EXECUTIVE SUMMARY

OF

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

PUBLIC HEARING

OF

Limestone Mining Project

(M.L Area : 531.126 ha)

Proposed Expansion of Limestone Production Capacity from 4.8 Million TPA to 8.6 Million TPA along with Establishment of Colony in Non - Mineralized Zone (Total Colony Area - 22 ha)

Near

Villages - Semaradih and Bharuwadih,
Tehsil- Balodabazar,
District - Balodabazar-Bhatapara
(Chhattisgarh)

APPLICANT

M/s. Shree Cement Ltd.

Post Box No. 33, Bangur Nagar,
Andheri Deori, Beawar,
Distt. Ajmer (Raj.)
Phone No. - 01462-228101-6
E-mail: bhargavr@shreecementltd.com

INDEX

1.0 PROJECT DESCRIPTION

1.1 Introduction

Shree Cement Limited (SCL) is the largest producer of cement in Northern India with a production capacity of 23.6 million tonnes per annum. It started its operations in 1985 with 0.6 million ton capacity at Bangur Nagar, Beawar in Ajmer, Rajasthan and has rapidly expanded its operations to reach the present production capacity of 23.6 million TPA. The principal promoter of the company is Bangur Group, which is a respected business house of India.

The company pursues multi-brand portfolio strategy which consists of three offers viz. Shree Ultra Jung Rodhak Cement, Bangur Cement and Rockstrong Cement.

The company has its manufacturing operations at Beawar, district Ajmer & Ras in Pali district in Rajasthan & District Balodabazar - Bhatapara in Chhattisgarh and split grinding unit at Khushkhera, Suratgarh & Jobner in Rajasthan, Laksar in Uttrakhand, Panipat in Haryana & Aurangabad in Bihar.

Shree Cement have set a vision to be a major player in the Cement Industry and have embarked upon a committed expansion programme to further enhance its market share in various other states of India with an objective to achieve 25 Million TPA cement capacity by the year 2015.

1.2 Type of Project

The mining lease over an area of 531.126 ha was granted in favour of Shree Cement Limited vide the government order no. F-2/32/2003/12 (3) dated 25.03.2008 for a period of 30 years from 12.01.2011 which is valid upto 11.01.2041.

Environmental Clearance (EC) for existing limestone production capacity of 4.8 Million TPA has been granted by MoEF & CC vide Letter no J-11011/235/2008- 1A II (I) dated 7th March 2011.

Consent to Establish (CTE) under Air (Prevention & Control of Pollution) Act, 1981 and Water (Prevention & Control of Pollution) Act, 1974 was obtained from Chhattisgarh Environment Conservation Board vide letter no. 4937/TS/CECB/2012, dated 19th Dec., 2012.

Consent to Operate (CTO) under Air (Prevention & Control of Pollution) Act, 1981 was obtained from Chhattisgarh Environment Conservation Board vide letter no. 8049/TS/CECB/2015, dated 12th March, 2015.

Consent to Operate (CTO) under Water (Prevention & Control of Pollution) Act, 1974 was obtained from Chhattisgarh Environment Conservation Board vide letter no. 8047/TS/CECB/2015, dated 12th March, 2015

Now, Shree Cement Ltd. is proposing expansion of limestone production capacity from 4.8 Million TPA to 8.6 Million TPA, near Villages- Semaradih and Bharuwadih, Tehsil- Balodabazar, District- Balodabazar-Bhatapara (Chhattisgarh). Mining operation commenced from 12th March, 2015.

As per EIA Notification dated 14th September, 2006 and amended time to time; the project falls under S. No. '1' (Mining of Minerals), Project or Activity -1(a)-(3), Category "A" and therefore requires Environmental Clearance from MoEF & CC, New Delhi.

Terms of Reference (TOR) have been issued by MoEF & CC, New Delhi for preparation of EIA/EMP report vide letter no J-11015/159/2014-IA. II(M) dated 12th August, 2014 and ToR amendment meeting has been held on 27/8/2015 and MOM are available on MoEF&CC website.

1.3 Need for the Project

Shree Raipur Cement Plant (A Unit of Shree Cement Ltd.) has proposed expansion of Integrated Cement Plant - Clinker (2 x 1.5 to 2 x 2.6 Million TPA), Cement (2 x 2.6 to 2 x 3.0 Million TPA), Waste Heat Recovery Power Plant (15 to 30 MW), Captive Thermal Power Plant (25 MW) along with Synthetic Gypsum Unit (65 TPH) and DG Sets {2000 KVA (size 1000/500/250/125)} near Village Khapradih, Tehsil Simga, District Balodabazar - Bhatapara (Chhattisgarh). To cater the additional requirement of limestone for proposed expansion of cement plant, SCL has now proposed expansion in limestone production capacity from 4.8 Million TPA to 8.6 Million TPA (ML Area – 531.126 ha) and residential colony in non-mineral zone of lease area near Villages, Semaradih and Bharuwadih, Tehsil – Balodabazar, District - Balodabazar – Bhatapara (Chattisgarh).

Besides this, the project has proven/will prove beneficial in terms of socio economic development as it has provided/will provide employment to locals. Further, the average income level, which is the indicator of socio – economic status of house- holds is expected to increase, which will ultimately result in the better standard of living of the people.

1.4 Brief Description of the Project

Table – 1

Brief Description of the Project

S. No.	Particulars	Details
A.	**Nature of project**	Limestone Mining Project
B.	**Size of project**	
(i)	**Mining Lease area**	Total Land: 531.126 ha Government land: 78.722 ha Private Land: 452.404 ha
(ii)	Proposed Expansion of Limestone Production capacity	Limestone Production Capacity from 4.8 MTPA to 8.6 MTPA
C.	**Project Location**	
(i)	Villages	Semaradih and Bharuwadih
(ii)	Tehsil	Balodabazar
(iii)	District	Balodabazar-Bhatapara
(iv)	State	Chhattisgarh
(v)	Latitude Longitude	21^0 34’ 36” N to 21^0 37’ 06” N 82^0 03’ 12” E to 82^0 06’ 12” E
(vi)	Toposheet No.	64K/2
D.	**Environmental Setting Details (with approx. aerial distance & direction from the mining lease boundary)**	
(i)	Nearest Town	Balodabazar (~7.5 km in NE direction)
(ii)	Nearest National Highway	NH – 200 (~30 km in WNW direction)
(iii)	Nearest Railway Station	Bhatapara Railway Station (~18 km in NW direction)
(iv)	Nearest Airport	Swami Vivekanand Airport, Raipur (~55 km in SSW direction)
(v)	National Parks, Wild Life Sanctuaries, Biosphere Reserves etc. within 10 km radius	None, within 10 km radius area of the mine lease boundary

(vi)	Reserved / Protected Forests within 10km radius	Dhabadih Reserved Forest (at ~ 0.25 km in NE direction)
(vii)	Nearest Water Body	➢ Chitawar Nala (~1.2 km in South direction) ➢ Tributary of Mahanadi River i. e. Khorsi Nala (~3.0 km in ESE direction.) ➢ Kukurdih Dam (~3.5 km in NNE direction) ➢ Banjari Nala (~4.5 km in NW direction) ➢ Tengna Nala (~5.0 km in ESE direction) ➢ Kauwa Nala (~ 6.0 km in ESE direction) ➢ Mahanadi Canal (Passing through the lease boundary) ➢ Many village ponds
(viii)	Seismic Zone	Zone – II [as per IS: 1893 (Part-I): 2002]
E.	**Cost Details**	
(i)	Total Project Cost	Rs. 74.70 Crores/-
(ii)	Cost for Environmental Protection Measures	Capital Cost –Rs. 1.0 Crore/- Recurring Cost –Rs. 0.30 Crore/-
F.	**Requirements for the project**	
(i)	Water requirement	300 KLD Source: Ground water
(ii)	Manpower requirement	131 Person
(iii)	Power requirement	2.1 MW Source: Proposed 25 MW CPP ,30 MW WHRS and Grid

Source: *Site Visit & Pre-feasibilty Report*

1.5Locationmap

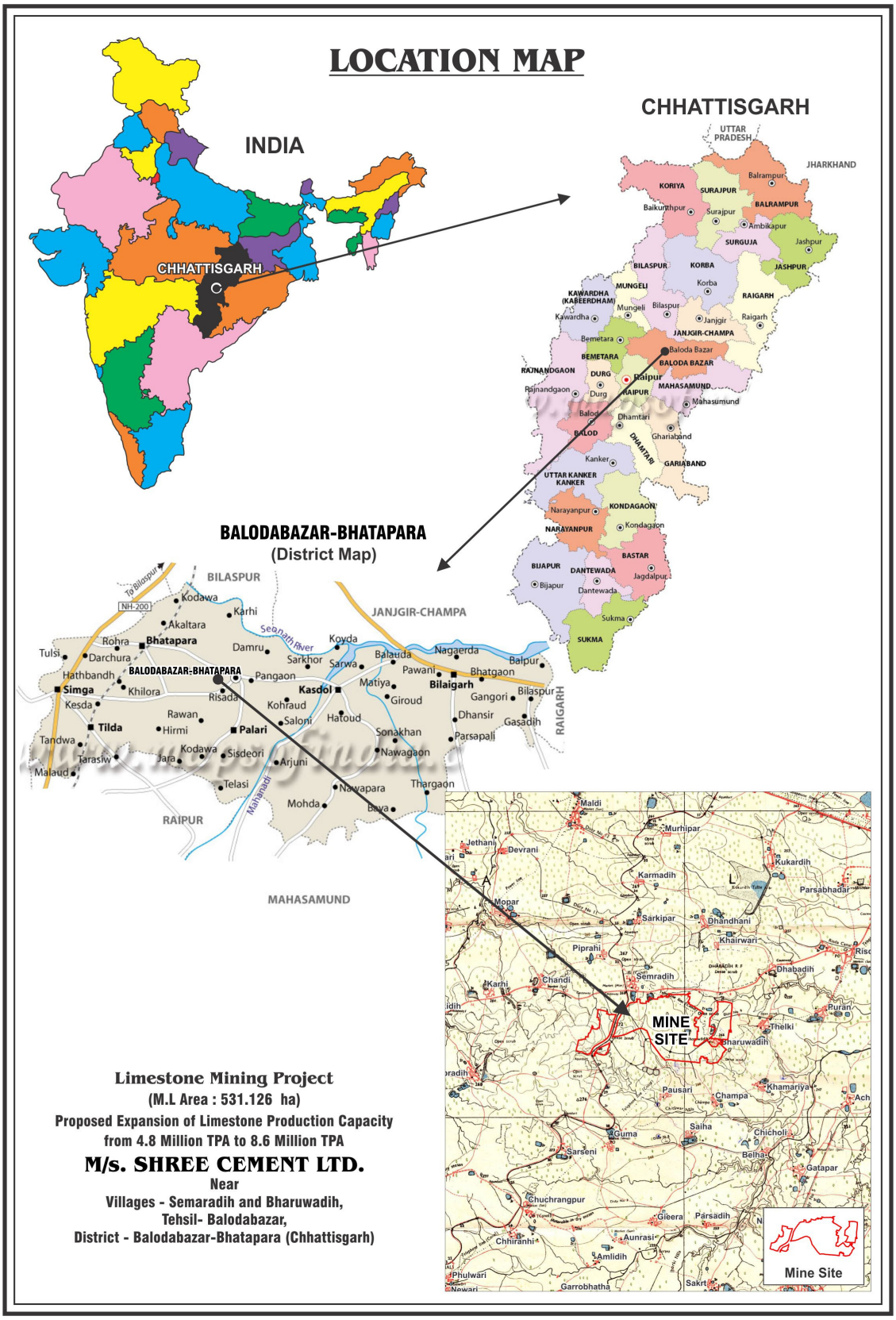

Figure 1: Location map

1.6 MINE DESCRIPTION

1.6.1 Mining Details

Table – 2

Mining Details

S. No.	PARTICULARS	DETAILS
1.	Method of Mining	Fully Mechanized Opencast Mining Method
2.	Limestone Production Capacity	4.8 Million TPA to 8.6 Million TPA
3.	Total Mineable Reserves	208 Million tonnes
4.	Life of Mine	24 years
5.	Bench Height	12 m
6.	Bench Width	30 m
7.	Elevation Range	261 – 277mRL
8.	General Ground level	272 mRL
9.	Ultimate Working Depth	192mRL
10.	Ultimate Pit Slope	45^0
11.	Number of Working Days	320 Days/Year
12.	Number of shifts per day	3 Shifts
13.	Total waste generation	83.2 Million tonnes
14.	Stripping ratio	1:0.4

Reference: *Modified Mining Plan & Progressive Mine Closure Plan*

1.6.2 Method of Mining

Mining is being/will be carried out by fully mechanized opencast mining method by a combination of shovel and dumper with drilling & blasting. To produce limestone, heavy earth moving machinery will be used. Limestone from Mine is being /will be transported up to the crusher by dumpers and to cement plant via covered belt conveyor.

1.6.3 Extent of Mechanization

Table - 3

Machinery & Equipments

S. No.	Machinery	Existing	Additional	Total	Capacity
1	Drill machine	2	1	3	16mtr/hr
2	Hydraulic Excavators	2	3	5	6.5 Cu M Bucket
3	Dumpers	8	7	15	55 Tonne
4	Jeep	2	1	3	-
5	Water tanker	2	1	3	12 KL
6	Explosive Van	0	1	1	9MT
7	Maintenance Van	1	0	1	-
8	Diesel tanker	1	1	2	12 KL
9	Rock Breaker	1	0	1	-
10	Soil Compactor	1	0	1	15 MT
11	Motor Grader	1	0	1	-
12	BMD	0	1	1	10 MT

Source: *Modified Mining Plan& Progressive Mine Closure Plan*

2.0 DESCRIPTION OF THE ENVIRONMENT

2.1 Presentation of Results (Air, Noise, Water & Soil)

Baseline study of the study area was conducted during Summer Season, March – May, 2015.

The concentrations of PM_{10} and $PM_{2.5}$ for all the 12 AAQM stations were found between 54.0 to 80.1 µg/m^3 and 25.2 to 41.1 µg/m^3, respectively, SO_2 ranges between 5.3 to 10.3 µg/m^3 and NO_2 ranges between 14.3 µg/m^3 to 28.1 µg/m^3.

Ambient noise levels were measured at 12 locations around the Mine site. Noise levels varied from 49.5 to 59.6 Leq dB(A) during day time and during night time noise levels ranged from 39.6 to 59.1 Leq dB(A).

Surface water samples were collected from only one location i.e. Kukardih dam as rest of the surface water bodies were dry during our study period. The surface water analysis for 1

sampling station show that pH is 7.36, Total Hardness is 54.85 mg/l & Total Dissolved Solids are 162.0 mg/l.

The ground water analysis for all the 8 sampling stations shows that pH varied from 7.20 to 7.52, Total Hardness varied from 150.83 mg/l to 370.22 mg/l and Total Dissolved Solids varied from 265.00 mg/l to 468.00 mg/l.

The analysis results for soil show that soil pH varies from 7.46 to 7.90, Organic matter from 0.67 % to 0.96 % and it is silty loam in texture.

2.2 Biological Environment

Flora: Species which are most commonly found in the study area are Babul (*Acacia arabica*), Ber (*Ziziphus mauratiana*), Neem (*Azadirachta indica*), Sisam (*Dalbergia sissoo*), Imli (*Tamarindus indica),* Mango (*Mangifera indica*), Jamun (*Syzygium cumini*), Shahtoot (*Morus nigra*), Guava (*Psidium guajava*) etc.

Fauna: Commonly found faunal species in the study area are Indial Hare (*Lepus nigricollis*), Sparrow (*Passer domesticus)*, Jungle crow (*Corvus macrohynehas*), bull frog (*Rana tigrina*), Blue rock pigeon (*Columba livia*), Five stripped squirrel (*Funambulus pennanti*) *etc.*

2.3 Socio-Economic Environment

The population as per 2011 Census records is 161142 (for 10 km radius buffer zone). Scheduled Caste population of the study area (10 km) is 18717 and Scheduled Tribe is 34441. Percentage of literacy is 69.8% and total no. of household in the area is 32645.

3.0 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

- **Impact on Air Environment -** The key air emissions from the mining activities (drilling, blasting, loading, haulage and transportation) are Particulate Matter, Oxides of Nitrogen (NO_2) and Sulphur dioxide (SO_2). Gaseous emissions are being/will be generated from HEMM and transportation of vehicles. Use of proper mitigation measures will be taken like water sprinkling during transport activities & development of green area along the road sides to control fugitive emissions. Better maintenance of equipments will also help to reduce such emissions.

  Impact on Water Environment - The Mahanadi canal is passing through the ML area which divides total Mining lease area into 2 blocks so protection measures will be taken to protect the canal and to reduce the impact of blasting near the canal. A bridge will be constructed over Mahanadi canal to transport crushed limestone from mine site to

adjacent cement plant by conveyor belt. Application for the same is under process from Water Resource Department.

A small canal is also passing through the ML area which will be diverted after getting permission from concerned authority.

From the mining activities wastewater will be discharged from the work shop which will be used for dust suppression in crusher after separation of oil / grease. Wastewater generated from office toilets will be discharged in soak pit via septic tank. Therefore there will be no significant impact on the water environment due to the mining operations in limestone Mining Lease area.

General ground level of the area is 272 mRL, Ultimate working depth is 192 mRL and Ground water table in pre monsoon season is 3.9 mbgl to 16mbgl and 2.31 mbgl to 8.70 mbgl in Post monsoon season so it shows that there is intersection in Ground water table. Permission for the same has been obtained from CGWA vide letter no. 21-4(36)/NCCR/CGWA/2008-569 dated: 08.04.2015 & CGWA vide letter no. 21-4(36)/NCCR/CGWA/2008-1270 dated: 06.08.2015. Hydro – Geological Study has been conducted for the same which has been incorporated in Draft EIA/ EMP Report.

Moreover, the mineral limestone and associated rocks do not contain any toxic substance. Therefore, there will be no significant impact of mining activities on any source of water.

- **Impact of Noise & Vibration -** Major noise generating sources of the mining activity are/will be drilling, blasting, crushing and HEMM movement used for transportation of limestone. The plantation and the green belt around the mining lease boundary will help in reducing noise level and proper mitigation measures will be carried out. Controlled blasting techniques through proper blast design and explosive selection will reduce the vibrations to a greater extent. In order to protect the houses in villages, the peak particle velocity less than 10 mm/sec at such distances would be maintained. (The Peak Particle Velocity will be maintained as per DGMS Tech Circular no. 7 of 1997).

- **Impact on Land Environment** – Opencast mining activities may alter the landscape of the lease area but will not have any effect on the surface features of the surrounding areas.

  At the conceptual stage, Out of total excavated area (408.2 ha), 286.2 ha will be converted into water reservoir and remaining 122.0 ha area will be backfilled (110

hectares of this backfilled area will be stabilized by the plantation later). At the end of life of mine, Total 176 ha area will be covered under Green belt/plantation.

4.0 POST PROJECT ENVIRONMENTAL MONITORING PROGRAMME

Table 4

S. No.	DESCRIPTION	FREQUENCY OF MONITORING
1.	Meteorological Data	Daily (AAQMS has been installed at plant and mine site)
2.	Ambient Air Quality at mine site	Twice a week
3.	Stack Monitoring	Once in a month
4.	Water Quality and Level	Quarterly
5.	Noise Level Monitoring	Once in a month (Day/ Night)

5.0 ADDITIONAL STUDIES

Additional Studies i.e. Hydro –Geological Study and Risk Assessment & Disaster Management Plan study are covered in Draft EIA/EMP Report as per the Terms of References issued by MoEF & CC vide letter no. J-11015/159/2014/IA-II (M) dated 12th August, 2014.

6.0 PROJECT BENEFITS

The proposed expansion project activity will help in meeting the growing demand of cement & hence will help in the economic growth of the country. It will be helpful in the development of basic needs of the local area like education, Health & family welfare, women empowerment, Natural resource management, water conservation, roads etc. It will result in growth of the surrounding areas by increasing direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure.

7.0 ENVIRONMENT MANAGEMENT PLAN

7.1 Air Quality Management

- The drilling machines are being/will be equipped with wet drilling arrangements/dry drilling arrangement with de-dusting system to prevent dust from getting air borne.
- Controlled blasting by latest blasting technique using shock tube detonator (Downline detonator in combination with noise less trunk line detonators).

- Use of Rock breaker in place of secondary blasting to reduce generation of fly rocks and ground vibration. The system is ECO friendly.
- Regular water spraying is being/ will be done to prevent generation of dust from vehicular movement.
- Gaseous emissions generated from HEMM and blasting are being/ will be kept within limits by proper maintenance of all machineries and controlled blasting with suitable explosives.
- In order to reduce air pollution in the surrounding, Green Belt has been/ will be developed around mine office, approach roads, pit peripheries and waste dump yards and along the boundary.
- Periodic air quality survey is being/ will be carried and the records will be maintained properly.

7.2 Water Quality Management

- Domestic Waste water generated from the office toilets is being/ will be disposed off in soak pit via septic tank.
- Waste water generated from the work shop is being/ will be used in crusher for dust suppression after oil and grease separation.
- Domestic sewage water of colony will be treated in proposed STP and treated water will be used for plantation purpose.

7.3 Noise Management

- Proper maintenance and lubrication of mine machineries
- Plantation in the lease area.
- Sharp drill bits with wet drilling arrangements.
- Controlled blasting by latest blasting technique using shock tube detonator (Downline detonator in combination with noise less trunk line detonators).
- Use of Rock breaker in place of secondary blasting.
- Use of personal protective equipments like ear plugs and ear muffs to all working persons near the machineries at the site.

7.4 Solid Waste Management

- Top soil will be stacked properly and will be used in plantation.

- OB will be stacked separately and dumped in the non- mineralized area within the lease area.
- Dumps will be stabilized by plantation after maturation.

7.5 Management of Land Use Pattern

At the conceptual stage of mining following activities will be carried out:

- Total excavated area will be 408.2 ha.
- Out of total excavated area, 286.2 ha area will be converted in to water reservoir and remaining 122.0 ha area will be backfilled.
- Greenbelt/plantation will be done on 176 ha area.
- About 21 ha will be covered under dumps and reclaimed by plantation.
- 22.0 ha area will be covered under township area.

7.6 Greenbelt Development and Plantation Program

- Approximately 10800 trees have been planted on 7.2 ha area under Green belt development / Plantation.
- At the end of life of mine, total green belt /plantation will be carried out on 176 ha area; out of which 110 ha area comes under Greenbelt development/plantation around mine lease boundary and 21 ha area of waste dump and on 45 ha area comes under afforestation on barrier zone along lease boundary.
- Local species are being/will be planted as per CPCB guidelines.
- The species have been/will be planted in the Green belt Ber, Neem, Pipal, Sisam, Mango, Imli etc.

7.7 Socio-Economic Environment

Better education facilities, proper health care, road infrastructure and drinking water facilities are basic social amenities for better living standard of any human being. SCL has conducted and provided such facilities to the nearby villagers and will further improve the facilities in the area, which will help in uplifting the living standards of local communities.

7.8 Colony Details

A residential colony is proposed in non-mineral zone of mining lease area. Total area of colony will be 22 Ha, out of which 33% area will be developed as green belt. Total no. of

household will be 450 and total resident will be 1800. Club house, School, Auditorium, Garden, Dispensary and Temple are also proposed in the colony area. Domestic waste water generated from the colony will be treated in proposed STP of capacity 300 KLD and treated water will be used for plantation.