PRE FEASIBILITY REPORT

of

New Molasses Based 30 KLPD Distillery of

M/s. The Kadwa Sahakari Sakhar Karkhana Ltd.

At Post Materwadi (Rajaramnagar), Tal. Dindori, Dist. Nasik,
Maharashtra-422209

Prepared By

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Ministry of Science and Technology, Government of India and P.G. and Doctoral Research Center
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1.0 INTRODUCTION

1.1 Identification of project and project proponent

The Kadwa Sahakari Sakhar Karkhana Ltd,(TKSSKL)is a cooperative sugar mill and it is registered under the vide registration no. NSK/PRG/(A)(3)(S) dated 15/10/1970 .The sugar factory is located at village Materewadi (Rajaramnagar), Tal-Dindori Dist- Nashik, Maharashtra. The establishment of this sugar factory was in the interest of local sugarcane growers. Initially, aunit of 1650 TCD was established in the year 1978-79 under the leadership of Late Shri Rajaram Sakharam Wagh founder chairman. Now the mill is growing under chairmanship Shri Shriram Sahadu Shete. The management of TKSSKL has taken efforts for increasing in sugar cane in commanding area. As a result of increase in sugar cane availability is increased mill decided to increase the crushing capacity from 1650 to 2500 TCD. As increase in crushing capacity the byproduct like molasses and bagasse get increased.Considering all these aspects and to attain financial stability, the management of TKSSKL has decided to install a new 30 KLPD distillery plant.

1.2 Project Setting

Proposed site meets the guidelines prescribed by Ministry of Environment, Forest and Climate Change for sitting of an industry. Geographical coordinates of the site are $20^{0}13'37.68"$ N, $73^{0}55'04.08"$ E**.** It is located on Khedgaon Dindori road Nashik- Saputara highway is just 8 Km far from proposed site and old national highway no 3 is approximately 12Km away from proposed unit.

1.3 Highlights of the Project

Table 1.1: Project Highlights

1.	**Name of the Proponent**	M/s. The Kadwa Sahakari Sakhar Karkhana Limited (TKSSKL)
2.	**Location of the project**	At village Materewadi (Rajaramnagar), Tal. Dindori, Dist.-Nashik, Maharashtra-422209 Email : kadwasakar@yahoo.com Telephone: 02557 237182/183 Fax no: 02557 237185
3.	**Land**	• Distillery, evaporation unit (MEE), storage lagoon=3.0 acres • Biomethanation=1.0 acres • Bio-composting yard and storage unit =6.0 acres • Green belt development=4.0 acres **TOTAL LAND ALLOCATED =14 acres** No need of acquisition of new land as,it is already under the possession of the project proponent (industrial land use) and the open

<table>
<tr><td></td><td></td><td>plot near the sugar mill will be developed into a distillery</td></tr>
<tr><td>4.</td><td>Project</td><td>New Molasses based distillery of 30 KLPD</td></tr>
<tr><td>5.</td><td>Product</td><td>
<table>
<tr><th>Product</th><th>Production</th></tr>
<tr><td>Rectified spirit</td><td>28.50 KLPD</td></tr>
<tr><td>Impure spirit (5%)</td><td>1.50 KLPD</td></tr>
<tr><td colspan="2">OR</td></tr>
<tr><td>ENA</td><td>28.20 KLPD</td></tr>
<tr><td>Impure spirit (6 %)</td><td>1.80 KLPD</td></tr>
<tr><td colspan="2">OR</td></tr>
<tr><td>Anhydrous Alcohol</td><td>27.14 KLPD</td></tr>
<tr><td>Impure spirit (5%)</td><td>1.50 KLPD</td></tr>
</table>
</td></tr>
<tr><td>6.</td><td>Operation days per annum</td><td>270 days</td></tr>
<tr><td>7.</td><td>Main Raw Material</td><td>
<table>
<tr><th>Raw material</th><th>Quantity</th></tr>
<tr><td>Molasses</td><td>111 MT/d</td></tr>
<tr><td>Nutrient N,P</td><td>100 Kg/d</td></tr>
<tr><td>Turkey Red Oil (TRO)</td><td>150 Kg/d</td></tr>
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</td></tr>
<tr><td>8.</td><td>Total Water Requirement</td><td>1128 cu.m/day (initial input)
543 cu.m/day (considering recycle and reuse)</td></tr>
<tr><td>9.</td><td>Fuel</td><td>Bagasse : ~ 117 TPD
Source: Own sugar factory</td></tr>
<tr><td>10.</td><td>Steam</td><td>Maximum 257 TPD</td></tr>
<tr><td>11.</td><td>Effluent Treatment System</td><td>Biomethanation followed by multi-effect evaporation (MEE) followed by bio-composting</td></tr>
<tr><td>12.</td><td>Manpower</td><td>80</td></tr>
<tr><td>13.</td><td>Total Project Cost</td><td>Rs. 5422.53 lakhs (Rounded to Rs. 5423.00)</td></tr>
<tr><td>14.</td><td>Capital expenses for Environment management</td><td>RS. 1786.00 lakhs</td></tr>
</table>

1.4 Need of project and its importance to the country and region

As an agro based industry,Sugar industry in India is dependent on monsoon. Its financial viability drastically gets affected due to weather conditions as well as market. Therefore, it is forced to explore the alternative products from the available resources so as improve its financial stability. Molasses based distillery is one of such an alternative. Because raw material availability i.e. molasses is fulfilled in-house,sugar mills produces own power (electricity). Therefore, the management of TKSSKL has planned to establish a new 30KLPD molasses based distillery.

In India, mainly three types of alcohol are popularly produced, i.e. rectified spirit (RS), extra neutral alcohol (ENA) and anhydrous alcohol (AA). Of these, RS is used for large number of industrial, scientific, laboratory, medical and many other applications. Thus demand for the same is immense and it is ever increasing. ENA is used for making liquors and other alcoholic beverages. AA is a fuel alcohol; it is used for blending with petrol in the ratio of maximum 26:7.

Table 1.2: Expected performance of sugar factory for next five years

Sr. No.	Season	Cane crushing (MT)	Sugar production@11.75%(MT)	Molasses production @ 4.5 (MT)	Press mud production@ 4. 0% (MT)
1.	2018-19	4,26,000	50055	19,170	17,040
2.	2019-20	4,80,000	56,400	21,600	19,200
3.	2020-21	5,00,000	58,650	22,500	20,000
4.	2021-22	4,95,000	58,162	22,275	19,800
5.	2022-23	4,90,000	57,575	22,050	19,600

Molasses is a byproduct of sugar industry. The above table shows the expected availability of molasses as a raw material for the proposed distillery unit. Since, the cane crushing capacity due to proposed project is going to increase, thus the molasses production will also increase. Therefore, it has decided to install a new distillery of 30 KLPD.

The distillery unit will be producing, RS/ENA which are very significant for other industries, medical services, etc. Ethanolis used to blend with petrol, thus able to save valuable foreign exchange on import of fossil fuel.

1.5 Power

An estimated requirement of power for 30 KLPD distillery, boiler and ETP will be 0.710 MW. Therefore, an independent boiler of 12 TPH (tons per hour)of 45 Kg/cm^2 (g) pressure and TG set of capacity 1 MW will be installed for steam and power requirement of distillery unit.In case of failure of captive power generation, electricity will be purchased from state electricity board (MSEDCL).

1.6 Import vs. Indigenous production

The process is straight line and the technology even for the pollution control/disposal is available indigenously.

1.7 Export Possibility

The finished products viz. Rectified Spirit (RS), Extra Neutral Alcohol (ENA) and Anhydrous Alcohol (AA) is havinggreat export potential.

1.8 Domestic / export markets

Market places such as Mumbai, Nashik, Aurangabad, Pune, Surat and Vadodara as well as chemical industries of South Gujarat are the potential domestic market for rectified spirit, ENA as well as AA. ENA could be an exportable product. Mumbai is the nearest port for international export. Mumbai is approx.200 km from the proposed site.

1.9 Employment Generation

Proposed project will be generating 80 direct employment opportunities, of which 50 will be for skilled and 30 for unskilled persons. Apart from this, the project is anticipated to give plenty of indirect opportunities to transporters, shopkeepers and various facility providers such as schools, medical facilities, etc.

2.0 PROJECT DESCRIPTION

2.1 Type of project

Proposed project is a new installation of 30 KLPD molasses based distillery. Molasses is a by-product from the sugar industry which will be used as raw material in the proposed new distillery. The project is placed under item 5 (g) - for distillery unit as 'A' category as per EIA Notification, 2006 (as amended in 2009) and will be appraised at central level

2.2 Location with coordinate : Project coordinates: 20⁰13’37.68” N, 73⁰55’04.08” E

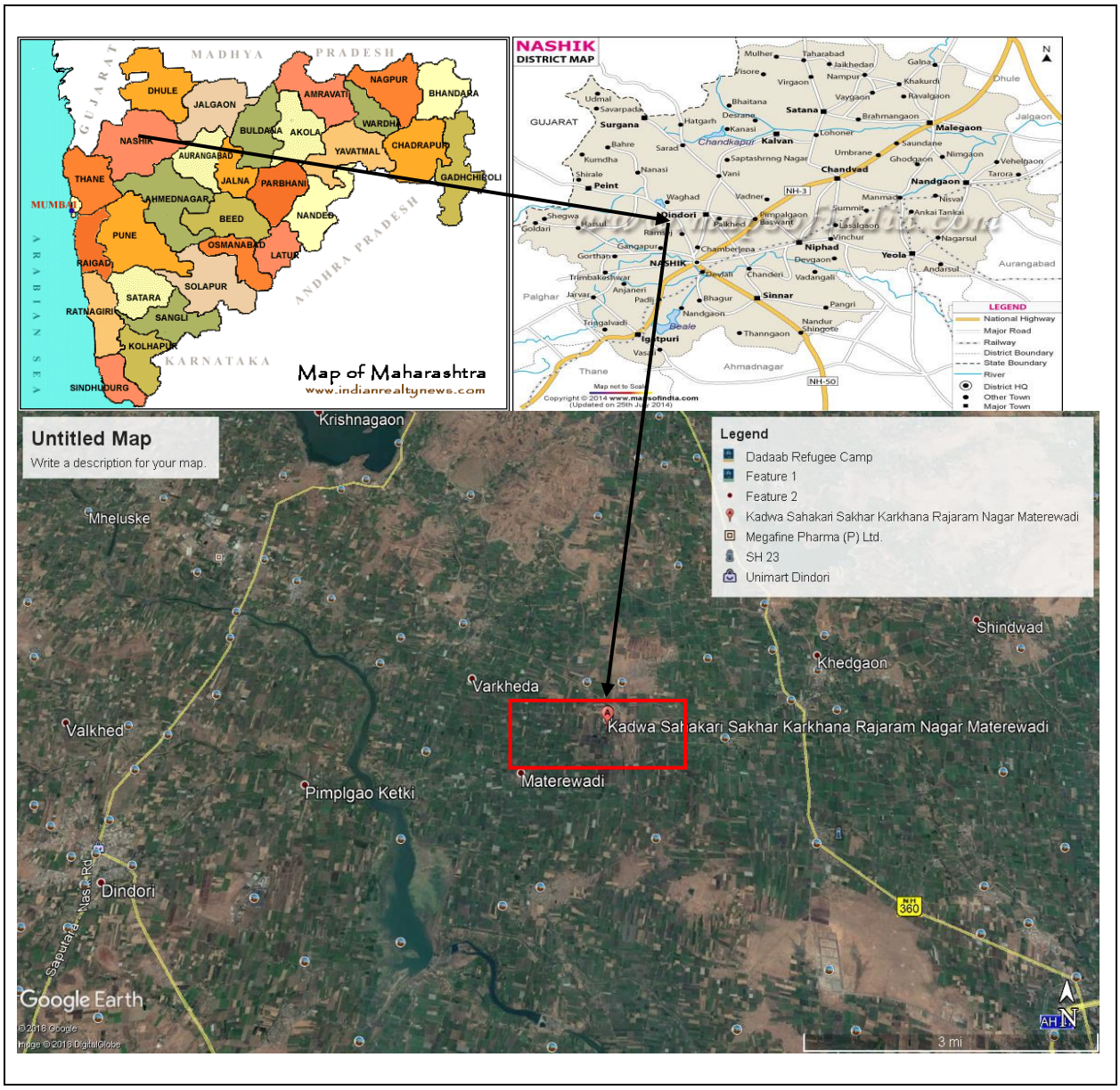

Figure 2.1: Location Map

Figure 2.2: Layout of the project site

2.3 Details of alternative site considered and basis of selecting the proposed site

Alternative sites for the proposed project are not considered, because of following reasons-

i) The project proponentis having land which is adequate for the proposed units as well as ancillary units thereof such as storage, treatment, disposal units, etc.
ii) The present site meets the guidelines for sitting of an industry prescribed by MoEFCC
iii) No rehabilitation or restoration issues involved with the proposed site
iv) The plot is open and barren, thus minimal disturbance to the ecology
v) Infrastructure and resources such as road, water, electricity, manpower, etc is already available

2.4 Size or magnitude of operation

- New molasses based distillery of 30 KLPD

2.5 Project description with process details

Process: Distillery

TKSSKLdecided to adopt the latest technology to achieve Zero Liquid Discharge (ZLD) for the proposed 30KLPD distillery unit; the peculiarities of manufacturing process are as follows

Manufacturing Process

The production process involves the following stages

1. Fermentation
2. Distillation

Fermentation- Molasses is the chief raw material used for production of alcohol. Molasses contains about 50% total sugars, of which 30 to 33% are cane sugar and the rest are reducing sugar. During the fermentation, yeast strains of the species *Saccharomyces cerevisieae*, a living microorganism belonging to class fungi converts sugar present in the molasses such as sucrose or glucose in to alcohol. The continuous fermentation process involves addition of fresh nutrients medium either continuously or intermittent withdrawal of portion of nutrient for recovery of fermentation products. In continuous process, fermenter is in constant usage with little shut down and after initial inoculation of yeast culture, further inoculation is not necessary.

Distillation- After fermentation, the next stage in the manufacturing process is to separate alcohol from fermented wash and to concentrate it to 95%. This is called Rectified Spirit(RS). For thispurpose, method of distillation is employed. After separation of alcohol, the remaining part is the effluent of the process i.e. spentwash and spent lees.

- **Re-distillation to manufacture Extra Neutral Alcohol (ENA)**

  ENA is prepared by re-distillation of the rectified spirit (RS) for the removal of impurities like higher alcohols, aldehydes and methyl alcohol. This is done by, remixing rectified spirit with soft water and distilling it in the ENA column.

- **Anhydrous Alcohol (AA)**

  Anhydrous alcohol is an important product required by industry. As per IS specification it is nearly 100% pure or water free alcohol. Alcohol as manufactured by Indian distilleries is rectified spirit, which is 94.68% alcohol. It is not possible to remove remaining water from rectified spirit by straight distillation as ethyl alcohol forms a constant boiling mixture with water at this concentration and is known as azeotrope. Therefore, special process for removal of water is required for manufacture of anhydrous alcohol.

  The various processes used for dehydration of alcohol are as follows.

  i) Azeotropic Distillation
  ii) Molecular Sieves
  iii) Pervaporation / Vapour permeation system.

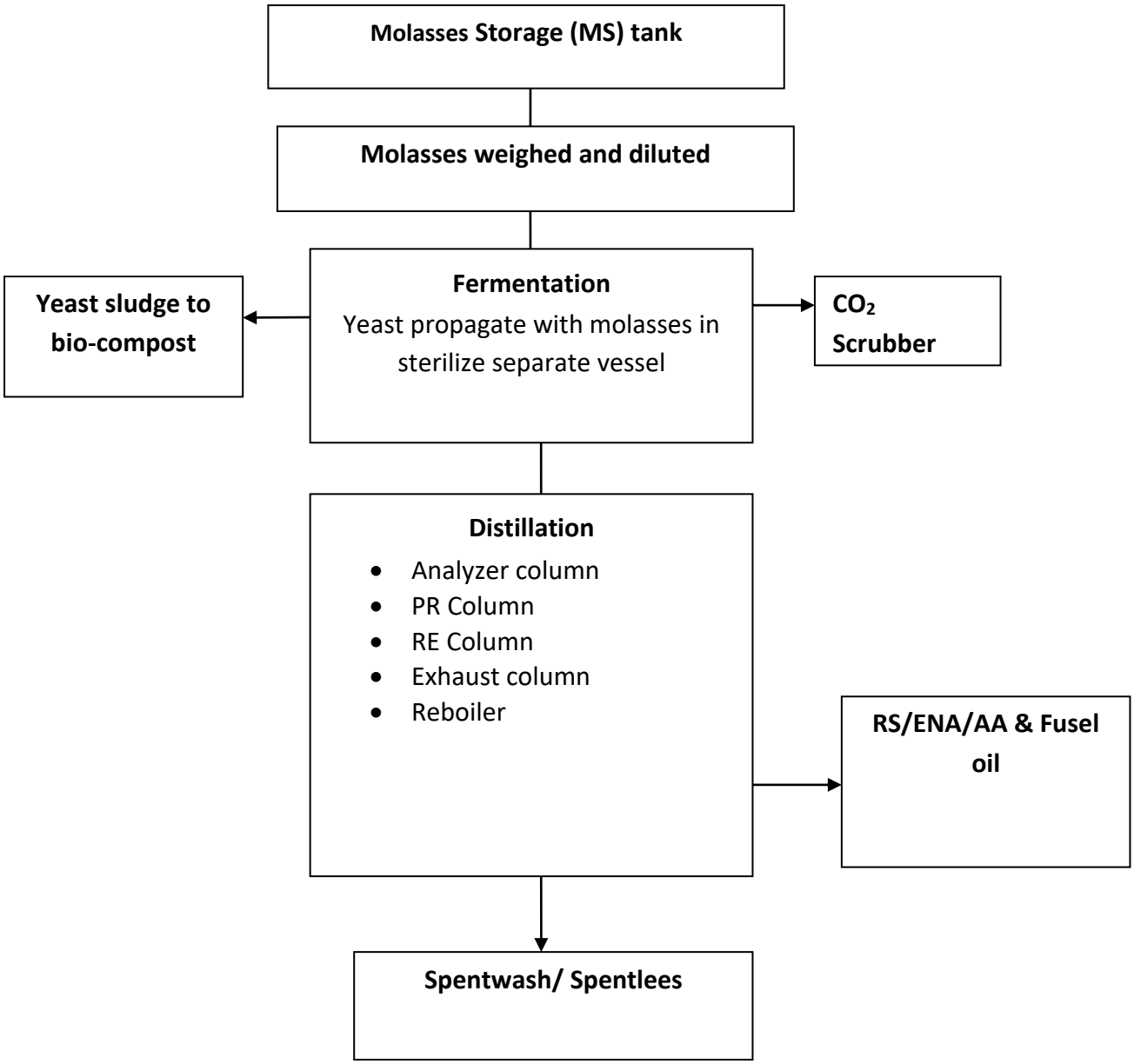

Figure 2.3: Schematic of RS/ENA/AA manufacturing process

2.6 Raw Materials for Finished Products

Raw materials for the proposed project will be available from the local market. Molasses as raw material will be available from in-house only. Product wise raw material consumption is given below.

Table 2.1: Availability of raw materials, finished good product and mode of transport

Raw materials	Estimated quantity	Source market	Final product	Estimated quantity	Transport mode
Molasses	111 MT/ Day	Own factory	Rectified spirit + Impure spirit (5%) OR ENA + Impure spirit (6 %) OR Fuel Alcohol (Anhydrous alcohol) + Impure spirit (5%)	28.50 KLPD + 1.50 KLPD 28.2 KLPD + 1.80 KLPD 27.14 KLPD + 1.50 KLPD	By Road- through Tanker
Nutrients N, P	100 Kg	Nashik, Pune, Mumbai	-	-	By Road- Truck Tempo
Turkey Red Oil (TRO)	150 Kg	Nashik, Pune, Mumbai	-	-	By Road- Truck Tempo
Compost (by-product)	50 MT/ Day	Own factory	compost	-	By Road- Truck Tempo

2.7 Resource optimization / recycle and reuse envisaged in the project

Optimum utilization of the available resources is strived by the management. These resources include land, water, steam, molasses and power. Press-mud is a byproduct of sugar factory that will be used for making bio-compost by mixing spentwash generated in the distillery. Thereby, nutrients will be recycled.

2.7.1 Water Requirement and its source

Necessary water requirement for the proposed project will be met from well. Water will be required for domestic, process and utility purpose. Daily fresh water requirement for the proposed distillery unit will be around 543 m^3/d.

Table 2.2: Water Balance: Distillery of 30 KLPD

WATER INPUT	Cu.m./day
For molasses dilution	300
For cooling tower makeup (fermentation, Distillation F.A & Evaporation etc) total circulation rate 1085 m^3 /hr X 24 X @ 1.5 evaporation, blow down drift loss)	400
Fermenter washing	10
For vacuum pump	15
For air blower	10
For fusel oil decanter & Alcohol scrubber	15
Boiler feed water (@12TPH)	288
DM water for ENA production for dilution of RS	60
Others (Domestic & laboratory)	30
Total Water Input at start-up	**1,128**
WATER OUTPUT	
Spent Lees (PR & Rect)	70
CT Evaporation & Drift Losses	400
Domestic Consumption	30
Water In Spent Wash (5% solids)	300
Pump Sealing / Purge	40
Steam condensate	288

Total Water Output	**1,128**
Recycle streams after treatment through CPU unit	
Evaporation Process Condensate	250
Spent lees	60
For vacuum pump	15
For air blower	10
Steam condensate water return to boiler	288
others	30
Water recycle to process & non-process application after treatment through CPU (considering efficiency @90 %)	**585**

2.7.2 Steam &Power requirement

Steam requirement for the proposed project is 9-10 TPH at 3.5 Kg/cm^2(g). Therefore, a new boiler of capacity 12 TPH with 45 Kg/cm^2 (g) pressure will be installed and this will supply steam to proposed 1.0 MW turbo-alternator. It will fulfil the steam as well as power requirement of distillery.

2.7.3 Fuel: Coal and biogas will be used as a fuel for the steam generation activity of the proposed industry. The requirement of bagasse will be117 MT/day.

2.8 Waste generation & disposal scheme

Estimated daily total water requirement of distillery will be (input) 1128 m^3/d. However, during day-to-day operations585 m^3/day water will be recycled and thus fresh water requirement will be restricted to 543 m^3/day. Effluent in the form of spent wash will be 300m^3 /day. It will be treated through Biomethanation process at primary stage. At secondary stage, its volume will be reduced to 50 m^3/day using multi effect evaporation (MEE). This effluent will be safely disposed through bio-composting process to achieve "Zero Liquid Discharge" as per CPCB norms. The remaining moderately polluted effluent due to spent lees and evaporating condensate will be treated in polishing unit and recycled in the same unit. Estimated domestic effluent will be 24 m^3/d, which will be treated separately in septic tank and soak pit. Quantity of waste to be generated & scheme for their disposal is given in the following chart.

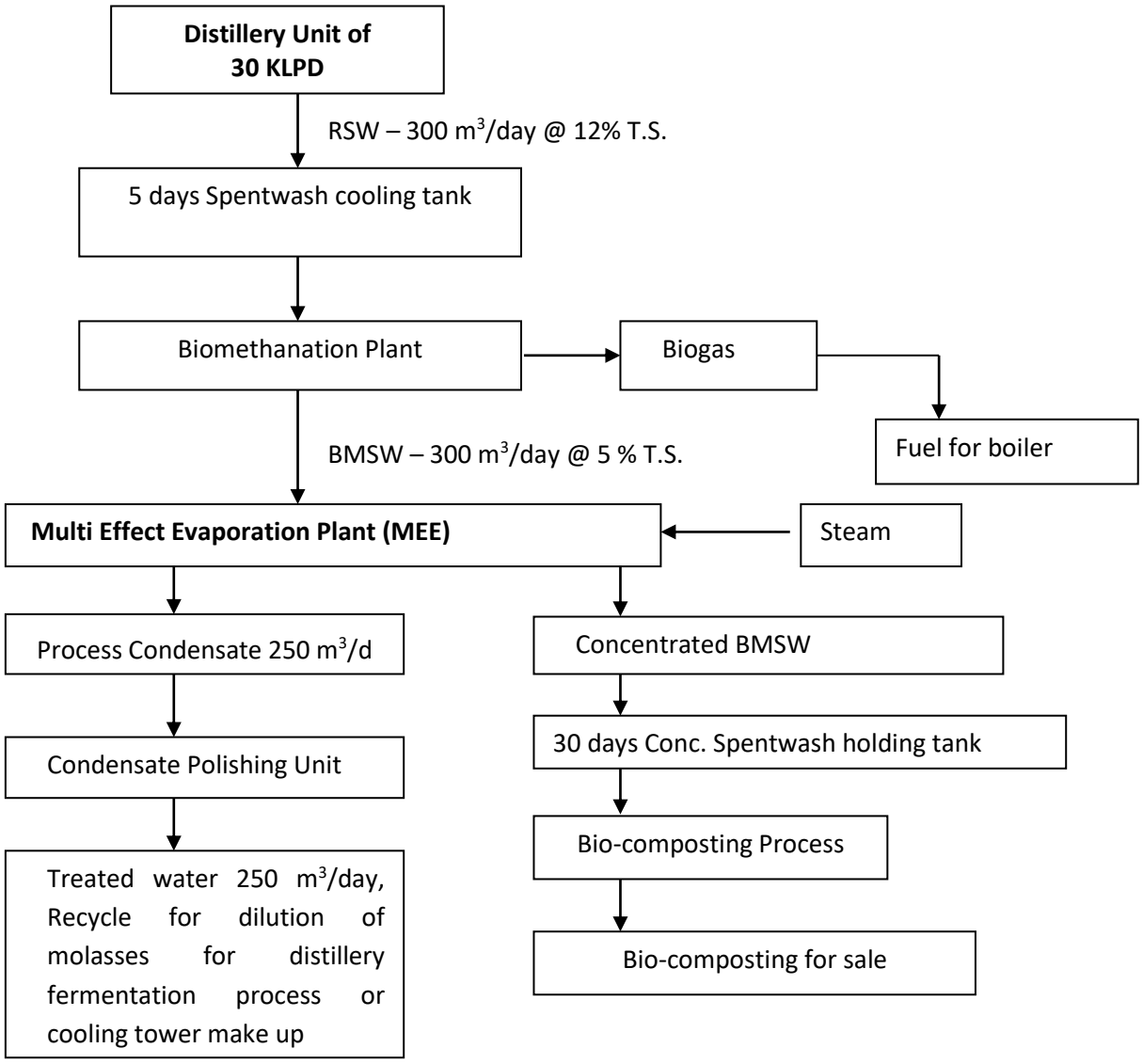

Figure 2.4: Flowchart for spent wash treatment and disposal

2.8.1 Solid waste

The proposed industrial activity could generate solid waste in the form of yeast and ETP sludge, boiler ash. These are biodegradable material. The solid waste will be used as a filler material in the composting process. The quantity and disposal technique is given briefly in the following **Table 2.3**.

Table 2.3: Solid waste generation and disposal

#	Waste	Quantity	Treatment	Disposal	Remark
1	Yeast sludge	1-1.5 TPD	Compost	Used as manure and land filling	Organic
2	Ash	2.35 TPD	Compost	Used as manure and land filling	Inorganic
3	Distillery Polishing unit Sludge	2.5 TPD	Compost	Used as manure and land filling	Organic

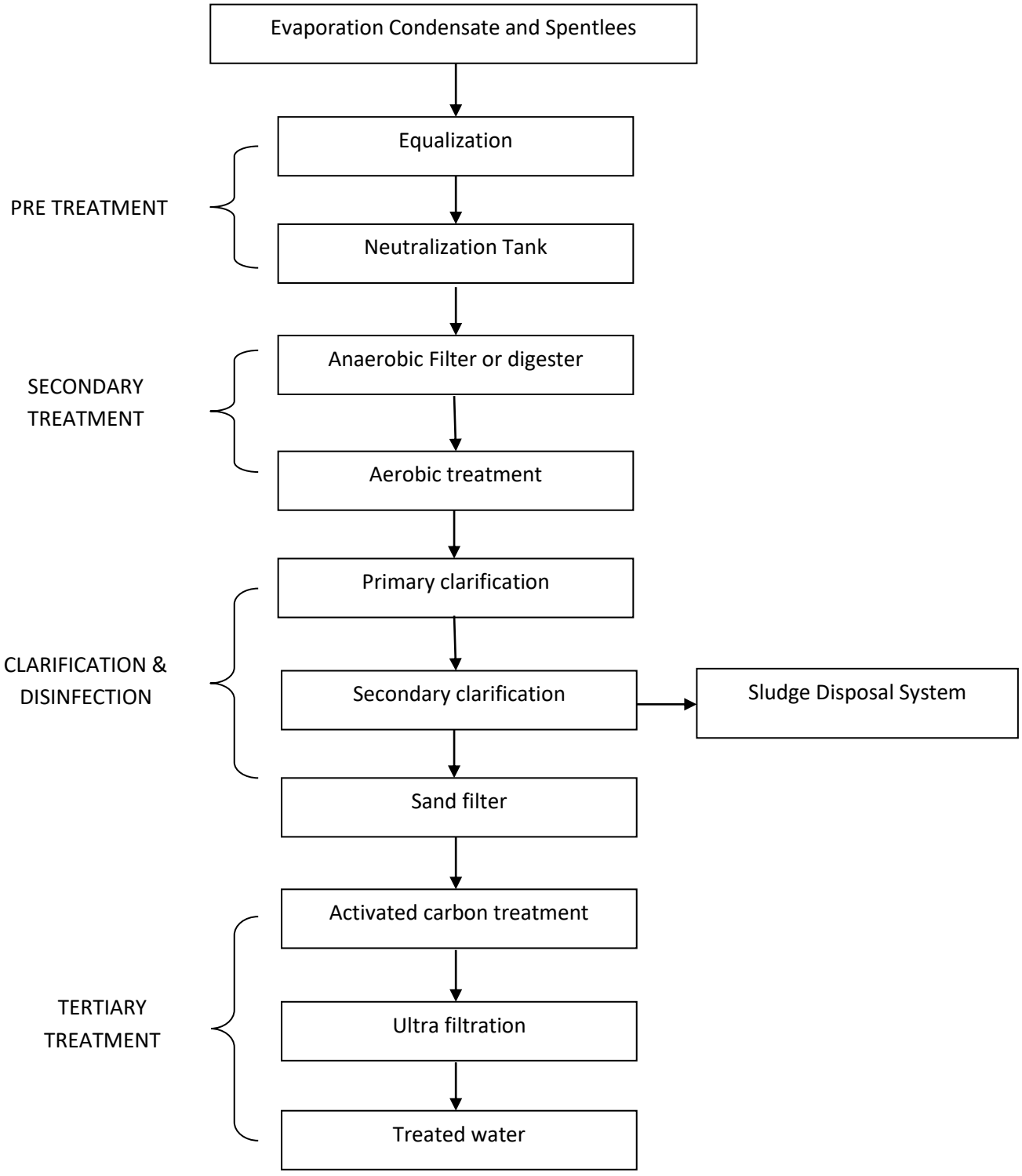

Figure 2.5: Schematic Diagram of CPU/ETP

2.9 Noise Control

Steam turbine generator will be the major noise source from the proposed project. Apart from that, noise is anticipated from pumps, motor drives, utilities etc. The plant and equipments will be specified and designed with a view to minimize noise pollution. The major noise producing equipments will be provided with sound proof devices and silencers. DG set will be provided with acoustic enclosures. Ear Plugs and ear muffs will be provided to the workers in utility section. Greenbelt will be developed.

2.10 Health and Safety Measures

TKSSKL is committed to the Health and Safety of all its employees. It strives to provide hygienic & safe work place and continually improve the effectiveness of Health & Safety system.

To meet these objectives the TKSSKL will;

- Comply all relevant Laws, regulation, statutory provisions & codes of practice
- Continually asses risks & hazards so as to evolve establish & upgrade hazard control measures, emergency preparedness, & risks mitigation and correct the deficiency identified in timely manner
- Ensure safe handling, storage, use and disposal of all substance & materials which are classified as hazardous to health & environment
- Create awareness in employees by providing appropriate training, motivation information's so as to create individual sense of duty, responsibility & participations & an institutionalize culture of continually improvement in safety , health & environment matters
- Make supervisors responsible for implementation of the safety precautions, use of safety devices, & the safety of the people
- Empower employees at all levels to be responsible & accountable for their personal health & safety
- Fire protection system will be provided in accordance to the local fire authorities regulations. The fire fighting system will consist of a hydrant network. It also incorporates suitable firefighting equipment and flameproof lighting and power control arrangements.
- A suitable Fire ring system as per the guidelines of TAC will be incorporated
- Portable fire extinguishers will be provided in strategic locations in new construction area.

2.11 Schematic representation of the feasibility drawing which give information of EIA purpose

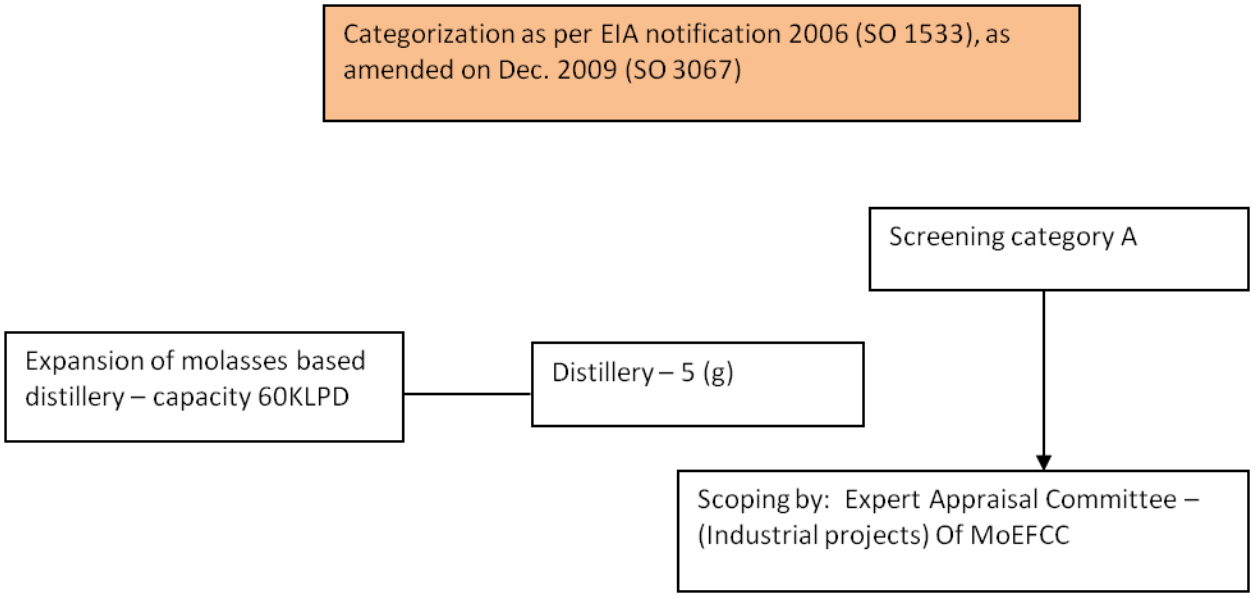

Figure 2.6: Procedure of Environmental Clearance

3.0 SITE ANALYSIS

3.1 Connectivity

The site is well connected by road, railway as well as air network. Mill is located on Khedgaon-Dindori road, Nashik Saputara highway is approx. 8 km far from site and Old national highway no 3 is about 12 Km away form site.

Niphad railway station (of central railway) is approx. 26 km. The international air port as well as port (sea port) of Mumbai is (approx. 200 km) and domestic airport of Nasik approx. 30 km from the site.

3.2 Land form, land use and ownership

The factory is holding 237 acres of land. The land is flat, open and already under the possession of the industry. So out of available land, a provision of approx.14 acre is for the proposed distillery and ancillary units thereof such as boiler house, distillery plant etc.

3.3 Topography

The terrain is almost flat, but surrounded by hills from all side. The geographical coordinates of the area are $20^0$13'37.68" N, $73^0$55'04.08" E. The proposed site is 620 meter above the mean sea level.

3.4 Salient Features

The proposed project requires no additional land. Therefore, no social issues are involved. There won't be change in the land use pattern since the land is under the possession of the industry. There is no sanctuary, bio-sphere reserve or national park in the 10km radius area. The land surrounding the project site is either fallow land or used for agricultural purpose. There are 34 villages within 10 km of the study area. Palkhed dam is approx. 5 km and Kadwa river is approx. 4.0 km away from the project site.

Table 3.1: Salient features of the project location

Roads	Nashik Saputara highway is approx. 8 km from the site Old national highway No. 3 is approx. 12 km from the site (Mumbai Agra)
Nearest City/ Town	Dindori is approx. 12 km from the project site.
Railway Station	Niphad railway station approx. 26 km from the site.
Air Port	Nasik airport is the nearest airport approx.30 km from the site.
River	Kadwa river is approx. 4 km and Palkhed dam is approx. 6km away from the project site.
Schools	Zilla Parishad school at Rajaramnagar i.e. factory site village for primary education. BK Kawle school and Jr. Collage is near to factory site
Colleges	BK Kawle Arts and Commerce college is near to factory site BK Kawle nursing collage is also at factory site
Medical and health care centers	Medical collage is approx. 35 km from the project site.
Banks	State Bank of India is. 12 km from the project site.
Market places	Dindori is a nearest market place at approx. 15km far from the project site.
Protected Area/ Sanctuaries/NP	Nandur Madhyameshwar bird sanctuaries is 45 km away from the project site.
CRZ applicability	Not applicable
Seismicity	Seismic Zone- III

Note: All the above mentioned distances are the aerial distance from the project site.

3.5 Existing Infrastructure

The nearest residential area to the factory is at a distance of 2.5 km towards south-west. There is an agricultural and fallow land in the surrounding area of the site. Within 10 km Influence Zone, there is no Tropical Forest, Biosphere Reserve, National Park, Wild Life sanctuary; Nandur Madhyameshwar sanctuary is approx. at 45 km from the project site.

Table 3.2: Existing Infrastructure

Infrastructure	Features
Land	Mill has total plot area is 237 acre out of which 14 acre allotted for proposed distillery unit
Water	Requirement 543 cum/day; Source: Palkhed dam
Power	Captive (~0.710MW) from 1 MW - STG set
Road	Nashik Saputara highway is approx. 8 km from the site Old national highway No. 3 is approx. 12 km from the site (Mumbai Agra)
Fuel	Fuel required for steam generation will be met from bagasse and bio-methanation unit
Steam generator (boilers)	New boiler 12 TPH will be installed

3.5.1 Raw Material: Sugar cane & Molasses

The new distillery unit depends on the availability of raw material i.e. sugarcane and molasses. The following **Table 3.3** describes the expected coming five year molasses production of TKSSKL after enhancement of existing sugar unit capacity from 1650 TCD to 2500TCD.

Table 3.3: Expected molasses production for next five year

Sr. No.	Year	Cane to be crushed (Lakh MT)	Total molasses production @ 4.5 % on cane crushed (MT)
1	2018-19	4.19	19,170
2	2019-20	4.80	21,600
3	2020-21	5.00	22,500
4	2021-22	4.95	22,275
5	2022-23	4.90	22,050

Above table shows the raw materials potential that is sugarcane and molasses in the area is about 22,000 to 22,500, however requirement of molasses is about 29,970 MT per annum. The remaining molasses is about 7000 to 8000 MT will be procure from nearby sugar factory

3.5.2 Irrigation and transportation facilities

TKSSKL is located in the vicinity of Palkhed dam and Kadwa river (approx. 4&6 km from project site). Irrigation is done through lift and canal.

Another important factor is proximity of old National Highway (NH-3) and also network of state and local roads in the operating area of the TKSSKL.

3.5.2 Fuel

Biogas and bagasse will be used as fuel.

3.5.4 Water

The water requirement for proposed project will be around 1128 m^3/day. Water conservation will be achieved by recycling of water. Water from the well will be used for all plant and fire-fighting purposes, diesel driven pump (capacity as per TAC recommendation) along with one electrical pump will be installed for supply to all fire hydrants and sprinklers.

3.5.5 Power

The power requirement for the proposed project is ~0.710 MW, which will be met from TG set of 1 MW.

3.6 Soil classification

The soils occurring in the district are classified in the four categories namely lateritic black soil (Kali), reddish brown soil (Mal), coarse shallow reddish black soil (Koral), medium light brownish black soil (Barad). In general the soils are very fertile and suitable for growing cereal and pulses.

The black soil contains high alumina and carbonates of calcium and magnesium with variable amounts of potash, low nitrogen and phosphorus. The red soil is less common and is suitable for cultivation under a heavy and consistent rainfall.

3.7 Social Infrastructure available

Infrastructure such as school, colleges, market, banks, hospitals, public transport, road, drinking water, electricity, post, telecommunication, cinema halls, radio, etc are easily available to the local people.

The present project is proposed by one of the leading and progressive sugar industry from northern Maharashtra. During the period of establishment, the industry received a strong leadership in the form of Shri. Shriram Sahadu Shete, Honorable Chairman of leading the TKSSKL.

The sugar factory has already initiated several activities for the development of the region. Some of the prime activities are as follows.

- The factory is providing medical aid to the employees and their dependents
- It provides educational facilities to the children of workers
- It helps member farmers by supplying organic and chemical fertilizers, press-mud and the developed cane seeds approved by VSI. The factory also arranges field demonstration to educate the farmers in sugarcane cultivation through application of scientific methods
- It provides drip irrigation facilities to the sugarcane growers on subsidized basis
- It provides insurance policy facilities for members and workers
- To facilitate better transport of sugarcane, the factory has undertaken major program to construct roads in its area of operation
- Regular tree plantation with development being done every year through the separate tree plantation cell in their campus and surrounding area. For nearby schools, hospitals free of cost plants are provided.

4.0 PLANNING BRIEF

4.1 Planning concept

A project is proposed by one of a leading cooperative sugar mill from Nashik district. Due to availability of, production of adequate amount of molasses from its own sugar industry, a new molasses based distillery of 30 KLPD is being proposed.

4.2 Facilities for Transport

Nashik Saputara highway is approx. 8 km from the site; Old national highway No. 3 is approx. 12 km from the site (Mumbai Agra). All the villages from the command area of TKSSKL are accessible by asphalted (*pucca*) road, operational year around. Hence, public transportation is available. State transport (ST) buses ply on schedule and connect almost all the villages of the command area.

4.3 Town and country planning / Development authority classification

The project is located at taluka Dindori, village Materewadi Grampanchayat is the local authority. The Grampanchayat has issued "No Objection Certificates (NOC) "for the proposed project.

4.4 Population projection

No major population flux is projected because the proposed distillery. It will employ candidates from local areas. Only for exceptional posts, it may employ candidates from other areas. In that case existing colony have the facilities to accommodate the additional man power for the new activity.

4.5 Land use Planning

Total land available for the proposed project is 14 acre. Out of which proposed distillery (and its ancillary unit) will be installed in 3 acre and 4 acres of land has been allocated for green belt development.

4.6 Assessment of infrastructure demand (Physical & Social)

The basic infrastructure such as roads, electricity, transportation, drinking water supply, health centers and hospitals, school, colleges, sanitation facilities are available in the vicinity. The proposed project is not going to exert any unbearable load on any of these resources. In fact it will generate employment for the local people there by raising their standard of living.

4.7 Amenities/ Facilities

Following amenities/facilities are available at the factory

- Guest house facility
- Petrol pump
- Separate dedicated parking facility for goods vehicle and personal vehicles at site
- Provision of street light within premises as well as on approach road
- Security check post and round the clock security persons on duty
- Fire extinguishing facilities
- Housing colony for employees
- Drinking water and power supply to housing colony

- Diesel generator as a backup facility
- Fresh water and wastewater treatment plants

5.0 PROPOSED INFRASTRUCTURE

5.1 Industrial Area

The proposed project will be carried out in the area owned by the factory only. The total allocated land for the proposed project is 14 acres.

5.2 Residential Area

The residential colony is in place (for existing sugar unit). It has capacity to accommodate 130 families. Since, most of the employees of the sugar mill are local the housing facility is occupied by less than 50% of its capacity. Therefore, new residential colony is not proposed for the distillery project.

5.3 Greenbelt Area

The total greenbelt area provided is ~ 4.0 acre.

5.4 Social infrastructure

The physical infrastructures such as land, roads, power, water, transportation etc are easily available for the proposed unit. Raw material and filler material are also available with factory adequately. Very minor influx of population is anticipated due to the project. Available social infrastructure such as schools, colleges, market, medical facilities, etc. is adequate to support the probable minor population increase.

5.5 Connectivity

Nashik Saputara highway is approx. 8 km from the site, Old national highway No. 3 is approx. 12 km from the site (Mumbai Agra).

5.6 Drinking water management

TKSSKL draws water from Palkhed dam and supply the drinking water to factory as well as the staff colony.

5.7 Industrial waste management

The wastewater generated from industrial activity will be treated in effluent treatment plant (ETP), Condensate Polishing Unit (CPU) and will be used for irrigation purpose. For ETP scheme, refer **Fig. 2.5** and **Table 2.3** for solid waste management**.** Thus, due to proper treatment of effluent, recycling and zero liquid discharge, the issue of wastewater is envisaged to be insignificant.

5.8 Power Requirement and Source

Boiler will generate the power of 1.0 MW which is the source for all industrial utilization as well as all subunits of proposed distillery and its allied units. The consumption of power will be 0.71 MW.

5.9 Rehabilitation and Resettlement (R & R) Plan

There will be no any issue of rehabilitation and resettlement (R & R) for the proposed project, since the required land is available with the factory.

5.10 Project Scheduled & Cost Estimates

Table 5.1: Project scheduled & cost estimate

1.	**Date of start of construction (Anticipatory)**	**Dec. 2018**
2.	Date of completion (Anticipatory)	Dec. 2019
3.	Proposed Project cost	Rs. 5422.53 lakhs (Rounded to Rs. 5523.00)
4.	EMP cost	RS. 1786.00 lakhs

5.11 Analysis of proposal (Final Recommendations)

I) Benefits

- This industry will produce RS, ENA and Anhydrous Alcohol (fuel ethanol) which are useful products for the country, which will earn & save foreign exchange in the potable alcohol cadre as well blending in petrol.
- Compatible Architecture will be adopted and No Prime Agriculture Land will be put to this industrial use. Trees will be maintained and not razed down. No Rehabilitation is involved.
- Sludge from ETP and ash from boiler are also soil enriching materials
- The problematic liquid waste materials will be disposed in the composting process with the help of filler materials like sugar factory press mud, ash, and biodegradable solid waste and form value added soil enriching compost.
- Wastewater viz. spentlees, process condensate will be reused in process and for gardening in campus only.
- The process is straight line and the technology even for the pollution control/disposal are available indigenously
- Waste products generated in the sugar factory are useful as a raw material and fuel at sugar factory and its own distillery

- The aggregate effect of the project is likely to boost the local economy
- Direct employment opportunities for local youths. The farmers will get proper price to their sugarcane

II) Conclusion

a) New distillery is very necessary for effective utilization of byproducts of sugar factory i.e. molasses and pressmud

b) The local people and sugarcane growers are strongly willing for the project and have already given consent to the management to develop and execute the proposed project.

c) The project site is suitable from general MoEFCC expectations.

d) Water, power, raw material, filler material and market is assured and found available with ease.

e) Full precautions will be taken for pollution control, resource conservation and environmental protection.

f) All the units are agro-based and hence promote sustainable development.