CHAPTER -1

AN OVERVIEW OF THE PROJECT

1.1 Background

1.1.1 M/s Shamli Distillery & Chemical Works, Shamli, is a Unit of M/s Sir Shadi Lal Enterprises Limited, Shamli, having Sugar Unit namely M/s Upper Doab Sugar Mills, Shamli, attached to Shamli Distillery situated on Meerut-Karnal road. The Unit is located at south-east corner of Shamli town and on the other side; is surrounded by agriculture land. Shamli distillery unit was installed in the year 1945 with an initial-capacity of 18,000 liters per day and thereafter it was increased to 25,000 liters per day. Present capacity of the distillery is too low and economically it has become un-viable because of its low capacity. Therefore, it has been proposed by the Management to increase the capacity from 25,000 Liters per day to 80,000 liters per day to make the unit viable.

The Company has got 2 Sugar Units in the area i.e. M/s Upper Doab Sugar Mills, Shamli, having a capacity of 6250 TCD and the other Sugar Unit namely M/s Unn Sugar Complex, Unn, having the capacity of 4000 TCD located approx. 35 km away from Shamli in the same District of Muzaffarnagar. Since the major part of raw materials i.e. Molasses, press-mud and bagasse is available in house, therefore, the Management is keen to increase the existing capacity from 25 klpd to 80 klpd so as to get the maximum utilization of bye products i.e. Molasses, press mud & Fuel (Bagasse).

The distillery is being conceived as operational for 270 days in a year along with bottling operations, and it is being designed as attached to the sugar mill. The Distillery will be run on sugarcane molasses procured from their own sugar mills in Shamli and Unn to the extent possible as well as from other nearby sugar mills. The distillery follows the conventional route of effluent treatment that includes biomethanation, reverse osmosis followed by bio-composting.

As per the Environmental Impact Assessment Notification of 2006 of the Ministry of Environment & Forests, molasses distillery are listed in the Schedule at Sr. No. 5(g), Category `A' and all such projects are required to obtain prior environmental clearance from Ministry of Environment & Forests with the process of public hearing.

M/s Shamli Distillery & Chemical Works submitted the FORM-1 along with draft Terms of Reference and Pre-Feasibility Report to the Ministry of Environment & Forests on 29.12.2009 for environmental Appraisal of the proposed project. The Terms of Reference (TOR) were discussed in the 8th meeting of the Expert Appraisal Committee (Industry) held during 9th February, 2010 for preparation of EIA/EMP. The MoEF issued the TOR's

vide letter F. No. J-11011/06/2010 - IA II (I) dated March 8, 2010. A copy of the letter of the MoEF referred to above is attached as **Annexure 1.1** for ready reference.

1.1.2 The Promoters :

The Company was established a Corporate Body in 1933 under the name **"The Upper Doab Sugar Mills Limited"** by the Rt. Hon'ble Sir Shadi Lal, who was the Chief Justice of the Lahore High Court and was the first Chief Justice of any High Court in India. The name of the Company was changed to **"Sir Shadi Lal Enterprises Limited"** w.e.f. 25th September, 1982.

The Project is promoted by the Sir Shadi Lal group. The group has interest in Sugar and Distillery. The group is already successfully running two Sugar Plants and two Distilleries. All the businesses of the group are professionally managed under the guidance of eminent Board of Directors.

The promoters of the Company take active interest in the operations & the affairs of the Company.

The turn-over of the Company in the Financial Year 2008-09 was Rs. 413.87 Crore.

The Industrial Relations in all the Units of the Company are extremely harmonious due to utmost sense and fair play on the part of the management creating lasting peace with mutual trust and confidence. The Company is making all the statutory dues well in time and in addition, having number of schemes, like free education to the children of the workers upto VIII Class, free medical check up, a hospital with qualified doctors and other adequate Staff, Relief Fund and other Sports & recreational events. There has been no strike or stoppage of work for more than five decades in any unit of the company.

1.2 Assignment and Scope of Present EIA Study

In order to assess the present status of the environment and likely impacts due to the proposed implementation of the project, SDCW retained the services of M/s EST Consultants (P) Ltd., New Delhi to carry out a Rapid Environmental Impact Assessment (EIA) study and to prepare environmental management plans so that the likely impacts, are minimized through adequate control, abatement measures and management steps.

1.2.1 Scope of the EIA

The main objectives of the scope are as follows:

- Field data collection over a period of 3 months for Rapid EIA study in 10 km radius around the proposed distillery.
- Monitoring of ambient air quality for SPM, RSPM, SO2 & NOx in and around the plant at selected locations.

- Collection of meteorological data (wind velocity, wind direction, ambient temperature, relative humidity and cloud cover) at one location.
- Monitoring of noise levels in study area.
- Collection of land use, biological, demographical and socio economic data for the villages of study area.
- Assessment of impacts and suggest measures for pollution abatement, use of effluents, its monitoring equipment/system, organisational set up for maintenance of pollution control equipment and implementation of the EMP.

1.3 Methodology of EIA Study

The various steps involved in Environmental Impact Assessment study of the proposed project are divided into the following phases:

- v Identification of significant environmental parameters and to study the existing status within the impact zone with respect to air, water, noise, soil and socioeconomic components of the environment.
- v Study of various activities of the proposed project for manufacturing process and to identify the areas leading to impact/change in environmental quality.
- v Identification/Prediction of impacts for the identified activities and to study levels of impact on various environmental components.
- v Evaluation of impacts after superimposing the predicted impacts over the baseline quality.
- v Formulation of Environmental Management Plan for implementation in the proposed project.

1.3.1 Baseline Field Data Collection

A. Micro Meteorology

A temporary weather monitoring station was set up to record meteorological parameters like Wind speed, wind direction, temperature, relative humidity, on hourly basis covering the months of April, May and June 2010.

Wind speed, wind direction data recorded during the study period were used for computation of relative percentage frequencies of different wind directions. The meteorological data thus collected has been used for interpretation of the existing Ambient Air Quality measurements.

B. Ambient Air Quality

The existing Ambient air quality scenario in the study area has been assessed through a network of eight ambient air quality monitoring stations during the study period i.e. April, May and June, 2010 within an area of 10 km radius.

The ambient air quality monitoring network has been designed keeping in view the available climatological norms of predominant wind direction and wind speed of this region with due consideration of TORs.

The following points were also taken into consideration in designing the network of sampling station .

- Topography / Terrain of the study area
- Populated areas within the study area
- Residential and sensitive areas within the study area.

The existing Ambient air quality (AAQ) status has been monitored for SPM, RSPM, SO2 and NOx at each station on 24 hourly basis.

C. Noise Environment

Noise monitoring has been carried out at various locations to identify the impact due to the existing sources on the surroundings in the study area during study period. Noise levels were recorded to compute the equivalent levels.

D. Water Environment

Surface and ground water samples from 8 locations within 10 km radius were collected for assessment of the existing physio-chemical quality during the study period.

Methodologies adopted for sampling and analysis were according to the IS methods. The parameters thus analysed were compared with IS 10500.

E. Land Environment

Field surveys were conducted to identify the land use in the10 km radius of the project site. Representative soil samples were collected from 8 locations within 10 km radius for analysis of the physico chemical characteristics. Standard procedures were followed for sampling and analysis. Information on flora and fauna in the study area has been collected. Landsat satellite imagery data has been obtained and included in the report.

F. Socio-Economic Environment

A socio economic assessment of the positive and negative impacts on the people likely to be directly and indirectly affected by the project was conducted along with other studies during the EIA study.

1.3.2 Prediction and Evaluation of Impacts

The quantified incremental impacts are superimposed on the baseline status of various environmental components to have an overall scenario. The overall scenario estimated has been checked for compliance with various statutory requirements / standards.

1.3.3 Formulation of an Environmental Management Plan

Based on the existing environmental status & quantified impacts, a detailed Environmental Management Plan has been formulated for implementation during the operational phase.

1.4 The Proposed Project

1.4.1 Land

At present, the existing distillery is located within the sugar mill complex which is surrounded by the Sugar Mill activities on 3 sides and by the plant boundary on 4th side. For the proposed expansion, additional space is required which will be made available from nearby existing Boiler & Power House where approx. 3.5 acres land will be available for operation of 80 klpd distillery. In addition to this, about 24 acres land is available for operation of effluent treatment activities like Bio gas plant, Reverse Osmosis Plant, storage & handling of Primary-Spent-wash, Spent wash after bio-methanisation and Spent wash after Reverse Osmosis Plant across the road.

For the activity of Bio composting, presently SDCW has 15 acres land duly prepared as per the guidelines of the Central Pollution Control Board at a distance of about 8-10 km from the distillery.

The Lay-out drawings of proposed site for the distillery and sugar plant complex is shown as Fig. 2.1, distillery plant layout as Fig. 2.2, bio gas plant area in Fig. 2.3 & Bio composting-area as Fig. 2.4.

The total land available for the distillery and sugar complex and its breakup into broad areas such as sugar plant, storage facilities, godowns, utilities, etc. and for residential facilities are as under :

Break up of Land Available in the Distillery:

a) Broad area in which the Distillery is located	:	5500 M^2
b) Broad area in which the Bio Gas Plant is located	:	25,727 M^2
c) Open area surrounding the Bio Gas Plant (For ETP Activities)	:	76,362 M^2

Break up of Land Available in the Sugar Mill:

Broad area wherein distillery new Boiler is situated	:	3,200 M^2
Area available for proposed Distillery	:	11,000 M^2

Broad area in which Sugar Godowns are located	:	14,200 M^2
Broad area in which Sugar Colony is located	:	60,000 M^2
Broad area in which Sugar Factory is located	:	65,965 M^2

1.4.2 Details of Utilities for the Distillery and power Plant :

The proposed **80 KLPD Distillery** will be operated on Molasses as feedstock. This has been considered fulfilling all the necessary criteria influencing the plant size selection viz. market requirement, raw materials availability, infrastructure, technology, investment and economic viability. The major raw materials for the 25 klpd and 80 klpd distillery plant are given in Table 2.1 and 2.2. The details of utilities is as given below.

1.4.3 Molasses as feedstock :

The molasses required for the 80 klpd capacity shall be approx. **90000 MT/annum**. The total Molasses production from own **6250 and 4000 TCD** Sugar Mills, which operates for max. 150 days season is **75000 MT**. In addition to 90000 MT / annum molasses requirement after proposed expansion the requirement of 40000 MT molasses for the 36 klpd molasses distillery at Pilkhani is also met from these two sugar mills. Thus out of the total requirement of 130,000 MT/annum of molasses 75000 MT molasses is produced at own sugar mills and shortfall of 55000 MT/ annum molasses will be procured from other sugar mills in the area.

Mode of transportation of Molasses from M/s Unn Sugar Complex, Unn, and other sugar mills will be through road tankers. However, from M/s Upper Doab Sugar Mills, Shamli, Molasses is being transferred through Pipe-line.

For the storage of Molasses, MS Tanks of the required capacity will be installed.

The requirement of 28400 MT/Annum Molasses for the 25 klpd distillery is met from the adjoining Upper Doab Sugar Mill of the company.

1.4.4 Water Requirement

Initially, the process & other requirements including steam generation, Blending & Bottling, domestic use etc. are estimated as 2773 m3 of water, which will be reduced to 1277 m3/day with plant stabilization and recycling. Hence, the plant would require 1277 m3/day of fresh water for its various operations. The water requirement will be met from existing tube wells already dug at site.

The water requirement for the 25 klpd plant operation is 650 m3/day.

1.4.5 Power Requirement

The connected load for the distillery operations will be approx. 1265 KW and the operating load will be 800 KW which will be met from own generation by a 12 tph boiler and 1.2 MW turbine facility for power generation. Required power for the operation of the plant will be met from the back-pressure-cum-Condensing Turbine. However, for any break-down D.G.Sets of sufficient capacities are available. No. of D.G.Sets alongwith their Capacities are given hereunder:-

(a) 1 No. D.G.Set 325 KVA.
(b) 2 Nos. D.G.Sets 250 KVA (Each)

The present average power requirement of 400 KW/Hour for the 25 klpd distillery is met from the above source.

	ELECTRICITY FOR MAIN PLANT : (ESTIMATED)	Connected load (KW)	Operating Load (KW)
a.	Fermentation section	200	170
b.	Distillation Section	300	175
d.	Auxiliaries including Cooling Towers and CW Recirculation Pumps.	765	455
	TOTAL ELECTRICAL LOAD (PRAJ SCOPE)	**1265**	**800**

1.4.6 Fuel Requirement

As the effluent treatment is based on bio gas chain, the major part of fuel will be bio gas & remaining fuel to be used is Bagasse, which is available from M/s Upper Doab Sugar Mills. During the crushing season of the Sugar Mill, bagasse is available directly from the Mill. However, during the off-season, bagasse is stacked in the form of bagasse bales.

The **12 TPH -** HP Steam Boiler (45 kg/cm2g) at the distillery is run on bagasse and biogas to generate steam & power for the distillery. The quantity of biogas and requirement & availability of bagasse for the 25 klpd and 80 klpd plants taking into consideration the requirement for the sugar mill boilers is as follows:

	25 KLPD	**80 KLPD**
Quantity Of Biogas available	40,00,000 M3/A	1,30,00,000 M3/A
Requirement of Bagasse	15,000 MT/A	10,000 MT/A
Availability of Bagasse	4,90,000 MT/A	4,90,000 MT/A
Bagasse required for Sugar Mill	3,90,000 MT/A	3,90,000 MT/A
Spare Bagasse from UDSM	1,00,000 MT/A	1,00,000 MT/A

The biogas available at the distillery will be used largely for the boiler along with bagasse and the distillery boiler is designed on the basis of use of both bagasse and biogas as fuels.

The HSD required for the D.G. Set shall be procured from the nearest oil depot.

1.4.7 Steam Requirement

Approx. 12 T/Hour steam is required for operation of the Plant and generation of Power for which SDCW already have a Boiler of identical capacity i.e.12 T/Hour working pressure 45 Kg/CM^2 with a Turbine of 1.2 MW Capacity. The present steam requirement for the 25 klpd distillery is met from the above boiler.

1) **10.67 tph** of Dry, saturated and regulated at a constant pressure of **3.5 ± 0.1 kg/cm^2 (g)** shall be provided at the inlet of steam header for ENA Distillation plant.

2) **7.33 tph** of Dry, saturated and regulated at a constant pressure of **3.5 ± 0.1 kg/cm^2 (g)** shall be provided at the inlet of steam header for RS Distillation plant.

1.4.8 Wastewater Treatment System

Liquid effluents are mainly generated from process and fermenter. The quantity of process wastewater generated will be 12 litres for every litre of alcohol produced.

The expansion of distillery proposes to achieve zero discharge by biomethanation, Reverse Osmosis and use it for biocomposting.

Non-process effluents mainly comprising of water treatment plant, DM Plant, Boiler and C.T. blowdown, spent lees, etc. after neutralization and settling shall be used for green belt irrigation and Cooling Tower make up. The sewage generated from the sanitary blocks to the tune of 3-4 m3/day shall be treated in septic tanks and applied on to soak pits and used for irrigation of green belt.

1.4.9 Air Emission Sources, Pollution generation and Control

There are no process emissions from the distillery. Air emission sources are boiler and D.G. Set. The boiler will be fired with biogas/ bagasse. The steam generation capacity of the boiler shall be 12 TPH. About 144 T/day bagasse shall be used in the boiler on 100% firing .

Bagasse and biogas are cleaner fuels and the emission loads shall be extremely low which will be controlled by providing an adequate stack height as per the specified norms of the SPCB/CPCB/MoEF. Multicyclones followed by bag filters which are sufficient to achieve the stipulated standards of 50 mg/Nm^3 for SPM shall be provided as Air Pollution Control System. The ash will be collected in hoppers underneath boiler bank/air preheater and dust collection system and used in the biocomposting plant.

1.4.10 Storage Facility

Spirit in godowns in the factory will be stored in 4 tanks of 7 m dia. and 8 m ht. and Impure cut in 100 KL capacity tank. A storage tank of 2000 litres capacity shall be provided for HSD. Areas shall be earmarked for the storage of bagasse, Ash, etc. A pucca and duly lined with 250 micron HDPE sheet and pitched by stone/bricks with cement mortar to prevent leachate equivalent to 30 days treated spent wash storage capacity is provided.

1.4.11 Cost of the Project

The total cost of the project will be Rs30.00 Crores taking into consideration the use of some of the existing plant and machinery such as boiler, biogas reactors, lagoons, R.O. Plant, Bio compost plant of the 25 klpd distillery. The breakup of cost is given in Annexure- 1.2.

1.4.12 Man Power

The existing distillery employees about 150 workmen for production, maintenance, procurement, quality control, marketing, finance and administrative functions. The same manpower will continue after the proposed expansion.

1.5 Consents under Water and Air Acts for Existing Plant

1.5.1 Letter of Consent u/s 25/26 of the Water (P & C of Pollution) Act, 1974 has been granted by Uttar Pradesh Pollution Control Board, Lucknow (**Annexure -1.3**) for operating the existing distillery vide No. F63/69 dated 16.03.2010.

1.5.2 Letter of Consent u/s 21 of the Air (P & C of Pollution) Act, 1981 has been granted by Punjab Pollution Control Board, Patiala (**Annexure -1.4**) for operating the existing distillery vide No. F 63/70 dated 16.03.2010.

1.6 Plant Location and Surrounding Environment

The plant is located at SE side of Shamli town, District Muzaffarnagar, Uttar Pradesh state.

The existing plant is located close to Meerut-Karnal road adjoining to the Shamli Railway station and is about 40 km from district headquarter, Muzaffarnagar, 90 km from Delhi, 500 km from state capital Lucknow.

The State Highway-82 connecting Meerut and Karnal passes adjoining the plant site. State Highwat-12 from Panipat to Muzaffarnagar cuts across the study area entering WSW and exiting ENE of the study area. River Yamuna flows N to S at a distance of 15 km on the Western side of the plant site. Krishni Nadi which now is a drainage channel to carry industrial waste flow from NE to SE passes 2 km East of the plant site. Yamuna canal and several distributaries are placed in the study area. The plant is located near the Shamli Railway station on the broadgauge section between Shahdara and Saharanpur.

The proposed site is located at 29 deg. 26' , 19" North latitude and 77 deg. 18', 60" East longitude at an altitude of 240 m above mean sea level. The biocomposting plant site is located at 29 deg. 22' , 16" North latitude and 77 deg. 22', 46" East longitude at an altitude of 210 m above mean sea level.

1.6.1 Description of the study area

Keeping in view the nature of the plant, characteristics of the pollutants generated and TORs issued by MoEF an area of 10 km radius has been selected as the study area. The salient features of the site are given in Table 1.1. The study area is largely rural and flat. The study area of 10 km radius belongs to District Muzaffarnagar.

Table 1.2 shows the list of revenue villages/towns in study area along with their bearings, distance, area and population with respect to the plant site. There is no defense installation, grasslands, biosphere reserve, in the study area. The plant location is shown on U.P. state and the country map at Fig. 1.1, on the district map at Fig. 1.2 and the revenue map of 10 km radius area around the plant site in Fig. 1.3.

All field data collection, evaluation of various components of the existing environment and prediction pertains to this 10 km radius area.

1.6.2 Industrial Activity in study area

There are several small units in and around Shamli as given in Table 1.3. There are also a number of industries in the study area a list of which is given in Table 1.4.

TABLE 1.1 : SALIENT FEATURES OF THE PROJECT SITE

Altitude	:	240 m above MSL
Latitude	:	29 deg. 26’ 19“ N
Longitude	:	78 deg. 18’ 60” E
Maximum day temperature	:	47 deg.C
Minimum day temperature	:	-2.2 deg.C
Maximum Relative Humidity	:	85%
Minimum Relative Humidity	:	24%
Annual Rainfall	:	1156.3 mm
Mean wind speed	:	4.9 kmph
Predominant Wind Direction	:	NW and SE
Land Availability	:	3.5 Acres for plant 15 acres for biocomposting 23 acres for biogas plant
Topography	:	Plain
Soil Type	:	Clay Soil
Nearest Highway	:	SH -12
Nearest Railway Station	:	Shamli (1.0 km)
Nearest Human Settlements	:	Shamli
Nearest City	:	Muzaffar nagar (30kms)
Nearest Industries	:	Small and medium units
Nearest town	:	shamli
Nearest seaport	:	None within 25 km
Nearest River	:	Krishni Nadi 2 km E
Nearest Airport	:	Delhi (90 kms)
Nearest Reserve Forest	:	None within 25 km
Nearest State Forest	:	None within 25 km
Nearest National Park	:	None within 25 km
Historical/ Religious Places	:	None within study area