

CHAPTER-4

THE PROJECT

4.1 INTRODUCTION

Lafarge Surma Cement Ltd (LSC) proposes to set up a 1.2 MTPA integrated cement plant at Chattak in Bangladesh. For this purpose Lum Mawshun Minerals Pvt Ltd is to supply 2.0 MTPA limestone from its proposed Nongtraï limestone in Meghalaya. Additionally, in order to condition the limestone quality to enable cement production, shale would have to be mixed to render the raw material suitable. To this extent, shale is proposed to be mined over an area of 4.9 hectares of land.

4.2 MINING RESERVES

The details of mining reserves are reproduced in Table-4.1 below :

Table-4.1

**Details of Mining Reserves of Shale/Silt Stone
(Million Tonnes)**

Proven	8.51
Indicated	0.96
Inferred	0.96
Mineable Reserves	7.23

4.3 MINING PRODUCTION

The life of the mine is expected to be 10 years and the lease period, applied for 30 years. The production rate of mineral over the first five years of operation is reproduced in Table-4.2.

Table-4.2

Production Rate of Mineral

First Year	5,27,908.09 tonnes
Second year	2,34,574.25 tonnes
Third year	4,19,484.35 tonnes
Fourth year	4,03,440.72 tonnes
Fifth year	2,68,200.24 tonnes
Total	18,53,607.65 tonnes

4.4 MINE DETAILS

The minimum thickness of the top soil is 1.4 m, while the maximum thickness comes upto 2.45 m. The average top soil thickness is 2.0 m. The highest level of the site is 147 m R.L, while the lowest level is 75 m R.L. The lowest level of the pit would be 58 m R.L.

4.5 MINING METHODOLOGY

The method of mining would be semi-mechanized and comprise of top slicing by way of deploying light tippers, backhoe, etc. Due to the very soft nature of the rock, no blasting practices are envisaged. The open cast mining would be carried out starting from the topmost benches and move downwards. Each bench would be 3.0 m high and about 15.0 m wide. Two 0.9 m³ shovels (backhoe) and twenty 10 tonne dumpers would be used.

4.6 SHALE COMPOSITION

The chemical composition of Shella shale as obtained from the geological investigation is as under :

SiO₂% varying from 55.22 to 86.53

Al₂O₃% varying from 5.57 to 20.54

Fe₂O₃% varying from 2.67 to 11.17

4.7 MINERAL TRANSPORTATION

The mineral would be transported from the mine site to the crushing plant through road and then through belt conveyor to the cement plant at Chattak in Bangladesh. The total quantity to be transported would be of the order of 25,000 tonnes/month.

4.8 WATER REQUIREMENT

The mining process and methodology described earlier, which would involve top slicing and semi-mechanization of the quarry through deployment of light tippers etc., would be a completely dry operation. No water would be required in the process.

4.9 WASTE WATER GENERATION

With no water being required in the mining process, there would be no concomitant waste-water generation in the process.

4.10 SOLID WASTE GENERATION

There would be no overburden that would be generated during mining and would require disposal. The entire material that would be mined would be used in some form or the other. As a result, there would be no generation of solid waste in this process.

4.11 ATMOSPHERIC EMISSIONS

During mining activities, atmospheric emissions in the form of suspended particulate matter or dust is generated from ground operations. Gaseous emissions as sulphur dioxide or oxides of nitrogen are generated from the operation of the various equipment.

As a direct quantification of the atmospheric emissions was impracticable, resort was made to the past data available with the Consultants on similar open cast mines in the country deploying similar mining equipments. Based on such data the gaseous emissions from the mine were ascertained, as presented in Table-4.3.

Table-4.3**Atmospheric Emission From Mine Operations**

SO₂ (kg/day)	NO_x (kg/day)
102	204

4.12 MANPOWER DEPLOYMENT AND OPERATIONAL SCHEDULE

About 20 skilled and 60 semi/unskilled workers would be deployed directly or indirectly for the total mining project including limestone and shale/silt stone mines for carrying out the various functions involved in the mining operations. There would be two working shifts of 8 hours each.