

EXECUTIVE SUMMARY IN ENGLISH

Executive summary of NPSWDL is summarized as below,

CHAPTER 1: INTRODUCTION AND BACKGROUND

About the project proponents: Mr. Ravi Chug has a business as a Distributor for Liquor Wholesalers at Waluj, Aurangabad in the name M/s Shakti Agencies and also a Director in Satyam Distilleries Pvt. Ltd. A company manufacturing Country Liquor at Phaltan. Dealing in Liquor, molasses and Distilleries since the past seven to eight years.

Mr. Pralhad Salunke a Director of sugar factory at Sakharwadi, Phaltan, and Satara in the name of New Phaltan Sugar Works Ltd. Dealing in Sugarcane, sugar and molasses since last Twenty years.

About the proposed project:

M/s New Phaltan Sugar Works Distillery Division Ltd. is proposing new project of molasses based Distillery with capacity of 50 KLPD Alcohol. M/s New Phaltan Sugar Works Distilleries Division Ltd factory will be promoted at Surawadi Gut no. 477,478/1,494,567, of village Sakharwadi, in Phaltan tahesil of (MS). The Plot admeasures about 14.33 acres. The Notification no. S. O. 1533 promulgated on 14th September 2006 have covered these types of industries under its entry 5(g) stated that (g) Distillery. TOR sanctioned on minutes of 20th reconstituted expert appraisal committee (industry) meeting held on 23rd -24th June 2014

CHAPTER 2: PROJECT DESCRIPTION:

- i. **Location of the project:** The proposed project is at Surwadi Gut no. 477, 478/1, 494, 567, of Village-Sakharwadi, Taluka- Phaltan, Dist. - Satara, and Maharashtra having area of 14.33 acres. The geographical location of the industry is Latitude: 18°01'54.5" N and Longitude: 74°20'33.2" E with an elevation of 539 m above Mean Sea Level (MSL).
- ii. **Description of the Manufacturing process:** Manufacturing process for Alcohol is Hiferm fermentation process comprises of following steps

- Molasses handling and Distillation in which screened molasses is weighed and distributed to cell mass propagation, fermentation and yeast activation section
 - At Yeast propagation stage Culture yeast is grown in laboratory during plant startup
 - Pre fermentation means transfer of cell mass from yeast vessel to yeast activation vessel to build up cell mass required for fermentation process by cell mass transfer pump.
 - Fermentation is engineered process purpose is to convert fermentable sugar into alcohol.
 - Distillation is process to cut rectified spirit from fermented wash. 95% v/v is taken out.
- iii. **Project Cost:** The Total project cost is **4500 lacks, EMP cost- 750Lacks, CSR cost - 225 Lacks**
- iv. **Raw materials:** The main raw material for this industry is Molasses which is by product of sugar factory. The procurement of molasses will be by own 28000 MT and balance from nearer sugar factory
- v. **Water management:** The water requirement is about 542 M3/Day for Domestic, Greenery and Processes. The source of water is from Nira Right bank canal and the same os adequate and satisfactory,
- vi. **Utilities:**
- Power:** New Phaltan Sugar Works Distilleries Division Ltd Power requirement 1000 kw/hr for unit connected load available through Govt. Electricity however the same will be generated in house from turbine. DG set will be used only in emergency backup of capacity **500 KVA** for proposed product. Quantity of fuel for DG set shall be **135 Liters /hr** of HSD.
- Boiler:** capacity 13 TPH, bagasse-40 tons per day and biogas-20,000 cm/day used as fuel for boiler
- Use of steam:** Steam of working pressure 45Kg. /Hr. When passes through turbine working pressure of the steam is 3.5Kg. /Hr. such steam will be used to distillation plant for ENA production. Quantity required here is 6.60MT/Hr. 3.10MT/Hr. steam is required for evaporator and 0.450Mt/Hr. steam is required for Ethanol production.
- Cooling Tower-**
- Capacity (TR) - 5500

Recirculation pumps Details-Distillation-500M3/hr, 42 M Head, Fermentation 400 m3/hr with 18 m Head, Evaporation -350 m3/hr 20m Head.

Type- Centrifugal Type

- vii. **Waste water generation:** waste water generation from different source is 404 m3/day. The main source of wastewater generation is the distillation step wherein large volumes of dark brown effluent (termed as spent wash, stillage, slop or vinasse) is generated in the temperature range of 71–81 °C. The characteristics of the spent wash depend on the raw material used also, it is estimated that 88% of the molasses constituents end up as waste. Waste water generation is from Boiler blow down, Process(spent wash, spent leese), cooling tower blow down, floor washing, DM plant and Domestic
- viii. **Waste water treatment:** Spent wash will be treated in Bio-digester. Biogas generated from Bio-digester will be used as fuel for boiler. The effluent after bio-digester shall be treated in MEE followed by bio-composting
- All lean streams from various sources like boiler blow down, cooling tower blow down, domestic will be collected together and subjected to primary, two stage biological treatment followed by UF and RO to recycle treated effluent. The Domestic Effluent will be treated in Septic tank and will be used for green belt after treatment.
- ix. **Air emissions:** The air pollution caused by this industry is mainly from boiler. The boiler will be provided with Cyclone and bag filter followed by 30 m Stack height.
- x. **Solid Waste Management:** The main solid waste from factory will be of non-hazardous from office, garden, Effluent treatment plant. Non hazardous waste will be segregated as compostable and saleable. Hazardous solid waste such as yeast sludge and Boiler Ash are mixed with press mud and converted to bio compost will be made available to nearby farmers.

CHAPTER 3: DESCRIPTION OF ENVIRONMENT

Base line environmental studies were carried out, as per TOR received from MoEF, Dehli

Study area: The study area is defined as area within 10 km radius from proposed site boundary.

Land use / land cover:

A recent satellite image for study area was collected from NRSC. The image was interpreted for identification of various land use / land cover classes. Ground truthing was done to confirm and edit the interpreted land use / land cover classes.

Land use of the study area has been classified into following categories. The major portion of land is covered by Agriculture land.

Land use/ Land cover Statistics of the Ten square Km Area

Sr. No.	Classes	Area (Ha)	Area (%)
1	Water body	277.56	0.88116
2	Agriculture	16079.4	51.0466
3	Current Fallow	2651.94	8.419
4	Long Fallow	2513.16	7.97842
5	Vegetation	727.29	2.3089
6	Open Scrub	4260.6	13.5259
7	Built up Land	2972.25	9.43588
8	Barren Land	2017.26	6.40411

Meteorology:

As per requirement of Terms of Reference, the hourly baseline meteorological data were collected by setting up meteorological station at the site. Minimum temperature recorded during study period was 12.1°C during the month of October and December with maximum temperature of 33.2°C. Minimum relative humidity recorded was 19.3% and maximum relative humidity recorded was 98.8 %. Meteorological data shows minimum wind speed during study period was 0.0 km/hr. maximum wind speed was 13.8 km/hr during study period.

Ambient Air quality

Ambient Air Quality monitoring stations were set up at 9 different locations. Parameters recorded are as follows:

- PM2.5
- PM 10
- SO₂
- Nox
- CO
- HC

The observations are as follows

Maximum concentration of SO₂ was 7.17µg/m³ at Jinti Site and Minimum was 6.99 µg/m³ at Phadtarwadi site.

Maximum and minimum concentration of NOX was 8.60 µg/m³ and 8.44 µg/m³ at Hol and project site respectively

Maximum and minimum concentration of PM₁₀ was 38.283µg/m³ and 31.875 µg/m³ at Mirgaon and Phadtarwadi respectively

Maximum and minimum concentration of PM_{2.5} was 17.94µg/m³ and 10.60 µg/m³ at Hol and Nimbhore

Maximum and minimum concentration of CO was 0.21µg/m³ and 0.18 µg/m³ at Phadtarwadi and project site

Concentrations of HC were Below Detectable limits at every site.

Noise

Noise levels were recorded at 9 different locations within the study area. Noise monitoring was carried out on date 15, 18, 22 November 2014. Observations are as follows:

- Average noise level at Project site on day time is 52.7 dB(A) and on nighttime is 42.6 dB(A)

This is within the permissible limit given by CPCB i.e. day time 55 dB (A) and night time 45dB (A).

- Average noise level at other locations within study area is 52.68 dB (A) at Day time and 42.92 dB (A) at Night time. This is also within permissible limits.

Soil:

Soil samplings were carried out at 9 locations in the study area. Observations are as follow:

- Soil at and around site area is dark brown to black colored cotton soil most commonly associated with Deccan plateau.
- As per Soil Classification, the soil within study area is mostly Silty Clay Loam and Silty Loam

Ground water quality:

Ground water sampling were carried out at 9 locations of the study area and analyzed for parameters mentioned in the Indian Standard IS 10500:1991. Observations are as follows

- TDS and Hardness is found to be high in few locations, the TDS level of Village Holl is 2106 mg/lit which is above the permissible limit. And Hardness of Village Holl is also above permissible limit i.e. 666.67 mg/lit.
- All heavy metals are found to be below the permissible limit.

Ecology and Biodiversity: The list of floral species is prepared based on visual observation during site visit and thorough review of site literatures and secondary data available with various government offices are referred for identifying rare or endangered species in the region. There are no endangered species of flora and fauna in the study area. There are no reports with the forest department about endangered species or notified protected species. Vernacular species are present in study area. Indian species such as *Hyena, Jackals, wild Pigs, red fox and panther*. Typically vegetation is composed of natural and cultivated type. Like *babhul, neem. Beshrami* is

common weed in wet areas. There are about sixty species of fish available in rivers, tanks, ponds. No threaten on flora and fauna in study area.

Socio-Economic Study: Social survey is conducted 26th October, 2014 to 29th October, 2014 in 24 villages to collect factual information by involving community. For secondary data primary census abstract of 2001, Government of India has been used.

In 2011, Satara had population of 3,003,741 of which male and female were 1510842 and 1492899 respectively. In 2001 census, Satara had a population of 2808994 of which males were 1408326 and remaining 1400668 were females. Satara District population constituted 2.67% of total Maharashtra population. The literacy rate of the district is 82.87% with Male literates having 89.42% and female literates accounting for 76.31 %. The effective literacy rate of the district is 82.87% which is significantly greater than that of the state literacy average (76.87%).

Onsite socio economic study and recent taluka level census statistics exhibits following facts:

Main working population of Taluka is almost 37%

Only about 10% population is engaged in agriculture activity.

Marginal workers and marginal agriculture laborers are 17% and 31% respectively.

Total non working population of 10 villages those are located very near to the project site is almost 55% of the total population of the villages Following are conclusions for project implementation,

- The project is not going to cause any damage to existing agricultural situation
- The project has very strong positive employment and income effects, both direct and as well as indirect.
- The project will have positive impact for health, agriculture development, agro-based enterprises and employment opportunity.

CHAPTER4: ANTICIPATED ENVIRONMENTAL IMPACT IDENTIFICATION, PREDICTION AND MITIGATION MEASURES

1. Air Environment:

Impacts

Various identified sources, in production of Alcohol that can cause potential impacts on air quality are emissions from:

- CO₂ generation from fermentation
- SPM From Boiler & CH₄ Bio-digester
- SPM / SO₂ From DG Sets;
- Dust/ NOX From vehicular movement.

Mitigation measures for air quality impacts will include:

- Air pollution control equipments like cyclone & Bag filter attached to boiler;
- Effective water spraying will be carried out on the access roads to control re-entrained dust during dry season (if required);
- Plantation within project premises and around the boundary will be done;
- Ensuring the availability of valid Pollution under Control Certificates (PUCC) for all vehicles used on site.

Fugitive Emissions

A number of mitigation measures are taken to control fugitive emissions, the presence of which will be taken to Noticeable by plain vision if not controlled. Following are the measures:

- Rubber wheel carts /trucks to bring in Raw materials, not filled high, sides cladded, slow speed travel , avoiding vibrations
- Engineering the plant layout in such a way so as to virtually Eliminate need of using heavy equipment for material handling in the main plant

2. Noise Environment

The proposed plant operations and related activities will lead to emission of noise that may have significant impact on the surrounding communities in terms of increase in noise levels and associated disturbances.

Impacts

Following activities would result in increase in noise level:

- Operation of Plant
- Construction activity
- Operation of DG set
- Vehicle / traffic movement

Mitigation measures for noise related impacts will include:

- Proper care shall be taken at the time of installation to insulate / enclose all the noise sources to avoid occupational exposure to the work and also to minimize the generation of excess noise level.
- Monitor the ambient noise level and work zone noise level as per the monitoring schedules to conform the stipulated norms
- Noise attenuation devices such as ear mufflers must be provided to the workers in the high noise exposure areas.

3. Water Environment

The proposed project will utilize 542 cum/day water during operation phase. The source of water will be from Nira Right Bank canal. Total wastewater generation from proposed project is 404 cum/day. This waste water shall be used to generate Biogas and to produce Bio-compost.

Impacts

- Water scarcity will be there and need of ground water development
- Waste water from proposed distillery mainly consisting of spent wash may have adverse impact on Ground water and Surface Water Sources.

Mitigation measures to reduce ground water related impacts are:

- Efforts will be made to reduce water requirement by recycle and reuse of process waste water etc;
- Recharge pits for rainwater harvesting will be made to improve groundwater condition;
- Domestic waste water shall be reused for Green belt

- Waste water except spent wash shall be treated in condensate polishing Unit and shall be recycled to process.
- Treatment of spent wash in Bio-digester followed by evaporation and Bio-composting

4. Land

The study area covers 314 km². In that context the likely change in land use and land cover due to the project is likely to be in the order of 0.01-0.02% of the entire area, a relatively modest figure. Also as per the environmental risk categorization it comes under moderate risk level where the activity can operate subject to management and or modification.

Impacts

Potential Impacts on the Land Use and land cover shall be due to the project are given below:

- Land Acquisition
- Site preparation
- Waste disposal
- Green belt development (Positive Impact)

Mitigation measures to reduce Land Use and land cover related impacts are:

- Optimization of land requirement through proper site lay out design will be a basic criteria at the design phase;
- As the Site is surrounded by Agriculture land as LU map suggest so care should be taken for the waste disposal.

5. Soil

Impacts

Potential impacts on soil due to production of Alcohol activities are given below:

- Construction Activities & due to spillage of oil, construction waste
- Impact on the soil characteristics is usually attributed to wastewater, solid waste and hazardous waste disposal.
- Storage and Handling of Raw material

Mitigation measures to reduce soil related impacts are:

- There is no major construction activity will be carried out. So there is no negative impact of on soil due to construction activities.
- Excavated soil will prevented from contaminations, stacked for landscaping.
- Waste water will be treated in proposed ETP. No waste water disposed inland waste water will be discharged.
- Yeast Sludge and Boiler ash are mixed with Pressmud and Converted to Bio-Compost.

6. Socio-Economic

Critical analysis of socio-economic profile of the area vis-à-vis its scenario with proposed project activities indicate that the impacts of the project are expected to be of varying nature.

ImpactsThe impacts predicted will be on following Environmental components:

- Population
- Education
- Employment Generation
- Infrastructure
- Sanitation/Public Health
- Agriculture

Mitigation measures to reduce socio-economic related impacts are:

- Construction and maintenance of the approach road at regular interval will be carried out by the project proponent;
- The proper sign board will be placed for smooth flow of traffic;
- The parking space/facilities will be provided within the premises of the factory by the project proponent to minimize the accidents and traffic;
- The Continuous Monitoring of Air and Water will be carried out as agricultural fields are just found adjacent to the site;
- Valuable Bio-compost will be sold at cheaper price to local farmers

8. Ecology and Biodiversity

Based on study conducted for ecology in the study area, no rare or endangered terrestrial and aquatic flora/fauna were noted in the study area.

The developed greenbelt and green cover in the project area would increase the flora and fauna density in the area at the project site

9. Occupational health community Health and safety

Impacts on Occupational Health, Community Health and Safety listed below:

- Impact during preparation of site, like Risk of occupational injuries
- Impact on community health due to various transportation activities, like Noise pollution, Dust pollution, potential damages to village road. Due to this lot of inconvenience may happen to local community.
- Occupational risk during working at heights, during welding etc for Construction activity.
- During storage, handling and disposal of waste water, Risk to community health due to spillage in surrounding area if not stored properly

Mitigation Measures:

- By using PPEs during process impacts on occupational health and safety shall be overcome.
- Occupational health and Safety surveillance program will be carried out
- Continuous CSR activities shall be there by proponent such as construction of approach roads, various awareness programs

CHAPTER5. ANALYSIS OF ALTERNATIVES

i. Site selection

M/s New Phaltan Sugar Works Distillery Division proposes to molasses based distillery unit at Surwadi Village Sakharwadi. Selection of proposed site is done on the following merits.

- a) Source of water and availability for industrial (factory) use and agriculture purpose
- b) Topography, soil condition and land cost
- c) Availability of raw materials

d) Access to power

Identified Sites:

Site No.1: Located at Surwadi village Sakharwadi, Tal. Phaltan, Dist. Satara Maharashtra.

Site No.2: Located at village Perhear of taluka Phaltan, Dist. Satara.

Site No.3: Located at village Nimbhore of taluka Phaltan Dist. Satara.

ii. Technology Process:

Technology Selection:

- a) The process used is based on raw materials that are available, without any bottleneck.
- b) Thus it is not necessary to store any one of it in excess. Excess storage also means wastage. Here we can follow easily the principle of JIT (Just in Time) procurement. Basic raw material i.e. sugar cane Molasses is available in the surrounding area abundantly.
- c) The process used is developed and streamlined by team and hence are aware about the sensitive points that need careful attention in advance.
- d) The process is cost effective, safe and environment friendly.
- e) No hazardous material is involved in process.
- f) We can recover energy from waste of Distillery which will be used for boiler as fuel.

iii. Water Supply Alternatives

M/s New Phaltan Sugar Works Distilleries Division Ltd. will utilize 542 cum/day of water which will be sourced from Neera Right Bank Canal having flow from 'Veer Dam' is very near to the project and it is having water almost a whole year. Fresh water will be drawn from this canal and will be stored and processed for further industrial use. No other source of water is there. The maximum efforts are undertaken to reuse and recycle process waste water to reduce fresh water requirement.

CHAPTER 6: ENVIRONMENTAL MONITORING PROGRAMME:

The following will be monitored on a regular basis during operation phase and also throughout the life of the project to ensure that a high level of environmental performance is maintained:

Sr. No.	Particulars	Parameter	Frequency
1	Stack Emissions	SPM, SO ₂ , NO _x	Monthly
2	Ambient Air Quality	PM ₁₀ , PM _{2.5} , SO ₂ , NO _x	Quarterly
3	Inlet and Outlet of condensate Polishing Unit	pH, BOD, COD, Total Solids, Oil & Grease etc.	Daily
4	Inlet and outlet of Bio-digester	pH, BOD, COD, CH ₄ %, TSS, TDS	Daily
4	Bore well/ ground water nearer to compost yard	pH, COD, BOD, Total Solids, Chlorides, Sulphate, Phosphates and Calcium	Quarterly
5	Noise Monitoring	Noise levels measurement at high noise generating places as well as sensitive receptors in the vicinity	Monthly
6	Analysis of Ready Bio-compost	Moisture, Organic Carbon, and C:N ratio, Nitrogen, Phosphorus, Potassium etc.	Each Batch of Compost
7	Occupational Health	Health and Fitness checkup of employees get exposed to various Hazards	Once in a year.

- Cost for EMP Measures is estimated about 750 Lacks.

CHAPTER7: ADDITIONAL STUDIES

Hazard Identification and Consequence Assessment

Identification of hazards in the proposed plant is of primary significance in the analysis, Quantification and cost effective control of accidents involving chemicals and process. A classical definition of hazard states that hazard is in fact the characteristic of system/plant/process that presents potential for an accident. Proper handling and storage procedure of Alcohol will be followed to avoid any kind of accidents.

Planning:

On-site and Offsite emergency plan will be prepared as per the factory act and will be prepared as per Rule no. 12 of factory act (control of Industrial Major Accident Hazard Rules, 2003) as per the guidelines given in Schedule 6. It is absolutely necessary to train & carryout mock drills for success of emergency plan during actual emergency. Emergency procedures should be laid down clearly and convincingly to everyone on site, particularly the KEY PERSONNEL & ESSENTIAL WORKERS.

Public consultation

Details of Public consultation will be incorporated after conducting Public hearing for the project as guided by MPCB.

CHAPTER8: PROJECT BENEFITS

The proposed project on implementation will generate Skilled and unskilled potential jobs directly, and will also generate many indirect job opportunities.

Skilled-35, unskilled 37

Alcohol is a potential fuel when blended with petrol. A large demand is anticipated for alcohol as fuel. The industry established in the rural region of the state. The industry helps to develop road and transportation facility of the region. The industry will provide direct and indirect employment for local people. Valuable Bio-compost shall be produced and will be made available to local farmers at lower price.

Overall community development is envisaged due to this project.

CHAPTER 9: ENVIRONMENTAL MANAGEMENT PLAN

The EMP provides a delivery mechanism to address potential adverse impacts, to instruct contractors and to introduce standards of good practice to be adopted for all project works. For each stage of the program, the EMP lists all the requirements to ensure effective mitigation of significant biophysical and socio-economic impacts identified in the EIA.

- Energy and water conservation practices will be adopted.
- Green belt development plan is designed for project over 19000 Sq. mtr. With variety of plants.
- Total rainwater generated and harvested through built-up and open area, and green belts from the project area is about **7437.72 M³ (7437720 Liters)**. To conserve this water one recharge pit of adequate size 10 X 5 X 3 Meters (**Map no. 1**) is proposed. The proposed recharge pit can shifted as per the availability of open land, direction & slope of harvested water channel.

CHAPTER10: CONCLUSION

All the possible environmental aspects have been adequately assessed and necessary control measures have been formulated to meet with statutory requirements. Thus implementing this project will not have any adverse impacts on surrounding environment. At the same time, income generation capacity will also improve in the area by direct and indirect employment leading to socio-economic development in the area. Hence proposed project will be a welcome development.