

Executive summary

of Draft EIA report

Setting up 70KLPD Malt Distillery and Malt Spirit Maturation plant along with 6MW Cogeneration Power Plant.

Plot no E1, Add. Butibori Industrial area, Maharashtra Industrial Development Corporation (MIDC),
Tal. Nagpur(R), Dist. Nagpur Maharashtra 441122.

By

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Executive Summary

1 Introduction

Pernod Ricard India Private Limited is a subsidiary of Pernod Ricard and is a fast-growing multinational alcohol beverage company that delivers quality products to its consumers across the country. They are committed for being a leader in sustainability in wine and spirits industry. Sustainability performance for M/s. Pernod Ricard India Private Limited is assessed by various organizations, including rating agencies and other external organizations. The proposed malt plant project aims to reduce dependency on import and manufacture malt spirit in-house. Product in Malt plant is Indian Malt Spirit which will be used by PRIs own bottling units in India.

Proposed bottling plant will be used to blend and bottle IMFL (Indian made foreign liquor) using Malt Spirit. PRIPL is Setting up 70KLPD Malt Distillery and Malt Spirit Maturation plant along with 6MW Cogeneration power plant. The waste stream generated from the process, which is called as Pot ale, will be treated in evaporation & concentrated as syrup, same will be mixed with spent grain (draft Cattle feed) or sold directly for poultry/cattle feed as it having good nutrient value.

2 Project Location

The proposed project will be located at plot no E1, Add. Butibori Industrial area, Maharashtra Industrial Development Corporation (MIDC), Tal. Nagpur(R), Dist. Nagpur Maharashtra 441122 is geographically located at Latitude 20°50'6.56"N & Longitude 78°57'4.22"E situated around 295 m above MSL.

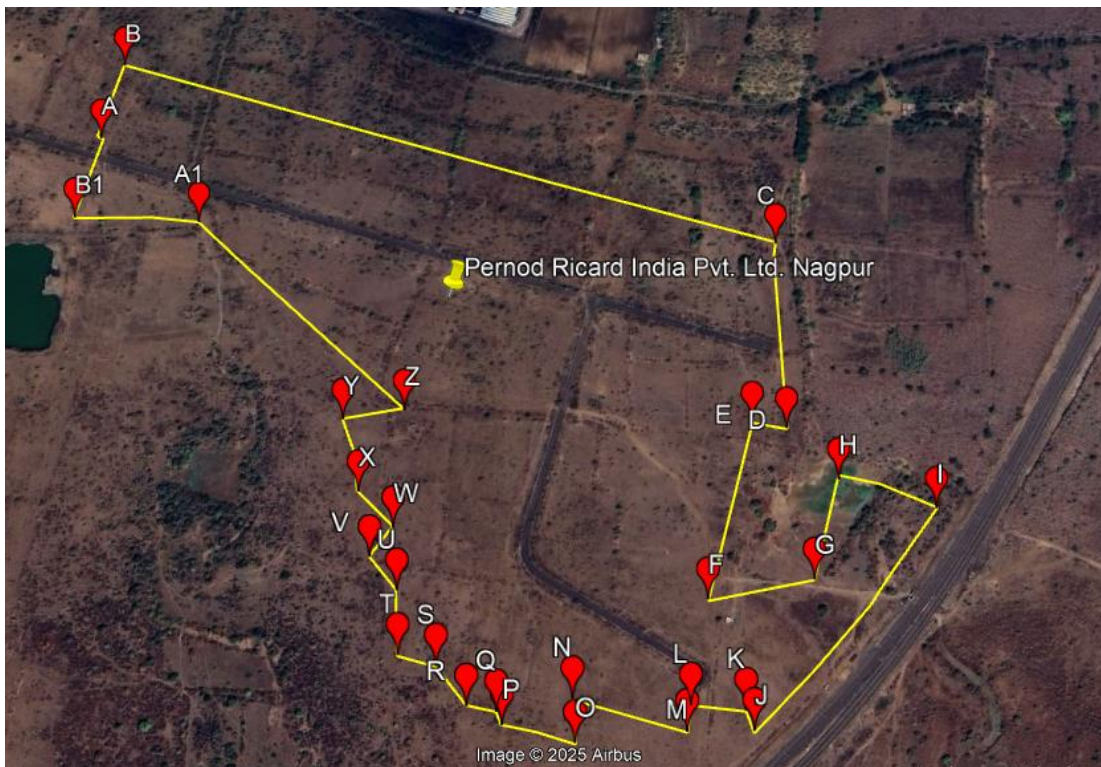


Figure 1: Google image of the Project Site with boundary

Table 1 Geographical co-ordinates of project site (MSL: 686 m)

Corners	Latitude	Longitude			
Centre	20°50'12.34"N	78°57'9.33"E	P	20°49'57.76"N	78°57'6.44"E
A	20°50'19.82"N	78°56'50.41"E	Q	20°49'58.21"N	78°57'6.23"E
B	20°50'22.86"N	73°48'53.54"E	R	20°49'58.40"N	78°57'5.09"E
C	20°50'15.55"N	78°57'17.40"E	S	20°49'59.80"N	78°57'3.92"E
D	20°50'8.41"N	78°57'17.58"E	T	20°50'0.18"N	78°57'2.45"E
E	20°50'8.62"N	78°57'16.23"E	U	20°50'2.47"N	78°57'2.35"E
F	20°50'2.15"N	78°57'14.32"E	V	20°50'3.67"N	78°57'1.27"E
G	20°50'2.86"N	78°57'18.46"E	W	20°50'4.73"N	78°57'2.15"E
H	20°50'6.51"N	78°57'19.55"E	X	20°50'6.06"N	78°57'0.75"E
I	20°50'5.44"N	78°57'23.32"E	Y	20°50'8.74"N	78°57'0.05"E
J	20°49'57.56"N	78°57'15.96"E	Z	20°50'9.16"N	78°57'2.43"E
K	20°49'58.26"N	78°57'15.67"E	A1	20°50'16.42"N	78°56'53.90"E
L	20°49'58.44"N	78°57'13.59"E	B1	20°50'16.60"N	78°56'48.82"E
M	20°49'57.53"N	78°57'13.43"E			
N	20°49'58.66"N	78°57'9.11"E			
O	20°49'57.14"N	78°57'9.20"E			



Figure 2 Plant Layout

3 Salient features of the project

Table 2 Brief information of the project and environmental setting

#	Particulate	Description		
1.	Project	Setting up 70KLPD Malt Distillery and Malt Spirit Maturation plant along with 6MW Cogeneration Power plant		
2.	Location	Plot no E1, Add. Butibori Industrial area, Maharashtra Industrial Development Corporation (MIDC), Tal. Nagpur(R), Dist. Nagpur Maharashtra		
3.	Land requirement	36.00 Ha		
4.	Product details	Particular	Capacity	Unit
		(Malt Spirit) Grain Alcohol from Barley, Malted Barley	70	KLPD
		Wooden Cask/Barrels	250,000	No's
		Blending and Bottling of Indian Made Foreign Liquor (IMFL)/ Mild Liquor	10800	KL/Annum
	By product details	Cogeneration power plant	6	MW
		Spent Grain (Draff)	150	TPD
		Syrup	52	TPD
		CO ₂	40	TPD
5.	Operational days	330		
6.	Raw materials	Material	Quantity in Ton/Annum	
		Barley/ Barley Malt	50,000	
		CIP Chemicals	850	
		Caustic Soda	80	
		Nitric Acid	50	
		Enzyme	250	
		Yeast	250	
7.	Water consumption	Process and boiler: 1288 m3/day Axillaries C.T. and pump sealing: 147 m3/day Bottling: 104 m3/day Domestic: 58 m3/day Source: MIDC		
8.	Boiler	50 TPH		
9.	T.G Set	6 MW		
10.	Steam consumption	49 TPH		
11.	Power Consumption	5.9 MW (Source: - 5.4 MW from captive 6.0 MW TG, 0.5 MW from MSEDCL)		
12.	D.G Set	2250 kVA each 3 no's		

13.	Fuel	368 tons/day (Agro waste like Rice Husk, Biomass briquettes, woodchips, Pellets, Bagasse, 10% Coal etc.)
14.	Air pollution Control Equipment	Installation of ESP with 65 m stack height for proposed 50 TPH boiler
15.	Effluent	Industrial process effluent 943 m ³ /day will be treated in 1200 m ³ /day CPU and sewage 49 m ³ /day will be treated in STP
16.	CO ₂	CO ₂ released from the fermentation process will be captured and Liquified/bottled.
17.	Man power	Construction phase: 800-1000 Operation phase: Skilled/Permanent ~250-300 Unskilled/temporary: ~250- 300
18.	Project cost	Total Cost: 1785 Cr. Plant & Machinery, Infrastructure Cost: 1235 Cr Wooden Barrels / Casks : 550 Cr
19.	EMP Cost	40.45 Cr.
20.	CER Cost	3.50 Cr.

4 Process description

Manufacturing Process of Malt spirit (Technology Unique for this project)

1. Malt storage / handling
2. Milling process
3. Mashing process
4. Fermentation
5. Distillation (wash & spirit stills)
6. Spirit storage & maturation

Malt Storage/Handling:

Purpose: To store malted barley and keep it free from moisture and pests.

Process:

1. Once malted, the barley is transported to the distillery.
2. The malt is stored in specialized silos or storage areas that are designed to be cool and dry.
3. Proper aeration systems may be used to ensure that the malt remains dry and free from moisture, which can degrade its quality.
4. Malt handling involves transferring the malt from storage to the milling area. This can be achieved using conveyor systems or pneumatic systems.

Milling Process:

Purpose: To crush the malted barley, preparing it for the mashing process.

Process:

1. The stored malt is transferred to a mill.
2. The mill grinds the malt into a coarse powder. This powder, often called grist, contains the husk, grits, and flour from the malted barley.
3. The purpose is to increase the surface area, making the extraction of sugars during mashing more efficient.

Mashing Process:

Purpose: To extract fermentable sugars from the malted barley.

Process:

1. The grist is transferred to a mash tun, a large vessel.
2. Here, it's mixed with hot water in a process called mashing.
3. The hot water allows enzymes present in the malt to convert starches into sugars.
4. This sugary liquid, known as wort, is then drained off, leaving the spent grains behind.
5. Often, multiple water infusions and draining's (called "waters") are done to extract as much sugar as possible.

Fermentation:

Purpose: To convert the sugars in the wort into alcohol.

Process:

1. The wort is transferred to large vessels known as wash backs.
 2. Yeast is added to the wort.
 3. The yeast consumes the sugars in the wort, producing alcohol and carbon dioxide in the process.
- This can take several days, and the end product is called "wash".

Distillation (Wash & Spirit Stills):

Purpose: To separate and concentrate the alcohol from the wash.

Process:

1. **Wash Still:** The wash is first heated in the wash still. Alcohol and other volatile compounds evaporate, leaving behind water and non-volatile residues. The vapors are condensed to form a liquid called "low spirits."
2. **Spirit Still:** The low spirits undergo a second distillation in the spirit still. The objective here is to separate the alcohol into different fractions based on boiling points. The heart of this distillation, the "middle cut," is collected as new make spirit, while the initial and final parts (heads and tails) are usually recycled or discarded.

Spirit Storage & Maturation:

Purpose: To age the spirit, allowing it to develop desired flavours and character.

Process:

1. The new make spirit is transferred to oak casks.
2. These casks are stored in warehouses, where the spirit undergoes maturation.
3. Over time, the spirit interacts with the wood, extracting flavors, tannins, and color.
4. The environment of the warehouse (temperature, humidity) plays a crucial role in the maturation process.
5. After a desired period, which can be several years, the matured spirit is drawn from the casks, and after possible blending, is bottled as whiskey or **other spirits**.

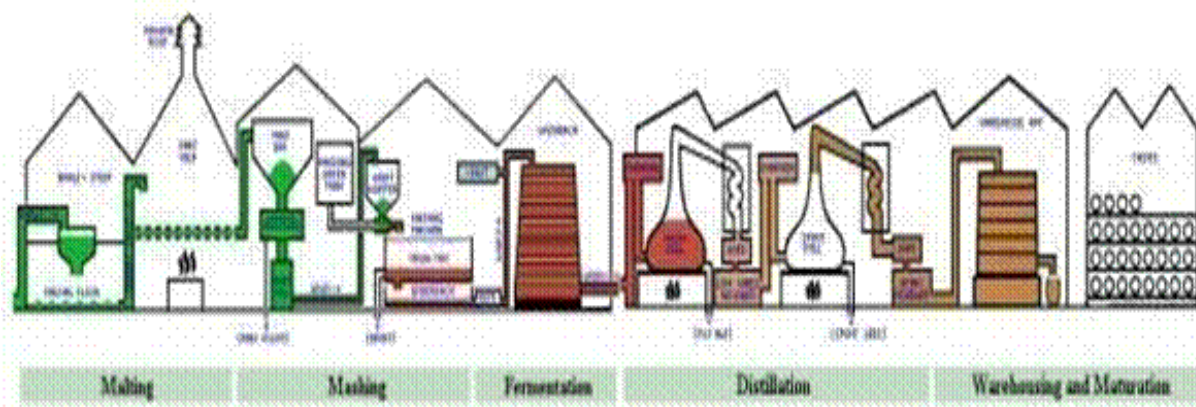


Figure 3: Process flow diagram

5 Description of the Environment

Standard ToR was issued by the State Level Expert Appraisal Committee(SEAC), MAHARASHTRA on 31.12.2024 vide file no. SIA/MH/IND2/513572/2024 and ToR identification no. TO24B2504MH5403235N. The study period conducted was from October 2024 to December 2024. The guiding factors for the present baseline study are the requirements prescribed by the guidelines given in the EIA Manual of the MoEF&CC and methodologies mentioned in Technical EIA Guidelines Manual for Distilleries approved by MoEF&CC.

Table 2 Observation of Environmental monitoring

Environmental Attributes	Frequency of monitoring	Parameters	Observed Results
Meteorology	Microprocessor based Weather Monitoring Station Continuous hourly recording	Wind direction	West to East
		Max. Temp.	47.8 °C
		Mini. Temp.	3.9 °C
		Relative Humidity	62-47 %
		Precipitation	Annual avg. 1100.3 mm
Ambient Air Quality	12 Locations 24 hourly samples Twice a week for 3 months	PM ₁₀	59.88 – 76.63 µg/m ³
		PM _{2.5}	21.95- 33.60 µg/m ³
		SO ₂	6.83 to 16.40 µg/m ³
		NO _x	13.35 to 23.42 µg/m ³
		CO	0.21 to 0.53 mg/m ³
		O ₃	10.04 – 14.99 µg/m ³
Water Quality (Ground & Surface)	11 no. of locations – Ground water 4 no. of locations – Surface water (Physical, chemical and biological parameters)	Parameter	Ground water:
		pH	pH: 7.12 to 7.83
		TDS	TDS: 298 mg/lit - 474 mg/lit
		COD	Total Hardness ranges from 148.15 mg/lit to 225.13 mg/lit. Chlorides 19.14 mg/lit – 59.13 mg/lit. Copper, Manganese, Zinc, Nickel and Hexavalent Chromium was below detectable limit at all the locations. Surface Water: <ul style="list-style-type: none"> • pH: 7.26 to 8.02 • DO: 5.8 to 6.2 mg/lit • BOD: <1 to 2 mg/lit • Total Coliform: 80-30 MPN./100 ml

Environmental Attributes	Frequency of monitoring	Parameters	Observed Results
			Maximum the constituents are within the permissible limits prescribed standards promulgated by Indian Standards
Soil Quality	Once in season at 10 locations	Soil type and texture, Physio-chemical properties, NPK	Soil is medium in fertility, good water holding capacity, heavy metal contamination signs not seen.
Noise Level	Once in season at 11 Locations (Noise levels in dB(A))	Day	34.81 - 47.54
		Night	31.89 – 38.92
Land use Pattern	One time visit of the study area	Identification & classification of land use	Most of the land is agricultural land followed by scrub land
Geology and hydrogeology	Based on secondary data	Geology and hydrogeology of the study area	Basaltic lava flows, the ground water in deccan trap basalt occurs mostly in the upper weathered and fractured parts down to 20-25 m depth, alluvium occurs in small areas.
Ecology	General in 10 km radial study area and data collected around the project site through field visits	Flora	During the study period Terrestrial and Aquatic habitats with Floral and faunal diversity in the study area were studied. During the floral study, total 91 tree species, 44 shrub species, 38 herbs, 15 climber species and 16 Grasses species were recorded
Socioeconomic Data	General in 10 km radial study area and data collected around the project site through field visits	Socio-economic characteristics of the affected area	Sanitation facilities are satisfactory, Power supply facility is available in almost villages and town, drinking water sources is mostly from ground water. Medical facilities in terms of primary health centre and primary health sub centres in the rural areas are good.

6 Anticipated Environmental Impacts

Table 3 Anticipated Impacts

Environmental Facets	Anticipated Impacts
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Air Environment	Probable increase in concentration of air pollutants due to process, fugitive and utility emissions.
Water Environment	Generation of industrial & domestic wastewater.
Land Environment	Impacts on land due to improper disposal of hazardous/ solid waste.
Ecological Environment	Positive as greenbelt of appropriate width will be developed and maintained by the company in the area. No impacts are envisaged on aquatic flora & fauna as there will be zero effluent discharge outside the plant premises.
Social Environment	Overall development of the area in respect of the infrastructure development, educational growth, health facilities etc.
Economic Environment	Positive impacts on economy of the region and the country as the Alcohol will be exported and revenue generation.
Noise Environment	Minor increase in noise level within the project area.
Occupational Health & Safety	Major health hazards are identified in worst case scenario.

7 Environmental Monitoring Program

Table 4 Environmental monitoring schedule

Particulate	Parameters	Number of location	Frequency
Ambient air quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x etc.	Ambient air quality at minimum 3 locations. Two samples downwind direction at 500 m and 1000 m respectively. One sample upwind direction at 500m.	Monthly
Stack emission	PM, SO ₂ and NO _x	All stacks	Monthly
		Online stack monitoring will be installed	-
Work place	PM _{2.5} , SO ₂ , NO _x , CO, O ₃	Process emission in workplace area/plants (for each area/plant minimum 2 locations and 1 location outside plant area near vent)	Monthly
Waste water	pH, EC, SS, TDS, O&G, Ammonical Nitrogen, COD, BOD, Chloride, Sulphides etc.	Wastewater from all sources. Inlet & outlet of CPU and STP	Monthly
		Online Monitoring will be installed.	
Surface water and ground water	pH, Salinity, Conductivity, TDS, Turbidity, DO, BOD, Phosphate, Nitrates, Sulphates, Chlorides, Total Coliforms (TC) & <i>E.Coli</i>	2-3 location 2 locations downward 1 location upward additional three locations within 10 radius from km the site.	Half yearly

Particulate	Parameters	Number of location	Frequency
Solid waste	Ash	<ul style="list-style-type: none"> Process dust generated sludge and ash. Before used as manure if used manure 	Monthly
Soil Organic and Inorganic matter	N, P, K, moisture, EC, heavy metals etc.	2-3 location At project site nearby area	Pre – monsoon and Post monsoon
Noise	Equivalent noise level - dB (A) at min. Noise Levels measurement at high noise generating places as well as sensitive receptors in the vicinity	5 location At all source and outside the Plant area.	Monthly
Green belt	Number of plantation (units), number of survived plants/ trees, number of poor plant/ trees.	In and around the plant site	Monthly
Soil	Texture, pH, electrical conductivity, cation exchange capacity, alkali metals, Sodium Absorption Ratio (SAR), permeability, porosity.	2-3 near Solid/ hazardous waste storage. At least five locations from Greenbelt and area where manure of biological waste is applied.	Quarterly
Occupational health	Health and fitness check-up of employees getting exposed to various hazards and all other staff	All worker	Yearly/ twice a year
Emergency preparedness, such as fire fighting	Fire protection and safety measures to take care of fire and explosion hazards, to be assessed and steps taken for their prevention.	Mock drill records, on site emergency plan, evacuation plan	Monthly during operation phase

8 Additional Studies

The following additional such as risk assessment for storage and handling of product and raw material and mitigation measure due to fire and explosion and handling area has been carried out.

9 Environmental Management Plan

Following mitigation measures shall be adopted by factory to minimize the impact of project on the surrounding environment.

Table 5: EMP for various environmental attributes

Environmental Attributes	Mitigation Measures
Air Quality Management	<p>Process Emission</p> <ul style="list-style-type: none"> • CO₂ released from the fermentation process will be captured and Liquefied/bottled <p>Utility Emission</p> <ul style="list-style-type: none"> • All the D.G. sets shall be standby arrangement and will only be used during power failure. • Adequate stack height shall be provided to Boiler and D.G. sets. • Electrostatic Precipitator shall be provided as an air pollution control device to the boiler with approximately 99.99 % efficiency to capture maximum boiler fly ash. <p>Fugitive Emission</p> <ul style="list-style-type: none"> • The main raw material and product shall be brought in and dispatched by road in covered enclosures. • Dust suppression on haul roads shall be done at regular intervals.
Water & Wastewater Management	<ul style="list-style-type: none"> • The distillery would be based on 'Zero Liquid Discharge' technology. • Pot ale, will be treated in evaporation & concentrated as syrup, same will be mixed with spent grain (Draff Cattle feed) or sold directly for poultry/cattle feed as it having good nutrient value. • The Process condensate, spent lees will be cooled and will be treated in Condensate Polishing Unit, after treatment of which it will be recycled back to the process and CT. • Sewage will be treated in STP and the treated water will be used for gardening. • Proper storm water drainage will be provided during rainy season to avoid mixing of storm water with effluent.
Noise Management	<ul style="list-style-type: none"> • Closed room shall be provided for all the utilities so as to attenuate the noise pollution. • Acoustic enclosure shall be provided to D.G sets. • Free flow of traffic movement shall be maintained. Earmuffs shall be used while running equipment's of the plant. • Proper maintenance, oiling and greasing of machines at regular intervals shall be done to reduce generation of noise. • Greenbelt shall be developed around the periphery of the plant to reduce noise levels.
Odour Management	<ul style="list-style-type: none"> • Odour shall be primarily controlled at source by good operational practices, including physical and management control measures.

	<ul style="list-style-type: none"> Better housekeeping will maintain good hygiene condition by regular steaming of all fermentation equipment. Use of efficient biocides to control bacterial contamination. Control of temperature during fermentation to avoid in-activation/ killing of yeast.
Solid & Hazardous Waste Management	<ul style="list-style-type: none"> The hazardous waste i.e. spent oil generated shall be very minor and shall be sent to authorized recycler. Boiler ash shall be sold to brick manufacturer. STP sludge and CPU sludge will be used as manure
Traffic Management	<ul style="list-style-type: none"> Culverts shall be maintained. The trucks carrying raw material & fuel shall be covered to reduce any fugitive dust generation. Good traffic management system shall be developed and implemented for the incoming and outgoing vehicles so as to avoid congestion on the public road.
Green Belt Development / Plantation	<ul style="list-style-type: none"> Plantation shall have been done as per Central Pollution Control Board (CPCB) Norms. The plantation in and around the plant site helps/will help to attenuate the pollution level. Native species shall be given priority for Avenue plantation.
Corporate Social Responsibility	<ul style="list-style-type: none"> An amount of INR 3.50 Cr. will be allocated for CSR activities for weaker sections of the society .
Occupational Health & Safety	<ul style="list-style-type: none"> Factory shall monitor the health of its worker before placement and periodically examine during the employment Health effects of various activities and health hazard if any observed shall be recorded and discussed with the health experts for corrective and preventive actions need to be taken by the industry All safety gear shall be provided to workers and care shall be taken by EMC that these are used properly by them. All safety norms shall be followed

10 Environment Management Cost

Table 6 Environment Management Cost

S. No	Construction phase (with Break-up)	Capital Cost	O & M
		(Amount in lakhs)	
1	Environmental monitoring	0	5
2	During site preparation	10	0
3	Noise and solid waste management	10	0
4	Water and waste water	10	0
5	Occupational health	10	5
6	Greenbelt development	10	5
	Total (A)	50	15

#	Operation Phase (with Break-up)	Capital Cost	O & M
1	Air pollution	700	
a	Stack	70	30
b	ESP	600	
c	Online Continuous Emission Monitoring System (OCEMS)	30	
2	Water pollution	3000	
a	CPU	1000	20
b	STP	300	
	Decanter	200	
	ZLD	1500	
d	Noise pollution	50	5
3	Enviro. Monitoring (Air, water, WW, Soil, SW, Noise)	40	5
4	Occupation health	60	10
5	Green belt	100	10
6	Solid waste	15	5
7	Rain water harvesting	30	5
	Total (B)	3995	90
	Total A+B	4045	105

11 Project Benefits

1. A malt-based distillery in India can contribute to local economic development by creating job opportunities in farming, production, and distribution sectors.
2. It enhances agricultural value chains by providing a stable market for grain producers in the region, promoting rural livelihoods.
3. With proper waste management practices, it can utilize by-products for animal feed, reducing environmental impact and supporting livestock industries.
4. Furthermore, they contribute to national GDP growth by generating revenue through exports of distilled spirits, showcasing India's rich tradition of craftsmanship in the global market.

12 Conclusion

- Efficient mitigation measures will be implemented for water pollution control.
- Air emissions through stack will be controlled by ESP.
- Loss of vegetation and habitat will not be attributed.
- Personal protective equipment's, safety precautions, emergency plan & disaster management plan shall be in place to avoid the environment hazards.