EXECUTIVE SUMMARY

For

Proposed Cane Juice/ Grain based Distillery for production of 600 KLPD Rectified Spirit (RS)/Extra Neutral Alcohol (ENA)/Ethanol along with 12 MW Co-generation Power Plant

By

M/s RSLD BIOFUELS PRIVATE LIMITED

Village Kaith Nawagaon, Tehsil Mungeli, District Mungeli, Chhattisgarh

[Project or Activity of schedule 5(g), Distilleries, Cat-A]

PREPAREDBY

Chandigarh Pollution Testing Laboratory- EIA Division

(QCI/NABETCertificateNo:NABET/EIA/25-28/RA 0371),
valid upto 13.02.2028
(NABL accredited), MoEF&CC recognized,
NABL Certificate TC-6728, validity: up to 08.11.2028
Address: E- 126, Phase- VII, Industrial Area, Mohali,Punjab- 160055.
Contacts:0172-4669295,5090312
E-mail:eia@cptl.co.in/cptleia@gmail.com

I. Project Name and Location

M/s. RSLD Biofuels Private Limited intends to establish a new Cane Juice/ Grain based Distillery for production of 600 KLPD Rectified Spirit (RS)/Extra Neutral Alcohol (ENA)/Ethanol along with 12 MW capacity Cogeneration Power Plant in the revenue state of Village Kaith Nawagaon, Tehsil Mungeli, District Mungeli, Chhattisgarh. The proposed project area is 22.55 Acres falling in Khasra Nos. 81/3, 81/18, 99, 100, 81/8, 81/12, 81/15, 97/3, 70/4, 81/27, 92, 93/1, 96, 97/2, 115/1, 81/24, 91/1, 93/2, 94/2, 94/1, 95/1, 95/2, 94/3, 81/13, 81/4, 81/14 and 81/9 of village Kaith Nawagaon.

II. Products & Capacities

The production detail will be as under: -

Table-I:Products & Capacities

Particulars	Capacity	Product
Cane Juice/Grain Based Distillery	600 KLPD	Rectified Spirit (RS)/Extra Neutral Alcohol (ENA)/Ethanol
Co-Generation Power Plant	12 MW	Power

III. Cost of the project

The cost of proposed project is about **Rs. 350 Crores**.

IV. Raw Material Requirement

The major kharif crop of the state of Chhattisgarh is Paddy, therefore, being paddy growing state there is abundance availability of rice, as such, it has been proposed to use grains as raw material.

Also, in notable land area of districts Kabirdham (Kawardha), Surguja, and Balod of Chhattisgarh, Sugarcane is cultivated. Thus, the state has significant potential of sugarcane juice, as such, it has been proposed to use sugarcane juice as raw material.

The above-mentioned raw material, as per availability, shall be used for production of Rectified Spirit (RS)/Extra Neutral Alcohol (ENA)/Ethanol. Details of raw material are given below:

Table-II: Raw Material Requirement

S. No.	Name of Raw Material	Quantity	Storage	Source & Mode of Transportation
1.	Cane Juice	**1840 TPD**	Steel Tanks	Nearby sugar mills through road

2.	Grains	**1500 TPD**	Silo/Godowns	Open market/local suppliers & By Road/Rail
2.	**Chemicals**		Godowns	
2.1.	Caustic soda (Sodium hydroxide)	14153 Kg per month		By Road
2.2.	Enzymes	42459 Kg per month		By Road
2.3.	Nutrients	340 Kg per month		By Road
2.4.	Antifoam agent	21241 Kg per month		By Road
2.5.	Yeast	12762 Kg per month		By Road

V. Fuel Requirement

Biomass/Slop/Coal will be used for the proposed boiler of 100 TPH capacity. Details regarding fuel requirements are given below:

Table-III: Fuel Requirement

Name of Raw Material	Total Requirement	Storage facility & capacity	Source & Mode of Transportation
During Cane Juice Based Operation			
Biomass/Paddy Straw	575 TPD	Covered sheds	From local suppliers by road
Slop (it will be generated only when cane juice will be used as raw material)	131 TPD	Storage Tank	Own plant through pipelines
Coal	380 TPD	Covered sheds	From market
During Grain Based Operation			
Biomass/Paddy Straw	720 TPD	Covered sheds	From local suppliers by road
Coal	480 TPD	Covered sheds	

VI. Major Equipment & Machinery

Details of machinery and equipment is given a under: -

Table-IV:Major Equipment & Machinery

Cane juice-based distillery			
S. No.	**Description**	**S. No.**	**Description**
1	Cane juice tank	7	Cooling Towers
2	Fermentation section	8	Boiler
3	Distillation section	9	Spent wash Holding tank
4	Evaporation section- MEE	10	CPU/RO system
5	PLC Section	11	Storage section
6	Modern Lab		
Grain Based Distillery			
1	Grain crushing mill	7	Multi-effect evaporator
2	Liquification tanks	8	Rotary Drier
3	Slurry tank	9	CPU/RO system
4	Beer-well		
5	Distillation Section		
6	Decanters		
Co-generation plant			
1	Boiler	8	DCS
2	TG set	9	Electrical HT and LT
3	ESP	10	Air compressor
4	ID Fan	11	Fuel handling
5	FD fan	12	Ash handling
6	SA fan	13	Fire-fighting system,
7	Transformer	14	Stack

VII. Water Requirement

- **For Cane Juice Based operation:** Total fresh water requirement will be 2400 KLPD which will be sourced from Ground Water. Total input for first run for Distillery will be 7712 KLPD, out of which 5312 KLPD will be recycled, therefore, net fresh water requirement will be 2400 KLPD for proposed Distillery.
- **For Grain Based operation:** Total fresh water requirement will be 2400 KLPD (2380 KLPD Process & 20 KLPD Domestic) which will be sourced from Ground Water. Total input for first run for Distillery will be 7392 KLPD, out of which 4992 KLPD will be recycled, therefore, net fresh water requirement will be 2400 KLPD for proposed Distillery.

VIII. Power Requirement

- The power requirement will be 12 MW, which will be sourced from the 12 MW Co-generation Power Plant.
- D.G. sets of 2 x 1000 KVA will be installed for the power backup.

IX. Steam Requirement

Total steam requirement for plant will be 1920 TPD (80 TPH) during Cane Juice based operation & 2160 TPD (90 TPH) during Grain based operation which will be sourced from proposed 100 TPH Boiler.

X. Manpower Requirement

For smooth functioning of the plant, the company needs a team of 200 persons (170 persons Permanent Employee and 30 person Contractual). These persons will be responsible towards their respective department such as Process Plant, Boiler Operating Plant and administrative block. In addition to the above direct employment, the project is expected to give birth to a range of businesses catering to upstream and downstream requirements. Overall, an indirect employment generation of about 500 persons is expected since the studies indicate that for every one person directly employed in such type of industry, two jobs are generated indirectly.

Fig. I: Manufacturing Process & Flow Chart of Cane Juice based Distillery

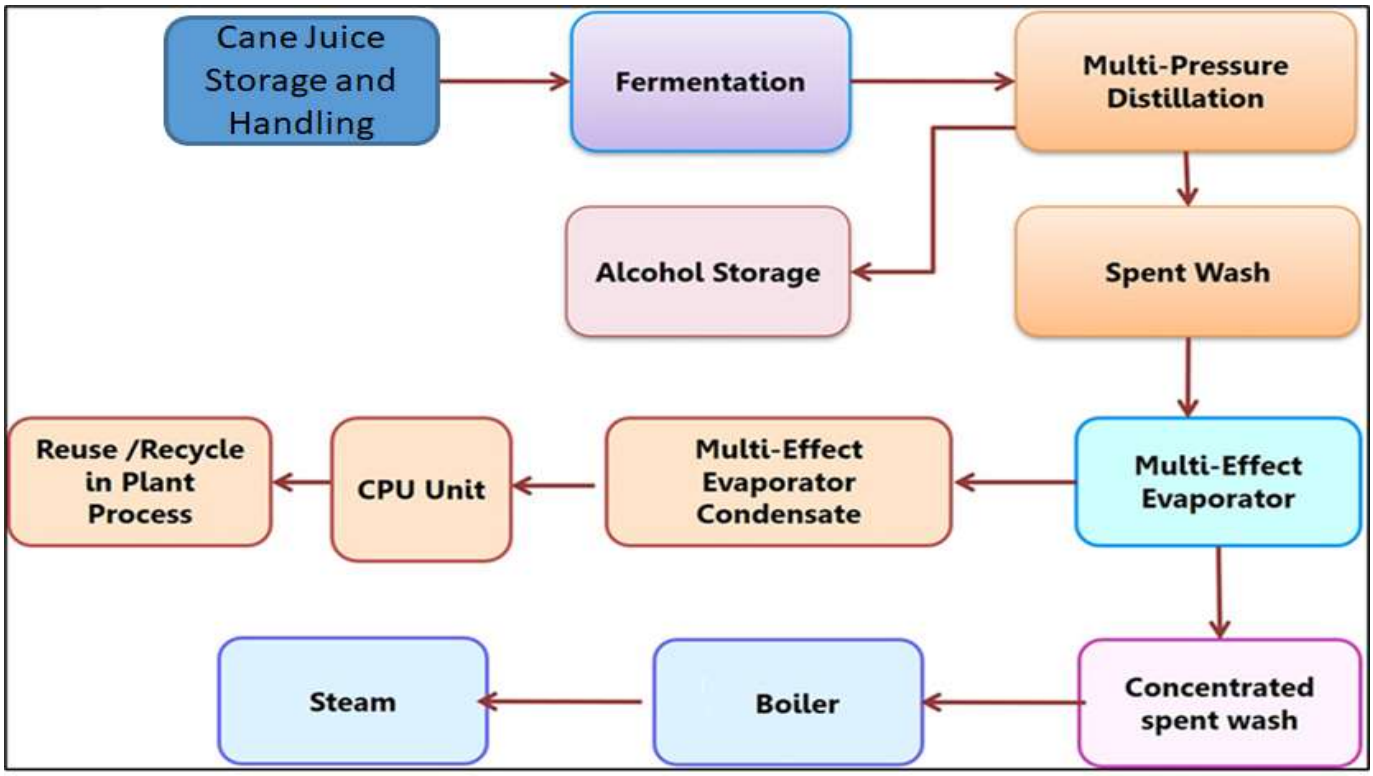
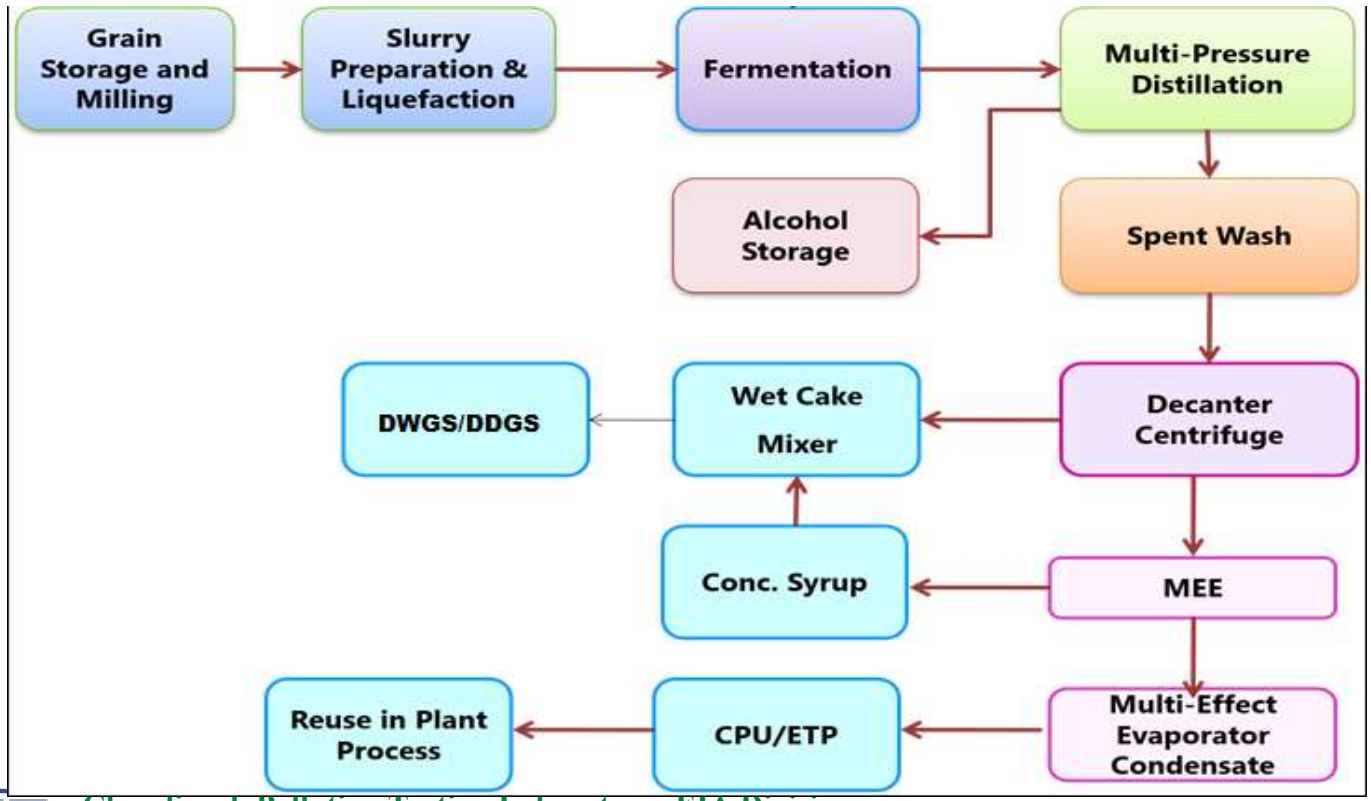


Fig. II: Manufacturing Process flow chart For Grain Based Distillery



XI. Environmental Baseline Study

Various Environmental factors as existing in the study area which are liable to be affected by the activities have been assessed both quantitatively and qualitatively. Baseline environmental data generation of study area was carried out during the period from**15th March,2025 to 15th June, 2025.**

Table-V: Baseline Environmental data-

Parameters	No. of Sites	Description	Permissible Level
Air Quality	8	P98 values of following parameters- PM_{10} - 77.0 µg/m^3 $PM_{2.5}$ - 41.3 µg/m^3 SO_2 – 6.2 µg/m^3 NO_2 – 13.4 µg/m O_3 – 22.4 µg/m^3 CO – 0.58 mg/m^3 NH3 – BDL (DL= 20 µg/m^3) Benzene– BDL (DL-0.5 µg/m^3) BaP – BDL (DL- 0.9 ng/m^3) Pb – BDL (DL-0.1 µg/m^3) Ni – BDL (DL- 5.0 ng/m^3) As – BDL (DL-0.7 ng/m^3)	 100 µg/ m3 60 µg/ m3 80 µg/ m3 80 µg/ m3 100 µg/ m3 4 mg/m3 400 µg/ m3 5 µg/ m3 1 ng/ m3 1 µg/ m3 20 ng/ m3 6 ng/ m3
Ground Water Quality	8	pH - 7.26 to 7.66 Hardness - 310 to 340 mg/l TDS - 338 to 368 mg/l Calcium - 52.0 to 64.0 mg/l Magnesium - 28.2 to 40.8 mg/l Alkalinity - 290 to 340 mg/l Chloride - 12.5 to 29.9 mg/l Sulphate - 14.6 to 28.8 mg/l	6.5-8.5 200-600 mg/l 500-2000 mg/l 75-200 mg/l 30 -100 mg/l 200- 600 mg/l 250- 1000 mg/l 200- 400 mg/l
Soil Quality	8	pH - 7.23 to 7.58 Nitrogen - 1.18 to 1.45 % Organic Matter - 0.52 to 1.38 %	---
Noise Level	8	Noise Level (Day) – 42.5 Leq dB (A) to 44.8 Leq dB (A) Noise Level (Night) – 33.2 Leq dB(A) to 35.4 Leq dB(A)	75 Leq dB (A) 70 Leq dB (A)

XII. Ecological Environment

Ecological data has been collected through secondary sources and by site visits. No endangered species of plants and animals are found in the study area, so no impact on ecological environment.

XIII. Sensitive Ecosystem

Within 5 km distance of the project site, no plant or animal species were found to be on the endangered list. No ecologically sensitive area like biosphere reserve, tiger reserve, and elephant reserve, migratory corridors of wild elephant, wetland, national park and wildlife sanctuary are present within 5 km distance of the project site. Agriculture dominate the occupation structure of the study area.

XIV. Socioeconomic Condition:

Socioeconomic status has been studied through secondary sources and by site visits. The social requirements identified such as Drinking water requirement, Promotion of Educational institutions and medical facilities to the villagers (especially Senior Citizens and infants or pregnant ladies). Community centers, recreation facilities etc will also be developed as part of social responsibility.

XV. CER Activities (Corporate Environmental Responsibility)

Proposed project will result in growth of the surrounding areas by increased direct and indirect employment opportunities in the region including ancillary development and supporting infrastructure. Special emphasis on Financial and Social benefits will be given to the local people.

Further, as per OM dated 30.09.2020 of MoEF&CC, the environment concerns raised during the public consultation shall be addressed under CER activities.

XVI. Green Belt Development

- Out of the total plant area of 9.12 ha (22.55 Acres), 3.0 ha i.e. 33% will be developed under greenbelt & plantation.
- Native plant species will be planted in consultation with local DFO.
- Greenbelt will be developed as per Central Pollution Control Board (CPCB) guidelines.
- Greenbelt development along with the road & plant boundary will attenuate noise level, arrest dust and improve the environment in surrounding.

- Greenbelt & plantation development will begin simultaneously with the initiation of construction activities of the proposed unit.

- Funds to be allocated for greenbelt development and all miscellaneous requirement will be Rs. ***75.0 lakhs as capital cost for a year***.

XVII. Mitigation Measures

Table-VI Mitigation Measures

S. No.	Particulars	Mitigation measures to be adopted
1.	***Air Environment***	• ESP with stack of adequate height of 72 m will be installed with the proposed boiler (100 TPH) to control the particulate matter to less than 30 µg/m3 emissions due to combustion of fuel. • CO2 generated during the fermentation process will be scrubbed in CO2 scrubbers. • DG Set (2 x 1000 KVA) will have adequate stack height (6.5 m above the canopy) as per CPCB guidelines. • Roads within the plant will be stabilized with suitable material. • Adequate greenbelt will be developed in the plant area. • OnlineContinuous Emission Monitoring System (OCEMS) on stacks will be installed and connected to the server of CPCB/SPCB. • The overall quality of the ambient air will be monitored and maintained within the National Ambient Air Standards NAAQS laid down by the MoEF&CC vide notification dated 16.11.2009.
2.	***Water Environment***	• The proposed plant will be based on achieving "Zero Liquid Discharge" norms. **Grain Based Distillery-** • The spent wash to be generated during use of grain as raw material shall be passed through centrifuge to get wet cake and thin slop. • DWGS/DDGS will be sold as by Product for cattle/ Poultry /Fish or Prawn feed.

S. No.	Particulars	Mitigation measures to be adopted
		• Effluent will be treated in Effluent Treatment Plant (Capacity 2400 KLPD). The treated water will be recycled back in plant activities. **Cane Juice based Distillery** • The spent wash to be generated, shall be passed through MEE to concentrate the same to get Slop of 131 TPD, which will be mixed with Biomass/Paddy Straw for further feeding to the boiler. • Sewage from domestic activity will be treated in proposed sewage treatment plant (Capacity 20 KLPD) and treated water will be reused in Greenbelt. • Rainwater harvesting will be done within the plant premises by collecting rainwater from rooftop, open & paved areas and used for process.
3.	***Solid/Hazardous Waste Environment***	• MSW @ 30 Kg/day will be collected, segregated using collection bins and handed over to authorized agency for final disposal at waste disposal site of local authority. • ETP sludge will be dewatered in filter press and will be used as manure. • During use of Coal & Biomass, the unit shall generate 144 TPD and 108 TPD of fuel ash, respectively. The coal ash shall be given to cement manufacturing plant and biomass ash will be given to brick kiln for manufacturing of bricks as well as to the farmers for conditional of soil. • Used oil & grease (1.0 KLPA) generated from D.G. set, plant machinery/gear boxes as hazardous waste will be sold out to the authorized recyclers.
4.	***Noise Environment***	• Proper maintenance, oiling and greasing of machines at regular intervals will be done to reduce generation of noise. • Personal Protective Equipment like earplugs and earmuffs will be provided to the workers exposed to high noise level. • D.G sets will be provided with acoustic enclosure to control the noise level within the prescribed limit. • Greenbelt inside the plant premises and at the plant boundary will be developed.

S. No.	Particulars	Mitigation measures to be adopted
		• Regular monitoring of noise level will be carried out.
5.	***Odour management***	• Adequate greenbelt all around the periphery of the plant will be developed & maintained. • Better housekeeping will maintain good hygiene condition by 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 ecofriendly disinfectants in the drains to avoid generation of putrefying micro-organisms.
6.	***Flue gas Management***	During combustion of fuel in the boiler furnace, there will be generation of flue gas emissions and to contain the conc. of particulate matter in the flue gas emissions within the prescribed standards of 30 mg/Nm^3, ESP will be installed as APCD.

XVIII. Environmental Management Plan (EMP)

Capital cost of EMP during construction phase will be Rs. 27 Lakhs and recurring cost will be Rs. 7.0 Lakhs. During operation phase, capital cost of EMP will be Rs. 1553.0 Lakhs and recurring Cost will be Rs. 143.0 lakhs. Breakup of EMP cost of the proposed project is given in the table below:

Table- VII: ENVIRONMENT MANAGEMENT PLAN ALONG WITH BUDGET

S. No.	Title	Activity	Capital Cost (Rs. In Lakhs)	Recurring Cost annually (Rs. In Lakhs)	Items covered
CONSTRUCTION PHASE: -					
1.	**Air Pollution Control and its Management:**	➢ Regular water sprinkling will reduce the dust generation. ➢ Personal protective equipment for workers. ➢ Wind breaking curtain. ➢ All internal and external roads will be asphalted and cleaned daily, so there will be less generation of re-suspended road dust.	6.0	1.0	Sprinklers, pipeline and smog gun Wind breaking wall at vulnerable areas
2.	**Water Pollution Control and its Management:**	➢ Proper sanitation facilities are/will be provided. ➢ Temporary drainage work will be maintained, removed and reinstated as required, and all other precautions will be taken for avoidance of damage by flooding and silt. ➢ The wastewater will be reused for dust suppression by adopting suitable mechanism.	8.0	1.5	Movable toilet Pipeline mechanism for reuse of treated domestic water
3.	**Noise Pollution Control and its Management:**	➢ Construction equipment's and transport vehicles would be properly maintained so that noise generation is minimized. ➢ Construction activity to be restricted in day time only.	3.0	1.0	Maintenance of construction equipment's

		➢ Proper servicing of vehicles.			
4.	**Solid/ Hazardous Waste Management:**	➢ Careful design, planning and good site management would minimize waste of materials such as concrete, mortars and cement grouts. ➢ Muck shall be generated and disposed within the plant premises for plinth raising purpose. ➢ Litter disposal and collection points shall be established around the all-construction work sites.	5.0	1.0	Providing different colored bins
5.	**Environment Monitoring and Management:**	➢ Ambient air quality monitoring twice a year or as per conditions of EC. ➢ Ambient noise monitoring twice a year or as per conditions of EC. ➢ Groundwater quality monitoring twice a year or as per conditions of EC. ➢ Soil Quality monitoring twice a year or as per conditions of EC. ➢ DG Stack monitoring twice a year or as per conditions of EC.	--	1.5	Analysis of different parameters from NABL approved lab
6.	**Occupational Health, Safety and Risk Management:**	➢ Plant personnel working in dust prone areas shall wear personnel protective equipment like air filters over their nose. ➢ Proper illumination shall be maintained at each and every nook and corner of the work places.	5.0	1.0	Provisions of PPE to workers and their health check-up

		➢ PPE like earplugs and muffs shall be provided to workers.			
TOTAL			**Rs 27.0 Lakhs**	**Rs 7 Lakhs**	
OPERATIONAL PHASE: -					
1	**Air Pollution Control and its Management:**	➢ **Installation of air pollution control device:** ESP and spark arrester etc. Adequate spares (bags, cages, compressors, pumps, and machine parts, etc.) shall be maintained. APCD Dust i.e., flue gas cleaning residue and torn APCD Bags will be given to TSDF	350.0	20.0	Installation of Bag House & their maintenance, operator salary and disposal of APCD dust.
2	**Water Pollution Control and its Management:**	➢ **Installation of water pollution control plant:** Sewage treatment plant (20 KLD) CPU (Condensate Polishing Unit) (2400 KLD) Water softener plant.	1000.0	25.0	Civil work construction, Modular sewage treatment plant based on MBBR technology & maintenance
3	**Noise Pollution Control and its Management:**	➢ Equipment's will be designed to conform to noise levels prescribed by regulatory agencies. ➢ High noise generating equipment should be acoustically treated or housed. ➢ Acoustic enclosure will be provided for DG sets.	8.0	2.0	Maintenance of machinery, provide PPE to worker, green belt and Acoustic enclosure

		➢ Ear plugs/ear muffs will be provided to employees working in high noise areas as protective device.			
4	**Solid/ Hazardous Waste Management:**	➢ Boiler ash will be generated from boiler and same will be sent to brick Manufacturer. ➢ MSW will be sent to authorize recyclers for final disposal. ➢ Used oil will be generated from servicing of DG Sets and will be sent to PPCB authorized recyclers for final disposal. ➢ Provision of vermicomposting will be provided for municipal solid waste management.	40.0	8.0	Making arrangement for solid & hazardous waste disposal. Contaminated drums disposal
5	**Occupational Health, Safety and Risk Management**	➢ PPE like earplugs and muffs shall be provided to workers. ➢ Workers exposed to mechanical accident-prone areas are given personal protective equipment (PPE) like tight rubber goggles, safety helmets, welders hand shields and welding helmets, plastic face shields, ear plugs, ear muffs, rubber aprons, rubber gloves, shoes with non-skid soles, gum boots, safety shoe with toe protection. ➢ Automation to minimize risk associated with material handling or casting. ➢ Proper labeling of risky areas w.r.t radiation. ➢ Safety switches. ➢ Firefighting arrangement will be provided.	50.0	5.0	Provisions of PPE to workers and their health check-up. Provision of First Aid medical facility with medical officer

		➢ First aid kit shall also be available within the industry.			
6	**Green Belt development:**	➢ Development of green belt in area of 3.0 ha i.e., 33 % ➢ Plantation of 7500 trees with 80-85% survival rate using the Miyawaki Forest Methodology.	75.0	75.0	Development of green belt, watering & manuring as per Miyawaki Forest methodology. Salary of Gardner.
7	**Energy Conservation**	➢ LED lighting shall be adopted to replace traditional inter-lighting systems, enhancing energy efficiency and reducing maintenance requirements. All street lighting installations shall be powered entirely by solar energy, promoting sustainability and minimizing environmental impact.	20.0	5.0	Installation, maintenance, monitoring, training, and safe disposal related to LED and solar street lighting systems.
8	**Environment Monitoring and Management:**	➢ Ambient air quality monitoring twice a year or as per conditions of EC. ➢ Ambient noise monitoring twice a year or as per conditions of EC. ➢ Groundwater quality monitoring twice a year or as per conditions of EC.	10.0	3.0	Analysis of different parameters from NABL approved lab. Provision of small

		➢ Soil Quality monitoring twice a year or as per conditions of EC. ➢ DG Stack monitoring twice a year or as per conditions of EC ➢ EC Compliance report			Environment lab.
Total			**Rs 1553.0**	**Rs 143.0**	