

EXECUTIVE SUMMARY

OF

**ENVIRONMENTAL IMPACT ASSESSMENT REPORT &
ENVIRONMENT MANAGEMENT PLAN**

FOR

PUBLIC HEARING

OF

Proposed Integrated Cement Project

**Clinker (3.3 MTPA), Cement (1.0 MTPA), CPP (30 MW),
WHRS (17 MW) and D.G. Set (2 x 2000 KVA & 1 x 500 KVA)**

At

**Village : Godadih, Boradih and Loharsi,
Tehsil: Masturi, District: Bilaspur (Chhattisgarh)**

APPLICANT



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EXECUTIVE SUMMARY

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

M/s. ACC Limited is proposing to set up an Integrated Cement Project - Clinker (3.3 MTPA), Cement (1.0 MTPA), CPP (30 MW), WHRS (17 MW) and D.G. Set (2 x 2000 KVA & 1 x 500 KVA) at Villages: Godadih, Boradih and Loharsi, Tehsil: Masturi, District: Bilaspur (Chhattisgarh) for which ToR issued by MoEF&CC, New Delhi vide their letter no. J-11011/313/2019-IA.II (I) dated 22nd November, 2019 and as amended on 10th January, 2022 for carrying out the Environmental Impact Assessment (EIA) study for Proposed Project.

As per EIA Notification dated 14th Sept., 2006, as amended thereof; the project falls under Category “A”, Project or Activity ‘3(b)’ Cement Plants.

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

Earlier; the Company had proposed an Integrated Cement Project - Clinker (2.72 MTPA), Cement (4.05 MTPA), CPP (65 MW), WHRS (10 MW) and D.G. Set (1200 KVA) at Villages: Godadih, Boradih and Loharsi, Tehsil: Masturi, District: Bilaspur (Chhattisgarh) for which Terms of reference has been obtained from MoEFCC, New Delhi vide letter No. J-1101/313/2019-IA. II (I), dated 22nd November, 2019 but now changed the configurations and proposing as given below -

Production capacities of the proposed project are given in Table - 1.1:

Table - 1.1
Production Capacities of the Proposed Project

Units	Proposed Capacity
Clinker	3.3 Million TPA
Cement	1.0 Million TPA
CPP	30 MW
WHRS	17 MW
D.G. Sets	2 x 2000 and 1 x 500 KVA

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

a) **Land requirement** - Total project area is 112.26 ha; out of which 73.0593 ha is Govt. Waste land and rest 39.2007 ha is private agricultural land (Non irrigated). No Forest land is involved in the project area. The land acquisition is under process.

b) Raw material Requirement & Fuel requirement

S. No.	Raw Material	Requirement (MTPA)	Source	Distance and Mode of Transportation
1.	Limestone	5.43	Captive Limestone Mining lease	By Covered Conveyor Belt; 500 m

S. No.	Raw Material	Requirement (MTPA)	Source	Distance and Mode of Transportation
2.	Bauxite	0.121	Odisha / Jharkhand / MP Open market	By Rail/Road; 367 km
3.	Laterite	0.121	Odisha / Jharkhand / MP Open market	By Rail/Road; 367 km
4.	Sand Stone	0.121	Odisha / Jharkhand / MP Open market	By Rail/Road; 367 km
5.	Gypsum	0.12	Rajasthan / Imported / Paradeep Phosphates or any other fertilizer plant	By Rail/Road; 593 km
6.	Fly ash	0.53	CPP, Power Plant in Chhattisgarh & Sepath	By Rail/Road; 20 Km
7.	Slag	0.53	JSPL, Bhilai Steel Plant	By Rail/Road; 150 Km

Source: Pre-feasibility Report

c) Fuel Requirement

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

Sr. No.	Name of Feed Stock	Total Quantity (MTPA)	Source	% Ash	% Sulphur	Calorific Value kcal / kg	Approx. Distance & Mode of Transportation
Cement Plant							
1.	Coal	0.65	SECL	35	0.5%	4000 - 5500	40 km; By Rail / Road
2.	Petcoke	0.37	Imported - Saudi Indian - Paradeep	2.0%	8%	7500 - 8000	480 km; By Rail / Road
Captive Power Plant							
1.	Coal	0.3	SECL	50%	0.5%	3500 - 4000	36 km; By Rail / Road

Source: Pre-Feasibility Report

d) Basic requirement for the project

S. No.	Particular	Total Quantity	Source
1.	Water (KLD)	2650	Lilagarh river
2.	Power (MW)	45	CPP, WHRS & D.G. Set (for back-up)
3.	Manpower (No. of Persons)	Operation Phase	
		Regular	140
		Contractual	222
		Total	362
		Construction Phase	2000

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.

Cement Plant: The Cement Plant is based on Dry Process Technology for Cement manufacturing with Pre-Heating and Pre-Calcliner Technology. The cement manufacturing process largely comprises of the following steps:

- ⌘ Crushing of limestone at the mine site
- ⌘ Pre-blending of crushed limestone by Stacker & Reclaimer
- ⌘ Grinding-cum- Drying of Raw Materials and Coal/ Petcoke in VRM
- ⌘ Homogenization of raw meal in a blending silo
- ⌘ Clinkerisation of the raw meal in a rotary kiln with preheater, calciner and Cooler
- ⌘ Finish Grinding, storage and packing of cement

Waste Heat Recovery System

M/s. ACC Limited is also proposing for installation of (17 MW) Waste Heat Recovery for re-utilization of the exhaust gases from the Pre-heater / Cooler to generate electric power and for continuous consumption of grid power. The project will contribute to the more efficient use of energy and will reduce reliance on exhaustible fossil fuel. Waste Heat Recovery System will consist of two types of boilers i.e. PH Boiler & AQC boilers to recover the heat from pre-heater and Kiln respectively.

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

Particulars	Type	Source	Management
Emissions	PM, SO ₂ , NO _x	Cement Plant	<ul style="list-style-type: none"> ○ Adequate Stack Height. ○ Installation of Low NO_x burner & De-NO_x system ○ Pyro-process itself acts as a long SO₂ scrubber ○ Installation and better maintenance of pollution control equipment like ESP, RABH, Bag House & Bag Filters. ○ Covered Conveyor belts will be used for transfer of raw materials inside the plant. ○ Bag filters will be installed at all material transfer points ○ Fly ash will be received through closed bulkers & fed into silo through pneumatic system. ○ Clinker, Fly ash and Cement will be stored in the silos. ○ Gypsum, Coal, Petcoke, Slag, AFR materials, will be stored in the covered sheds. ○ Proper Regular maintenance of vehicles will be done to reduce gaseous emissions. ○ Using PUC certified vehicles. ○ Vacuum sweeping machines for better housekeeping. ○ Concreted Roads will be made inside the Plant premise along with water sprinkling system at the required places to reduce the PM emission level.

Particulars	Type	Source	Management
			<ul style="list-style-type: none"> o Greenbelt will be developed around / within the Plant premises. o CPCB and CREP guidelines will be followed.
Fugitive Emission	SPM	Plant activities	<ul style="list-style-type: none"> o Dry fly ash will be transported in closed tankers o Clinker, Fly Ash and Cement will be stored in silos and Gypsum in covered sheds o Covered Conveyor belts will be used for transfer of raw materials inside the plant. o Bag filters will be installed at all material transfer points o Greenbelt will be developed around/ within the premises of the plant site to arrest the fugitive emissions o Unloading of trucks will be carried out with avoiding dropping of the materials from height. o Sprinkling of water will be done along the internal roads in the plant in order to control the dust arising due to the movement of vehicles. o Regular maintenance of vehicles will be done to reduce gaseous emissions o Regular ambient air quality and stack emission monitoring will be carried out as per CPCB / CECB norms to ensure that ambient air quality standards will be met all the time.
Process Waste Water	Waste water	RO Plant & WHRS	<ul style="list-style-type: none"> o RO reject water & WHRS Boiler Blow down water will be reused in mill spray. o Waste water generated from CPP& WHRS will be used for dust suppression after proper neutralization.
Domestic Waste water	Waste Water	Plant	<ul style="list-style-type: none"> o Sewage Treatment Plant (STP) of capacity 250 KLD will be installed for the treatment of 176 KLD waste water, which will be generated from drinking & domestic waste water. o 100% treated sewage from STP will be used in greenbelt development & plantation.
Solid & Hazardous waste	Cement Dust	Cement Plant	Dust collected from various APCE will be totally recycled into the process.
	MSW	Plant	Bio-degradable waste will be converted into organic manure and manure will be used for greenbelt development & plantation.
	STP Sludge	STP	Sewage sludge generated from STP will be used as manure in greenbelt development & plantation.
	Used or Spent Oil	Different Sections	o Used Oil / Spent Oil will be used in Kiln as co-processing as per Hazardous Waste Management Rules, 2016.
	Fly ash & Bottom ash		o Fly ash & Bottom ash generated from proposed CPP will be utilized in cement manufacturing process.
	Used Lead acid batteries		o Lead acid batteries & e-waste will be sold to the CECB/ CPCB authorized recyclers.
e-waste			

b) Material balance

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

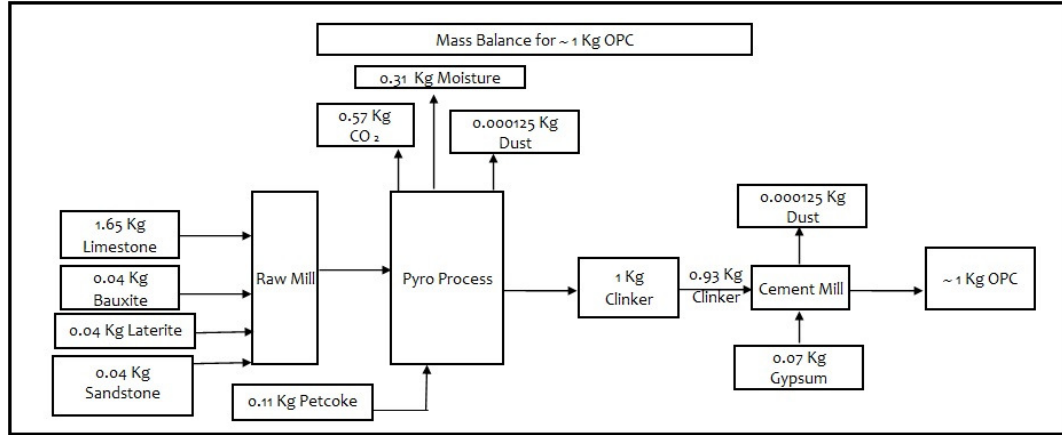


Figure 1: Mass Balance Diagram OPC

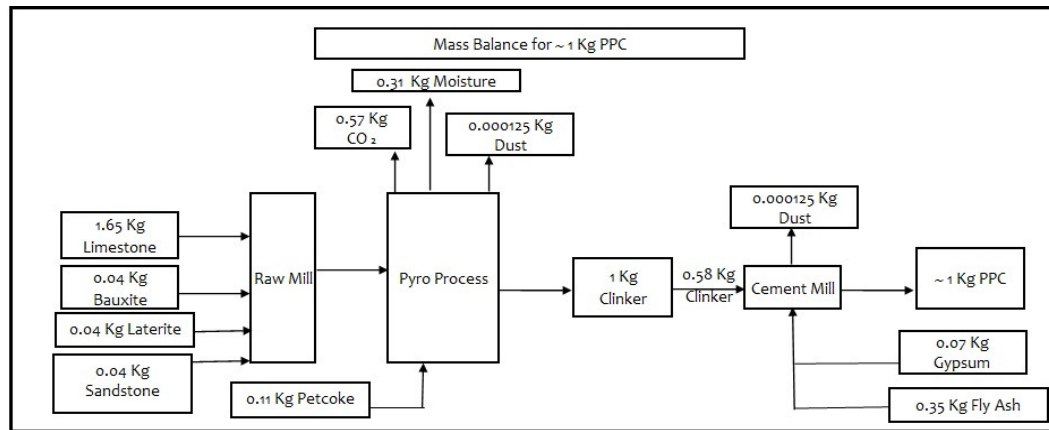


Figure 2: Mass Balance Diagram PPC

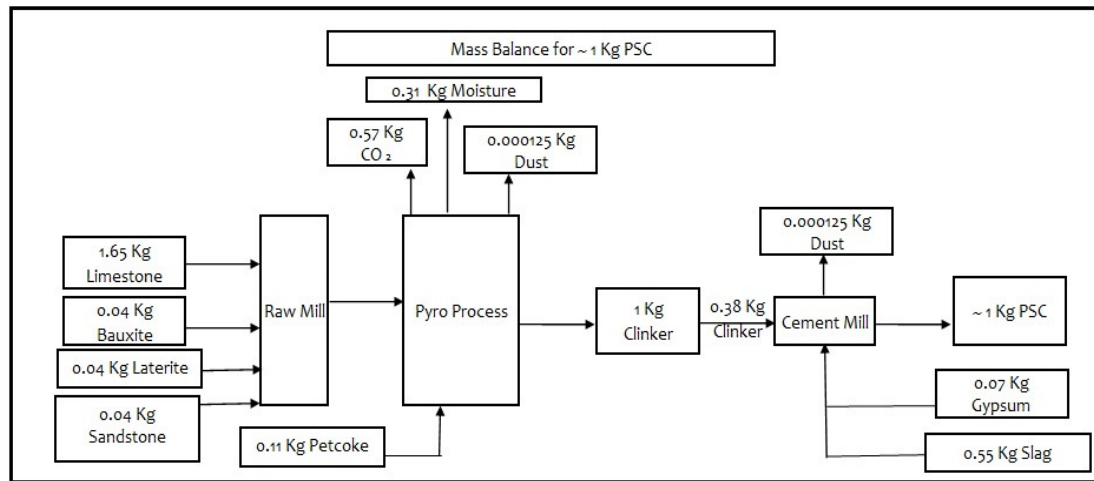


Figure 3: Mass Balance Diagram PSC

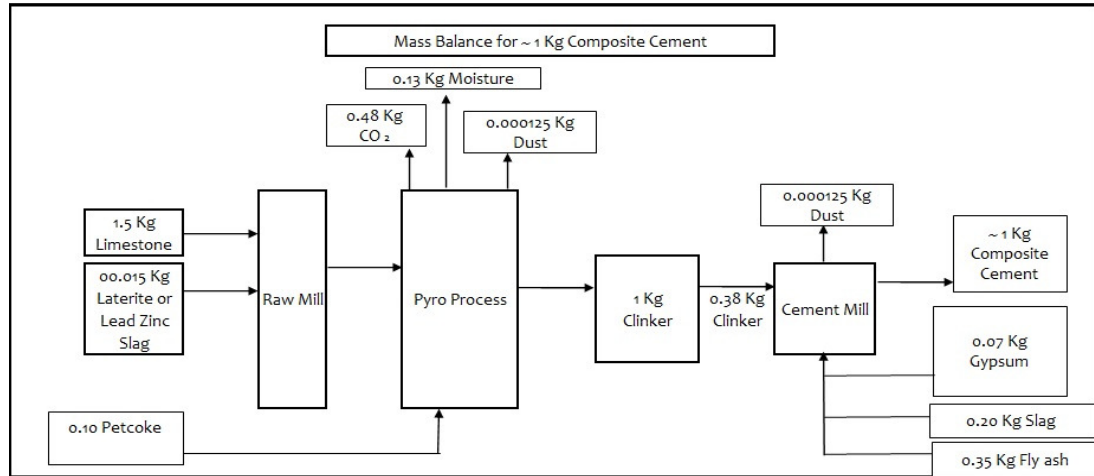


Figure 4: Mass Balance Diagram Composite Cement

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

Particulars	Details
Air Quality Management	<ul style="list-style-type: none"> ⊗ Efficient APCEs will be installed at all major stacks to keep the PM emission level within prescribed limit of 30 mg/Nm³. ⊗ Bag filters will be provided to control dust released from various dust generating points in the plant and at all material transfer points ⊗ Low NO_x burners and De-NO_x System will be installed. ⊗ Dry fly ash will be transported in closed tankers ⊗ Clinker, Fly Ash and Cement will be stored in silos and Gypsum, Coal, AFR, in covered sheds ⊗ Greenbelt will be developed around/ within the premises of the plant site to arrest the fugitive emissions ⊗ Unloading of trucks will be carried out with avoiding dropping of the materials from height ⊗ Sprinkling of water will be done along the internal roads in the plant in order to control the dust arising due to the movement of vehicles ⊗ Regular maintenance of vehicles will be done to reduce gaseous emissions ⊗ Regular ambient air quality and stack emission monitoring will be carried out as per CPCB / CECB norms to ensure that ambient air quality standards will be met all the time.
Water Management	<ul style="list-style-type: none"> ⊗ RO reject water from CPP & WHRS will be reused for dust suppression after neutralization. ⊗ Domestic wastewater (176 KLD) generated from plant will be treated in STP (Capacity - 250 KLD) and the treated water will be utilized for greenbelt development/ plantation. ⊗ Rain water harvesting will be done inside and outside the plant premises.
Noise Management	<ul style="list-style-type: none"> ⊗ Personal Protective Equipment (PPEs) viz. earplugs and earmuffs will be provided to the employees exposed to high noise level. ⊗ Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise. ⊗ Silencer will be provided to all safety valves of the plant and Turbine vent valves to control the Noise level. ⊗ Installation of compressors and turbine in closed building ⊗ Greenbelt will be developed all along the plant boundary.

Particulars	Details
	<ul style="list-style-type: none"> ⊗ Regular monitoring of noise levels will be carried out and corrective measures in concerned machinery will be adapted accordingly to the possible extent.
Solid & Hazardous Waste Management	<ul style="list-style-type: none"> ⊗ Dust collected from various air pollution control equipment will be 100% recycled into the process. ⊗ Sewage sludge generated from STP will be used as manure in greenbelt development/ plantation. ⊗ Municipal solid waste generated from plant & colony will be disposed after segregating the waste into bio-degradable and non-degradable. Bio-degradable waste will be composted and manure will be used for greenbelt development / plantation; and non-degradable wastes will be disposed off suitably. ⊗ Used Oil / Spent Oil will be used in Kiln as co-processing as per Hazardous Waste Management Rules, 2016 and Used Grease & Waste residue, Lead acid batteries & ⊗ Lead acid batteries & e-waste will be sold to the CECB/ CPCB authorized recyclers.
Greenbelt Development / Plantation	<ul style="list-style-type: none"> ⊗ Out of the total project area i.e. 112.26 ha, approx. 33% area (i.e. 37.04 ha) will be covered under greenbelt/plantation. ⊗ It is proposed to plant about 2500 saplings per hectare considering the survival rate of 85 - 90%. ⊗ Plant species like <i>Azadirachta indica</i> (Neem), <i>Ficus religiosa</i> (Peepal), <i>Polyalthia longifolia</i> (Ashok), <i>Pithecellobium dulce</i> (Jungle jalebi), <i>Tectona grandis</i> (Teak), <i>Delonix regia</i> (Gulmohar), <i>Mangifera indica</i> (Mango), <i>Nerium indicum</i> (Kanar), <i>Acacia rabica</i> (Gond), <i>Cassia fistula</i> (Amaltas) and <i>Conocarpus erectus</i> (Dubai Tree) will be planted.

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

S. No.	Particular	Details
1.	Total Cost of the Project	Rs. 2407 Crores
2.	Cost for Environmental Protection Measures	Capital Cost: Rs 240 Crores Recurring Cost: Rs. 12.0 Crores / annum
3.	Time of completion of the project	33 - 36 months (after getting all the regulatory approvals)

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**

The land area required for the proposed plant is 112.26 ha; out of which 73.0593 ha is Govt. Waste land and rest 39.2007 is private non-agricultural land. No forest land is involved.

b) **Status of its acquisition**

The land acquisition is under process.

c) 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	Godadih (460 m in NNW direction)
2.	Nearest Town	Masturi (22 km in NNW direction)
3.	Nearest City	Bilaspur (36.5 km in NW direction)
4.	Nearest National / State Highway	NH - 49 (12.5 km in North direction)
5.	Nearest Railway station	Bilaspur (33.25 km in NW direction)
6.	Nearest Airport	Swami Vivekananda International Airport, Raipur (91.5 Km in SW Direction)
7.	National Parks, Wildlife Sanctuaries, Biosphere Reserves within 10 Km radius Protected Forests (PF) / Reserved Forests (RF) within 10 Km radius	No National Park, Wildlife Sanctuary, Biosphere Reserve and Reserve Forest (RF) / Protected Forest (PF) falls within 10 km radius of the project site.
8.	Water Bodies within 10 km radius	<ul style="list-style-type: none"> ▪ Lilagarh River (1.7 km in East direction) ▪ Seonath River (6.6 km in SW direction) ▪ Kurang Left Bank Canal (Adjacent in West direction) ▪ Malhar Dam (8.0 km in NNW direction)
9.	Seismic Zone	Zone - II as per IS: 1893 (Part - I): 2002

d) List of industries within 10 km radius study area

S. No.	Name of the Company	Type of Industry	Approx. Distance and Direction from the Project site
1.	Limestone Mine, Jindal Steel & Power	Limestone mine	~3.26 km in West direction
2.	JSPL Chilhati Mines	Limestone mine	~3.45 Km in West direction
3.	ACC Limestone Mines	Captive Limestone mine	~3.91 Km in West direction

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

a) **Baseline Environmental Data (Air, Noise, Water & Soil)**

Baseline study of the study area was conducted during Post Monsoon Season (Oct., to Dec., 2021) for the project. Ambient Air Quality was measured at eight AAQM stations. The observed values for PM_{2.5} is between 24.5 µg/m³ (at Captive mine site) to 40.8 µg/m³ (Village Chilhati) and PM₁₀ is found to 52.3 µg/m³ (at Captive Mine Site) to 74.5 µg/m³ (at Village Dhuruwakari).

As far as the gaseous pollutants SO₂ and NO₂ are concerned, the concentrations of SO₂ and NO₂ were found to be in range of 5.7 µg/m³ (at Captive Mine Site) to 13.4 µg/m³ (at Village Chilhati) and 11.3 µg/m³ (at Captive Mine Site) to 24.3 µg/m³ (at Village Chilhati) respectively. The concentration of CO was found to be in range of BDL to 0.83 mg/m³ (at Village Dhuruwakari).

Ambient noise levels were monitored at eight locations. Noise levels vary from 50.7 Leq dB (A) at Project Site to 53.9 Leq dB (A) at Village Chilhati during day time and from 39.8 Leq dB (A) at Project Site to 44 Leq dB (A) at Village Loharsi during night time.

Surface water samples were collected from the Lilagarh River, Seonath River, Malhar Dam as rest of the water bodies were found dry during the study period. The analysis results show that pH of the surface water samples was observed to be 7.23 to 7.69 indicating slightly alkaline in nature. Total hardness (188.18 to 210.15 mg/l), Total dissolved solids (329.0 to 377.0 mg/l), total alkalinity (126.54 to 194.75 mg/l) and conductivity (539.0 to 581.0 μ S/cm) were found to be within standards in water samples.

The ground water analysis for all the eight-sampling location shows that pH varies from to 7.21 to 7.89 indicating slightly acidic to slightly alkaline nature; and maximum pH was recorded at village Kukurdi. Total hardness varies from 232.6 to 485.1 mg/l. Total dissolved solids varies from 398 to 769 mg/l.

Soil monitoring was carried out at eight locations and the analysis results show that soil is slightly Neutral to moderately alkaline in nature having pH range from 7.09 to 7.89, with organic matter from 0.54 % to 10.78 %. Soil texture was silty clay and sandy clay at all locations. Available nitrogen ranges from 223.53 kg/ha to 312.56 kg/ha. Phosphorous ranges from 33.35 kg/ha to 74.74 kg/ha whereas the Potassium ranges from 202.68 kg/ha to 391.04 kg/ha.

Biological Environment (Flora & fauna)

Flora Diversity:

Total of 87 trees, 50 shrubs, 7 herbs 19 species of grasses, 16 Aquatic species and 6 species of climbers have been found in the study area based on primary observation as well as based on information collected from the secondary data. As per the field survey and List of Flora by ENVIS, MoEFCC; no endemic, endangered and rare species of flora have been observed under threatened status in the study area.

Fauna Diversity:

Among fauna, 21 species of mammals, 18 species of Herpeto-fauna (reptiles and amphibians) and 16 species of Butterfly and Arthropods were found from the study area. Among avifauna, 58 species were found in the study area.

There will be no significant impact of proposed project on flora & fauna as proper mitigative measures like development of greenbelt, installation of APCE etc. will be taken by the company.

Based on primary survey & secondary data, no Schedule - I species were found within 10 km radius of the study area.

b) Socio-Economic Environment

The population as per 2011 Census records is 70,762 for 10 km radius buffer zone. Scheduled Caste fraction of the population of the study area (10 km) is 22,498 (32%) and Scheduled Tribe 6438 (9%). Percentage of literacy is 57.20 % and that of workers those actually engaged in occupation is 48% including, 24% of Main workers & 25% of marginal workers. Rest 51% of the total population, are considered as non-workers.

The study area has 80 primary schools, 49 middle schools, 7 secondary schools and 7 Senior secondary school but no proper facilities for higher studies are available in the area. Health care facility in the study area is having 3 PHCs, 17 PHSCs, 02 Maternity and child care welfare centre etc. Village people are availing Drinking water facilities generally from Tap water, Well, Tube well, Hand Pump, River etc. The water supply is also carried out through tanker in few villages.

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	<ul style="list-style-type: none"> ○ 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 Cement Plant	Heat, Fire, Dust, Smoke & Explosion	Physical injuries, burning, air pollution, CO poisoning	<ul style="list-style-type: none"> ○ Firefighting & first aid facility ○ Use of PPEs. ○ Use of proper APCEs like Bag house ESP/Bag Filters ○ Covered conveyor belts ○ Inspection & regular monitoring ○ Training to workers for proper handling of raw materials
3.	APCD failure	Release of PM in ambient air	Air pollution	<ul style="list-style-type: none"> ○ Regular monitoring & inspection will be done. ○ The plant shall immediately shut down on APCE failure
4.	Working at height	Slip, trips & falls of operators	Physical injuries	<ul style="list-style-type: none"> ○ 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	<ul style="list-style-type: none"> ○ Regular checking and maintenance of electrical units ○ Use of PPEs ○ Provision of First aid box
6.	Working near D.G. sets during emergency	High noise	Noise induced hearing losses	<ul style="list-style-type: none"> ○ 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 Limestone by Covered Conveyor Belt	Fugitive Dust Emission Fugitive Dust Emission	<ul style="list-style-type: none"> ▪ There will be no major impact ▪ Only, there will be increase in the concentration of fugitive dust in very lesser quantity 	<ul style="list-style-type: none"> • Water spray nozzles over the covered conveyor belt in the stacker feed point • Installation of Bag Filters at transfer points • Greenbelt development along the sides of

S. No.	Project Activity	Aspect	Impact	Mitigation Measures
				covered conveyor belt and periphery of plant
2.	Transportation of other raw materials by road		<ul style="list-style-type: none"> ▪ Increase in the fugitive dust concentration in the ambient air which will affect the biotic environment 	<ul style="list-style-type: none"> • Use of PUC Certified vehicles • Vehicles to be covered with tarpaulin and not over loaded • Speed limit will be maintained under 10 Km/hr ○ Paved road in plant premises
3.	Raw Material & Finished Product - storage and handling	Particulate Matter Emission	<ul style="list-style-type: none"> ▪ Increase in the fugitive dust concentration in the ambient air <p>Workers affected by respiratory diseases due to working in the high dust-zone area</p>	<ul style="list-style-type: none"> • Covered yard for storage of Gypsum, Coal, and Petcoke as feedstock. • Personal Protective Equipment to the workers
4.	Raw Mix Preparation	Particulate Matter Emission	Increase in the concentration of particulate matter in the ambient air	<ul style="list-style-type: none"> • Transportation of material to the raw mill by covered conveyor belt • Installation of Bag Filters at all material transfer points.
5.	Clinkerisation (Calcination) Clinker Grinding / Cement Mill (including Fly ash handling)	Particulate Matter Emission, Gaseous Emission & Fugitive Dust Emission	Increase in Particulate Matter, SO ₂ & NO ₂ and fugitive dust concentration in air environment	<ul style="list-style-type: none"> • Installation of adequate APCEs such as Bag House, Bag filters& ESP. • Low NO_x burners • Installation of De-NO_x system. • Development of greenbelt & plantation • Personal Protective Equipment (Goggles, Mask, Boots, Gloves, Helmet, Ear plug etc.) to workers
		Particulate Matter Emission & Fugitive Dust Emission	<ul style="list-style-type: none"> ▪ Increase in Particulate Matter and fugitive dust concentration in air environment 	<ul style="list-style-type: none"> • Installation of Bag House & Bag filters • Fly ash received through closed bulkers & fed into Silo through pneumatic system. • Development of greenbelt & plantation.
6.	Cement Packing & Dispatch	Noise generation due to Exhaust fans and Cement grinding	<ul style="list-style-type: none"> ▪ Increase in noise levels near source generation ▪ Hearing impairments ▪ Other health effects 	<ul style="list-style-type: none"> • 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
7.	Cement Packing & Dispatch	Fugitive Dust Emission	<ul style="list-style-type: none"> ▪ Area source - Increase in fugitive dust concentration in air environment ▪ Respiratory Diseases 	<ul style="list-style-type: none"> • Dust extraction arrangement • Spilled cement collected and recycled into process • Installation of Bag Filters at all material transfer points

S. No.	Project Activity	Aspect	Impact	Mitigation Measures
				<ul style="list-style-type: none"> • Development of greenbelt & Plantation • Personal Protective Equipment (Goggles, Mask, Boots, Gloves, Helmet, Ear plug etc.) to worker. • Periodic Occupational Health Surveillance

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

M/s. ACC Ltd. will have an Emergency Plan (Onsite & offsite) at the plant 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 for the proposed project is yet to be conducted.

xiii) Socio-economic Development Plant with proposed expenditure

As per MoEF&CC OM dated 30th Sept., 2020 & OM dated 20th Oct., 2020; Socio-Economic Developmental activities will be formulated on the basis of the issues raised during Public hearing; which will be addressed in EMP & will be implemented in a time bound manner with the start of the proposed project.

xiv) Occupational Health Measures

Dust	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Proper maintenance of machineries ▪ Installation of compressors & DG sets 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ Proper Earthing as per IS 3043 will be done ▪ Low Voltage Supply will be ensured ▪ Isolating Transformers ▪ Double Insulated Tools

	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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	<ul style="list-style-type: none"> ▪ 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 10 km/hr. inside the proposed 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 proposed plant area. ▪ Proper illumination in plant area ,office and road area

xv) **Post project monitoring plan**

Frequency and location for post-project monitoring

S. No.	Description	Frequency of Monitoring	Location
1.	Meteorological monitoring	Hourly	Plant Site
2.	Ambient Air quality Monitoring	Twice a Week/ Yearly/ Online Monitoring	Plant Site, Villages in upwind & downwind from the Project site as per EC/CTO conditions
3.	Fugitive Emission Monitoring	Quarterly	Cement Mill, Packing Plant, Raw Materials Handling Area & Coal Yard
4.	Stack Monitoring	Monthly/ Yearly & Continuous Online Monitoring	Raw Mill / Kiln, Coal Mill, Cement Mill, Clinker Cooler, Cement Mill
5.	Water Quality and level	As per CGWA NOC	Nearby Ground water sources and as per CGWA NOC
6.	Waste Water Monitoring	Monthly & as per CTO	Inlet and outlet of STP
7.	Groundwater Level	As per CGWA NOC	Nearby Ground water sources and as per CGWA NOC

S. No.	Description	Frequency of Monitoring	Location
8.	Noise Level Monitoring	Monthly & as per EC / CTO	Plant Boundary, High noise generating areas within the Project Boundary and as per CTO conditions
9.	Medical Checkup of Employee	Yearly or as per Factories Act	Health Management Centre
10.	Performance evaluation of APCE's / Adequacy Study	Six Monthly	Inlet & outlet dust of APCE's Raw Mill / Kiln, Coal Mill, Cement Mill, Clinker Cooler.

