**“FURTHER RESOLVED THAT this PMCP also assures the amount of finance vide rule 23F(2) of Mineral Conservation and Development (Amendment) Rules, 2003.”**

*Certified true copy*

**For CEMENT MANUFACTURING COMPANY LIMITED**

*Pankaj Kejriwal*

**(Pankaj Kejriwal)  
Whole-time director**

Place: Delhi  
Date: 23<sup>rd</sup> July, 2013

**APPROVED**



Delhi Office : 281, Deepali, Pitampura, New Delhi-110 034, Ph.:011-27033821 / 22 / 27, Fax :011-27033824, e-mail : delhi@cmcl.co.in  
Regd. Office & Works : Lumshnong, East Jaintia Hills District, Meghalaya-793210. Ph.:03655-278215 / 16 / 18, Fax:03655-278217, Mob.:09436301616 e-mail : lumshnong@cmcl.co.in

**AN ISO 9001, ISO 14001 & OHSAS 18001 CERTIFIED COMPANY**

**CERTIFICATE & UNDERTAKING**

This is to certify that all the statutory rules, regulations, orders made by the Central or State Governments, Statutory organizations, court etc have been taken into consideration in this **Mining Plan** prepared by the RQP, **M/s Geomin Consultants (P) Ltd.**, Bhubaneswar, Odisha under Rule 23B (1) of MCDR, 1988 in respect of **Wah-Pynkon Limestone Deposit** over an area of **13.58** hectares in **East Jaintia Hills** district, **Meghalaya** and will be implemented in a time bound manner.

I do hereby undertake that all the measures proposed in this **Progressive Mine Closure Plan** will be implemented in a time bound manner.

Place : Lumshnong

Date : 29<sup>th</sup> July, 2013



**Signature of the Lessee**

Name : Shri Devender Bansal

Designation : Nominated Mines Owner



**APPROVED**



GOVERNMENT OF MEGHALAYA  
MINING & GEOLOGY DEPARTMENT

Annexure-1

No. MG.96/2007/82

Dated Shillong, the 22<sup>nd</sup> July, 2010.

From:

Shri C.K. Marak  
Under Secretary to the Government of Meghalaya,  
Mining & Geology Department.

To,

The Director  
M/s Cements Manufacturing Company Ltd,  
Lumshnong, Khliehriat,  
Jaintia Hills District,  
Jowai.



Subject: **Grant of Mining Lease on Limestone over an area of 13.58 hectares at Wahpynkon, Lumshnong Village, Jaintia Hills District.**

Ref: Your letter No. CMCL/ML-13.58/2007-08 dated 09-04-2007.

Sir,

I am directed to convey the decision of the Government to the grant of Mining Lease for Limestone over an area of 13.58 hectares at Wahpynkon, Lumshnong Village, Jaintia Hills District, under Rule 22(4) of the Mineral Concession Rules, 1960 subject to the following conditions:-

- 1) Submission of Mining Plan duly approved by IBM.
- 2) Certificate of consent to establish and operate from Meghalaya State Pollution Control Board (MSPCB).
- 3) Forest Clearance under Forest Conservation Act, 1980 from the Competent Authority.
- 4) Revenue Clearance for Land Transfer from Revenue Department.
- 5) Financial assurance under MCDR, 1988.
- 6) Other material/particulars that may be required.

This has the approval of Competent Authority.

Yours faithfully,

(C.K. Marak)

Under Secretary to the Govt. of Meghalaya,  
Mining & Geology Department.

APPROVE

A-1

Memo No. MG.96/2007/82-A

Dated Shillong, the 22<sup>nd</sup> July, 2010.

Copy to:

- 1) The Director of Mineral Resources with reference to letter No. DMR/MM/708/2010/412 dated 26.04.2010.
- 2) The Deputy Commissioner, Jaintia Hills District, Jowai with reference to letter No. REV/MIN-2/2004/370 dated 21-09-2007.
- 3) The Chairman, Meghalaya State Pollution Control Board (MSPCB), 'Arden' Lumpyngad, Shillong - 793 014.

By order, etc.,

*Sdy*

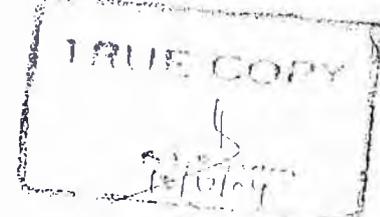
Under Secretary to the Govt. of Meghalaya,  
Mining & Geology Department.



**APPROVED**



Sp/Recd No 44 of 2004



### SALE DEED

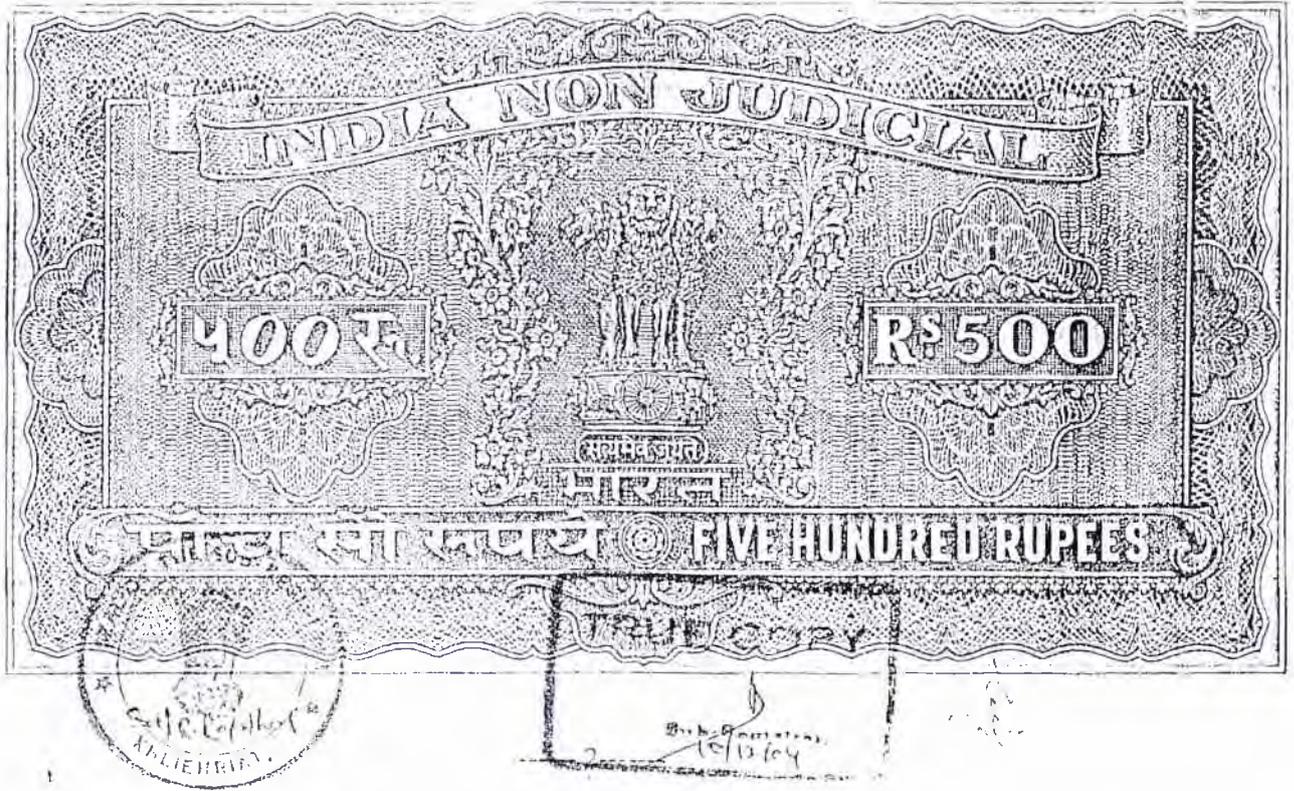
SALE DEED MADE on the 2<sup>nd</sup> November, 2004 by **St. Presbyter Gynpad S/o Late Ondro Lamare R/o Lumshnong, P.S. Khliehriat, Distt. Jaintia Hills, Meghalaya**, hereinafter to as Vendor which expression unless repugnant to the context shall mean and concluding the said Vendor, his/ her heirs, successors, executors, administrators and assigns of the ONE PART

AND

**Cements Manufacturing Co. Ltd.**, a Ltd. company registered with Registrar of Companies, Shillong vide Registration No.13- 06663 dated 11.02.2001 under the Companies Act, 1956, and having its registered office at Lumshnong, Meghalaya, hereinafter referred to as the purchaser, which expression unless repugnant to the context shall mean and include the said purchaser, successor, executors, administrators and assigns of the OTHER PART witness as follows: -



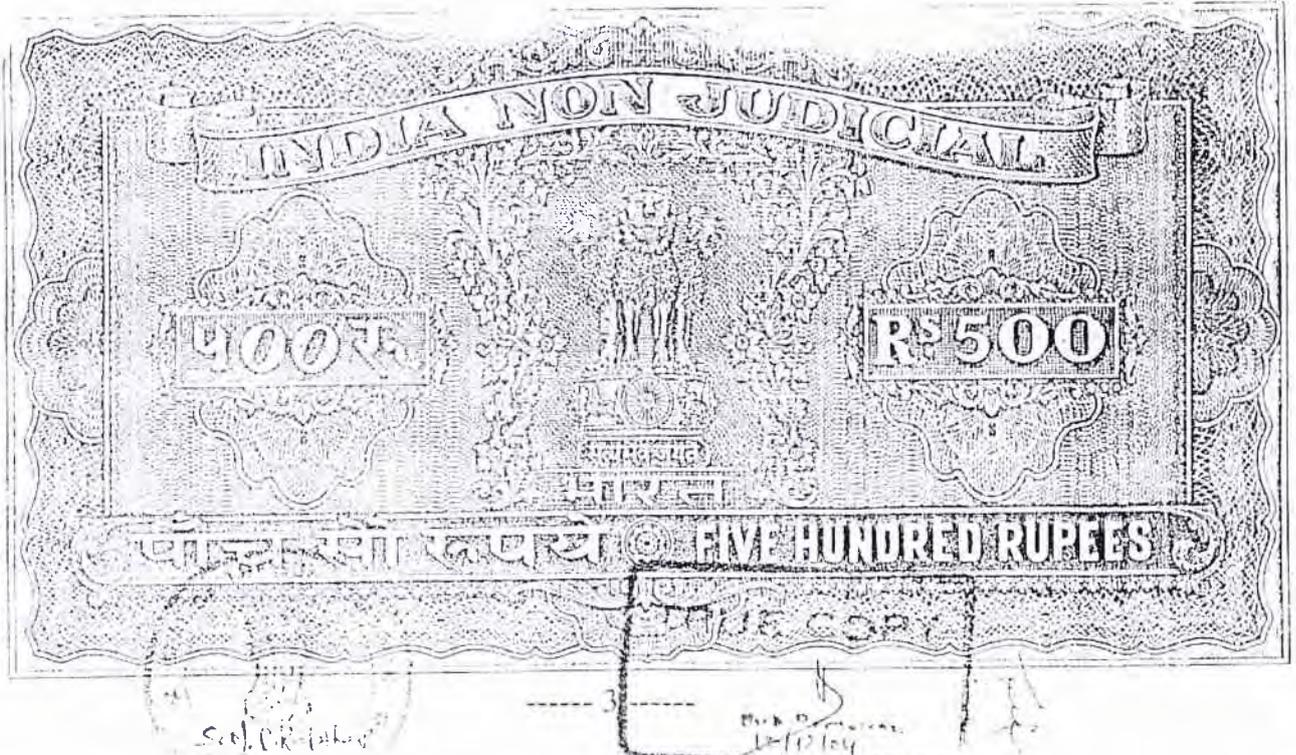
**APPROVE**



WHERE AS the above named Vendor is the absolute owner of the land having a total area of 86227.37 Sq Mtrs, Situated at Sympkor area, village Lumshnong P.S. Khliehriat, Distt. Jaintia Hills, Meghalaya, more specifically described in the schedule below and same being certified by the office of the Jaintia Hills Autonomous District Council, Jowai vide Land Holding Certificate No.4 of 1991 and the said land is free from all encumbrances what so ever AND WHERE AS the above named vendor has agreed to sell the total land measuring 86227.37 Sq. Mtrs. (along with Limestone/ any other minerals or anything what so ever which may be found embedded there in) as specifically described in the schedule below along with approved map of the said land as issued from the office of the Jaintia Hills Autonomous District Council, Jowai, to the above named M/s Cemens Manufacturing Co. Ltd., for a total consideration amount of Rs 10,35,000.00 (Rupees Ten Lacs Thirty Five Thousand only) The Total amount i.e. 10,35,000.00 (Ten Lacs Thirty Five Thousand only) has paid today to the vendor and the receipt of which has already been acknowledged by the Vendor.

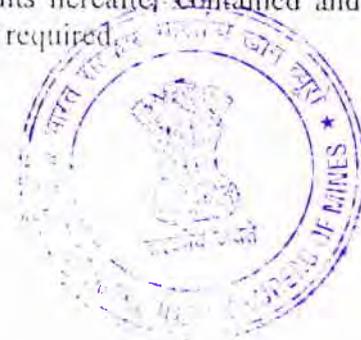


**APPROVE**

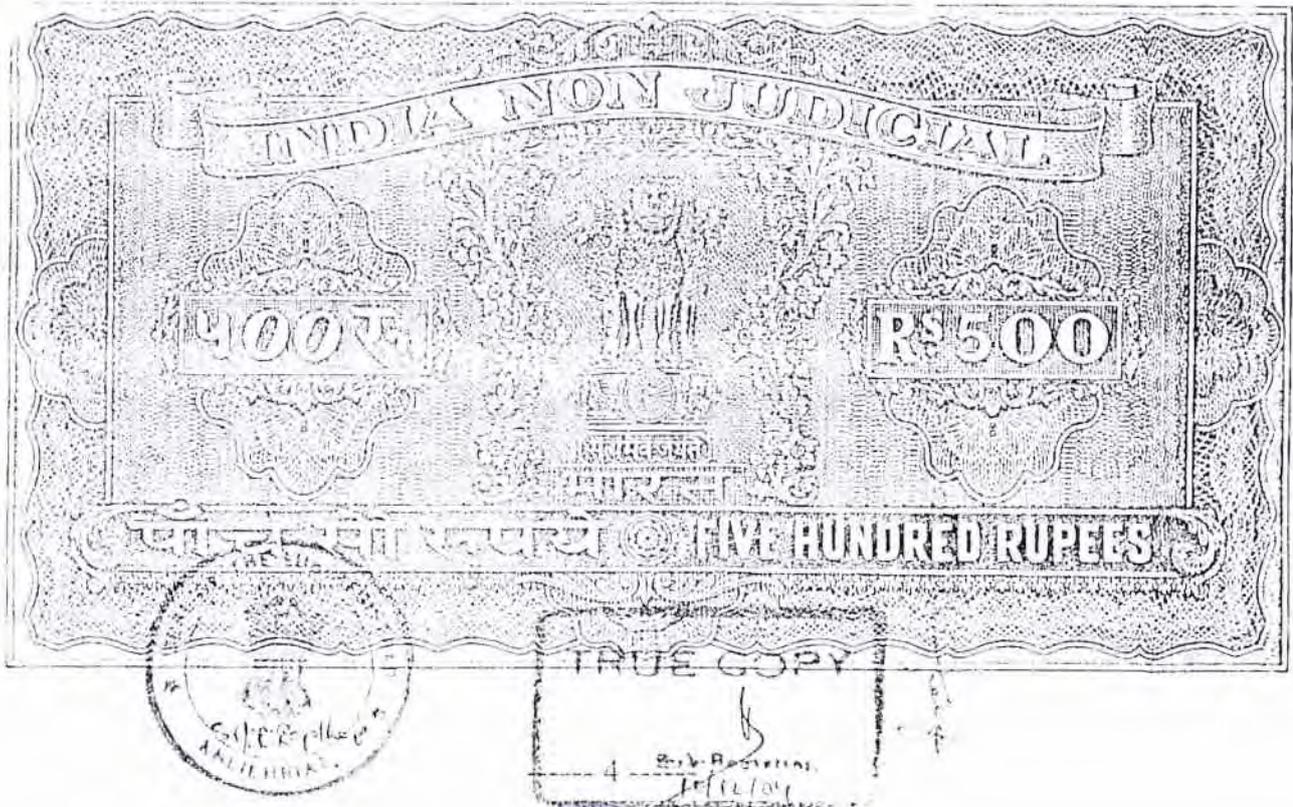


**NOW THIS DEED WITNESSETH AND FOLLOWS:**

That in consideration of a total sum of Rs. 10, 35,000.00 (Rupees Ten Lacs Thirty Five Thousand only) paid by the purchaser and the receipt whereof (the entire sale consideration) is being admitted and acknowledged by the Vendor do hereby and here under grant, convey, transfer to the purchaser by way of sale ALL THE ESTATES, right, title, interest, claim and demand what so ever of the vendor into or upon the same and every part thereof referred to above and specifically described in the schedule below AND TO HOLD the same as an absolute owner AND a PERMANENT RIGHT AND RECORDS OF RIGHT to use AND THE Vendor do hereby covenant with the purchaser that not withstanding any act, deed or things hereto before done or executed AND I LAWFULLY possess the said land free from any encumbrance, attachments or defect in the title whatsoever and Vendor has full Power and absolute authority to sell the said land in the manner aforesaid AND the purchaser shall thereafter peaceably and quietly hold, possess and enjoy the land in KHAS POSSESSION with all the rights relating to sale, mortgage, lease and mining of limestone or any other minerals, any other use whatsoever without any interruption by Vendor or person or persons claiming through him WHATSOEVER AND FURTHER MORE THAT THE Vendor shall at all time thereafter indemnify and keep indemnified the purchaser against losses, damages, costs, charges and expenses if any suffered by reason of any defect in the title of the Vendor or any breach of covenants hereafter contained and the Vendor do hereby covenants with purchaser that if required



**APPROVE**



The Vendor shall appear in person in all government/ Semi-government/ financial Institutions/ Durbar/ Local body in connection with sale of this land and the Vendor do hereby agrees to suitably amend the Terms and Conditions of the Sale Deed if so required to be done so on behest of Financial Institutions/ Government Departments.

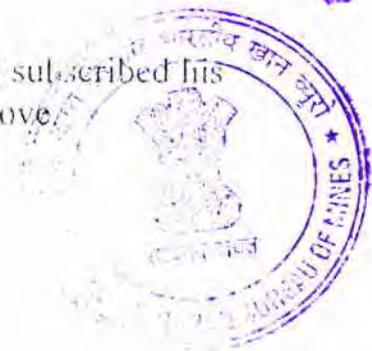
The vendor further covenants that the necessary expenditure towards registration of this deed shall be borne by him/her.

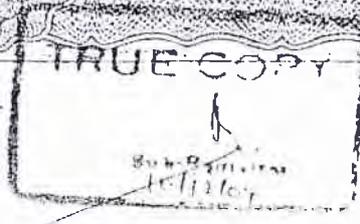
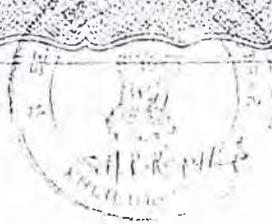
HENCE FORTH all the land revenue payable for the said land shall be paid by the purchaser PROVIDED ALWAYS that the expressions "VENDOR AND THE

PURCHASER" herein before used shall include their respective successors, legal representatives and assignees.

IN WITNESS WHEREOF Vendor has here unto set and subscribed his hand and seal on the day, month and year first written above.

**अनुमोदित  
APPROVED**





SCHEDULE

LAND SITUATED AT Symphor area, village Lumshnong, P.S. Khliehriat, Distt. Jaintia Hills. Jowai, Meghalaya, butted and bounded on the

- NORTH : Kyor Symphor
- EAST : Khlaw Lieh
- SOUTH : Ka Lynti rep iaid kjat Lumtongseng
- WEST : N.H.-44

Within the above boundaries land measuring 86227.37 Sq. Mtrs. (Approx.)

WITNESSES:

- 1) *[Signature]*  
(Lantelikaw, Symphor)
- 2) *[Signature]*  
(A. Lantel)
- 3) *[Signature]*

*[Signature]*  
Signature of the Vendor



Headman  
Lumshnong Village  
Jaintia Hills,

**APPROVED**

# OFFICE OF THE DISTRICT COUNCIL

JAINTHIA HILLS AUTONOMOUS DISTRICT, JOWAI

LAND HOLDING CERTIFICATE NO. 4 OF 1971.

REVENUE FORM No. 6



CERTIFICATE OF LAND HOLDING FROM THE JAINTHIA HILLS AUTONOMOUS DISTRICT COUNCIL IN RESPECT OF LAND AT \_\_\_\_\_

Symphon Klaka Nasput, JOWAI.

CERTIFIED that the plot of land situated at Symphon Klaka  
Nasput, Jowai (more fully described in the Schedule below) belongs to

Sri/Smt Presbyter Gymbal, according to the customary right of holding in the area by the member of Schedule Tribes and by virtue of such customs heritable rights over the land in question.

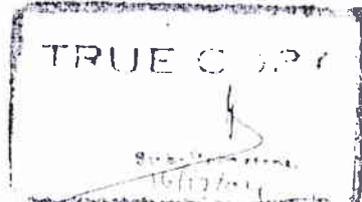
The land is liable to assessment of revenue as and when the District Council, Jaintia Hills Autonomous District, may by law exact.

Schedule of land referred to above :-

Plot No \_\_\_\_\_  
Location Symphon Klaka Nasput  
Area 86227 37 Sqrmt

Boundaries :-

- North - Kyos Symphon
- East - Klaka
- South - Ka Lyuti sep. land by the district council
- West - N. 11-44



Dimensions :-



M.S. Jyoti  
Chief Executive Officer  
Jaintia Hills Autonomous District Council, Jowai

Memo No. JHADC/REV/HC/246/75

Copy forwarded to Sri/Smt Presbyter Gymbal

Dated Jowai, the 21-1-1971

for information.

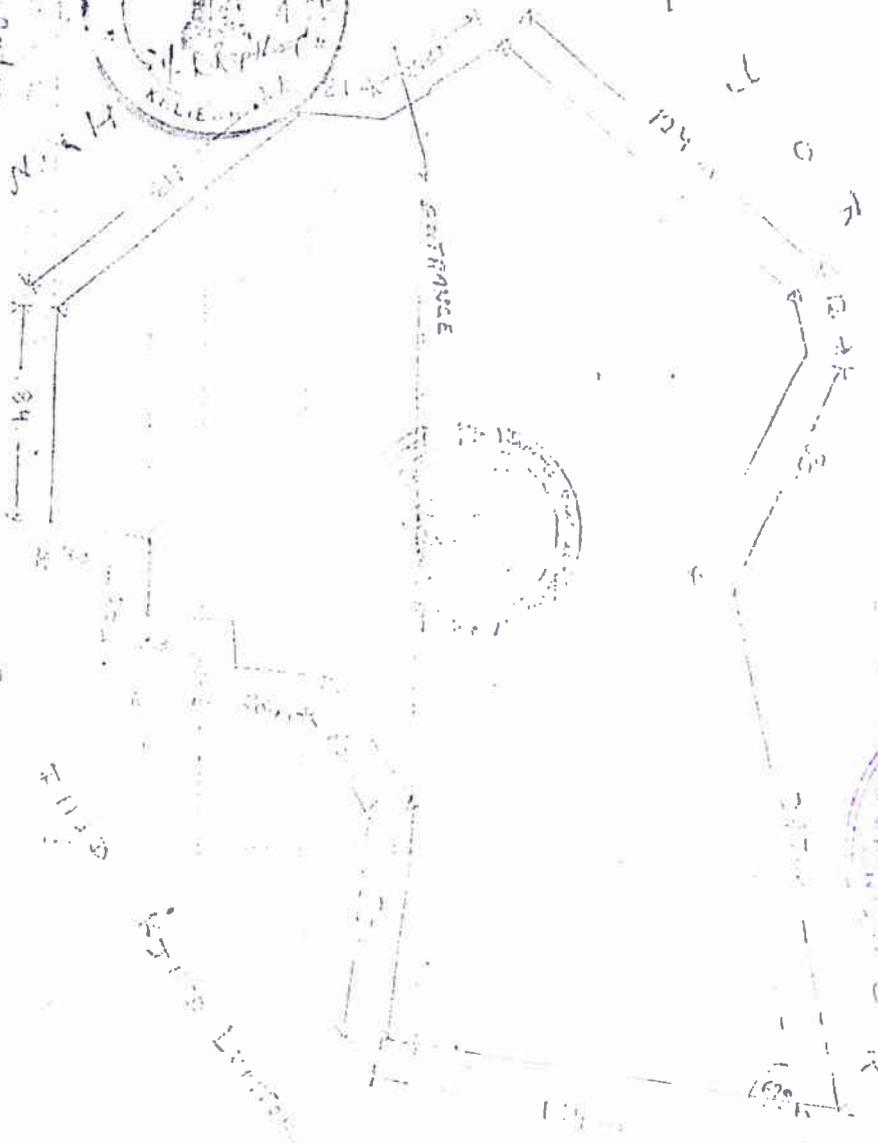
**DO NOT PROVE**

SR 0577  
T. 1102

Jaintia Hills Autonomous District Council Jowai



Measured and  
Drawn By  
[Signature]



**APPROVED**



K. H. I. N. N. H. E. H.

**TRUE COPY**  
[Signature]

NOT TO SCALE  
KEEP SECRET  
REF. BOARD  
[Signature]

TREASURY Department  
LOCATED AT SYRUPALATHA  
IN KARRUPU DOLLER SURIP

APPROVED



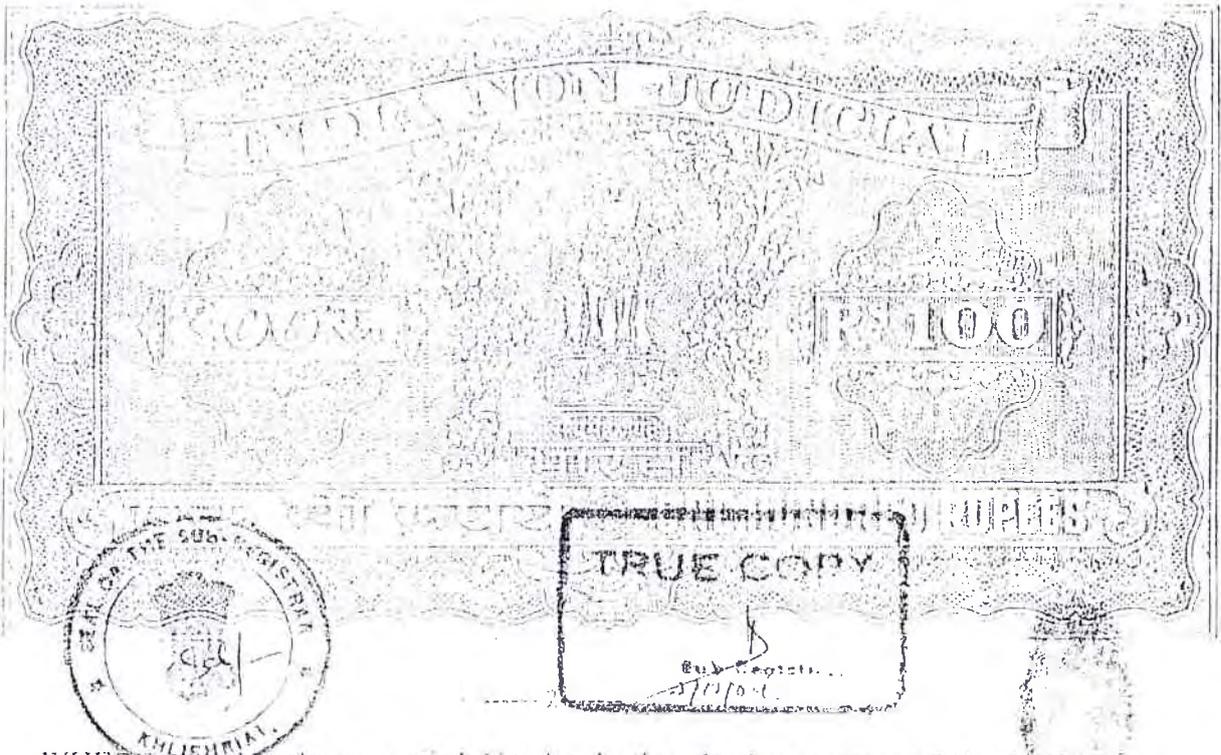
SALE DEED MADE on the 11<sup>th</sup> May, 2004 by Smt. Biki Sutunga w/o Sh. Louis P'dang R/o Lumshnong, P.S. Khliehriat, Distt. Jaintia Hills, Meghalaya, hereinafter to as Vendor which expression unless repugnant to the context shall mean and concluding the said Vendor, his/ her heirs, successors, executors, administrators and assigns of the ONE PART.

AND

Cements Manufacturing Co. Ltd., a Ltd. company registered with Registrar of Companies, Shillong vide Registration No.13- 06663 dated 11.02.2001 under the Companies Act, 1956, and having it's registered office at Lumshnong, Meghalaya, hereinafter referred to as the purchaser, which expression unless repugnant to the context shall mean and include the said purchaser, successor, executors, administrators and assigns of the OTHER PART witness as follows: -



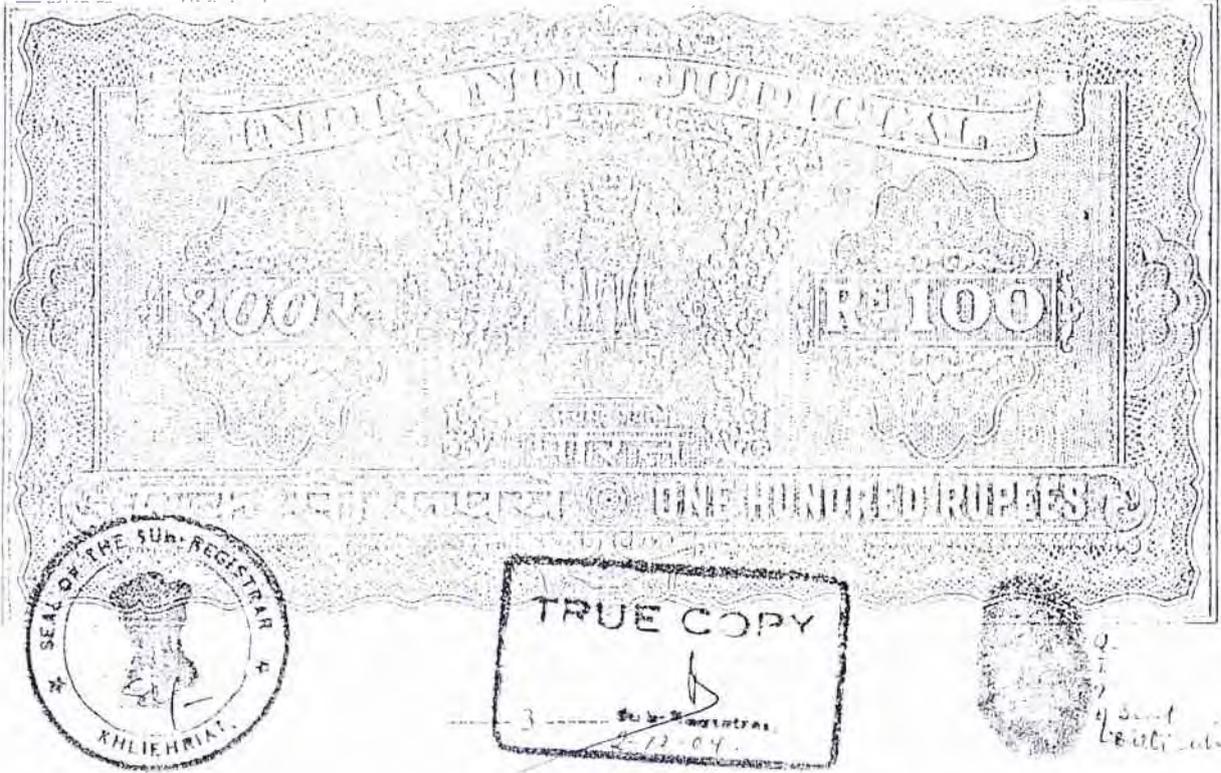
**APPROVED**



WHEREAS the above named Vendor is the absolute owner of the land having a total area of 49.647 Sq Mtrs, Situated at Wan Pynkon, village Lumshnong P.S. Kheihriat, Distt. Jaintia Hills, Meghalaya, more specifically described in the schedule below and same being certified by the office of the Jaintia Hills Autonomous District Council, Jowai vide Land Holding Certificate No.90 of 2003 and the said land is free from all encumbrances what so ever AND WHEREAS the above named vendor has agreed to sell the total land measuring 49.647 Sq Mtrs. (along with Limestone/ any other minerals or anything what so ever which may be found embedded there in) as specifically described in the schedule below along with approved map of the said land as issued from the office of the Jaintia Hills Autonomous District Council, Jowai, to the above named M/s Cements Manufacturing Co. Ltd., for a total consideration amount of Rs.5,95,764.00 (Rupees Five Lacs Fifty five thousand seven hundred sixty four only). Rs. 10,000 (Rupees Ten thousand only) has been paid as advance money. The Balance amount of Rs.5,85,764.00 (Rupees Five Lacs Eighty five thousand seven hundred sixty four only) has paid today to the vendor and the receipt of which has already been acknowledged by the Vendor.



**अनुमोदित**  
**APPROVED**



NOW THIS DEED WITNESSETH AND FOLLOWS:

That in consideration of a total sum of Rs.5,95,764.00 (Rupees Five Lacs Ninety five thousand seven hundred sixty four only) paid by the purchaser and the receipt whereof (the entire sale consideration) is being admitted and acknowledged by the Vendor do hereby and here under grant, convey, transfer to the purchaser by way of sale ALL THE ESTATES, right, title, interest, claim and demand what so ever of the vendor into or upon the same and every part thereof referred to above and specifically described in the schedule below AND TO HOLD the same as an absolute owner AND a PERMANENT RIGHT AND RECORDS OF RIGHT to use AND THE Vendor do hereby covenant with the purchaser that not withstanding any act, deed or things hereto before done or executed AND LAWFULLY possess the said land free from any encumbrance, attachments or defect in the title whatsoever and Vendor has full Power and absolute authority to sell the said land in the manner aforesaid AND the purchaser shall thereafter peaceably and quietly hold, possess and enjoy the land in KHAS POSSESSION with all the rights relating to sale, mortgage, lease and mining of limestone or any other minerals, any other use whatsoever without any interruption by Vendor or person or persons claiming through him WHATSOEVER AND FURTHER MORE THAT THE Vendor shall at all time thereafter indemnify and keep indemnified the purchaser against losses, damages, costs, charges and expenses if any suffered by reason of any defect in the title of the Vendor or any breach of covenants hereafter contained and the Vendor do hereby covenants with purchaser that if required.





The Vendor shall appear in person in all government/ Semi-government/ financial Institutions/ Dubar/ Local body in connection with sale of this land and the Vendor do hereby agrees to suitably amend the Terms and Conditions of the Sale Deed if so required to be done so on behalf of Financial Institutions/ Government Departments.

The vendor further covenants that the necessary expenditure towards registration of this deed shall be borne by him/her.

HENCE FORTH all the land revenue payable for the said land shall be paid by the purchaser PROVIDED ALWAYS that the expressions "VENDOR AND THE

PURCHASER" herein before used shall include their respective successors, legal representatives and assignees.

IN WITNESS WHEREOF Vendor has here unto set and subscribed his hand and seal on the day, month and year first written above.



APPROVED



----- 5 -----

WITNESSES

LAND SITUATED AT Wahi Pynkon, village Lumshuong, P.S. Talichrist, Dist. Jaintia Hills, Jaintia, Meghalaya, bounded and bounded on the

NORTH : The Land of Sh. Kyrmen Sutunga, Lumshuong

EAST : The Land of Sh. Kyrmen Sutunga, Lumshuong

SOUTH : Wahi Pynkon

WEST : The Land of Poo-fine Electricity

Within the extent of one acre and measuring 49.4754 Mu. (Approx.)

WITNESSES

1) Sh. E. ...  
2) ...

2) Sh. (Chaboy Talang)



**APPROVE**

OFFICE OF THE JAINTIA HILLS AUTONOMOUS DISTRICT COUNCIL, JOWAI



NO 90 OF 20 03

Elaka Naipaul

LAND HOLDING CERTIFICATE

TRUE COPY

Certified that according to customary right of land holding and by virtue of custom, tradition and heritable right over the land within Jaintia Hills District. The plot of land situated at ... Elaka ... more fully described in the Schedule below belongs to Shri/Smt ... presently residing at ... Village ... District ...

SCHEDULE OF LAND

Plot No. 7 Area 612.647 Sq. Mtrs. Location ... Village ... Elaka ...

Table with columns: Boundaries, Dimensions. Rows: North, East, South, West. Contains handwritten boundary descriptions and measurements.

The land is liable to assessment of revenue as and the District Council Jaintia Hills Autonomous District, may by law enact.

Signature of Issuing Authority - [Signature] 1/8/03

Office Seal and Designation -

MEMO No. JHAJDC/REV/LIC/7/27/2003 Dated Jowai, the 13.5.20.03

Copy forwarded to :- Shri/Smt. ...

Revenue Officer Jaintia Hills Autonomous District Council



APPROVE



**GPS Co-ordinates of Boundary Pillars of 13.58 hecets of CMCL  
(Ref. Authenticated Surface Plan – Plate-II)**

Boundary Pillar	Latitude	Longitude
1	N 25° 09' 47.8''	E 092° 23' 12.9''
2	N 25° 09' 46.6''	E 092° 23' 13.3''
3	N 25° 09' 45.9''	E 092° 23' 13.8''
4	N 25° 09' 45.9''	E 092° 23' 13.8''
5	N 25° 09' 45.0''	E 092° 23' 15.4''
6	N 25° 09' 43.1''	E 092° 23' 15.9''
7	N 25° 09' 43.0''	E 092° 23' 16.3''
8	N 25° 09' 43.6''	E 092° 23' 17.8''
9	N 25° 09' 43.9''	E 092° 23' 18.5''
10	N 25° 09' 44.7''	E 092° 23' 20.4''
11	N 25° 09' 45.4''	E 092° 23' 23.5''
12	N 25° 09' 44.4''	E 092° 23' 25.0''
13	N 25° 09' 45.0''	E 092° 23' 25.4''
14	N 25° 09' 45.1''	E 092° 23' 26.2''
15	N 25° 09' 44.9''	E 092° 23' 27.1''
16	N 25° 09' 45.4''	E 092° 23' 27.8''
17	N 25° 09' 45.8''	E 092° 23' 28.7''
18	N 25° 09' 46.5''	E 092° 23' 29.3''
19	N 25° 09' 46.9''	E 092° 23' 29.3''
20	N 25° 09' 47.6''	E 092° 23' 30.2''
21	N 25° 09' 47.6''	E 092° 23' 32.4''
22	N 25° 09' 47.7''	E 092° 23' 32.8''
23	N 25° 09' 47.9''	E 092° 23' 32.1''
24	N 25° 09' 48.9''	E 092° 23' 31.2''
25	N 25° 09' 49.9''	E 092° 23' 31.2''
26	N 25° 09' 50.8''	E 092° 23' 31.1''
27	N 25° 09' 51.1''	E 092° 23' 31.2''
28	N 25° 09' 50.7''	E 092° 23' 32.7''
29	N 25° 09' 52.0''	E 092° 23' 35.5''
30	N 25° 09' 54.1''	E 092° 23' 39.5''
31	N 25° 09' 54.4''	E 092° 23' 40.1''
32	N 25° 09' 56.2''	E 092° 23' 39.4''
33	N 25° 09' 58.0''	E 092° 23' 38.7''
34	N 25° 09' 58.3''	E 092° 23' 37.7''
35	N 25° 09' 58.2''	E 092° 23' 35.1''
36	N 25° 09' 56.4''	E 092° 23' 33.7''
37	N 25° 09' 57.7''	E 092° 23' 33.0''
38	N 25° 09' 58.5''	E 092° 23' 31.6''
39	N 25° 09' 53.3''	E 092° 23' 25.4''
40	N 25° 09' 52.6''	E 092° 23' 24.5''
41	N 25° 09' 52.0''	E 092° 23' 24.3''
42	N 25° 09' 51.9''	E 092° 23' 24.0''
43	N 25° 09' 47.3''	E 092° 23' 18.8''
44	N 25° 09' 45.9''	E 092° 23' 15.4''
45	N 25° 09' 48.7''	E 092° 23' 14.1''

**APPROVED**



## CERTIFICATE OF RECOGNITION AS QUALIFIED PERSON TO PREPARE MINING PLANS

(Under Rule 22 (c) of Mineral Concession Rules 1960)

*M/s ..... Gearris..... Consultants..(P).Ltd.....* having registered office at *.24B..Kharavela...Nagar...Mubamparam-751001,* and having given satisfactory evidence of the qualifications and experience of their key persons is hereby granted recognition under Rule 22 (c) of the Mineral Concession Rules 1960 as a Qualified Person to prepare Mining Plans.

The registration number is 200/CAI/167/92/30

This recognition is valid for a period of two years

ending *1.7.th. August..1994*

वर्धित स्तनाक

Renewed up to

17 AUG 1996

केन्द्रीय खान नियंत्रक

Regional Controller of Mines

Place: *Calcutta*

भारतीय खान ब्यूरो

Date: *18. 8. 1992*

Bureau of Mines

के. ए. के. लो

Calcutta

वर्धित स्तनाक

17 AUG 1998

Renewed up to

*18/8/98*

केन्द्रीय खान नियंत्रक

Regional Controller of Mines

APPROVED

*M. N. Bondopadhyay*  
Regional Controller of Mines

Indian Bureau of Mines

.....Calcutta.....



A-18

B.T.C

नवीनीकृत दिनांक 17.08.2000

23/10/98  
Regional Controller of Mines  
Calcutta

नवीनीकृत दिनांक 17.08.2010

26/1/2000  
क्षेत्रीय खान नियंत्रक  
Regional Controller of Mines  
भारतीय खान ब्यूरो  
Indian Bureau of Mines  
कलकत्ता  
Calcutta

नवीनीकृत दिनांक 17-8-2020 तक  
Renewed upto.....

17/8/2020

क्षेत्रीय खान नियंत्रक  
REGIONAL CONTROLLER OF MINES  
भारतीय खान ब्यूरो  
INDIAN BUREAU OF MINES  
भुवनेश्वर/BHUBANESWAR

BY REGD POST with AD

GOVERNMENT OF INDIA  
MINISTRY OF MINES  
INDIAN BUREAU OF MINES

OFFICE OF THE REGIONAL CONTROLLER OF MINES

No. RQP/ BBS/ 7 (R)/ 98/ B

Mahani Complex, 2<sup>nd</sup> Floor  
308, District Centre, Chandrasekharpur  
Bhubaneswar – 751 016  
Date:16.04.2012

To

✓ M/s Geomin Consultants (Pvt.) Ltd.  
267, Kharavela Nagar  
Bhubaneswar – 751 001

**Sub: Inclusion of Key persons in Recognition Certificate of M/s Geomin Consultants (Pvt.) Ltd., Registration No. RQP/ CAL/ 167/ 92/ B valid up to 17.08.2020.**

**Ref: Your letters (i) GM (G)/ IBM/ RQP/685/11 dated 14.12.2011.**

Sir,

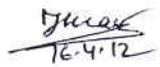
With reference to above letter, it is informed that the names of Key persons in the RQP certificate No. RQP/ CAL/ 167/ 92/ B of your organization have been revised by deleting the names of Shri Pradeept Mohapatra and inserting the name of Shri Binod Chandra Patnaik in his place as new key person, as requested. The revised Key persons are as follows:

1. Dr. S.K. Sarangi
2. Shri H.S. Sarangi
3. Shri Binod Chandra Patnaik
4. Shri Mohan N. Rahangdale
5. Shri Bhagabati Prasad Mishra



APPROVE

Yours faithfully,

  
( T K RATH)

क्षेत्रीय खान नियंत्रक / Regional controller of Mines

Copy for kind information to the Controller of Mines (CZ), Indian Bureau of Mines, Nagpur.

  
( T K RATH)  
क्षेत्रीय खान नियंत्रक / Regional controller of Mines

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Annexure-V

# GEOLOGICAL PROSPECTING REPORT

## For Limestone

Over an Area of 13.58 Hectares in Wah Pynkon Area  
of Lumshnong Village  
Jaintia Hills District, Meghalaya.

FOR

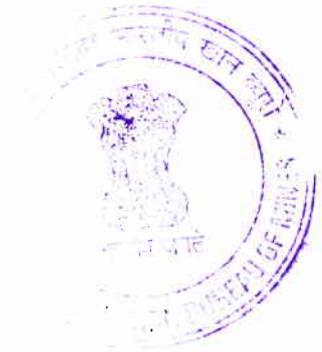
**M/s Cement Manufacturing Co. Ltd.**

Mining Lease Applicant

Dist – Jaintia Hills

Meghalaya – 793200

*Prepared by:*



**M/S GEOMIN CONSULTANTS (P) LTD.**

**GEOLOGICAL & MINING CONSULTANTS**

**REGD. NO. RQP/CAL/167/92-B**

**267, KHARAVELA NAGAR**

**BHUBANESWAR – 751001**

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## CONTENTS

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### LIST OF PLATES

Plate-I	:	Location Plan
Plate-II	:	Surface Plan
Plate-III	:	Geological Plan
Plate-IV	:	Geological Cross-section



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## 1.0 INTRODUCTION :

1.1 Cements Manufacturing Company Limited (CMCL) is a Public Limited Company incorporated under Companies Act 1956 on 2<sup>nd</sup> November 2001. The name was changed as Cement Manufacturing Co. Ltd. on 10<sup>th</sup> November 2004. CMCL was granted licence for setting up a 900 TPD cement plant at Lumshnong village, Jaintia Hills district Meghalaya under single window clearance by the Govt. of Meghalaya in the year 2002. For sustained supply limestone to the Cement Plant, CMCL obtained Prospecting Licence (P.L) over an area of 13.58 hectares in Wah Pynkon area of Lumshnong village. The P.L was granted by the Govt. of Meghalaya vide grant Letter No. 109/2005/88 dated 20<sup>th</sup> March 2006.

Drilling was carried out by an outside agency (M/s Mahananda Construction Co., Siliguri) under the supervision of CMCL. The time period required to complete the prospecting is 196 mandays. The expenditure incurred was Rs.4,03,610.00 (Rupees Four Lakh Three Thousand Six Hundred Ten only).

1.2 On completion of prospecting work, the company intends to apply for Mining Lease (M.L) over an area of 13.58 hectares within the aforesaid prospected area and about 5km SE of the company's mining lease area no. 1 and no. 2 in Khub area of Lumshnong Village.

## 2.0 GENERAL

### 2.1 Name and Address of the Prospecting Agency :

M/S Cement Manufacturing Co. Ltd.  
Lumshnong, P.S - Khliehriat  
Dist : Jaintia Hills  
Meghalaya – 793 200  
Phone No. 03655 – 278214 –18  
Fax : 03655 - 278217

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## **2.2 Status of the Applicant**

Public Limited Company Registered under Companies Act 1956.

## **3.0 DETAILS OF THE AREA :**

The Wah Pynkon limestone deposit under reference in village Lumshnong, district Jaintia Hills, Meghalaya falls in parts of Survey of India Toposheet No. 83 C/W on a scale of 1:50,000. Geologically the rock formations of the area belong to Jaintia Series of Eocene Age. Limestone unit belongs to Sylhet stage of Jaintia Series of middle Eocene Age.

## **4.0 ACCESSIBILITY :**

The area is situated to SE at a distance of about 5km from Lumshnong village (25°10'16''N and 92°22'52''E) to the East of National Highway No. 44 from Shillong to Silchar. It is about 50m to East of 129 km stone point on the N.H. The nearest rail station, at a distance of 80 km from Lumshnong is Badarpur on Guwahati-Lumding-Silchar meter gauge section of N.E.F. Railway. Nearest airport at Silchar is at a distance of 130 km and Guwahati airport is at a distance of 250 km from the area. Lumshnong village is 125 km from Shillong, the State Capital, and 65 km from Jawai, the District Headquarters. The GTS bench mark with an elevation of 550.0 m above M.S.L is located in Lumshnong village.



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## 5.0 PHYSIOGRAPHY & DRAINAGE :

Topography of the proposed ML area and its surroundings are rugged and mountainous. The area extends in NE – SW direction. Maximum and minimum contours passing through the area are 387m and 282m respectively. The north-western part of the area is at a higher elevation with respect to the south-eastern part.

## 6.0 CLIMATE :

Located not far from Cherrapunji, the area receives heavy rainfall of over 500 cm per year. Rainfall of the order of 300-350mm in 24 hours is not uncommon at Lumshnong during rainy season. The maximum and minimum temperature of the area as recorded by CMCL are 40.8°C during summer and 6.2°C during winter months. The area enjoys a humid tropical climate.

## 7.0 PREVIOUS WORK:

Though the occurrence of limestone in Lumshnong area is known since 18<sup>th</sup> century, the first systematic work was taken up by Geological Survey of India (GSI) in 1967-68 field season. Subsequently Directorate of Geology and Mining, Govt. of Assam during 1968-69 and 1970-71 field seasons investigated the limestone deposits in the area. Department of Mineral Resources Govt. of Meghalaya and Cement Corporation of India, a Central Public Sector Enterprise, carried out detailed exploration by core drilling during the period 1975 – 76 to 1982-83.

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Cement Corporation of India explored Prang limestone unit by core drilling and established 90 meters thickness of the unit, the boreholes were closed in prang limestone. The limestone is reported to be of high grade.

## 7.1 REGIONAL GEOLOGY:

The State of Meghalaya covers an area of approximately 23,000 sq.km and divided into seven administrative districts. The northern and eastern borders of the state are covered by Assam State and south by Bangladesh and west by Bangladesh & Assam. Shillong, the State Capital is at an elevation of 1800m and located in the central part of Khasi hills. The rock formations of the area fall under Jaintia series of Eocene age.

The Regional Stratigraphy of the area is as follows:

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Age	Group/Series	Stage	Beds
Oligocene	Barail Series	----	Sandstone & Shale
Upper Eocene	Garo Group	Kopili Formation	Grey shale with alternate layers of Sandstone & Siltstone
Lower to Middle Eocene	Jaintia Group	Sylhet Limestone	Prang Limestone Narpuh Sandstone Umlatdoh Limestone Lakadong Sandstone Lakadong Limestone
Palaeocene	----	Therria Sandstone	Sandstone



The Lakadong sandstone and Narpuh sandstone distinctly and sequentially separate the Lakadong , Umlatdoh and Prang limestone bands in the area.

### Local Geology

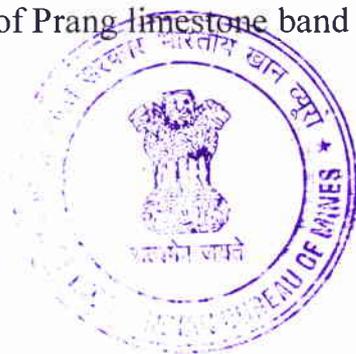
The present area under report falls under Survey of India Toposheet No. 83 C/W and located near village Lumshnong (25°10'16'' north and 92°22'52'' East). The minimum and maximum elevation of the area varies from 282m to 387m above M.S.L. The different lithounits of the area belong to Jaintia series of Eocene age. The limestone unit belongs to sylhet stage of Jaintia series of Middle Eocene age.

The entire area under report is covered by Prang limestone unit of Jaintia series.

Based on surface and sub-surface data generated during the exploration work, the following rock formations are encountered in the area.

Overburden	Fractured limestone , filled with clayee &..... brown sandy soil.	0.00 to 6.00 m.
Grey limestone	Prang limestone	25.80m to 54m (and continuing to depth).

The average thickness of limestone band varies from 25.80m to 54.00m as observed from the borehole data. All the bore holes have been closed within the Prang limestone unit. Further detailed exploration shall be taken up in phased manner in order to establish the entire thickness of Prang limestone band occurring within the area.



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## 8.0 PROSPECTING OPERATION (CARRIED OUT) :

In this proposed mining lease area the topographic survey and geological mapping were conducted, based on which a surface plan and geological map have been prepared.

The prospecting operation over the area of 13.58 hectares constitute the following broad activities.

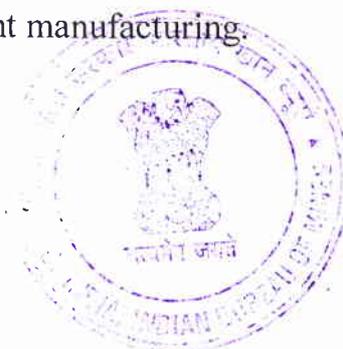
1. Topographic survey and preparation of surface plan on 1:1000 scale
2. Surface geological mapping on 1:1000 scale
3. Drilling
4. Sampling and Analysis

The survey work was carried out by CMCL with the help of theodolite. Grids were laid at 10m interval, contouring was done with respect to the GTS bench mark (B.M) located 3.6 Kms NW of 129km stone on NH-44 with an elevation of 550m above M.S.L. Based on topographical survey the surface plan was prepared on 1:1000 scale with 3 meters contour interval.

### Geological study

Reconnaissance study and geological mapping, topographical survey etc. was conducted by a team from CMCL Based on which surface and geological maps have been prepared. During mapping, surface samples from twenty locations (SS-01 to SS-20) were collected and analysed for CaO and MgO. The result of the analysis confirmed that the reserve is suitable for cement manufacturing.

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### Detailed exploration

Based on the results of geological study and study results of the nearby areas, four numbers of vertical bore holes were drilled along the strike direction at an interval of 145m to 240m (B.H. No. SS/BH/05,06,07,08). A cumulative meterage of 191.30m were drilled in four boreholes. All the boreholes were closed within the Prang limestone.

The limestone body is exposed throughout the area, which was plotted on the surface contour plan. The dip ( $42^{\circ}$  to  $50^{\circ}$  towards south-east) and strike (NE-SW) were noted and indicated on the plan. Thus the geological plan was prepared on a scale of 1:1000.

Analysis results of the surface samples collected from the area are as follows:

Sl. No.	Sample No.	CaO%	MgO%
1	WP/SS – 01	51.45	0.64
2	WP/SS – 02	50.18	0.85
3	WP/SS – 03	50.45	0.48
4	WP/SS – 04	49.48	0.68
5	WP/SS – 05	50.25	0.62
6	WP/SS – 06	52.10	0.54
7	WP/SS – 07	51.62	0.79
8	WP/SS – 08	47.20	1.15
9	WP/SS – 09	50.55	0.32
10	WP/SS – 10	51.25	0.44
11	WP/SS – 11	49.85	0.80
12	WP/SS – 12	50.38	0.42
13	WP/SS – 13	50.27	0.95
14	WP/SS – 14	49.95	1.12
15	WP/SS – 15	50.65	0.65
16	WP/SS – 16	50.45	0.45
17	WP/SS – 17	51.72	0.28
18	WP/SS – 18	52.77	0.63
19	WP/SS – 19	51.48	0.73
20	WP/SS – 20	51.45	0.48



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The overall core recovery is low in one bore hole (No. SS/BH/06) due to the presence of solution cavities. The details of litho chemical logs of the four vertical bore holes drilled in the area are shown in the following four tables.

Table - 1

Litho-Chemical Log of Borehole No SS/BH/05

Area : Wah Pynkon  
Bore hole no. : SS/BH/05

Collar RL of Bore hole : 384.69m  
Bore hole Inclination : Vertical

From	To	Run (mtrs)	Core Rec.	Core Recovery (%)	Lithology	Sample No	Ca O (%)	Mg O (%)	Remarks
0.00	0.20	0.20	--	--	Sludge of reddish brown sandy soil	SS/BH/05/00	3.47	0.71	
0.20	1.00	0.80	0.50	62.50	Limestone boulder	SS/BH/05/01	48.65	0.84	
1.00	2.50	1.50	1.20	86.50	Limestone boulder	SS/BH/05/03	49.15	0.70	
2.50	3.50	1.00	0.75	75	Grey coloured, hard and compact fossiliferous limestone	SS/BH/05/04	51.64	0.48	
3.50	4.50	1.00	0.85	85	Grey coloured, hard and compact limestone sparsely fossiliferous	SS/BH/05/05	52.33	1.15	
4.50	5.15	0.65	0.60	92.31	Light Grey coloured, hard and compact limestone sparsely fossiliferous	SS/BH/05/06	50.1	0.90	
5.15	7.80	2.65	2.60	98	Limestone as above	SS/BH/05/07	51.6	0.85	
7.80	9.40	1.60	1.55	96	Limestone as above	SS/BH/05/08	52.35	0.88	
9.40	10.60	1.20	1.20	100	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/09	51.75	0.65	
10.60	11.45	0.85	0.80	95.50	Limestone as above with calcite vein	SS/BH/05/10	50.85	0.75	
11.45	12.05	0.50	0.50	100	Limestone as above	SS/BH/05/11	52.35	0.95	
12.05	13.60	1.55	1.52	98	Grey coloured, hard and compact limestone	SS/BH/05/12	51.95	0.88	
13.60	14.40	0.80	0.70	88	Limestone as above with fractured at the bottom	SS/BH/05/13	50.50	0.65	
14.40	15.90	1.50	1.25	83.33	Grey coloured limestone with fractured at the top	SS/BH/05/14	51.25	0.90	
15.90	16.65	0.75	0.20	26.66	Limestone as above	SS/BH/05/15	49.95	0.85	Cavity - 15.90 to 16.40
16.65	18.15	1.50	1.20	80	Limestone as above but fractured	SS/BH/05/16	50.25	0.35	
18.15	18.55	0.40	0.35	97	Limestone as above with minor fractured at the top	SS/BH/05/17	51.54	0.65	
18.55	19.35	0.80	0.70	87	Light grey coloured, hard and compact limestone	SS/BH/05/18	52.50	0.87	
19.35	19.80	0.45	0.40	88	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/19	53.00	0.65	
19.80	21.65	1.85	1.20	65	Limestone as above but fractured	SS/BH/05/20	51.95	0.48	
21.65	22.75	1.10	0.88	80	Grey coloured, hard and compact fossiliferous limestone	SS/BH/05/21	52.25	0.54	
22.75	24.40	1.65	1.60	96	Limestone as above	SS/BH/05/22	51.46	0.45	
24.40	25.40	1.00	0.95	95	Limestone as above	SS/BH/05/23	51.95	0.75	
25.40	25.90	0.50	--	--	--	--	--	--	Cavity 50cm
25.90	26.45	0.55	--	--	--	--	--	--	Cavity 55cm
26.45	27.40	0.95	0.90	94	Grey coloured, hard and compact limestone	SS/BH/05/26	50.85	0.85	
27.40	28.40	1.00	0.99	99	Grey coloured, hard and compact, fossiliferous limestone	SS/BH/05/27	52.00	0.35	
28.40	30.40	2.00	1.98	99	Grey coloured, hard and compact, fossiliferous limestone	SS/BH/05/28	50.55	0.36	
30.40	33.00	2.60	2.60	100	Limestone as above	SS/BH/05/29	51.85	0.62	
33.00	34.80	1.80	1.76	97	Limestone as above	SS/BH/05/30	52.15	0.75	
34.80	35.50	0.70	0.70	100	Limestone as above	SS/BH/05/31	53.25	0.62	
35.50	36.15	0.65	0.60	92	Limestone as above but fractured at the bottom	SS/BH/05/32	51.36	0.85	
36.15	38.80	2.65	2.63	99	Light grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/33	50.96	0.54	
38.80	39.50	0.70	0.68	97	Limestone as above with minor shale parting	SS/BH/05/34	49.50	0.40	
39.50	41.00	1.50	1.45	96	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/35	51.54	0.85	
41.00	42.30	1.30	1.30	100	Limestone as above	SS/BH/05/36	52.55	0.45	
42.30	43.05	0.75	0.70	93	Limestone as above but fractured at the bottom	SS/BH/05/37	50.68	0.78	
43.05	44.50	1.45	1.45	100	Limestone as above with impression of solution cavity.	SS/BH/05/38	51.45	0.84	
44.50	44.80	0.30	--	--	--	--	--	--	Cavity 30cm
44.80	45.30	0.50	0.49	98	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/40	52.65	0.82	
45.30	47.70	2.40	2.40	100	Limestone as above	SS/BH/05/41	51.85	0.65	
47.70	50.00	2.30	2.10	91	Limestone as above	SS/BH/05/42	51.75	0.75	

Bore hole closed at 50.00m



**APPROVAL**

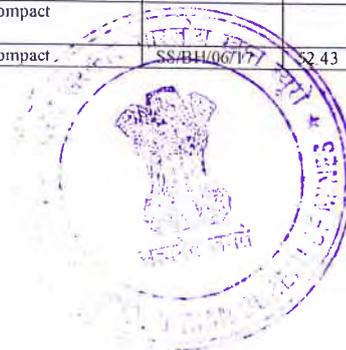
**Table - 2**  
**Litho-Chemical Log of Borehole No SS/BH/06**

**Area : Wah Pynkon**  
**Bore hole no. : SS/BH/06**

**Collar RL of Bore hole : 339.879m**  
**Bore hole Inclination : Vertical**

From	To	Run (mtrs)	Core Rec.	Core Recovery (%)	Lithology	Sample No	Ca O (%)	Mg O (%)	Remarks
0.00	0.50	0.50	0.19	38%	Limestone boulder	SS/BH/06/01	17.59	0.64	
0.50	1.50	1.00	0.60	60%	Sandstone + sandy soil				Cavity 1.10 to 1.35
1.50	2.00	0.50	0.35	70%	Sandy soil-brown				
2.00	2.50	0.50	0.42	84%	Sandy soil-brown	SS/BH/06/02	2.44	0.64	
2.50	3.00	0.50	Nil	Nil					
3.00	4.00	1.00	0.95	95%	Sandy soil-brown				
4.00	5.00	1.00	0.95	95%	Clay soil				
5.00	6.00	1.00	0.90	90%	Clay soil				
6.00	7.00	1.00	0.88	88%	Limestone-grey, fine grain	SS/BH/06/03	53.23	0.8	Top 40cm. Fractured
7.00	8.50	1.50	1.32	88%	Limestone-grey, compact and hard fossiliferous				
8.50	9.00	0.50	0.41	88%	- do -	SS/BH/06/04	52.24	1.12	
9.00	10.50	1.50	1.28	85%	- do -				
10.50	12.00	1.50	1.30	86%	- do -				
12.00	13.50	1.50	1.00	67%	Fractured from top 40cm	SS/BH/06/05			Cavity 12.85 to 13.30
13.50	14.00	0.50	0.18	36%	Limestone-grey, fractured				Cavity 13.70 to 14.00
14.00	15.00	1.00	0.87	87%	Limestone, fractured				
15.00	16.00	1.00	0.30	30%	Limestone hard and compact	SS/BH/06/06			Cavity 15.00 to 15.65
16.00	17.00	1.00	0.30	30%	- do -				Cavity 16.35 to 17.00
17.00	17.50	0.50	0.27	54%	- do -				Cavity 17.30 to 17.50
17.50	18.00	0.50	0.29	58%	- do -				Cavity 17.50 to 17.65
18.00	18.50	0.50	0.18	36%	Limestone, fractured				Cavity 18.00 to 18.30
18.50	18.75	0.25	Nil	Nil					Cavity 25cm.
18.75	19.00	0.25	0.23	92%	Limestone, fractured				
19.00	19.50	0.50	0.40	80%	Limestone, fractured				
19.50	20.00	0.50	Nil	Nil					Cavity 50cm.
20.00	20.50	0.50	0.22	44%	Limestone -side cavity indication				
20.50	21.00	0.50	0.23	46%	Limestone -side cavity indication	SS/BH/06/07	52.94	0.80	Cavity 20.50 to 20.75
21.00	22.50	1.50	0.95	63%	Limestone, fractured 30cm				Cavity 21.35 to 21.65
22.50	24.00	1.50	0.85	56%	Limestone grey colour				Cavity 23.10 to 23.60
24.00	24.70	0.70	0.62	89%	Limestone first half fractured	SS/BH/06/08	52.04	0.64	Cavity 24.70 to 25.20
24.70	25.20	0.50	Nil	Nil					Cavity 50cm.
25.20	25.95	0.75	0.66	88%	Limestone first half fractured				
25.95	26.40	0.45	Nil	Nil					Cavity 45cm.
26.40	26.70	0.30	0.27	90%	Limestone hard and compact				
26.70	27.40	0.70	0.37	53%	- do -				
27.40	28.90	1.50	0.40	26%	- do -	SS/BH/06/09			Cavity 27.50 to 28.00, 28.40 to 28.90
28.90	30.40	1.50	0.82	55%	- do -				Cavity 29.20 to 29.70
30.40	31.70	1.30	0.70	54%	- do -	SS/BH/06/10	52.04	0.48	Cavity 30.40 to 30.90
31.70	32.30	0.60	0.39	65%	- do -				Cavity 31.70 to 31.85
32.30	33.00	0.70	0.57	81%	- do -				
33.00	33.60	0.60	0.51	85%	- do -				
33.60	35.10	1.50	1.32	88%	- do -	SS/BH/06/11	52.74	0.32	
35.10	36.25	1.15	0.64	56%	- do -				Cavity 35.85 to 36.25
36.25	38.00	1.75	1.00	57%	- do -				Cavity 36.70 to 37.05
38.00	40.60	2.60	1.64	63%	Carbonaceous limestone	SS/BH/06/12	52.65	0.32	Cavity 38.95 to 39.35, 39.85 to 40.25
40.60	42.10	1.50	0.90	60%	Carbonaceous limestone				Cavity 41.70 to 42.10
42.10	43.05	0.95	0.32	33%	Carbonaceous limestone	SS/BH/06/13	52.15	0.64	Cavity 42.45 to 43.05
43.05	44.05	1.00	0.26	26%	Limestone fractured				Cavity 43.35 to 44.05
44.05	45.20	1.15	0.38	33%	Limestone fractured				Cavity 44.20 to 44.60, 44.90 to 45.20
45.20	47.15	1.95	0.65	33%	Limestone fractured				Cavity 45.45 to 46.05
47.15	48.75	1.60	0.77	48%	Limestone hard & compact, fractured	SS/BH/06/14	51.14	0.48	Cavity 47.35 to 47.75
48.75	50.10	1.35	0.70	52%	Limestone fractured				Cavity 49.10 to 49.40, 49.90 to 50.10
50.10	52.60	2.50	1.87	75%	Limestone hard & compact	SS/BH/06/15	51.59	0.48	Cavity 50.60 to 51.00
52.60	53.00	0.40	Nil	Nil					Cavity 52.60 to 53.00
53.00	53.40	0.40	0.35	88%	Limestone hard & compact	SS/BH/06/16	51.64	0.48	
53.40	53.80	0.40	Nil	Nil					Cavity 53.40 to 53.80
53.80	54.30	0.50	0.41	82%	Limestone				
54.30	54.60	0.30	Nil	Nil					Cavity 30cm
54.60	56.15	1.55	0.48	31%	Limestone				Cavity 54.80 to 55.60, 55.75 to 56.15
56.15	59.00	2.85	0.96	34%	Limestone hard & compact				Cavity 56.15 to 56.55, 57.30 to 58.00
59.00	60.20	1.20	0.85	71%	Limestone hard & compact	SS/BH/06/17	52.43	0.48	58.30 to 59.00

Bore hole closed at 60.20m



**APPROVED**

Table - 3

## Litho-Chemical Log of Borehole No SS/BH/07

Area : Wah Pynkon  
Bore hole no. : SS/BH/07

Collar RL of Bore hole : 355.097m  
Bore hole Inclination : Vertical

From	To	Run (mtrs)	Core Rec. (%)	Core Recovery (%)	Lithology	Sample No	Ca O (%)	Mg O (%)	Remarks
0.00	0.70	0.70	0.50	71	Limestone light grey, fragmented.	SS/BH/07/01	50.96	0.48	
0.70	1.20	0.50	0.41	82	Limestone light grey, compact with calcite veins.	SS/BH/07/02	51.20	0.64	
1.20	1.95	0.75	0.30	40	Limestone fragmented.	SS/BH/07/03	52.04	0.48	Cavity 1.45 to 1.85
1.95	2.75	0.80	0.53	66	Limestone grey, hard and compact	SS/BH/07/04	50.30	0.32	Cavity 2.55 to 2.75
2.75	4.05	1.30	0.95	73	Limestone grey coloured, hard and compact	SS/BH/07/05	51.02	0.64	Cavity 3.85 to 4.05
4.05	4.85	0.80	0.61	76	Limestone grey to light brown colour hard & compact, calcite along the joints.	SS/BH/07/06	51.31	0.80	Cavity 4.75 to 4.85
4.85	5.95	1.10	0.94	85	Limestone grey, fine to medium grained, hard & compact.	SS/BH/07/07	49.65	0.80	
5.95	6.95	1.00	0.65	65	Limestone grey to light brown, fractured at the top.	SS/BH/07/08	50.80	0.64	Cavity 6.55 to 6.80
6.95	8.25	1.30	1.25	96	Limestone grey, fine to medium grain, hard & compact, fossiliferous.	SS/BH/07/09	52.25	0.48	
8.25	9.75	1.50	1.30	87	Limestone grey to light brown, fine to medium grained, compact	SS/BH/07/10	51.86	0.80	
9.75	10.25	0.50	0.46	92	Limestone as above	SS/BH/07/11	50.86	0.56	
10.25	11.75	1.50	1.45	97	Limestone as above	SS/BH/07/12	50.58	0.80	
11.75	13.55	1.80	1.60	89	Limestone as above with impression of solution cavity (6cm) at the top.	SS/BH/07/13	51.58	0.80	
13.55	15.25	1.70	1.56	92	Limestone grey colour, fine to medium grain, hard and compact	SS/BH/07/14	51.74	0.48	
15.25	16.85	1.60	1.60	100	Limestone as above	SS/BH/07/15	52.93	0.72	
16.85	18.00	1.15	1.15	100	Limestone as above with side cavity towards bottom (10m)	SS/BH/07/16	52.60	0.72	
18.00	18.75	0.75	0.75	100	Limestone as above, with continuation of side cavity (10cm)	SS/BH/07/17	53.67	0.32	
18.75	19.75	1.00	0.96	96	Limestone grey, fine to medium grain, hard and fractured at places.	SS/BH/07/18	52.69	0.48	
19.75	21.25	1.50	1.50	100	Limestone grey colour, fine to medium grain, hard and compact, calcite vein observed along the joints.	SS/BH/07/19	53.05	0.56	
21.25	21.75	0.50	0.45	90	Limestone as above	SS/BH/07/20	52.99	0.32	
21.75	23.25	1.50	1.40	93	Limestone as above	SS/BH/07/21	53.09	0.48	
23.25	24.75	1.50	1.50	100	Limestone -do, fossiliferous	SS/BH/07/22	51.95	0.48	
24.75	26.25	1.50	1.50	100	Limestone -do, fossiliferous	SS/BH/07/23	52.25	0.32	
26.25	27.75	1.50	1.50	100	Limestone -do, fossiliferous	SS/BH/07/24	52.26	0.56	
27.75	29.25	1.50	1.45	97	Limestone grey, fine to medium grain, compact & hard	SS/BH/07/25	53.10	0.48	
29.25	30.75	1.50	1.40	93	Limestone -do, calcite veins	SS/BH/07/26	54.17	0.32	
30.75	31.90	1.15	1.14	99	Limestone grey, fine compact	SS/BH/07/27	52.65	0.80	
31.90	32.70	0.80	0.50	63	Limestone fractured	SS/BH/07/28	53.27	0.48	
32.70	34.20	1.50	1.00	67	Limestone grey, compact, fine grain, vert. Joints, fractured at places	SS/BH/07/29	53.83	0.48	
34.20	34.50	0.30	0.20	67	Limestone fractured	SS/BH/07/30	53.45	0.48	
34.50	35.70	1.20	1.15	96	Limestone grey, fine & compact	SS/BH/07/31	53.56	0.38	
35.70	36.20	0.50	0.47	94	Limestone as above	SS/BH/07/32	52.65	0.64	
36.20	37.40	1.20	1.10	92	Limestone -do, fossiliferous	SS/BH/07/33	52.71	0.80	
37.40	38.90	1.50	1.45	97	Limestone -do, fossiliferous	SS/BH/07/34	53.22	0.56	
38.90	40.40	1.50	1.43	95	Limestone -do, fossiliferous	SS/BH/07/35	52.26	0.64	
40.40	41.20	0.80	0.75	94	Limestone -do, fossiliferous	SS/BH/07/36	52.64	0.64	
41.20	42.10	0.90	0.88	98	Limestone -do, fossiliferous	SS/BH/07/37	52.99	0.80	
42.10	43.30	1.20	1.10	92	Limestone grey, hard & compact	SS/BH/07/38	53.48	0.40	
43.30	44.90	1.60	1.55	97	Limestone grey, fine to medium grained, hard & compact, fossiliferous	SS/BH/07/39	52.77	0.48	
44.90	46.40	1.50	1.40	93	Limestone -do	SS/BH/07/40	52.93	0.48	
46.40	47.50	1.10	1.05	95	Limestone grey, fine grained, hard & compact	SS/BH/07/41	51.87	0.80	
47.50	48.70	1.20	1.15	96	Limestone as above	SS/BH/07/42	52.94	0.56	
48.70	50.00	1.30	1.20	92	Limestone grey, fine grained, hard & compact with calcite vein.	SS/BH/07/43	53.33	0.32	

Bore hole closed at 50.00m



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Table - 4

## Litho-Chemical Log of Borehole No SS/BH/08

Area : Wah Pynkon  
Bore hole no. : SS/BH/08

Collar RL of Bore hole : 326.21m  
Bore hole Inclination : Vertical

From	To	Run (mtrs)	Core Rec. (%)	Core Recovery (%)	Lithology	Sample No	Ca O (%)	Mg O (%)	Remarks
0.00	2.00	2.00	--	--	Sludge of brown coloured soil				
2.00	2.50	0.50	0.46	92	2.00-2.20 : Light brown to grey coloured hard and compact limestone 2.20-2.50 : Light grey coloured, hard and compact limestone with solution cavity indication.	SS/BH/08/01	49.12	0.8	
2.50	4.00	1.50	1.50	100	Grey coloured compact and hard limestone, sparsely fossiliferous	SS/BH/08/02	52.64	0.48	
4.00	5.00	1.00	0.95	95	Limestone as above, fossiliferous fragmentation at the top	SS/BH/08/03	52.04	0.48	
5.00	6.00	1.00	0.76	76	Grey coloured compact and hard limestone, sparsely fossiliferous with impression of solution cavity.	SS/BH/08/04	48.84	0.64	
6.00	7.00	1.00	0.93	93	Limestone grey coloured with impression of solution cavity at the top and fragmented.	SS/BH/08/05	50.86	0.48	
7.00	7.40	0.40	0.35	88	Limestone as above	SS/BH/08/06	52.77	0.48	
7.40	8.50	1.10	1.00	91	Limestone as above with fragmentation towards the bottom.	SS/BH/08/07	52.43	0.32	
8.50	9.50	1.00	0.80	80	Limestone as above but fragmented.	SS/BH/08/08	51.63	0.48	
9.50	9.80	0.30	0.25	83	Light grey coloured limestone	SS/BH/08/09	52.88	0.32	
9.80	10.80	1.00	0.85	85	Limestone as above	SS/BH/08/10	52.15	0.32	
10.80	11.55	0.75	0.70	93	Limestone as above	SS/BH/08/11	51.98	0.32	
11.55	12.95	1.40	1.35	96	Light grey coloured hard and compact limestone, sparsely fossiliferous with impression of solution cavity at the top and middle portion.	SS/BH/08/12	50.79	2.35	
12.95	13.95	1.00	1.00	100	Light grey coloured limestone hard and compact, fossiliferous with presence of calcite veins	SS/BH/08/13	51.76	0.48	
13.95	14.55	0.60	0.55	91.66	Grey coloured hard and compact limestone, sparsely fossiliferous.	SS/BH/08/14	52.04	0.64	
14.55	15.45	0.90	0.90	100	Limestone as above with calcite veins.	SS/BH/08/15	51.76	0.64	
15.45	16.30	0.85	0.85	100	Grey coloured hard and compact fossiliferous limestone.	SS/BH/08/16	51.70	0.80	
16.30	17.45	1.15	1.05	91	Limestone as above	SS/BH/08/17	50.08	0.64	
17.45	18.05	0.60	0.57	95	Limestone as above	SS/BH/08/18	50.96	0.64	
18.05	19.45	1.40	1.35	96	Limestone as above	SS/BH/08/19	51.91	0.32	
19.45	20.25	0.80	0.65	81	Grey coloured hard and compact with fragmentation towards bottom.	SS/BH/08/20	51.12	0.64	
20.25	20.75	0.50	0.50	100	Limestone as above	SS/BH/08/21	51.52	0.40	
20.75	21.20	0.45	0.40	89	Limestone as above	SS/BH/08/22	53.25	0.16	
21.20	21.90	0.70	0.60	86	Grey coloured hard and compact indication of solution cavity	SS/BH/08/23	52.38	0.48	
21.90	22.60	0.70	0.70	100	Grey coloured compact and hard limestone, sparsely fossiliferous with fragmentation at the bottom.	SS/BH/08/24	51.91	0.32	
22.60	23.00	0.40	0.30	75	Grey coloured compact and hard limestone, sparsely fossiliferous but fragmented.	SS/BH/08/25	52.86	0.32	
23.00	23.60	0.60	0.50	83	Limestone as above with fragmentation at the top.	SS/BH/08/26	52.88	0.32	
23.60	24.60	1.00	0.95	95	Limestone as above with fragmentation at the top.	SS/BH/08/27	51.46	0.48	
24.60	25.10	0.50	0.45	90	Grey coloured compact and hard limestone with fragmentation towards bottom.	SS/BH/08/28	51.08	0.32	
25.10	25.60	0.50	0.50	100	25.10-25.43 : Grey coloured, compact and hard limestone. 25.43-25.60 : Limestone with shale parting.	SS/BH/08/29	51.69	0.48	
25.60	26.40	0.80	0.75	94	25.60-25.93 : Limestone with shale parting 25.93-26.40 : Grey coloured, compact and hard limestone.	SS/BH/08/30	37.80	0.48	
26.40	26.80	0.40	0.30	75	Dark grey coloured limestone with fragmentation at the top	SS/BH/08/31	47.82	0.64	
26.80	27.80	1.00 (with 93cm void)	0.07	7	Limestone-1 piece. Dark grey coloured limestone, hard & compact.	SS/BH/08/32	49.57	0.48	
27.80	28.80	1.00	0.70	70	27.80-28.40 : Grey coloured, fine to medium grained limestone, siliceous. 28.40-28.80 : Brown coloured, medium to coarse grained sandy limestone	SS/BH/08/33	36.29	0.32	
28.80	29.60	0.80	0.65	81	Light grey to brown coloured medium to coarse grained limestone, siliceous with minor shale parting.	SS/BH/08/34	40.83	0.32	
29.60	31.10	1.50	0.90	60	29.60-29.95 : Light grey coloured hard and compact fine to medium grained siliceous limestone. 29.95-30.10 : Brown coloured, medium grained sandy limestone. 30.10-31.10 : Light grey coloured, hard and compact, fine to medium grained siliceous limestone.	SS/BH/08/35	32.41	0.80	

Bore hole closed at 31.10m



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The overall core recovery in each bore hole is as follows :

Sl. No.	B.H. No.	Core Recovery %		
		Overall	Limestone	Cavity
1	SS/BH/05	88.48	89.55	4
2	SS/BH/06	57.57	55.90	34
3	SS/BH/07	90.38	90.38	2
4	SS/BH/08	80.67	97.24	No Cavity

A total of 131 nos of core samples were analysed for CaO and MgO individually which have been indicated in the lithologs of boreholes. Further 34 nos of composite samples have been prepared representing 5 to 7 metres run-length and analysed for seven to nine radicals.

Details of analysis result of composite limestone samples are as follows :

**COMPOSITE LIMESTONE SAMPLE BORE HOLE NO. 05**

Collar of BH In Mtrs		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	Ca O	Mg O	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
2.50	7.80	BH/05/CS/01	41.62	0.85	0.65	0.60	51.45	0.84	-	-	-	-	0.08
7.80	14.40	BH/05/CS/02	42.52	0.75	0.50	0.55	52.25	0.79	-	-	-	-	0.3
14.40	21.65	BH/05/CS/03	42.18	1.35	0.85	0.45	52.58	0.68	-	-	-	-	0.045
21.65	26.45	BH/05/CS/04	42.85	0.95	0.15	0.72	52.85	0.62	-	-	-	-	0.2
26.45	33.00	BH/05/CS/05	42.91	0.98	0.42	0.53	52.74	0.54	-	-	-	-	0.14
33.00	38.80	BH/05/CS/06	42.78	1.35	0.64	0.57	53.24	0.62	-	-	-	-	0.06
38.80	44.50	BH/05/CS/07	41.95	1.2	0.66	0.68	51.42	0.58	-	-	-	-	0.1
44.50	50.00	BH/05/CS/08	42.05	0.95	0.85	0.74	52.64	0.81	-	-	-	-	0.06



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**COMPOSITE LIMESTONE SAMPLE BORE HOLE NO. 06**

Collar of BH In Mtrs		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	Ca O	Mg O	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
1.50	6.00	BH/06/CS/01	11.17	1.65	0.65	0.72	52	0.8	-	-	-	-	0.09
6.00	12.00	BH/06/CS/02	42.52	1	0.57	0.49	53.38	0.64	-	-	-	-	0.2
12.00	20.50	BH/06/CS/03	42.18	1.16	0.81	0.5	54.11	0.6	-	-	-	-	0.015
20.50	27.40	BH/06/CS/04	42.85	1.06	0.45	0.49	53.38	0.64	-	-	-	-	0.1
27.40	33.60	BH/06/CS/05	42.91	0.97	0.35	0.49	53.38	0.64	-	-	-	-	0.13
33.60	38.00	BH/06/CS/06	42.78	1.24	0.17	0.55	53.55	0.6	-	-	-	-	0.1
38.00	47.15	BH/06/CS/07	41.95	1.52	0.68	0.70	52.99	0.60	-	-	-	-	0.08
47.15	53.00	BH/06/CS/08	42.05	2.01	1.07	0.75	52.99	0.8	-	-	-	-	0.12
53.00	59.00	BH/06/CS/09	41.7	1.46	0.96	0.9	52.79	0.6	-	-	-	-	0.14
59.00	60.20	BH/06/CS/10	42.75	1.36	0.26	0.5	53.83	0.6	-	-	-	-	0.15

**COMPOSITE LIMESTONE SAMPLE BORE HOLE NO. 07**

Collar of BH In Mtrs		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	Ca O	Mg O	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
0.00	4.05	BH/07/CS/01	42.57	2.58	1.32	1.3	49.91	0.8	-	-	-	-	0.09
4.05	9.75	BH/07/CS/02	41.87	2.41	1.31	0.79	52.04	0.88	-	-	-	-	0.12
9.75	15.25	BH/07/CS/03	42.14	1.88	0.51	0.71	52.71	0.88	-	-	-	-	0.11
15.25	21.75	BH/07/CS/04	42.94	1.26	0.55	0.37	53.5	0.96	-	-	-	-	0.15
21.75	27.75	BH/07/CS/05	41.96	1.13	0.7	0.3	54.67	0.4	-	-	-	-	0.08
27.75	34.20	BH/07/CS/06	42.19	0.7	0.4	0.62	54.67	0.5	-	-	-	-	0.12
34.20	38.90	BH/07/CS/07	42.84	0.6	0.37	0.3	53.97	1.2	-	-	-	-	0.10
38.90	44.90	BH/07/CS/08	42.9	0.52	0.51	0.2	54.39	0.5	-	-	-	-	0.14
44.90	50.00	BH/07/CS/09	42.76	1.49	0.41	0.25	53.55	0.6	-	-	-	-	0.11

**COMPOSITE LIMESTONE SAMPLE BORE HOLE NO. 08**

Collar of BH In Mtrs		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	Ca O	Mg O	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
2.00	5.00	BH/08/CS/01	41.47	1.94	1.04	0.60	52.99	0.80	0.08	0.01	-	-	0.12
5.00	10.80	BH/08/CS/02	41.65	2.36	0.78	0.40	52.99	0.60	0.06	0.01	-	-	0.10
10.80	16.30	BH/08/CS/03	41.96	2.08	0.74	0.40	53.27	0.60	0.05	0.09	-	-	0.15
16.30	23.00	BH/08/CS/04	42.28	1.37	0.48	0.70	53.33	0.40	0.04	0.10	-	-	0.11
23.00	25.43	BH/08/CS/05	42.09	0.98	0.60	0.80	53.45	0.40	0.06	0.10	-	-	0.10
25.43	25.93	BH/08/CS/06	31.71	20.21	3.68	3.30	39.53	0.60	0.05	0.40	-	-	0.11
25.93	31.10	BH/08/CS/07	33.28	20.81	1.52	2.20	40.93	0.80	0.03	0.18	-	-	0.10



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## 9.0 ESTIMATION OF ORE RESERVE :

Geological reserve is estimated by cross-sectional area method. Cross-sectional area of the deposit is multiplied with length of influence and bulk density to arrive at the geological reserve.

Mathematically the reserve is calculated as follows:

$$G = C \times L \times B$$

Where G = Geological Reserve (in MT)  
C = Cross-sectional Area  
L = Length of Influence in metre  
B = Bulk density in metric tonnes per cubic metre.

The geological reserve has been calculated along four NW-SE sections i.e S<sub>1</sub>S<sub>2</sub>, S<sub>3</sub>S<sub>4</sub>, S<sub>5</sub>S<sub>6</sub>, S<sub>7</sub>S<sub>8</sub> (along which all the bore holes have been encountered). The geological reserve of the proposed ML area under proved category is calculated to be 14.276mt and under probable category (upto 15m depth below proved depth) is 4.574mt (Table-A).

Summary of Reserve		UNFC Code
Proved	- 14.276 mt	111
Probable	- 4.574 mt	222
<b>Total</b>	<b>- 18.850 mt</b>	



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## Geological Reserve

Table – A

Category	Section considered	Cross-Sectional Area (m <sup>2</sup> )	Length of Influence (m)	Volume of ore Zone (m <sup>3</sup> )	Tonnage Factor (m <sup>3</sup> /MT)	Quantity of Ore (MT)	UNFC Code
Proved	S <sub>1</sub> S <sub>2</sub>	9800	150	1470000	2.5	3675000	111
	S <sub>3</sub> S <sub>4</sub>	10100	175	1767500	2.5	4418750	
	S <sub>5</sub> S <sub>6</sub>	9700	200	1940000	2.5	4850000	
	S <sub>7</sub> S <sub>8</sub>	4100	130	533000	2.5	1332500	
<b>Total :</b>						<b>14276250</b>	
Probable	S <sub>1</sub> S <sub>2</sub>	3300	150	495000	2.5	1237500	222
	S <sub>3</sub> S <sub>4</sub>	3225	175	564375	2.5	1410937.50	
	S <sub>5</sub> S <sub>6</sub>	2925	200	585000	2.5	1462500	
	S <sub>7</sub> S <sub>8</sub>	1425	130	185250	2.5	463125	
<b>Total :</b>						<b>4574062.50</b>	
<b>Grand Total (Proved + Probable)</b>						<b>18850312.50</b> or <b>18.850 million tonne</b>	



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### **Mineable Reserve:**

The demonstrated geological reserve (proved + probable) is computed to be 18.850 mt. Hence the mineable reserve (demonstrated) category can be computed to be 15.08 mt by taking 80% of geological reserve. The 20% loss will be accounted for 7.5mtrs M.L boundary & ultimate pit slope.

### **10.0 CLASSIFICATION OF RESERVE UNDER UNFC**

United Nations Framework classification of mineral resources is defined under three aspects. Such as Economics, Technical feasibility & Geology. Based on economics of mining a deposit can be classified as economic (Code-1), Potentially economic (Code-2) and Intrinsically economic (Code-3). The proposed M.L area will be under code-1 since it is the extension of the limestone deposits which are under exploitation in the adjacent mining areas. On the basis of technical feasibility this deposit can be placed under code-1 based on the approved mining plan of the nearby mining areas. The geological assessment for this deposit is placed under code-1 as detailed exploration has been completed by way of large scale geological mapping, survey, surface sampling and analysis, drilling of four bore holes, core logging and analysis. With UNFC system the resources can thus be placed under 111 for proved reserve. However, probable reserve of 4.574 mt has been indicated upto 15m below proved depth since thickness of the limestone band (Prang limestone) continues further below the proved depth. This has been placed under UNFC code-222.

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## 11.0 CONCLUSION :

Based on the geological investigation in the prospective area, the following findings are summarized below:

- Proposed ML area over 13.58 hectares is mainly represented by rugged terrain and the altitude variation being 105m.
- Based on exploration data a limestone band of almost NE-SW with dip varying from 42° to 50° towards SE is established.
- The analysis results of limestone samples drawn from the proposed M.L area confirms to its usability in the cement industry.
- The geological reserve of limestone is estimated at 18.85 million tonne and mineable reserve at 15.08 million tonne.

This geological report is prepared to fulfill the conditions for applying for the mining lease for the proposed area over 13.58 Ha and to have an idea for future planning in respect of production of limestone to cater to the need of the applicant's cement plant.

  
(H. S. Sarangi)

**Authorised Signatory**  
**M/s Geomin Consultants (P) Ltd.**  
**Regd. No. RQP/CAL/167/92-B**



### Summary of Borehole Data

Sl. No.	Borehole No.	Collar RL (m)	Total depth (m)	From (m)	To (m)	Lithounits	Range of CaO%
1.	SS/BH/05	384.69	50.00	0.00	0.20	Sandy soil	48.65 to 49.15 51.42 to 53.24
				0.20	2.50	Limestone boulder	
				2.50	50.00	Limestone	
2.	SS/BH/06	339.879	60.20	0.00	6.00	Limestone boulder sandy soil etc	52.79 to 54.11
				6.00	60.20	Limestone	
3.	SS/BH/07	355.097	50.00	0.00	50.00	Limestone	49.91 to 54.67
4.	SS/BH/08	326.21	31.10	0.00	2.00	Soil	52.99 to 53.45 39.53 40.93
				2.00	25.43	Limestone	
				25.43	25.93	Limestone with shale parting	
				25.93	31.10	Limestone	



प्रमाणित  
 APPROVED

*Speed Post*



GOVERNMENT OF INDIA  
MINISTRY OF COMMERCE & INDUSTRY  
PETROLEUM AND EXPLOSIVES SAFETY ORGANISATION (PESO)  
(Formerly Department of Explosives)  
GNB Road, Bhuyan Mansion,  
4th floor, Panchwati, Silpukhuri Guwahati 781003  
Tele 2662503 Fax 2662503  
Email dyceeguwahati@explosives.gov.in

ANNEXURE - VI

Dated 23/12/2011

26 DEC 2011

No. E/HQ/MG/22/32(E.56590)

*Speed Post*  
Manufacturing Company Limited,  
Jaintia Hills - 793 200  
Dist. Jaintia Hills, State Meghalaya, Pincode-793200

Subject: Possession for Use of Explosives from magazine at Plot No.: Plot No. 68, Village/Town, Village Lumshnong, P.S. Khalielriat, Dist. JAINTIA HILLS, State Meghalaya Licence No.: E/HQ/MG/22/32(E.56590) granted in Form I.E-3 of Explosives Rules, 2008 -Endorsement regarding

Reference No. E/HQ/MG/22/32(E.56590) Dated 04/12/2011 from Chief Controller of Explosives, Nagpur and inspection of the subject premises by an officer of this office on 12/12/2011.

As per letter No. JAA-27/92-93/212 dated 31st March 2010 was endorsed as required under Rule 117(a) of the Explosives Rules, 2008, forwarded herewith.

For further renewal of licence, please submit following documents so as to reach this office on or before 31/03/2016.

- Application in Form RE-1 duly filled in and signed
- Licence fees for one to five years in the form of demand draft drawn on any Nationalized Bank in favour of Jt. Chief Controller of Explosives, Kolkata payable at Kolkata
- Original licence with approved plan
- In this connection, please also refer to Rule 112 of Explosives Rules, 2008
- Indent for purchase of explosives shall be placed in RE-11 with the supplier and copy of the same shall be sent to this office (Not applicable for fireworks store house)
- Please submit quarterly returns of explosives in RE-7 at the end of every quarter so as to reach this office by 10th of the succeeding quarter (Not applicable for fireworks store house)
- All blasting operations shall be carried out by a competent person holding a valid shot firer's permit granted under above rules. However, blasting operations in mines coming under the purview of the Mines Act 1952, the blaster shall have qualifications prescribed in the regulations framed under the said Act.

Yours faithfully,  
*Anil Kumar Kunj*  
(Anil Kumar Kunj)  
Deputy Chief Controller of Explosives  
Guwahati

उप मुख्य विस्फोटक नियंत्रक  
गुवाहाटी

Deputy Chief Controller of Explosives  
Guwahati

Copy forwarded to

- 1 District Magistrate, JAINTIA HILLS, Meghalaya with reference to his Nuc No: JAA-27/92-93/212 Dated: 23/06/2011

For more information regarding status fees and other details please visit our web site <http://explosives.gov.in>

**APPROVED**



A-90

Inspected & endorsed.  
 उप मुख्य विस्फोटक नियंत्रक  
 गुवाहाटी

LICENCE FORM LE-3

See article 3(a) to (d) of Part 1 of Schedule IV of Explosives Rules, 2008)

Licence to possess : (c) for use, explosives of class 1, 2,3,4,5,6 or 7 in a magazine



Licence No. : E/HQ/MG/22/32(E56590)  
 Annual Fee Rs. 5000/-

1060



1 Licence is hereby granted to : **M/s. Cement Manufacturing Company Limited (Occupier : Shri Prem Kumar Bhajanka S/o. M.P. Bhajanka)**

**Lumshnong, Distt. Jaintia Hills - 793 200, Town/Village -  
 District-JAINTIA HILLS, State-Meghalaya, Pincode - 793200**

2 Status of licensee : **Company**

3 Licence is valid only for the following purpose : possess for use of **Nitrate mixture - Slurry and Emulsion Explosives, Cast Booster, Safety Fuse, Detonating Fuse, Electric/Non Electric(Nonel) Detonators,**

4 (a) Licence is valid for the following kinds and quantity of explosives:

Sr. No.	Name and Description	Class & Division	Sub-division (If any)	Quantity at any one time
1.	Nitrate mixture - Slurry and Emulsion Explosives	2 .0	0	4250 Kg.
2.	Cast Booster	3 .2	0	500 Kg.
3.	Electric/Non Electric(Nonel) Detonators	6 .3	0	20000 Nos.
4.	Detonating Fuse	6 .2	0	10000 Mtrs
5.	Safety Fuse	6 .1	0	1000 Mtrs

(b) Quantity of explosives to be purchased in a calendar month[applicable for licence under article 3(b) and (c)] : **3 times as above.**

5 The licensed premises shall conform to the following drawing(s):

Drawing No : **E/HQ/MG/22/32(E56590) dated : 03/11/2011**

6 The licensed premises are situated at following address:

Plot No. Plot No. 68 . Town/Village : **Village Lumshnong, P.S. Khaliehriat**

Police Station : **Khaliehriat**

PinCode : **793200**

Phone : **03655 278215/16/17**

District : **JAINTIA HILLS**

E-Mail : **lumshnong@cmcl.co.in**

State : **Meghalaya**

Fax : **03655 278217**

7. The licensed premises consist of following facilities : **A Main High Explosives Storage Room, A Lobby, And A Detonators Storage Room**

8. The licence is granted subject to the provision of Explosives Act 1884 as amended from time to time and the Explosives Rules, 2008 framed there under and the conditions, additional conditions and the following Annexures.

(1) Drawings (showing site, constructional and other details) as stated in serial No. 5 above.

(2) Conditions and Additional Conditions of this licence signed by the licensing authority

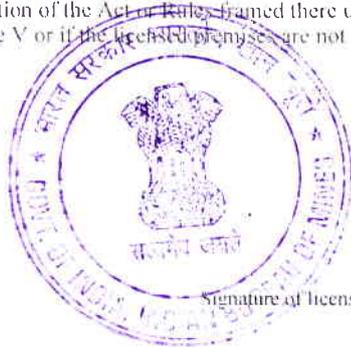
(3) Distance Form DE-2

9. This licence shall remain valid till **31st day of March 2016**

**APPROVED**

This licence is liable to be suspended or revoked for any violation of the Act or Rules framed there under or the conditions of this licence as set forth under Set VIII, wherever applicable, referred to in Part 4 of Schedule V or if the licensed premises are not found conforming to the description shown in the plans and Annexure attached hereto

The Date **03/11/2011**



*[Signature]*  
**Chief Controller of Explosives**

Endorsement for renewal of licence

Date of Renewal

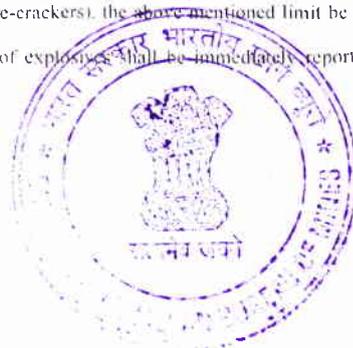
Date of Expiry

Signature of licensing authority

**Statutory Warning : Mishandling and misuse of explosives shall constitute serious criminal offence under the law.**

The following are the conditions of licence number E/HQ/MG/22/32(E56590) to possess for sale or use, explosives of Class 1,2,3, 4, 5, 6 and 7 in a magazine in Form LE-3 (articles 3(b) to (c) ) granted by Chief controller of Explosives or Controller of Explosives.

1. The quantity of explosives on the premises at any one time shall not exceed the licensable capacity.
2. The magazine used for storage of explosives shall maintain safety distance specified in Schedule III and annexure to the licence.
3. The magazine shall be used only for keeping all explosives specified in this licence and of receptacles for, or tools or implements for work connected with the keeping of such explosives.
4. The opening of packages and the weighting and packing of explosives shall not be carried on in the magazine.
5. Two or more description of explosives which may be permitted to be kept in the magazine shall be kept only if they are separated from each other by an intervening partition of such substance or character, or by such intervening space, as will effectually prevent explosion or fire in the one communicating with the other; Provided that—
  - (d) the various explosives of Class 2 (nitrate-mixture), Class 3 (nitro-compound), safety fuses belonging to Class 6 Division 1 and detonating fuses belonging to Class 6 Division 2 as do not contain any exposed iron or steel, may be kept with each other without any intervening partition of space
  - (e) Detonators belonging to Class 6 Division 3 shall be kept separately
  - (f) Gun powder belonging to Class 1 shall be kept separately
6. Explosives of Class 2 (nitro-compound) shall not be kept in the magazine after the expiration of one year from the date of their manufacture except with the special sanction of licensing authority.
7. Explosives of Class 3 (nitro-compound) shall not be kept in the magazine after the expiration of one year from the date of their manufacture except with the special sanction of the Controller of Explosives.
  - (a) When such sanction has been given, a written certificate showing the period covered by the sanction shall be obtained from the Controller of Explosives at each inspection, and shall be kept by the licensee and produced on demand.
  - (b) When an explosive owing to its being no longer of standard purity or owing to signs of liquefaction or of exuded nitro-glycerin or liquid nitro-glycerin or liquid nitro-compound is no longer fit for storage in the magazine or store house the licensee shall comply, at his own expense, with such directions as to its disposal as the Chief Controller or Controller of Explosives may issue.
8. The interior of the magazine and the benches, shelves and fittings therein shall be so constructed or so lined or covered as to prevent the exposure of any iron or steel contact with the explosives. Such interior, benches, shelves and fittings shall so far as is reasonably practicable, be kept free from grit and shall otherwise be clean; and in the case of any explosives liable to be dangerously affected by water, due precautions shall be taken to exclude water there from. Provided that so much of this condition as relates to precautions against the exposure of any iron or steel shall not be obligatory in a building in which no explosive other than explosive of the 1st Division 6th (Ammunition) Class is kept.
9. If the lightning conductor is tested by the Controller of Explosives, the licensee shall pay the fees prescribed for test. In the even of the test proving unsatisfactory, the same fees shall be payable by the licensee for each subsequent test until the lightning conductor is passed by the testing officer as satisfactory.  
It is noted that the fees payable for a single test shall be charged for all tests made on a conductor during any one day.  
Provided further that where two or more lightning conductors are attached to one and the same magazine, the fee for the testing of all such conductors shall not exceed the fee prescribed in this condition for testing a single lightning conductor.
10. Due provisions shall be made, by the use of suitable working clothes without pockets, suitable shoes and by searching or otherwise or by such means, for preventing the introduction into danger area of the factory premises of fire, Lucifer matches or any substance or article likely to cause explosion or fire, but this condition shall not prevent the introduction of an artificial light of such construction, position or character as not to cause any danger of fire or explosion. Provided that so much of this condition as applies to the exclusion of iron or steel, shall not be obligatory in a building in which no explosive other than an explosive of the 1st Division of the 6th (Ammunition) Class is kept.
11. The licensee shall keep records and accounts of all explosives in Forms RE-3 and RE-4 or RE-5, as the case may be, and exhibit the stock books and records to any of the officers authorised under the Explosives Rules, 2008 whenever such officer may call upon him to do so. The stock books in the prescribed proforma shall be page numbered.
12. No changes or alterations shall be carried out to the premises without prior approval of the licensing authority and the licensee shall comply with any condition that may be specified by the licensing authority in this behalf.
13. Magazine shall at all times be kept in state of good repair (or maintained in good condition). The licensee shall report to licensing authority forthwith, if the magazine becomes unfit for storage of any explosives for any reason whatsoever.
14. The licensee of the magazine shall submit quarterly return as per sub-rules (3) and (4) of rule 24 of these rules.
15. Any encroachment of the safety distance shall be immediately communicated to the licensing authority for necessary advice and action.
16. The licensing authority shall be immediately informed for advice if any explosive is found deteriorated or unserviceable.
17. The explosive packages shall be stocked in such a way so as to allow movement of at least one person to check the condition of all packages stored and to record the manufacture particulars of each package.  
The resistance of the lightning conductor to earth shall be as low as possible and in no case be more than 10 ohms
18. The resistance of the lightning conductor to earth shall be as low as possible and in no case be more than 10 ohms
19. A distance of 15 meters surrounding the magazine or store house shall be kept clear of dried grass or bush or flammable materials
20. Every package of explosive at the time of bringing inside the magazine shall be examined for its sound condition.
21. Not more than 4 persons shall be allowed inside the magazine or store house at any one time.
22. Empty packages of the explosives shall be removed at the earliest and destroyed.
23. The licensee and the employee shall be conversant with procedure to be taken during the emergency within the premises
24. Free access to the licensed premises shall be given at all reasonable times to any inspecting or sampling officer and every facility shall be afforded to the officer for ascertaining that the provisions of the Act and these rules and the safety conditions are duly observed.
25. If the licensing authority or a Controller of Explosives informs in writing, the holder of the licence to execute any repairs or to make any additions or alterations to the licensed premises or machinery, tools or apparatus or carry out recommendations, which are in the opinion of such authority may pose unacceptable risk and so necessary for the safety of either on-site or off-site of the premises or persons, the holder of the license shall execute the recommendations and report compliance within the period specified by such authority
26. The licensee shall purchase authorised explosives/ fireworks or safety fuse as mentioned in the list authorised explosives from a licensed factory or company for possession and sale from the magazine
27. The possession and sale of fire-crackers generating noise level exceeding:
  - a) 125 dB(A) or 145 dB(C)pk at 4 meters distance from the point of bursting shall be prohibited;
  - b) For individual fire-cracker constituting the series (joined fire-crackers), the above mentioned limit be reduced by 5 log<sub>10</sub> (N) dB, where N = number of crackers joined together.
28. Accidents by fire or explosion and losses, shortage or theft of explosives shall be immediately reported to the nearest police station and the licensing authority and local office of the licensing authority.



APPROVE

For Chief Controller of Explosives

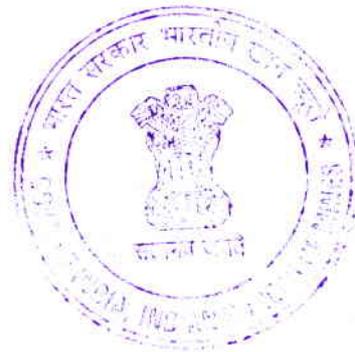
**Form DE-2**  
**(See rule 113 of the Explosives Rules, 2008)**  
**(Distance Form to be attached to the licence)**

Safety distances required to be kept clear around magazine for high explosives or fire works or factory licence number E/HQ/MG/22/32 (E56590) in form LE-3 granted to M/s. Cement Manufacturing Company Limited, Lumshnong, Distt. Jaintia Hills - 793 200, Meghalaya-793200.

<b>Type of Structure(s)</b>	<b>Safety distances meters</b>	
<b>Inside Safety Distances(ISD)</b>		
	<b>M</b>	<b>UM</b>
1 Room or Workshop used in Connection with the Magazine	41	
2 Any other Explosives Magazine or store House or Factory of the Applicant		
3 Magazine Office		
<b>Middle Safety Distances(MSD)</b>		
4 Magazine Keeper's or Chowkidar's Dwelling house		
5 Railway including Minerals and Private Railways		
6 Canal (in active use) or other navigable water		
7 Dock or Pier or Jetty		
8 Public Highway or Public Road		180
9 Private Road which is PRINCIPAL means of access to a Temple, Mosque, Church, Gurudwara or other places of worships, Hospital, College, School or Factory		
10 River Embankment or Sea Embankment or Public Well		
11 Reservoir or Bounded tank/rope way		
12 Windmillor or Solar panel for Power Generation		
<b>Outside Safety Distances(OSD)</b>		
13 Dwelling House		
14 Govt. and Public Building		
15 Temple, Mosque, Church or Gurudwara or other Places of Worships		
16 Shops, Market place, Public recreation and Sports Ground, College, School, Hospital, Theater, Cinema or other Building where the public are accustomed to assemble		
17 Factory		
18 Buildings or Works used for the Storage in Bulk of Petroleum, Sprit, gas, or other inflammable or hazardous substances		
19 Building or Works used for Storage and Manufacture of Explosives or of articles which contain Explosives		359
20 Aerodrome		
21 Furnace, Kiln or Chimney		
22 Quarry or mine pit head		
23 Power House or Electric Substation		
24 Wireless Station		
25 Warehouse or other Storage Building		
26 Any other Protected works		
<b>Overhead Electric lines</b>		
27 Electric Power over head Transmission Lines above 440V		90
28 Electric Power over head Transmission Lines Below 440V		15

The Date : 03/11/2011

  
 For Chief Controller of Explosives





दिल्ली DELHI

SPECIAL POWER OF ATTORNEY

00AA 097250

Know All men by these presents that in pursuance of the board of directors meeting of M/s Cement Manufacturing Co. Ltd. held at Kolkata on 31st May, 2005, Mr. Devender Bansal son of Shri Hanuman Prasad R/o Modan Street, Halu Bazar, Bhiwani (Haryana) is hereby authorized to appear before and filling an application for prospecting licence with the appropriate authority on behalf of the company for its cement plant At Lumshnong, Jaintia Hills Distt, Meghalaya. He is further authorized to apply for Mining Lease for captive consumption on behalf of the company. He is also authorized to sign on all application, documents and other related papers and to take all such steps as may be considered necessary in this regard.

IN WITNESS WHEREOF, we have signed the power of attorney in the presence of the following witnesses:

WITNESSES:

1.   
(SURENDR GUPAL)  
H-2/78, Sec. III  
Pohini, N. Delhi

For Cement Manufacturing Co. Ltd. जगद

  
(Director)



*Shamir*  
*Ramniwas*  
281 Dec path  
Pitampura  
DELHI-34



ATTESTED  


NOTARY PUBLIC DELHI  
27 AUG 2005

**CEMENTS MANUFACTURING Co. LTD.**

Registered Office: Lumshnong, P.O. Khahehriat, Dist. Jaintia Hills, Meghalaya

Date: - 18.06.04

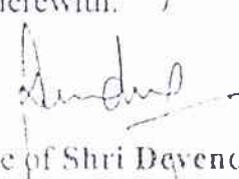
**Board of Directors Resolution**

The board of Directors of Cements Manufacturing Co. Ltd, in the meeting held on dated 17<sup>th</sup> June 2004 at Delhi, hereby resolved to designate **Shri Devender Bansal** as Nominated Owner of the company's limestone mines located at Lumshnong Village, P.O. Khahehriat, Dist. Jaintia Hills, Meghalaya.

It is further resolved that **Shri Devender Bansal** is authorized to put his Signature and seal in all concerned papers in connection with the mines of the Company.

  
(Shri PREM K BHAJANKA)  
Director

The Signature of Shri Devender Bansal is attested herewith:

  
(Signature of Shri Devender Bansal)

Attested

  
Director



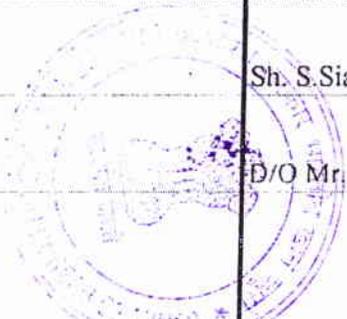
**APPROVED**

## CEMENT MANUFACTURING CO. LTD.

Lumshnong, P.O. Khliehriat, Dist. : Jaintia Hills, Meghalaya

### DETAILS OF DIRECTORS

Name	Father / Husband Name	Residential Address	E-Mail Address	Telephone No.	PAN
Mr. Sajjan Bhajanka	Lt.Ram Swaroop Dass Bhajanka	15, Belvedere Road, Kolkata-27	sajjan@centuryply.com	033-22104321	ACAPB0486F
Mr. Rajendra Chamaria	Late G.S. Chamaria	Bandedewa Andhra Pradesh	rajendra@cmcl.co.in	011-27033821	ABPPC5410Q
Mr. Sanjay Agarwal	Sh. Banwari Lal Agarwal	Kaziranga Udyog, 6 Lyons Range, Kolkata	sanjay@centuryply.com	033-22104323	ADDPA5363J
Mr. Brij Bhushan Agarwal	Sh. Mahabir Prasad Agarwal	3B, Ashoka Road, 2nd Floor, Kolkata	bbush@shvamgroup.com	033-22116346	ACGPA0365A
Mr. Sajan Kumar Bansal	Sh. Sadhuram Bansal	23A, N.S. Road, 5th Floor, Kolkata	----	033-23300174	AGOPB1886F
Mr. Prem Kumar Bhajanka	Sh. M.P. Bhajanka	Makum Road, Tinsukia, Assam	pkb@plymail.com	01745-242841	ACAPB4176A
Mr. Pankaj Kejriwal	Sh. Om Prakash Kejriwal	3, Heritage, Maroi Village Road, Andheri-East, Mumbai	pankajkejriwal@hotmail.com	011-27033821	AEJPK9055K
Mrs. Clara Suja	Sh. S.Sianghai	Lumshnong, Khliehriat, Jaintia Hills, Meghalaya	----	----	----
Miss Payal Bhajanka	D/O Mr. Sajjan Bhajanka	15, Belvedere Road, Kolkata-27	payalbhajanka@cmcl.co.in	033-2448169	ABDPB8610K
Mr. Shree Kishan Bramadutta Roongta	Sh. Bramadutta Roongta	Gurukunj' B/5, Satellite Complex Bungalows, Near Satellite Tower, Premchandnagar Road, Satellite, Ahmedabad - 380 015, India.	sbroongta@cmcl.co.in	(079) 26748991 / 26740928	ADFPR4280B
Mr. Mangi Lal Jain	Late P.C. Jain	37-B, Garcha Road, Kolkata-19	----	----	ACXPJ3173C



REGISTERED  
 COMPANY

ANNEXURE -IX

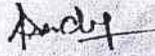
आयकर विभाग  
INCOME TAX DEPARTMENT

भारत सरकार  
GOVT. OF INDIA

DEVENDER KUMAR BANSAL

HANUMAN PARSHAD

08/12/1978  
Permanent Account Number  
AGSPB4527D

  
Signature

  
21062007

यदि कार्ड के खोने / चुराये पर सूचना सुविधा मांगें / कोटेशन  
आयकर पैन सेवा इकाई, एन एस डी एल  
महली मंजिल, टाइम्स टॉवर, कामला मिठु कम्पाउंड,  
एस. बी. मार्ग, लोअर परेल, मुंबई - 400 013.

*If this card is lost / someone's lost card is found,  
please inform / return to:*  
Income Tax PAN Services Unit, NSDL  
1st Floor, Times Tower,  
Kamala Mills Compound,  
S. B. Marg, Lower-Parel, Mumbai - 400 013.  
Tel: 91 22 2499 4650, Fax: 91 22 2495 0664,  
e-mail: tininfo@nsdl.co.in

समाप्ति  
APPROVE



## हरियाणा सरकार

डी-3

राशन कार्ड

(केवल राशन वस्तुओं के लिए)

वितरण क्षेत्र का नाम..... शिवानी  
 राशन कार्ड संख्या..... 010280  
 परिवार के मुखिया का नाम..... देवेन्द्र कुमार  
 माता/पिता का नाम..... हनुमान कुमार  
 पत्नी/पति का नाम.....  
 एल.पी.जी.गैस उपभोक्ता नं..... एक सिलेण्डर/दो सिलेण्डर  
 क्या आवेक एवं परिवार का कोई सदस्य आयकर दाता है या नहीं।  
 मकान नं..... 377 बार्ड/सेक्टर नं..... 20  
 मोहल्ला/गली का नाम..... 3 गोपबजारी  
 स्थाई डाक पता..... हनुमान शिवानी

सदस्यों की संख्या	व्यस्क	बच्चे	शिशु	जोड़
1+1=2	L	X	X	1+1=2



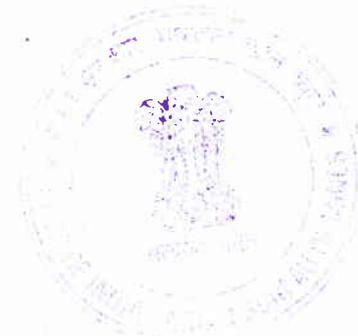
495  
 Rajkumar Singh O/H  
 Auth. No. 91/69.

ई धारक को हस्ताक्षर.....  
 थे.....

वितरण अधिकारी के हस्ताक्षर व मोहर

तिथि.....

APPROVE





# CEMENT MANUFACTURING COMPANY LTD.

Date: 01-12-2010

## TO WHOM IT MAY CONCERN

This is to certify that Shri Devender Bansal son of Shri Hanuman Prasad is the Resident Director of M/s Cement Manufacturing Company Ltd. He is presently residing at the colony of M/s Cement Manufacturing Company Ltd. located at Lumshnong village, P.O. & P.S. Khliehriat, Jaintia Hills District, Meghalaya - 793 200.

For M/s Cement Manufacturing Co. Ltd.

  
(M.K.Rai)

Dy. General Manager (HR),

**APPROVED**



Regd. Office & Works: Lumshnong, P.O. Khliehriat, Distt. Jaintia Hills, Meghalaya, Ph: 03655-278215/16/18, Fax: 03655-278217, e-mail: lumshnong@cmcl.co.in  
Corporate Office: Satyam Towers, 3 Alipore Road, 1st Floor, Unit No. 9B, Kolkata-700027, Ph: 033-24484169/4170/4693, Fax: 033-24484168, e-mail: kolkata@cmcl.co.in

**AN ISO 9001 COMPANY**

A-50

# FEASIBILITY REPORT

FOR

WAH-PYNKON LIMESTONE DEPOSIT

OVER AN AREA OF 13.58 hectares

AT WAH-PYNKON AREA, LUMSHNONG VILLAGE,  
EAST JAINTIA HILLS DISTRICT, MEGHALAYA

of

**M/s Cement Manufacturing Co. Ltd.**

(Prepared under the guidelines issued by IBM)



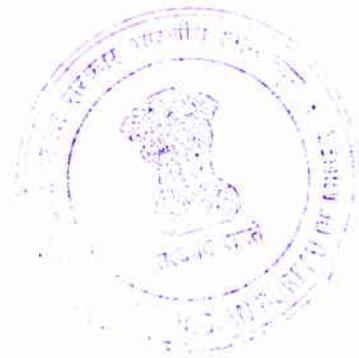
Prepared by

**M/s CEMENT MANUFACTURING COMPANY LIMITED**  
LUMSHNONG VILLAGE, EAST JAINTIA HILLS DISTRICT,  
MEGHALAYA

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## 1. GENERAL MINES DESCRIPTION:

### 1.1 Location:

The Mining Lease area of 13.58 Hectares is located at Wah-Pynkon area of Lumshnong Village, East Jaintia Hills District, Meghalaya. The area is situated on the eastern side of National Highway No. 44 from Shillong to Silchar and near to 129 km. Stone and located south – east of Lumshnong village.

### 1.2 Geology:

#### 1.2.1 Regional geology:

The State of Meghalaya covers an area of 22,429 sq.km. and divided into eleven administrative districts. Its north and eastern borders are covered by Assam State and south and west by Bangladesh. Shillong, the State Capital is at an elevation of about 1800m and located in the central part of Khasi hills. The rock formations of the area fall under Jaintia series of Eocene age.

The regional stratigraphy of the area is as follows:

Age	Group/Series	Stage	Beds
Oligocene	Barail Series	----	Sandstone & Shale
Upper Eocene	Garo Group	Kopili Formation	Grey shale with alternate layers of Sandstone & Siltstone
Lower to Middle Eocene	Jaintia Group	Sylhet Limestone	Prang Limestone Narpuh Sandstone Umlatdoh Limestone Lakadong Sandstone Lakadong Limestone
Palaeocene	----	Therria Sandstone	Sandstone

The Lakadong sandstone and Narpuh sandstone distinctly and sequentially separate the Lakadong, Umlatdoh and Prang limestone bands in the area.

#### 1.2.2 Local Geology:

The present area under report falls under Survey of India Toposheet No. 83 C/W and located near village Lumshnong (25°10'16" North and 92°22'52" East). The minimum and maximum elevation of the area varies from 282 m to 387 m above M.S.L. The different litho-units of the area belong to Jaintia series of Eocene age. The limestone unit belongs to Sylhet Stage of Jaintia series of Middle Eocene Age.

The area under report has been explored in detail by geological mapping, surface sampling, drilling and analysis of surface samples and core samples. It is observed that the entire area is covered by top limestone band known as prang limestone beds. The top surface shows rough and jagged outcrops and fractured filled with clayey brown sandy soil locally. The thickness of this limestone band as encountered in the drilled boreholes varies from 29.10m to 54.20m. The limestone bed extends in NE-SW diversion dipping 42° to 50° south easterly.

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### 1.2.3 Topography:

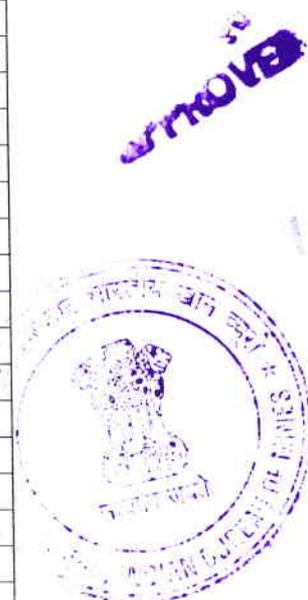
The topography of the ML area & its surroundings are rugged & hilly. The area extends in NE-SW direction. Maximum and minimum contours passing through the area are 387 & 282m respectively. The area is surrounded by thick bushes. North-Western and South-Western part is at higher elevation with respect to North-eastern & South-eastern part and gradually sloping towards from West to East direction. There is no nalla or water body in the Mining Lease area.

## 2. EXPLORATION:

### 2.1 Surface Sample:

Surface samples are collected from different locations to verify the grade of Limestone. Analysis of samples is tabulated in the following table.

Sl. No.	Sample No.	CaO%	MgO%
1	WP/SS – 01	51.45	0.64
2	WP/SS – 02	50.18	0.85
3	WP/SS – 03	50.45	0.48
4	WP/SS – 04	49.48	0.68
5	WP/SS – 05	50.25	0.62
6	WP/SS – 06	52.10	0.54
7	WP/SS – 07	51.62	0.79
8	WP/SS – 08	47.20	1.15
9	WP/SS – 09	50.55	0.32
10	WP/SS – 10	51.25	0.44
11	WP/SS – 11	49.85	0.80
12	WP/SS – 12	50.38	0.42
13	WP/SS – 13	50.27	0.95
14	WP/SS – 14	49.95	1.12
15	WP/SS – 15	50.65	0.65
16	WP/SS – 16	50.45	0.45
17	WP/SS – 17	51.72	0.28
18	WP/SS – 18	52.77	0.63
19	WP/SS – 19	51.48	0.73
20	WP/SS – 20	51.45	0.48



### 2.2 Drilling:

Four vertical bore holes at an interval of 145 m. to 240 m. were drilled for a cumulative meterage of 191.30. All the bore holes were closed in Prang Limestone. Detailed litho-chemical logs of the bore holes are shown in the following tables.

The overall core recovery of limestone is 79%.

The litho-chemical logs of the boreholes drilled is given in the following tables.

**Litho-Chemical Log of Borehole No SS/BH/05**

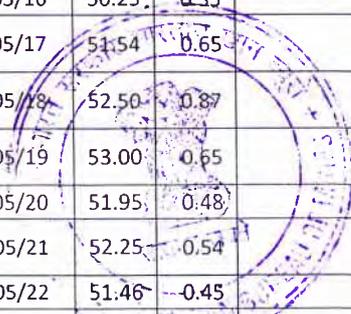
Area: Wah Pynkon

Collar RL of Borehole: 384.69m

Borehole Inclination: Vertical

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
0.00	0.20	0.20	0.00	0	Sludge of reddish brown sandy soil	SS/BH/05/00	3.47	0.71	
0.20	1.00	0.80	0.50	63	Limestone boulder	SS/BH/05/01	48.65	0.84	
1.00	2.50	1.50	1.20	80	Limestone boulder	SS/BH/05/03	49.15	0.70	
2.50	3.50	1.00	0.75	75	Grey coloured, hard and compact fossiliferous limestone	SS/BH/05/04	51.64	0.48	
3.50	4.50	1.00	0.85	85	Grey coloured, hard and compact limestone sparsely fossiliferous	SS/BH/05/05	52.33	1.15	
4.50	5.15	0.65	0.60	92	Light Grey coloured, hard and compact limestone sparsely fossiliferous	SS/BH/05/06	50.10	0.90	
5.15	7.80	2.65	2.60	98	Limestone as above	SS/BH/05/07	51.60	0.85	
7.80	9.40	1.60	1.55	97	Limestone as above	SS/BH/05/08	52.35	0.88	
9.40	10.60	1.20	1.20	100	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/09	51.75	0.65	
10.60	11.45	0.85	0.80	94	Limestone as above with calcite vein	SS/BH/05/10	50.85	0.75	
11.45	12.05	0.60	0.50	83	Limestone as above	SS/BH/05/11	52.35	0.95	
12.05	13.60	1.55	1.52	98	Grey coloured, hard and compact limestone	SS/BH/05/12	51.95	0.88	
13.60	14.40	0.80	0.70	87	Limestone as above with fractured at the bottom	SS/BH/05/13	50.50	0.65	
14.40	15.90	1.50	1.25	83	Grey coloured limestone with fractured at the top	SS/BH/05/14	51.25	0.90	
15.90	16.65	0.75	0.20	27	Limestone as above	SS/BH/05/15	49.95	0.85	Cavity: 15.90 to 16.40
16.65	18.15	1.50	1.20	80	Limestone as above but fractured	SS/BH/05/16	50.25	0.35	
18.15	18.55	0.40	0.35	87	Limestone as above with minor fractured at the top	SS/BH/05/17	51.54	0.65	
18.55	19.35	0.80	0.70	87	Light grey coloured, hard and compact limestone	SS/BH/05/18	52.50	0.87	
19.35	19.80	0.45	0.40	89	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/19	53.00	0.65	
19.80	21.65	1.85	1.20	65	Limestone as above but fractured	SS/BH/05/20	51.95	0.48	
21.65	22.75	1.10	0.88	80	Grey coloured, hard and compact fossiliferous limestone	SS/BH/05/21	52.25	0.54	
22.75	24.40	1.65	1.60	97	Limestone as above	SS/BH/05/22	51.46	0.45	
24.40	25.40	1.00	0.95	95	Limestone as above	SS/BH/05/23	51.95	0.75	
25.40	25.90	0.50	0.00	0	--	--	--	--	Cavity: 50cm
25.90	26.45	0.55	0.00	0	--	--	--	--	Cavity: 55cm
26.45	27.40	0.95	0.90	95	Grey coloured, hard and compact limestone	SS/BH/05/26	50.85	0.85	
27.40	28.40	1.00	0.99	99	Grey coloured, hard and compact, fossiliferous limestone	SS/BH/05/27	52.00	0.35	
28.40	30.40	2.00	1.98	99	Grey coloured, hard and compact, fossiliferous limestone	SS/BH/05/28	50.55	0.36	
30.40	33.00	2.60	2.60	100	Limestone as above	SS/BH/05/29	51.85	0.62	
33.00	34.80	1.80	1.76	98	Limestone as above	SS/BH/05/30	52.15	0.75	
34.80	35.50	0.70	0.70	100	Limestone as above	SS/BH/05/31	53.25	0.62	
35.50	36.15	0.65	0.60	92	Limestone as above but fractured at the bottom	SS/BH/05/32	51.36	0.85	

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**Feasibility report of 13.58 Ha. ML at Wah-Pynkon area of M/s CMCL**

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
36.15	38.80	2.65	2.63	99	Light grey coloured, hard and compact sparsely fossiliferous Lst.	SS/BH/05/33	50.96	0.54	
38.80	39.50	0.70	0.68	97	Limestone as above with minor shale parting	SS/BH/05/34	49.50	0.40	
39.50	41.00	1.50	1.45	97	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/35	51.54	0.85	
41.00	42.30	1.30	1.30	100	Limestone as above	SS/BH/05/36	52.55	0.45	
42.30	43.05	0.75	0.70	93	Limestone as above but fractured at the bottom	SS/BH/05/37	50.68	0.78	
43.05	44.50	1.45	1.45	100	Limestone as above with impression of solution cavity.	SS/BH/05/38	51.45	0.84	
44.50	44.80	0.30	0.00	0	--	--	--	--	Cavity: 30cm
44.80	45.30	0.50	0.49	98	Grey coloured, hard and compact sparsely fossiliferous limestone	SS/BH/05/40	52.65	0.82	
45.30	47.70	2.40	2.40	100	Limestone as above	SS/BH/05/41	51.85	0.65	
47.70	50.00	2.30	2.10	91	Limestone as above	SS/BH/05/42	51.75	0.75	

Bore hole closed at 50.00m

**Litho-Chemical Log of Borehole No SS/BH/06**

Area: Wah Pynkon

Collar RL of Borehole: 339.879m

Borehole Inclination: Vertical

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
0.00	0.50	0.50	0.19	38	Limestone boulder	SS/BH/06/01	17.59	0.64	
0.50	1.50	1.00	0.60	60	Sandstone + sandy soil				Cavity: 1.10 to 1.35
1.50	2.00	0.50	0.35	70	Sandy soil-brown				
2.00	2.50	0.50	0.42	84	Sandy soil-brown	SS/BH/06/02	2.44	0.64	
2.50	3.00	0.50	0.00	0					
3.00	4.00	1.00	0.95	95	Sandy soil-brown				
4.00	5.00	1.00	0.95	95	Clay soil				
5.00	6.00	1.00	0.90	90	Clay soil				
6.00	7.00	1.00	0.88	88	Limestone-grey, fine grain	SS/BH/06/03	53.23	0.8	Top 40cm. Fractured
7.00	8.50	1.50	1.32	88	Limestone-grey, compact and hard fossiliferous				
8.50	9.00	0.50	0.44	88	- do -	SS/BH/06/04	52.24	1.12	
9.00	10.50	1.50	1.28	85	- do -				
10.50	12.00	1.50	1.30	87	- do -				
12.00	13.50	1.50	1.00	67	Fractured from top 40cm	SS/BH/06/05			Cavity: 12.85 to 13.30
13.50	14.00	0.50	0.18	36	Limestone-grey, fractured				Cavity 13.70 to 14.00
14.00	15.00	1.00	0.87	87	Limestone, fractured				
15.00	16.00	1.00	0.30	30	Limestone hard and compact	SS/BH/06/06			Cavity 15.00 to 15.65
16.00	17.00	1.00	0.30	30	- do -				Cavity 16.35 to

**Feasibility report of 13.58 Ha. ML at Wah-Pynkon area of M/s CMCL**

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
									17.00
17.00	17.50	0.50	0.27	54	- do -				Cavity 17.30 to 17.50
17.50	18.00	0.50	0.29	58	- do -				Cavity 17.50 to 17.65
18.00	18.50	0.50	0.18	36	Limestone, fractured				Cavity 18.00 to 18.30
18.50	18.75	0.25	0.00	0					Cavity 25cm.
18.75	19.00	0.25	0.23	92	Limestone, fractured				
19.00	19.50	0.50	0.40	80	Limestone, fractured				
19.50	20.00	0.50	0.00	0					Cavity 50cm.
20.00	20.50	0.50	0.22	44	Limestone –side cavity indication				
20.50	21.00	0.50	0.23	46	Limestone –side cavity indication	SS/BH/06/07	52.94	0.8	Cavity 20.50 to 20.75
21.00	22.50	1.50	0.95	63	Limestone , fractured 30cm				Cavity 21.35 to 21.65
22.50	24.00	1.50	0.85	57	Limestone grey colour				Cavity 23.10 to 23.60
24.00	24.70	0.70	0.62	89	Limestone first half fractured	SS/BH/06/08	52.04	0.64	Cavity 24.70 to 25.20
24.70	25.20	0.50	0.00	0					Cavity 50cm.
25.20	25.95	0.75	0.66	88	Limestone first half fractured				
25.95	26.40	0.45	0.00	0					Cavity 45cm.
26.40	26.70	0.30	0.27	90	Limestone hard and compact				
26.70	27.40	0.70	0.37	53	- do -				
27.40	28.90	1.50	0.40	27	- do -	SS/BH/06/09			Cavity 27.50 to 28.00, 28.40 to 28.90
28.90	30.40	1.50	0.82	55	- do -				Cavity 29.20 to 29.70
30.40	31.70	1.30	0.70	54	- do -	SS/BH/06/10	52.04	0.48	Cavity 30.40 to 30.90
31.70	32.30	0.60	0.39	65	- do -				Cavity 31.70 to 31.85
32.30	33.00	0.70	0.57	81	- do -				
33.00	33.60	0.60	0.51	85	- do -				
33.60	35.10	1.50	1.32	88	- do -	SS/BH/06/11	52.74	0.32	
35.10	36.25	1.15	0.64	56	- do -				Cavity 35.85 to 36.25
36.25	38.00	1.75	1.00	57	- do -				Cavity 36.70 to 37.05
38.00	40.60	2.60	1.64	63	Carbonaceous limestone	SS/BH/06/12	52.65	0.32	Cavity 38.95 to 39.35 , 39.85 to 40.25
40.60	42.10	1.50	0.90	60	Carbonaceous limestone				Cavity 41.70 to 42.10
42.10	43.05	0.95	0.32	34	Carbonaceous limestone	SS/BH/06/13	52.15	0.64	Cavity 42.45 to 43.05
43.05	44.05	1.00	0.26	26	Limestone fractured				Cavity 43.35 to 44.05
44.05	45.20	1.15	0.38	33	Limestone fractured				Cavity 44.20 to 44.60, 44.90 to 45.20
45.20	47.15	1.95	0.65	33	Limestone fractured				Cavity 45.45 to 46.05
47.15	48.75	1.60	0.77	48	Limestone hard & compact, fractured	SS/BH/06/14	51.14	0.48	Cavity 47.35 to 47.75

**Feasibility report of 13.58 Ha. ML at Wah-Pynkon area of M/s CMCL**

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
48.75	50.10	1.35	0.70	52	Limestone fractured				Cavity 49.10 to 49.40, 49.90 to 50.10
50.10	52.60	2.50	1.87	75	Limestone hard & compact	SS/BH/06/15	51.59	0.48	Cavity 50.60 to 51.00
52.60	53.00	0.40	0.00	0					Cavity 52.60 to 53.00
53.00	53.40	0.40	0.35	88	Limestone hard & compact	SS/BH/06/16	51.64	0.48	
53.40	53.80	0.40	0.00	0					Cavity 53.40 to 53.80
53.80	54.30	0.50	0.41	82	Limestone				
54.30	54.60	0.30	0.00	0					Cavity 30cm
54.60	56.15	1.55	0.48	31	Limestone				Cavity 54.80 to 55.60, 55.75 to 56.15
56.15	59.00	2.85	0.96	34	Limestone hard & compact				Cavity 56.15 to 56.55, 57.30 to 58.00 & 58.30 to 59.00
59.00	60.20	1.20	0.85	71	Limestone hard & compact	SS/BH/06/17	52.43	0.48	

Bore hole closed at 60.20m

**Litho-Chemical Log of Borehole No SS/BH/07**

Area: Wah Pynkon

Collar RL of Borehole: 355.097m

Borehole Inclination: Vertical



From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
0.00	0.70	0.70	0.50	71	Limestone light grey, fragmented.	SS/BH/07/01	50.96	0.48	
0.70	1.20	0.50	0.41	82	Limestone light grey, compact with calcite veins.	SS/BH/07/02	51.20	0.64	
1.20	1.95	0.75	0.30	40	Limestone fragmented.	SS/BH/07/03	52.04	0.48	Cavity 1.45 to 1.85
1.95	2.75	0.80	0.53	66	Limestone grey, hard and compact	SS/BH/07/04	50.30	0.32	Cavity 2.55 to 2.75
2.75	4.05	1.30	0.95	73	Limestone grey coloured, hard and compact	SS/BH/07/05	51.02	0.64	Cavity 3.85 to 4.05
4.05	4.85	0.80	0.61	76	Limestone grey to light brown colour hard & compact, calcite along the joints.	SS/BH/07/06	51.31	0.80	Cavity 4.75 to 4.85
4.85	5.95	1.10	0.94	85	Limestone grey, fine to medium grained, hard & compact.	SS/BH/07/07	49.65	0.80	
5.95	6.95	1.00	0.65	65	Limestone grey to light brown, fractured at the top.	SS/BH/07/08	50.80	0.64	Cavity 6.55 to 6.80
6.95	8.25	1.30	1.25	96	Limestone grey, fine to medium grain, hard & compact, fossiliferous.	SS/BH/07/09	52.25	0.48	
8.25	9.75	1.50	1.30	87	Limestone grey to light brown, fine to medium grained, compact.	SS/BH/07/10	51.86	0.80	
9.75	10.25	0.50	0.46	92	Limestone as above	SS/BH/07/11	50.86	0.56	
10.25	11.75	1.50	1.45	97	Limestone as above	SS/BH/07/12	50.58	0.80	

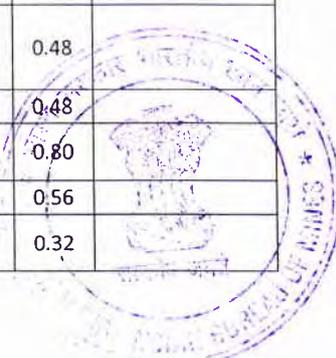
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**Feasibility report of 13.58 Ha. ML at Wah-Pynkon area of M/s CMCL**

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
11.75	13.55	1.80	1.60	89	Limestone as above with impression of solution cavity (6cm) at the top.	SS/BH/07/13	51.58	0.80	
13.55	15.25	1.70	1.56	92	Limestone grey colour, fine to medium grain, hard and compact	SS/BH/07/14	51.74	0.48	
15.25	16.85	1.60	1.60	100	Limestone as above	SS/BH/07/15	52.93	0.72	
16.85	18.00	1.15	1.15	100	Limestone as above with side cavity towards bottom (10m)	SS/BH/07/16	52.60	0.72	
18.00	18.75	0.75	0.75	100	Limestone as above, with continuation of side cavity (10cm)	SS/BH/07/17	53.67	0.32	
18.75	19.75	1.00	0.96	96	Limestone grey, fine to medium grain, hard and fractured at places.	SS/BH/07/18	52.69	0.48	
19.75	21.25	1.50	1.50	100	Limestone grey colour, fine to medium grain, hard and compact, calcite vein observed along the joints.	SS/BH/07/19	53.05	0.56	
21.25	21.75	0.50	0.45	90	Limestone as above	SS/BH/07/20	52.99	0.32	
21.75	23.25	1.50	1.40	93	Limestone as above	SS/BH/07/21	53.09	0.48	
23.25	24.75	1.50	1.50	100	Limestone -do, fossiliferous	SS/BH/07/22	51.95	0.48	
24.75	26.25	1.50	1.50	100	Limestone -do, fossiliferous	SS/BH/07/23	52.25	0.32	
26.25	27.75	1.50	1.50	100	Limestone -do, fossiliferous	SS/BH/07/24	52.26	0.56	
27.75	29.25	1.50	1.45	97	Limestone grey, fine to medium grain, compact & hard	SS/BH/07/25	53.10	0.48	
29.25	30.75	1.50	1.40	93	Limestone-do, calcite veins	SS/BH/07/26	54.17	0.32	
30.75	31.90	1.15	1.14	99	Limestone grey, fine compact	SS/BH/07/27	52.65	0.80	
31.90	32.70	0.80	0.50	62	Limestone fractured	SS/BH/07/28	53.27	0.48	
32.70	34.20	1.50	1.00	67	Limestone grey, compact, fine grain, vert. Joints, fractured at places	SS/BH/07/29	53.83	0.48	
34.20	34.50	0.30	0.20	67	Limestone fractured	SS/BH/07/30	53.45	0.48	
34.50	35.70	1.20	1.15	96	Limestone grey, fine & compact	SS/BH/07/31	53.56	0.38	
35.70	36.20	0.50	0.47	94	Limestone as above	SS/BH/07/32	52.65	0.64	
36.20	37.40	1.20	1.10	92	Limestone -do, fossiliferous	SS/BH/07/33	52.71	0.80	
37.40	38.90	1.50	1.45	97	Limestone -do, fossiliferous	SS/BH/07/34	53.22	0.56	
38.90	40.40	1.50	1.43	95	Limestone -do, fossiliferous	SS/BH/07/35	52.26	0.64	
40.40	41.20	0.80	0.75	94	Limestone -do, fossiliferous	SS/BH/07/36	52.64	0.64	
41.20	42.10	0.90	0.88	98	Limestone -do, fossiliferous	SS/BH/07/37	52.99	0.80	
42.10	43.30	1.20	1.10	92	Limestone grey, hard & compact	SS/BH/07/38	53.48	0.40	
43.30	44.90	1.60	1.55	97	Limestone grey, fine to medium grained, hard & compact, fossiliferous	SS/BH/07/39	52.77	0.48	
44.90	46.40	1.50	1.40	93	Limestone -do	SS/BH/07/40	52.93	0.48	
46.40	47.50	1.10	1.05	95	Limestone grey, fine grained, hard & compact	SS/BH/07/41	51.87	0.80	
47.50	48.70	1.20	1.15	96	Limestone as above	SS/BH/07/42	52.94	0.56	
48.70	50.00	1.30	1.20	92	Limestone grey, fine grained, hard & compact with calcite vein.	SS/BH/07/43	53.33	0.32	

**Bore hole closed at 50.00m**

**APPROVED**



**Litho-Chemical Log of Borehole No SS/BH/08**

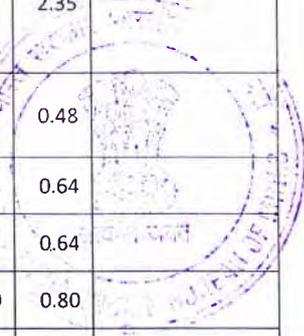
Area : Wah Pynkon

Collar RL of Bore hole: 326.21m

Bore hole Inclination: Vertical

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
0.00	2.00	2.00	0.00	0	Sludge of brown coloured soil				
2.00	2.50	0.50	0.46	92	2.00-2.20 : Light brown to grey coloured hard and compact limestone.	SS/BH/08/01	49.12	0.80	
					2.20-2.50 : Light grey coloured, hard and compact limestone with solution cavity indication.				
2.50	4.00	1.50	1.50	100	Grey coloured compact and hard limestone, sparsely fossiliferous	SS/BH/08/02	52.64	0.48	
4.00	5.00	1.00	0.95	95	Limestone as above, fossiliferous fragmentation at the top.	SS/BH/08/03	52.04	0.48	
5.00	6.00	1.00	0.76	76	Grey coloured compact and hard limestone, sparsely fossiliferous with impression of solution cavity.	SS/BH/08/04	48.84	0.64	
6.00	7.00	1.00	0.93	93	Limestone grey coloured with impression of solution cavity at the top and fragmented.	SS/BH/08/05	50.86	0.48	
7.00	7.40	0.40	0.35	87	Limestone as above	SS/BH/08/06	52.77	0.48	
7.40	8.50	1.10	1.00	91	Limestone as above with fragmentation towards the bottom.	SS/BH/08/07	52.43	0.32	
8.50	9.50	1.00	0.80	80	Limestone as above but fragmented.	SS/BH/08/08	51.63	0.48	
9.50	9.80	0.30	0.25	83	Light grey coloured limestone	SS/BH/08/09	52.88	0.32	
9.80	10.80	1.00	0.85	85	Limestone as above	SS/BH/08/10	52.15	0.32	
10.80	11.55	0.75	0.70	93	Limestone as above	SS/BH/08/11	51.98	0.32	
11.55	12.95	1.40	1.35	96	Light grey coloured hard and compact limestone, sparsely fossiliferous with impression of solution cavity at the top and middle portion.	SS/BH/08/12	50.79	2.35	
12.95	13.95	1.00	1.00	100	Light grey coloured limestone hard and compact, fossiliferous with presence of calcite veins.	SS/BH/08/13	51.76	0.48	
13.95	14.55	0.60	0.55	92	Grey coloured hard and compact limestone, sparsely fossiliferous.	SS/BH/08/14	52.04	0.64	
14.55	15.45	0.90	0.90	100	Limestone as above with calcite veins.	SS/BH/08/15	51.76	0.64	
15.45	16.30	0.85	0.85	100	Grey coloured hard and compact fossiliferous limestone.	SS/BH/08/16	51.70	0.80	
16.30	17.45	1.15	1.05	91	Limestone as above	SS/BH/08/17	50.08	0.64	
17.45	18.05	0.60	0.57	95	Limestone as above	SS/BH/08/18	50.96	0.64	
18.05	19.45	1.40	1.35	96	Limestone as above	SS/BH/08/19	51.91	0.32	
19.45	20.25	0.80	0.65	81	Grey coloured hard and compact with fragmentation towards bottom.	SS/BH/08/20	51.12	0.64	
20.25	20.75	0.50	0.50	100	Limestone as above	SS/BH/08/21	51.52	0.40	
20.75	21.20	0.45	0.40	89	Limestone as above	SS/BH/08/22	53.25	0.16	
21.20	21.90	0.70	0.60	86	Grey coloured hard and compact indication of solution cavity	SS/BH/08/23	52.38	0.48	

**APPROVED**



**Feasibility report of 13.58 Ha. ML at Wah-Pynkon area of M/s CMCL**

From	To	Run (m)	Core recovered (m)	Core recovery (%)	Lithology	Sample No.	CaO (%)	MgO (%)	Remarks
21.90	22.60	0.70	0.70	100	Grey coloured compact and hard limestone, sparsely fossiliferous with fragmentation at the bottom.	SS/BH/08/24	51.91	0.32	
22.60	23.00	0.40	0.30	75	Grey coloured compact and hard limestone, sparsely fossiliferous but fragmented.	SS/BH/08/25	52.86	0.32	
23.00	23.60	0.60	0.50	83	Limestone as above with fragmentation at the top.	SS/BH/08/26	52.88	0.32	
23.60	24.60	1.00	0.95	95	Limestone as above with fragmentation at the top.	SS/BH/08/27	51.46	0.48	
24.60	25.10	0.50	0.45	90	Grey coloured compact and hard limestone with fragmentation towards bottom.	SS/BH/08/28	51.08	0.32	
25.10	25.60	0.50	0.50	100	25.10-25.43 : Grey coloured, compact and hard limestone.	SS/BH/08/29	51.69	0.48	
					25.43-25.60 : Limestone with shale parting.				
25.60	26.40	0.80	0.75	94	25.60-25.93 : Limestone with shale parting	SS/BH/08/30	37.80	0.48	
					25.93-26.40 : Grey coloured, compact and hard limestone.				
26.40	26.80	0.40	0.30	75	Dark grey coloured limestone with fragmentation at the top	SS/BH/08/31	47.82	0.64	
26.80	27.80	1.00	0.07	7	Limestone-1 piece. Dark grey coloured limestone, hard & compact.	SS/BH/08/32	49.57	0.48	(with 93cm void)
27.80	28.80	1.00	0.70	70	27.80-28.40 : Grey coloured, fine to medium grained limestone, siliceous.	SS/BH/08/33	36.29	0.32	
					28.40-28.80 : Brown coloured, medium to coarsed grained sandy limestone				
28.80	29.60	0.80	0.65	81	Light grey to brown coloured medium to coarse grained limestone, siliceous with minor shale parting.	SS/BH/08/34	40.83	0.32	
29.60	31.10	1.50	0.90	60	29.60-29.95 : Light grey coloured hard and compact fine to medium grained siliceous limestone.	SS/BH/08/35	32.41	0.80	
					29.95-30.10 : Brown coloured, medium grained sandy limestone.				
					30.10-31.10 : Light grey coloured, hard and compact, fine to medium grained siliceous limestone.				

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**Bore hole closed at 31.10m**



A total of 34 nos. of composite samples have been prepared representing 5 to 7 metres run-length and analysed for seven to nine radicals which is tabulated in the following tables.

**COMPOSITE LIMESTONE SAMPLE BOREHOLE NO. 05**

Collar of BH (mtr.)		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
2.50	7.80	BH/05/CS/01	41.62	0.85	0.65	0.60	51.45	0.84	-	-	-	-	0.08
7.80	14.40	BH/05/CS/02	42.52	0.75	0.50	0.55	52.25	0.79	-	-	-	-	0.30
14.40	21.65	BH/05/CS/03	42.18	1.35	0.85	0.45	52.58	0.68	-	-	-	-	0.05
21.65	26.45	BH/05/CS/04	42.85	0.95	0.15	0.72	52.85	0.62	-	-	-	-	0.20
26.45	33.00	BH/05/CS/05	42.91	0.98	0.42	0.53	52.74	0.54	-	-	-	-	0.14
33.00	38.80	BH/05/CS/06	42.78	1.35	0.64	0.57	53.24	0.62	-	-	-	-	0.06
38.80	44.50	BH/05/CS/07	41.95	1.20	0.66	0.68	51.42	0.58	-	-	-	-	0.10
44.50	50.00	BH/05/CS/08	42.05	0.95	0.85	0.74	52.64	0.81	-	-	-	-	0.06

**COMPOSITE LIMESTONE SAMPLE BOREHOLE NO. 06**

Collar of BH (mtr.)		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
1.50	6.00	BH/06/CS/01	11.17	1.65	0.65	0.72	52.00	0.80	-	-	-	-	0.09
6.00	12.00	BH/06/CS/02	42.52	1.00	0.57	0.49	53.38	0.64	-	-	-	-	0.20
12.00	20.50	BH/06/CS/03	42.18	1.16	0.81	0.50	54.11	0.60	-	-	-	-	0.02
20.50	27.40	BH/06/CS/04	42.85	1.06	0.45	0.49	53.38	0.64	-	-	-	-	0.10
27.40	33.60	BH/06/CS/05	42.91	0.97	0.35	0.49	53.38	0.64	-	-	-	-	0.13
33.60	38.00	BH/06/CS/06	42.78	1.24	0.17	0.55	53.55	0.60	-	-	-	-	0.10
38.00	47.15	BH/06/CS/07	41.95	1.52	0.68	0.70	52.99	0.60	-	-	-	-	0.08
47.15	53.00	BH/06/CS/08	42.05	2.01	1.07	0.75	52.99	0.80	-	-	-	-	0.12
53.00	59.00	BH/06/CS/09	41.70	1.46	0.96	0.90	52.79	0.60	-	-	-	-	0.14
59.00	60.20	BH/06/CS/10	42.75	1.36	0.26	0.50	53.83	0.60	-	-	-	-	0.15

**COMPOSITE LIMESTONE SAMPLE BOREHOLE NO. 07**

Collar of BH (mtr.)		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
0.00	4.05	BH/07/CS/01	42.57	2.58	1.32	1.30	49.91	0.80	-	-	-	-	0.09
4.05	9.75	BH/07/CS/02	41.87	2.41	1.31	0.79	52.04	0.88	-	-	-	-	0.12
9.75	15.25	BH/07/CS/03	42.14	1.88	0.51	0.71	52.71	0.88	-	-	-	-	0.11
15.25	21.75	BH/07/CS/04	42.94	1.26	0.55	0.37	53.50	0.96	-	-	-	-	0.15
21.75	27.75	BH/07/CS/05	41.96	1.13	0.70	0.30	54.67	0.40	-	-	-	-	0.08
27.75	34.20	BH/07/CS/06	42.19	0.70	0.40	0.62	54.67	0.50	-	-	-	-	0.12
34.20	38.90	BH/07/CS/07	42.84	0.60	0.37	0.30	53.97	1.20	-	-	-	-	0.10
38.90	44.90	BH/07/CS/08	42.90	0.52	0.51	0.20	54.39	0.50	-	-	-	-	0.14
44.90	50.00	BH/07/CS/09	42.76	1.49	0.41	0.25	53.55	0.60	-	-	-	-	0.11

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COMPOSITE LIMESTONE SAMPLE BOREHOLE NO. 08

Collar of BH (mtr.)		Sample	PARAMETERS IN %										
From	To		LOI	SiO <sub>2</sub>	Al <sub>2</sub> O <sub>3</sub>	Fe <sub>2</sub> O <sub>3</sub>	CaO	MgO	Na <sub>2</sub> O	K <sub>2</sub> O	Total Alkalies as Na <sub>2</sub> O	Cl	SO <sub>3</sub>
2.00	5.00	BH/08/CS/01	41.47	1.94	1.04	0.60	52.99	0.80	0.08	0.01	-	-	0.12
5.00	10.80	BH/08/CS/02	41.65	2.36	0.78	0.40	52.99	0.60	0.06	0.01	-	-	0.10
10.80	16.30	BH/08/CS/03	41.96	2.08	0.74	0.40	53.27	0.60	0.05	0.09	-	-	0.15
16.30	23.00	BH/08/CS/04	42.28	1.37	0.48	0.70	53.33	0.40	0.04	0.10	-	-	0.11
23.00	25.43	BH/08/CS/05	42.09	0.98	0.60	0.80	53.45	0.40	0.06	0.10	-	-	0.10
25.43	25.93	BH/08/CS/06	31.71	20.21	3.68	3.30	39.53	0.60	0.05	0.40	-	-	0.11
25.93	31.10	BH/08/CS/07	33.28	20.81	1.52	2.20	40.93	0.80	0.03	0.18	-	-	0.10

3. RESERVE ASSESSMENT:

3.1 Sampling & Chemical analysis:

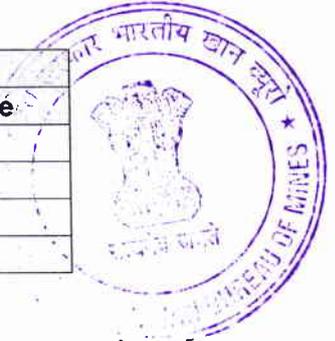
A total no. of 20 surface samples was collected from different locations to verify the grade of Limestone and are analysed for CaO & MgO.

A total no. of 131 borehole core samples were collected from 4 boreholes and analysed for CaO & MgO. Further 18 borehole composite samples were analysed for 7 radicals & 16 for 9 radicals respectively.

3.2 Recovery with Cut-off grade & tonnage factor:

The overall core recovery in each bore hole is as follows:

Sl. No.	B.H. No.	Core Recovery %	
		Overall	Limestone
1	SS/BH/05	88.46	88.82
2	SS/BH/06	57.57	55.90
3	SS/BH/07	90.38	90.38
4	SS/BH/08	80.68	86.22



Since, it is a captive mine, cut off grade mainly depends on the composition of Raw Mix and the availability of additives. Limestone from Mine is not directly suitable for Clinker Manufacture. It is deficient in SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub> and FeO. SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> can be maintained from the locally available Sandstone (required mainly in Monsoon) and Shale. FeO is maintained presently by iron fillings due to non availability of Laterite nearby. Due to the reasons mentioned above, ROM is maintained at (50±1) % CaO content.

The majority of limestone deposit contains more than 50 % CaO content which is the analysis of washed core and is bound to deteriorate due to the mechanical loading and deep hole blasting. The dilution is taken as 5%. Limestone below 50% CaO content is not much and can be blended suitably with higher CaO content. Hence, the cut off grade can be as low as 35% CaO content (if available).

The tonnage factor for limestone is considered as 2.5.

### 3.3 Method of Assessment:

Geological reserve is estimated by cross-sectional area method. Cross-sectional area of the deposit is multiplied with length of influence and bulk density to arrive at the geological reserve under Proved and Probable categories.

Mathematically the reserve is calculated as follows:

$$G = C \times L \times B$$

Where, G = Geological Reserve (in MT)  
 C = Cross-sectional Area  
 L = Length of Influence in metre  
 B = Bulk density in MT per cubic metre

#### 3.3.1 Reserve Estimation

##### Summary of Geological Resource

Type	Quantity of ore(MT)	Grade
G <sub>1</sub>	848531.25	+ 45% CaO
G <sub>2</sub>	1310265.00	
G <sub>3</sub>	8831722.50	
<b>Total</b>	<b>10990518.75</b>	

##### Summary of Mineable Reserve (Proved + Probable Mineral Reserve)

Type	Quantity of ore(MT)	Grade
Proved (111)	41535	+ 45% CaO
Probable (122)	388620	
<b>Total</b>	<b>430155</b>	

### 4. PRODUCTION SCHEDULE:

#### 4.1 Mine capacity:

The mine capacity will be around 40,000 MT of limestone annually.

#### 4.2 Total handling of ROM ore & OB/waste:

Limestone from the mine will be utilized in the captive cement plant of the company. The handling of OB/waste is not required as there is no OB/waste in the Mining Lease area.

#### 4.3 Rate of Production:

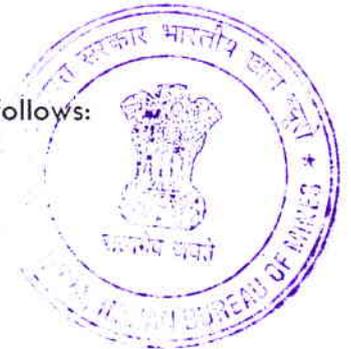
The proposed rate of production for the 1<sup>st</sup> five years is as follows:

##### a) Limestone per annum:

1 <sup>st</sup> Year	:	30,127.5 MT
2 <sup>nd</sup> Year	:	41,647.5 MT
3 <sup>rd</sup> Year	:	35,673.75 MT
4 <sup>th</sup> Year	:	36,687.5 MT
5 <sup>th</sup> Year	:	49275 MT

During the 1<sup>st</sup> & 2<sup>nd</sup> year of mining, further exploration will be done to find out the quality and extend of the Prang Limestone and the underlying Umlatdoh Limestone.

##### b) Overburden per annum: NIL



**4.4 Dilution recovery, grade control/blending:**

The limestone found in the Mining Lease area is of cement grade & homogeneous. The minor quantity of ROM ore which may sometimes be present having with lower grade will be controlled by blending with higher grade limestone.

**5. METHOD OF MINING:**

**5.1 Proposed Method of Mining:**

Sl. No.	Description	Parameter
1	Method of Mining	Fully Mechanized Open Cast by top slicing method.
2	Height of each bench	3 m.
3	Width of working benches	4.5m
4	Slope angle	34° (in working benches); 45° (ultimate pit slope)
5	Haul Road Gradient and width of Road	1 in 16 to 20 & minimum 8 m.
6	Raising of Limestone per day	164.25 MT
7	Raising of overburden per day	No overburden
8	Stripping ratio	0:1
9	No. of working days	300
10	No. of working shifts	One

The entry to each bench is from the main haul road. The width and gradient of the haul road will be maintained as referred above.

**5.2 Drilling & blasting:**

Drilling operation will be carried out with the help of wagon drill.

It is proposed to do single row blasting of 100 mm dia. with 3m depth & spacing x burden (1.5m x 1.25m). The holes proposed for drilling will be angle holes to match the requirement. Blasting will be done with High Explosives using Raydet or Excel to initiate the blast. This reduces vibration, noise, throw and air blast.

**5.3 Requirement of Equipment:**

The lists of equipment required are given below:

Sl. No.	Equipment	Nos./Set
1	Compressor XAH-210 with Crawler Drill	1 set
2	Hydraulic Excavator, Model Tata-Hitachi Ex-100 0.9m <sup>3</sup> bucket capacity	1 No.
3	Secondary Rock breaker	1 No.
4	10 MT Dumper for transportation of limestone	3 Nos.
5	Komatsu D-155 Dozer	1 No.
6	LMV / maintenance vehicle	1 No.
7	Water Tanker 10 kl capacity	1 No.

**5.4. Surface Transportation:**

All mined out material (Limestone) will be transported by 10 MT Dumper through haul road to crushing plant. Distance of mine to the crushing plant is about 2.5 km. (Approx.)

**6. BENEFICIATION:**

Beneficiation is not required as the limestone available in the Mining Lease area is of cement grade & homogeneous.

**7. MARKETING:**

The total ROM ore will be utilized as captive source for the plant.

**8. INFRASTRUCTURE:**

**8.1 Road:**

The area is situated on the eastern side of National Highway No. 44 from Shillong to Silchar and near to 129 km. Stone and located south – east of Lumshnong village. Distance of mine from the crushing plant is about 2.5 km. (Approx.)

**8.2 Power Source:**

Power is also available at mining site. The power is supplied by MSEB and one Diesel operated Generator for office lighting, street and haul road lighting.

**8.3 Labour supply & Skill:**

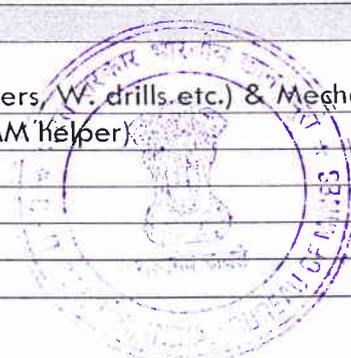
This is not applicable as the mine will be fully mechanized open-cast mine.

**8.4 Employment Potential:**

Sl. No.	Designation/Post	No.
<b>Managerial &amp; Supervisory:</b>		
1	Manager (Mines)	1
2	Asst. Manager	1
3	Geologist	1
4	Mining Engineer	1
5	Mines Surveyor (part time)	1
6	Mines Foremen	1
7	Mining Mate	1
8	Mines Blaster	1
9	Engineer Maintenance	1
<b>TOTAL</b>		<b>9</b>
<b>Others</b>		
1	Operators (for excavator, 10 MT dumpers, W. drills.etc.) & Mechanic	5
2	Semi-skilled (Blasting & HEMM helper)	4
3	Clerical Staff	1
4	Peon/Tea boy	1
5	Plantation Gang	1
<b>TOTAL</b>		<b>12</b>

**9. ENVIRONMENTAL REQUIREMENTS :**

We do not see any adverse effect on the environment as adjoining Wah-Pynkon Limestone Deposit over an area of 4.85 Ha. which is on the North-eastern side of this lease is under operation. There shall be no adverse effect on the environment as regular monitoring will be done and the report of the same will be sent regularly to IBM & State Pollution Control Board.



**APPROVE**

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**10. OTHERS :**

**10.1 Tribal Issues:**

There is no tribal issue in the area.

**10.2 National Park, monuments etc. :**

There is no National Park, monuments etc. within 10 km. radius of the Mining Lease area.

**ECONOMIC EVALUATION :**

**11.1 Estimated Capital Cost:**

Sl. No.	Equipment	No.	Amount in Lacs (Rs)
1	Hydraulic Excavators with 0.9 m <sup>3</sup> back hoe bucket	1	50.00
2	Hydraulic Excavator with Rock Breaker arrangement	1	75.00
3	18.50 MT dumper	2	100.00
4	Crawler mounted Crawler drill with compressor	1	17.50
5	Komatsu D-155 Dozer	1	165.00
6	Water tanker truck mounted	1	20.00
<b>TOTAL</b>		<b>07</b>	<b>427.50</b>

**11.2 Production & Transport Cost:**

Sl. No.	Description	Cost (Rs. per MT)
1	Drilling	10.00
2	Blasting	12.00
3	Excavation	19.00
4	Transport	26.00
5	Wages	9.00
<b>TOTAL</b>		<b>76.00</b>

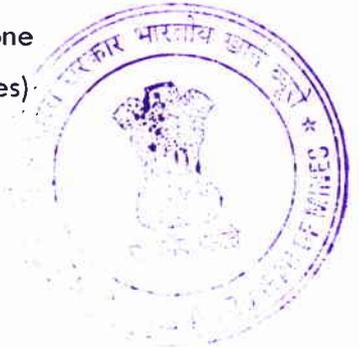
**11.3 Royalty and other taxes:**

Sl. No.	Description	Cost (Rs. per MT)
1	Royalty (to State Govt.)	63.00
2	Mineral Cess (to State Govt.)	20.00
3	Welfare Cess (to Central Govt.)	1.00
<b>TOTAL</b>		<b>84.00</b>

**APPROVED**

**11.4 Total cost of Mining operation per 1MT of Limestone:**

The total cost of Mining operation per 1MT of Limestone  
 = (Production & transport cost + Royalty & other taxes)  
 = 76 + 84  
 = **Rs. 160.00 (Rupees one hundred and sixty only)**



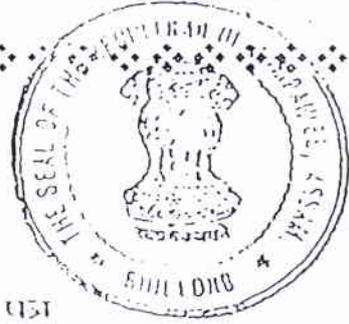
**11.5 Availability of Financing:**

Financing is done by the Management of the company.

\*\*\*\*\*



फॉर्म आई. आर.  
Form I. R.



डिपार्टमेंट ऑफ कॉर्पोरेशन्स

CERTIFICATE OF INCORPORATION  
CORPORATE IDENTITY NUMBER (CIN)

ता. U26942ML2001PLC006663 को. सं. 2001-2002

No. 13 - 06663 of 200 1-2002

में एतद्वारा प्रमाणित करता हूँ कि आज

कम्पनी अधिनियम 1956 (1956 का 1.) के अधिनियमित को मई है और कम्पनी  
परिशीमित है।

I hereby certify that CEMENTS MANUFACTURING COMPANY  
LIMITED

is this day incorporated under the Companies Act, 1956 (No. 1 of 1956)  
and that the Company is limited.

मेरे हस्ताक्षर से आज ता. \_\_\_\_\_ की दिया गया

Given under my hand at Shillong this 02nd (Second)  
day of November Two thousand One

( S.K. Majumdar )  
कम्पनीयों का रजिस्ट्रार

Registrar of Companies

Assam, Meghalaya, Manipur, Tripura, Nagaland  
Assam, Meghalaya, Manipur, Tripura, Nagaland

APPROVED



U26942ML2001PLCC06663



13 - 06663 of 2001-2002

### FRESH CERTIFICATE OF INCORPORATION CONSEQUENT ON CHANGE OF NAME

In the Office of the Registrar of Companies, Assam, Meghalaya, Manipur, Tripura, Nagaland,  
Arunachal Pradesh & Mizoram, Shillong.

[Under the Companies Act, 1956 (I of 1956)]

IN THE MATTER OF CEMENTS MANUFACTURING COMPANY LIMITED

I hereby certify that CEMENTS MANUFACTURING COMPANY LIMITED

Limited which was originally incorporated on 02nd (Second) day of November, 2001

under the Companies Act and under the name Cements Manufacturing Company

Limited, having duly passed the necessary resolution in terms of  
section 21(1)(a) of Companies Act, 1956 and the approval of the Registrar of Companies

in accordance with the provisions of the said Act, this Office vide  
~~XXXXXX~~

letter No ST/13-06663/Section 21/3957 dated 10th Nov., 2004

the name of the said company is this day changed to CEMENT MANUFACTURING COMPANY

Limited and this certificate is issued pursuant to section 23 (1) of the said Act

Given under my hand at Shillong this day of 10th November

2004 (Two thousand Four)



( u, Sanjibpuria )

Registrar of Companies  
Assam, Meghalaya, Manipur, Tripura, Nagaland,  
Arunachal Pradesh & Mizoram, Shillong

**APPROVE**

Here give the name of the company in English and in Assamese  
Here give the name of the Registrar of Companies in English and in Assamese

Certified to be true Copy

For Registrar of Companies  
*[Signature]*  
Secretary

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ANNEXURE - XIII

**CEMENT MANUFACTURING CO. LTD.**

Registered Office & Works : Lumshnong, P.O. Khaliehriat, Dist. Jaintia Hills, Meghalaya. Pin. 793200.  
Tel. No. : 03655-278215/16/17/18, Fax. No. 03655-278217, E-mail : lumshnong@yahoo.co.in.

Ref: CMCL/ML-13.58/2007-08

To  
**The Commissioner & Secretary**  
Mining & Geology Department  
Govt of Meghalaya  
Shillong

Dated: 9<sup>th</sup> April 2007

Through- **The Deputy commissioner**  
Jaintia Hills District  
Jowai.

Sub: Application for Mining Lease over an area of 13.58 Hectares at Wah Pynkon area in Lumshnong village, Jaintia Hills District, Meghalaya.

Dear Sir,

Cement Manufacturing Co. Ltd has set up a 900 TPD cement plant at Lumshnong village, Jaintia Hills District, Meghalaya. The Cement Plant was conceived based on the Reports of occurrence of abundant high-grade limestone reserves around Lumshnong village. Approval from state government departments have been accorded for expanding the capacity of the plant to 1800 TPD.

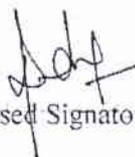
To meet the raw material requirement, CMCL obtained Prospecting License (PL) for limestone over an area of 13.58 hectares. Detailed prospecting work was done in the PL area. Sale Deed from landowners were obtained for mining the deposit. The application for mining lease in triplicate is enclosed for your kind perusal.

No Objection Certificate from local bodies and various authorities of Govt. of Meghalaya and documents mentioned in ML application are enclosed as per list attached.

We request your honour to kindly grant the Mining Lease over 13.58 hectares to meet the requirement of limestone to the cement plant.

Thanking You

Yours Faithfully  
For M/s Cement Manufacturing Co. Ltd

  
Authorised Signatory

**APPROVED**



Enclosed: - As above.

**CC: The Director, Directorate of Mineral Resources, Shillong. – For kind information**

Offices :

- : - Delhi : 281, Deepali Apartments, Pritampura, New Delhi-110 034 . Ph. No.- 2448 4169, 2448 4170.
- : - Kolkata : Satyam Towers, 1<sup>st</sup> Floor, Flat- 9B, 3 Alipur Road, Kolkata-700 027, Ph. No- 24484169,24484170.
- : - Guwahati : Mayur Garden, G.S. Road, Cuwahati -781 005; Ph. No.- 2462215/16/17; guwahati@cmcl.co.in

**FORM – I**  
**Application for Mining Lease (See Rule 22 (1))**

Received.....  
at.....(Place)  
on.....(Date)  
Initial of Receiving Officer

Government of Meghalaya

Application for Mining Lease  
(See Rule 22(3) of the  
Mineral Concession Rules, 1960).  
Dated the 9 th day of April 2007

To:  
The Commissioner & Secretary  
Mining & Geology Department  
Shillong.

Through:  
The Deputy Commissioner  
Jaintia Hills District  
Jowai, Meghalaya.

Sir,

I/We request that a mining lease under the Mineral Concession Rules, 1960 may be granted to me / us.

2. A sum of Rs. 2500/- and Rs. 1,000/- being the Fees in respect of this application and preliminary expenses respectively payable under sub-rule (3) of Rule 22 of the said rule have been deposited ( vide receipt challan No 333 @ & 334@ dated 23.03.07 of the State bank of India / Treasury Jowai.)

3. The required particulars are given below:

(i) Name of the applicant with complete address.

Status of the applicant.

**M/s Cement Manufacturing Co. Ltd**  
**Lumshnong, P.O Khliehriat, Jaintia Hills**  
**Meghalaya – 793200**  
**Telephone No: 03655/278214-218**  
**Fax:03655/278217**  
**Email: lumshnong@yahoo.co.in**

**Public Company**

(ii) Is the applicant a private individual / co-operative / firm / association / Private Company / Public Company / Public Sector undertaking / Joint Sector undertaking or any other.

**Not Applicable**

(iii) In case the applicant is,---

(a) An individual, his nationality, Qualifications and experience relating to mining

(b) [ a company, an attested copy of the certificate of registration of the company shall be enclosed]

**Attested copy of the certificate of registration enclosed**

(c) [xxx]

(d) Firm or Association, the nationality of all the partners of the firm or members of the association; and

**Not Applicable**

(e) A co-operative, the nationality of non-Indian members, if any along with place of registration and a copy of the certificate of registration.

**Not Applicable**

(iv) Profession or nature or business of Applicant.

**Manufacture and Marketing of Cement**

(v) Particulars of documents appended:

Document	Reference
(a) Mining dues clearance certificate	<b>Copy of mining dues clearance certificate enclosed</b>
	OR
(b) Affidavit in lieu of Mining Dues Clearance Certificate; subject to the production of mining lease dues, clearance certificate within the period of ninety days of making application. NA	
	OR
(c) Affidavit when not holding any mining lease.	NA
(d) Affidavit that up-to-date Income tax Returns as prescribed under the Income Tax Act, 1961 and that the tax due including the tax on account of self-assessment has been paid.	<b>Affidavit and income tax return certificate (Form No 1, Receipt No 001364) enclosed.</b>
(vi) Mineral or minerals which the applicant intends to mine.	<b>Limestone</b>
(vii) Period for which mining lease is required :	<b>30 (Thirty) Years</b>
(viii) Extent of the area for which mining lease is required.	<b>13. 58 Hectares</b>

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**APPROVE**

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(ix) Details of the area in respect of which mining lease is required

District	Taluqa	Village Occupancy	Khasra No.	Plot No.	Ownership / Area
Jaintia Hills Distt.	Khliehriat	Lumshnong	N.A	1. 2.	CMCL - 4. 9647 Ha. CMCL - 8. 6227 Ha

(x) Brief description of the area with particulars reference to the following:-

(a) Does the applicant have surface rights over the area for which he is making an application for grant of a mining lease.

**Yes. Documents of Sale Deed for the land held by CMCL enclosed.**

(b) If not, has he obtained the consent of the owner, and the occupier of the land for undertaking mining operation. If so, the consent of the owner and occupier of the land be obtained in writing and be filed.

**Not Applicable**

(xi)(a) The situation of the area in respect of natural features such as streams or lakes

**Situation of the area with respect to 129km Stone on NH - 44, shown on plan which is enclosed.**

(b) In the case of Village areas; the name of the Village, the khasra number, the area in hectares of each field or part thereof applied for.

**The area is located in Lumshnong village. Cadastral plans not available. Details of ownership of each plot of land is given above in point IX. a .**

(c) In case the area applied for is under forest, then the following particulars be given:-

**Not Applicable**

(1) Forest division, Block and Range.

(2) Legal status of the forest (namely reserved, protected, unclassified etc.)

(3) Whether it forms part of a National park or Wildlife sanctuary.

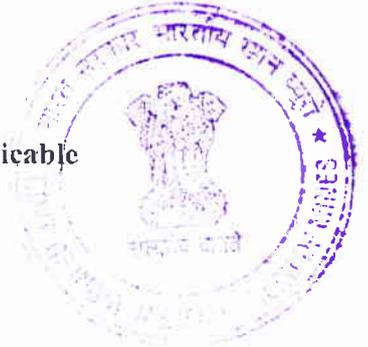
(4) Type and extent of vegetation in the area.

(5) For areas where no forest maps or cadastral maps are available, a sketch plan should be submitted on scale showing the area applied for together with boundary, if any, of any other existing mining lease or prospecting licence area, if the area applied for has any common point or line with the boundaries of existing prospecting licence or mining lease areas.

(xii) The area applied for should be marked on plans as detailed below:

(a) In case cadastral map\* of the area is available, the area on this map should be marked showing the name of the Village, Khasra number and area in hectares of each field and part thereof.

Not Applicable



(b) In the case of forest maps the area should be marked on the map showing the range and felling series:-

Not Applicable

(c) In case neither cadastral nor forest maps are available, the area should be marked on a sketch plan drawn to scale showing on this plan all important surface and natural features, the dimension of the lines forming the boundary of the area and the bearing and distance of all corner points from any important, prominent and fixed point or points. (No.1 (3)/68-MII Dt.30-3-68)

Plan of the area applied for Mining lease with dimensions of lines forming boundary of the area with bearing and distance with respect to 129km stone on NH 44 is enclosed.

(xiii) Particulars of the areas mineral-wise in each State duly supported by an affidavit for which the applicant or any person joint in interest with him.

Applicant holds Mining Leases in Meghalaya State only.

(a) Already holds under mining lease.

Holds three. MLs for limestone in Lumshnong area as per details given below.

1. Mining Lease over 4.96Ha granted on 20-12-2004
2. Mining Lease over 4.85Ha granted on 04-07-2005
3. Mining Lease over 4.70Ha granted on 04-01-2005

(b) Has already applied for but not granted.

Not Applicable.

(c) Being applied for simultaneously;

Not Applicable

(xiv) Nature of joint in interest if any.

Not Applicable.

(xv)(a) Does the applicant hold a prospecting licence over the area mentioned at (xi) above? : If so, give its number and date of grant and date when it is due to expire.

Yes - Date of Grant - 20.03.2006.  
Date of Expiry - 21.05.2008.

APPROVED

- (b) Has the applicant carried out the prospecting operations over the area held under prospecting licence and sent his report to the State Government, required by Rule 16 of the Mineral Concession Rules, 1960 ? If not, state reasons for not doing so.
- (xvi) Broad parameters of the mineral / ore body / bodies
- Like length, average width and dip.
  - Wall rocks on hanging and foot wall sides.
  - Whether area is considerably disturbed geologically or is comparatively free of geological disturbances? (Copy of geological map of the area is to be attached).
  - Reserves assessed with their grades (s) (chemical analysis reports of representative samples are to be attached).
  - Whether the area is virgin. If not, the extent to which it has already been worked, In case there are old workings, their locations are to be shown on the geological map of the area.
- (xvii) Broad parameters of the mine:
- Proposed date of commencement of the mining operations.
  - Proposed rate of mineral production during the first 5 years (year-wise).
  - Proposed rate of production when mine is fully developed.
  - Anticipated life of the mine
  - Proposed method of mining (Under ground or opencast)
    - If underground, the method of approach to the deposit mineral / ore-whether through inclines or shafts.
    - If opencast, the overburden to ore ratio and overall pit slope.

Applicant carried out prospecting operations. Report of prospecting work carried out over 13.58 Hectares enclosed. Details as per Form- B of MCDR submitted.

Strike Length – Average 710. 0Mtrs  
Average width – 177. 5 Mtrs  
Dip – 42 - 50<sup>0</sup> towards south-east

Narpuh Sandstone on footwall and Kopili formation is on hanging wall side (both the units are beyond the mining lease area).

The area is free from major geological disturbances. Geological report enclosed

Reserves assessed and chemical analysis reports given in the Geological report enclosed.

Virgin Area

April 2008

1<sup>st</sup> Year - Development of Mine  
2<sup>nd</sup> Year - 50 thousand tonnes  
3<sup>rd</sup> Year - 75 thousand tonnes  
4<sup>th</sup> Year - 90 thousand tonnes  
5<sup>th</sup> Year - 1-lakh tonnes

1-lakh tonnes

About 100 years

Open cast

Not Applicable

There is negligible overburden in the lease area.

Overall pit slope - 45°

- (f) Nature of the land chosen for dumping overburden / waste and tailings (that is type of land whether agricultural, grazing land; barren, saline land etc.) and whether proposed site has been shown on the mine working plan. Give also the extent of area in hectares set apart for dumping of waste and tailings.

**ML area is free of OB.**



- (xviii) [A report giving the details of prospecting carried out in the area together with assessment of the ore reserves, geological plans, results of chemical analysis of the representative samples, and boreholes and logs.]

**Enclosed.**

- (xix) Manner in which the mineral raised is to be utilized.  
(a) (i) If for captive use, the location of plant and industry.

**Captive use – Cement Industry located in Lumshnong village, Jaintia Hills district, Meghalaya & supply to subsidiary companies in Jaintia Hills.**

- (ii) For sale for indigenous consumption.

**Not Applicable**

- (b) If for exports to foreign countries indicate,

**Not Applicable**

- (i) Names of the countries to which it is likely to be exported where the mine is being set up on 100% Export oriented or tied-up basis.

**Not Applicable**

- (ii) Whether mineral will be exported in raw form or after processing. Also indicate the stage of prospecting, whether intermediate stage or final stage of the end product.

**Not Applicable**

- (c) If it is to be used within the country, indicate:-

- (i) The industry / Industries in which it would be used.

**Cement Industry and proposed thermal plant of subsidiary company.**

- (ii) Whether it will be supplied in raw form or after processing (crushing / grinding / beneficiation / calcining).

**Raw form.**

- (iii) Whether it would need upgradation and if so, whether it is proposed to set up beneficiation plant. Also indicate the capacity of such plant and the time by which it would be set up.

**Upgradation not required**

- (e) In case of coal, or other high bulk minerals/ ores details of existing railways transport facility available and additional transport facility, if any, required.

**Not Applicable**

**APPROVE**

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- (xx) Name, qualification and experience of the technical personnel available for supervising the mines.

S No	NAME	QUALIFICATION	DESIGNATION	AGE	EXPERIENCE
1	D V N Raju	M.Sc (Geology), RQP, Issued by IBM.	Chief Geologist	64 Yrs	35 Years in Geological Exploration and Mining.
2	L. Das	Graduate Mining Engineer With First class Competency Certificate awarded by DGMS, Govt. of India.	Dy. General. Manager (Mines)	56 Yrs	35 Years in the field of Mining and Mineral Exploitation and also Member of various Mining and Geological Association.
3	Padam P.Sharma	M.Sc (Geology)	Junior Geologist	27 Yrs	2 Years in the field of geological investigation and exploration.

- (xxi) (i) Financial resources of the applicant.

(ii) Anticipated yearly financial investment during the course of mine construction and aggregate investment upto the stage of commencement of commercial production.

- (xxi) (a) Nature of waste water, (e.g. whether acidic) If so, expected PH value.

- (b) The application form should be accompanied by a statement of the salient features of the scheme of mining. They should be generally on the lines of the Project at a Glance given in a mining feasibility report including features relating to the protection of environment.

**Promoters share capital and loan from financial institutions.**

**Rs50 Lakhs during the course of mine development and Rs2 crores up to the stage of commercial production.**

**Only surface run-off rain water is expected. Expected PH value 6.5 to 7**

**Statement of salient features of scheme of mining enclosed.**

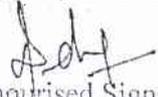
I / We do hereby declare that the particulars furnished above are correct and am / are ready to furnish any other details including accurate plans and security deposit as may be required by you.

Yours faithfully,

Place: Lumshnong, Meghalaya

Date: 9th April 2007

Signature of the applicant



Authorised Signatory

Encl : as above

অনুমোদিত  
অনুমোদিত



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**SUBMISSION OF GEO-REFERENCED CADASTRAL MAP FOR  
THE COMPLIANCE OF IBM CIRCULAR NO. 2/2010**

**UNDERTAKING BY THE APPLICANT**

I, Shri Devender Bansal, Nominated Mines Owner on behalf of M/s Cement Manufacturing Company Ltd. at Lumshnong village, P.O. - Lumshnong, P.S. Khliehriat, District East Jaintia Hills, Meghalaya - 793210, hereby undertake that, I shall approach for the Geo-referenced Cadastral Map of **Wah-Pynkon Limestone Deposit** over an area of 13.58 hectares to the concerned State Government authorities for Mining Plan and Progressive Mine Closure Plan of 13.58 hectares to fulfill the requirement as per IBM circular No. 2/2010, dated 06/04/2010.

I, Shri Devender Bansal on behalf of M/s Cement Manufacturing Company Ltd. at Lumshnong village, P.O & PS Khliehriat, District East Jaintia Hills, Meghalaya-793210 is giving an undertaking that I shall deposit the certified copy of the Geo-referenced Cadastral Map before 31.01.2016.

Place: Lumshnong

Date: 11th August, 2014

**Devender Bansal**

(Nominated Mines Owner)

APPROVE



# ANNEXURE - XV

## GOVERNMENT OF MEGHALAYA MINING AND GEOLOGY DEPARTMENT

\*\*\*\*\*

No. 109/ 2005/ 88.

Dated Shillong the 20<sup>th</sup> March 2006.

From Shri. S. S. Gupta, IAS,  
Commissioner & Secretary to the Government of Meghalaya  
Mining And Geology Department.

To ✓ The Deputy Commissioner,  
Jaintia Hills District,  
Jowai.

Subj Grant of Prospecting Licence for Limestone to M S. Cement Manufacturing  
Co.Ltd., over an area of 13.58 hectares at Wahpynkon area, Lumshnong,  
Jaintia Hills District



Sir,

I am directed to convey Govt. approval to the grant of Prospecting Licence for Limestone over an area of 13.58 hectares at Wahpynkon in Jaintia Hills, in favour of M.S.Cement Manufacturing Co.Ltd., for a period of 2 (two) years from date of execution of Prospecting Licence deed in accordance with the provisions of the Mineral Concession Rules, 1960. A copy of the Prospecting Licence deed under Rule 15 (2) of the said Rules containing the terms and conditions both local and general on which the licence is to be executed is forwarded herewith for execution by you and the said party, subject to the following conditions :-

1. The Licence shall immediately furnish information to the State Govt. on the existence of caves within the P.L. area if any, encountered during the course of prospecting operations.
2. The Licencee shall submit to the State Govt. a six monthly report of the work done by him stating the number of persons engaged and disclosing in full the Geological or other valuable data collected by him during the period. The report shall be submitted within three months of the close of the period to which it relates.
3. The licencee shall also submit to the State Govt. within three months of the expiry of the licence or abandonment of operations or termination of the licence, whichever is earlier, a full report of work done by him and all informations relevant to

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minerals resources acquired by him in the course of prospecting operations in the area covered by the licence.

4. The Licencee shall maintain an accurate and faithful account of all the expenses incurred by him on prospecting operations and also the quantity and other particulars of all minerals obtained during such operations and their despatch.

I am to say as per Rule 15 of the said Rules, the Prospecting Licence shall be executed within 90 (ninety ) days of the date of the communication of the Order granting the prospecting licence or such further period as the State Government may allow in this behalf. I am also to say that as required under Rule 14(1)(i) of the said Rules, the applicant / Licencee shall pay prospecting fee @ Rs.10/= per hectare per year. The said fee which amounts to Rs.280/= only in this case for the area and period applied has to be paid in advance in appropriate State Government Account by means of treasury challan.

Lastly under Rule 20 (1), the licencee shall, before the prospecting licence is executed deposit as security for the due observance of the terms and conditions of the licence a sum of Rs.2,500--. The security should be in the term of "Term Deposit Receipt" for a period of 2(two) years. The Term Deposit Receipt should be pledge to the Commissioner and Secretary to the Government of Meghalaya, Mining and Geology Department.

Limestone is a mineral not included in the first Schedule of the Mines and Minerals Development & Regulation Act, 1957. Hence, the grant of Prospecting Licence for limestone is solely within the powers of the State Government.

( Shri. S. S. Gupta )

Commissioner & Secretary to the Government of Meghalaya,  
Mining And Geology Department.

Memo.No.MG. 109/ 2005- 88- A

Dated Shillong the 20<sup>th</sup> March 2006

Copy to :-

1. The Under Secretary to the Govt. of Meghalaya, Political Department.
2. The Secretary, Jaintia Hills Autonomous District Council, Jowai.
3. The Director of Mineral Resources, Meghalaya, Shillong.
4. M/S Meghalaya Cement Limited, Thangskai, P.S.Khlehriat, Jaintia Hills District, Jowai.

By Order Etc.

Commissioner & Secretary to the Govt. of Meghalaya,  
Mining And Geology Department.

# ANNEXURE-XVI

OFFICE OF THE DEPUTY COMMISSIONER JAINTIA HILLS DISTRICT:

J O W A I

No.Gen/Min-4/02/pt.VI/185.

Dated Jowai the 24th May, 2006.

To,

The Commissioner & Secretary, to the  
Govt. of Meghalaya Mining & Geology  
Deptt.

Subject:-

Grant of Prospecting Licence for Limestone to  
M/S Cement Manufacturing Co. Ltd. over an area  
of 13.58 hectares at Vahpyngon area, Lushalnong  
Jaintia Hills District.

Reference:-

Your letter No.109/2005/SS. Dt. 20th March, 06

Sir,

With reference to the letter on the subject  
quoted above, I am forwarding herewith the Agreement Deed in  
Form I under Rule 15(2) of the Mineral Concession Rules for  
Guly executed and signed with cements Manufacturing co. Ltd.  
This is for your information and necessary action.

Enclos:- 1. Agreement deed in Original.

2. One Copy of map showing the Area granted  
Cement Manufacturing Co. Ltd.
3. One Copy of HOC from JHADC.

Yours faithfully,

Deputy Commissioner,  
Jaintia Hills District  
Jowai.

Mem. No. Gen/Min-4/02/pt.VI/185. Dated Jowai the 17th May, 06

Copy to:-

1. The Director of Minerals Resources Meghalaya for  
information.
2. The Secretary, JHADC Jowai.
3. M/S Cements Manufacturing Co. Ltd Lushalnong.

Deputy Commissioner,  
Jaintia Hills District,  
Jowai.

WHEREAS the licensee has applied to the State Government in accordance with the Mineral Concession Rules, 1960 (hereinafter referred to as the said Rules) for a licence to prospect for Limestone in the land specified in Schedule 'A' hereunder written and delineated in the plan herewith annexed (hereinafter referred to as the said lands) and has deposited with the State Government Rs. 2,500/- (Two Thousand Five Hundred) as the prescribed security in respect of such licensee and has paid to the State Government the sum of Rs. 280/- (Two Hundred Eighty) as the prescribed prospecting fee for 2 (two) years in advance in respect of such licensee and WHEREAS there is no objection to the grant of such licence, and WHEREAS the Central Government has approved the grant of his NOW THESE PRESENT

WITNESS as follows:

THIS INSTRUMENT made this 17th day of 2006 between the Governor of Meghalaya / the President of India (hereinafter referred to as the 'State Government' which expression shall where the one part and M/s Cement Manufacturing Co. Ltd (Name of Company) a company registered under Companies Act, 1956. (Act under which incorporated) having its registered office at Vill. Lamsahong, P. O. Khliehria, Jaintia Hills District, Meghalaya - 793200 (Address) (hereinafter is a referred to as "the licensee" which expression shall where the context so admits be deemed to include its successors and permitted assigns) of the other part.

When the licensee is a registered company



**APPROVED**

FORM F  
Prospecting Licence  
[See rule 15(2)]

## PART - I

In consideration of the fee, royalties, covenants, and agreements hereinafter reserved and contained and on the part of the licensee / licensees to be paid observed and performed the State Government hereby grants and demises into the licensee / licensees the sole rights and licensee.

*To enter upon the lands and to search for, win or carry away and dispose of minerals won.*

- (1) To enter upon the said lands and to search for by quarrying, boring and digging or otherwise all or any Limestone (Name of Minerals) lying or being within under or throughout the said lands;
- (2) In the case of minerals other than gold, silver, precious stones or mica, this licence shall not confer upon the licensee and right to win or carry away the minerals for commercial purposes;

*Provided that the licensees may win and carry away for purposes other than commercial purposes.*

- a) Any quantity of such minerals within the limits specified in schedule III of the Mineral Concession Rules, 1960, without any Payment;
- b) Any quantity of such minerals exceeding such limits but not exceeding twice such limits, which is won during prospecting operations on payment of royalty for the time being specified in the Second Schedule to the Act in respect of those minerals;
- c) Any quantity of limestone not exceeding 200 (tonnes) for testing its use in any industry specified by the Central government in this behalf, on payment of royalty for the time being specified in the Second Schedule to the Act in respect of Limestone;
- d) With the written approval of the State government, the licensee may carry away quantities of minerals in excess of twice the limit specified in the Schedule III of payment of royalty for the time being specified in the Second Schedule to the Act, for chemical, metallurgical, ore-dressing and other test purposes;

*To clear undergrowth and brushwood. etc*

- (3) Subject to the provisions of clauses 5 and 6 of part II of these presents for the purpose aforesaid to clear undergrowth and brushwood and trees with the sanction of the Deputy Commissioner / Collector previously obtained in writing, to make and use any drain or water courses on the said lands for purposes as may be necessary for effectually carrying on the prospecting operations and for the workmen employed thereon and with the like sanction to use any water provided always that such uses shall not diminish or interfere with the supply of water to which any cultivated land, village, building or watering place for livestock has therefore been accustomed and that no streams, springs or well shall be fouled or polluted by any such use of the prospecting operations hereby licensed.

*To bring and erect machinery etc. on the said lands*

- (4) To erect and bring upon the said lands all such temporary huts, sheds and structures steam and other engine machinery and conveniences, chattels and effects as shall be proper and necessary for effectually carrying on the prospecting operations hereby licensed or for the workmen employed thereon.

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RESERVED nevertheless to the State Government full power and liberty at all times to enter into and upon and to grant or demise to any person or persons whomsoever liberty to enter into and upon the said lands for all or any purposes other than those for which sole right and license are hereby expressly conferred upon the licensee /licensees and particularly (and without hereby in any way qualifying such general power and liberty) to make on, over or through the said lands such roads, tramways and ropeways as shall be considered necessary or expedient for any purposes and to obtain from and out of the said lands such stone, earth or other materials as may be necessary or requisites for making, repairing or maintaining such roads, tramways, railways and ropeways for all purposes and as occasion shall require.

To hold the said right and license unto the licensee /licensees from the date of these presents for the term of (hereinafter referred to as the said term), 2(two) years.

Paying therefore annually in advance a sum of **Rs. 280/- (Two Hundred Eighty)** being the prospecting fee for 2 (Two) years or portion of a year and immediately on the expiration or sooner determination of the said term clear of all fees, rates, taxes, charges, deductions and royalty at the rates specified in the Schedules 'B' and 'C' hereunder written on the minerals won and carried away by the licensee during the said terms.

#### PART- II Covenants by Licensee

The licensee / licensees hereby covenants with the State Government as follows:-

##### ***Payment and Rates of Royalty***

(1) To pay royalty to the State Government at such rates and at such time as are specified in Schedule 'C' hereunder written provided that the licensee/licensees shall be entitled to carry away free of royalty not more than **50 (fifty) Tonnes** for experimental purposes.

##### ***Payment of prospecting fee***

(2) To pay annually in *advance* a prospecting fee in respect of 2 (two) years or part of the year at such rates and times as are specified in Schedule 'B' hereunder written.

##### ***To Carry on work in workman-like manner***

(3) To work and carry on the operations hereby licensed in a fair orderly skillful and workman-like manner and with as little damage as may be to the surface of the lands and to trees, crops, buildings/ structures and other property thereon.

##### ***Maintenance of correct accounts***

(4) Licensee/ licensees shall maintain a correct and faithful account of all the expenses incurred by him on prospecting operations and also the quantities and other particulars of all minerals obtained during such operations and their dispatch.

##### ***No mining operations within 50 metres of public work, etc***

(5) The licensee/ licensees shall not work or carry on or allow to be worked or carried on any prospecting operations at or to any point within a distance of 50 metres from any railway line except with the previous written permission of the Railway administration concerned or from any reservoir, canal or other public works such as public roads and building or inhabited site except

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with the previous written permission of the Deputy Commissioner / Collector or any other Officer authorized by the State Government in this behalf and otherwise than in accordance with such instructions, restrictions and conditions either general or special which may be attached to such permission.

The said distance of 50 metres shall be measured in the case of the railway line, reservoir or canal horizontally from the outer toe of the bank or the outer edge of the cutting as the case may be and in case of a building horizontally from the plinth thereof. In the case of village roads no working shall be carried on within a distance of 10 metres of the outer edge of the cutting except with the previous written permission of the Deputy Commissioner / Collector or any other officer duly authorized by the State Government in this behalf and otherwise than in accordance with such directions, restrictions and additions, either general or special, which may be attached to such permission.

**Explanation:** For the purposes of this clause the expression 'Railways Administration' shall have the same meaning as it is defined to have in the Indian Railways Act, 1890 by clause (6) of section 3 of that Act. 'Public Road' shall mean a road, which has been constructed by artificially surfaced as distinct from a tract resulting from repeated use. Village road will include any track shown in the Revenue record as village road.

***Not to cut or injure trees in reserved forest, etc. without previous permission***

(6) Not to cut or injure any timber or tree on any unoccupied or unreserved land without the written permission of the Deputy Commissioner / Collector nor without such permission disturb the surface of any road or enter upon any public pleasure ground, burning or burial ground or any place held sacred by any class of persons or interfere with any right of way, well or tank.

(7) Not to enter upon any land in the occupation of any person without the consent of the occupier not to cut or in any way injure any trees, standing crops, building, huts, structures or other property of any kind of the occupier of any land or any other person without the written consent of such owner, occupier or person.

***Not to commence work in reserved forest without previous permission.***

(8) Not to enter upon or commence prospecting in any protected or reserved forest situated upon the lands without obtaining the written sanction of the District Forest Officer nor otherwise than in accordance with such conditions as may be prescribed in such sanction.

***Indemnify Government against all claims***

(9) To make reasonable satisfaction and pay such compensation as may be assessed by lawful authority in accordance with the law in force on the subject for all damage, injury, or disturbance which may be done by him in exercise of the powers granted by this licence and to indemnify and keep indemnified fully and completely the State Government against all claims which may be by any person or persons in respect of any such damage, injury or disturbance and all costs and expenses in connection therewith.

(9A) To Pay a wage not less than the minimum wage prescribed by the Central or State Government from time to time.

(9B) To comply with the Provisions of the Mines Act, 1952.

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(9C) To take measures, at his own expense, for the protection of environment like planting of trees, reclamation of mined land, use of pollution-control devices, and such other measures as may be prescribed by the Central or State Government from time to time.

(9D) To pay compensation to the occupier of the surface of the land on the date and in the manner laid down in these rules.

***Forfeiture of Security deposits, etc.***

(10) Whenever the Security Deposit of Rs 2,500/- (Two Thousand Five Hundred ) or any part thereof or any further sum hereafter deposited with the State government in replenishment thereof shall be forfeited or applied by the State Government. Pursuant to the power hereinafter declared in that as may be sufficient with the un-appropriated part thereof to bring the amount in deposit with the State Government up to the sum of Rs 2500/- (Two Thousand Five Hundred).

***Licensee not to be controlled by trust, syndicate, etc.***

(11) The licensee shall not be controlled or permit himself to be controlled by any trust, syndicate, corporation, firm or person except with the written consent of the State Government which will be given only after obtaining the prior approval of the Central Government in case where prospecting licence executed is in respect of minerals included in the First Schedule to the Act.

***Report of Accident***

(12) The licensee without delay send to the deputy Commissioner / Collector a report of any accident causing death or serious bodily injury or serious injury to property or seriously affecting or endangering life or property which may occur in the course of the operations under this licence.

***Section 18 of the Act 67 of 1957***

(13) The licensee shall be bound by such rules as may be issued by the Central government under section 18 of the Mines and Minerals (Regulation and Development) Act, 1957 (67 of 1957) and shall not carry on Prospecting or other operations under the said licence in any way other than as prescribed under these rules.

***To provide for weighing or measurement of material won***

(14) At such times and occasions as may be required the licensee shall well and truly measure or weigh or cause to be measured or weighed upon some part of the said lands all minerals from time to time won from the said lands by the licensee and all such minerals as may require to be measured or weighed for the purpose of ascertaining the royalty payable under these presents shall be so measured or weighed. The licensee agrees not to take away from the said lands any minerals so won until the same shall have been measured or weighed as the case may be. The licensee further agrees to give 15 (Fifteen) days previous notice in writing to the Deputy Commissioner / Collector of every such measuring or weighing in order that he or some person on his behalf may be present thereat.

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***Plugging of bore holes, fencing etc, and restoring the surface of land after determination or abandonment.***

(15) Save in the case of land over which the licensee shall have been granted a mining lease, on or before the expiration or sooner determination of the licence he shall within 6(six) months next after the expiration or sooner determination of the licence or date of abandonment of the undertaking, whichever shall first occur, securely plug any bore or hole and fill up or fence any holes or excavations that may have been made in the lands to such an extent as may be required by the deputy Commissioner / Collector concerned and shall to a like extent restore the surface of the land and all buildings there on which may have been damaged or destroyed in the course of prospecting provided that licensee / licensees shall not be required to restore the surface of the land, or any building in respect of which full and proper compensation has already been paid.

***Removal of machinery, etc, after expiration, determination of abandonment.***

(16) Upon the expiration or sooner determination of this licence or the abandonment of the operations hereby licensed, whichever shall first occur, the licensee shall remove expeditiously at his own cost all buildings, structures, plant, engines, machinery, implements, utensils and other property and effects theretofore, erected or brought by the licensee and then standing or being upon the said lands and also all minerals theretofore won by the licensee under the authority of these presents and then being upon the said lands PROVIDED that this covenant shall not apply to any part of the said lands which may be comprised in any mining lease granted to the licensee during the subsistence of this licence.

***Report of work done before the refund of security deposits***

(17) At any time before the said security deposit is returned to him or transferred to any other account or (within one month after the expiration or sooner determination of the licence or abandonment of the operations whichever is earlier. The licensee shall submit to the State Government confidentially a full report of the work done by him and disclose all information acquired by him in the course of the operations carried on under this licence regarding the geology and mineral resources of the area covered by the licence.

***Report of information obtained by licensee:***

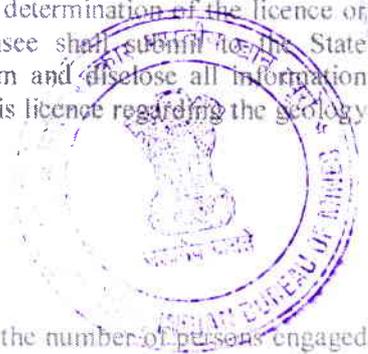
(17A) (1) The licensee shall submit to State Government:

- a) A quarterly report of the work done by him stating the number of persons engaged and disclosing in full the geological, geophysical or other valuable data collected by him during the period.

The report shall be submitted within three months of the close of the period to which it relates;

- b) Within three months of the expiry of the licence, or abandonment of operations or termination of the licence, whichever is earlier, a full report of the work done by him and all information relevant to mineral resources acquired by him in the course of prospecting operations in the area covered by the licence.

(2) While submitting reports under clause (1), the licensee may specify that the whole or any part of the report or data submitted by him shall be kept confidential and the State Government shall thereupon keep the specified portions as confidential for a



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period of Two years from the expiry of the licence, or abandonment of operations or termination of the licence, whichever is earlier.

***Employment of foreign nationals***

- (18) The licensee shall not employ, in connection with the prospecting operation any person who is not an Indian National except with the previous approval of the Central Government:

***Furnishing of Geophysical data***

- (19) The licensee shall furnish:
- a) All geophysical data relating to prospecting or engineering and ground water surveys, such as anomaly maps, sections, plans, structures, contour maps, logging, collected by him during the course of prospecting operations to the Director General, Geological Survey of India, Calcutta;
  - b) All information pertaining to investigations of radio active minerals collected by him during the course of prospecting operations to the Secretary to the Department of Atomic energy, New Delhi.

Data of information referred to above shall be furnished every year reckoned from the date of commencement of the period of the prospecting licence.

**PART-III  
Powers of the government**

It is hereby agreed as follows:-

***Cancellation of the licence and forfeiture of the deposit in case breach of conditions***

- 1) In the case of any breach of the condition of the licence or assignees, the State government shall give a reasonable opportunity to the licensee of stating his case and where it is satisfied that the breach is such as cannot be remedied, on giving thirty days notice to the licensee or assignees, determine the licence and or forfeit the whole or any part of the said deposit of Rs 2500/- deposited under the covenants in that behalf as the State Government may deem fit. In case the State Government considers the breach to be of a remediable nature, it shall give notice to the licensee or assignees as the case may be requiring him to remedy the breach within thirty days from the date of receipt of the notice informing him of the penalty proposed to be inflicted if such remedy is not made within such period.

***Application of security to payment of compensation***

- 2) The State Government may from time to time appropriate and apply the said deposit of Rs 2500/- or any part thereof or any further sum deposited under any covenants in that behalf hereinbefore contained in or towards payment or satisfaction of any claims to compensation which the Government has or may have against the licensee and / or which may be made by any person or persons against the licensee and or the State Government in respect of any damage or injury done by the licensee in exercise of any of the powers conferred by this licence and in or towards payment of any damages,



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costs or expenses which may become payable as the result of or in connection with any suits or proceedings which may be instituted against the State Government in respect of any damage or injury and also in or towards payment of the expense of the carrying out or performance of any works or matters which the licensee shall fail to carry out or perform after the expiry or sooner determination of this licence or the abandonment of the operations hereby licensed in accordance with the covenants in that behalf hereinbefore contained or in payment of the expense of the carrying out or performance of any works or matters which the licensee shall fail to carry out or perform after the expiry or sooner determination of this licence or the abandonment of the operations hereby licensed in accordance with the covenants in that behalf hereinbefore contained or in payment or satisfaction of any claims, damages, costs and expenses.

*When the properties of licensee are not removed from the lands in time*

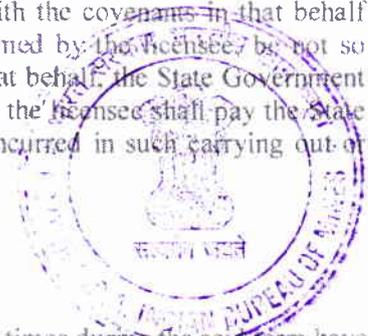
- 3) If any building, structures, plants, engines, machinery implements, utensils or other property or effects or any minerals which ought to be removed by the licensee from the said lands, in accordance with the covenant in that behalf hereinbefore contained be not so removed within one calendar month after notice in writing requiring their removal shall have been given to the licensee by the State Government and may be sold or disposed of for the benefit of the State Government in such manner as the State government shall deem fit, without any liability to pay any compensation to account to licensee in respect thereof.

*Licensee / licensees to pay for work done on his behalf*

- 4) If any of the works or matters which in accordance with the covenants in that behalf hereinbefore contained are to be carried out or performed by the licensee; but not so carried out or performed within the time specified in that behalf, the State Government may cause the same to be carried out or performed and the licensee shall pay the State Government on demand all expenses which shall be incurred in such carrying out or performance of the same.

*Right of pre-emption*

- 5) (a) The State Government shall from time to time and at all times during the said term have the right (to be exercised by notice in writing to the licensee) of pre-emption of the said minerals (and / all products thereof) lying in or upon the said lands or elsewhere under the control of the licensee and the licensee shall with all possible expedition deliver all minerals or products or minerals purchased by the State Government under the power conferred by this provision in the quantities at the time in the manner and at the place specified in the notice exercising the said right.
- b) Should the right of pre-emption conferred by this present provision be exercised and a vessel chartered to carry the minerals or products thereof procured on behalf of the State Government or the Central Government be detained on demurrage according to the terms of the charter party of such vessel unless the State Government shall be satisfied that the delay issue to cause beyond the control of the licensee.
- c) The price to be paid for all minerals or products of minerals taken in pre-emption by the State Government in exercise of the right hereby conferred shall be the fair market prevailing at the time of pre-emption. PROVIDED THAT in order to assist in arriving at the said fair market price the licensee shall if so required furnish to the State



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Government for the confidential information of the Government, particulars of the quantities, descriptions and prices of the said mineral or products thereof sold to other customers and of charters entered into for freight for carriage of the two and shall produce such to officer or officers as may be directed by the State Government original or authenticated copies of contracts and charter parties entered into for the sale of freightage of such minerals or products.

- d) In the events of the existence of a state of war or emergency (of which existence the President of India shall be the sole judge and a notification to this effect in the Gazette of India shall be conclusive proof) the State Government with the consent of the Central Government shall from time to time and at all times during the said term have the right (to be exercised by a notice in writing to the licensee) forthwith take possession and control of the works, plant, machinery and premises of the licensee on or in connection with the said lands or the operations under this licence and during such possession or control, the licensee shall conform to and obey all directions given by or on behalf of the Central or State Government regarding the use of employment of such works, plants, premises and minerals, PROVIDED THAT fair compensation, which shall be determined in default of agreement by the State Government shall be paid to the licensee for all loss or damage sustained by him by reason or in consequence of the exercise of such power shall not determine the said term hereby granted or effect the terms and provisions of these presents further than may be necessary to give effect to the provisions of this clause.

**PART-IV**  
**Rights of licensee / licensees**

It is hereby agreed as follows:-

***Transfer of licence and fee payable***

- (1) During the subsistence of this licence or of any renewal thereof the licensee may, with the previous sanction of the State Government, Transfer his/ their licence or any right, title or interest therein to a person who has filed an affidavit stating that he has filed up-to-date income tax returns, paid income tax assessed on him and paid the income tax on the basis of self-assessment as provided in the income Tax Act, 1961 (43 of 1961), on payment of a fee of five hundred rupees. Provided that the State Government shall not give its sanction unless-
  - (i) The licensee has furnished an affidavit along with his application for transfer of the prospecting licence specifying therein the amount that he has already taken or propose to take as consideration from the transferee;
  - (ii) The transfer of the prospecting licence is to be made to a person or body directly undertaking prospecting operations.

***Renewal of Prospecting Licence***

- (2) If the licensee be desirous of taking a renewal licence of the premises hereby demised or of any parts of that for a further term from the expiration of the term hereby granted and is otherwise eligible, he shall apply to the State Government for renewal at least prior to the date of expiration of the term of license under these covenants and shall pay the rents and royalties hereby reserved and shall observe and perform the several covenants and agreements herein contained and on the part of licensee to be observed



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Jaintia Hills District,  
Jowai.

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and performed application for renewal shall consider it in accordance with relevant sections of the Act and relevant rules of the Mineral Concession Rules, 1960 and shall pass such orders as it may deem fit. If renewal is granted the State Government will at the expense of the licensee and upon his executing and delivering to the State Government, if required, the counterpart thereof, execute and deliver to the licensee the renewal licence of the said premises or to such rates and royalties and on the such terms and subject to such covenants and agreements including this present covenant be renewed and shall in accordance with the Mineral Concession Rules, 1960 applicable to **Limestone** (names of minerals) on the day next following the expiration of the term hereby granted.

***Preferential right of the licensee / licensees for obtaining mining lease***

- (3) On or before the determination of the licence or any renewal thereof, the licensee shall have a preferential right for obtaining a mining lease in respect of whole or part of that land over any other person, provided that the State Government is satisfied that the licensee has not committed any breach of the terms and conditions of the Prospecting licence. [has undertaken prospecting operations to establish mineral resources in such land] and is otherwise a fit person for being granted the mining lease.
- (3-A) If the application for renewal of the prospecting licence made in accordance with the rules is not disposed of by the State Government before the expiry of the licence, the licence shall be deemed to have been renewed for a period [ ~~not exceeding~~ the period prescribed for the renewal of prospecting licence under sub-section (2) of section 7, of the Act or the period for which the application is made, whichever is less.

***Extension of period of Prospecting licence***

- (4) If the licensee before the determination of this licence or of any renewal thereof applies for the grant of a mining lease over the whole or any part of the said lands, the period of this licence shall be further extended over that part of the said lands, until his application for mining lease is disposed of or deemed to have been refused under sub-rule (1) or sub-rule (3), as the case may be, of rule 24 of the Mineral Concession rules, 1960, or any other law in force. No fee shall be payable in respect of any period so extended.

***Refund of deposit***

- (5) On such date within six calendar months after the determination of this licence or of any renewal thereof, as the State Government shall elect compliance by the licensee of rule 16 of Mineral Concession Rules, 1960, the amount then remaining in deposit with the State Government and not required to be applied to any of the purposes in Part-III of these presents mentioned, shall be refunded to the licensee or if the licensee shall have obtained a mining lease over the said lands or any portion thereof, be retained at the credit of the licensee on account of the fees, rents and royalties to become payable under such lease. The amount shall in no case carry any interest whatsoever.

Gement Manufacturing Co. Ltd.  
 Authorized Signatory.

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Deputy Commissioner  
 Jaitle Hills District,  
 Jowal.

**PART-V**  
**General Provisions**

It is lastly agreed as follows:-

***Acquisition of land and compensation thereof***

- (1) If after the receipt of an offer of compensation for any damage which is likely to arise from the proposal operation of the licensee, the occupier of the surface of any part of the said lands shall refuse his consent to the exercise of the rights and powers reserved to the State Government and granted by this licence, the licensee shall report the matter to the State Government and shall deposit with it the amount offered as compensation and if the State Government is satisfied that the amount of compensation is reasonable or if it is not so satisfied and the licensee / licensees shall have deposited with it such further amount as the State Government may consider reasonable, the State Government shall order the occupier to allow the licensee to enter upon the said land and carry out such operations as may be necessary for the purpose of the licence. In assessing the amount of such compensation the State government shall be guided by the principles of the Land Acquisition Act.

***Delay in fulfillment of the term of licence due to force majeure***

- (2) Failure on the part of the licensee to fulfill any of the terms and conditions of this licence shall not give the State Government any claim against him or he deemed a breach of the licence in so far as such failure is considered by the State Government to arise from force majeure. If the fulfillment of the licensee of any of the terms and conditions of this licence be delayed from force majeure, the period of such delay shall be added to the period fixed by this licence.

The expression force majeure means act of God, war, insurrection, riot, civil commotion, strike, tide, tidal wave, storm, flood, lightning, explosion, fire, earthquake and any other happening which the licensee could not reasonably prevent or control.

***Service of notices***

- (3) Every notice required to be given to the licensee shall be given in writing to such person as the licensee may appoint for the purpose of receiving such notices or if no such appointment is made then the notice shall be sent to the licensee by registered post addressed to him at the address shown in his application for the licence or at such other address in India as he / they designate from time to time and every such service shall be deemed to be proper and valid service upon the licensee and shall not be questioned or challenged by him.

***Discovery of new minerals***

- (4) The licensee shall report to the State Government the discovery of any mineral not specified in the licence within a period of sixty days from the date of such discovery and shall not undertake any prospecting operations in respect of such mineral unless such mineral is included in the licence

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Jaintia Hills District,  
Jowai

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***Immunity of State Government from liability to pay compensation***

- (5) If in any event the orders of the State Government are revised, reviewed or cancelled by the Central Government in pursuance under Chapter VII of the Mineral Concession Rules, 1960, the licensee / licensees shall not be entitled to compensation for any loss sustained by the licensee / licensees in exercise of the powers and privileges conferred upon him / them by these presents.
- (6) The licence deed is executed at **Jowai, Jaintia Hills District, Meghalaya** (Name of the State) and subject to the provision of article 226 of the Constitution of India it is hereby agreed upon by the licensee and the State Government that in the event of any dispute in relation to the area under prospecting licence condition of the licence deed and in respect of all matters touching the relationship of the licensee and the State Government, suits of petitions shall be filed in civil courts at **Jowai** (Name of the city) and it is hereby expressly agreed that neither party shall file a suit or appeal or bring any actions at any place other than the courts named above.

IN WITNESS WHEREOF these presents have been executed in the manner hereunder appearing the day and year first above written.

**Schedule – A**

The land covered by the licence. The land under Prospecting licence is as per schedule mentioned herein below:

**Plan drawn to scale with bearing and distance of the corner points of the area for P.L. with respect to 129 Km stone on N.H. – 44 is enclosed.**

**The area is marked by ABCDEFGHIJKLMNOPQRSTUVWXYZ0 And hatched.**

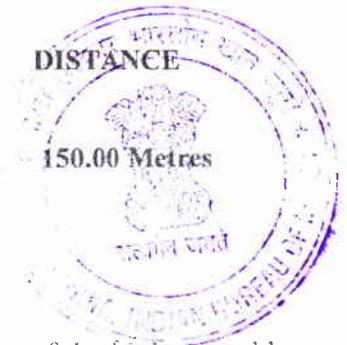
LINE – FROM	TO	DIRECTION	DISTANCE
129 Km. Stone	B	129° 30'	150.00 Metres
Total area ABCDEFGHIJKLMNOPQRSTUVWXYZ0 = 13.58 hectares			

**Schedule – B**

The Prospecting fee is **Rs. 10/- (Rupees Ten only)** per hectare per year of the land covered by the licence and this amount has to be paid in advance in appropriate State Government Account vide Treasury Challan.

**Schedule – C****Royalty**

- Rate of Royalty on Minerals shall be in accordance with the 2<sup>nd</sup> schedule of the Act.
- The licensee shall pay in advance the amount of Royalty on the quantity of Limestone intended to be removed exceeding the quantity of 50 (Fifty) tonnes prescribed in Schedule-III of the said Rules. The amount of Royalty shall have to be deposited in appropriate State Government Account vide Treasury Challan.



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Cement  
ALL MINERAL SIGNATORY

Deputy Commissioner  
Jaintia Hills District,  
Jowai.

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*[Handwritten Signature]*  
Deputy Commissioner  
Jaintia Hills District,

Signed by:  
For and on behalf of the Governor of Meghalaya

In presence of:

*[Handwritten Signature]*  
2015  
*[Handwritten Signature]*

Signed by:  
For and on behalf of the Licensee

Company: *[Handwritten Name]* Co. Ltd.

*[Handwritten Signature]*  
Authorized Signatory

In presence:

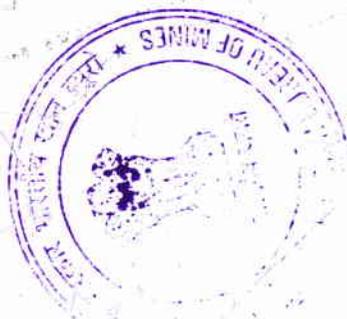


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STN NO	DISTANCE	BEARING
L-N	27.40	141.0
M-N	17.90	27.5
N-O	180.15	242.0
O-P	42.55	171.0
P-Q	56.00	135.0
Q-R	62.70	170.0
R-S	35.85	234.10
S-T	15.70	181.0
T-U	26.15	111.0
U-V	42.00	261.0
V-W	22.00	207.0
W-X	56.00	313.0
X-Y	120.85	260.0

STN NO	DISTANCE	BEARING
O-A	28.15	350.0
A-B	49.30	255.0
B-C	21.20	331.30
C-D	54.10	62.0
D-E	107.10	145.0
E-F	28.90	57.30
F-G	600.10	45.0
G-H	21.35	137.30
H-I	113.00	100.0
I-J	38.00	160.30
J-K	22.90	6.0
K-L	19.10	145.0



**APPROVED**

REFERENCES

ROAD  
KALLA

PROSPECTING LICENCE AREA

REFERENCE BEARING FROM 2994 STONE TO STATION B IS 29.00 & THE DISTANCE FOR THE SAME IS 1500M

INDEX



4-94



**REMOVED**  
**REMOVED**

State Bank of India  
State Bank of India  
State Bank of India  
State Bank of India

as a Deposit negotiable at call.  
which is placed to  
Bank of India  
the sum of  
of  
on 21/11/19

STATE BANK OF INDIA  
STATE BANK OF INDIA

Handwritten initials and a stamp.

DEPOSIT AT CALL

NOT-TRANSFERABLE

NO. J 521102

NO OBJECTION CERTIFICATE

The Executive Committee, Jaintia Hills Autonomous District Council, Jowai after due consideration of the application No. CMCU/JADC/1506/04-05 Dt. 15.6.04 of Cement Manufacturing Co., Ltd. Lumsinong is pleased to grant this No Objection Certificate to the Company for carrying out prospecting and mining of Limestone, Shale and Clay over an area of 1.5 sq.km. out of the total of 563.09 Hap. of Land within Lumsinong village Jaintia Hills District under the following terms and conditions.

1. That the Company shall strictly observe and adhere to the conditions laid down in the N.O.C. No. JHADC/FOI/2/2003 Dt. 10.5.03.
2. That the N.O.C. shall relate only in respect of the area specified above and no additional lands shall be included without the knowledge and consent of this Council.
3. That the Numbers and size of trees required to be felled down during the process of operation should be reported to the Chief Forest Officer, Jaintia Hills Autonomous District Council, Jowai for necessary action.
4. That the Company or Land Owners shall have to obtain the permission and N.O.C. for the transfer of the Land from the District Council.
5. That the Company shall have to plan and implement long term requirements of environmental safety and to give direction and co-ordinate a system of speedy and adequate response to emergency threatening the environment.
6. That this N.O.C. shall be valid for a period of \_\_\_\_\_ with effect from the date of issue and shall expire on the expiry of the term.

Secretary, Executive  
Jaintia Hills Autonomous District Council



MEMO NO. JHADC/FOI/2/2003 Dated Jowai, the \_\_\_\_\_

Copy distributed to:-

1. \_\_\_\_\_, Jaintia Hills Autonomous District Council, Jowai
2. \_\_\_\_\_, Cement Manufacturing Co., Ltd. Lumsinong

Secretary, Executive  
Jaintia Hills Autonomous District Council, Jowai

**APPROVE**

# CEMENTS MANUFACTURING CO. LTD.

Regd. Office and Works: Lumshnong, P.O. Khliehriat, Dist. Jaintia Hills, Meghalaya.

ANNEXURE-XVII

Ref: CMCI/Mines/2006-07

Dated: - 26<sup>th</sup> May 2006

To

The Controller General  
Indian Bureau of Mines,  
Govt., of India  
Indira Bhavan, Civil lines  
Nagpur - 440 001

Sub: Submission of Scheme of Prospecting as per Rule 4(1) of Minerals Conservation & Development Rules - 1988.

Dear Sir,

We have been granted a Prospecting licence for Limestone over an area of **13.58 hectares** in Lumshnong Village, Jaintia Hills District, Meghalaya, vide No. 109/2005/88, dated 30th March 2006 for establishing, a captive source of limestone for our Cement plant. The Prospecting Licence has been executed on 22<sup>nd</sup> May 2006.

A Scheme of Prospecting as required under Rule 4(1) of Minerals Conservation & Development Rules - 1988 is enclosed herewith for your kind perusal.

Thanking you

Yours Faithfully

For Cements Manufacturing Co. Ltd



(Lilamoy Das)

D.G.M., Mines

cc: The Regional Controller of Mines,  
Indian Bureau of Mines,  
Office of the Regional Controller of Mines,  
Plot No-13, Block- CP, Sector-V,  
Salt Lake City, Kolkata- 700 091.

The Director,  
Directorate of Minerals Resources  
Risa Colony, Shillong



RECEIVED  
26/5/06  
APPROVED

For kind information

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## Scheme of Prospecting

### 1.0 Introduction:

1.1 M/s Cement Manufacturing Co. Ltd. (CMCL) has been granted Licence for setting up a 900 tpd cement plant at Lumshnong, Jaintia Hills District, under single window clearance by the Govt. of Meghalaya. For sustained supply of limestone, the main raw material for the cement plant and to meet the requirement for future expansion, CMCL has been granted Prospecting Licence over an area of **13.58 hectares**, vide order No. 109/2005/88, dated 20<sup>th</sup> March 2006 from Govt. of Meghalaya. The Prospecting Licence was executed on 22<sup>nd</sup> May 2006.

1.1 A scheme of prospecting prepared as per Rule 4 of Mineral Conservation and Development Rules, 1988 and is presented in the following paras. The prospecting operations however will be started in the areas for which Letters of consent from landowners have already been obtained and submitted to Directorate of Mineral Resources (DMR), Govt. of Meghalaya.

### 2.0 Particulars of the area:

2.1 **Location:** The area granted under Prospecting Licence falls in Lumshnong village and is on the eastern side of Shillong-Silchar section of National Highway-44. The area can be approached from 129km stone on NH-44 and a PWD road leading to Khaddum Village. Location plan of the area of Prospecting Licence granted is enclosed.

The area falls in survey of India Toposheet No.83 C/W. Lumshnong village is located at N25°10'16" latitude and E92°22'52". Lumshnong is 65 Kms. from Jowai, the district headquarter and 125 Kms. by road from Shillong, the state capital. Badarpur the nearest railhead on Lumding –Kumar Ghat / Silchar M.G section of NEF railway is 85 Kms.

2.2 **Physiography and Drainage:** The prospect is in the form of a ridge extending in E-W direction. The ridge slopes gently towards North and steeply sloping towards South. The regional topography is sloping towards south and southeast.

The area is drained by number of streams flowing into Umsoh River, flowing west to east which merges into Lunar River, flowing north to south. Lunar joins into a major river named Lubha River, which flows south and south west direction and drains into Bangladesh.

### 3.0 Scale of the plan and area for Geological Mapping:

3.1 **Topographic plan:** It is proposed to prepare a topographic plan of the prospect in 1:1000 scales with 3 (Three) meter contour interval showing Physiography, surface features etc.

3.2 **Geological Map:** Geological Map will be prepared showing all the geological features like lithological units, dip & strike, outcrop area and other structural features on the topographic plan prepared on 1:1000 scale.

**4.0 Pits, trenches and boreholes proposed in the area:**

4.1 Four boreholes are proposed to be drilled in the area to establish quality, quantity and various other parameters. Trenches will be made to supplement geological mapping and boreholes data to established lithological contacts in the field. The location of boreholes, depth of each boreholes etc. will be assessed on completion of topographic survey and geological mapping.

**5.0 Particulars of machines to be used:**

5.1 Topographic survey, Geological mapping, surface sampling, pitting and trenching will be carried out by the Company's own resources of equipment and manpower. For topographic survey the following survey instruments will be used.

- |                           |   |     |
|---------------------------|---|-----|
| 1. Vernier Theodolite 20" | - | Two |
| 2. Prismatic Compass      | - | One |

5.2 For detailed exploration by diamond core drilling, outside agencies will be engaged. The boreholes will be drilled by deploying hydraulic drills, with necessary equipments like triplex pressure pumps, drill accessories, water supply pumps etc

**6.0 Details of exploratory mining:** Will be considered based on data generated from field and boreholes.

**7.0 Number of samples proposed to be drawn and analyzed:**

7.1 **Samples to be drawn:** The generation of surface and borehole core samples can be assessed on completion of topographic survey and geological mapping.

Tentative number of samples to be drawn is as under.

- |                     |   |          |
|---------------------|---|----------|
| (a) Surface samples | - | 30 Nos.  |
| (b) Core samples    | - | 160 Nos. |

7.2 **Analysis:** All the limestone samples will be analyzed initially for CaO and MgO. Composite core samples representing approximately three meters thickness will be analyzed for six major radicals (CaO, MgO, SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, Fe<sub>2</sub>O<sub>3</sub> and LOI). Ten percent of the Composite samples will be analyzed for 9 radicals (6 major radicals and 3 Minor radicals i.e., Na<sub>2</sub>O, K<sub>2</sub>O & SO<sub>3</sub>).

**8.0 Beneficiation studies:** Not proposed at present.

**9.0 Baseline Information:**

9.1 The preliminary baseline data of the area available from various sources is given in the following paras. Detailed baseline information will be collected/generated for the core and buffer zones while the prospecting operations are in progress.



**APPROVE**

9.2 **Land use pattern:** The land holding rights over the prospect area and in the Village are held by private Individuals.

Jhum (shifting) Cultivation is the normal practice adopted in the area for seasonal crops .The seasonal crops are mainly maize, rice, potato, ginger etc. Orchards of orange, lemon, papaya, betel nut, etc are the most commonly grown varieties in the area. Orchards cover larger area followed by seasonal crops including cultivation of pine apple. Inter - crop cultivation is also a prevalent practice in the area. Exact enumeration of land use pattern will be generated.

9.3 **Water regime:** The area is interspersed with some streams/nallas. All the streams / nallas in the area drain into Lubha River, flowing south and southwest direction and drains into Bangladesh.

9.4 **Quality of air and water:** The area is located far away from major industrial belts .The ambient air and water quality will be well within stipulated pollution levels.

9.5 **Meteorological Information:** The climate experienced in the area is warm and humid.

a) **Rainfall:** The area experiences heavy rainfall spreading over a period from April to October. Maximum rainfall is during the months of June and July. November and December are mostly dry months. The rainfall recorded at project site from June 2003 to May 2004 is 4587 mm with 181 rainy days.

b) **Temperature and humidity:** The average maximum and minimum temperatures range from 24° C to 33°C and 9° to 23° C respectively. The average maximum and minimum humidity levels vary from 73 to 88 % and 36 to 55 % respectively.

9.6 The prospecting operations do not involve any activity which results in increasing the pollution levels of air, water, noise, etc.

9.7 **Infrastructure Facilities:** The infrastructure facilities available in the area are poor. Khliehriat, the Sub-divisional HQ located at 35 Kms. is the nearest place with basic infrastructure facilities like Educational institutions, hospitals, markets, workshops, etc.

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# CEMENTS MANUFACTURING CO. LTD. o/c

Regd. Office and Works: Lumshnong, P.O. Khliehriat, Dist. Jaintia Hills, Meghalaya.

REGISTERED POST

**ANNEXURE - XVII (A)**

Ref: CMCL/Mines/2006-07

Dated: 5<sup>th</sup> June 2006

To,  
The Controller General,  
Indian Bureau of Mines,  
Indira Bhawan, Civil Lines,  
Nagpur - 440 001, Maharashtra.

**Sub: Notice of Commencement of Prospecting Operations as per Rule 7 of Mineral Conservation & Development Rules, 1988 over an area of 13.58 Ha. at Lumshnong village, Jaintia Hills District, Meghalaya.**

Dear Sir,

We have been granted a Prospecting licence for Limestone over an area of **13.58 hectares** in Lumshnong Village, Jaintia Hills District, Meghalaya, vide No. 109/2005/88, dated 30<sup>th</sup> March 2006 for establishing a captive source of limestone for our Cement plant. The Prospecting Licence has been executed on 22<sup>nd</sup> May 2006. We have started Prospecting Operation from 1<sup>st</sup> June 2006.

A Notice of Commencement of Prospecting Operations in Form-A as required under Rule 7 of Mineral Conservation & Development rules, 1988 is enclosed herewith for your kind perusal.

Thanking you,

Yours faithfully

*For M/s Cement Manufacturing Co. Ltd*



(Lilamoy Das)  
D.G.M. (Mines)

- Cc:**
- 1. The Controller of Mines (CZ),**  
Indian Bureau of Mines,  
Indira Bhawan, Civil Lines, Nagpur - 440 001 .
  - 2. The Regional Controller of Mines,**  
Indian Bureau of Mines.  
Plot No.-13, Block-CP, Sector-V,  
Salt Lake City, Kolkata - 700 091
  - 3. The Director,**  
Directorate of Mineral Resources,  
Risa Colony, Shillong - 792 002, Meghalaya.



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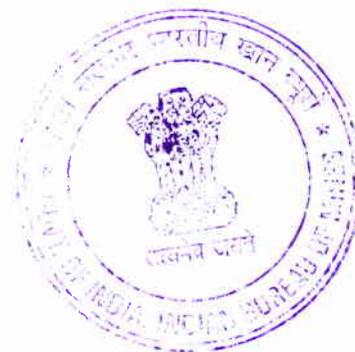
**"SCHEDULE"**  
**FORM-A**  
**(Notice of commencement of Prospecting Operations)**  
**(See rule 7)**

**IMPORTANT**

*This Form, duly filled in must reach the concerned authorities within fifteen days of the commencement of prospecting operations.*

To

1. The Controller General  
Indian Bureau of Mines, Nagpur - 440 001
- \*2. The Controller of Mines (CZ),  
Indian Bureau of Mines, PIN - 440 001
- \*3. The Regional Controller of Mines,  
Indian Bureau of Mines, PIN - 700 091
4. State Government concerned.



- |   |  |
|---|--|
| <p>1. <i>Name of the minerals for which prospecting licence has been granted</i></p> <p>2. <i>Name and address of the licensee</i></p> <p>3. <i>In case the licensee is a Company or Partnership Firm or Co-operative, please indicate.</i></p> <p>(i) Name and address of the Director-in-charge</p> <p>(ii) Address of the Registered Office</p> <p>4. <i>Particulars of Prospecting Licence (PL):</i></p> <p>(i) Date of execution</p> <p>(ii) Period 'Two (2) years, from'</p> <p>(iii) Area under licence</p> <p>5. <i>Location of the Prospecting Licenced Area:</i></p> <p>(i) Topo Sheet Number</p> <p>(ii) Cadastral Survey or Khasra Number</p> <p>(iii) Village</p> <p>(iv) (a) Post Office</p> <p style="padding-left: 20px;">(b) Police Station</p> <p>(v) (a) Taluka</p> <p style="padding-left: 20px;">(b) District</p> <p style="padding-left: 20px;">(c) State</p> <p>(vi) (a) Nearest Railway Station</p> | <p>Limestone</p> <p>M/s Cements Manufacturing Co. Ltd<br/>Village- Lumshnong, P.O. Khliehriat,<br/>Jaintia Hills District.<br/>Meghalaya - 793 200</p> <p>Shri Devender Bansal<br/>Village- Lumshnong,<br/>P.O. Khliehriat, Jaintia Hills District.<br/>Meghalaya - 793 200</p> <p>Village- Lumshnong,<br/>P.O. Khliehriat, Jaintia Hills District.<br/>Meghalaya - 793 200</p> <p>22<sup>th</sup> May 2006</p> <p>22<sup>th</sup> May 2006 to 21<sup>st</sup> May 2008</p> <p>13.58 hectares.</p> <p>83 C/W</p> <p>Not Available</p> <p>Lumshnong</p> <p>Khliehriat</p> <p>Khliehriat</p> <p>Khliehriat</p> <p>Jaintia Hills</p> <p>Meghalaya</p> <p>Badarpur</p> |
|---|--|

**APPROVED**

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- (b) The distance there from 85 Km.
- (vii) (a) Nearest Rest House/Dak Bangalow Khliehriat
- (b) Its distance from
- (1) The Railway Station (kilometres) 115 Km.
- (2) The prospecting area (kilometres) 30 Km.
6. *Particulars of Geologist or Mining Engineers employed for the Prospecting Licenced area:*
- (i) Name and address: Sh. Lillamoy Das  
Cements Manufacturing Co. Ltd  
Lumshnong Village,  
Jaintia Hills District. Meghalaya.
- (ii) Qualifications B.E. (Mining) (FCC, restricted)
- (iii) Date of appointment 2<sup>nd</sup> June 2005
- (iv) Nature of appointment Whole time (✓) Part time ( )  
(Please tick (✓) mark one of the boxes whichever is applicable). Whole Time
7. *Date of commencement of prospecting operations* 1<sup>st</sup> June 2006

Place: Lumshnong  
Date: 5<sup>th</sup> June 2005

Signature:



Name in full : Sh. Lillamoy Das  
Designation : Mining Engineer



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## CEMENT MANUFACTURING CO. LTD.

Registered Office & Works : Lumshnong, P.O. Khaliehriat, Dist. Jaintia Hills, Meghalaya. Pin. 793200.  
Tel. No. : 03655-278215/16/17/18, Fax. No. 03655-278217. E-mail : lumshnong@yahoo.co.in.

Ref : CMCL/mines/IBM/PL-FB/2007-08/

Regd Post  
L.D.

Date : 07.04.07

TO,

The Controller General,  
Indian Bureau of Mines,  
Indira Bhavan, 8<sup>th</sup> floor, Civil Lines,  
Nagpur - 440001,  
Maharashtra.

Sub: Yearly Report of the Prospecting Operations carried out in Form -B under MCDR.

Dear Sir,

Kindly find enclosed the yearly report of Prospecting Operation in Form - B under MCDR completed in all respect. Hope you will find this in order.

Thanking You

Yours Faithfully

For Cement Manufacturing Co. Ltd.

L. Das

(L.Das)

DGM, Mines

Enc : a/a

APPROVED  
DGM, Mines



01. The Controller of Mines, North East Region, Nagpur

02. The Regional Controller, Kolkata.

03. The Director Of Mineral Resources, Shillong.

Offices :

- : - Delhi : 281, Deepali Apartments, Pritampura, New Delhi- 110 034 . Ph. No.- 2448 4169, 2448 4170.
- : - Kolkata : Satyam Towers, 1<sup>st</sup> Floor, Flat- 9B, 3 Alipur Road, Kolkata-700 027, Ph. No- 24484169,24484170.
- : - Guwahati : Mayur Garden, G.S. Road, Guwahati -781 005: Ph. No.- 2462215/16/17; guwahati@cmcl.co.in

01e

**FORM-B**

**(Yearly Report of the Prospecting Operations carried out)**

[See rule B (1)(b) and B (2)]

To

IMPORTANT

This Form, duly filled in must reach the concerned authorities within thirty days after expiration of one year from the date of execution of prospecting licence or the expiry of prospecting licence or abandonment of prospecting operations, whichever is earlier.

1. The Controller General  
Indian Bureau of Mines,  
Nagpur - 440 001

2. The Controller of Mines,  
Indian Bureau of Mines  
PIN - 440001

3. The Reg. Controller Mines  
Indian Bureau of Mines  
PIN - 700091

4. State Government concerned.

1. Name of the mineral s for which  
Prospecting licence has been granted.

(a) Limestone (c) \_\_\_\_\_  
(b) \_\_\_\_\_ (d) \_\_\_\_\_

2. Name and address of the licensee

M/s Cement Manufacturing Co. Ltd.  
Lumshnong Village  
P.O. Khliehriat Distt Jaintia Hills  
Meghalaya, PIN: 793200

3. Particulars of Prospecting Licence (PL):

Area, 13.58 Hectares

(i) Date of execution: 22.05.2006

(ii) Period Two years, from 20.03.2006 to 21.05.2008

(iii) Area under Licence 13.58 hectares.

(iv) Number and date assigned by State Government to  
Prospecting Licence. (13.58 Hectares)

(a) Number MG.109/2005/88  
(b) Date 20<sup>th</sup> March 2006

4. Location of the Prospecting Licenced Area: \_\_\_\_\_

(i) Topo Sheet Number 83 C/W

(ii) Cadastral Survey or Khasra Number Not available

(iii) Village Lumshnong

(iv) (a) Taluka Khliehriat

(b) District Jaintia Hills

(c) State Meghalaya

5. Particulars of Geologist or Mining Engineer  
employed for the Prospecting Licenced area:

(i) Name and address:

L.Das  
M/s. CMCL. Lumshnong  
Jantia Hills dist. PIN: 793 200

(ii) Qualifications B.E Mining, 1<sup>st</sup> class mines Manager(R)

(iii) Date of appointment 2<sup>nd</sup> June 2005

(iv) Nature of appointment Whole time (  ) Part time (  )

(Please tick mark one of the boxes whichever is applicable).



The Report shall contain the borehole logs and interpretation and the inferences drawn as a result of the study of the geology of the area and the interpretation of the borehole cores, pits, trenches, assay data, reserves of ore and contain results of complete analysis of at least two representative samples of ore and the blocks proposed for mining operations. The report shall also contain the results of any beneficiation study carried out on the ores or minerals of the area.

Place: Lumshnong.  
Date: 07.04.2007

Signature : 

Name in full: L.Das  
Designation: DGM, Mines.

---

This should be sent to the Controller of Mines/Regional Controller of Mines in whose territorial jurisdiction the area/mine falls as notified from time to time by the Controller General, Indian Bureau of Mines, under rule 62 of the Mineral Conservation and Development Rules, 1988.

**TEST REPORT**

Issued To : CEMENT MANUFACTURING CO LTD. LUMSHNONG VILLAGE EAST JAINTHIA HILLS DIST. MEGHALAYA-793210	Report No.: 120828007/1208280011	Date: 29-Aug-2012 DOR 28-Aug-2012
Phone/Fax: 09612168304 Kind Attn: MR.M.P.SINGH	Sample Description : COMPOSITE LIMESTONE SAMPLE/BH-05/WAH-PYNKON/01	
Your Ref. No. :	CMCL/13.58HA/SALL/2012-13, DT. 23-08-2012	

**ID No - 1208280011**

*Composite Sample of lime Stone from Cement manufacturing Company Ltd- Wah Pynkon Lime Stone Deposit of 13.58 hectares, Lumshnong, Jaintia Hills, Meghalaya.*

Sample No -- Composite Surface Lime Stone Samples / Wah Pynkon-01

**Chemical Composition :**

Silica ( as SiO <sub>2</sub> )	-	6.58 %
Alumina ( as Al <sub>2</sub> O <sub>3</sub> )	-	4.56 %
Iron oxide ( as Fe <sub>2</sub> O <sub>3</sub> )	-	4.88 %
Calcium oxide ( as CaO)	-	42.9 %
Magnesia ( as MgO)	-	2.68 %
Loss on Ignition	-	36.77 %

Note: Sample not drawn by us.  
Protocol : IS : 1760 : XRF Spectrometer



**PROVE**

*[Signature]*  
Analyst

COD-KKM/3/RA000/A6742



*[Signature]*

Authorised Signatory

**TRA- 120316**

NABL accredited, BIS, DGS & D, DDA, MOEF, DGCA approved,  
ISO - 9001: 2008 & ISO 14001 : 2004 Certified Laboratory  
Subject to Terms & Conditions Overleaf

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**TEST REPORT**

Issued To: CEMENT MANUFACTURING CO LTD.  
LUMSHONG VILLAGE  
EAST JAINZIA HILLS DIST.

Report No.: 120828007/1208280012  
Sample Description :  
COMPOSITE LIMESTONE SAMPLE/BH-06/VAH-PYNKON/01

Date: 29-Aug-2012  
DOR: 28-Aug-2012

MEGHALAYA-793210

Phone/Fax: 09612166304  
Kind Attn: MR M P SINGH

Your Ref No.: CMCL/13.58HA/SALL/2012-13, DT. 23-08-2012

*ID No - 1208280012*

*Composite Sample of lime Stone from Cement manufacturing Company  
Ltd- Wah Pynkon Lime Stone Deposit of 13.58 hectares, Lumshmong,  
Jaintia Hills, Meghalaya.*

*Sample No - Composite Surface Lime Stone Samples / Wah Pynkon-02*

**Chemical Composition :**

Silica ( as SiO <sub>2</sub> )	-	1.91 %
Alumina ( as Al <sub>2</sub> O <sub>3</sub> )	-	1.01 %
Iron oxide ( as Fe <sub>2</sub> O <sub>3</sub> )	-	0.92 %
Calcium oxide ( as CaO)	-	51.9 %
Magnesia ( as MgO)	-	1.21 %
Loss on Ignition	-	42.22 %



Note: Sample not drawn by us.  
Protocol : IS : 1760 / XRF Spectrometer

**APPROVED**

Analyst

COD:KXMM/IRAG0001A6742



Authorised Signatory

**TRA- 120315**

NABL accredited, BIS, DGS & D, DDA, MOEF, DGCA approved,  
ISO - 9001 : 2008 & ISO 14001 : 2004 Certified Laboratory  
Subject to Conditions Overleaf

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**TEST REPORT**

Issued To: CEMENT MANUFACTURING CO LTD.  
LUMSHNONG VILLAGE  
EAST JAINTIA HILLS DIST.

MEGHALAYA-793210

Phone/Fax: 09612168304  
Kind Attn.: MR.M.P.SINGH

Report No: 120828007/1208280013  
Sample Description:  
COMPOSITE LIMESTONE SAMPLE/BH-07/WAH-PYNKON01

Date: 29-Aug-2012  
DOR 28-Aug-2012

Your Ref. No.: CMCL/13.58HA/SALL/2012-13. DT. 23-08-2012

*ID No - 1208280013*

*Composite Sample of lime Stone from Cement manufacturing Company  
Ltd- Wah Pynkon Lime Stone Deposit of 13.58 hectares, Lumshnong,  
Jaintia Hills, Meghalaya.*

*Sample No - Composite Surface Lime Stone Samples / Wah Pynkon-03*

**Chemical Composition :**

Silica ( as SiO <sub>2</sub> )	-	5.49 %
Alumina ( as Al <sub>2</sub> O <sub>3</sub> )	-	3.59 %
Iron oxide ( as Fe <sub>2</sub> O <sub>3</sub> )	-	4.55 %
Calcium oxide ( as CaO )	-	44.8 %
Magnesia ( as MgO )	-	2.41 %
Loss on Ignition	-	37.94 %

*Note: Sample not drawn by us.  
Protocol : IS : 1769 / XRF Spectrometer*



**APPROVED**

Analyst

COO-KKM13/RA0301A6742



*[Handwritten Signature]*

Authorised Signatory

**TRA- 120313**

NABL accredited, BIS, DGS & D, DDA, MOEF, DGCA approved,  
ISO - 9001: 2008 & ISO 14001 : 2004 Certified Laboratory  
Subject to Terms & Conditions Overleaf

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**TEST REPORT**

Issued To: CEMENT MANUFACTURING CO LTD,  
LUMSHNONG VILLAGE  
EAST JAINTIA HILLS DIST.

MEGHALAYA-793210

Phone/Fax: 00612168304  
Kind Attn: MR.M.P.SINGH

Report No.: 120828007/1208280014

Sample Description:

COMPOSITE LIMESTONE SAMPLE: BH-08/WAH-PYNKON-01

Date: 29-Aug-2012

DOR: 28-Aug-2012

Your Ref. No.: CMCL/13.58HA/SALL/2012-13, DT. 23-06-2012

*ID No - 1208280014*

*Composite Sample of lime Stone from Cement manufacturing Company  
Ltd- Wah Pynkon Lime Stone Deposit of 13.58 hectares, Lumshnong,  
Jaintia Hills, Meghalaya.*

Sample No - Composite Surface Lime Stone Samples / Wah Pynkon-04

Chemical Composition :

Silica ( as SiO <sub>2</sub> )	-	5.23 %
Alumina ( as Al <sub>2</sub> O <sub>3</sub> )	-	3.52 %
Iron oxide ( as Fe <sub>2</sub> O <sub>3</sub> )	-	4.51 %
Calcium oxide ( as CaO )	-	45.1 %
Magnesia ( as MgO )	-	2.31 %
Loss on Ignition	-	38.22 %

Note: Sample not drawn by us.  
Protocol: IS: 1760 / XRF Spectrometer



Analyst  
CCO-KKM131R4000UA6742



23/08/12  
LUMSHNONG

Authorised Signatory

TRA- 120312

NABL accredited, BIS, DGS & D, DDA, MOEF, DGCA approved,  
ISO - 9001: 2008 & ISO 14001: 2004 Certified Laboratory  
Subject to Terms & Conditions Overleaf

A-108

## CEMENT MANUFACTURING COMPANY LTD.

**DECLARATION**

I, Shri Devender Bansal on behalf of M/s Cement Manufacturing Company Ltd. located at Lumshnong village, P.O.-Lumshnong, East Jaintia Hills District, Meghalaya hereby declare that in case of any change in the name, address/partnership etc., during the pendency of the approval of the Mining Plan of the Mining Lease for limestone over an area of 13.58 hectares at Wah-Pynkon, Lumshnong village, the same should be submitted to the concerned authority.

Place : Lumshnong

Date : 29<sup>th</sup> July, 2013

**Signature of the Lessee**

Name : Shri Devender Bansal

Designation : Nominated Mines Owner

STROVE



No. 7-33/2006-FC  
Government of India  
Ministry of Environment and Forests

Paryavaran Bhavan, CGO Complex,  
Lodhi Road, New Delhi  
Ph. No. 24362698; Tele/Fax No. 24363868  
Dated the 2<sup>nd</sup> February, 2007

To  
The Director,  
Archaeological Survey of India,  
Ministry of Culture,  
Government of India, Janpath,  
New Delhi-110001

Subject: Information regarding a notification of caves in the State of Meghalaya as per the various provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958.

Sir,

Following is the list of <sup>known</sup> caves formed in limestone deposits of Meghalaya:

1. Krem Kotsati
2. Krem Umlawan
3. Krem Liat Prah
4. Krem Synrang Pamiang
5. Krem Umthloo
6. Krem Chympe
7. Krem Shynrong Labit
8. Krem Umlawan Prah
9. Krem Labbit (Khaidong)
10. Krem Mawsmai - Cherrapunji

In connection with certain matter we require to know whether any of these caves have been declared as ancient monument, protected monument or monument of national importance as per the various provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958.

It is requested that the information may kindly be provided to us expeditiously.

Yours faithfully,

(Ansar Ahmed)

Inspector General of Forests

*Arjuna*

F. No. 33144/2007-M  
Government of India  
Archaeological Survey of India

Janpath, New Delhi.  
Dated: 9.4.2007

To

The Inspector General of Forests,  
Ministry of Environment and Forests,  
Parvathan Bhawan, CGO Complex,  
New Delhi.

Sub: Information regarding a notification of caves in the State of Meghalaya as per the various provisions of the Ancient Monuments and Archaeological Sites and Remains Act, 1958- reg.

This is with reference to your letter No. 7-33/2006-FC dated 2.2.2007 on the subject cited above. I am to inform that none of the Caves of Meghalaya as referred in your letter under reference are declared protected as a monument of national importance under the provisions of Ancient Monuments and Archaeological Sites and Remains Act, 1958. The list of centrally protected monuments in the State of Meghalaya is enclosed for ready reference.

Yours faithfully,

*[Signature]*  
Director (Monuments)  
For Director General

Encl: As above



*[Handwritten stamp]*  
RECEIVED  
2007/4/12

## 18. Manipur (Guwahati Circle)

Sl.No	Name of the monument / site	LOCATION	DISTRICT
1	Temple of Vishnu	Bishenpur	Bishnupur

## 19. Meghalaya (Guwahati Circle)

Sl.No	Name of the monument / site	LOCATION	DISTRICT
1.	Megalithic bridge on the Um-Nyekaneth	Between Jaraom and Syndai	Jaintia Hill
3.	Megalithic bridge known as Thulu-um-wi between Jowai and Jardin	Maput	Jaintia Hill
3.	Megalithic bridge on the Um-Kumbet	Near Syndai	Jaintia Hill
4.	Stone memorial of U.Mawthaw - dur-briew	Nartiang	Jaintia Hill
5.	Tank	Syndai	Jaintia Hill
6.	Stone memorial of U-Mawthow-dur	Bhol Country	East Khasi Hill
7.	Scott's Monument	Cherrapunji	East Khasi Hill
8.	Manipur memorial	Khasi and Jaintia Hill (Shilong)	East Khasi Hill

## 20. Nagaland (Guwahati Circle)

Sl.No	Name of the monument / site	LOCATION	DISTRICT
1.	Remains of a fort (Dimapur Ruins)	Dimapur	Kohima
2.	Memorials of Mr. G.H. Damout, Major Cook and Subedar Nurbar Sahi	Khenoma	Kohima
3.	Stone Cairn to the memory of Mr. Damot	Kohima	Kohima
4.	Lt. H. Forbe's Grave	Suchima	Kohima

RECEIVED  
17/10/2014



## OFFICE OF THE JAINTIA HILLS AUTONOMOUS DISTRICT COUNCIL: JOWAI

No. JHADC/FOR/2/2003/2556-59

Dated Jowai, the 20<sup>th</sup> July, 2011

To

The Managing Director  
Cement Manufacturing Co. Ltd.  
Lumshnong, Jaintia Hills District

Sub.: Renewal of No-Objection – Certificate for Mining Lease of Limestone over an area of 13.58 hectares at Wahpynkon in Lumshnong Village.

Ref.: Your application dated 05.05.2011.

Sir,

With reference to the subject cited above, I am to inform you that No-Objection-Certificate No. JHADC/FOR/2/2003/1701-03 dtd 12.09.2007 is hereby renewed for two years from the date of issue of this letter. The terms and conditions will remain the same.



Chief Forest Officer  
Jaintia Hills Autonomous District Council,  
Jowai.

Memo No. JHADC/FOR/2/2003/

Dated Jowai, the 20<sup>th</sup> July, 2011

Copy to:

1. Divisional Forest Officer (T) Jaintia Hills.
2. Assistant Forest Officer, Khliehriat Range
3. Range Officer, i/c Khliehriat Range

Chief Forest Officer  
Jaintia Hills Autonomous District Council,  
Jowai



OFFICE OF THE JAINTIA HILLS AUTONOMOUS DISTRICT COUNCIL, JOWAI.

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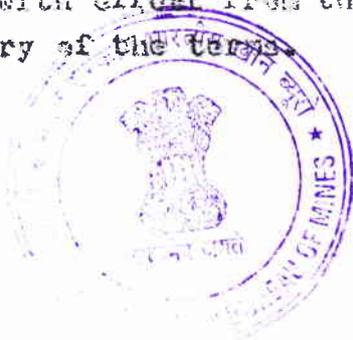
NO. JHASC/FOG/2/2003

Dated Jowai, the 12. Sept 2007.

NO OBJECTION CERTIFICATE.

The Executive Committee of Jaintia Hills Autonomous District Council, Jowai after due consideration of the application dt. 9.8.2007 of the Cement Manufacturing Company Limited, Lumsiang, is pleased to grant this No-objection Certificate to the Cement Manufacturing Company Ltd. for Mining lease in non Forest area of Nah pynken, Biaka Warpuh, measuring about 13.58 Hectares of Land within the area specified in the land holding Certificates No. 99 of 2003 and No. 4 of 1991, under the following terms and conditions.

1. That the company shall strictly observe and adhere to the condition laid down in the No-objection certificate No. JHASC/FOG/2/2003, dt. 10.9.2003.
2. That the N.O.C shall relate only in respect of the area specified in the land holding certificate No. 99 of 2003 & No. 04 of 1991 and no additional land shall be included without the knowledge and consent of this Council.
3. That the company shall not allot any mining or contract work to any non-tribal who do not possess a valid trading License issued by the Jaintia Hills Autonomous District Council, Jowai.
4. That this N.O.C shall be valid for a period of 2 (two) years only with effect from the date of issued and subject to renewal on the expiry of the term.



*Dalvi*  
Deputy Chief Forest Officer,  
Jaintia Hills Autonomous District  
Council, Jowai.

**APPROVED**

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Memo No. JHASC/FOG/2/2003/1701-3

Dated Jowai, the 12. Sept 2007.

Copy to :-

1. The Deputy Commissioner, Jaintia Hills District, Jowai.
2. The Managing Director Cement Manufacturing Company Ltd. Lumsiang.

*Dalvi*  
Deputy Chief Forest Officer,  
Jaintia Hills Autonomous District  
Council, Jowai.

A-114

**UNDERTAKING BY THE APPLICANT**

I, Shri Devender Bansal, Nominated Mines Owner on behalf of M/s Cement Manufacturing Company Ltd. at Lumshnong village, P.O.-Lumshnong, P.S. Khliehriat, District East Jaintia Hills, Meghalaya – 793 210, hereby undertake that, to ascertain the occurrence and assess exact dimension of the sub-surface voids/ cavities, DTH drilling will be done at closer spacing within the proposed working area. The DTH drilling will be started on approval of mining plan of Wah-Pynkon Limestone Mine over an area of 13.58 hectares and the same will be completed within one month. A detailed report of findings will be submitted and the production will be started after getting clearance from IBM.

Place : Lumshnong

Date : 10.11.2014

**Signature of the Lessee**

Name : Shri Devender Bansal

Designation : Nominated Mines Owner



**UNDERTAKING BY THE APPLICANT**

I, Shri Devender Bansal, Nominated Mines Owner on behalf of M/s Cement Manufacturing Company Ltd. at Lumshnong village, P.O.-Lumshnong, P.S. Khliehriat, District East Jaintia Hills, Meghalaya – 793210, hereby undertake that, we have applied for necessary permission from the competent authority for the transportation of ROM through National Highway No. 44 in respect of 13.58 hectares. After getting the permission we will submit the same up to 31.03. 2015 for the purpose.

Place : Lumshnong

Date : 25.11.2014

**Signature of the Lessee**

Name : Shri Devender Bansal

Designation : Nominated Mines Owner





भारतीय खनन विभाग  
BUREAU OF MINES