PRE-FEASIBILITY REPORT

825 LITRES DAILY PRODUCTION CAPACITY
MAHUA FLOWER BASED
COUNTRY LIQUOR MANUFACTURING UNIT

BISHNUPRYA STORE, MAIN O.S
SHOP, GAJAPATI

License Renewal No: 11/2017-18

Submitted by License holders:

Sri Manoj Kumar Sahu

Manufacturing unit’s location at:

At/Ps -Mohana
Dist:Gajapati,
Odisha.
<table>
<thead>
<tr>
<th>SL. No.</th>
<th>PARTICULAR</th>
<th>PAGE NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Executive Summary</td>
<td>01</td>
</tr>
<tr>
<td></td>
<td>2. Introduction of the project/ Background information</td>
<td>02</td>
</tr>
<tr>
<td>(i)</td>
<td>Identification of project and project proponent</td>
<td>02</td>
</tr>
<tr>
<td>(ii)</td>
<td>Brief description of nature of the project.</td>
<td>05</td>
</tr>
<tr>
<td>(iii)</td>
<td>Need for the project and its importance to the country and or region.</td>
<td>06</td>
</tr>
<tr>
<td>(iv)</td>
<td>Demand-Supply Gap.</td>
<td>07</td>
</tr>
<tr>
<td>(v)</td>
<td>Imports vs. Indigenous production.</td>
<td>08</td>
</tr>
<tr>
<td>(vi)</td>
<td>Export Possibility.</td>
<td>08</td>
</tr>
<tr>
<td>(vii)</td>
<td>Domestic / export Markets.</td>
<td>08</td>
</tr>
<tr>
<td>(viii)</td>
<td>Employment Generation (Direct and Indirect) due to the project.</td>
<td>08</td>
</tr>
<tr>
<td></td>
<td>3. Project Description</td>
<td>09</td>
</tr>
<tr>
<td>(i)</td>
<td>Type of project</td>
<td>09</td>
</tr>
<tr>
<td>(ii)</td>
<td>Location of the unit</td>
<td>09</td>
</tr>
<tr>
<td>(iii)</td>
<td>Details of alternate sites</td>
<td>10</td>
</tr>
<tr>
<td>(iv)</td>
<td>Size or magnitude of operation.</td>
<td>10</td>
</tr>
<tr>
<td>(v)</td>
<td>Project description with process details</td>
<td>10</td>
</tr>
<tr>
<td>(vi)</td>
<td>Raw material required along with estimated quantity</td>
<td>13</td>
</tr>
<tr>
<td>(vii)</td>
<td>Resource optimization/ recycling and reuse envisaged in the project</td>
<td>15</td>
</tr>
<tr>
<td>(viii)</td>
<td>Availability of water its source, Energy/ power requirement</td>
<td>15</td>
</tr>
<tr>
<td>(ix)</td>
<td>Wastes</td>
<td>16</td>
</tr>
<tr>
<td>(x)</td>
<td>Schematic representations of the feasibility drawing which give information of EIA purpose.</td>
<td>17</td>
</tr>
</tbody>
</table>
4. Site Analysis
   (i) Connectivity. 18
   (ii) Land Form, Land use and Land ownership 18
   (iii) Topographical and other details 19
   (iv) Existing land use pattern 23
   (v) Existing Infrastructure. 24
   (vi) Soil classification 24
   (vii) Climate details. 25
   (viii) Social Infrastructure available. 25

5. Planning Brief
   (i) Planning Concept. 26
   (ii) Population Projection 26
   (iii) Land use for the site. 27
   (iv) Assessment of Infrastructure Demand (Physical & Social). 28
   (v) Amenities/Facilities. 35

6. Proposed Infrastructure
   (i) Industrial Area (Processing Area). 36
   (ii) Residential Area (Non Processing Area). 36
   (iii) Green Belt. 36
   (iv) Social Infrastructure. 36
   (v) Connectivity (Traffic and Transportation Road/Rail/Metro/Water ways etc) 36
   (vi) Drinking Water Management (Source & Supply Of water) 36
   (vii) Sewerage System. 36
   (viii) Industrial Waste Management. 36
   (ix) Solid Waste Management. 36
   (x) Power Requirement & Supply / source. 36

7. Rehabilitation and Resettlement (R & R) Plan 37

8. Project Schedule & Cost Estimates 37

9. Conclusion 38
PRE-FEASIBILITY REPORT

1. EXECUTIVE SUMMARY

The Mohana Main Out Still Liquor Shop is a small scale industry and the said unit is always remained under the control of the State Excise department in terms of capacity creation, distribution and taxation. The industry possesses a dilemma to the State, borne by the temptation of large revenues, on the one hand, and the other hand to supply quality liquor to the people of the locality. Due to consumption of spurious liquor 4 people were died in the month of August, 1994 in Purshottampur area of Ganjam District and again due to consumption of spurious liquor 29 people were lost their life in this District in the period of March & April, 2006. After this incident the State government has started a new initiative to check and control of the illegal country liquor production business and accordingly throughout Ganjam District out still country liquor manufacturing unit was started through Mahua Flower under the full control of the Excise department. In this context the present unit has also obtained License vide No: 11/2017-18 in the licensee namely Sri Manoj Kumar Sahu from the Excise department and the said unit is operating at Mohana under Mohana Tahasil of Gajapati district. The unit’s License is valid till March 2018 with vide license No: 11/2017-18 and thereafter it will be again renewed. Since the year 2005 to till now the Excise department has been renewed the said License each year in the month of March. In obligation to the order dated: 15.12.2016 passed in O.A. No: 124 of 2015/EZ by the Hon’ble NGT the licensee holder has applied EC for this unit site.
2. INTRODUCTION OF THE PROJECT/ BACKGROUND INFORMATION

(i) Identification of project and project proponent.

The license holder has been producing 825 liter per day (Mahua Flower based Country Liquor) at village: Mohana under Mohana Tahasil of Gajapati District.

**Nature of License:** License issued by the State Excise Department as per their endorsement -OS-1 (Main Out-Still Liquor Shop). This License is valid for the manufacture and sale by retail of country sprit in a shop on the out still system, which is narrated at the Sl. No: 1 of the License and the said License is in force for the unit till March, 2018.

**No. of License as in original:** Renewal License No: 11/2017-18 as per the endorsement made by Superintendent of Excise, Gajapati.

**Locality of vend:** Mohana(Main O.S. Shop) of Gajapati District.

**Name of the EP Holder:** Sri Manoj Kumar Sahu, Dura, Berhampur, Gajapati, Dist: Gajapati, Odisha.

**Monthly consideration of money fixed for 2017-18:** Monthly consideration of money fixed by the Excise Department in favour of the unit of Rs: 78872 and the said amount has been deposited by the License holders in each month to the Govt. of Odisha for the year 2017-18.
**Amount of three month’s advance fees paid:** The unit’s License holders have deposited three months advance to the Excise Department for running of their country liquor production business.

**One month C money as security deposit:** The unit’s License holders have deposited one month C. Money as security deposit amounting to the Excise Department for running of their country liquor production business.

**C. Money for April, 2017 deposited:** The unit’s License holders have deposited to the Excise Department for running of their country liquor production business.

Period of renewal **01.04.2017 to 31.03.2018** (both days inclusive).

**Govt. order in the strength of which this renewal endorsement is made:** License renewal endorsement was made in favour of the unit vide License No: 11/2017-18/ dated: 24.03.2017 of Superintendent of Excise, Baramundali, Mohana, Gajapati, Chatrapur.

**Still capacity to be fixed at the shop of the licensed premises:** The unit’s still capacity has been fixed by the State Excise Department per day 825 Litress = 3 Mounds.

**Partnership deed:** It is proper to mention that the EP holders have executed partnership deed before the commencement of the unit as per the guideline of the Excise department while sanctioning the license.
Locus-standi of the licensee to obtain EC from the State Authority:
The licensee is entitled to obtain EC having regard to the law of the land. The Hon’ble Nation Green Tribunal, Eastern Zone bench, Kolkata has passed order on 15.12.2016 vide O.A Case No: 124 of 2015/EZ to obtain EC from the state authority.

(ii) Brief description of nature of the project.

The unit’s license holders have been producing Mahua flower based country liquor through normal distillation process. Mahua flower and water has been boiling with 110° C in copper pot for the 4 to 6 hours. Then steam process has been started. Thereafter, Mahua liquor has been generating. Product of Mahua liquor with water has been mixing as per the guideline of the Excise Department. Then the concerned charge Excise Officer has been collecting the product sample for chemical examination. If it is found fit for human consumption thereafter the said Mahua liquor has been distributed to the authorized retail counters i.e. branch shops of the locality for selling. The state Excise department has tagged 10 no of Branch shops with this unit of this locality. The said country liquor has been selling in an earmarked poly pack. This pocket has been preparing in the premises of this unit prior to distribute to the retail counters of the locality. It is again to mention that the poly pack is not a polluted material.
(iii) **Need for the project and its importance to the country and or region.**

India is one of the major alcohol producing countries. Production of alcohol has gone up from a meager 100 million liters in the fifties to the current level of more than 600 million liters. The Russia, USA, Brazil, India, the UK, Japan and North Germany, are the leading alcohol producing countries. India, has been exporting alcohol in substantial quantities.

According to a survey conducted by a UK-based trade magazine on liquor, three Indian brands figured in the "TOP 25 Fastest Growing Brands in the world in 1994". While the survey is for both local as well as foreign sales, it takes into account only those brands which "export or produce more than 10 percent of their sales volumes overseas"- in other words, Indian-made Foreign liquor (IMFL) could actually be well on its way to becoming a preferred foreign liquor. Indian Consumption of whisky has grown at an average 14% annually for the past eight years, climbing to 30 million cases (of 12 bottles of 750 ml each) per annum. That makes India the hottest whisky market in the world.
(iv) **Demand - Supply Gap.**

Change in the situation with a sharp increase in demand for alcohol following the implementation of expansion and new schemes by SM Dyechem and Chemplast, which were increasing the output of ethylene oxide, specialty chemicals, PVC resins and Mono ethylene glycol in a big way.

The output of alcohol-based chemicals would increase at a faster rate in future with the independent units taking up new projects and sugar mills having their own distilleries establishing downstream projects. The calculations in this regard have been upset largely by the sharp increase in the cost of molasses and therefore alcohol.

The present availability of alcohol cannot meet the entire demand. Alcohol production is directly linked with sugar output and availability of molasses. Table 2 shows the trend in alcohol production and consumption will be observed that it is upward. To meet the needs of the growing population, sugar production will continue to maintain this trend and as a result, alcohol availability will improve. However, a disturbing factor is the diversion of a large proportion of alcohol for potable use.
(v) **Imports vs. Indigenous production**

The license holders have been entitled only to imports Mahua Flower within the State of Odisha. None of the material is not imported from out of State or Country.

(vi) **Export Possibility**

Production of country liquor is not meant for export marketing. It is producing to sale the local market under the jurisdiction i.e. Mohana Block of Gajapati district.

(vii) **Domestic / export Markets.**

Mahua flower based country liquor has been sale within the local market as per the terms and conditions fixed by the Excise Department, Govt. of Odisha. This country liquor is not producing for export marketing.

(viii) **Employment Generation (Direct and Indirect) due to the project.**

Only 15 number of people is getting direct and indirect employment in this unit.
3. Project Description

(i) Type of project
Manufacturing industry i.e. (Mahua Flower based country liquor manufacturing unit with 825 Litres daily production capacity).

(ii) Location of the Unit
The Country liquor manufacturing unit’s location is at village/Mouza: Mohana under the Mohana Panchayat of Mohana Tahasil, District Gajapati, Odisha. Mohana slum area is situated 1.1 Km distance from the unit site. The unit site area is very alone and there is no important place situated like water body, inhabitants, school, college, temple etc. This unit’s location is from the 2 km distance of the Mohana High School. The unit’s land is vide the plot no.183 under khata no.- 205 of Mohana Mouza measures about 0.400 decimal for processing of the unit at Village – Mohana, Dist. Gajpati.. So the unit’s location is suitable in all aspects and all the ward members of MohanaGram Panchayat has been passing unanimous resolution to establish the unit in this area for the betterment of the local people as well as to avoid liquor mishap in the locality. It is profitable to mention here that MohanaGram Panchayat Sarapancha has also given no objection certificate in favour of the unit. Therefore it is crystal clear from the Gram Panchayat resolution and no objection certificate issued by the Sarapancha local people is in favour for this unit.
(Attached here with maps showing General Location, Specific Location).

(iii) Details of alternate sites
No alternative site is required for the unit.

(iv) Project description with process details
Utility of Mahua flower: Mahua flowers are also considered good for cooling, and are used as a tonic and demulcent. However an estimated 90 per cent of the production goes into brewing beverages. Seventy five per cent of the tribal households in our country are engaged in Mahua flower collection meaning a population of around 7.5 million is into this livelihood activity. Various studies indicate that a household gets between Rs 2500-5000 in a normal Mahua year. An estimate says that 28600 person years of employment are generated in Mahua flower collection every year (FGLG India, 2008). But the income for the primary collectors/processors in this transaction is very low. This is often attributed to an unorganized market and little access of the primary collectors to the market.
Another feature of this sub sector is that the producers and the consumers are essentially the same group of people, the tribal. In the National Context Chhattisgarh, Madhya Pradesh and Orissa account for nearly 80 % of Mahua trees in India.

**Sub sector of Mahua flower:** The production sub system Mahua trees are found both in forest lands and in lands owned by the individuals. Farmers with more lands are expected to have more number of Mahua trees. The practice is to collect Mahua flower from own trees first and then go to the forest for collection. An estimated 35pc of the collection comes from own trees and rest from forests. Mahua flowering happens for around 4-6 weeks between March to May. But the period varies from place to place. Rains during this period affect the crop. The process of collection starts with cleaning of the forest floor on the previous day. Next day morning the women and children go to the tree/forest forest for collection. It continues from early in the morning till the sun is right above the head (from 6 am till 1 pm). The effective collection days per household are 20 days in a season. Collection is done by women and children of the household in the baskets, which are hand made out of bamboo. On an average one family member manages to collect 10-15 kgs (1=GAPA=1Basket) of Mahua in a day. Collection from one Mahua tree varies from 1.5 to 3 quintals depending upon the age and the girth of the tree.

**The Processing Sub System:** Processing of Mahua occurs at three levels:

- **Drying:** collectors dry the flowers before they sell
- **Stocking:** traders stock in cold storages
- **Brewing:** brewing of liquors household/bhatti/large brewer level.
Drying is done immediately after collection. It is rarely observed that the flower is sold without drying. Hence this is generally put as part of production sub-system. Stocking, technically, is not a processing activity. However, in the case of Mahua it has a special connotation. In order to retain its colour and quality Mahua is put in cold storage. Generally this is done by the large traders and wholesalers. The most important processing done with Mahua flower is brewing. However commercially it is undertaken by Bhattis or large scale brewers. Processing of Mahua flower into brew large scale brewing by licensed bhatti is permitted in Mohana District of Odisha.

**Mahua flower processing for brewing:** Mahua flowers are putting in drums filled with water five days before it goes into brewing. After the bubbles are seen on the top of the drum, that drum of flowers is feet for further processing in the furnace and transferred to the brewing copper pot on the bottom. The brewing chamber has a hearth/furnace with one pot. The bucket placed near the furnace is connected to the brew which is situated in the middle of the chamber pot with a pipe. The process often takes five to six hours.

**Product:** The unit’s license holders have been producing Mahua flower based country liquor through normal distillation process. Mahua flower and water has been boiling with 110°C in copper pot for the 4 to 6 hours. Then steam process has been started. Thereafter, Mahua liquor has been generating. Product of Mahua liquor with water has been mixing as per the guideline of the Excise Department. Then the concerned charge Excise Officer has been collecting the product sample
for chemical examination. If it is found fit for human consumption thereafter the said Mahua liquor has been distributed to the authorized retail counters i.e. branch shops of the locality for selling. The state Excise department has tagged 10 no of Branch shops with this unit of this locality. The said country liquor has been selling in an earmarked poly pack. This pocket has been preparing in the premises of this unit prior to distribute to the retail counters of the locality. It is again to mention that the poly pack is not a polluted material.

(v) Raw material required along with estimated quantity

Mahua flower:

Mahua Flower 60833 K.G. per day is using as a raw material for manufacturing country liquor in this unit as per the terms and conditions fixed by the State Excise Department vide License Renewal No: 11/2017-18 in favour of the EP holder. Mahua flower is collecting from different parts of the State of Odisha by the license holders as per the license endorsed by the State Excise Department.

Water for distillation:

Water 4m$^3$/d has been using as raw material for manufacturing country liquor in the unit. Surface Water is available at borewell throughout the year and this river is located 3 km distance from the unit. The unit’s licensee holders has been using surface water for the unit as per the terms and conditions fixed by the State Water Resource department and this water have been using as raw material for the unit.
Water Consumption

**Source of Water:** Surface Water is available at Boring or borwell and it is situated 0.6 KM distance from the unit. The unit’s requirement water as a raw material for manufacturing of the Mahua liquor and 4m³/d water has been using for various purposes from the surface water.

**Total Quantity of water used:** The unit’s requirement water as a raw material for manufacturing of the Mahua liquor and 4m³/d water has been using for various purposes from the surface water.

- **Total fresh water usage:** 4m³/d
- **Industrial water usage:** 5m³/d
- **Water sinking with Mahua Flower before Brewing:** 0.1 m³/d
- **Residential/Domestic:** 0.5 m³/d
- **Green belt etc.:** 1 m³/d
- **Other uses:** 0.4 m³/d
- **Waste water:** 2 m³/d

**Marketing area:** Mahua flower based country liquor is producing in this unit to fulfil the public demand in the locality i.e. Mohana Block area of Gajapati district as per the endorsement made by State Excise Department.
Transportation of raw material & Finished product:

**Mahua Flower:** Mahua flower has been transported/collected from the different part of the State of Odisha as per the NOC endorsement of the State Excise Department.

**Water:** Similarly water is transporting from the own tanker by the licensee from nearby borwell.

**Finished product:**

Finish product item such as Mahua Liquor is transporting through the own vehicle by the licensee to the different branch shops of the locality as per the stipulated condition fixed by State Excise Department.

(vi) **Resource optimization/ recycling and reuse envisaged in the project.**

Management shall envisage optimum utilization, recycling and reuse. These resources include Land, paddy husk, Water and Electricity. Wastewater generated from distillation process has been treatment in this unit and recycled for further domestic, green belt development uses.

(vii) **Availability of water its source, Energy/ power requirement and source.**

**Water source:** Sufficient surface/ground water is available in the site and Mohana Block is not water scarcity area. Surface water is available at borwell and it is located from the 3 km distance from the unit site.
Power: Own Established 11KV Capacity power supply transformer with due permission of the SOUTHCO and the said project's own expenditure is of Rs: 2 Lakhs. All Electrical Installations has followed guidelines as laid down in Indian Electricity Rule 1956 and National Electrical Codes. Electricity consumption is not required for Mahua flower based Country liquor distillation process. But Electricity is required for domestic/general purpose of the unit.

(viii) Wastages
Source of waste water: In this unit total 4m3/d water is using for liquor distillation and other purposes. The source of the waste water is from the process of Mahua flower based country liquor manufacturing / distillation through normal method.

Quantity of waste water generation: It is estimated that during the process of liquor distillation 2m³/d waste water is generating.

Waste water treatment measure: The license holders have been taken full-fledged waste water treatment measures. The wastewater has been streamlined through a pipeline from the distillation point to the 2 No’s of storage concrete tanks, and the wastages has been sold regularly to the outsiders for their beneficial use to prevent Air and Water Pollution.

Solid waste generation and it's management to prevent air and water pollution: It is estimated that solid waste (Ash 18 ton per annum) has been generating from the unit while burning of the paddy husk during the liquor distillation process and it is carefully dumping with tarpaulin cover in the yard, the said yard is built in the premises of the unit and regularly it is selling to the Brick Makers to prevent Air and Water pollution.
The other solid wastes expected from the unit are empty drums and barrels which is using for packing product, and or returned to the product seller or sold to authorize buyers after detoxification.

**Pollution and it’s control measures**

**Air Pollution:** During the process of brew Mahua flower distillation paddy husk has been burnt for boiling the raw material such as mixed brew Mahua flower and water. At the time of smog, it is estimated air pollution.

**Air Pollution Control Measure:** The air pollution is mainly from emissions of air pollutants from the stacks and dust from the paddy husk. The emissions from the distillation unit are passed through air filter before releasing into atmosphere through a stack. The stack height of 30m has been built to avoid pollution to the surrounding.

(ix) **Schematic representations of the feasibility drawing which give information of EIA purpose.**

- 825 liter daily production capacity Mahua flower based country liquor manufacturing unit.
- Category B industrial 2.
- Non interference with eco sensitive area in 10 KM boundary of sanctuary.
- Unit location at Village/Mouza: Mohanaunder MohanaTahasil of Gajapati District.
- Application (Form: 1) and pre-Feasibility study to SEIAA.
4. Site Analysis
Main out still liquor shop, Mohan aunder MohanaTahasil of Mohanadistrict is located from the 2 KM away of Mohana high School under MohanaGram Panchyat of MohanaBlock, MohanaDistrict of Odisha. The unit area is very alone and within 2 km radius no habitants are residing.

(i) Connectivity

Nearest Road : SH 17 at 0.2km NH 3261
Approx. 0.2 km North.

Nearest Railway Station : Golanthra Railway Station
(Approx. 56.0 Km)

Nearest Airport : Bhubaneswar Airport
(Approx. 220 km)

(ii) Land Form, Land use and Land ownership.

Land: An area of 0.662 Acres with GHARABARI Status land at Mohana village under MohanaTahasil of Mohanadistrict of Odisha vide Plot plot no.183 under khata no.- 205 of Mohana Mouza measures about 0.400 decimal for processing of the unit at Village – Mohana, Dist. Gajpati.is under the possession of the licensee through rent deed executed under Indian registration Act. The said deed is valid for the period of 10 years.
(iii) **Topographical & Other Details**

**INTRODUCTION:**

Gajapati district has been named after Maharaja Sri Krushna Chandra Gajapati Narayan Deo, the Ex-Raja Sahib of Paralakhemundi estate (the 1st Prime Minister of Odisha State), who is remembered for his contribution in formation of a separate Odisha province and inclusion of Paralakhemundi estate in Odisha. The district headquarters at Paralakhemundi erstwhile a princely estate, has been clustered within a radius of approximately 05 kilometers around the geometric centre of Paralakhemundi. The District came into being with effect from 2nd October 1992. Prior to this it was a part (Sub-Division) of Ganjam district.

**GEOGRAPHICAL SITUATION:**

**LOCATION:**

This district is lying between 18.46 degree North to 19.39 degree North Latitude and 83.48 degree East to 84.00 degree East Longitude. The area is abutting the state boundary i.e. Andhra Pradesh towards South. Ganjam district bound this district on the East, Rayagada district on the West, Ganjam and Phulbani districts on the North.

**CLIMATE & RAINFALL:**

Atmospheric temperature varies between 160 to 450 Celsius. The normal rainfall received in the district is 1403.30 mm. The average rainfall of the district during the year 1993 to 2008 is as follows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rainfall in mm.</th>
<th>Year</th>
<th>Rainfall in mm.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994</td>
<td>1,415.43</td>
<td>2003</td>
<td>1,618.77</td>
</tr>
<tr>
<td>1995</td>
<td>2,080.42</td>
<td>2004</td>
<td>1,280.94</td>
</tr>
<tr>
<td>1996</td>
<td>893.36</td>
<td>2005</td>
<td>1,452.42</td>
</tr>
<tr>
<td>1997</td>
<td>1,338.42</td>
<td>2006</td>
<td>1,704.50</td>
</tr>
<tr>
<td>1998</td>
<td>1,246.91</td>
<td>2007</td>
<td>1,206.31</td>
</tr>
<tr>
<td>1999</td>
<td>1,048.12</td>
<td>2008</td>
<td>1,443.04</td>
</tr>
<tr>
<td>2000</td>
<td>1,164.3</td>
<td>2009</td>
<td>1,336.04</td>
</tr>
<tr>
<td>2001</td>
<td>1,281.54</td>
<td>2010</td>
<td>1,600.02</td>
</tr>
<tr>
<td>2002</td>
<td>707.15</td>
<td>2011</td>
<td>1,292.61</td>
</tr>
</tbody>
</table>
SOIL & ROCK:

The major part of the district belongs to hilly terrain and undulated topography, which is inhabited by the tribal. The highest mountain of the district, Mahendragiri lies at an altitude of 4,923 feet above the sea level. The soil quality is alluvial, brown, land laterites, clay loam, sandy loam and red soil. The geographical formation of the district is Alluvial, brown land Lateriates, Gondowanas, Newer Dolerites and Archon comprising igneous and metamorphic rocks. The main soil types are clay loam, sandy loam and red soil.

VEGETATION:

The soil and climate is suitable for plantation crops and there is a great potential of horticulture development in the district. More than 60% of lands are situated in hilly terrain, which has been treated as high lands, mainly suited for horticulture plantation and other cultivable land belongs to the category of medium lands and low lands.

MINERAL RESOURCES:

The mountains contain no exploitable mineral of economic value. However, the major economic minerals in the district are granite decorative stones found in some part of the Paralakhemundi Tahasil.

WATER RESOURCES:

The river Vansadhara and Mahendratanaya are two important rivers of Gajapati district. The river Vansadhara originated from Lanjigarh area of Kalahandi district and passes through Kashinagar block and flows southwards along the borderline of Gajapati district. The river Mahendratanaya has originated from the Mahendragiri range and flows in the westward direction through Rayagada block and then to southward direction through Gosani block. Another river Badanadi flows through western part of Mohana block.

FOREST:

The total forest area of 2,301.98 sq. km and area of 437.52 sq. km is reserve forest. The major forest products are Timber, Bamboo,
Hill Broom, Patala Garuda, Soap nut, B. Kaliakhali, Marsinga leaf, Dhatuki flowers, Kochila seeds, Genduli gum, Siali leaves and Kathalai etc.

INDUSTRY:

Except a few agro-processing units, there is no major industry in this district. However some activities of cottage industries like Horn work, Jaikhadi bag, Cane & Bamboo work, Ganjappa Card & Pattachitra Mukha, Broom work & Siali leaf plate making and Tibetan Woolen Carpet contributes some place in the cottage industries of the district.

COMMUNICATION:

Paralakhemundi town is situated on the axis of State Highway No.17 connecting Berhampur at one end and Gunupur and Rayagada on the other. Berhampur is situated at 120 KMs. from this place and other urban nuclei like Gunupur and Rayagada are distanced at 60 & 120 KMs. respectively. The nearest National Highway (N.H–5) junction is at around 40 KMs. from this place. There was a narrow gauge railway line (called Naupada-Gunupur Rail line) running through this town. The work of conversion to broad gauge is going on.

ECONOMY:

Broadly, this town depicts agrarian economy. The geography and the climate are conducive for production of crops like paddy, sugarcane, sunflower, oilseeds etc. This town behaves as a nodal point for accumulation & marketing of such products produced in the hinterland. The available connectivity to this town needs up-gradation to boost the economy. Paralakhemundi cannot be thought of in isolation without the nearest transport node Palasa (A.P). It connects to the mainstream of state & national economy through Palasa, the major railway junction of East Coast Railway, which plays a catalyst on the economic front. We have experienced, a chaotic mess of urban functions prevail over the space and eroded the quality of life. The population is marching ahead vis-a-vis the pressure on infrastructure like water supply, electricity, roads and housing is in upward trend.

Existing land use pattern

GHARABARI Status land at Mohanavillage under
Mohana Tahasil of Mohanadistrict of Odisha vides plot no.183 under khata no.- 205 of Mohana Mouza measures about 0.400 decimal for processing of the unit at Village – Mohana, Dist. Gajpati. is under possession of the license holder for this unit.

No national park is available in this unit area.

Wildlife sanctuary and eco sensitive area is not available surrounding of this site..

The unit area is not cover under the CRZ Regulation.
(iv) **Existing Infrastructure.**

**Land:** GHARABARI Status land at Mohanavillage under Mohana Tahasil of Mohanadistrict of Odisha vide plot no.183 under khata no.- 205 of Mohana Mouza measures about 0.400 decimal for processing of the unit at Village – Mohana, Dist. Gajpati.is under possession of the license holder for this unit.

**Power:** Own Established 11KV Capacity power supply transformer with due permission of the SOUTHCO and the said project’s own expenditure is of Rs: 1.8 Lakhs. All Electrical Installations has followed guidelines as laid down in Indian Electricity Rule 1956 and National Electrical Codes. Electricity consumption is not required for Mahua flower based Country liquor distillation process. Electricity is required for general purpose of the unit.

**Existing bore well:** One 8 inches measuring bore well is existing in this site.

(v) **Soil classification**

The district has alluvial soil in its eastern part (coastal region) and late rite Soil in the North (with small patches of black cotton soil at the center and in the northeast close to Chilika.
(vi) Climate Details

The district is characterized by an equable temperature all through the year, particularly in the coastal regions and by high humidity’s. The cold season from December to February is followed by hot season from March to May. The period from June to September marks the South North Monsoon and 70% of annual precipitation has received during this period. May is the hottest month. With the arrival of the monsoon by about the second week of June the day temperature decreases slightly while the night temperature continue as it was in the summer. Towards the end of September, after the withdrawal of southNorth monsoon, temperature decreases progressively. December is the coldest month. The relative humidity are high throughout the year specially in coastal areas. Winds are strong particularly in coastal regions in summer and monsoon months.

(vii) SOCIAL INFRASTRUCTURE AVAILABLE

Most of its people depend on agriculture as their means of livelihood. About 50% people survive on daily wages. Domestic animal resource, marine products and forest products help to add additional income for the people of Baramundali, Mohana, Gajapati. Only about 30% people are service holders in Government as well as Non-Government/private sectors. Most of the working population is working in the private sector outside the district.

Social life is the indicator of economic status of a community. Though the district has rich socio-cultural background, the economic status of the community is not sound. Poverty stands as a barrier in the path of progress. The district’s cultural heritage is dominated and influenced by Telugu people. Its cultural heritage is obviously glamorous. They do not prohibit traditional practices and have not abandoned many of their traditional cultural practices. Other social infrastructures are available at District Headquarter at Chatrapur 50 kms.
5. Planning Brief

(i) Planning Concept

Type of industry: Mahua Flower based country liquor manufacturing unit (825 Litress production capacity per day) and it is declared as a small scale industry as per the Industry Department, State of Odisha notification.

Facilities for drinking water: Drinking water is available in this site and it is using from ground.

Facilities for transportation: NH-326 is 0.2 Km North away from the site.

Town and Country Planning/Development authority Classification: The Project site is coming under the jurisdiction of Mohana Gram Panchayat of Gajapati District.

PROJECT BENEFITS

➢ Purified and hygienic liquor has available in the locality as per guideline of the Excise Department.
➢ Direct Employment
➢ Increase in Revenue
➢ Economic Growth of State

(ii) Population Projection

This unit is giving employment opportunity to the 15 number of people. In future more people will get employment opportunity and it is depends upon the business growth of the unit.
(iii) **Land use for the site**

- **Total area in possession**: 0.400 Acre or 17424 sq.ft
- **Area available for greenery**: Aprox 2613.6 sq.ft. (15% out of total area)
- **Existing green belt area**: Aprox 5227.2 sq.ft. (30% out of total area)

**Existing green belt details**: It is here to mention that a large numbers of Coconut Trees (200 Nos) exist in measuring 5227.2 sq sq.ft. (30%) of the area of the unit. The Coconut Trees are year old, so day by day watering is not required for the growth of the trees. These trees will automatically survive through the rainy water.

**Proposed green belt plan**: In near future, the EP holders will create green belt another 2613.6 sq. ft (15%) vacate area of the unit, out of the total area of 0.400 Acre or 17424 sq.ft. As soon as possible the license holders will create green belt in 859.221 Sq. ft area (approximately 300 cashew tree). For the growth/survive of the newly planted cashew tree 1m3/d water will be required. The EP holders will follow the DRIP IRRIGATION method for the green belt development to reduce water consumption. 2 Nos of rain water recharge dug well water will also use for the green belt development, residential, domestic and other purpose in the site.
(iv) **Assessment of Infrastructure Demand (Physical & Social).**

The infrastructures such as land, roads, power, water, transportation, Raw material and paddy husk is sufficiently available locally.

**Existing rain water harvesting method as per guideline of CPCB**

**Introduction for Rainwater Harvesting**

Harvesting Rainwater for saving drinking water has gained enormously in significance as modern water saving sanitary technique. This has been using for green belt development and other uses in the unit and it is easy and low cost for the project proponent.

**Objectives of Rainwater Harvesting of the Unit**

The main objectives of rainwater harvesting are:

➢ To meet the increasing demand of water.
➢ To reduce the run-off which chokes the drains?
➢ To avoid the flooding of roads.
➢ To raise the underground water table.
➢ To reduce groundwater pollution.
➢ To reduce soils erosion.
➢ Supplement domestic water needs.
Rain Water Recharge Measure

The License holders has been taken appropriate steps for rainwater harvesting through trench in the surrounding of the unit site area (i.e. 0.20 Acre) and Roof top method. Rainwater collection is one of the solutions for solving or reducing the problem of water availability in this site area. In this system, rainwater has been collecting from the building and shed roof through a system of pipes measuring 110mm (4 inch) and stored in 2 Nos of dug well measuring 5 feet RCC ring has installed to the 20 feet depth of the ground level for recharge of the rain water.

What is Rainwater harvesting and why is it important?

Water is our most precious natural resource and something that most of us take for granted. We are now increasingly becoming aware of the importance of water to our survival and its limited supply. The harvesting of rainwater simply involves the collection of water from surfaces on which rain falls, and subsequently storing this water for later use. It has been collected from the roofs of the building & sheds and it has stored in 2 Nos of dug well.
Methods of Rainwater harvesting in the unit

Broadly there are two ways of harvesting rainwater.

➢ Trench Method
➢ Roof top rainwater harvesting

Trench Method in this unit

In the premises of the unit site area rainwater flows away as surface runoff. This runoff could be caught and used for recharging aquifers by adopting appropriate methods. So the License holders has been following trench method to harvest the rain water in the surrounding of the unit i.e. 0.400 area. The trench direction has been East to North of the unit. Recharge trenches are suitable for buildings having roof area of 200-300 sq m and where permeable strata are available at shallow depths. Trench has been 1 m wide, 1.5 m deep and 20 m long and these are back filled with boulders (5-20 cm), gravels (5-10 mm) and coarse sand (1.5-2 mm) in graded form-boulders at the bottom, gravel in between and coarse sand at the top so that the silt content that is coming with runoff has deposited on the top of the layer and it is easily removed. A mesh has been provided at the roof so that leaves or any other solid waste/debris is prevented from entering the trench and a desalting /collection chamber has been provided on ground to arrest the flow of finer particles to the trench. By-pass arrangement has provided before the collection chamber to reject the first showers. The top layer has cleaned periodically to maintain the recharge rate.
Trench Area for Rain Water Harvesting

- Surrounding of the project site plot no.183 under khata no.- 205 of Mohana Mouza measures about 0.400 decimal for processing of the unit at Village – Mohana, Dist. Gajpati.

Roof Top rainwater harvesting in the unit

It is a system of catching rainwater where it falls. In rooftop harvesting, the roof becomes the catchments, and the rainwater is collected from the roof of the house/building. It can either be stored in a tank or diverted to artificial recharge system. This method is less expensive and very effective and if implemented properly helps in augmenting the ground water level of the area. PVC pipes of 110 mm diameter are connected to roof drains to collect rain water. The first roof runoff is let off through the bottom of drain pipe. After closing the bottom pipe, the rain water of subsequent rain showers is taken through a T to an online PVC filter. The filter has been provided before water enters the tube-well. The filter is 1.2 m in length and is made up of PVC pipe. Its diameter has been 20 cm. The filter is provided with a reducer of 6.25 cm on both the sides. Filter is divided into three chambers by PVC screens so that filter material is not mixed up. The first chamber is filled up with gravel 10 mm, middle chamber with charcoal and last chamber with bigger pebbles 40 mm. These collection chambers have interconnected as well as connected to the filter pit through pipes having a slope of 1: 15.
Components of the Roof Top Rainwater Harvesting

The illustrative design of the basic components of roof top rainwater harvesting system is given below:

The system mainly constitutes of following sub components:

➢ Catchment
➢ Transportation
➢ First flush
➢ Filter

Catchment
The surface that receives rainfall directly is the catchment of rainwater harvesting system. It has been terrace, courtyard, or paved or unpaved open ground. The terrace has been flat RCC/stone roof or sloping roof. Therefore the catchment is the area, which actually contributes rainwater to the harvesting system.

Transportation
Rainwater from rooftop has carried through down take water pipes to storage/harvesting system. Required capacity PVC Water pipes has installed for rain water harvesting purpose. Water from sloping roofs has been caught through gutters and down take pipe. At terraces, mouth of the each drain has been wire mesh to restrict floating material.

First Flush
First flush is a device used to flush off the water received in first shower. The first shower of rains needs to be flushed-off to avoid contaminating storable/rechargeable water by the probable contaminants of the atmosphere and the catchment roof. It is also help in cleaning of silt and other material deposited on roof during dry seasons Provisions of first rain separator has been made at outlet of each drainpipe.
Filter
There is always some skepticism regarding Roof Top Rainwater harvesting since doubts are raised that rainwater may contaminate groundwater. There is remote possibility of this fear coming true, if proper filter mechanism is not adopted. So the project proponent has been taken more steps for filter mechanism during the time of rain water harvesting. Secondly all care has been taken to see that underground sewer drains are not punctured and no leakage is taking place in close vicinity of the site area. Filters have been used for treatment of water to effectively remove turbidity, colour and microorganisms. After first flushing of rainfall, water should pass through filters. A gravel, sand and ‘netlon’ mesh filter is designed and placed on top of the storage tank. This filter is very important in keeping the rainwater in the storage tank Clean. It removes silt, dust, leaves and other organic matter from entering the storage tank. The filter media has been cleaning daily after every rainfall event. Clogged filters prevent rainwater from easily entering the storage tank and the filter may overflow. The sand or gravel media has been taken out and washed before it is replaced in the filter.

Advantages of Rainwater harvesting for the unit
Easy to Maintain: Utilizing the rainwater harvesting system provides certain advantages for the unit. It is important to do so since drinking water is not easily renewable and it helps in reducing wastage. Systems for the collection of rainwater are based on simple technology. The overall cost of their installation and operation is much lesser than that of water purifying or pumping systems. Maintenance requires little time and energy. The result is the collection of water that can be used in substantial ways even without purification. Water collected from the rainwater harvesting system can be put to use for several non-drinking functions as well. On an industrial scale, harvesting rainwater can provide the needed amounts of water for many operations to take place smoothly without having to deplete the nearby water sources.
**Reduces Demand on Ground Water:** With increase in population, the demand for water is also continuously increasing. The end result is that many residential colonies and industries are extracting ground water to fulfill their daily demands. This has led to depletion of ground water which has gone to significant low level in some areas, where there is huge water scarcity. In this context rain water harvesting method is highly required for the unit.

**Reduces Floods and Soil Erosion:** During rainy season, rainwater has been collecting in large storage tanks which also help in reducing floods in some low lying areas. Apart from this, it also helps in reducing soil erosion and contamination of surface water with pesticides and fertilizers from rainwater run-off which results in cleaner lakes and ponds.

**Can be used for Several Non-drinking Purposes:** Harvesting Rainwater has been using for several non-drinking purposes like flushing toilets, washing clothes, watering the green belt and other purposes etc. It is unnecessary to use pure drinking water if all we need to use it for some other purpose rather than drinking.

(Schematic diagrams of Rain Water harvesting through roof top and trench is attached here with)

(v) **Amenities/Facilities.**

Basic infrastructure such as Water, Electricity and connectivity is available this site.
6. Proposed Infrastructure

(i) **Industrial Area (Processing Area).**
Not applicable for this site.

(ii) **Residential Area (Non Processing Area).**
Not applicable for this site.

(iii) **Green Belt.**
2613.6 sq.ft area out of the total land will create greenery.

(iv) **Social Infrastructure.**
It will be depends upon the development of business.

(v) **Connectivity (Traffic and Transportation Road/Rail/Metro/Water ways etc)**
This is not required for this unit.

(vi) **Drinking Water Management (Source & Supply of water)**
This is not required for this unit.

(vii) **Sewerage System.**
This is not required for this unit.

(viii) **Industrial Waste Management.**
The licensee has been managing the wastages in the premises of the unit site.

(ix) **Solid Waste Management.**
The licensee has been managing the wastages in the premises of the unit site.

(x) **Power Requirement & Supply / source.**
Sufficient electricity is available in this site.
7. Rehabilitation and Resettlement (R & R) Plan
   This unit is not covered under the policy.

8. Project Schedule & Cost Estimates
   The unit is operating since 2005 in this area under the valid Excise license of the State Government and smoothly running the business by the license according to the law of land.

   **Project Cost Estimation**

   Estimated Project Cost is of Rs: 12,00,000.00 (fourteen lakhs rupees only).

   ✓ Environmental management estimate plan for Air, Water, Solid waste, Green Belt Development: 1,00,000.00 (Rupees One Lakhs Only) per annum.
9. Conclusion

The Country liquor manufacturing unit is a small scale industry and it is operating under the guidelines of the Odisha Excise department. The present licensee holders are law abiding citizens of India and they will try to their maximum to protect the Green Environment in the premises of the unit and also the adjacent area of the said location. The undersigned licensee holders will also take suitable measures to prevent the Air and Water pollution as per the norms and conditions as prescribed by the State Pollution Control Board and the statutory provision of Law.

SIGNATURE OF THE LICENS

Manoj Kumar Sahu