EXECUTIVE SUMMARY

FOR

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

&

ENVIRONMENTAL MANAGEMENT PLAN

FOR

PUBLIC HEARING

OF

Proposed Shree Punjab Cement Plant (Clinker Grinding Unit) with Cement Production Capacity of 5.0 Million TPA and D.G. Sets of 1250 KVA {1000 KVA or (2 x 500 KVA) & 250 KVA} along with Railway Siding

At

Village: Deh - Kalan,
Tehsil & District: Sangrur (Punjab)

APPLICANT

Shree Cement North Private Limited

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December, 2021

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EXECUTIVE SUMMARY

i) Project name and location (Village, District, State, Industrial Estate (if applicable))

Shree Cement North Private Limited is proposing Shree Punjab Cement Plant (Clinker Grinding Unit) with cement production capacity of 5.0 Million TPA and D.G. Sets of 1250 KVA {1000 KVA or (2 x 500 KVA) & 250 KVA} along with Railway Siding at Village: Deh-Kalan, Tehsil & District: Sangrur (Punjab).

As per EIA Notification dated 14th September 2006, as amended thereof; the project falls under Category "B", Project or Activity '3(b)'. Application (Form-1/ToR and Pre-Feasibility Report) for obtaining Environmental Clearance for this proposed project was submitted to SEIAA, Punjab on 30th July, 2021. The project was considered in front of State Expert Appraisal Committee (SEAC), Punjab for its First Technical Presentation (for ToR recommendation) on 21st August, 2021. Technical Presentation held before SEIAA, Punjab (for ToR Approval) on 13th September, 2021, ToR Letter was issued by SEIAA, Punjab *vide* letter no. SEIAA/MS/2021/4746 dated 28th September, 2021 and amended *vide* letter no. SEIAA/MS/2021/4898 dated 25th November, 2021.

ii) Products and capacities. If expansion proposal, then existing products with capacities and reference to earlier EC.

a) Proposed products and capacities - Shree Cement North Private Limited is proposing Shree Punjab Cement Plant (Clinker Grinding Unit) with cement production capacity of 5.0 Million TPA and D.G. Sets of 1250 KVA {1000 KVA or (2 x 500 KVA) & 250 KVA} along with Railway Siding at Village: Deh-Kalan, Tehsil & District: Sangrur (Punjab).

Particular	Unit	Proposed Capacity
Cement	Million TPA	5.0
D.G. Set	KVA	1250 {1000 or (2 x 500) & 250}

b) Reference of earlier EC - Not Applicable as this is a proposed project.

iii) Requirement of land, raw material, water, power, fuel with source of supply (Quantitative)

a) Land requirement - Total project area is 28.16 ha. Out of the total project area, approx. 9.29 ha (33 % of the total project area) area will be covered under greenbelt / plantation.

Table - 1
Project Area Breakup

S. No.	Unit	Area	S. No.	Unit	Area
1.	Plantation & Greenbelt (Approx. 33 %)	9.29	7.	Plant building	0.20
2.	Clinker Grinding unit	0.40	8.	Road and cemented area	4.05
3.	Raw material storage area	1.62	9.	Railway Siding	8.09
4.	Raw material unloading area	1.21	10.	Truck Parking area	0.89
5.	Packing plant	1.29	11.	Open area for future expansion	0.31
6.	Water harvesting pond	0.81	**Total**		28.16

b) Raw material Requirement & Fuel requirement

Raw material

S. No.	Raw Material	Requirement (MTPA)				Source	Distance & Mode of Transportation
		Additional Quantity					
		OPC / RHPC / SRC	PPC	PSC	Composite Cement		
1.	Clinker	4.65	2.9	1.9	1.9	SCL's Plants located Ras, Beawar, Nawalgarh (Proposed) in Rajasthan	Nawalgarh - 370 km Ras - 590 km Beawar - 610 km By Road & Rail
2.	Gypsum	0.35	0.35	0.35	0.35	Mineral & Chemical Gypsum from Nagaur and Bikaner (Rajasthan); Synthetic Gypsum from unit of SCL at Ras (Pali), Beawar (Ajmer)	Nagaur - 500 km, Bikaner - 425 km Ras (Pali) - 590 km, Beawar (Ajmer) - 610 km By Road & Rail
3.	Fly ash	-	1.75	-	1.75	Guru Gobind Singh Super Thermal Power Plant, Ropar, Rajpura Thermal Power Plant, Rajpura, Talwandi Sabo Power Project, Mansa, Guru Hargobind Thermal Plant, Lehra Mohabbat, Bhatinda & Goindwal sahib power plant 540MW	Ropar - 150 km, Rajpura - 100 km, Mansa - 100 km, Bhatinda - 75 km and Goindwal sahib power plant 540MW - 190 km By Road
4.	Slag	-	-	2.75	1.0	Open Market / Nearby steel plants	40-75 km by Road
Total		**5.0**	**5.0**	**5.0**	**5.0**	**-**	

Source: Pre-feasibility Report

Fuel Requirement

Details regarding quantity of fuel required, their source along with distance and mode of transportation are given below –

S. No.	Name of Fuel	Quantity Required	Calorific value (Kcal. /kg)	Source	Distance & Mode of transportation
1.	Coal (Million Tonnes)	0.025	Indian Coal: 3700 Imported Coal: 3942	Local Market Indian and imported & other sources	~ 500 to 950 km by Road Kandla Port, 1500 km
2.	HSD (Litre)	600	9900 - 10500	Local Market	~ 50 km by Road

Source: Pre-Feasibility Report

c) Basic requirement for the project

S. No.	Particular			Detail	Source
1.	Water Requirement (KLD)			350	Ground water (after obtaining prior permission from PWRDA /SGWB/CGWA)
2.	Power Requirement (MW)			31.9	Punjab State Electricity Board (PSEB) / Grid and D.G. Set for backup
3.	Manpower Requirement (No. of persons)	A.	Construction phase	**300**	Unskilled / Semi-skilled - local area and Skilled - outside / local
		B.	Operation Phase		
		i.	Regular	100	
		ii.	Contractual	150	
		Total		**250**	

***Source**: Pre-feasibility Report*

iv) Process description in brief, specifically indicating the gaseous emission, liquid effluent and solid and hazardous wastes. Material balance shall be presented.

Technology that will be used for the manufacturing of cement in the Grinding Unit will be Vertical Roller Mill.

Major steps involved in the process of Clinker Grinding Unit are given as below:

- Clinker storage & handling
- Fly ash & Pond ash storage & handling
- Gypsum storage & handling
- Coal and Slag storage, handling, grinding and drying with hot air generator
- Cement production and storage
- Cement packing and dispatch

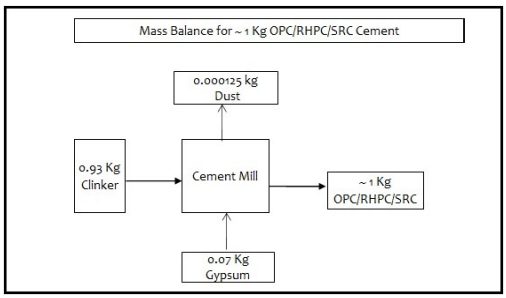
a) Gaseous emission, liquid effluent and solid and hazardous wastes

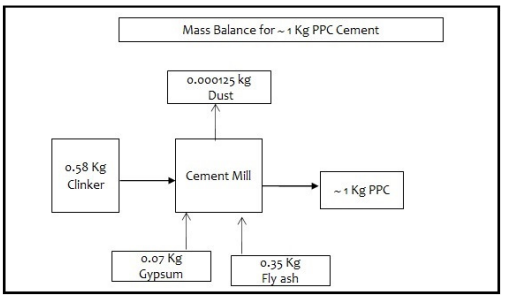
Particulars	Type	Source	Management
Emissions	PM	Grinding unit	High Efficiency Bag House at Cement Mill Stack
Fugitive Emission	SPM	Grinding unit	○ Covered Conveyor belts for transfer of raw materials / finished products. ○ Bag filters (70 nos.) will be provided at all material transfer points ○ Fly ash received through closed bulkers & fed into silo through pneumatic system. ○ Clinker, Fly ash and Cement stored in the silos.

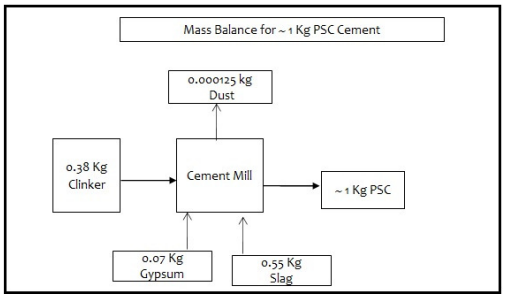
Particulars	Type	Source	Management
			○ Gypsum will be stored in the covered sheds. ○ Water sprinkling will be done to control dust. ○ Use of Road sweeping machines ○ Proper maintenance of vehicles to reduce gaseous emissions ○ Use of PUC certified vehicles ○ Greenbelt/ plantation will be carried out all along the plant boundary to attenuate air pollution.
Process Waste Water	Waste water	Plant Process	○ Grinding unit will be based on the dry process technology. ○ Water used for cooling at various stages of cement manufacturing will be partially evaporated and partially recycled; hence, no waste water will be discharged. ○ Hence, zero liquid discharge will be maintained in Grinding Unit.
Domestic Waste water	Waste Water	Plant & Colony	○ Domestic waste water (10 KLD) will be generated from office toilets & Canteen and further it will be treated in STP and treated water (9 KLD) will be used for greenbelt development / plantation.
Solid & Hazardous waste	Cement Dust	Grinding unit	Dust collected from various APCE will be totally recycled into the process.
	STP Sludge	STP	Used as manure for greenbelt development / plantation
	MSW	Plant & Colony	Bio-degradable waste will be composted and non-degradable wastes will be disposed of suitably
	Used or Spent Oil	Plant Maintenance	Will be sold to CPCB authorized recycler

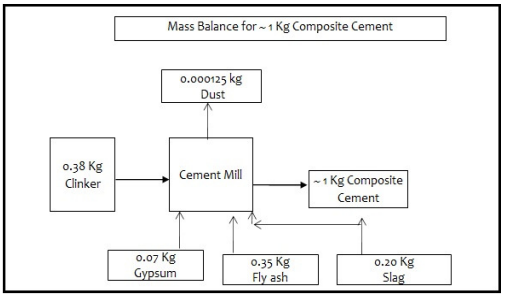
b) Material balance

Mass Balance Diagram for manufacturing of OPC/RHPC/SRC, PPC, PSC & Composite Cement is shown below -









v) Measures for mitigating the impact on the environment and mode of discharge or disposal.

Particulars	Details
Air Quality Management	ꕥ Installation of Bag House along with cement mill stack. ꕥ Enclosures will be provided for unloading operations. ꕥ Bag filters will be installed at all transfer points to reduce fugitive dust emissions. ꕥ All the roads inside the plant premises will be concreted. ꕥ Regular sweeping of all the roads & floors will be done. ꕥ Dust collected from air pollution control equipment will be totally recycled in the process. ꕥ Fly ash will be pumped directly from the tankers to silos pneumatically in closed loop such that fugitive emissions do not occur. ꕥ The packing machines will be equipped with dust extraction arrangement.
Water Management	ꕥ Domestic wastewater (10 KLD) will be generated from office toilets & Canteen and further it will be treated in STP and treated water (9 KLD) will be used for greenbelt development / plantation. ꕥ Rainwater Harvesting will be practiced within the plant premises.
Rainwater Harvesting	ꕥ Total Artificial Rainwater harvesting inside the Grinding unit through pond is 47,040 cum/annum. ꕥ Net groundwater development inside the Grinding unit is 256.69%
Noise Management	ꕥ Equipment generating excessive noise will be kept in properly insulated enclosures ꕥ Improved silencers within the equipment generating high noise ꕥ Isolation of continuously vibrating structures / machines by proper and secured mountings ꕥ Proper maintenance, oiling and greasing of machines at regular intervals to reduce generation of noise. ꕥ Personal Protective Equipment (PPEs) like earplugs and earmuffs will be provided to the workers exposed to high noise level. ꕥ Development of greenbelt of appropriate width inside the plant premises and at the plant boundary. ꕥ Regular monitoring of noise level and corrective measures accordingly.
Solid & Hazardous Waste Management	ꕥ No solid waste will be generated from the cement manufacturing process. ꕥ Dust collected from various air pollution control equipment will be recycled in the process. ꕥ STP Sludge will be used as manure in Greenbelt / Plantation development. ꕥ Used / Spent Oil will be sold to the CPCB authorized recycler.
Greenbelt Development / Plantation	ꕥ Out of total plant area of 28.16 ha, greenbelt & plantation will be developed in 9.29 ha i.e. 33% of the total plant area. ꕥ Native species i.e., *Azadirachta indica* (Neem), *Ficus religiosa* (Peepal), *Polyalthia longifolia* (Ashok), *Cassia fistula* (Amaltas), *Jacaranda mimosifolia* (Blue gulmohar), *Alstonia scholaris* (Saptparni), *Delonix regia* (Gulmohar), *Mangifera indica* (Mango), *Populus indica* (Poplar), *Morus alba* (Shahtut), *Toona ciliata* (Toon), *Conocarpus erectus* (Dubai tree) etc. will be planted under proposed greenbelt development.

vi) Capital cost of the project, estimated time of completion.

S. No.	Particular	Details
1.	Total Cost for the Project	Rs. 671 Crores
2.	Cost for Environmental Protection Measures	○ Capital Cost - Rs. 19.68 Crores ○ Recurring Cost - Rs. 1.42 Crores / annum
3.	Time of completion of the project	12 months

vii) Site selected for the Project-Nature of land- agricultural (single/double crop), barren, Govt./private land, status of its acquisition, nearby (in 2-3 km) water body, population, within 10 km other industries, forest, eco-sensitive zones, accessibility (Note- in case of industrial estate this information may not be necessary).

a) Nature of land

Total plant area is 28.16 ha. Present land use of the site is agricultural which will be changed to industrial after the establishment of the grinding unit. No Forest land is involved in the plant area.

b) Nearby (in 2-3 km) water body, forest, eco-sensitive zones, accessibility

S. No.	PARTICULARS	DETAILS *(with approximate aerial distance & direction from the nearest project boundary)*
1.	Nearest Village	Ladda Kothi (500 m in North direction) Channa (500 m in South direction) Deh-Kalan (975 m in East direction)
2.	Nearest Town & City	Sangrur (6.0 km in South direction)
3.	Nearest National Highway / State Highway	SH - 11 (0.5 km in West direction) NH - 64 (6.5 km in SSW direction) NH - 71 (7.0 km in South direction)
4.	Nearest Railway station	Bahadur Singh Wala Railway Station (0.75 km in ENE direction) Sangrur Railway Station, (~6.5 km in SSW direction) Rajo Majra Railway Station (~8.5 km in NNW direction)
5.	Nearest Airport	Chandigarh Airport (100 km in ENE direction)
6.	National Parks, Wildlife Sanctuaries, Biosphere Reserves etc. within 10 km radius.	Bir Aishwan Wildlife Sanctuary is located at a distance of ~8.5 km in SE direction from the project boundary and as per MoEF&CC notification S.O. 3313 dated 24th October, 2016, and the extent of Eco-sensitive zone is upto 100 meters from the boundary of the Bir Aishwan Wildlife Sanctuary. The Project site will be located outside the Eco-sensitive Zone i.e., at a distance of ~8.4 km.
7.	Reserve Forest (RF) / Protected Forest (PF) etc. within 10 km radius.	There is no Reserved Forest (RF) / Protected Forest (PF) etc. within 10 km radius.
8.	Water Bodies (within 10 km radius)	○ Sheron Distributary (~3.0 km in N direction) ○ Sangrur Distributary (~6.0 km in ENE direction) ○ Laungowal Distributary (~6.0 km in West direction) ○ Mohalagwara Distributary (~6.5 km in ENE direction) ○ Badbar Distributary (~8.5 km in West direction) ○ Badru Khan Branch (Sirhind Canal) (~9.0 km in SW direction) ○ Sirhind Canal (Kotla Branch) (~9.5 km in NNW direction)
9.	Seismic Zone	Zone - III as per IS: 1893 (Part-I): 2002

c) List of industries within 10 km radius study area

The major industries within the 10 km radius area of the project site are as follows:

S. No.	Name of the industry	Type of the Industry	Approx. Aerial Distance and Direction from Project Site
1.	IOCL Petroleum Plant	Petroleum Plant	9.0 km in South direction
2.	Meghan Paper Mill	Paper Mill	8.5 km in South direction

Note: Other than above, some small-scale industries are also present in the study area.

viii) Baseline environmental data- air quality, surface and ground water quality, soil characteristic, flora and fauna, socio economic condition of the nearby population.

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

Baseline study of the study area was conducted during Winter Season (Dec., 2020 to Feb., 2021). Ambient air quality monitoring has been carried out at eight locations in the study area on 24 hourly basis. The concentration of PM2.5 varied between 22.1 µg/m^3 to 51.6 µg/m^3 and the concentration of PM10 varied between 52.2 µg/m^3 to 90.4 µg/m^3, SO_2 ranges between 5.3 µg/m^3 to 14.4 µg/m^3 and NO_2 ranges between 10.2 µg/m^3 to 29.5 µg/m^3. CO concentration was found to be maximum at Sangrur (0.96 mg/m^3) and BDL near Project Site and Village Gangasinghwala & Kanjhla. Benzo(a)pyrene (BaP) concentration was observed as BDL (DL-0.50) at all locations. Ambient noise levels were measured at eight locations around the grinding unit. Noise levels vary from 50.5 to 62.3 Leq dB (A) during day time and from 40.8 to 50.4 Leq dB (A) during night time. There are seven surface water bodies present in the study area. Surface water was collected from 05 locations the rest were found dry during the study period. pH varies from 7.42 to 7.86, Total Hardness varies from 114.57 mg/l to 151.25 mg/l, Alkalinity varies from 90.2 mg/l to 104.51 mg/l, TDS varies from 168 mg/l to 229 mg/l. The ground water analysis for all the eight sampling stations shows that pH varies from 7.57 to 7.98, Total hardness varies from 198.87 to 403.25 mg/l, Total dissolved solids vary from 433.0 to 698.0 mg/l. Soil monitoring was carried out at eight locations and the analysis results show that soil is slightly alkaline to moderately alkaline in nature in nature, pH value ranging from 7.36 to 7.98 with organic matter from 0.65 % to 0.91 %. Soil texture is Clay loam. Total nitrogen ranges from 234.46 to 323.99 kg/ha, indicates that nitrogen is in good amount in this soil; Phosphorous is present in the range of 47.41 to 80.01 kg/ha which is in less amount, whereas the Potassium is found to be ranging from 204.38 to 398.91 Kg/ha which is present in very less to medium amount in soil**.**

b) Biological Environment

Flora: A total of 46 trees, 45 shrubs, 29 herbs, 11 types of Climbers, 23 types of grasses and 6 species of medicinal plants have been recorded in the study area based on primary observation as well as based on secondary data. Most common species found in the area are Neem (*Azadirachta indica)*, Pipal *(Ficus religiosa)*, Shisham *(Dalbergia sissoo)*, Black mustard *(Brassica nigra)*, Arandi *(Ricinus communis)*, Bathua *(Chenopodium album)*, Nimboo *(Citrus limon)*, Dhaman *(Cenchrus setigerus)*, Aam *(Mangifera indica)*, Khajoor *(Phoenix sylvestris) etc.*

Fauna: Among fauna, 8 species of mammals, 5 species of reptiles & amphibians and 6 species of Butterfly and Arthropods were recorded from the study area. 24 species of birds were recorded from the study area.

Commonly found species in the study area are Nilgai *(Boselaphus tragocamelus)*, Jackal *(Canis aureus)*, Indian Hare *(Lepus nigricollis)*, Common Langur *(Prebytis entellus)*, *etc.*

No Schedule- I species were recorded in the study area during field survey; which are categorized as Schedule- I according to (IWPA) Indian Wildlife Protection Act' 1972.

c) Socio-Economic Environment

The population as per 2011 Census records is 188664 (for 10 km radius). Scheduled Caste population of the study area is 53199 and Scheduled Tribe is 0. Literacy rate of the area is 69.61 % & sex ratio of the area is 872. Population of the workers engaged in occupation is 66424, out of which 57037 are considered as main workers and 9387 are considered as marginal workers and remaining 122240 persons are considered as non-workers.

The study area has 120 primary schools, 44 middle schools, 33 secondary schools and 17 senior secondary schools but no proper facilities for higher studies are available in the area. Health care facility in the study area is having 05 PHC, 04 PHSC, 03 Maternity and child care welfare center, 01 Veterinary Hospital, 10 Dispensaries and 17 Veterinary Hospitals, etc. People of the Village are availing drinking water facilities generally from the Hand pump, Tap Water, Well Water, Tube wells and bore wells. However, covered wells are not present in most of the Village. The area consists of water Bodies such as rivers, canals and chois through which water is available for domestic purpose and agriculture the water supply is continuous with the regions. Most of the Village have storage facilities for drinking water supply. All the Village in the study area were electrified. Electricity is available for the various domestic, non-domestic, industrial, agricultural and public lighting purposes. But being a rural area, the electric supply is discontinuous most of the times and is supplied in shifts. The study area is served by road transport. Village have fare road connectivity and Private bus operators operate transport service in the Village. Road condition of the Village is good and the area is well connected with two National highways; NH-64 (6.5 km in SSW direction) and NH- 71 (7.0 km in South direction).

ix) Identification of hazards in handling, processing and storage of hazardous material and safety system provided to mitigate the risk.

Risk Assessment table along with mitigation measures

S. No.	Activity	Associated hazards	Associated risk/ health impact	Mitigation Measures
1.	Storage & handling of raw material & chemicals	Heat, Fire & dust	Exposure, physical injuries, burning, air pollution due to fugitive emissions	• Use of PPEs. • Continuous water sprinkling • Training to workers for proper handling • Proper system for loading & unloading operations • Firefighting & first aid facility. • Storage should be away from ignition source • Proper housekeeping facilities
2.	Working in Grinding Unit	Heat, Fire, Dust, Smoke & Explosion	Physical injuries, burning, air pollution, CO poisoning	• Firefighting & first aid facility • Use of PPEs. • Use of proper APCDs. • Inspection & regular monitoring

S. No.	Activity	Associated hazards	Associated risk/ health impact	Mitigation Measures
				• Training to workers for proper handling of raw materials
3.	APCD failure	Release of PM in ambient air	Air pollution	• Regular monitoring & inspection will be done. • The plant shall immediately shut down on APCD failure
4.	Working at height	Slip, trips & falls of operators	Physical injuries	• Individual alertness of the workers. • First aid boxes shall be provided
5.	Electrical maintenance work	Electric shock, short circuits in power room	Electrical shocks, Injury or burn	• Regular checking and maintenance of electrical units • Use of PPEs • Provision of First aid box
6.	Working near D.G. set during emergency	High noise	Noise induced hearing losses	• Provision of PPEs to the workers.

x) Likely impact of the project on air, water, land, flora-fauna and nearby population.

S. No.	Project Activity	Aspect	Impact	Mitigation Measures
1.	Transportation of Clinker and other raw materials by road	Fugitive Dust Emission & Gaseous Pollutants	▪ Increase in the fugitive dust concentration in the ambient air which will affect the biotic environment	• Use of PUC Certified vehicles • Vehicles to be covered with tarpaulin and not over loaded • Speed limit to be maintained • Paved road in plant premises
2.	Material storage and handling		▪ Increase in the fugitive dust concentration in the ambient air ▪ Workers affected by respiratory diseases due to working in the high dust-zone area	• Clinker, Cement and Fly Ash stored in silos. • Covered yard for storage of Gypsum, Slag & Coal. • Fly ash received through closed bulkers & fed into Silo through pneumatic system. • Personal Protective Equipment to the workers
3.	Cement Mill	Particulate Matter Emission & Fugitive Dust Emission	Increase in Particulate Matter and fugitive dust concentration in air environment	• Installation of Bag House with cement mill stack. • Better maintenance of pollution control equipment like Bag Filters and Bag House etc. • Development of greenbelt / plantation all along the plant boundary.
		Noise generation due to Exhaust fans and Cement grinding	▪ Increase in noise levels near source generation ▪ Hearing impairments ▪ Other health effects	• Earmuffs/ Earplugs to persons working in high noise zone. • Proper lubrication & maintenance of machinery • Development of greenbelt / plantation within the plant premises • Periodic Occupational Health Surveillance of worker

S. No.	Project Activity	Aspect	Impact	Mitigation Measures
4.	Cement Packing & Dispatch	Fugitive Dust Emission	▪ Area source - Increase in fugitive dust concentration in air environment ▪ Respiratory Diseases	• Dust extraction arrangement • Spilled cement collected and recycled • Installation of Bag Filters at transfer points • Development of greenbelt • Personal Protective Equipment (Goggles, Mask etc.) to worker. • Periodic Occupational Health Surveillance

xi) Emergency preparedness plan in case of natural or in plant emergencies.

Shree Cement North Private Limited will have an Emergency Plan (Onsite & offsite) at the project site. Suitable Risk Control Measures with respect to Risk Assessment will be implemented to minimize the risk to an acceptable level. Regular Training, Implementation of SOPs and compliance of relevant Personal Protective Equipment's (PPEs) will help to minimize the health hazards and incidental casualties.

xii) Issues raised during public hearing (if applicable) and response given.

Public Hearing is yet to be conducted for the proposed project.

xiii) Socio-economic Development Plant with proposed expenditure

As per OM dated 30th Sept., 2020 & OM dated 20th Oct., 2020; company will propose a detailed Socio-economic development plan along with the budgetary allocation after conduction of Public hearing considering issues raised during Public hearing.

The funds allocated will be spent for various socio-economic development activities proposed to be undertaken in the study area with a priority to Village falling in the impact zone, which may be further extended to other Village depending upon the budget and requirement.

xiv) Occupational Health Measures

Dust	▪ Implementation of adequate dust control systems and good housekeeping. ▪ Water sprinkling in the places where dust dispersion can occur. ▪ Regular sweeping of roads within plant premises ▪ Providing dust masks to employees working in handling and storage yards. ▪ Periodic work zone monitoring
Noise	▪ Proper maintenance of machineries ▪ Installation of compressors in closed buildings ▪ Regular monitoring of noise level ▪ Display of noise level with permission level ▪ Display instructions for using PPEs at high noise level area ▪ Periodic health checkup for Audiometry for the individuals working in high noise area
Heat stress	▪ Scheduling hot jobs in cooler part of the day ▪ Monitor those workers who are at risk of heat stress ▪ Provide rest periods with water breaks ▪ Use of personal protective equipment
Electrical Hazards	▪ Proper Earthing as per IS 3043 will be done ▪ Low Voltage Supply will be ensured ▪ Isolating Transformers ▪ Double Insulated Tools

	▪ Over Load Protection ▪ Protection Against Leakages (G.F.C.I.) ▪ Flame- Proof Equipment ▪ Lightning Protection ▪ Protection against Static Electricity and safely using ladders and scaffolds
Fire and Explosion	▪ Suitable fire extinguisher, fire buckets and fire hydrant system. Dry power type in oil and fire buckets will be kept near transformer, cable, general store and office area. Hydrant line at all location in plant area along with coal, clinker storage area. Fire tender is to be kept ready at plant main gate. ▪ Oil and Flammable Gases storage area will be fenced and declared as Fire Hazardous Area-No Smoking Area" ▪ Permit and safety instruction will be given to use welding / gas cutting in the area of oil, gas, coal and bag go down. ▪ Predictive interlock in transformers so as to give alarm and trip the system. ▪ Adequate height of brick walls for separation of all transformers, soak pits for storage of oil leakages from transformers will be done.
Other Hazards	▪ Structural soundness of silos and buildings. ▪ Installing light arrestors at all tall buildings. ▪ Permit to be taken to work at height with work instruction to use safety belts etc. ▪ Testing of all lifting tools, tackles and pressure vessel to avoid failure. ▪ Safe working pressure maintained in air receiver. ▪ Safe working load on cranes and ropes etc. ▪ Good housekeeping & Speed limit of vehicles will be 20 km/hr. inside the plant area. ▪ Display of emergency number at all suitable location. ▪ Fire tender, ambulance and emergency staff ready at the plant main gate at all the time ▪ First aid kits are kept at the sites and training provided ▪ Use of mobile while driving, alcohol, smoking etc. are ban inside the plant area. ▪ Proper illumination in plant area (100 to 150 LUX), office (250 to 300 LUX) and road area (20 to 30 LUX)

xv) Post project monitoring plan

Frequency and location for post-project monitoring

S. No.	Description	Frequency of Monitoring	Location
1.	Ambient Air Quality	Twice a Week	At Plant Boundary, in upwind & downwind direction and as per EC / CTO conditions
2.	Fugitive Emission	Quarterly	Cement Mill, Packing Plant, Raw Materials Handling Area
3.	Stack Monitoring	Monthly & Continuous Online Monitoring	Cement Mill Stack
4.	Water Quality	As per PWRDA /SGWB/CGWA NOC	Nearby Ground water sources and as per CTO conditions
5.	Water Level	Monthly as per PWRDA /SGWB/CGWA NOC	
6.	Waste water Monitoring	Monthly & as per CTO	Inlet and outlet of STP
7.	Noise Level Monitoring	Monthly & as per EC / CTO	Plant Boundary, High noise generating

S. No.	Description	Frequency of Monitoring	Location
			areas within the Plant Boundary and as per CTO conditions.
8.	Medical Checkup of Employee	Annually	Dispensary/ Health Centre
9.	Performance evaluation of APCE's / Adequacy Study	Yearly	Cement Mill Bag House

*****Water Level monitoring will also be done to monitor recharge in the area proposed by the company*