

## EXECUTIVE SUMMARY

OF

**“Establishment of a New Standalone Cement Grinding Unit of  
Capacity 2.0 MTPA”**

AT

**Village Chamata Pathar, Tehsil Sonapur, District Kamrup (Metro),  
Assam**

Total Area: 12.85 Ha

**Proposed Production:** 2.0 MTPA Cement

Schedule – 3(b) Category ‘B’

Total Cost of the project: Rs. 550 Crores

Reference: TOR issued vide File No. SEIAA.1995/2022/TOR/23/1969 dated  
02.04.2022.

### PROJECT PROPONENT

## STAR CEMENT NORTH EAST LIMITED

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# 1. Executive Summary

## 1.1. Introduction

Star Cement North East Limited is proposing to establish a new cement grinding unit of 2.0 MTPA at Village Chamata Pathar, Tehsil Sonapur, District Kamrup (Metro) Assam over 12.85 ha land. The proposed Grinding unit is situated near the existing 1.6 MTPA grinding unit of Star Cement Ltd. which is under operation with due EC approval from MoEF&CC. Star Cement Limited (formerly Cement Manufacturing Company Ltd.) is one of the largest cement manufacturers in North East India. The Ministry of Environment & Forests, Govt. of India, made environmental clearance (EC) for certain development projects mandatory through its notification of 27.01.1994 under the Environment Protection Act, 1986. Keeping in view of the experience gained in the environmental clearance process over a period of one decade, the MoEF&CC came out with Environment Impact Notification, SO 1533(E), dated 14.09.2006.

It has been made mandatory to obtain environmental clearance for all Cement Plants and the project lies under Item 3(b), Category B as per EIA Notification 2006 and its subsequent amendments. Since the plant will be a Standalone Cement Grinding Unit the project falls under Category "B" (As per EIA Notification dated 14th Sept., 2006 and as amended from time to time).

Terms of Reference (TOR) for the proposed project has been granted by MoEF&CC File No. SEIAA.1995/2022/TOR/23/1969 dated 02.04.2022.

### 1.1.1. About the Project

The total area of the plant will be 12.85 ha and the land is already in the possession of Star Cement Limited. Due to increase in market demand, Star Cement North East Limited is planning to establish a new standalone cement grinding unit of capacity 2.0 MTPA.

### 1.1.2. Location & Accessibility

The proposed project is located at village Chamata Pathar, Tehsil Sonapur, District Kamrup (Metro), Assam. The minimum elevation of the site is about 53 AMSL and maximum elevation is 57 AMSL.

The site can be accessed from SH-3B adjacent to the plant in NE. The nearest Railway station is Tetelia Railway Station which is approx. 1.69 km in East direction from the plant site. The nearest Airport is Guwahati Airport which is approximately 41.1 km in WSW direction from the plant site.

## 1.2. Project Description

Details	Proposed
Production Capacity	Cement - 2 MTPA
Type of Cement	OPC, PPC, PSC & CC
Total plot area	12.85 ha
Total green area	4.3312 ha
Total Water Requirement	368 KLD
Fresh Water Requirement	324 KLD
Water Source	Ground water from tube well will be used for plant
Power Required	9 MW (Source: Assam Power Distribution Company Ltd., (APDCL) / IEX)
D.G. Sets	1*500 kVA
Waste water	44 KLD
STP capacity	STP 50, 20 & 10 KLD
APCS proposed for process emissions	Jet pulse bag filters
Process waste generated	STP Sludge- 13 kg/day, Dust from APCS/Bag filter- 200 TPD
Total Cost of the Project	Rs. 550 Crores
Manpower Details	125
No. of residents in residential colony (for bachelor & labour accommodation)	250

### Resource Requirements

- **Land:** The total area of the plant will be 12.85 ha and the land is already in the possession of SCNEL.
- **Water Requirement:** The total water requirement will be 368 KLD out of which 324 KLD will be freshwater which will be sourced from Ground water from tube wells used for plant and treated water which will be used is 44 KLD.
- **Power Requirement:** Total Power load will be 9 MW which will be sourced partially from the Assam Power Distribution Company Ltd., (APDCL) / IEX. DG sets (for emergency use only) of capacity 500 kVA will be used for the power backup during construction and operation phase.
- **Fuel:** 500 liter/day of Low Density Diesel will be required for the operation of DG set (emergency use only).
- **Manpower:** 500 no. workers required during the construction phase and 125 no. of workers will be required during the operation phase. Nearly 5000 people will get indirect employment opportunities such as in transportation, workshop, packing, repair & maintenance etc. Lots of ancillary units will also come up.
- **Operational Activities:** Operational activities involved in the unit are transportation, unloading of raw material, Raw material Grinding, Raw Meal Homogenization, Fuel (Coal/petcoke) Grinding & Handling, handling/ Dispatch, Fly ash storage and

handling, Gypsum storage and handling, Cement grinding and storage, Cement packing and dispatch.

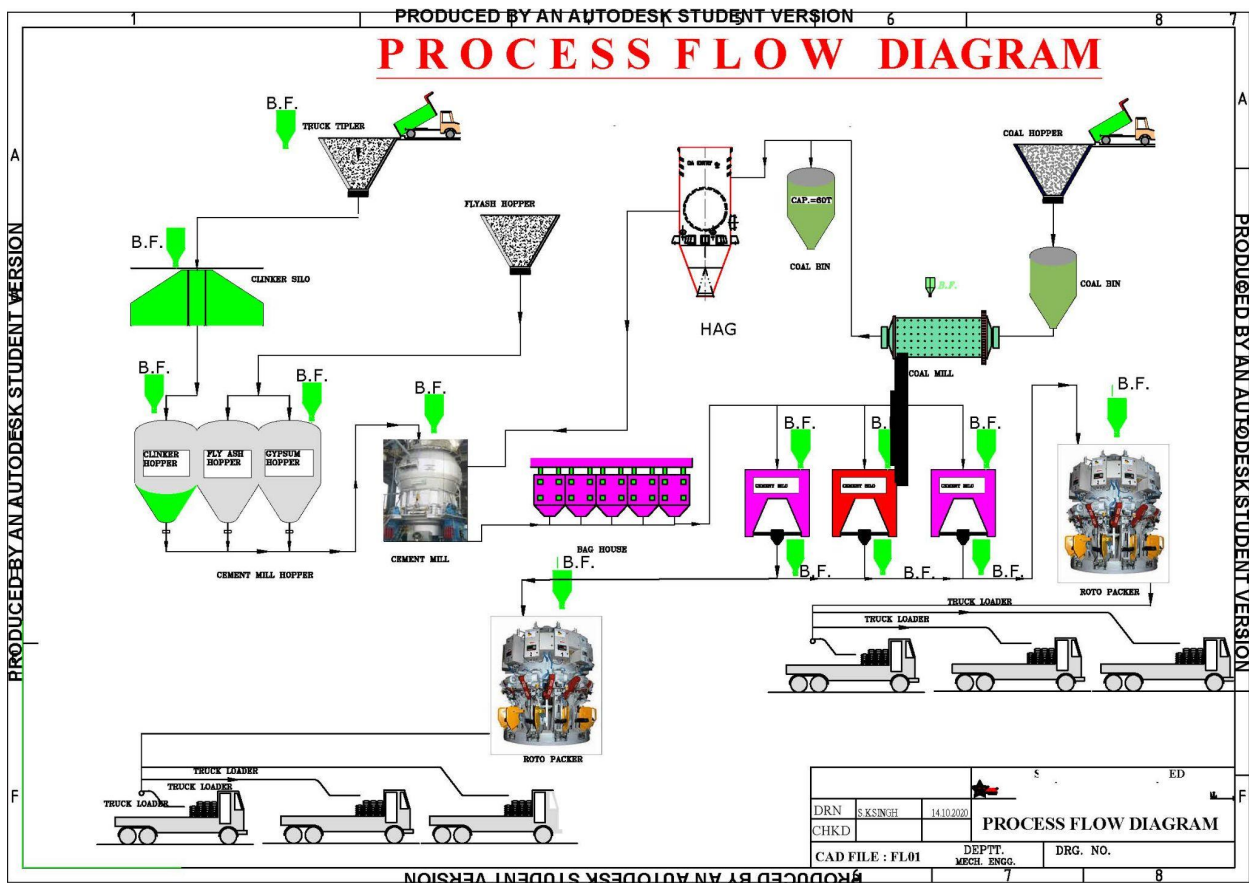
- **Pollution Sources:** Main Pollution sources from the project will be air & noise emission, wastewater generation and Solid & Hazardous waste.

**Total quantity of wastewater generation** from the industry will be 15 KLD and will be treated in STP of capacity 20 KLD and from domestic use will be 32 KLD and will be treated in STP's of capacity 50 & 10 KLD.

**Air Emissions** will be from the process machinery (Cement mill, Coal Mill, Hot air generator & Packing Unit ), Vehicles & DG sets (emergency use only) used in production processes. To prevent emissions, APCS like Jet pulse bag filters will be installed with appropriate stacks in accordance with CPCB norms.

The main sources of **noise generation** from the unit will be operation of process machinery, transportation & DG sets (emergency use only) etc. Adequate engineering control will be taken to minimize the noise level during construction and operations.

**Manufacturing Process:**



## 1.3. Description of Environment

The baseline data is generated through field study within the impact zone (Core Zone and Buffer Zone i.e. 10 Km from Project Boundary) for various components of the environment viz. Air, Noise, Water, Soil, Land, Traffic, Ecology and Socioeconomic. The baseline environmental quality has been assessed for Post Monsoon Season (October 2021-December 2021) (by NABL accredited laboratory Perfact Researchers Pvt Ltd, New Delhi) in a study area of 10 Km radius from the project site. The baseline data obtained is summarized below:

- **Land Use:**

**Core Zone:** The proposed project is located in village Chamata Pathar, Tehsil Sonapur, District Kamrup (Metro), Assam. Topography of the proposed land is undulating with sparse vegetation. Presently the land used is partly industrial and partly non-productive agricultural land, which is being converted to industrial land. There exists a few temporary sheds for workers which will be removed for establishment of the new unit.

**Buffer Zone:** Out of total 10 km radius study area i.e. 33532.34 Ha built-up land is about 2710.42 hectares (8.08%), agriculture land is about 11562.01 hectares (34.48 %), forest area is about 18767.21 hectares (55.97%), Water bodies area is about 492.71 hectares (1.47 %) of the total 10 km radius study area. There are a total of 3 brick kilns near the project site.

- **Natural Hazard:** The area under study falls in Zone-V , according to the Indian Standard Seismic Zoning Map which is classified as High Risk Zone intensity.
- **Geology:** This zone has flat topography. The maximum elevation 57m amsL is found at the north of the core zone and minimum elevation 53m amsL is in the south of the project site. The area comprises an older flood plain. The buffer area occupies part of the basin formed by the mighty river Brahmaputra. The topography of the area is undulating. Study area comprises high and low dissected structural hills and valleys and pediment pediplain complex also there are some patches of younger alluvial plain. The maximum elevation of the buffer area is 567 m AMSL near the South eastern periphery at top of hill and minimum elevation is 51 m AMSL lies in the Northern eastern periphery. The study area consists of two different geological features mostly with indifferent fluvial sediments covering 311.93271 sq km area where in south eastern side the assam-meghalaya gneissic complex covers 50.81976 sq km area.
- **Hydrology:** The area forms part of flat terrain. The general slope of the area is towards the north. A stream Digaru river flows located at 1.04 Km from south west to north in the north western part of the core area. Kathoni beel is flowing in between the project site and it flows towards northeastward and further it joins into digaru river in north. The natural drainage of the area is modified by a network of roads, canals, and railway lines. Buffer zone comprising various water bodies such as drains, river and Beel. Major rivers fall in the buffer area are Digaru river flows

SW-N West and Kapili (Kalang) river flows NE-NW located 7.79 Km in NNE. Digaru river is the tributary of Kalang river which ultimately meets into Brahmaputra river. The drainage in the surrounding area is dendritic in nature. 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> streams orders are found in the buffer area. Trend of the buffer area in the south eastern part is flowing towards NE. There is not an alignment in drainage in the Northern part of Buffer area. In addition, the floodplain is also found in the North and North east direction. By and large the slope of the buffer area is towards the North.

- **Ambient Air Quality:**

**Core Zone:** The mean value of PM<sub>10</sub> at core zone locations ranges from (69.22 - 72 µg/m<sup>3</sup>) & PM<sub>2.5</sub> ranges from (33.13 - 34.45 µg/m<sup>3</sup>), SO<sub>2</sub> ranges from (7.7-8.01 µg/m<sup>3</sup>), NO<sub>2</sub> ranges from (15.78 - 16.41 µg/m<sup>3</sup>) & CO (0.47 - 0.49 mg/m<sup>3</sup>), are within the limits of National Ambient Air Quality Standards (NAAQS). As per the Air Quality Index by CPCB, the air quality of the core zone is found to be Satisfactory during the sampling period - October 2021 - December 2021.

**Buffer zone:** The mean value of PM10 ranges from (74.46 - 91.38 µg/m<sup>3</sup>), PM2.5 ranges from (35.78 - 43.06 µg/m<sup>3</sup>), SO2 ranges from (8.32 - 10.02 µg/m<sup>3</sup>), NO2 ranges from (17.04 - 20.52 µg/m<sup>3</sup>) & CO ranges from (0.512 - 0.61 mg/m<sup>3</sup>) which are within the limits of National Ambient Air Quality Standards (NAAQS). As per the Air Quality Index by CPCB the air quality of the buffer zone is found to be Satisfactory during the period - October 2021 - December 2021.

- **Ambient Noise levels:** The ambient noise level during day time at the proposed project site varies from 54.6 dB (A) to 54.9 dB (A) which are within the day time standard limit of industrial area ~ 75 dB (A). During night the noise level at the project site ranges from 47.2 dB (A) to 47.5 dB (A) which are also within the night time standard limit of industrial area ~ 55 dB (A). In the residential area of Buffer Zone, noise levels at the day time range from 53.8 dB(A)- 55.4 dB(A) and at night time it ranges from 44.2 dB (A) to 44.9 dB (A). The daytime noise level in commercial area (buffer zone) range from 62.3 dB(A) to 73.5 dB(A) during the day while it goes down to 54.5 to 66.4 dB(A) during the night. The noise levels in the region seem to be slightly higher than the ambient noise standards which could be attributable to vehicular and residential activities.

- **Soil Quality:**

**Core Zone (S1- S8):** The samples collected from the site - S1- S7 shows that the soil moisture content in the core zone ranges from 0.5 to 1.4%, pH ranges from 5.99 to 6.96. Amount of primary nutrients like Organic matter range from 0.3 to 1.87 %, the available nitrogen content ranges from 42 to 116.6 mg/kg is very low, available Potassium from 22.22 to 77.66 mg/kg is very low while the available Phosphorus is from 3.75 to 20.10 mg/kg is very high. Therefore, the Primary nutrient profile shows that soil is low fertile in the core zone due to low concentration of available nitrogen.

**Buffer Zone (S8- S18):** The samples collected from the site S8- S18 shows that the soil moisture content in the buffer zone is between 0.8 -1.3 %, pH is 4.82 - 7.14. Amount of primary nutrients like Organic matter is 0.75 - 1.40 %, the available

nitrogen 74.2 - 118.6 mg/kg is low, available Potassium 11.35 - 22.5 mg/kg is low while the available Phosphorus 3.68 - 20.61 mg/kg is in higher range. Therefore, the Primary nutrient profile shows that soil is low fertile in the buffer zone due to the availability of extremely low amounts of nitrogen.

- **Surface Water Quality:** The results of water quality of surface water (SW1, SW2, & SW6) shows that it is meeting the criteria class "D" defined by CPCB except SW3, SW4 & SW5 i.e Digaru river downstream, Digaru river & digaru river upstream respectively shows that it is meeting the criteria class "B" defined by CPCB. The majority of the water quality parameters in the selected sites were within their respective drinking water quality standards. Moreover, DO values are within the CPCB Surface water quality criteria indicating that the surface water quality within the region can be considered as safe for their respective designated use.
- **Ground Water Quality:** For the Buffer zone all the values are found within the drinking water standards (IS:10500). Total Dissolved Solids (TDS) of the sampling locations ranges from 26.8 mg/l to 191 mg/l, Total Hardness of the sampling locations ranges from 16 mg/l to 122 mg/l, Alkalinity of the sampling locations ranges from 16 mg/l to 118 mg/l, Calcium Concentration of all the sampling locations ranges from 4.8 mg/l to 32.8 mg/l, Chloride Concentration of all the sampling locations ranges from 4.25 mg/l to 56 mg/l. The results are well within the prescribed drinking water standard.
- **Biological Environment:** Amchang Wildlife Sanctuary is situated on the southern bank of mighty Brahmaputra and lies entirely within the civil district of kamrup and located within the geographical limits of 91°55'E longitude and 26°10' N latitude. The distance of Amchang Wildlife Sanctuary & ESZ Amchang Wildlife Sanctuary from the site is 5.31 km & 6.27 km respectively. The distance of Pobitora Wildlife Sanctuary from the site is 10.18 km. In the Core Zone no significant varieties of flora and fauna were observed. 28 no. of trees of low girth, herbs and shrubs. The herbs and shrubs will be cleared and the existing trees will be retained. The nearby area is limited to 3 to 4 differentiated forms of flora species. The names of flora species found at the time of site visit are *Arundinaria gigantea*, *Musa acuminata*, *Eupatorium perfoliatum*, *Ageratum conyzoides*, *Cynoglossum glochidiatum* etc.

As per The Indian WildLife (Protection) Act, 1972, seven (7) numbers of species are the 'Schedule - I' species, nine (9) numbers of species under 'Schedule II', four (4) numbers of species under 'Schedule III', eighteen (18) numbers of species under 'Schedule IV' were observed in the study area. The schedule I species observed in the buffer zone are, *Bos gaurus*, *Elephas maximus indicus*, *Hoolock hoolock*, *Manis pentadactyla*, *Nycticebus bengalensis*, *Panthera pardus*, *Trachypithecus pileatus*

- **Socioeconomic Environment:** The total population of the study area is 124151 constituting 25227 households as per Census of India, 2011. Primary survey was carried out in 4 villages namely, Kewa Gawn (Rewa) village, Hahara village, Gomoria village, Sonapur village. During the survey it was found that Agriculture, Service, Labour, Private Job, Private Business etc. were principal work in the villages. Main water source in the surveyed area are Open Wells & Handpumps. Paddy is the most cultivated crop in the survey villages. Fruits and Vegetable etc are also

cultivated in the surroundings. All surveyed areas had 100% toilet facility; sanitation facility was satisfactory. The project will generate employment opportunities for the local people which will reduce unemployment and enhance the lifestyle of the community.

## 1.7. Additional Studies

### Risk Assessment

Risk Assessment was carried out in order to ensure effective management of any emergency situations that may arise from the failure of isolated storages, natural hazards, and electrical malfunctions with respect to the proposed project. As it is a cement Manufacturing unit all the precaution measures while handling, storage of raw material and coal are being taken.

### General safety measures

- Occupational health surveillance programmes will be done six monthly & and their records will be maintained.
- At the project site an emergency First Aid facility will be provided.
- Water sprinkling methods are used to avoid overheating in coal storage areas.
- Coal storage risk mitigation – Proper ventilation will be provided around the coal storage shed.
- Microprocessor Based Parameter Control Unit will be used to Avoid high Voltage & to maintain the Specified Voltage & Current within limits.
- A mixture of coal dust and coke dust can be potentially explosive and will be avoided by removing sources of ignition such as glowing coal, sparks, welding, grinding, static, electricity, smoking etc., away from the stockpiles

### Occupational Health & Safety management plan

- Occupational health surveillance programmes will be done six monthly & and their records will be maintained.
- Health check-up camps will be organized on a regular basis at company dispensary/nearby locations for nearby people.
- Label Precautions and First Aid facilities will be provided.
- Emergency plan will be prepared and mock drills of the on-site emergency will be conducted.
- Inspection of the industrial activity will be done at least once in a year and an annual status report on the compliance with the Rules will be submitted.
- An Environment, Health and Safety (EHS) Manager will be available, who handles all the safety issues related to man, machine & materials.

- Exterior refuge or safe areas include parking lots, open fields or streets which will be located away from the site of the emergency and which provide sufficient space to accommodate the employees.
- Specific written instructions will be obtained before any welding, burning, grinding or other flame heat producing work commences in coal processing areas.

## 1.8. Project Benefits

The unit will generate direct & indirect employment and benefits with respect to availability of social, physical infrastructure and other benefits, such as,

- The project will cater to the increasing demand of cement in the country as well as increase export capacity of the country
- The industry will spend Rs. 50 Lakhs as Social welfare activities in the area including activities for rural development, health and sanitation, education and livelihood development.
- Employment opportunities will lead to a rise in income and improved standard of living. The industry would also generate jobs for the labourers during the construction phase as well as during the operation phase. It will provide direct and indirect employment to local youth.
- Star Cement North East Limited will improve their efficiencies and use technological advances to reduce their impact on the environment. The industry also aims to use dust collected in Jet pulse bag filters.
- Cement industry is a large and growing industry with huge economic benefits due to selling of products. The project will create extra opportunities of direct and indirect employment for which skilled and unskilled manpower will be needed.

## 1.10. Environment Management Plan

### Air Quality Management Plan

#### For Construction Phase

- Water sprinkling with a fixed sprinkling system will be done at the location where dust generation is anticipated.
- No excavation of soil will be carried out without adequate dust mitigation measures in place.
- No loose soil or sand or Construction & Demolition Waste or any other construction material that causes dust will be left uncovered.
- Sprinkling will be done every hour by a fixed sprinkling system.
- Construction material and waste should be stored only within earmarked area and road side storage of construction material and waste will be prohibited
- Only covered vehicles carrying construction material and machinery and waste will be permitted.

- Construction and Demolition Waste processing and disposal sites will be identified and required dust mitigation measures be notified at the site.
- To minimize the occupational health hazard, proper masks will be provided to the workers who are engaged in dust generation activity.

#### **For Operation Phase**

- To control fugitive emissions, enclosures will be provided for all unloading operations, except wet materials like gypsum, to control the dust emissions from dropping/transfer points of the belt and bucket conveyors, proper cover and water sprinklers will be provided at various locations of the transfer points. -Road sweeping machines/ Mist fogging system will be installed, the spilled cement from the packing machine will be collected properly and sent for recycling.
- For the Proposed DG sets of 1x500 KVA (emergency use only), a stack of 30 m shall be provided.
- Process emissions will be from the stack attached to the Coal Mill Area, Cement Mill Area, Hot Air generator & Packing Unit Area, from which pollutants/gasses PM, SO<sub>2</sub>, NO<sub>2</sub> will be released in the form of gasses. To control the same the jet pulse bag filters will be installed at each and every point to avoid emission of particulate matter. Collected dust will be reused in the cement manufacturing process & the packing machines will be equipped with dust extraction arrangements & the dust collected may be reused again in the process.
- Green area of 4.3312 Ha (33.71% of plot area) shall be developed.

#### **Noise Level Management Plan**

##### **For Construction Phase**

- During the construction stage, expected noise levels will be in the range of 80-100 dB(A), which will decrease with increase in distance. Hence most of the activities will be carried out during the day.
- There will be some noise generation due to movement of vehicles carrying materials during the installation phase and as this is only a temporary phenomenon it can be managed by properly regulating the movement of vehicular traffic so that the ambient air quality with respect to noise is not adversely affected.
- To prevent any occupational hazard, earmuffs/earplugs will be given to the workers working around or operating plant/ machinery emitting high noise levels. Hence most of the activity is carried out mostly in the day. Careful planning of machinery operation and scheduling of operation will be done to minimize such impact.

##### **For Operation Phase**

To reduce Ambient Noise level the following measures will be adopted:-

- Noise generating units like machinery areas etc. will be well insulated with enclosed doors. Earmuffs will be used while running equipment of the Industry.
- Maintenance of vehicles and machinery will be done in a sustainable manner to ensure best performance and less loss.

- Vehicle and people flow during shift changes will be regulated by allowing exits in a phased manner.
- The green belt will help in reducing noise levels in the complex as a result of attenuation of noise generated due to plant operations and transportation.
- DG sets of capacity 1x500 KVA will be acoustically enclosed and kept on the surface. The DG set will strictly be used for emergency purposes only.

### **Solid & Hazardous Waste Management plan**

#### **For Construction Phase**

- Total 75 kg/day of solid waste will be generated, out of this 45 kg/day will be organic waste which will be composted and used as a manure for green belt development and the rest 30 kg/day will be inorganic waste which will be given to authorized recyclers.
- C&D waste generated will be managed as per construction and demolition waste management rules 2016.

#### **For Operational Phase**

- Total 131 kg/day solid waste will be generated out of which 79 kg/day of biodegradable waste and the waste will be composted in the composting pit within the site and will be used as a manure for green belt development. Recyclable waste of 52 kg/day will be given to authorized recyclers.
- Used oil of 4.50 KLPa and will be given to authorized recyclers, E-waste will be 0.50 TPA, Battery waste of 25 no. per year, will be sold/disposed of to authorized vendors.
- Non hazardous Waste: 13 kg/day of STP sludge will be Used as manure for plantation and 200 TPD of Dust from APCS/Bag filter/ ESP residue will be recycled in cement manufacturing and other solid waste of 1800 TPA will be sold to vendors.

### **Wastewater & Effluent Management Plan**

#### **For Construction Phase**

- Total 33 KLD of water will be required out of which 23 KLD will be sourced from tanker suppliers and 10 KLD treated water from mobile STP will be used for construction related activities. Fresh water from tanker suppliers will be provided for drinking purposes only.
- Runoff from the site will not be allowed to stand (water logging), the same will be channelized & collected into tanks for reuse in construction activities.

#### **For Operational Phase**

- Total water requirement will be 368 KLD which consists of water requirement for the Cement grinding machinery water is 65 KLD, for gardening and dust suspension will be 136 KLD and for domestic will be 34 KLD. Out of Total water requirement fresh water requirement is 324 KLD & treated water requirement is 44 KLD.
- For fresh water usage, the groundwater will be sourced from Tube Wells which will be used for domestic purposes, Cement Plant Cooling water, and treated water generated from STP will be used for wheel washing and Gardening.

### Biological Environment Management Plan

- Green belt area in the plot will be 4.3312 Ha (33.7% of plot area) along with vertical green.
- Total 10900 nos. of trees will be planted in the proposed site.
- Plantation Maintenance: it is important to clear or cut the unnecessary vegetation “Weed” regularly. This will help the required seeds to grow properly and increase the survival rate.

### Socio Economic Environment management plan

- The Industry will require raw materials, skilled and unskilled laborers. It will be available from the local area. Due to increasing industrial activities, it will boost the commercial and economical status of the locality, to a positive extent.
- In the operation phase, the proposed plant will require a significant workforce of nontechnical and technical persons. About 500 people will be deployed temporarily during construction of the project. About 125 people will be employed during the operational stage of the project. Nearly 5000 people will get indirect employment opportunities such as in transportation, workshop, packing, repair & maintenance etc. Lots of ancillary units will also come up.
- The proposed project land consists of a total plot area of 12.85 Ha. The part of land is already industrial and the balance of the entire land is non-productive agricultural land where no crops have been grown on the land for more than 10 years. Thus, no R&R will be applicable.

## 1.11. Cost & EMP Implementation Budget

The total cost of the project is Rs. 550 Crores. The total capital cost for the EMP Budget will be Rs. 12.80 crores and recurring cost will be Rs 1.34 Crores/Year.

Sr. No.	Particulars	Capital Cost (lakhs)	Recurring Cost (lakhs)
1	Air Management	1000	100
2	Solid Waste Management	50	5
3	Wastewater Management	40	4
4	Noise Pollution Control	100	5
5	Landscaping/Plantation	20	10
6	RainWater Harvesting	20	2
7	Social Activities	50	8

<b>Total</b>	1280 Lakhs	134 Lakhs
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**Cost Summary**

S.No.	COST Summary	Cost for Total (Rs. in Crores)	% of the project Cost
1	Project Cost	550	100.00%
2	Capital cost for Environment Management Plan (including social activities cost)	12.80	2.32
3	Recurring cost for Environment Management Plan	1.34	0.24
4	Wildlife Conservation Plan (included in EMP capital)	0.075	0.013
5	Social activities (included in EMP recurring)	0.5	0.09
6	Occupational Health and Safety (included in EMP recurring)	0.18	0.032