EXECUTIVE SUMMARY

1. Introduction

M/s. Bhilai Engineering Corporation Limited (BEC), Bhilai is a diversified Engineering manufacturing organization with multidisciplinary facilities. It is engaged in meeting the engineering challenges of business with a devoted sense of commitment and conviction. BEC's main product ranges from design, engineering, manufacturing of steel plant and other core sector equipments for over 40 years, to manufacture and supply of Fertilizer since year 1985. M/s. BEC Fertilizers (BECF) is a unit of M/s. Bhilai Engineering Corporation Limited and entered in the business of Manufacturing fertilizers and other Agro-inputs since 1985. BEC has a unit at Bilaspur (1985) and Pulgaon (2001).

It has proposed to expand its existing Phosphatic fertilizer unit of following existing capacities to the respective proposed capacities: Single Super Phosphate/Boronated Single Super Phosphate from 66,000 TPA to 1,50,000 TPA; Triple Super Phosphate after expansion 50,000 TPA; Granulated Fertilizer from 60,000 TPA to 2,00,000 TPA and Sulphuric Acid from 33,000 TPA to 50,000 TPA at Village Gunjkheda, Tehsil Deoli, District Wardha, Maharashtra.

M/s Asian Consulting Engineers Pvt. Ltd. has been appointed by BEC as an independent EIA consultant for carrying out environmental impact assessment studies for the proposed project.

Scope of EIA Study

The scope of the EIA study includes:

Detailed characterization of the existing status of the land, air, water, soil, biotic and socio-economic environment within 10 km study area around the project site was done. Identification of the potential environmental impacts of the project, suggestion of appropriate remedial/ mitigation measures and formulation of an effective environmental management plan (EMP) to prevent, control and mitigate the adverse impacts, and ensure the environmental compliance.

Apart from suggesting mitigation measures to the negative impacts, the report reserves implementation of various enhancement measures as a part of project benefit program to people of the nearby areas.

The structure of executive summary is set out under the following sub-headings:

1. Introduction
2. Salient Features.
3. Project Location
4. Project Description
5. Baseline Environmental Status
6. Impact Assessment and Mitigation Measures
7. Environmental Monitoring Plan
8. Project Benefits

9. Environmental Management Plan
10. Conclusion.

2. Salient Features

The salient features of the proposed project are given in the **Table 1.**

Table 1: Salient Features of the Project

Items	Details
Location	Survey No.275/I-K, Village: Gunjkheda, Taluka: Deoli, District: Wardha, Maharashtra
Latitude and Longitude	Latitude : 20° 44' 5.50" °N Longitude : 78° 20' 24.64" °E
Land area	20 Hectares (Existing premises)
Proposed production capacity	Single Super Phosphate/Boronated Single Super Phosphate from 66,000 TPA to 1,50,000 TPA; Triple Super Phosphate after expansion 50,000 TPA; Granulated Fertilizer from 60,000 TPA to 2,00,000 TPA and Sulphuric Acid from 33,000 TPA to 50,000 TPA
Power requirement & source	Existing:0.75MW Proposed: 1.5 MW **Source**: MSEB and Captive Generation
Power backup	2 nos. of D. G. sets of capacity 380 KVA and 125 KVA are available to meet emergency power requirement
Water requirement & source	Existing plant :335 KLD After Expansion: 536 KLD. **Source**: Wardha River and Bore Well1
ETP Facility	Waste Water generation from existing unit – 60 m^3/day Waste Water generation from proposed unit – 114 m^3/day
Project cost	Rs. 10.00 Crores

3. Project Location

The proposed expansion of Phosphatic fertilizer unit from capacity 66,000 TPA to 2,00,000 TPA (Single Super Phosphate/Boronated Single Super Phosphate: 1,50,000 TPA and Triple Super Phosphate : 1,00,000 TPA) and facility is being developed inside the plant premises and adjacent to the existing fertilizer plant. The existing fertilizer plant is also having necessary facilities such as railway siding, well developed roads, and truck unloading facilities, facilities for rain water collection etc. which also substantiate the proposed site location.

Location map is given in **Figure 1**. The detailed layout plan of the proposed project is also given in **Figure 2.**

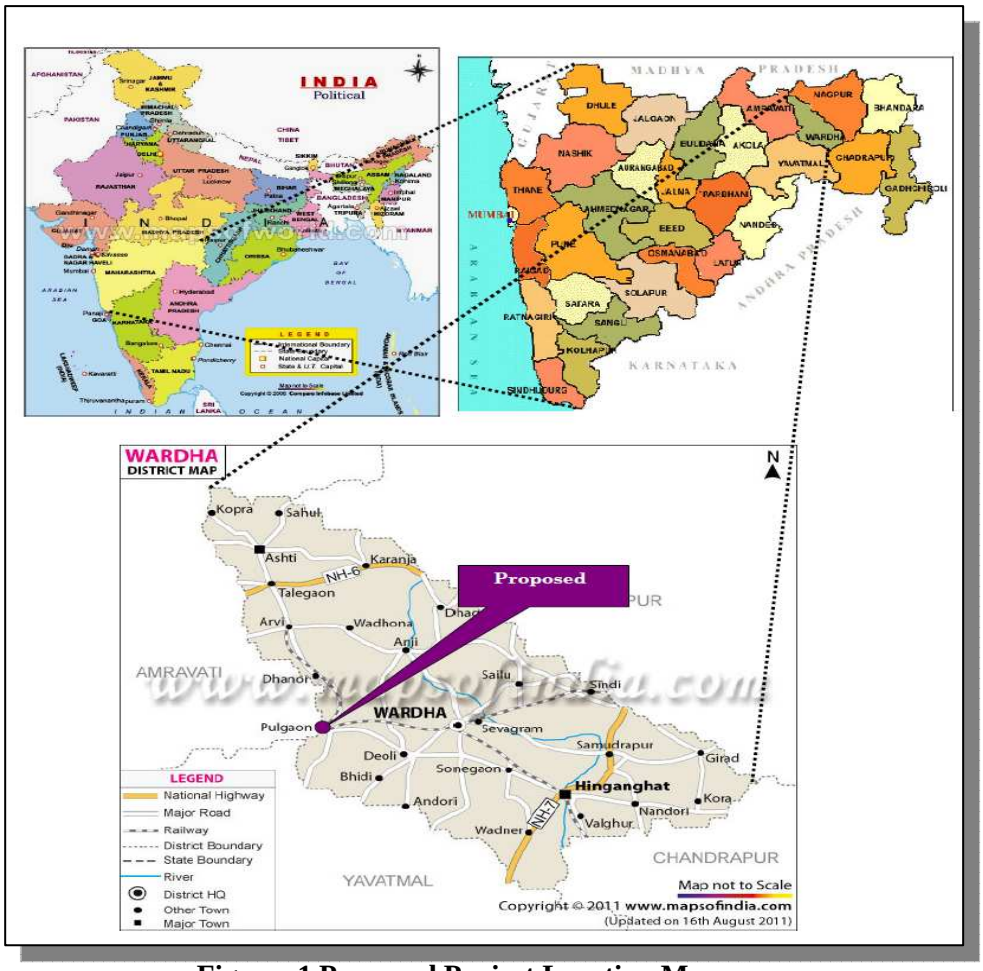

Figure: 1 Proposed Project Location Map

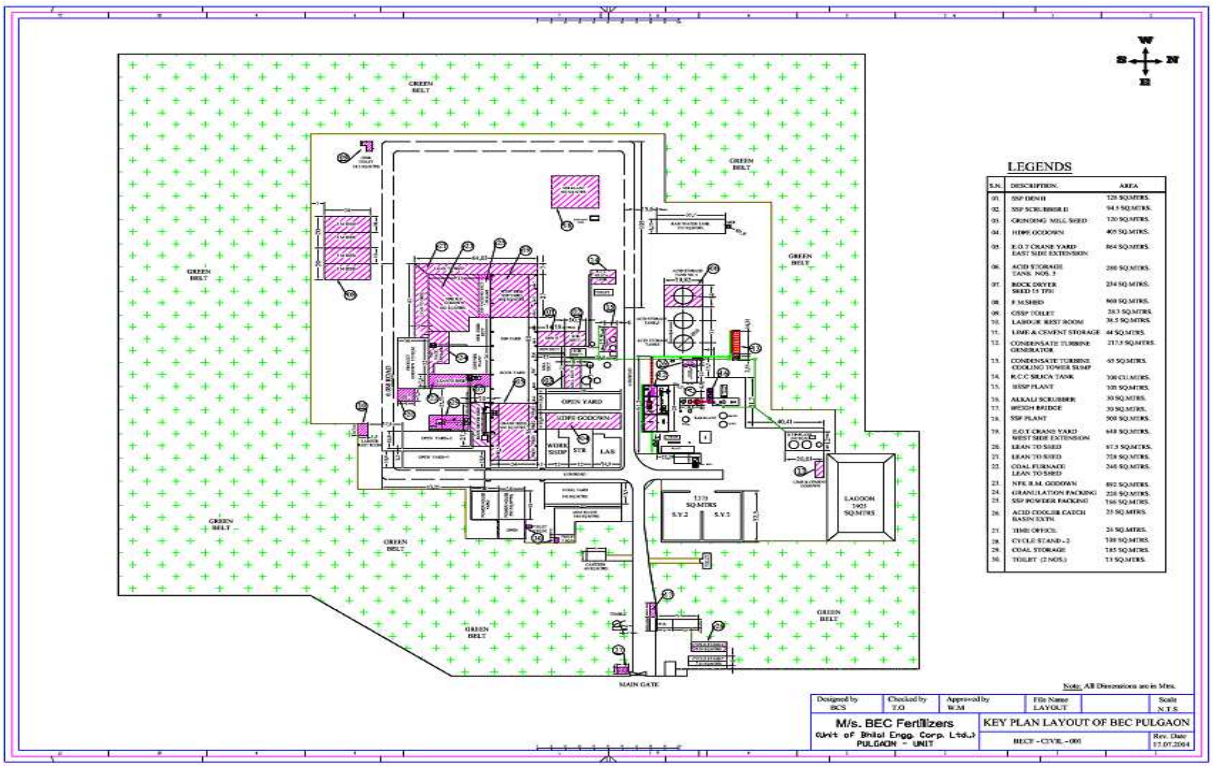

Figure: 2 Layout Map of the Proposed Project

4. Project Description

The area for proposed expansion is within the existing plant premises. The site is well connected by road and is approximately 2.6 km from Pulgaon Railway Station. The study areas of 10 km radius mostly consist of mixture of scrub land and agricultural land and the project site is in proximity to various industries such a Cotton Mill and Mohini Group of Companies.

Raw Materials Used

Sulphur, Rock Phosphate, Sulphuric acid, Phosphoric acid are the raw materials required for the manufacturing of the complex fertilizer products such as Sulphuric acid, SSP, TSP, Boronated Single Super Phosphate. Details of the raw materials required for the existing and proposed project is as per below **Table 2** and **Table 3.**

Table 2: Raw Materials Required for Existing Project

S.No.	Products	Capacity (MTPA)	Raw Material	Quantity Required (MTPA)
1	Single Super Phosphate	66,000	Rock Phosphate	36,000
			Sulphuric Acid	23,760
2	Granulated SSP/NPK Fertilizer	60,000	Various Fertilizers (DAP/ Urea/ MOP, etc.)	60,000
3	Sulphuric Acid (98%)	33,000	Sulphur	11,220
4	Sodium Silico Fluoride (By-product)`6	180	Common Salt	126

Table 3: Raw Materials Required for Proposed Project

S.No.	Products	Capacity (MTPA)	Raw Material	Quantity Required (MTPA)
1	Single Super Phosphate/ Boronated Single Super Phosphate	1,50,000	Rock Phosphate	81,820
			Sulphuric Acid	54,000
			Borax	600
2	Triple Super Phosphate	50,000	Rock Phosphate	23,000
			Phosphoric Acid	18,000
3	Granulated Fertilizers (SSP/BSSP/TSP)/NPK Fertilizer/Customized Fertilizer	2,00,000	Various Fertilizers (SSP/BSSP/TSP/DAP/Urea/MOP, etc.)	2,00,000
4	Sulphuric Acid (98%)	50,000	Sulphur	17,000

S.No.	Products	Capacity (MTPA)	Raw Material	Quantity Required (MTPA)
5	Sodium Silico Fluoride (By-product)	750	Soda Ash	600

Sulphuric Acid

Sulphur is the basic raw material for the production of Sulphuric Acid. Sulphuric acid produced in the plant shall be utilized for manufacturing Single Super Phosphate Fertilizer.

Sulphuric acid is manufactured by contact process using DCDA (Double conversion & double absorption) technology, which is latest and most efficient today. Following chemical reactions take place in the process.

01. $S+O_2 = SO3$

02. $SO_2 + ½ O_2 = SO3$

03. $SO_3 + H_2O = H_2SO_4$

Single Super Phosphate

Single Super Phosphate (SSP) manufacturing is a simple process. By digesting the Rock Phosphate with Sulphuric Acid it is produced. During the reaction the insoluble Phosphates are converted into water soluble phosphates thus when SSP is applied in field the Phosphates are readily available in the soil and absorbed by plants for its growth.

Raw material consumption (PMT of SSP)

A) Rock Phosphate - 560 Kg.

B) Sulphuric Acid (Conc. 98%) - 360 Kg.

Manufacturing process

Rock Phosphate is ground to fine powder (90% of 100mesh) in a Milling section and it is conveyed through Screw Conveyor and Bucket Elevator to the Mixer where reactions take place. Parallely Sulphuric acid, water and recycled Flouro Silicic Acid liquor are also added in the mixer in a pre-determined ratio. The Rock Phosphate, Acid and dilution liquor react together in the Mixer (Reactor) to produce single Super Phosphate.

Boronated Single Super Phosphate (BSSP)

Manufacturing process of BSSP is same as that of SSP. Boronated Single Super Phosphate will be manufactured by adding Sodium Borate Penta Hydrate (Na2B4O7.5H2O) directly to the Single Super Phosphate and blending it thoroughly. This will also be manufactured by adding Sodium Borate Penta Hydrate (Na2B4O7.5H2O) with water during the manufacturing process of Single Super Phosphate (SSP) in mixture in required proportion.

Boron is a micronutrient, which is also necessary for the growth of plants to increase the yield. As per FCO (Fertilizer Control Order), the Boron contained in the BSSP should be 0.15% to 0.20%. Above 10 Kg/MT of Sodium Borate is added to get desired Boron in the product. BECF shall manufacture Boronated SSP also in the existing SSP plant.

Triple Super Phosphate (TSP)

Triple Super Phosphate is manufactured by digesting rock phosphate with phosphoric acid. Manufacturing process of TSP is same as of Single Super Phosphate (SSP) except Phosphoric

acid used for TSP in place of Sulphuric Acid used for SSP. TSP is considered as the concentrated form of Single Super Phosphate. Consequently, TSP can also be manufactured in the existing SSP plant. BECF proposes to manufacture TSP also in the existing and proposed SSP plant.

Granulated Fertilizer (GSSP/TSP/NPK/Customized)

The granulation plant is a multi product unit where one or many of the individual fertilizers viz, Urea, TSP DAP, SSP, MOP, Boron, Zinc, Copper, Sulphur, Iron, etc are mixed together in a predetermined ratio and they are broken down and blended to make homogeneous mass. This mass is fed into granulator where required quantity of water is added to moist the mass and rotated in a drum called 'Granulator'. As a result of this the powdered mass is converted into granules of various sizes. The wet granules are passed through a rotating dryer drum where hot air generated from a furnace is passed through the mass. At the end of the dryer drum dried granules are received and it is fed into a cooler drum where atmospheric air is passed from the opposite direction to cool the material. The cooled granules are screened in vibrating screens to segregate product size, oversize & undersize particles. The oversize granules are crushed and along with undersize material it is fed back to granulator for onward granulation. In the whole process no chemical reaction takes place as it is a simple physical crushing and mixing and granulating process using suitable machineries.

To produce granulated SSP, only SSP Powder will be the raw material. For NPK Mixture manufacture Urea, DAP, SSP, MOP, etc are the raw materials. For Customized Fertilizers, in addition to the above, micro nutrients viz, Boron, Zinc & the other cation minerals in very small quantities will be added in the granulation process.

5. Baseline Environmental Status

5.1 Topography

The district of Wardha is bounded by Nagpur district in the northeast, Chandrapur district in the southeast, Yavatmal district in the southwest and Amaravati district in the northwest. Situated on the west of the Nagpur plateau, Wardha River circles the district on its north, west and southwest boundaries. The area is physiographically divided in two parts, the north and north eastern parts forming into a hilly spur projecting south and south eastwards from the Satpuras. While the southern part forms in to an undulating plain with average elevation ranging between 300 and 500 metre above mean sea level. The general slope is southwards and gentle towards Wardha River, but tends to become steeper in the northern uplands.

5.2 Geology

The geology of area consists of Deccan Trap lava flows with some patches of Gondwana formations, Lametas and the alluvium along the major river courses. This lava flows in entire area of the district in 400 meter depth. It can be easily found by comparing the difference between minimum MSL height of highest and lowest surface area of North -East part of the district. The Deccan Traps cover about 95% of the area and comprise rocks of basaltic composition. The alluvial deposits are restricted to the banks of the Wardha river and its tributaries.

5.3 Hydrology

The major riverine system of the study area is drained by Wardha River, which falls within 2.7 km (West) from the project site. It rises in the Multai plateau of the Satpura ranges and

flows all along the northern and western boundaries of the district. The other important river in the district is the Venna, which flows from adjoining Nagpur district to the Hinganghat tahsil to merge with the Wardha River at village Sawangi. Yashoda, Venna and Bakli are the main tributaries of the Wardha River.

5.4 Hydrogeology

The main sources of water in the study area are bore wells, tube wells and piped water supply. The requirements of water for irrigation and the domestic purposes, are fulfilled by the groundwater through dug well and bore well. The major part of the district is underlain by Deccan lava flows of Upper Cretaceous to Eocene age, whereas Alluvium is restricted along the banks of Wardha River and Yashoda River. . The ground water in areas underlain by Deccan Trap Basalt may be developed through dug wells and dug-cum-bored wells. The project site falls in Deoli block of the Wardha district that has high ground water potential.

The average depth to water level in the district during pre-monsoon period is 4.37 m bgl and the average depth to water level during post-monsoon period is 2.14m bgl. The fluctuation in the ground water level is about 2.23 m. (*Source: CGWB, 2007*)

The main sources of water in the study area are bore wells, tube wells, canals and piped water supply. The study area falls under the Wardha river basin.

5.5 Land Environment

5.5.1 Land Use Land Cover

The project site is located in the Gunjkheda Village, near Pulgaon Town, Tehsil Deoli, District Wardha and the Proposed Expansion area is located within the existing plant premises so the project site is devoid of agricultural land but within the study area both agricultural, fallow land and scrub lands are present.

About 73.87 % of the study area is covered by agricultural land, which is characterized by scattered plantation of 1.09 % and built up area of 2.77%. About 4.65% land is fallow land and water bodies occupy 1.9 % of land. 7.2 % of the area constitutes shrub land and 0.14 % constitutes dry river bed. India's largest military-civil camp and ammunition depot (CAD) is about 3.0 km from the project site and occupy 8. 33% of land in the 10 km study area.

5.5.2 Seismicity

The proposed project site is in Seismic Zone II as per IS 1893 (Part I):2002, the associated intensity is MM VI (or less), which signifies that the project site is of low intensity zone. Hence, probability of having high intensity earthquake is almost negligible.

5.5.3 Soil Quality

The Soil Monitoring was conducted for studying the various parameters in five different locations within the study area, namely namely existing plant site, proposed plant site, Khurjhudi Village, Nachangaon Village and Bobhad Village.

As per the soil quality analytical results, the soil was slightly alkaline in nature with pH ranging from 7.3 to 7.6. The bulk density of the soil varied from 1.33 to 1.59 g/cc, which was ideal for agricultural activity. The concentration of available Nitrogen, Phosphorous and Potassium were in the range of 154 – 189 kg/ha, 22.1– 31.8 kg/ha and 265 – 382 kg/ha, The organic carbon in the soil ranged from 0.76 to 1.00% The concentration of Fluoride in the soil

ranged from 1.5 to 3.1 mg/l. From the above physicochemical investigation of soil it can be concluded that the soil quality of the area is moderately good and would support vegetation after suitable reclamation / modification.

5.6 Water Environment

To assess the water quality of the study area, three different classes of water was sampled and assessed, they are: Surface Water, Ground Water and Water from the Effluent treatment plants, located within the plant premises.

Water samples were collected once from all these locations during the one season study period. The samples were analyzed for relevant physico-chemical parameters for drawing up the baseline data.

Surface Water

The pH of the surface water was in the range of 7.2 to 7.9. The TDS ranged from 77 to 98 mg/. The concentration of Calcium ranged from 21 to 41 mg/l and Magnesium ranged from 17-29 mg/l. The concentration of Lead, Chromium, Mercury, Arsenic, Cyanide were below the detectable level. The concentration of fluoride in water was in the range of 0.24-0.36 mg/l.

Ground Water

The pH of the ground water was slightly alkaline ranging from 7.1 to 7.7. The totals dissolved solids in all the sampled water and were in the range of 412 to 468 mg/l. Calcium and magnesium were in the range of 42-71 mg/l and 20-28 mg/l, respectively. The concentration of fluoride in water was in the range of 0.51 – 0.79 mg/l, which is within the permissible limit of 1.0 mg/l as per IS 10500:2012. The range of alkalinity and hardness in water ranged from 98-120 mg/l and 142-168 mg/l, respectively which is within the permissible limit of 200.0 and 300.0 mg/l as per IS 10500:2012.

The concentration of nitrate in the ground water was in the range of 33.8-50.1 mg/l which is above the permissible limit of 45.0 mg/l in some of the locations i.e. GW2, GW4 and GW5.

Waste Water

The wastewater quality monitoring was conducted for studying the parameters in three different locations within the plant. The pH of the water collected from ETP 1, 2 were alkaline in nature. All other parameters like TSS, Oil and grease, Fluoride, Phenolics, Mercury, Cyanide, Phosphates, were well within the discharge limits.

5.7 Climate and Meteorology

The climate of Wardha district is characterized by a hot summer and general dryness throughout the year except during the southwest monsoon season. The year may be divided into four seasons. The winter is from December to February. The hot season is from March to May. This is followed by the southwest monsoon season till September. October and November constitute the post-monsoon season.

The air is generally dry over the district except during the southwest monsoon season when the humidity is generally above 70%. The summer months are the driest when the relative humidity goes down to about 17 to 20% in the afternoons. During the southwest monsoon months the skies are heavily clouded to overcast. In the rest of the year the skies are mostly clear or lightly clouded. Cloud amounts are increased in the afternoons.

Winds are generally light to moderate with some strengthening in force during the latter part of the hot season and during the southwest monsoon season. A review of the wind rose diagram of the project site project site during the study period (September to November, 2013) shows that predominant winds are mostly towards South West directions with calm winds prevailing during 7.14%. The inversion level for the proposed project site during post monsoon season is in the range of 1280 m – 1530m.

5.8 Ambient Air Quality

Six sampling stations were chosen for monitoring of ambient air quality within the study area. These were within 10 km from proposed expansion locations. One of the locations was situated in the predominant wind direction (South West and South East) as per the Windrose.

The air quality parameters like PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO, NH_3, and HC are monitored out of which PM_{10}, $PM_{2.5}$, SO_2, NO_X, CO and NH_3 are listed in the NAAQ standard 2009 and are found to be within the permissible limits of prescribed standards.

The 24-hourly average PM_{10} level varied between 51.23 $\mu g/m^3$ (at AQ-3 Expansion Site) and 69.07$\mu g/m^3$ (at AQ-2 Storage Area). The level of PM_{10} in all the areas is well within the NAAQ standards of 100 $\mu g/m^3$. The 24-hourly average $PM_{2.5}$ level varied between 23.28 $\mu g/m^3$ (at AQ-6 Laxmi Narayanpur) and 35.45 $\mu g/m^3$ (at AQ-2 Storage Area).Similar to that of PM_{10}, the levels of $PM_{2.5}$ for all the sampling locations is within the permissible limit.

The mean of 24-hourly average values of SO_2 over the study area was varying between 6.4 $\mu g/m^3$ (at AQ-5 Malkapur) to 8.6 $\mu g/m^3$ (at AQ-2 Raw Material Storage Area). The SO_2 levels at all the locations were much below the permissible limit of 80 $\mu g/m^3$ stipulated for residential, rural & other areas.

The mean of 24-hourly NO_x level over the entire study area was varying between 15.2 $\mu g/m^3$ (at AQ-1 Main Entrance Gate BEC) to 17.3 $\mu g/m^3$ (at AQ-3 Material Storage Area). The 24-hourly average values of NO_x at all the locations were within the prescribed limit of 80 $\mu g/m^3$ stipulated for residential, rural and other areas.

Air samples for Carbon Monoxide, Benzene, Ammonia and Fluoride were collected from six different sites within the study area. The values of all the pollutants were found to be within the NAAQS Limits.

5.9 Noise

The noise level was monitored in seven locations and is within the permissible limits.

Assessment of day-night equivalent noise levels in and around the industry reveals that noise levels are ranging from 44.68 to 58.87 dB (A) during day time and 32.35 to 42.81 dB (A) during night time, which can be taken as the existing baseline status.

5.10 Biological Environment

The study was carried out within the 10 km radius of the project area. To understand the structure of the ecological community of the study area quadrate sampling method was followed. During the process of ecological survey, quadrate study was done for tree, shrubs and herbs species to understand the community structure of the vegetation. The forest of Wardha District comprises of miscellaneous forests with few Teak patches. It is southern tropical moist deciduous forest in type and supports high proportion of mixed trees.

Flora

The forest of Wardha District comprises of miscellaneous forests with few Teak patches. It is southern tropical moist deciduous forest in type and supports high proportion of mixed trees. Among the species observed in the area, *Tectona grandis, Delbergia sissoo* (Shisham), *Acacia nilotica* (Babul) and *Bambusa arundinaceae* (Bamboo) were common.

Fauna

During the field, survey fauna species were recorded by direct observation as well as indirect evidences such as calls, nests, burrows, droppings, etc., and interrogation with local people during field survey which confirms the presence of the animals in the area. Among the species that were observed are Common Langur, Pigeon, Bulbul, Python, Common Skink.

No Eco sensitive Zone like Biosphere reserve, National Park, Wildlife Sanctuary is present within 10 km of the study area or its vicinity.

5.11 Socio-Economic Environment

The sociological aspects of this study include human settlements, demography and social strata and literacy levels besides infrastructure facilities available in the area. The Socio – Economic survey was conducted in six hamlets Gunjkheda, Boargaon , Hiwara, Laxmi Narayanpur, Malkapur and Kurzadi villages.

Agriculture provides livelihood to a large section. People are engaged in growing crops and plantations for commercial purposes. The major cash crops of the area are Sorghum, Cotton, Wheat, Soybean, Red Gram, and Oil Seeds.

Most of the villages have good Power, Banking and communication facilities. Most of the villages are accessible through roads, either pakka or kachha. They are well connected with State highway (SH-243), State highway (SH-244) to nearby rural areas.

Pulgaon railway station is the nearest main railway station at approx. 2.6 km (aerial distance) from the project site in the north direction, which is well connected to the study area. Apart from railways and roadways, there are rivers flowing through the area.

Most of the villages in the block have both mobile and landline telecom connections. They have post offices and many cooperative as well as regional level banks. All the villages have television/radio sets and are aware of national and international news/events.

6. Identification of Impacts and Mitigation Measures

The impacts and mitigation measures with respect to the construction and operation phases of the proposed project are given in **Table 4**.

Table 4: Proposed Environmental Mitigation Measures

Sl. No.	Component	Impact	Mitigation Measures
Construction Phase			
1.	Air	Generation of Dust, CO_2, SO_X, NO_x (Short term for a period of 6 months and Local)	• Covering of construction material with sheets while transportation and storage. • Use of water sprinklers. • Personal Protective equipment

Sl. No.	Component	Impact	Mitigation Measures
			for labours. • Project site is inside the existing industrial complex. No impact on general public.
2.	Noise and Vibration	• Increase in the noise levels due to movement of vehicles and construction activities. • Vibration due to movement of vehicles and construction activities. (Short term for a period of 6 months and Local)	• Proper service and maintenance of machines and vehicles to control noise. • Personal protective equipments for labours. • The impact due to vibration will be insignificant. • Project site is inside the existing industrial complex. No impact on general public.
3.	Water	• Water pollution due to disposal of sewage will be curtailed with the Septic Tank & Soak Pit (Short term, Minor, Local)	• Proper sanitation facilities in the construction site as well as labour colony. • Treatment of sewage within BEC premises.
4.	Land	• Removal of top soil and change in soil quality. • Soil pollution due to discharge of sewage and solid waste onto land will be curtailed with proper treatment. • No change in Land use pattern as project site is inside the existing industrial complex. (Minor and Local)	• Use of removed soil for landscaping purposes, improving aesthetics. • Sanitation facilities in the construction site as well as labour camps. • Treatment and disposal of sewage and solid waste as per Maharashtra State Pollution Control Board guidelines.
5.	Biological • Flora • Fauna	• Disturbance due to increase in noise. (Short term, Minor and Local)	• Green belt development.
6.	Socio-Economic	Employment of construction workers (Direct, Positive)	• People from the study area to be employed as far as possible
7.	Occupational Health and Safety	• Auditory ailment due to noise will be prevented. • Dust emission (Short term, Minor and Local)	• The use of personal protective equipments will be made stringent. • Water sprinkling system for dust generating area.
Operation Phase			
1.	Air	• Increase in the air pollutant concentration will be addressed	• Use of cyclonic Separators and Venturi scrubbers to control dust and fugitive emissions within the

Sl. No.	Component	Impact	Mitigation Measures
		using cyclonic Separators and Venturi scrubbers • Dust generation possibility is minimum as raw materials handled in cover vehicle/covered shed & mechanized system and product will be bagged in the bagging plant (Direct, Local, sustainable)	limits of Maharashtra State Pollution Control Board. • Personal protective equipments for labours. • Strict implementation of Hazardous Waste Rules Act 1989, while storage/handling/transportation of hazardous substances. • Regular monitoring of emissions.
2.	Noise and Vibration	• Increase in the noise levels will be minimised by using Equipments with noise level below 80db • Vibration during operation of manufacturing unit. (Direct, Minor ,Local, sustainable)	• Equipments with noise level below 80db only will be used. • Proper service and maintenance of machines to control noise. • Personal protective equipments for employees like anti vibration gloves and ear plugs. • Project site is inside the existing industrial complex. No impact on general public.
3.	Water	• Insignificant on groundwater. • Degradation of quality due to discharge of sewage and untreated water will be prevented. • Discharge of effluent from the manufacturing unit. (Indirect, Negative, Minor, Local, sustainable)	• Proper sanitation facilities in the plant area. • Treatment of wastewater • The effluent generated from the manufacturing unit will be reused for dilution of sulphuric acids and phosphoric acids. There will be no generation of effluent from the proposed project. Hence, no specific mitigation measures are proposed with respect to this. Effluent discharge, if any due to unforeseen circumstances or process upset shall be treated in the existing ETP
4.	Land	• Pollution due to discharge of sewage waste will be prevented. • Dust generation possibility is minimum as raw materials handled are liquids and product will be bagged in the existing bagging plant (Direct, Negative, Minor , Local, sustainable)	• Proper sanitation facilities in the plant area. • Proper treatment and disposal of sewage and solid waste as per the guidelines of Maharashtra State Pollution Control Board

Sl. No.	Component	Impact	Mitigation Measures
5.	Biological • Flora • Fauna	• Disturbance due to increase in noise. (Minor, Direct, Local ,sustainable)	• Operational activities of heavy machineries and transportation only in daytime. • Green belt development.
6.	Socio-Economic	Employment to local people (Positive, Local)	• Proper sanitation facilities within plant area. • Proper treatment and disposal of sewage and solid waste as per the guidelines. • Proper handling and management of hazardous material as per the Hazardous waste (Management and Handling) Rules.
7.	Occupational Health and Safety	• Auditory ailment due to noise generated from the production unit will be minimised by using Equipments with noise level below 80db • Accidents due to handling/storage/ transportation of hazardous materials. (Local and sustainable)	• Equipments with noise level below 80db only will be used. • Wearing of personal protective equipments like gas masks, ear muffs etc. will be strictly enforced. • Training/awareness programme about the handling / storage / transportation of hazardous materials. • Signages showing the hazardous nature and the method of handling near storage / handling area of all the hazardous materials. • First aid training for chemical /fire hazard related accidents.

7. Environmental Monitoring Plan

The parameters and respective frequency of monitoring as part of Environmental Monitoring Plan for both construction and operation phases are tabulated below in **Table 5 and 6.**

Table 5 List of Parameters to be monitored during Construction Phases

Parameter	Parameters	Frequency	Location
Air	PM_{10}, $PM_{2.5}$, SO_2 and NO_x	Monthly	At major construction sites (total 3 stations)
Noise	Equivalent noise level	Monthly	At major construction site and near generator set
Soil	Parameters as per CPCB	Annual	At and near the plant area and green belt, three locations around the project site within 200 m distance from the unit.
Water	Parameters as per CPCB standards	Monthly	Storm water drainage area, two ground water location within BEC Fertilizer Pulgaon.

Table 6: List of Parameters to be monitored during Operation Phases

Parameter	Parameters	Frequency	Location
Air	PM_{10}, $PM_{2.5}$, SO_2 and NO_x	Monthly	At major construction sites (total 3 stations)
Noise	Equivalent noise level	Monthly	At major construction site and near generator set
Soil	Parameters as per CPCB	Annual	At and near the plant area and green belt, three locations around the project site within 200 m distance from the unit.
Water	Parameters as per CPCB standards	Monthly	Storm water drainage area, two ground water location within BEC Fertilizer Pulgaon.
Effluent from ETP	pH, BOD, COD, TSS, TDS	Monthly	Inlet and outlet of ETP
Item	Parameters	Frequency	Location
Air	PM_{10}, $PM_{2.5}$, SO_2 , HC, NH_3, CO and NOx	Monthly	Stack, generator set, three locations within 100 – 200 m of the project site, two locations within the plant near the production units, storage area for the raw material and fertilizer, packaging area for fertilizer.
Noise	Equivalent noise level	Monthly	Generator set, three locations within 100 – 200 m of the project site, two locations within the plant near the production units, storage area for the raw material and fertilizer, packaging area for fertilizer.
Ground Water	Parameters as per CPCB standards	Thrice a year	Storm water drainage area, two ground water locations within BEC Fertilizer Pulgaon and one in the nearest bore well.
ETP	Parameters as per CPCB standards	Monthly	Before and after treatment from ETP
Soil	pH, moisture content, texture, organic matter, chloride, SAR, CEC, nitrogen, phosphorous, fluoride, sulphur	Once in a year	Three locations around the project site within 200 m distance from the unit.
Occupational Health	General and respiratory ailments check up	Once in a year	-

8. Project Benefits

The proposed expansion project will lead to the following benefits:

- Increase in production of complex fertiliser.
- Increase in agricultural productivity due to application of complex fertiliser.
- The project will result in the employment opportunities to the unskilled/skilled local people.
- Thereby, the standard of living of the employed people will increase.

9. Environmental Management Plan (EMP)

The following plans are proposed under the Environmental Management Plan:

- Air Pollution Management Plan
- Storm Water Management Plan
- Sewage Management Plan
- Rainwater Harvesting System
- Effluent Management Plan
- Solid Waste Management Plan
- Hazardous Waste Management Plan
- Green Belt Development
- Corporate Responsibility for Environmental Protection (CREP)

A total capital and recurring cost provision of about **INR 203 Lakhs** has been kept in the project cost towards the environmental protection, control and mitigation measures and implementation of the EMP. The budgetary cost estimate for EMP is given in **Table: 7.**

Table: 7. Cost Estimate for EMP Budget

S. No.	Items	Approx. Capital Cost (Rs. Lakhs)	Recurring Cost per yr. (Rs. Lakhs)
1.	Water pollution control (water & effluent quality monitoring)	25	5
2.	Air pollution control (Capital cost of stacks and recurring cost of stack emission monitoring.)	100	28
3.	Noise pollution control (Capital cost of DG room enclosure & acoustic treatment and recurring cost of noise monitoring.)	5	-
4.	Solid wastes management (Capital cost of bins for solid wastes, storage space for hazardous wastes and recurring cost of handling & disposal.)	15	3
5.	Rainwater harvesting.	10	-
6.	Storm water drainage system.	Present drainage system is available	1
7.	Landscaping.	5	1
8.	Environmental management (recurring cost of annual monitoring, hiring of consultants and payment of various statutory fees.)		5

S. No.	Items	Approx. Capital Cost (Rs. Lakhs)	Recurring Cost per yr. (Rs. Lakhs)
	Total	**160**	**43**

10. Conclusion

The environmental status of the project site and study area of 10 km radius is delineated with respect to air, noise, water, land, biological and socio-economic environment The different project activities in the construction and operation phases are identified. To identify the impacts, the interaction between the project activities and different components of environment are classified phase wise. A summary of the identified impacts are given in the following paragraphs.

Since this project is proposed inside the existing plant premises with well-maintained infrastructure facilities, the impact during construction phase on the nearby settlement will be negligent as the land is already developed for industrial use.

During the operational phase, transportation of raw material, operation of grinding, screening of the machines and the production process could cause a temporary disturbance to local environment which will be prevented with the proposed mitigation measures proposed in Chapter 4.

From the Environmental Impact Assessment, it can be concluded that this proposed project will not have any major significant negative impacts. The minor impacts arising out during construction and operation phases can be mitigated with the help of the proposed Environmental Management Plan.

In general, production of fertiliser will benefit the economy of the state and country also it will generate employment opportunities among the local peoples which ultimately will uplift the status of living.