

**SUMMARY OF DRAFT EIA REPORT FOR
ESTABLISHMENT OF 45 KLPD MOLASSES / CANESYRUP BASED
DISTILLERY
BY**

Shri Someshwar Sahakari Sakkare Karkhane Niyamit (SSSSKN), located at at
Siddasamudra, Post: Belawadi, Tal.: Bailhongal, Dist: Belagavi, KS

1) THE PROJECT

Shri Someshwar Sahakari Sakkare Karkhane Niyamit is located at located at Survey No. 293, 294, 298, 301, 306, at Siddasamudra, Post: Belawadi, Tal.: Bailhongal, Dist: Belagavi, KS. The proposed establishment of 45 KLPD Molasses/ Cane syrup-based distillery would be in existing sugar factory (2500 TCD) and Co-gen plant (6 MW) premises.

As per the provision of “EIA Notification No. S. O. 1533 (E)” dated 14.09.2006 as amended vide Notification dated 13 June 2019, the proposed project comes under Category - B. Accordingly, Form -1 application is submitted to SEAC, Karnataka and standard ToR granted. Proposed establishment of distillery would be formulated in such a fashion and manner so that the utmost care of Safety Norms and Environment Protection shall be taken. Details of capital investment are given in **Table 1**.

Table 1 Project Investment Details

No.	Industrial Unit	Capital Investment (Rs. Crores)		
		Existing	Proposed	Total
1	Sugar Factory	66.75	--	66.75
2	Distillery	--	75.27	75.27
			Total	142.02

2) THE PLACE

Proposed establishment of distillery shall be carried out in existing premises of sugar factory and co-gen plant by SSSSKN. Total land acquired by the SSSSKN is 62.82 Ha. Out of this total built up area of proposed distillery will be 6.07 Ha and under existing sugar factory and co-gen plant is 1.08 Ha. Refer Appendix - A of Draft EIA report for plot layout plan.

Table 2 Area Break up

No.	Description	Area in (Sq. m)		
		Existing	Expansion	Total After Expansion
1	Total Plot Area	628243.2	--	628243.2
2	Built-up Area			
	Sugar Factory/Factory building	10,489.5	--	10,489.5
	Distillery	--	60702.9	60702.9
	Other Amenities	37028.8	--	37028.8
	Total Built-up	47,518.30	60702.9	1,08,221.20
3	Green Belt Area (51% of total plot area)	323749	--	323749
4	Total Open Area	196273	--	196273

3) THE PROMOTERS

SSSSKN promoters are well experienced in the field have made a thorough study of entire project planning as well as implementation schedule. Names and designations of the promoters are presented at table 3.

Table 3 List of Promoters

Sr. No.	Name and address	Designation
1	Shri. Guruputrappa Malleshappa Hosamani	Chairman
2	Shri. Parisappa Payappa Bhavi	Vice Chairman
3	Shri. Basavaraj Ramesh Balekundargi	Director
4	Shri. Mallikarjun Mugappa Gulappanavar	Director
5	Shri. Ashok Mohan Balekunderagi	Director
6	Shri. Mahabaleshwar Basavraj Kudasomannavar	Director
7	Shri. Basavaraj Chanabasappa Mokashi	Director
8	Shri. Madivalappa Annappa Angadi	
9	Shri. Gangappa Yallappa Bharamannavar	Director
10	Shri. Sannabhimasheppa Hanamantappa Amabadagatto	Director
11	Smt. Kamala Shivaputrappa Avvakkanavar	Director
12	Smt. Kasturi Basavaraj Somanatti	Director
13	Shri. Adrushappa Doddasiddappa Kotabagi	Director
14	Shri. Mallappa Gangappa Muragod	Director
15	Shri. Shrikar Keshavarao Kulakarni	Director
16	Shri Pradeep Shivalingappa Vannur	Director
17	Shri. Manjunath Nagappa Ullegaddi	Director Co-opted
18	Shri.Mahantesh Nagappa Ullegaddi	Director Apex Bank representative
19	Shri. Basavaraj M. Ingalagi	Director DCC Bank Belagavi Representative
20	Shri. Ningappa Irappa Choudannavar	Director Government Nominee
21	Shri. M.D.Mallur	ADDITIONAL Registrar of Cooperative Societies and Managing Director

4) THE PRODUCTS

Details of products that are manufactured under proposed distillery as well as existing sugar factory and co-gen plant are represented in Table 4.

Table 4 List of Products& By-product

Industrial Unit	Product & By-product	Unit	Quantity
Existing Sugar Factory (2500 TCD)	Sugar (12%)*	MT/D	300
	By-Product		
	Bagasse (30%)*	MT/D	750
	Press Mud (4%)*	MT/D	100
Proposed Distillery Unit (45 KLPD)	Molasses (4%)*	MT/D	100
	Products		
	Rectified Spirit (RS)/Extra Neutral Alcohol (ENA)/Ethanol	KLPD	45
	By-Product		
	Fusel Oil	MT/D	2.7
	CO ₂	MT/D	37

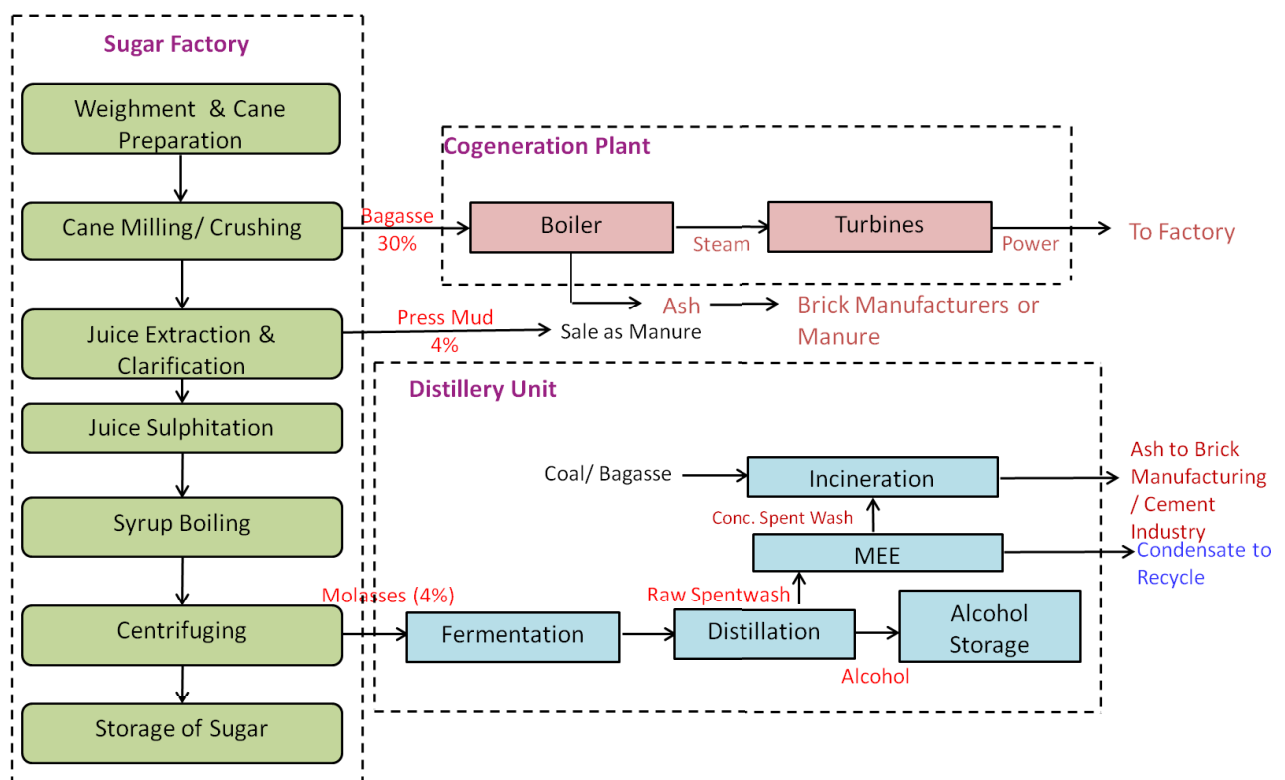
5) THE PURPOSE

Alcohol has assumed very important place in the Country's economy. It is a vital raw material for a number of chemicals and also a renewable source of energy. It has been a source of a large amount of revenue by way of excise duty levied by the Govt. on alcoholic liquors. It has a potential as fuel in the form of power alcohol for blending with petrol. Also, the fermentation alcohol has great demand in countries like Japan, U.S.A., Canada, Sri Lanka etc., as the synthetic alcohol produced by these countries, from naphtha of petroleum crude, is not useful for beverages. Considering the above facts as well as availability of raw material, management of SSSSKN decided for establishment of distillery.

6) MANUFACTURING PROCESS

Detailed manufacturing process and flow diagram for distillery, sugar factory and co-gen are given on Chapter 2 of EIA report. Manufacturing process of integrated project complex is presented at Figure 1

Figure 1 Integrated Manufacturing Process Operations



7) ENVIRONMENTAL ASPECTS

SSSSKN has implemented an effective 'Environmental Management Plan' and various aspects of the same are as follows: -

A) Water use and Effluent generation:

a. Water Requirement -

(A) Water Requirement for Distillery

Table 5(A) Details of Water Consumption for Distillery (CMD)

No.	Description	Water Consumption(M ³ /Day)	
		Molasses Based	Cane Syrup
1	Domestic	#3	#3
2	Industrial		
a)	Process	*357	--
b)	Cooling Make up	63(#57+*6)	*63
c)	Boiler Make up	#36	*36
d)	Lab & Washing	*2	*2
e)	DM Plant	#7	*7
f)	Ash quenching	*1	*1
	Industrial Total	466 (#103+*363)	*109
	Recycle	78% Recycle	100% Recycle
3	Greenbelt	\$809	809 (*93+\$716)
	Grand Total	1278 (#106+*363+\$809)	921 (#3+*202+\$716)
	Fresh Water Consumption (Norm: 10 KL/KL of Alcohol)	2.2 KL	0 KL

Note: # - Fresh Water; Malaprabha River, * - Molasses Distillery CPU Treated Effluent Recycle, * - Cane Juice Distillery CPU Treated Effluent, \$- Harvested Rainwater

(B) Water Requirement for Sugar Factory and Co-Gen Plant

Table 5(B) Details of Water Consumption for Sugar Factory and Co-Gen Plant (CMD)

No	Sugar Factory	Water Quantity
A	Domestic	# 26
B	Process	*788
	Cooling Makeup	*316
	Boiler Makeup	*192
	DM Backwash	*38
	Lab & Washing	*3
	Ash Quenching	*1
	Industrial Total	*1338 (100% Recycle)
C	Green Belt (Existing)	809 (*37+ ^Ω 224+ ^{\$} 548)
D	Total (A+B)	2147 (# 26+*1375+^Ω224+^{\$}548)

Note : # Fresh Water; Malaprabha River * Sugarcane condensate
^Ω Treated water from ETP \$ Harvested Rainwater

b. Effluent Treatment-

i) Domestic Effluent

Domestic effluent generated from distillery will be 3M³/D. From existing sugar factory & co-gen plant about 15M³/D is generated. Same will be treated in proposed Sewage Treatment Plant (STP) and treated water will be used for gardening or for irrigation purpose.

Table 6 Details of Effluent Generation Proposed 45 KLPD Distillery Unit

Description	Quantity (M ³ /D)		Disposal
	Molasses Distillery	Cane Juice Distillery	
1. Domestic	2.5	2.5	Treated in proposed STP
2. Industrial			
a)Process	Raw Spent wash – 360 Conc. Spentwash – 72	Raw Spent wash – 180 Conc. Spentwash – 36	Raw Spentwash - MEE – Conc. Sp.wash – Incineration boiler
	MEE Condensate - 288 Spent lees – 61	MEE Condensate – 144 Spent lees – 40	
b)Cooling Blow down	6	6	Other effluents viz. MEE condensate, spent lees, cooling b/d, boiler b/d, lab & washing effluent shall be forwarded to Distillery CPU. Treated effluent shall be fully recycled in process to achieve Zero Liquid Discharge (ZLD) for process effluent.
c)Boiler Blow down	7	7	
d)Lab; Washing	7	7	
e)DM back wash	2	2	
Total	Conc. Spent wash – 75 Other effluent – 374	Conc. Spent wash – 36 Other effluent – 206	

Table 7 Details of Effluent Generation in Sugar Factory & Co-gen Plant(M³/D)

Description	Effluent Generation		Disposal
	Sugar Factory (M ³ /Day)		
1. Domestic	21		Treated in proposed STP
2. Industrial			
a)Process	95		Treated in existing ETP having primary & secondary treatment units; used for green belt & gardening
b)Cooling	31		
c)Boiler	38		
d)DM Plant	38		
e)Lab & Washing	3		
Industrial Total (a+b+c+d+e)	205		

ii) Industrial effluent(M³/D)

Under the proposed distillery, Raw sp. Wash of molasses-based operations @ 360 CMD concentrated in MEE. Further, Concentrated Spentwash @72 CMD will be burnt in incineration boiler along with bagasse/coal/spentwash. Spentlees to the tune of 61 M³/D, MEE condensate to the tune of 288 M³/D and other effluents to the tune of 22 M³/D would be treat in proposed CPU. Treated water from the CPU shall be then reused for industrial operations. Thereby, achieving Zero Liquid Discharge (ZLD) of process effluent.

Moreover, Total trade effluent generated from existing sugar and co-generation activities is 205 M³/D. Same is treated in existing Effluent Treatment Plant (ETP) provided in own factory premises comprising of primary, secondary & tertiary unit operations. Treated effluent supplied for watering plantation under the green belt in own factory.

Figure 2 - Flow Chart of Proposed CPU for Distillery

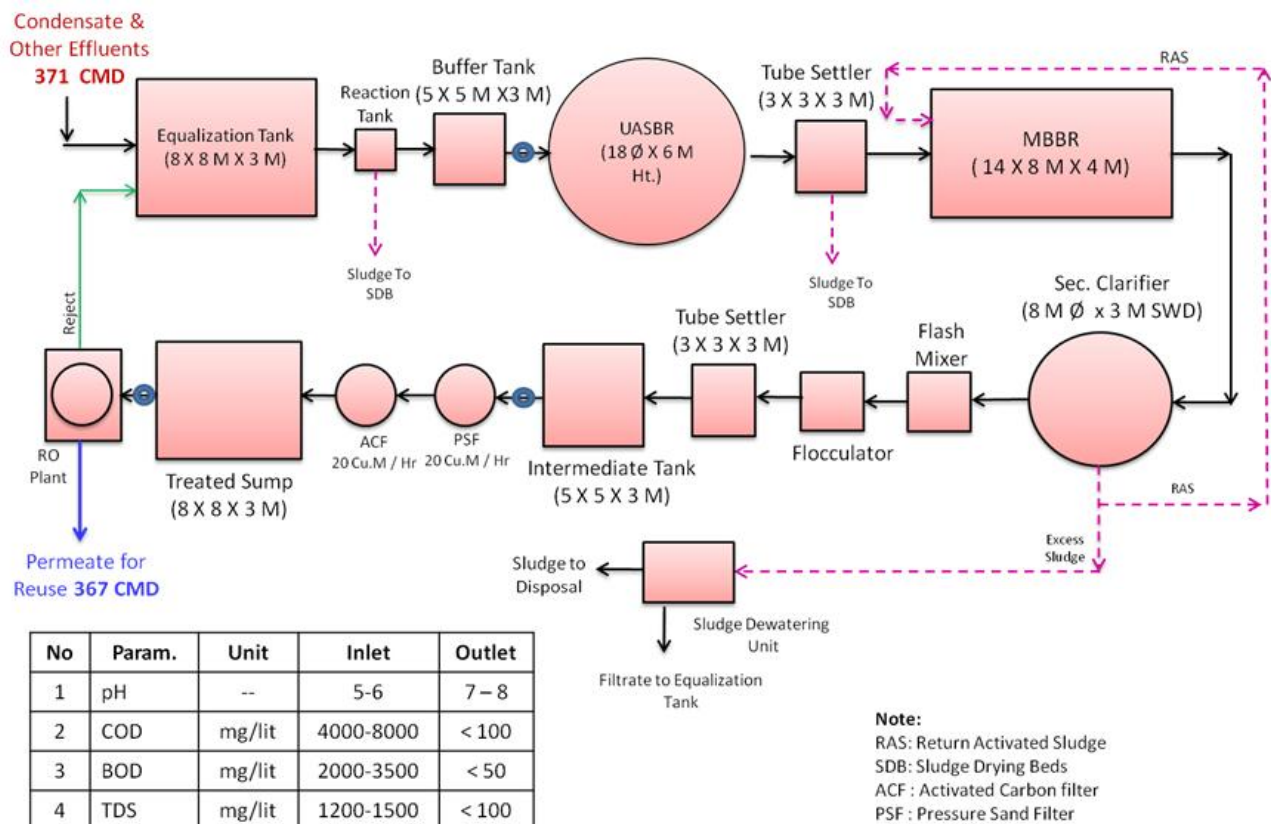
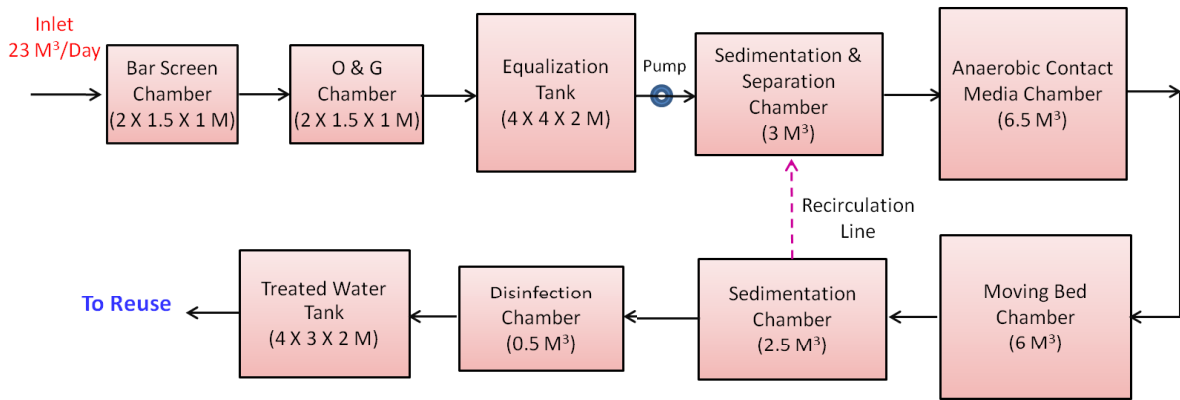
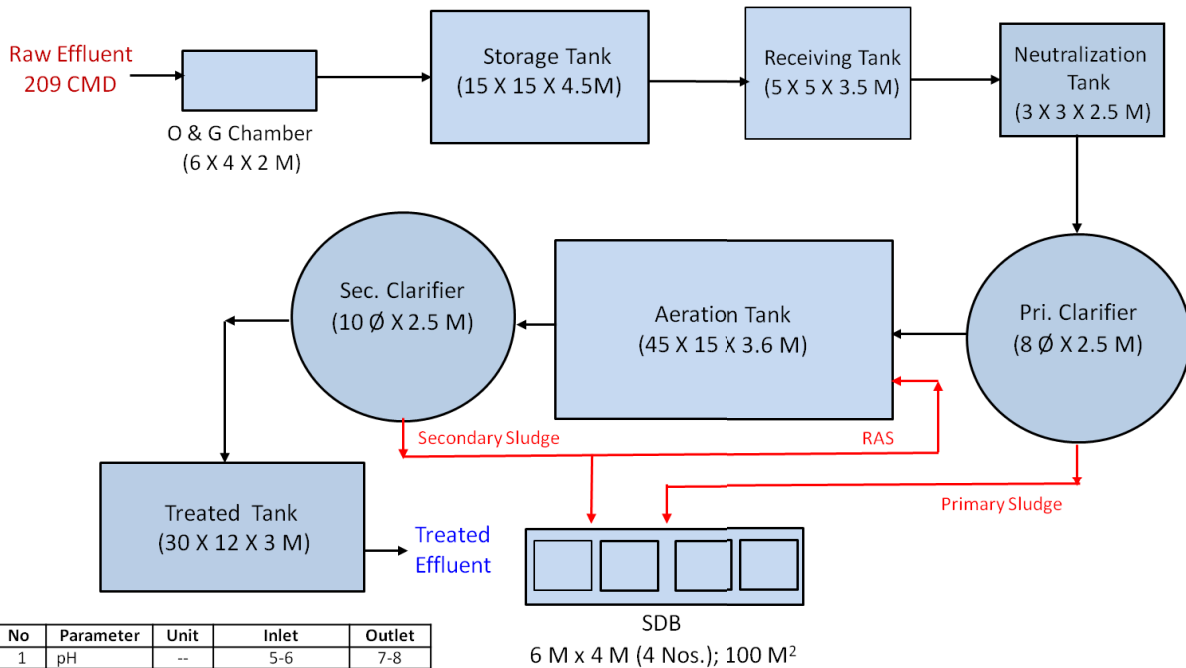


Figure 3- Flow Chart of Proposed STP



No.	Parameter	Unit	Inlet	Outlet
1	pH	---	6.0 – 8.5	6.0 – 8.5
2	COD	mg/lit	400 – 500	< 50
3	BOD	mg/lit	250 – 300	< 20
4	TSS	mg/lit	150 - 250	< 30
5	O & G	mg/lit	20 - 30	< 10

Figure 4 -Flow Chart of Existing Sugar Factory ETP



No	Parameter	Unit	Inlet	Outlet
1	pH	--	5-6	7-8
2	COD	mg/l	2000-2500	<250
3	BOD	mg/l	1000-1500	<100
4	TDS	mg/l	1800-2100	<2100
5	SS	mg/l	250 – 300	<100

Note:
RAS: Return Activated Sludge SDB:
Sludge Drying Beds

B) Air Emissions:

Under proposed establishment of distillery 15 TPH boiler will be installed. Bagasse/ Coal (102/41 MT/D) would be used as fuel for the same. Under Existing sugar factory 40 TPH (2 Nos) boiler and 625 & 320,180 KVADG Set is installed. Under proposed distillery 415,1000 KVA Will be installed.

Details of Boilers are presented at table 8.

Table 8 Details of Boiler and DG Set in SSSSKN

No.	Description	Boilers		DG Set	
		Existing (Sugar Factory)	Proposed (Distillery)	Existing	Proposed
1	Capacity	40 TPH, 2 Nos	15 TPH	625 & 320,180 KVA	415,1000 KVA
2	Fuel type	Bagasse	Bagasse	Diesel	Diesel .
3	Fuel Qty.	750 MT/D	105 MT/D	180 Lit./Hr.	40 Lit./Hr
4	MOC	R.C.C	R.C.C	-	---
5	Shape	Round	Round	-	--
6	Height	60 M	55	3 M (ARL)	3M AGL
7	Diameter			-	--
8	APC Equipment	Venture Scrubber	ESP	--	--

C) Noise Pollution Aspect**1. Sources of Noise**

- i. In the distillery, very high noise generating sources would not exist. Expected noise levels in the section would be about 70 dB (A) or so. Adequate noise abatement measures like silencer & maintenance of pumps, motors, and compressors would be carried out and enclosures would be provided to abate noise levels at source. Moreover, enclosures to the machinery would be provided wherever possible.
- ii. Fermentation section & distillation section would be the other minor noise generating sources. The expected noise levels in these sections would be in range of 70 to 80dB(A).
- iii. Existing sugar factory and co-gen; noise generating sources are the boiler house, turbine rooms, cane crushing section and mill house, etc.
- iv. Adequate green would be developed in phase wise manner in and around the industry. So that it would further attenuate the noise levels.

2. Control Measures

Isolation, separation and insulation techniques to be followed, PPEs in the form of earmuffs, earplugs etc. would be provided to workers. D.G. Sets are enclosed in a separate canopy to reduce the noise levels.

D) Solid Wastes

Table 9 Solid Waste Generations, Storage and Disposal Details

No.	Unit	Type	Quantity (MT/D)	Disposal
1	Sugar Factory (Existing)	ETP Sludge	0.93	To Brick Manufacturer/ Manure
		Boiler Ash (Bagasse)	100	To be given to farmers as Manure
2	Distillery Unit (Proposed)	Boiler Ash (Bagasse)	23	Brick/Cement Manufacturer
		Yeast Sludge	10	To be given to farmers as Manure
		CPU Sludge	0.3	

E) Hazardous Wastes

Hazardous waste generated from existing sugar factory.

F) Odour Pollution

There are number of odour sources such as molasses handling and storage, fermentation and distillation, secondary effluent treatment, and storage of effluents, stale cane, bad mill sanitation, bacterial growth in interconnecting pipes & unattended drains. Measures adopted under existing unit for controlling same are proper housekeeping, sludge management in biological ETP units, steaming of major pipe lines, regular use of bleaching powder in the drains, efficient handling, prompt & proper disposal of press mud. Under proposed project of distillery, spentwash shall be carried through closed pipeline for spentwash storage and handling activity shall be entirely eliminated.

G) Compliance with the Norms

All the relevant acts, rules and guidelines with respect to effluent treatment and disposal, solid & hazardous wastes handling and disposal as well as in respect of emission handling and disposal, wherever applicable, as specified by the Karnataka State Pollution Control Board (KSPCB) or any other concerned authority are strictly followed in the existing set up. Same practice shall be continued after proposed establishment.

H) Environmental Management Cell

SSSSKN is already having an EMC functioning under its Sugar factory. Members of EMC are well qualified and experienced in their concerned fields. This cell shall be further augmented suitably under proposed establishment of distillery. EMC members are as under-

Table 10 Environmental Management Cell

No.	Name of Member	Designation	No. of Working Person(s)
1.	Shri M.D. Mallur	Managing Director	1
2.	Shri. C.B. Patil	G.M. In-charge	1

Details of capital as well as O & M costs towards environment protection under existing as well as proposed establishment is presented as follows –

Table 11 Capital as well as O & M Cost

No	Description	Cost Component (Rs. Lakhs)	
		Capital	O & M / Year
A	Existing (2500 TCD Sugar Factory)		
1	APC Equipment: Wet Scrubber, Stack (60 M AGL) for Boiler of 40 TPH (2 Nos)& Ash Collection System	50	5
2	Water Pollution Control: ETP	80	10
3	Noise Pollution Control	10	2
4	Solid Waste Management	25	5
5	Occupational Health and Safety	25	2
6	Green Belt Development	25	4
7	Environmental Monitoring & Management	15	5
	(4% of Capital Investment of Rs.66.75 Cr.)Total	Rs. 230	Rs. 33
B	Proposed (45 KLPD Distillery)		

1	Air Pollution Control: 15 TPH Incineration Boiler, Stack 65 M Height, ESP & OCMS. CO ₂ Bottling Plant	3,000	200
2	Water Pollution Control: MEE, CPU & STP	800	100
3	Noise Pollution Control	30	10
4	Occupational Health & Safety	30	5
5	Green Belt Augmentation Plan & Rain Water Harvesting implementation	50	10
6	Environmental Monitoring & Management	50	15
	(53% of Capital Investment of Rs.75.27Cr.) Total	Rs. 3,960	Rs. 340
	Total	Rs. 4,190	Rs. 373

D) Rainwater Harvesting Aspect

Table 12 Area Taken for RWH

No.	Description	Area (Sq. M.)
1	Rooftop Area	27654.9
2	Green Belt Area	323749
3	Area under Roads	11000
4	Open Space	196273

Average annual rainfall in the area = 1200 mm
=1.2M

No.	Description	Area (Sq.M.)	Runoff Factors considered	Average Annual Rain Fall (M)	RWH Quantity (M ³)
1	Roof Top Harvesting				
i	Rooftop Area	27654.9	0.8	1.2	26548.7
	Total Rooftop Harvesting				26548.7
2	Surface Water Harvesting				
i	Green Belt Area	323749	0.3	1.2	16549.67
ii	Area under Roads	11000	0.5	1.2	6600
iii	Open Space	196273	0.3	1.2	70658.28
	Total Surface Water Harvesting				93807

Hence, the total water becoming available after rooftop and land harvesting would be

$$\begin{array}{rcl}
 \text{Rooftop Harvesting} & + & \text{Surface Harvesting} & = & \text{Total RWH} \\
 26548 & + & 93807 & = & 120335 \text{ M}^3 \\
 & & & = & 120 \text{ ML}
 \end{array}$$

J) Green Belt

Table 13 Area Details

No.	Description	Area in (Sq. m)		
		Existing	Expansion	Total After Expansion
1	Total Plot Area	628243.2	--	628243.2
2	Built-up Area			
	Sugar Factory/Factory building	10,489.5	--	10,489.5
	Distillery	--	60702.9	60702.9
	Other Amenities	37028.8	--	37028.8
	Total Built-up	47,518.30	60702.9	1,08,221.20
3	Green Belt Area (51% of total plot area)	323749	--	323749
4	Total Open Area	196273	--	196273

Criteria for Green Belt Development Plan

Emission of SPM, SO₂ is the main criteria for consideration of green belt development. Plantation under green belt is provided to abate effects of the above emissions. Moreover, there would also be control on noise from the industry to surrounding localities as considerable attenuation would occur due to the barrier of trees provided in the green belt.

K) Socio-Economic Development

Socio economic study was carried out in 9 villages within 10 Km radius of the study area was carried out with the help of a structured close ended interview schedule, comprising of questions in English. The schedule was administered by using Simple Random Disproportionate Sampling Technique. Refer Socio – economic profile in Chapter 3 of EIA report for detailed information of socio economic aspect. Observations and conclusions after the socio-economic study are as follows-

- Most of the villages have basic facilities like drinking water, preliminary educational infrastructure, toilets and electricity. Good transportation & satisfactory educational facilities are present.
- A majority of the population within the sample size had a good income which is mostly due to sugarcane cultivation.
- Indirect & direct Job opportunities provided to locals by industry.
- Most villages lacked drainage system, open drainages; scattered solid waste as well as poor sanitation was visible.
- Improper, inadequate and not within close vicinity health facilities is the major problem faced by locals.

8) ENVIRONMENTAL MONITORING PROGRAM

Reconnaissance of the study area was undertaken in the month of December 2020. Field monitoring for measuring meteorological conditions, ambient air quality, water quality, soil quality and noise levels was initiated in January 2021. Report incorporates the data monitored during the period from January – February – March 2021 and secondary data collected from various sources which include Government Departments related to ground water, soil, agriculture, forest etc.

A. Land Use

Land use study requires data regarding topography, zoning, settlement, industry, forest, roads and traffic etc. Collection of this data was done from various secondary sources viz., Census books, Revenue records, State and Central Government Offices, Survey of India toposheets as well as high resolution satellite image and through primary field surveys

B. Land Use/ Land Cover Categories of Study Area

Table 14 Land Use/ Land Cover

S.no.	Classes	Area in Ha.	Percentage
1	Built Up Area	920	2.93
2	Crop Land	7227	23.00
3	Fallow Land	16234	51.68
4	Barren Land	1959	6.24
5	Water Bodies	1870	5.95
6	Scrub Land	2465	7.85
7	Forest	740	2.36
	Total	31415	100

C. Meteorology

Methodology adopted for monitoring surface observations is as per the standard norms laid down by Bureau of Indian Standards (BIS) and the Indian Meteorology Department (IMD). On-site monitoring was undertaken for various meteorological variables in order to generate the data, which is then compared with the meteorological data generated by IMD from the nearest station at Belagavi. Meteorological parameters were monitored during the period January – February – March 2021. Details of parameters monitored, equipments used and the frequency of monitoring have been given in Chapter 3 of the EIA report.

D. Air Quality

This section describes the selection of sampling locations, includes the methodology of sampling and analytical techniques with frequency of sampling. Presentation of results for January – February – March 2021 survey is followed by observations. All the requisite monitoring assignments, sampling and analysis was conducted through the laboratory of Green Enviro safe Engineers & Consultant Pvt. Ltd., Pune which is NABL accredited and MOEFCC; New Delhi approved organization. Further, same has received certifications namely ISO 9001- 2015 and OHSAS 18001–2007 from DNV. Ambient air monitoring was conducted in the study area to assess the quality of air for PM₁₀, PM_{2.5}, SO₂, NO_x and CO. Various monitoring stations selected are shown in table 15.

Table 15 Ambient Air Quality Monitoring (AAQM) Locations

AAQM Station Code	Name of the Station	Station Location	Distance (km)	Direction
A1	Industrial Site	--	--	--
A2	Udikeri	Upwind	4.20	NE
A3	Dodwad		4.43	SE
A4	Belawadi	Downwind	3.09	N
A5	Budaraghatti		3.32	S
A6	Kodampur	Cross wind	7.99	W
A7	Bidaragaddi		5.97	SW
A8	Siddhasamudra	Nearest Habitation	2.14	W

**Table 16 Summary of the AAQM Levels for Monitoring Season
[January2021 to March2021]**

Parameter		Location							
		Site	Udikeri	Dodwad	Belawadi	Budara ghatti	Koda mpur	Bidarag addi	Siddhasa mudra
PM ₁₀ (µg/m ³)	Max.	67.30	58.50	59.10	59.20	58.90	58.80	59.50	59.40
	Min.	56.20	48.90	52.70	52.90	48.80	52.90	54.40	55.20
	Avg.	62.74	54.52	56.15	55.85	53.59	55.74	56.78	57.56
	98%	67.02	58.41	58.78	58.97	58.90	58.71	59.13	59.35
PM _{2.5} (µg/m ³)	Max.	27.70	22.30	21.40	20.50	20.50	21.10	19.60	19.80
	Min.	18.60	14.30	16.30	14.10	15.40	17.00	14.90	16.40
	Avg.	24.00	18.15	19.07	17.57	17.88	19.02	16.80	18.73
	98%	27.52	21.79	21.31	20.18	19.95	21.01	19.00	19.71
SO ₂ (µg/m ³)	Max.	24.00	16.50	16.90	15.70	16.40	17.60	17.50	17.60
	Min.	17.30	10.20	10.60	10.50	10.40	13.10	12.90	13.20
	Avg.	21.00	12.72	13.63	12.86	14.24	15.10	15.12	15.09
	98%	23.95	15.63	16.72	15.42	16.31	17.05	17.13	17.46
NO _x (µg/m ³)	Max.	29.30	21.10	18.80	21.00	18.80	22.80	20.30	20.60
	Min.	20.30	12.20	13.20	15.60	13.90	15.50	16.20	15.50
	Avg.	25.13	18.40	17.35	18.03	16.89	18.26	17.98	18.54
	98%	29.02	20.78	18.55	20.49	18.71	22.57	19.89	20.55
CO (mg/m ³)	Max.	0.08	0.04	0.04	0.06	0.04	0.05	0.04	0.05
	Min.	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01
	Avg.	0.05	0.02	0.02	0.03	0.02	0.03	0.02	0.03
	98%	0.08	0.04	0.04	0.05	0.04	0.05	0.04	0.05

Notes:PM₁₀, PM_{2.5}, SO₂ and NO_xare computed based on 24 hourly values,CO is computed based on hourly values.

**Table 17National Ambient Air Quality Standards (NAAQS) by CPCB
(Notification No. S.O.B-29016/20/90/PCI-L by MOEFCC; New Delhi dated 18.11.2009)**

Zone Station	PM ₁₀ µg/M ³		PM _{2.5} µg/M ³		SO ₂ µg/M ³		NO _x µg/M ³		CO mg/M ³	
	24 Hr	A.A.	24 Hr	A.A.	24 Hr	A.A.	24 Hr	A.A.	8 Hr	1 Hr
Industrial, Rural & Residential Area	100	60	60	40	80	50	80	40	2	4
Eco-sensitive Area Notified by Govt.	100	60	60	40	80	20	80	30	2	4

Note: A.A. represents Annual Average

E. Water Quality

Sampling and analysis of water samples for physical, chemical and heavy metals were also undertaken through the laboratory of GreenEnviro safe Engineers & Consultant Pvt. Ltd, Pune. Nine locations for surface water and Eight locations for ground water were selected. Same are listed below-

Table 18 Monitoring Locations for Ground Water

Sample Code	Location Name	Type	Distance from site (Km)	Direction w.r.t site	Latitude	Longitude
GW 1	Siddasamudra	BW	0.91	NW	15°41'33.38"N	74°54'58.12"E
GW 2	Siddasamudra	BW	0.77	SW	15°41'8.18"N	74°55'5.60"E
GW 3	Siddasamudra	DW	0.84	S	15°40'55.34"N	74°55'25.63"E
GW 4	Doddawada	DW	2.21	SE	15°40'32.27"N	74°56'20.14"E
GW 5	Doddawada	DW	2.02	E	15°41'11.00"N	74°56'33.80"E

GW 6	HireBelawadi	BW	1.75	NE	15°42'10.16"N	74°55'59.20"E
GW 7	HireBelawadi	BW	3.99	NW	15°43'15.97"N	74°54'21.21"E
GW 8	Udakeri	DW	4.19	NE	15°43'3.84"N	74°57'0.80"E

Note: BW- Bore Well, DG- Dug Well.

Table19 Monitoring Locations for Surface Water

Sample Code	Location Name	Type	Distance from site (Km)	Direction w.r.t site	Latitude	Longitude
SW1	Khodanapur	Pond	6.02	W	15°40'43.80"N	74°52'8.79"E
SW2	Garjur	River	9.67	NW	15°44'30.52"N	74°51'4.82"E
SW3	Konanakudra	River	7.64	N	15°45'21.33"N	74°54'8.39"E
SW4	Mugabasav	River	9.81	NNE	15°46'35.96"N	74°56'39.00"E

Results observed after monitoring ground water locations and surface water locations are mentioned in Chapter 3 of the EIA report.

F. Noise Level Survey

Study area of 10 Km radius with reference to the establishment project site has been covered for noise environment. Four zones viz. Residential, Commercial, Industrial and Silence Zones have been considered for noise monitoring. Some of the major arterial roads were covered to assess the noise due to traffic. Noise monitoring was undertaken for 24 hours at each location. Details of noise monitoring stations are given in table 20.

Table 20 Noise Sampling Locations

Location	Location Name	Type	Distance from site (Km)	Direction w.r.t site	Latitude	Longitude
N1.	Site	Industrial	-	-	15°41'22.49"N	74°55'27.34"E
N2.	Siddasamudra	Rural	1.8	WNW	15°41'25.67"N	74°54'16.42"E
N3.	Belvadi	Rural	3	NNW	15°42'56.94"N	74°54'55.35"E
N4.	Udakeri	Rural	4	NE	15°43'5.84"N	74°56'34.94"E
N5.	Dodvad	Rural	4.7	SE	15°40'22.74"N	74°57'43.32"E
N6.	Budarkatti	Rural	3	SSW	15°39'44.09"N	74°54'55.54"E
N7.	Bidargaddi	Rural	5.4	SW	15°39'22.51"N	74°53'4.40"E
N8.	Pattehal	Rural	5.6	NW	15°41'46.02"N	74°52'9.68"E

If required, additional locations shall be monitored as per project requirement

Table 21 Ambient Noise Levels

No.	Location	Average Noise Level in dB(A)					
		L10	L50	L90	Leq(day)	Leq(night)	Ldn
1	Siddasamudra	57.1	58.9	61.7	62.2	56.5	64.4
2	Belvadi	43.4	45.2	47.6	50.3	40.8	50.5
3	Udakeri	44.0	46.9	47.6	52.9	41.4	52.4
4	Dodvad	43.6	46.7	47.2	52.9	41.1	52.3
5	Budarkatti	43.6	45.3	47.0	50.6	40.6	50.6
6	Bidargaddi	43.7	46.1	47.2	52.0	40.7	51.6

No.	Location	Average Noise Level in dB(A)					
		L10	L50	L90	Leq(day)	Leq(night)	Ldn
7	Pattehal	43.8	46.0	47.1	51.6	40.9	51.3
8	Siddasamudra	43.2	45.1	46.4	50.5	40.1	50.4

G. Socio-Economic Profile

Survey of within 10 KM study area of SSSSKN, taking the reference of census 2011. A project area has been carefully studied. The impacts on various sections have been identified. A questionnaire with this respect was designed. About 70 families were surveyed. Chapter 3 may be referred for details of this aspect.

H. Ecology

Field survey was carried out according to random sampling method for flora, and opportunistic sighting method and standard point count method for fauna were followed. In general, visual observation and estimation method was used for qualitative study of the biota. Birds and fish were studied being good indicators of local environmental change. Flora, mainly major tree species, was focused on identification and species abundance.

Conclusion

The probable impacts were considered for worst case scenario. The factory site is surrounded by forest area, agriculture fields and human settlements. Discharge of untreated wastewater and effluent from the industry in surrounding area can cause adverse environmental impacts on terrestrial and aquatic habitats and dependent biodiversity and ground water resources. Therefore, any possibility of land and water contamination by the industry, affecting local ecology, biodiversity, neighbouring cropland and local habitation should be prevented.

9) ADDITIONAL STUDIES & INFORMATION

Risks Assessment

Risk to human health is inherent. It is safe only when the installation is dismantled at the end of its useful life. The following principles should be used as guidelines for the selection of risk criteria -

1. Increase in risk, caused by the presence of the plant to local community (i.e. neighbouring public) should be negligible in comparison to the risk they already have in their daily life.
2. Work force on the plant should be expected to accept a potentially greater risk than the members of the local community since the work force have been trained to protect themselves from the possible hazards and thus reducing the actual risk to themselves.

The risk criteria considered by Green A.G. (1982) are given as below:

1. Risk to Plant: This risk is to be given priority only when it is proved beyond doubt that the risk to life is so low that reducing this risk may not be justified. Under this consideration, the risk to economic damage may be considered.
2. Risk to Public and Employees: Scale used for risk to employee and public is Fatal Accident Rate (F.A.R.) or more commonly Fatal Accident Frequency Rate. (F.A.F.R.). F.A.R. and F.A.F.R. is defined as number of deaths from industrial injury expected in a group of 1000 men during their working period.

For more details w.r.t. this aspect, Chapter 7 may be referred.

10) ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

A. Impact on Topography

No major topographical changes are envisaged in the acquired area as it is establishment of distillery plant which will take place in existing premises of sugar factory SSSSKN. Industrial activity would invite positive benefits in the form of land levelling and tree plantation in the plant vicinity and other premises

B. Impact on Climate

Impact on the climate conditions due to the establishment activity is not envisaged, as emissions to the atmosphere, of flue gases with very high temperatures are not expected

C. Impact on Air Quality

A study area of 10 km radius is considered for determination of impacts.

i. Baseline Ambient Air Concentrations

24 hourly 98 percentile concentrations of PM₁₀, PM_{2.5}, SO₂ and NO_x in Ambient Air, recorded during the field study conducted for the season January-February-March 2021 are considered as baseline values. They represent impact due to operations of existing nearby industries on this region. Average concentrations of above mentioned parameters, at this location, are considered to be the 'Baseline Concentrations' to determine the impact of proposed industrial operation on ambient air quality. The existing baseline concentrations are summarized in following table-

Table 22 Basline Concentrations at site

Parameter	PM ₁₀	PM _{2.5}	SO ₂	NO _x	CO
98 percentile	69.02 µg/m ³	28.85 µg/m ³	25.75 µg/m ³	32.02 µg/m ³	0.08 mg/m ³
NAAQS	100 µg/m ³	60 µg/m ³	80 µg/m ³	80 µg/m ³	4 mg/m ³

ii. Air Polluting Sources

A New Boiler of 15 TPH capacity will be installed under establishment of distillery. Under existing activity of sugar factory and co-gen plant operations, boiler of capacity 40 TPH (2 Nos) is already installed. New DG set of capacity 415,1000 KVA will be installed under establishment of distillery project.

D. IMPACT ON WATER RESOURCES

i. Impact on Surface Water Resources & Quality

Surface water along with recycled water will be used to meet water requirement of proposed distillery. Effluent from Mollases distillery in the form of spentlees (61 CMD), MEE condensate (288 CMD) and other effluents (25 CMD) will be treated in proposed CPU. Effluent from cane Juice distillery in the form of spentlees (40 CMD), MEE condensate (144 CMD) and other effluents (25 CMD) will be treated in proposed CPU.

Industrial effluent from sugar factory (201 CMD) is treated in existing ETP. Domestic effluent would be treated in proposed STP. Hence there will not be any impact on surface water resource. More details about water budget are presented at Chapter 2.

ii. Impact on Ground Water Resources & Quality

Water required for the industry would be obtained from Hindolco Reservoir. Application for Permission for lifting required amount of water is made and a copy of the letter is enclosed for reference at Appendix - C. Ground water will not be a source of raw water for the proposed establishment project. Moreover, there will not be any discharge of untreated effluent so there will not be any impact on ground water level and quality.

E. Impact on Soil

Impact on the soil characteristics is usually attributed to air emissions, wastewater discharges and solid waste disposal. Under proposed distillery as well as existing sugar factory & co-gen plant, as mentioned above, there will not be discharge of any untreated effluent on land. For proposed boiler ESP will be installed. For existing boilers Wet scrubber is already installed. Boiler ash from existing as well as proposed distillery boiler is given to brick manufacturers whereas ETP sludge is used as manure. CPU sludge and yeast sludge from distillery will be used as manure. Domestic effluent would be treated in proposed STP. Hence, there will not be any major increase in chemical constituents of soil through deposition of air pollutants/ discharge of waste water.

F. Impact on Noise Levels

Workers could get annoyance and can lose concentration during operation. It can cause disturbance during working. People working near the source need risk criteria for hearing damage while the people who stay near the industry need annoyance and psychological damage as the criteria for noise level impact analysis. Major noise emanating sources in SSSSKN complex shall be Fermentation section, distillation section plant, boiler house, turbine rooms, cane crushing section and mill house and DG set etc. SSSSKN is not a major noise producing industry. There shall be no any prominent effect due to Vibration at the project site.

G. Impact on Land Use

Since there will not be any significant impact on the land use, however, the additional workers settlement shall be located within the premises of factory.

H. Impact on Flora and Fauna

Discharge of the untreated wastewater from the industry in surrounding area can also cause significant environmental impact on the aquatic habitats and affect dependent biodiversity. In case of air pollution, the industry is going to contribute in SPM pollution load in the nearby area. This may have negative impact particularly on avifauna, surrounding crop yields and local population. The details in respect of impacts on ecology and biodiversity are described in Chapter 3.

I. Impact on Historical Places

No historical place is within the study area and the impact is nil.

11) SALIENT FEATURES OF EMP

Following routine monitoring programme as detailed in Table 23 shall be implemented at site. Besides to this monitoring, the compliances to all Environmental Clearance (EC) conditions and regular permissions from CPCB /MoEFCC shall be monitored and reported periodically.

Table 23 Plan For Monitoring of Environmental Attributes within Industrial Premises

No.	Description	Location	Parameters	Frequency	Conducted by
1.	Air Emissions	Upwind – 1, Downwind - 2 (Near main gate, Fermentation section, Distillation section)	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO	Monthly	MoEFCC & NABL Approved External Laboratory
		Study area – (Industrial Site, Udikeri Dodwad,Belawadi, Budaraghatti, Kodampur,Bidaragaddi,Siddhasamudra)		Quarterly	
2.	Stack Emissions	Existing Boiler –1 Nos.,Proposed-1 No, Existing D.G Set – 2 No. Proposed D.G Set-2 Nos	SO ₂ , SPM, NO _x	Monthly	
3.	Noise	Work zone 5 Locations - (Near Main Gate, Near Fermentation Section, Distillation section, Boiler, DG set)	Spot Noise Level recording; Leq(n), Leq(d), Leq (dn)	Monthly	
		Ambient Noise location - 8		Quarterly	
4.	Drinking water	Canteen & Colony	Parameters as per drinking water standard IS10500	Monthly	
5.	Soil	8 locations – Siddasamudra Hire Belawadi,Siddasamudra,Hire Belawadi,Pattihal K.B,Lingadhalli , Govanakoppa, Doddawada	pH, Salinity, Organic Carbon, Nitrogen, Phosphorous and Potash	Quarterly	
6.	Water Quality (Ground Water & Surface Water)	Locations in study area –	Parameters as per CPCB guideline for water quality monitoring – MINARS/27/2007-08	Quarterly	
		Ground Water – 8 locations of GW - Siddasamudra,,Siddasamudra,Siddasamudra Doddawada, Doddawada, Hire Belawadi, Hire Belawadi Udakeri) Surface Water – 4 locations of SW; (Khodanapur,Garjur, Konanakudra,,Mugabasav)			
7.	Effluent	Treated, Untreated	pH, SS, TDS, COD, BOD, Cl, Sulphates, Oil & Grease	Monthly	
8.	Waste management	Implement waste management plan that Identifies and characterizes every waste associated with proposed and existing activities and which identifies the procedures for collection, handling & disposal of each waste arising.	Records of Solid Waste Generation, Treatment and Disposal shall be maintained	Twice in a year	
9.	Emergency Preparedness such as fire fighting	Fire protection & safety measures to take care of fire & explosion hazards, to be assessed & steps taken for their prevention.	On site Emergency Plan, Evacuation Plan, firefighting mock drills	Twice a year	By SSSSKN
10.	Health Check up	Employees and migrant labour health check ups	All relevant health check-up parameters as per factories act.	Twice a Year	By SSSSKN
11.	Green Belt	Within Industry premises as well as nearby villages	Survival rate of planted sapling	In consultation with DFO.	By SSSSKN

No.	Description	Location	Parameters	Frequency	Conducted by
12.	CER	As per activities	--	Six Monthly	By SSSSKN