EXECUTIVE SUMMARY

OF

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR

Expansion of Distillery from 200 KLPD (140 KLPD Grain /Molasses & 60 KLPD Grain based) to 400 KLPD along with 3.0 MW to 8.5 MW Co-Generation Power Plant by new installation of 200 KLPD Grain based Distillery along with 5.5 MW Co-Generation Power Plant

At

D-192 to D-195, MIDC Shendra Five Star Industrial Area, Tehsil & District Aurangabad, Maharashtra

APPLICANT

M/s. Radico NV Distilleries Maharashtra Ltd.

Work & Regd. Office: D-192 to D-195, MIDC Shendra Five Star Industrial Area, Tehsil & District Aurangabad, Maharashtra

Phone No. : 0240-2622048;

E-mail: kapoora@radiconv.co.in

EXECUTIVE SUMMARY

1.0 PROJECT DESCRIPTION

1.1 INTRODUCTION

Radico NV Distilleries Maharashtra Limited is operating an existing 200 KLPD Distillery plant (140 KLPD Molasses/Grain based distillery & 60 KLPD Grain based Distillery) along with 3.0 MW Co-Generation Power Plant at D-192 to D-195, MIDC Shendra Five Star Industrial Area, Tehsil & District Aurangabad, Maharashtra. Existing plant is operational on the basis of obtained Environmental Clearance letter from MoEFCC, New Delhi vide F. No. J-11011/137/2014-IA II (I) dated 25th June, 2015 for Expansion of grain/molasses based distillery (from 120 KLPD to 140 KLPD) & F. No. J-11011/233/2009-IA II (I) dated 16th November 2009 for 60 KLPD Grain based unit-II. The company renews Consent to operate obtained from Maharashtra Pollution Control Board from time to time.

The company is now proposing Expansion of Distillery from 200 KLPD (140 KLPD Grain/Molasses & 60 KLPD Grain) to 400 KLPD along with 3 MW to 8.5 MW Co-Generation Power Plant by new installation of 200 KLPD Grain based Distillery along with 5.5 MW Co-Generation Power Plant within existing plant premises.

The proposed expansion project falls in category "A" Project or Activity '5(g)' Distilleries. [Non-Molasses based distilleries>200 KLPD] as per EIA Notification, dated 14th September, 2006 & its subsequent amendment on 13th June 2019.

Standard ToR Letter was issued by MoEFCC, New Delhi for the preparation of EIA/EMP Report vide their letter no. J-11011/137/2014-IA II (I) dated 9th September, 2021.

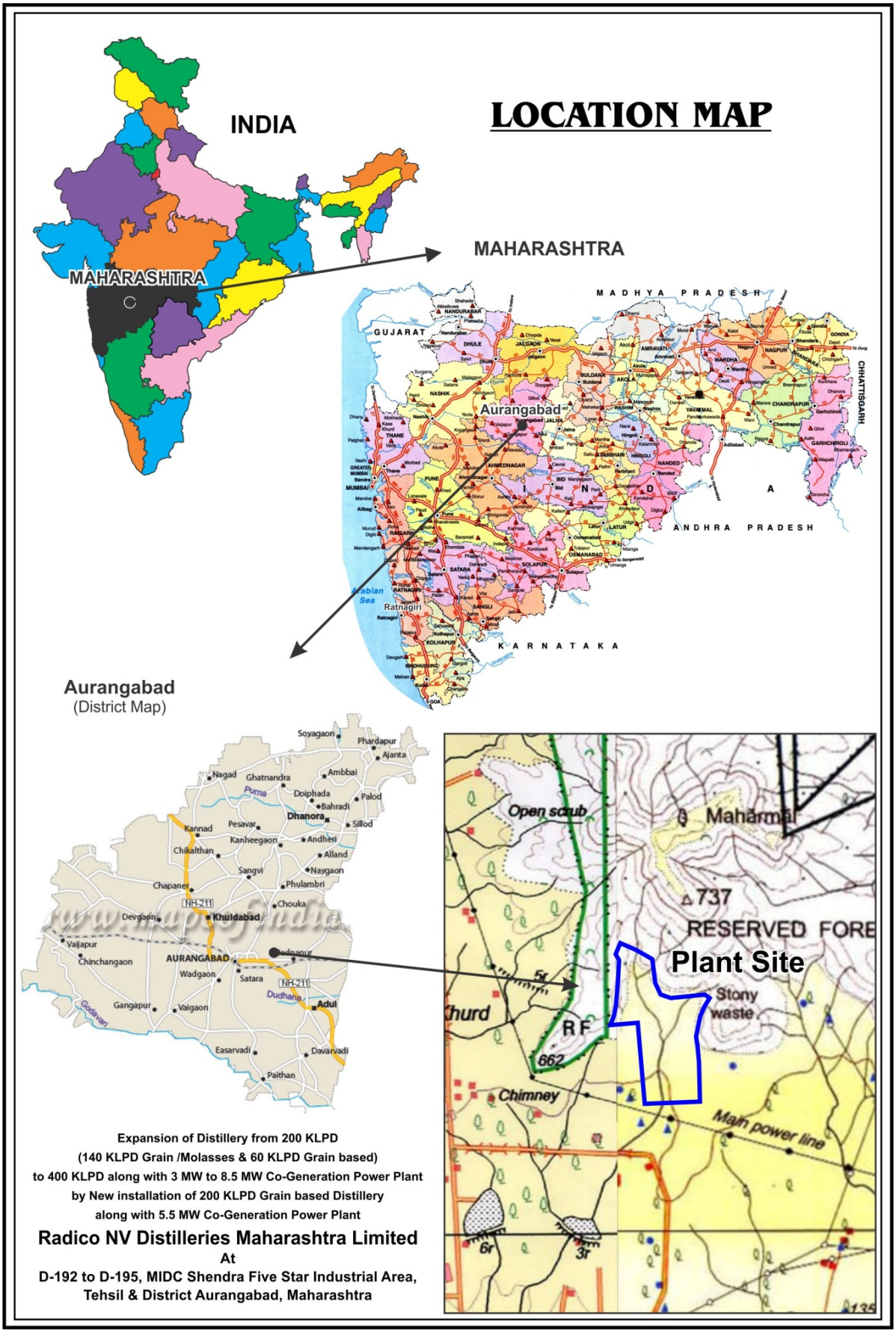
1.2 DETAILS ABOUT THE PROJECT

<table>
<tr><th>S. No.</th><th>Particulars</th><th colspan="4">Details</th></tr>
<tr><td>A.</td><td>Nature & size of the Project</td><td colspan="4"></td></tr>
<tr><td></td><td colspan="5"><table>
<tr><th>Units</th><th>Existing Capacity</th><th>Additional Capacity</th><th>Total Capacity after expansion</th></tr>
<tr><td>Distillery</td><td>200 KLPD
(140 KLPD Grain/Molasses & 60 KLPD Grain)</td><td>200 KLPD</td><td>400 KLPD</td></tr>
<tr><td>Co-generation power plant</td><td>3.0 MW</td><td>5.5 MW</td><td>8.5 MW</td></tr>
<tr><td>Bottling plant (IMFL)</td><td>174990</td><td>-</td><td>174990</td></tr>
<tr><td>Bottling plant(Country Liquor based on grain spirit</td><td>300000</td><td>-</td><td>300000</td></tr>
</table></td></tr>
<tr><td>B.</td><td>Location Details</td><td colspan="4"></td></tr>
<tr><td>1.</td><td>Plot No.</td><td colspan="4">D-192 to D-195, MIDC Shendra Five Star Industrial Area</td></tr>
<tr><td>2.</td><td>Tehsil</td><td colspan="4">Aurangabad</td></tr>
<tr><td>3.</td><td>District</td><td colspan="4">Aurangabad</td></tr>
<tr><td>4.</td><td>State</td><td colspan="4">Maharashtra</td></tr>
<tr><td>C.</td><td colspan="5">Geographical Extent of the Plant Site</td></tr>
<tr><td>1.</td><td>Latitude</td><td colspan="4">19^0 52' 58.87'' N to 19^0 53' 33.13'' N</td></tr>
</table>

S. No.	Particulars	Details
2.	Longitude	75^0 29′ 58.97′′ E to 75^0 30′ 21.38′′ E
3.	Topo sheet No.	47M5 & 47M9
D.	**Area Details**	
1.	Plant Area	37.64 Hectares (93 Acres)
2.	Greenbelt & Plantation Area	~33% of total plant area i.e. 12.4 Hectares (30.7 acres) already developed as greenbelt & plantation
E.	**Environmental Setting Details (*with approximate aerial distance and direction from the project site*)**	
1.	Nearest Village	Village Shendra Khurd (~1.5 km in West Direction)
2.	Nearest Town & City	City Aurangabad (~ 11.5 km in West Direction)
3.	Nearest National Highway / State Highway	• NH 752I (~1.7 km in South Direction) • NH 52 (~ 8.0 km in SW Direction) • SH 178 (~ 4.0 km in ESE Direction)
4.	Nearest Railway station	Karmad Railway station(~ 3.5 km in ESE Direction) Aurangabad Railway station(~20 km in SW Direction)
5.	Nearest Airport	Aurangabad Airport (~ 11.2 km in SW Direction)
6.	National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors, Reserved Forests (RF)/ Protected Forests (PF) etc. within 10 km radius	No National Parks, Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors, Protected Forests (PF) within 10 km radius Some patches of unnamed Reserved Forests (RF) present only.
7.	Water Body (within 10 km radius)	**River**–Lahuki River (~4.0 km in North direction), Sukna Nadi (~7.0 km in SW direction), Chitle Nadi (~ 9.5 km in South direction), Bori Nadi (~4.0 km in SW direction) **Reservoir-** Lahuki Reservoir (~4.5 km in ENE direction), Sukna Reservoir (~6.5 km in South direction) **Canal**–Sukna Main Canal (~9.5 km in South direction)
8.	Seismic Zone	Zone - II (Based on the Vulnerability Atlas of India – 2ndEdition, BMTPC)
F.	**Cost details**	
1.	Total Cost of the Project	Rs. 216.5 Crores
2.	Cost for Environmental Protection Measures	Capital Cost: Rs. 13.0 Crores Recurring Cost: Rs. 2.81 Crores/annum
G.	**Working Days**	350 days/annum
H.	**Products**	Rectified Spirit/ ENA/ Ethanol/ Denatured Spirit

Source: Pre-feasibility Report

1.3 LOCATION MAP


LOCATION MAP
INDIA
MAHARASHTRA
MAHARASHTRA
MADHYA PRADESH
GUJARAT
Aurangabad
ANDHRA PRADESH
KARNATAKA
Arabian Sea
Ratnagiri
Aurangabad
(District Map)
Soyagaon
Phardapur
Ajanta
Nagad
Ghatnandra
Ambbai
Purna
Doiphada
Palod
Bahradi
Dhanora
Sillod
Kannad
Pesavar
Kanheegaon
Andheri
Chikalthan
Alland
Sangvi
Naygaon
Chapaner
Phulambri
NH-211
Chouka
Devgaon
Khuldabad
Vajapur
Chinchangaon
AURANGABAD
Wadgaon
Satara
NH-211
Dudhana
Adul
Gangapur
Vaigaon
Godavari
Easarvadi
Davarvadi
Paithan
Open scrub
Maharmal
737
RESERVED FORE
Plant Site
Stony waste
RF
662
Chimney
Main power line
Expansion of Distillery from 200 KLPD
(140 KLPD Grain /Molasses & 60 KLPD Grain based)
to 400 KLPD along with 3 MW to 8.5 MW Co-Generation Power Plant
by New installation of 200 KLPD Grain based Distillery
along with 5.5 MW Co-Generation Power Plant
Radico NV Distilleries Maharashtra Limited
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1.4 Requirements for the Project

1.4.1 Raw Material Requirement

The basic raw material for the manufacturing of Ethanol/RS/ENA is being/will be Molasses & Grains (Maize, Broken rice & Sorghum). Molasses are being procured from nearby Sugar mills and Grain is easily available in nearby market and will be obtained from local suppliers and transportation will be done by road.

Details regarding quantity of raw materials required, their source along with distance and mode of transportation for proposed project are given in Table below**.**

Table - 1
Raw Material and chemicals requirement

Raw Material	Existing Quantity (TPD)	Additional Quantity for Distillery (TPD)	Total Quantity after expansion (TPD)	Storage facility	Source & mode of transportation
Molasses	482	-	482	Steel Tank	Nearby Sugar mills by road
Grains (Maize, Broken Rice, Sorghum)	159	525	684	Steel Silo	Local suppliers by road
Chemicals (kg/day)					
Sodium Hydroxide (Caustic soda)	980	2000	2980	Stores/Steel Tanks	Nearby markets by road
Enzyme	485.8	385	870.8	In Stores	
Antifoam Agent	46	50	96	In Stores	
Urea/ Di ammonium Phosphate (DAP)	256	500	756	In Stores	
Sulphuric acid	116	150	266	Mild Steel Tanks	
Nitric Acid	-	750	750	Steel Tanks	
Hydrochloric Acid	-	1400	1400	HDPE Tanks	
Yeast	280	150	430	In Stores	

Source*: Pre-feasibility Report*

1.4.2 Fuel Requirement

Existing fuel for the 30 TPH boiler is Bagasse and Biogas produced from Bio-methanation. For proposed additional grain based plant, the fuel required for 45 TPH boiler will be Bagasse or Rice husk, Soya husk or Coal. Details of quantities for fuel requirement are tabulated below:

Table- 2
Fuel Requirement for Distillery

Fuel	Existing Quantity (TPD)	Additional Quantity for Distillery (TPD)	Total Quantity after expansion (TPD)	Source & mode of transportation
Bagasse	100	220	320	From nearby Sugar mills by trucks
Rice husk/Soya husk	-	95	95	From local suppliers by trucks
Coal	-	40	40	
For the existing plant operations, Biogas of 52000 Nm3 /day is being used additionally in the existing boiler along with bagasse				

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.	Particular	Existing Requirement	Additional Requirement	Total Requirement after expansion	Source
1.	Fresh Water (KLPD)	1540	1100	2640	Maharashtra Industrial Development Corporation (MIDC)
2.	Power (MW)	3.0	5.5	8.5	8.5 MW Co-generation power plant (existing 2X1000 KVA & 1X750 KVA & 2x1000 KVA proposed DG sets & electric connection of MSEB 1600 KVA is available for the emergency)
3.	Manpower (persons)	182	120	302	Unskilled / Semi-Skilled - Local Area; Skilled- Local & Outside
4.	Steam (TPH)	32	41.5	73.5	Existing 30 TPH & proposed 45 TPH boilers

Source: Pre-feasibility Report

1.5 PROCESS DESCRIPTION

Molasses based distillery	Grain based distillery
• Molasses Unloading and Storage • Yeast Propagation • Fermentation • CO2 Plant • Multi Pressure Distillation • Alcohol daily receivers & bulk storage • Multi Effect Evaporation • Bio-composting	• Grain Storage Silos, Cleaning, Handling and Milling Section • Liquefaction and Saccharification • Fermentation • CO2 Plant • Multi Pressure Vacuum Distillation • Decantation • Multi Effect Evaporation • DWGS Dryer

1.6 DESCRIPTION OF ENVIRONMENT

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

Ambient Air Quality Monitoring reveals that the concentrations of PM_{10} and $PM_{2.5}$ for all the 8 AAQM stations were found between 48.9 to 89.7 μg/m3 and 24.5 to 49.7 μg/m3 respectively. The concentrations of SO_2 and NO_2 were found to be in range of 5.47 to 13.06 $\mu g/m^3$ and 10.87 to 30.15 $\mu g/m^3$ respectively.

Ambient noise levels were measured at 8 locations within the 10 km radius area from the plant site. Noise levels vary from 50.4 to 60.2 Leq dB (A) during day time and 40.2 to 50.8 Leq dB(A) during night time.

The ground water analysis for all the 8 sampling stations shows that pH varies from 7.16 to 7.85. Total hardness varies from 361.3 to 742.5 (mg/l), Total dissolved solids vary from 564 to 1261 mg/l. The groundwater samples from the plant site and from study area are of good quality, not polluted and good for irrigation or for domestic use.

Soil monitoring was carried out at 8 locations and the analysis results show that soil is moderately alkaline in nature, pH value ranging from 7.45 to 8.09, with organic matter from 0.11% to 2.38%. Soil texture was Silt Loam for area near plant site and other villages, which is acceptable to agriculture., medium to high phosphorus content (28.43 to 149.9 kg/ha). Available potassium (160.52 to 1109.17 kg/ha) was medium to high, available nitrogen (217.51 to 527.78 kg/ha) was low to medium.

1.7 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	Ground water quality	Pre & Post Monsoon	In & around the plant site
4	Effluent quality (CPU)	Daily (In house laboratory)	ETP Outlet
5	Noise Level Monitoring	As per EC/CTO condition	In & around the plant site
6	Soil Quality	Yearly	In & around the plant site
7	Medical checkup of employees	Yearly	Nearby hospitals/dispensary
8	Compliance Audit	Half yearly	In & around the plant site
9	OHS Audit	Yearly	In & around the plant site
Water Level monitoring will also be used to monitor recharge in the area proposed by the company.			

1.8 PROJECT BENEFITS

Major benefits envisaged are saving in foreign exchange and self-reliance after replacing crude import due to green fuel as ethanol will be substituting the imported crude as per Govt. of India's ambitious Ethanol Blending Programme (EBP). Further, the distillery expansion 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 infrastructure will be in the form of medical provisions, health centres will be constructed and maintained, education facilities to nearby villagers and formation of self-help groups. Maharashtra state will get revenues in terms of taxes and local people will get direct & indirect employment. Business opportunities for local community will be available. Environment will be protected primarily while the industrial operations are going on with best mitigation measures to be implemented.

1.9 ENVIRONMENT MANAGEMENT PLAN

The environment management plan is as given below: -

Particulars	Details
Air quality management	➢ ESP with stack of adequate height (50 m) is already installed with the existing 30 TPH boiler to control the particulate and gaseous emissions as per CPCB guidelines. As a part of this expansion, a new boiler of 45 TPH is proposed wherein ESP will be installed. ➢ CO2 generated during the fermentation process is being/ will be collected and sold to authorized vendors. ➢ DG Sets have been provided with adequate stack height as per CPCB Guidelines. ➢ Adequate measures for control of fugitive dust emissions is being/will be taken. ➢ All the internal roads are/will be already asphalted and swept regularly to avoid dust. ➢ 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. ➢ Regular monitoring is being / will be done to ensure ambient air quality standards. ➢ Online Continuous Emission Monitoring System has been/will be installed with the existing as well as proposed stack and data is being/will be transmitted to CPCB/SPCB servers.
Water quality management	➢ The project will be continuing based on "Zero Effluent Discharge". ➢ During Molasses based operations- Spent wash generated from the analyzer column during distillation is being/will be anaerobically treated in Bio-methanation plant and concentrated in seven staged Multi – Effect Evaporator (MEE) after T.S. S reduction system . Concentrated spent wash is being/will be mixed with press mud, boiler ash and yeast sludge and used for bio composting. ➢ During Grain based operations, Grain Slops (Spent Wash) is being/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 DWG – Distillers Wet Grains). Thin Slops from the Decanter Centrifuge is being/will be partly recycled back to process and balance portions shall be taken to Thins Slops Evaporation Plant for concentration of remaining solids to form Syrup. This Syrup is/ 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 is being/will be dried in Steam Tube Bundle Dryer for producing DDGS with 8-10% moisture (max.). DDGS is being/will be utilized as Cattle, poultry and fish feed ingredients. ➢ Process condensate, cooling tower, boiler blow down is being/will be treated in CPU/ETP (Capacity 1515 KLPD) and recycled within the process. ➢ Domestic waste water is being/ will be treated in Sewage Treatment Plant of Capacity 10 KLPD. ➢ Regular monitoring of ground water quality is being/ will be carried out.

Noise Management	➢ Personal Protective Equipment like earplugs and earmuffs is being / will be provided to the workers exposed to high noise level. ➢ Proper maintenance, oiling and greasing of machines at regular intervals is being / will be done to reduce generation of noise. ➢ Greenbelt inside the plant premises and at the plant boundary has been/will be developed & maintained in future. ➢ Regular monitoring of noise level is being / will be carried out in and around plant premises to find out any high noise level zones and measures are being/will be implemented accordingly.
Solid & Hazardous Waste Management	➢ Concentrated spent wash during Molasses based operation of distillery is being/will be mixed with press mud and used for bio composting. ➢ Solid waste from the Grain based operations generally comprises of fibres and proteins in the form of DDGS, which is being/will be ideally used as Cattle, poultry and fish feed ingredients. ➢ Fly Ash generated from boiler is being/will be used for bio composting or supplied to brick manufacturers. ➢ ETP Sludge is being/will be mixed with press mud and used for bio composting. ➢ Used or spent oil generated from the plant machinery/ gear boxes as hazardous waste is being/will be sold out to the CPCB authorized recycler.
Greenbelt development & plantation	➢ 33% of total area i.e.12.4 ha has already been covered under greenbelt and plantation. As a part of this expansion project, the same will be densified and maintained in future. ➢ Development of greenbelt as per Central Pollution Control Board (CPCB) guidelines. ➢ Native plant species have been planted in consultation with local horticulturist. ➢ Approx. 29695 trees have been planted within the plant premises in 5 to 10 m width which will be made denser as a part of proposed expansion.
Odour management	➢ Installation of DWGS dryer for odour control from grain based distillery operations. ➢ Adequate greenbelt all around the periphery of the plant and in odour prone areas has been developed. Species like Azadirachta indica (Neem), Millingtonia hortensis (Indian cork tree), Pongamia pinnata (karanj) has been 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 is being / will be avoided & use of efficient biocides to control bacterial contamination. ➢ Regular use of disinfectants in the drains to avoid generation of putrefying micro-organisms.
Occupational health & safety	➢ Occupational health surveillance program is being/ will be taken as a regular exercise for all the employees and their records maintained.

	➢ Proper storage and handling precautions are being/will be taken. The storage area are being/will be kept cool, dry and well ventilated and away from the source of heat, flame or oxidizers. ➢ Use of Personal Protective Equipment (PPEs) are being/will be encouraged. Proper training program on use of PPEs, characteristics of the material handled and safety precautions have been/will be arranged. ➢ Fire safety measures will be incorporated within the factory premises. All the fire extinguishing media such as water, dry chemicals, CO2, sand, dolomite, foam, etc. is being kept in vital locations. ➢ Mock drill is being/will be arranged for the worker to test the effectiveness of the training program time to time and the way to react in case of emergency. ➢ Safety precautions are being/will be displayed in the premises on the banners, boards, etc.

1.10 CONCLUSION

The expansion 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 will be taken by the company that will bring development in the near-by villages. Greenbelt development around the area has been done as an effective pollution mitigation technique, as well as to control the pollutants.