EXECUTIVE SUMMARY

OF

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

Proposed 210 KLPD Grain based distillery along with 6.25 MW Co-Generation Power Plant

At
Village: Beltukri, Tehsil & District: Mahasamund, Chhattisgarh

APPLICANT

M/s. Piccadily Agro Industries Ltd.

Regd. Address: - Village Bhadson, Umri Indri Road, Tehsil Indri District Karnal, Haryana 134101
Email: environment.indri@piccadily.com

EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

M/s Piccadily Agro Industries Ltd. is proposing 210 KLPD Grain based Distillery along with 6.25 MW Co-generation Power Plant at Village Beltukri, Tehsil & District Mahasamund, Chhattisgarh. The total area for the proposed project is 9.0 ha (22.24 acres) & complete land is under possession of the company. The company will apply for land conversion to industrial use.

The proposed distillery plant will be designed for manufacturing Ethanol/Rectified Spirit /Extra Neutral Alcohol/Industrial Alcohol/Denatured Spirit/Specially Denatured Spirit along with Malt Spirit from grains (Maize, Broken Rice, Surplus Rice from FCI Sorghum & Barley Malt). Along with the main product, the proposed new installation of distillery will also produce animal feed called as Distiller's Dried Grain with Soluble (DDGS) depending upon the market demand.

As per EIA Notification dated 14th Sep, 2006 and as amended on 13th June, 2019, the project falls under Category "A", Project or Activity '5(g)' Distilleries [Non-Molasses based distilleries>200 KLD] and will be appraised at Central level in MoEFCC, New Delhi.

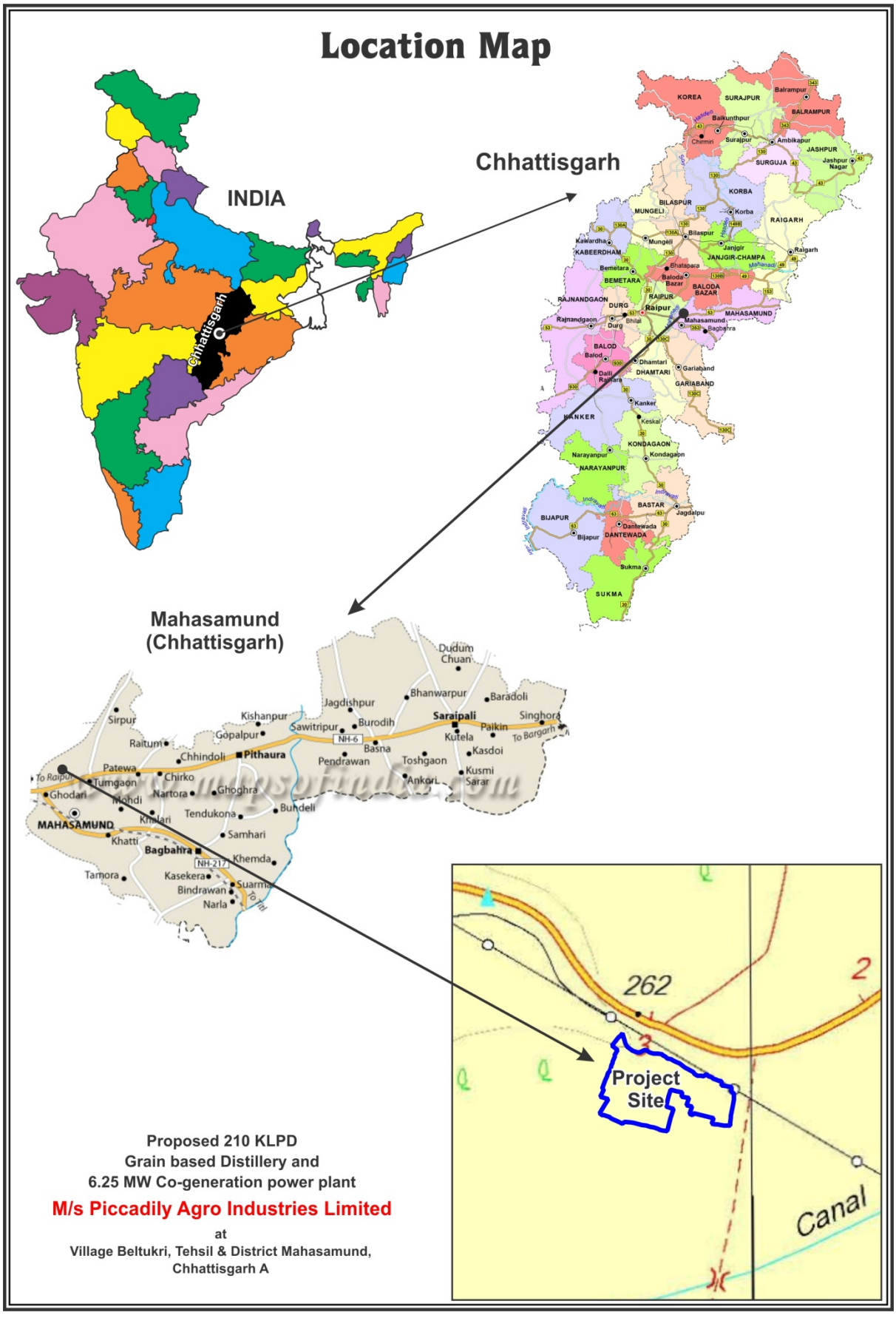
Standard ToR has been issued by MoEFCC, New Delhi vide letter no. IA-J-11011/277/2023-IA-II(I) dated 31st July 2023 for the preparation of EIA/EMP Report.

1.2 DETAILS ABOUT THE PROJECT

<table>
<tr><th>S. No.</th><th>Particulars</th><th>Details</th></tr>
<tr><td>A.</td><td>Nature & size of the Project</td><td><table><tr><th>Units</th><th>Proposed Capacity</th></tr><tr><td>Grain based Distillery</td><td>210 KLPD</td></tr><tr><td>Co-generation power plant</td><td>6.25 MW</td></tr></table></td></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>B.</td><td>Location Details</td><td></td></tr>
<tr><td>1.</td><td>Village</td><td>Beltukri</td></tr>
<tr><td>2.</td><td>Tehsil</td><td>Mahasamund</td></tr>
<tr><td>3.</td><td>District</td><td>Mahasamund</td></tr>
<tr><td>4.</td><td>State</td><td>Chhattisgarh</td></tr>
<tr><td>C.</td><td colspan="2">Geographical Extent of the Plant Site</td></tr>
<tr><td>1.</td><td>Latitude</td><td>21°13'8.83" N to 21°13'20.19" N</td></tr>
<tr><td>2.</td><td>Longitude</td><td>82°4'41.10"E to 82°4'57.78"E</td></tr>
<tr><td>3.</td><td>Topo sheet No.</td><td>56H/7, 56H/8</td></tr>
<tr><td>D.</td><td colspan="2">Area Details</td></tr>
<tr><td>1.</td><td>Plant Area</td><td>9.0 ha (22.24 acres)</td></tr>
<tr><td>2.</td><td>Greenbelt & Plantation Area</td><td>2.97 ha (7.34 acres) i.e., 33% of the plant area will be developed as greenbelt & plantation area.</td></tr>
</table>

S. No.	Particulars	Details
E.	**Environmental Setting Details (*with approximate aerial distance and direction from the project site*)**	
1.	Nearest Town & City	• Mahasamund (~10.5 km in SSE direction))
2.	Nearest National Highway / State Highway	• NH 53 (~3.5 km in South Direction) • NH 353 (~8.0 km in SW direction) • SH 20 (~8.0 km in NW Direction)
3.	Nearest Railway station	Belsonda RS (~8.4 km in SW direction)
4.	Nearest Airport	Swami Vivekananda Airport, Raipur (~ 35.0 km in WSW direction)
5.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, Reserved Forests (RF)/ Protected Forests (PF), Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius	No National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius. Kukradih RF (5.0 km in NE direction), Tumgaon RF (5.5 km in ESE direction), Sirpur RF (7.0 km in NE direction), Sorid PF (8 km in SE direction) within 10 km radius.
6.	Water Body (within 10 km radius)	Kurar Nadi (1.5 km in SW direction), Kantori Nadi (2.5 km in WSW direction), Mahanadi river (4 km in NW direction).Some nalas are present within 10 km radius
7.	Seismic Zone	The project site falls in Seismic Zone – II Low damage risk zone [based on the Vulnerability Atlas of India – 3rd Edition, BMTPC]
F.	**Cost details**	
1.	Total Cost of the Project	Rs. 182 Crores
2.	Cost for Environmental Protection Measures	Capital Cost- Rs. 20.0 Crores Recurring Cost- Rs. 2.0 Crores/annum
G.	**Working Days**	350 days per annum
H.	**Products Mix**	Ethanol/ Rectified Spirit /Extra Neutral Alcohol/ Industrial Alcohol/ Denatured Spirit/ Specially Denatured Spirit & Malt Spirit
I.	**By Product**	DDGS & CO2

1.3 LOCATION MAP


Location Map
INDIA
Chhattisgarh
Mahasamund
(Chhattisgarh)
Project
Site
262
Canal
Proposed 210 KLPD
Grain based Distillery and
6.25 MW Co-generation power plant
M/s Piccadily Agro Industries Limited
at
Village Beltukri, Tehsil & District Mahasamund,
Chhattisgarh A

1.4 Requirements for the Project

1.4.1 Raw Material Requirement

Grains such as damaged grain feed stock, broken rice, maize, bajra & sorghum will be used as raw material which is easily available from the local market. Details regarding quantity of raw materials required their source along with mode of transportation for project are given in table below:

Table - 1
Raw Material Requirement for 150 KLPD Distillery

S. No.	Particulars	Total Requirement	Storage facility	Source & mode of transportation
1.	**Grains**- Maize, Broken Rice & Sorghum	464 TPD	Steel Silo	Near-by Markets via road
2.	**Barley Malt**	20 TPD	Steel Silo	Near-by Markets via road
3.	**Process Chemicals**			
	Sodium Hydroxide (Caustic soda)	2100 Kg/day	Stores/Steel Tanks	Near-by Markets via road
	Nutrients	420 Kg/day	In Stores	
	Enzymes (Alpha amylase, Amyloglucosidase)	273 Kg/day	In Stores	
	Antifoam Agent	105 Kg/day	In Stores	
	Dry Yeast	105 Kg/day	In Stores	

1.4.2 Fuel Requirement

The fuel required for proposed boiler to generate steam & power is biomass like rice husk or coal. Details regarding fuel requirements are given below.

Table- 2
Fuel Requirement

Name of Raw Material	Total Requirement (TPD)	Storage facility & capacity	Source & Mode of Transportation
Biomass/Rice husk	412 TPD	Covered sheds	From local suppliers by road
Or			
Low sulphur Coal	288 TPD	Covered sheds	From local suppliers by road

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

1.4.3 Other Basic Requirements

Other basic requirements for the project are given in Table below.

Table – 3
Basic Requirements for the Project

S. No	Parameters	Quantity Requirement	Source
1.	Fresh Water (KLPD)	1102 KLPD	Surface water
2.	Power (MW)	6.0 MW	Proposed 6.25 MW Co-generation power plant
3.	Manpower (persons)	150	150 persons (100 Permanent + 50 Temporary)

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

1.5 PROCESS DESCRIPTION

Grain based distillery	Malt spirit production
• Grain storage silos, cleaning, handling and milling • Liquefaction & Saccharification • Fermentation • CO2 Recovery plant • Multi Pressure distillation • Decantation • Multi Effect Evaporation • DWGS Dryer Section	• Malt Handling • Milling • Mashing • Fermentation • Pot Distillation

1.6 DESCRIPTION OF ENVIRONMENT

1.6.1 Presentation of Results (Air, Noise, Water and Soil)

Baseline study of the study area was conducted during Summer Season (March to May, 2023). Ambient Air Quality Monitoring reveals that the concentrations of PM_{10} and $PM_{2.5}$ for all the 8 AAQM stations were found between 51.3 to 70.6 µg/m3 and 22.9 to 39 µg/m3 respectively. The concentrations of SO2 and NO2 were found to be in range of 12.9 to 5.2 µg/m3 and 13.7 to 23.9 µg/m3 respectively.

Ambient noise levels were measured at 8 locations within the 10 km radius area from the project site. Noise levels vary from 50.6 to 54 Leq dB (A) during day time and 40.2 to 43.9 Leq dB(A) during night time.

Groundwater was analyzed for 8 locations. The pH of the groundwater samples ranged from 7.21 to 7.97 which is within the permissible limit. The color and turbidity were below detection limit and odor and taste were agreeable. The total dissolved solids ranged from 294 to 429 mg/l. Physical quality of the groundwater samples was fair. This observation is supported by moderate to high values of total hardness 175.22 to 286.87 (mg/l) and alkalinity 158.05 to 255.97 (mg/l). Samples were less polluted as indicated by the values of chlorides 51.23 to 87.54 (mg/l) and sulphates 14.5 to 58.12 (mg/l). The Fluoride concentration is 0.55 to 0.97 (mg/l). Based on the moderate conductivity values (496 to 663 µS/cm), the groundwater samples are rich in dissolved substances and minerals which are good for irrigation purpose. The sodium 22.3 to 43.6 (mg/l) and potassium 3.2 to 5.3 (mg/l) concentration are very low indicating absence of pollution of groundwater samples. Total suspended solids, Nickel, Mercury, Arsenic, Lead, Cadmium, Manganese, Copper, Zinc, Chromium, Anionic Detergents, Phenolic compounds, Boron, Aluminium and phosphates were BDL for all the villages.

Soil monitoring was carried out at 8 locations and the analysis results show that soil is slight acidic to basic in nature, pH ranged from 7.66 to 8.11 Water holding capacity (47.6 % to 61.9 %) is favorable for the crops but showed tendency towards water logging. However, the bulk density

1.23 to 1.32 (g/cc) was within the optimum level 1.0 to 1.8 (g/cc). Calcium ranges from 1409 to 2333.74 mg/kg, Sodium 134.45 to 245.47 mg/kg, Potassium 247.28 to 437.24 (kg/ha) was high, Available nitrogen 215.65 to 347.96 (kg/ha) was moderate and Available phosphorus 23.74 to 34.14 (kg/ha) is high. Chloride levels range from 149.54 to 299.2 mg/kg and SAR ranges from 0.80 to 1.36 of the soil samples. Nitrogen fertilizer addition may be necessary during plantation and green belt development. The average conductivity values are 0.34 to 0.52 (mS/cm) which is average in all locations.

1.6.2 Environmental Monitoring Programme

Details of the environmental monitoring schedule / frequency, which will be undertaken for various environmental components, as per conditions of EC/CTE/CTO are given in Table below**.**

Table - 4
Post Project Monitoring

S. No.	Description	Frequency of Monitoring	Locations of monitoring
1.	Ambient Air Quality	As per EC/CTO condition	3-4 Location in and around plant site (1 within and 3 outside plant area at an angle of 120^0 each)
2.	Stack Monitoring	Continuous Monitoring	Plant Site (Boiler)
3.	Performance Guarantee (PG) test of pollution control equipment	Yearly	All pollution control devices
4.	Fugitive Emission	As per EC/CTO condition	In the plant site
5.	Ground water quality	Twice a year (Pre and Post Monsoon)	In & around the plant site
6.	Effluent quality (CPU)	Daily (In house laboratory)	ETP Outlet
7.	Noise Level Monitoring	As per EC/CTO condition	In & around the plant site
8.	Soil Quality	Yearly	In & around the plant site
9.	Medical checkup of employees	Yearly	Nearby hospitals/dispensary
10.	Compliance Audit	Half yearly	In & around the plant site
11.	OHS Audit	Yearly	In & around the plant site

1.7 PROJECT BENEFITS

The distillery installation of Piccadily Agro Industries Ltd. will result in growth of the surrounding areas by increasing direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Development of social amenities will be in the form of medical facilities, education to underprivileged and creation of self-help groups. Chhattisgarh will get revenues in terms of taxes and local people will get direct & indirect employment. Business opportunities for local community will be available. No adverse effect on environment is envisaged as proper mitigation measures will be taken up for the same. Projects will be implemented based on community needs and with significant local contributions. Important areas identified through socio-economic survey and public hearing will be considered for social welfare activities covered under EMP. This approach will strengthen the groups, empower the members.

1.8 ENVIRONMENT MANAGEMENT PLAN

The environment management plan is as given below: -

Particulars	Details
Air quality management	➢ For proposed 60 TPH boiler, ESP as Air pollution control equipment will be installed with stack height of 60 m to control the particulate and gaseous emissions in accordance with CPCB guidelines. ➢ CO_2 generated (154 TPD) during the fermentation process will be collected and sold to authorized vendors. ➢ DG Set (1 x 1500 KVA) will be provided with adequate stack height as per CPCB Guidelines. ➢ Adequate measures for control of fugitive dust emissions will be taken. ➢ All the internal roads will be asphalted and regular sweeping & sprinkling of water in dust generating areas. ➢ Greenbelt development around the periphery & within the premises of the plant will help in attenuating the pollutants emitted and maintaining air quality. ➢ Online Continuous Emission Monitoring System will be installed with the proposed stack and data will be transmitted to CPCB/SPCB servers. ➢ Regular monitoring will be done to ensure ambient air quality standards.

Water quality management	➢ The Grain based distillery will be based on "Zero Effluent Discharge". ➢ **For Grain based operation**: Grain Slops (Grain Spent Wash) (1163 TPD) will be taken through Centrifuge Decanters for separation of Suspended Solids separated as Wet Cake and which goes as cattle, poultry and fish feed as it contains high protein. (Also known as DWGS – Distillers Wet Grains Soluble). Thin Slops from the Decanter Centrifuge will be partly recycled back to process and balance portions shall be taken to Thins Slops Evaporation Plant (MEE) for concentration of remaining solids to form Syrup. This Syrup will be also mixed into the Wet Cake coming out of Centrifuge and forms part of Cattle, poultry and fish Feed. DWGS Drier: The Wet Cake (DWGS) and Syrup mixture will be dried in Steam Tube Bundle Dryer for producing DDGS with 8-10% moisture (max.). DDGS (88 TPD) will be utilized as Cattle, poultry and fish feed ingredients. ➢ **During Malt Spirit Process**: Malt Spirit Slops will be passed through centrifuge decanters for separation of suspended solids separated as Wet Cake (also known as DWGS – Distillers Wet Grains Soluble). ➢ Process condensate, boiler Blowdown, DM plant reject & washing, CT blowdown will be treated in CPU/ETP of capacity 1200 KLPD and treated water will be reused in process activities. ➢ Domestic waste water will be treated in Sewage Treatment Plant of Capacity 30 KLPD. ➢ Regular monitoring of ground water quality will be carried out.
Noise Management	➢ Personal Protective Equipment like earplugs and earmuffs will be provided to the workers exposed to high noise level. ➢ Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise. ➢ Greenbelt inside the plant premises and at the plant boundary will be developed & maintained. ➢ Regular monitoring of noise level will be carried out in and around plant premises to find out any high noise level zones and measures will be implemented accordingly. ➢ Regular auditing of process area to find out any loosened nuts/bolts/joints to avoid unnecessary noise.
Solid & Hazardous Waste Management	➢ Solid waste from the Grain based distillery operations generally comprises of fibers and proteins in the form of DDGS (88TPD), which will be ideally used as Cattle, poultry and fish feed ingredients. ➢ Boiler ash (116 TPD) generated during coal-based operations will be given

	to cement/brick manufactures & during biomass (62 TPD) based operations will be given to brick manufacturers in covered vehicles. ➢ Spent resin from DM plant (500 kg/annum) will be supplied to authorized recyclers. ➢ Used oil & grease (0.5 KL/annum) generated from DG Set, plant machinery/gear boxes as hazardous waste will be given to the CPCB authorized recyclers or used as in-house lubricant.
Odour management	➢ Boiler will be installed which is based on an eco-friendly and odourless technology. ➢ Adequate greenbelt all around the periphery of the plant and in odour prone areas will be developed. Species like *Azadirachta indica* (Neem), *Millingtonia hortensis* (Indian cork tree), *Pongamia pinnata* (karanj) will be given preference to minimise odour in every possible way. ➢ Efficient CO2 collection to avoid carryover of alcohol vapours & other fumes. ➢ Regular steaming of all fermentation equipment. ➢ Longer storages of any product/by-products will be avoided & use of efficient biocides to control bacterial contamination. ➢ Regular use of eco-friendly disinfectants in the drains to avoid generation of putrefying micro-organisms.
Greenbelt development & plantation	➢ Out of the total Plant area of 9.0 ha (22.24 acres), 33% of project area will be developed under greenbelt & plantation i.e., 2.97 ha (7.34 acres). ➢ Native/Indigenous wild plant species will be planted in consultation with local DFO. ➢ Greenbelt will be developed as per Central Pollution Control Board (CPCB) guidelines. ➢ Greenbelt & plantation development will begin simultaneously with the initiation of construction activities of the proposed unit.
Occupational health and safety	➢ Training shall be imparted to all employees on safety and health aspects of chemical handling. ➢ Pre employment and routine check-ups to be undertaken regularly. ➢ Proper counselling sessions will be conducted to know well being of employees. ➢ Proper safety signs and boards will be displayed. ➢ Records of accidents happened will be kept and discussed for the preventive measures to avoid the same.

	➢ Proper personal protective equipment will be provided in each area as per applicability. ➢ Proper assembly points and emergency gate will be defined and employees will be given training regularly for the same.

1.9 CONCLUSION

The proposed project will prove beneficial to the local people as more infrastructure development, improvement in education and health facilities, roads, availability of drinking water, etc. in near-by villages will be done. There will be no significant impact on the area, as adequate preventive measures will be adopted to maintain the various pollutants within permissible limits. Regular monitoring of all the components of environment will be done. Increased social welfare measures taken by the company that will bring development in the near-by villages. Greenbelt development around the area will be also taken up as an effective pollution mitigation technique, as well as to control the pollutants.