EXECUTIVE SUMMARY

OF

ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FOR PUBLIC HEARING

OF

NEW PROJECT

PROPOSED BY

M/s. Sri Krishna Pharmaceuticals Ltd.

Plot No. F - 1, MIDC - Chincholi,
Taluka-Mohol, District -Solapur, Maharashtra

FOR

Active Pharmaceutical Ingredients Manufacturing Facility

REPARED BY

GOLDFINCH
One-stop Environmental Solution...

GOLDFINCH ENGINEERING SYSTEMS PVT. LTD.

NABET ACCREDITED EIA CONSULTANT
THANE, MAHARASHTRA
SEPTEMBER 2014

Executive Summary

1.0 Introduction

Since 1975, Sri Krishna Pharmaceuticals Ltd. (SKPL) is active in the business of Pharmaceutical Raw materials (API's), Direct Compression Granules, Drug Delivery Systems, Vitamins, & Neutraceticals. SKPL proposes to establish a new unit to manufacture 4095 MT/Month of API (Bulk Drug & Intermediates) products (2545 MT API products and 1550 MT by product acetic acid) to meet the current market demand at Plot No. F-1, MIDC, Chincholi, Taluka - Mohol, Dist. Solapur, State – Maharashtra. Proposed unit will be spread over - 101,250 sq. meters of plot area.

SKPL has multi-purpose manufacturing facilities backed up with a modern pilot plant, centralized R & D center and a dedicated scientific team to scale up and commercialize technologies. The group has been recognized as a leader in waste minimization by the Indo – Australian joint venture on waste management and granted an AUS-AID award. SKPL is a largest producer of Paracetamol in India with a capacity of 6000 MT/Year and largest producer of Folic Acid in the world with a capacity of 250 MT/Year.

To assure better environment Government of India has made it statutory to take prior Environmental Clarence as per notification No. S. O. 1533 dated 14th September 2006. These types of industries are covered as category 5 (f) in the Schedule. It is also stated that Synthetic Organic Chemical Industry (Bulk Drugs & Intermediates) located in a notified industrial area/estate comes under category 'B' and No public hearing is required.

1.1 Purpose of Study

The purpose of this report is to establish the existing (baseline) environmental status of the project area, assess the pollution potential, the possible environmental impacts and recommend the mitigation measures required to minimize the adverse impacts. The proposal by Sri Krishna group falls in category 5(f) B1 of schedule under EIA notification covering Synthetic organic chemicals industry. However, based on the OM dated 16th May 2014 by Director MoEF, Public Hearing is required for the proposals in Industrial Estates / Parks which have not taken Environmental Clearance.

1.2 Extent of Study and Study Covered

Environmental Impact Assessment report is prepared based on the studies carried out during April May & June in the year 2012. The Environmental parameters such as ambient air, water, soil, noise, are those which are likely to be affected by the project were selected for study. The study area is defined as an area within 10 kms radius around site. The study area was selected based on the criteria of pollutant's potential effects, sensitivity of receptors viz. people within the vicinity area and ecosystems, human settlements, plantations,

cultural, aesthetic and recreational features etc.

1.3 Method of Study

Based on the MoEF guidelines specifying model ToRs, studies were carried out and the nature of activities involved and their impacts caused on various environmental parameters were identified. These subsequently apply mitigation measures to be executed for safeguarding against any environmental degradation. Finally the exercise suggests methods of implementing the environmental management plan.

2.0 Type of Project

Sri Krishna Pharmaceutical Ltd. (SKPL) proposes a new unit for manufacturing of Bulk Drugs and Intermediates at notified industrial area at Chincholi MIDC at Plot No. F-1, Taluka - Mohol, District – Solapur - 413 255, State - Maharashtra. The total magnitude of operation will be 4095 MT/Month (2545 MT API & Neutraceticals products & 1550 MT by-product Acetic acid) of API (Bulk Drug & Intermediates) products.

2.1 Need of the Project

Global pharmaceutical market are in the midst of major discontinuities while growth in developed market will slow down, emerging market will become increasingly important in coming decade. The regulatory environment in the pharmaceutical sector is more challenging now than ever before. To meet new normal, companies will have to invest in re-establishing their competitive position. Optimisation of product portfolio to target high return products and building distinguish capabilities to stay ahead of competition would be the key of success.

Indian pharmaceutical industry need to grow to remain in the market, focusing on this SKPL wish to expand their business at National and International market.

2.2 Location of the Project

The proposed project under consideration would be located at,

Plot No: F-1, MIDC
Village: Chincholi
Taluka: Mohol
District: Solapur
State: Maharashtra.

Site specific details are as below:

Geographical Location	Site is located Latitude 17° 46'25.22" N and Longitude 75° 48'13.86" E. The elevation above MSL is 1570 ft.
Distance from City	5.00 km from Solapur city.
Nearest Railway Station	15 km from Solapur Railway Station
Nearest Airport	25 km from Solapur Airport
Road Network	Solapur– Mumbai High way – 2.0 km MIDC Main Road – 0.5 km. Internal MIDC approach road – width – 45 feet
Nearby River	9 km from Sina River

2.3 Size or Magnitude of Operation

SKPL intends to manufacture 4095 MT/Month of API (Bulk Drug & Intermediates) products (2545 MT API & Neutraceticals products & 1550 MT by-product Acetic acid) at Plot No.F-1. Product wise capacity is given below:

Table 1.1 Details of the Products

Sr. No.	Name of the Product	Remark	Proposed production Quantity for Environmental Clearance (MT/Month)
1A	Paracetamol - 4 Stages	Starting from PNCB	400
1B	Paracetamol - 2 Stages	Starting from Penultimate stage	1100
2	Ibuprofen	--	500
3	Metformin	--	500
4	Domperidone	--	15
5	Dextromethorphan Hydro Bromide	--	20
6	Omega -3	--	10
By Product			
1.	Acetic Acid	Generates in the process and sold to consumers	1550

2.4 Power/Energy Requirement

The total power requirement for this proposed project will be 6000 HP. The required power connection is available from MSEDCL

- Connected load: 4500 KW
- Max. demand : 2000 KVA
- Transformer capacity: 3500 KVA
- Total power requirement 6000 HP
- Power Supply: (From MSEDCL)

In case of emergency backup of three nos. of DG sets of capacity 1000 KVA each shall be proposed with acoustic enclosure.

2.5 Fuel /Steam Requirement

21 TPH will be the steam requirement for the unit can be met by using 2 Nos. of boilers of capacity of 15 TPH & 1 No. stands by boiler with capacity of 10 TPH.

Fuel for Boiler: Max. of 2800 MT/ month of coal will be used.

2.6 Material Storage

The R & D will keep its efforts to see if any other mode of process comes up or if outsourcing can be done to minimize the load. Measures may be adopted as

1. Procuring pure raw material and analyzing them before accepting
2. To reduce inventory by adopting JIT (just in time) procurement.
3. Designing the tank roofs to avoid VOC (Volatile Organic Contents)
4. To go by predictive maintenance rather than preventive or emergency maintenance.
5. Good housekeeping and machine keeping for enhancing the efficiency.

2.7 Water Requirement

The water requirement for process, domestic, gardening, boiler feed & for cooling water make up is about 1690 KLD. The source of water is already available from existing water works of MIDC and the same is adequate and satisfactory. A water purification work is already operational with settling, coagulation and disinfection. The source is dependable and reliable. It does not encroach on anybody else's water source.

Table 1.2 Water Balance

Sr. No.	Product	Process Water Consumption (KL/d)	Water loss (-) / Reaction water add (+)(KL /d)	Density kg/m3 /TDS in mg/l	Waste Water in KL/d
1A	Paracetamol – 4 Stages	83.114	+ 0.24	1128 / 166485	83.36
1B	Paracetamol – 2 Stages	138.21	- 31.19	1040 / 57276	107.02
2	Ibuprofen	241.018	+ 33.32	1140 / 180281	274.34
3	Metformin	6.19	-0.001	1000 / Nil	6.19
4	Domperidone	51.48	+ 2.97	1031 / 37653	54.45
5	Dextromethorphan Hydrobromide	73.89	+ 4.72	1014 / 2227.5	78.61
6	Omega-3	23.31	+18.61	1000 / Nil	41.920
7	Scrubber Water	50.0	Nil	1040 / 48076	50
8	Floor Washings	10.0	Nil	1000 / 1000	10
9	Laboratory Washings	1.0	Nil	1000/ 100	1
	Sub- Total	**678**	**+ 29**	**1080 / 111668.9**	**707**
10	Domestic	50	-10	1000 / 500	40
11	Boiler Feed	201	-182 (Condensate recovery back to feed water)	1000 / 1000	20
12	Cooling water make up	510	- 459 (evaporation, windage, drift)	1000 / 1000	51
13	Gardening	39	-39		0
14	Steam for MEE & ATFD	90.0+ 146.0	0	1000 / 150.0	236
	Total	**1715**	**- 661**		**1054**
	Water recycle after effluent Treatment	1013			
	Net Requirement	702			

3.0 Baseline Environment

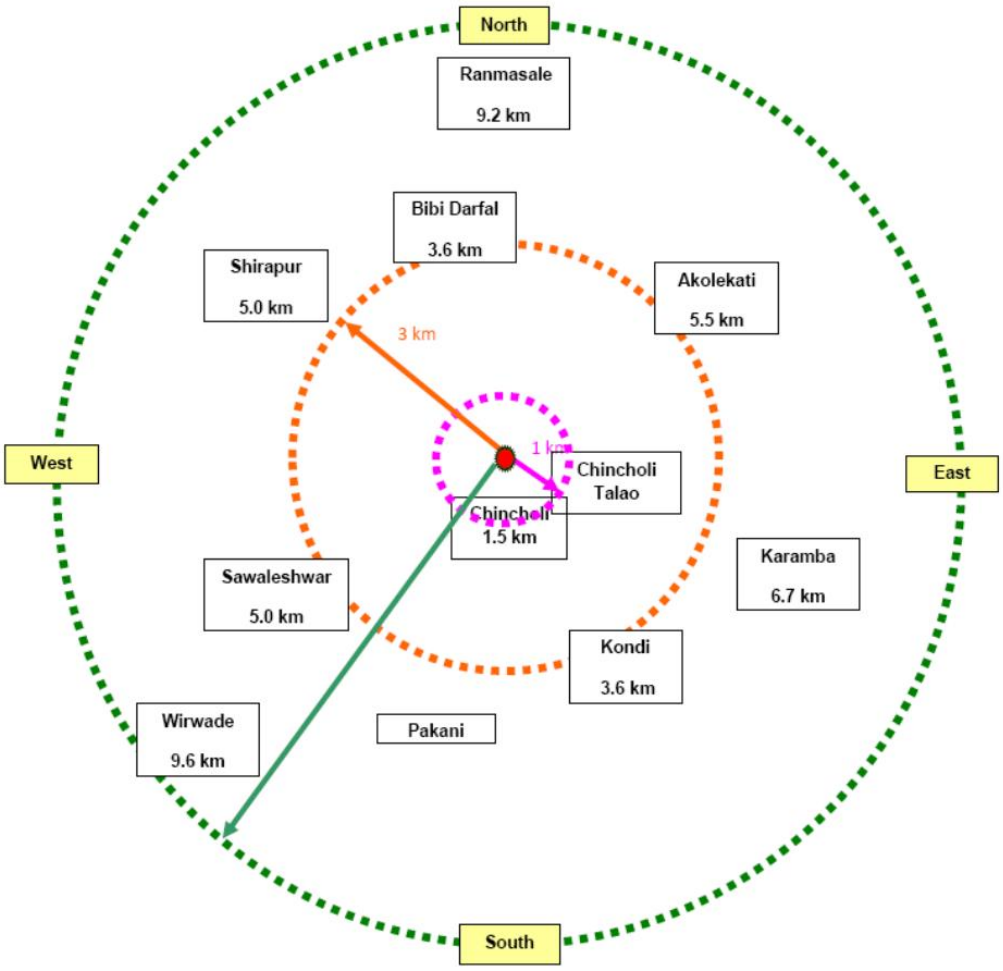
Baseline environment incorporates the description of the various existing environmental settings within the area encompassed by a circle of 10 km radius around the proposed project site. Based on the model Terms of References (ToRs) published by the SEAC for this category and after giving due consideration to various aspects of the project, field studies were conducted and secondary data was collected to establish baseline conditions for the EIA studies.

Table 1.3 and Figure 1.1 below illustrate Air, Water, Soil and Noise monitoring locations and specific parameters of significance. The samples were collected once in a month from various locations around the periphery of the plant. The sampling details have mentioned in the below table.

Table 1.3: Sampling Locations

Sr. No.	Name of Place	Air	Water		Soil	Noise Level Ambient
			Surface	Ground		
1.	Sri Krishna F1 plot				√	
2.	Chincholi Village	√	√		√	√
3.	Bibidarfal Village	√	√		√	√
4.	Kondi Village	√	√		√	√
5.	Shirapur Village	√			√	√
6.	Shirapur borewell		√			
7.	Savleshwar Village	√	√	√	√	√
8.	Akolekati Village	√	√		√	√
9.	Karamba Village	√		√		√
10.	Ranmasle Village	√	√		√	√
11.	Wirwade Village	√				√
12.	Chincholi Talao					
13.	Sri Krishna MIDC water		√			
14.	Pakni village				√	

Figure 1.1: Sampling Locations



3.1 Air Environment

3.1.1 Micro Meteorological Data

Annual temperatures in Chincholi is ranges from 12°C to 40 °C, with the most comfortable time to visit in the winter - October to February. The highest maximum temperature ever recorded was 46 °C (114 °F) on 25 May 1905. The lowest recorded temperature was 2°C (36 °F) on 2 February 1911. In the cold season, the district is sometimes affected by cold waves in association with the eastward passage of western disturbances across North India, when the minimum temperature may drop down to about 2°C to 4 °C (35.6 °F to 39.2 °F).

From the meteorological data of the study area, the months of April, May and June are considered to be dry season. It is referred that minimum and maximum daily temperatures are 25.1^{o} C and 39.9^{o} C respectively. Predominant wind direction was in between East and West in study period. Monthly mean relative humidity was in the range of 20-25%,

3.1.2 Particulate Matter

The average PM_{10} concentration was varied in the range of 25.2 – 42.3 µg/m$^{3.}$The highest concentrations among the locations was observed at Chincholi village and lowest at Sawaleshwer village among the locations monitored, high concentration may be due to windblown dust, unpaved road etc. The PM_{10} concentrations for all locations were observed to be below stipulated standards for NAAQS (24 hourly PM_{10} = 100 µg/m^3).The average $PM_{2.5}$ concentration was ranged between 15.5 – 30.4 µg/m^3.The highest concentration among all the locations was observed at Bibidarfal village and lowest at Sawaleshwer village. The $PM_{2.5}$ concentration for all the locations was observed within stipulated standards for National Ambient Air Quality Standards (NAAQS) (24 hourly $PM_{2.5}$ = 60 µg/m^3)

3.1.3 Gaseous Pollutants

The average concentration of SO_2 was ranged between 43.4 – 69.3 µg/m^3 and the average concentration of NO_x was ranged between 5.8 – 35.8 µg/m^3 respectively. Highest concentration among all the locations of SO_2 was found at Sawaleshwer village and lowest concentration of SO_2 was found at Wirwade village. The levels of the gaseous pollutants were below stipulated NAAQS**.** (24-hourly is SO_2 & NO_x is 80 µg/m^3).

The average concentration of Ammonia (NH_3) was ranged between 0.05 – 0.42 µg/m^3 which may be attributed to emissions from animal waste, and soil and also due to industrial activities. Higher concentration was recorded at Karmada village whereas, lower concentration was observed at Wirwade village. However, all these values are well within stipulated NAAQS (24-hourly is 400 µg/m^3).

3.2 Noise Environment

Noise, often defined as unwanted sound, interfaces with speech communication, causes annoyance, distracts from work, and disturbs sleep, thus deteriorating quality of human environment. The impact on ambient noise within the study area due to generation of loud noise levels from various sources during operation of the plant was predicted. The major noise source of the proposed unit was used for the simulation. Construction phase impacts due to noise generating equipment and machineries was estimated based on primary data generated

at similar project sites. Study shows that noise level in the study area is within stipulated standards prescribed by MPCB for industrial sector.

3.3 Water Environment

The proposed project does not have any potential impact on the surface and ground water quality and quantity in a significant manner in the long term during the operation phase.

All villages in the vicinity are provided with drinking water from wells or Government Water Supply Schemes. Hence, SKPL does not encroach or compete with other users for its supply and is dependent on water line that is dedicated for MIDC. Rainwater harvesting is planned to collect rainwater from the concreted roofs of buildings proposed in the factory. However, this will be a small quantity available only in rainy season as the annual rainfall is low around 650 mm.

Surface and ground water samples analyzed in the study area showed all parameters are within the permissible water standards except for hardness in a few bore wells.

3.3.1 Surface Water

During study period the physico-chemical parameters of water samples showed moderate water quality in terms of turbidity: 0.2-0.6 NTU and total suspended solids: 8-18 mg/l. Buffering capacity in terms of alkalinity was found to be in the range of 162-260 mg/l, whereas pH was in the range of 7.1-7.4.TDS was found in the range of 420-590 mg/l, Total hardness was found in the range of 259 – 302 mg/l, whereas chloride and sulphate were found to be in the range of 78 – 176 mg/l, and 18 – 64 mg/l, respectively. Nutrient load in terms of Nitrates as N was in the range of 0.04-0.11 mg/l, whereas total phosphate was 27-34 mg/l. Level of COD was observed to be in the range of 7.2-9.7 mg/l; Sodium,calcium,Magnesium and potassium were in the range of 2 – 94 mg/l, Heavy metals like nickel, cadmium, chromium, copper, lead, iron, manganese, zinc and mercury were found in the range of ND, ND, ND-0.05, ND-0.08, ND-0.05, ND-0.04, ND-0.11, ND-4.0 and ND mg/l respectively.

3.3.2 Ground Water

In groundwater turbidity was found to be in the range of 0.2-1.0 NTU while corresponding total suspended solids in the range of 4-18 mg/l. TDS was found in the range of 326 – 1650 mg/l. The Alkalinity as $CaCO_3$, was found to be in the range of 167-1122 mg/l whereas pH was in the range of 7.2-8.2. Chloride and Sulphate were found to be in the range of 52 – 275 mg/l, and 18 – 471 mg/l, respectively. Nutrient load in terms of Nitrates as N was in the range of 0.01-0.18 mg/l, whereas, total phosphate was in the range of 20-48 mg/l. Level of COD was found to be in the range of 5-18 mg/l**.**Sodium,calcium,magnesium and potassium were in the range of 12 – 480 mg/l, Heavy metals like nickel, cadmium, chromium, copper, lead, iron, manganese, zinc and Mercury were found in the range of ND, ND, ND-0.02, ND-0.08, ND-0.05, ND-1.42, ND-0.16, ND-0.16 and ND mg/l respectively.

3.4 Land Environment

The direct and indirect impacts on surrounding land due to pollution discharge in the form of flue gases, fugitive emission, liquid and solid wastes as well as subsequent urbanization have been considered while studying the base line data of land environment. The likely impacts on land environment depend on several factors like the project location, land use/land covering surrounding area, ecological or otherwise sensitivity of the surrounding regions etc. Accordingly for assessment of impacts, it is pertinent to study the current land use/land cover of identified project site as well as surrounding area.

3.4.1 Land Use Pattern

Main land use in the region is cultivation (78.65%), since the region is well irrigated with many small tanks and canals. With reference to the satellite image, land under water is 0.27% of the total (this refers to wet water bodies only, since the image is acquired in the month of January, some of the tanks and streams are observed dry). Other natural vegetation covers about 0.54% while scrub covers about 4.02% of total area. Habitation is spread over 1.36% of the total area and open land is about 15.17

The proposed project is in industrial area, it will not change land use pattern

3.4.2 Geography

Geographically Solapur is located between 17.10 to 18.32 degrees North Latitude and 74.42 to 76.15 degrees East Longitude. The district is situated on the south east fringe of Maharashtra State and lies entirely in the Bhima and Seena basins. Whole of the district is drain either by Bhima river or its tributaries. The district is bounded on the north by Ahmednagar and Osmanabad Districtcs, on the east by Osmanabad and Gulbarga (Karnataka State) districts, on the south by Sangli and Bijapur (Karnataka State) and on the west by Satara and Pune districts. There is no important hill system in the district.

3.4.3 Climate

The climate of the district is very good due to high lands on the western part and gradual slope towards east and north, and on the western side with moderate summer from April to June and good winter from November to March. The climate during rainy season from the middle of the June to end of September is cool and pleasant followed by a hot spell of October.

3.4.4 Rainfall

Agro climatically entire district is comes under rain shadow area. Rainfall is uncertain and scanty. The average rainfall of the district is between 500 mm to 650 mm.

3.4.5 Soil

The soil of the district can broadly be classified into three groups viz, black or kali, red or Tambat and the gray. Soils of the district are light, medium or heavy according to depth, texture and location. . In Solapur district the nodular lime stones or kankars is everywhere and abundant whereas, building stones are mainly found in Chincholi, Darphal, Haglar, Kondi ,Lomboti and Savleshvar, 15 km away from the city.

3.4.6 Rivers

The major rivers in the district are Bhīma and Neera. Mann, Seena, and Bhagawati are its tributaries. The Bhima and Sina run South - East. Neera and Mann nearly East. During the summer season all the rivers becomes dry.

3.4.7 Agriculture / Cultivation

The major crops in the region are Jowar, Bajara & Pulses. Cash crops like Sugarcane, Groundnut and Cotton are also grown in Solapur Tehsil. Water from Ujani dam is used for irrigation purpose improving the Agricultural productivity of Solapur District.

3.4.8 Baseline Status of Soil

The possible impacts of the project on soil texture has been studied by designing network of baseline(pre-project) status by characterization of soil through field studies. Results are summarized below.

The pH of the soil in the study area is moderately alkaline in the range of 7.2 to 8.9. The soluble salts was determined from soil extract (1:1).The soluble salts was expressed in terms of electrical conductivity (EC). The EC of the soil samples was in the range of 0.04 to 0.1 µs/cm. The Phosphate and Sulphate contents of soil in the study area were varied from 0.012 mg/kg to 0.022 mg/kg and 0.0003 mg/kg to 0.017 mg/kg respectively. Prominent cations in the study area viz. Calcium, Magnesium, Sodium and Potassium area were present in the range of 0.5 mg/kg to 7.0 mg/kg. Study shows that land cover in study area is of good quality.

Care has been taken by project proponent that due to operation of the project soil quality of the study area will not get adversely affected.

3.5 Biological Environment

In view of the need for conservation of environmental quality and biodiversity, study of biological environment is one of the most important components for environmental impact assessment.

3.5.1 Flora & Fauna

The project site, falls within the Chincholi MIDC area, is open land having monsoon specific vegetation, the site was devoid of trees, few shrubs, herbs and grasses were observed at the site. *Calatropis procera* (Rui), *Lantana camara* (Ghaneri), *Argemone mexicana* (poppy), *Dendrocalamus strictus, Chloris barbata, Andropogon triticeous* were common at the core site.

Faunal ecological and biodiversity status of the site shows characteristic of industrial habitat**.** Ecological richness and value of the actual project site location was found very low. Ecologically rich areas are 9-10 km away from the project site.

3.5.2 Avian Diversity

In the surrounding areas within 10 km range of the site in total 81 species of birds were encountered. In areas falling within 1 km range of the project 21 species of birds were observed during the study. The observations were made based on direct sightings and bird calls. In the observed list of birds none of the species are classified as endangered or rare.

The project seems to raise no impact on biological environment, as the project falls in the MIDC area, the project is expected to be designed as per MIDC guidelines and infrastructure to reduce any impact that may be expected from water effluent discharge or air emissions.

3.6 Socio-Economic Effect

Environment is a whole complex of physical, social, economic, cultural and aesthetic dimensions which affects individual, communities and ultimately determines their forms, characters, relationships and survivals.

3.6.1 Demographic Structure

In 2011, Solapur had population of 4,315,527 of which male and female were 2,233,778 and 2,081,749 respectively. In 2001 census, Solapur had a population of 3,849,543 of which males were 1,989,623 and remaining 1,859,920 were females. The Taluka is situated in remote, drought, and some part hilly area and has 51363 households of Maratha, Muslim, Buddhist, and also includes SC, ST, OBC and open categories community.

3.6.2 Occupational Structure

Solapur is the home of Handloom and Power loom weaving industry which provides employment to a large number of workers.

The spatial analysis of levels of Socio-Economic development shows that low level of socio-economic development found in Madha,Karmala,Mangalvedha,Sangole,Mohol,Akkalkot and South Solapur tahsil.It covers nearly 65 % of the total geographical area of district.The agricultural activities of these areas are mainly dependent on monsoon, due to scanty and nonuniform rainfall sarcity conditions prevail in the district indicating a very less possibility of agricultural irrigation.It indicates urgent need for industrialization which ultimately helps to provide substantial support for direct employment generation as well as indirect benefit for livelihood support activities.

3.6.3 Infrastructure Resource Base

The infrastructure resources base of the study area with reference to education, medical facility, water supply, post and telegraph, transportation and communication facility and power supply etc.

I. The Industrial Area had Modern Infrastructure

About 524 Nos of street lights are provided along the main roads as well as the internal roads. 70 W & 150 W HPSV (High-Pressure Sodium Vapour lamps) are used mounted on 9 m high steel tubular poles. A total of 210 lamps of 70 W and 314 lamps of 150 W are provided in the whole area.

ii. Common Facility Center

MIDC has constructed a common facility center building in the area. This building accommodates a post office, the telephone exchange, a bank and the association's office.

iii. Banks

There are full-fledged branches of most of the nationalized as well as co-operative banks in Solapur City.

iv. Education Centers

All educational facilities are available in the surrounding area.

v. Fire Station

A fire station is necessary keeping in mind the planned development of the Chincholi MIDC.

vi. Electricity

Maharashtra State Electricity Board has established a 132 KVA substation in the area.

Vii. Water

MIDC has lifted the water from Solapur Municipal Corporation by making the agreement of 10 MLD quantity. The average daily consumption of water in this area is 4 MLD.

viii Sewage System

No residential activity or housing colony is proposed by the project proponent. Domestic wastewater generated will be treated separately in Sewage Treatment plant of capacity 40 CMD. As per the Solapur City Development Plan (CDP) the sewerage sector investments is 273.23 Crores for the year of 2007-2013 and 2036.30 Crores for the year for 2007-2031.

ix Solid Waste Management

No residential activity or housing colony is proposed by the project proponent. The total amount of waste generated in Solapur city is about 300 MT per day. The solid waste is collected from houses and is deposited at a predetermined location from where it is carried to land fill site through trucks. There is door-to-door collection system in Solapur city. Individual household dispose their solid waste in near disposal location/bins in their locality from where it is picked by the vehicles.

As per the Solapur City Development Plan (CDP) the Solid Waste management investments is 80.55 Crores for the year of 2007-2013 and 476.50 Crores for the year for 2007-2031.

x. Roads

Main roads have 45 m land width with 2 lanes while the internal roads have a land width of 30 m, 25 m or 20 m with 1 lane. All the approach roads to the plots are asphalted. Tree plantation along the roadside is done. Streetlights are also erected by the side of the roads.

xi. Residential Facilities

Available in Solapur city which is away from 5 kms from Chincholi Industrial Area

xii. Telecommunication

All telecommunication facility such as fax, telephone, telegram and internet are available in Solapur city.

3.6.4 Health Status

Total 77 Primary Health Centers (PHC) is available in Solapur District, out of which seven are available in Mohol Taluka where Sri Krishna proposes to establish their new unit of API Drugs at Chincholi MIDC area. Around the project site PHC are available at Anagar, Ankoli, Begampur, Kamathi, Kurul, Narkhed, Patkul and Shirpur.

3.6.5 Cultural and Aesthetic Attributes

No cultural and Aesthetic important places are observed within the study area, hence likely impact on such important places in ruled out.

4.0 Environmental Impact Mitigation

4.1 Water Pollution

- **Treatment of Industrial Wastewater**

The water requirement is about 1715 CMD for process,domestic, greenery, boiler feed & for cooling water make up. The source of water is already available from existing water works of MIDC.

The wastewater generated 707 CMD from the process/manufacturing will be collected & neutralized.
This wastewater has high TDS. So it will be directly pumped to the Multi Effect Evaporator (MEE). The concentrated salts in last effect of the evaporator would be pumped to the Agitated thin Film dryer (ATFD) to obtain pure solids / salts (approximately 88 tons / day). The condensate of the ATFD (279 KL / day) can be reused. The condensate of the ME evaporator which would be having a TDS of less than 500 mg/l will be pumped to the conventional aerobic Effluent Treatment Plant to remove the volatile organics, COD / BOD. For the purpose the wastewater will be equalized and then pumped to the Primary system, followed by the aerobic secondary system and tertiary treatment system for polishing. The final outlet of the ETP would be having a COD of less than 200 mg/l and TDS < 350 mg/l. This treated water will be mixed with condensate of ATFD and will be used for Cooling tower make up, Scrubbers, Floor Washing and in Laboratory. Remaining effluent will be sent to RO. The low TDS permeate (TDS < 40PPM) from RO will be used in process and high TDS (<1800 PPM) reject from RO will be sent back to MEE for treatment resulting Zero Liquid Discharge (ZLD).

- **Treatment of Domestic Wastewater**

A separate STP is proposed (40 m3/d) to treat domestic wastewater, the treated water will be used for gardening purpose.

4.2 Air Pollution

4.2.1 Particulate Matter

Dust will lead to an increase in the background SPM concentration of the area if proper control measures are not adopted. However, this will be temporary and reversible in nature and restricted to smaller and for short duration. Proper upkeep and maintenance of vehicles, sprinkling of water on roads and construction site, providing sufficient vegetation etc. are some of the measures that would greatly reduce the impacts during the construction phase. Therefore, considering all sources of air pollution, it is expected that air emissions due to construction will not exceed National air quality standards (NAAQS). Moreover major portion of plot will be used for green belt development to minimise such effects.

4.2.2 Gaseous Emission

The impacts on air environment due to emission of gaseous from stacks depend on the type of fuel used and may extend to far distances depending on meteorological conditions. The fugitive emissions are generally less in quantity and they are released relatively closer to ground level which cause impact to very limited distances (about 1-3 Km). Amongst the continuous point source emissions, SO_2 will be of prime concern as it is emitted depending on the type of fuel used and followed by emission of Oxides of Nitrogen (NOx), which also depends on type of fuel (solid/liquid/gas) and the rate of fuel combustion. Emissions from the proposed unit along with anticipaped amount of discharge are shown in Table 1.3.

Table 1.4 Details of Air Pollutants

Sr. No.	Pollutant	Source of Emission	Emission rate
1.	SPM	Process /Boiler/ D.G. Set	<150 mg/nm3
2.	SO2	Boiler/ D.G. Set	<1120 kg/day
3.	Ammonia	Process	<35 mg/nm3
4.	HCl	Scrubber	<50 ppm

21 TPH will be the steam requirement for the unit; can be met by using 2 nos. of Boilers of capacity of 15 TPH & 1 no. stand by boiler with capacity of 10 TPH.Amount of Coal required for two 15 TPH steam boiler is 2800 MT/month and for one 10 TPH stand by boiler is 880 MT/month. Generation of 10 % of Ash and 0.6 % of Sulphur is anticipated from the burning of the coal .As a pollution control measure Chimneys with height of 47 meters will be attached to the !% MT/hr boilers and 41.5 m for 10 MT/hr. Boiler so that the gas would be discharged at a proper height to disperse the gaseous pollutants. The arrangement of ports in the chimney and facilities such as ladder, platform etc.is proposed considering the post air monitoring operations. Two Polypropylene scrubbers are proposed as a Best Available Control Technology (BACT) to remove Ammonia and HCl gases from industrial exhaust steames each with a stack height of 21.5 m (i.e., above the roof of the building).

Arrangment of three D.G sets will made by proponent and will be used only in case of emergency and in case of power failure.Emission of less than 10.0 % of Ash and upto 0.6 % of Sulphur is anticipated from operation of DG sets.Stack will be provided to both DG sets each with height of 6.325 meters above enclosures.

SKPL will install a comprehensive control system consisiting of control equipments as is warranted with reference to generation of emission and operate and maintain the same continuously so as to achive the level of pollutants to the prescribed standards.

4.3 Noise Pollution

The noise levels will be below MPCB prescribed limits. All operating personnel are well acquainted with their respective operations and Personnel Protection Equipment's (PPE) will be provided to the operators in utility area.

- In house monitoring will be done regularly inside and outside the factory. The noise levels will always be within Maharashtra Pollution Control Board limits for industrial activity and SKPL will ensure 100% compliance record.
- Proper noise barriers, acoustic enclosures will be provided on noise generating equipment's like DG sets and cooling towers to minimize noise.

4.4 Land Pollution

The project proponents will take all the precautions to make its solid waste areas impervious to water and leach-ate migration. This will avoid soil contamination. It follows that soil quality will not be adversely impacted by proposed production activity. The unit set up is in industrial area hence no change in land use.

Hazardous wastes such as process/ distillation residues, waste solvents, iron sludge, spent carbon, ETP sludge, MEE/ATFD salts, waste oil, E-waste and used lead-acid batteries will be generated from the proposed activity. As per the HW rule (M&H and Trans boundary movement) 2008, all the hazardous waste are being sent to CHWTSDF at MEPL Ranjangaon established with support of MIDC & MPCB. The hazardous waste container will be labeled and record book will maintain as a safety measure and to control any leakage to soil and water. The impact on soil quality will be NIL due to disposal of hazardous waste, as they are not dumped straight into the land.

The generated solid waste from the Effluent Treatment Plant is mostly containing dried biomass. This Biomass will be mixed with domestic bio waste (dry leaves, roots & hey) & composting with the help of worms will be carried out for producing bio-compost & will be used for Green Belt development.

4.5 Green Belt Development

In and around the Industry of green plantation has already started. The area for green belt development within the factory premises is approximately 14,000 sq. mtrs. Number of species of trees & shrubs to be planted areabout 700 Nos.

4.5 Socio-Economic Effect

Sri Krishna Pharmaceuticals Ltd. will be actively involve in improving the socio economic conditions of the area and will also actively participate in implementing government schemes for welfare of the society of the area. The overall impact of the proposed project will be positive and beneficial as the company is committed to continue its efforts for improving the socio economic conditions of the area. Negative impact on socio-economic component within the impact zone would be insignificant as the proposed project would be established in Chincholi MIDC area. Due care has to be taken from the planning stage of proposed unit for mitigation of occupational health along with necessary social welfare activities in the surrounding villages. However, the local inhabitants are not against the project, provided their demands for Infrastructural improvement and job opportunities are met by the management.The project will provide employment opportunities to local population.

5.0 Environmental Monitoring Program (EMP)

EMP is planed such that the mitigation measures should be put in place to reduce the adverse impacts likely to result from the implementation of the project. Apart from the regular monitoring, Post – Project Monitoring Plan (PPMP) is proposed to monitor the ambient environmental quality after the commissioning of the project. The frequency of monitoring of various parameters will be increased as per the requirement after the project goes on schedule.

Table 1.5 Environmental Monitoring Program

Sr. No.	Type	Locations	Parameters	Period and Frequency
1	Ambient air Quality	Project site 2 locations	Criteria Pollutants: SO_2,NOx, RSPM, NH_3 •	24-hr average samples every quarter during operation
2	Stack emission Monitoring	Stack of Boilers and DG sets 4 nos	•SO_2, NOx, RSPM,NH_3 and hydrocarbons	24 hr average every quarter.
3	Workplace Monitoring	Proposed Plant	•RSPM,Acetone,Tolune , HCl, ,NH_3	For TLV, Once in two months
4	Ambient noise	Project site 2 locations	•dB(A) levels	Hourly Day and Night time Leq levels every quarter during Operation phase.
5	Treated effluent quality	Influent, bioreactor, final treated water before disposal.	•General parameters like pH, COD, TSS, BOD, MLSS, MLVSS	Once every day. Twice a week.
6	Surface water quality	3 stations around project Site	•Physical and Chemical Parameters.	Once a month.
			•Bacteriological parameters.	Once in 3 months
			•Heavy metals and toxic constituents.	Once in 3 months
7	Ground water quality and depth of water table	3 piezometer stations around the factory site for ground water monitoring to ensure no contamination	•Physical and chemical parameters: Total Organic matter Concentration	Once a month.
			•Bacteriological Parameters.	Once in 3 months
			•Heavy metals and toxic Constituents.	Once in 3 months
8	Terrestrial ecology	Flora and fauna in and around the site	•The health and the density of the vegetation, forest cover	Once a year
9	Aquatic ecology	Aquatic organisms in the nearby water body	•Ensure no fish kill in the nearby water body.	Once a year
10	Waste characterization	Storage area	Physical and chemical composition	Annual by CHWTSDF

6.0 Risk Assessment and Disaster Management Plan

Rapid development has posed wide-ranging hazards threatening safety and health of people. Accidents may adversely affect the environment and the people living in the vicinity. These accidents can be minimized to a great extent by proper procedures, handling and training. The proposed project of SKPL is also complying statutory requirements under section 7A & B and chapter IV A of Factories Act, 1987 and manufacture, storage and import of Hazardous Chemicals Rules Under Environment (Protection) Act, 1986. Hence, the present EIA report also covered following studies.

Hazard Identification	Risk Assessment
Risk Analysis & Emergency Plan	Risk Management & Insurance Planning
Disaster Management Plan	Onsite Emergency Plan

An emergency occurring in the proposed plant is one that may affect several sections within it and/ or may cause serious injuries, loss of lives, extensive damage to environment or property or serious disruption outside the plant. It will require the best use of internal resources and the use of outside resources to handle it effectively. It is imperative to conduct risk analysis for all the projects where hazardous materials, fuels are handled.

Statistics and in-house risk database, the frequencies of occurrence for the different accident scenarios were determined. The frequencies derived from the historical database have been checked with the possible hazard scenario identified during hazard identification.

- **Disaster Management Plan**

- Storage in tightly closed containers in a cool, well-ventilated area away from WATER, HEAT, COMBUSTIBLES (such as WOOD, PAPER and OIL) and LIGHT.
- Storage away from incompatible materials such as flammable materials, oxidizing materials, reducing materials, strong bases.
- Use of corrosion - resistant structural materials and lighting and ventilation systems in the storage area.
- Wood and other organic/combustible materials will not be used on floors, structural materials and ventilation systems in the storage area.
- Use of airtight containers, kept well sealed, securely labeled and protected from damage
- Use of suitable, approved storage cabinets, tanks, rooms and buildings. Suitable storage will include glass

bottles and containers.

- Storage tanks will be above ground and surrounded with dikes capable of holding entire contents.
- Limit quantity of material in storage. Restrict access to storage area.
- Post warning signs when appropriate. Keep storage area separate from populated work areas. Inspect periodically for deficiencies such as damage or leaks.
- Have appropriate fire extinguishers available in and near the storage area.

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➢ **Work Environment**

Under the Factories Act Section 59 (6), regular workplace monitoring is required in any factory in which toxic chemicals are used or given of. Work place monitoring of the proposed plant will be done regularly once in two months and proper care will be taken that concentration will not exceed the prescribed limits. Parameters to be monitored are given below:

Table 1.6 Work Environment Monitoring

Parameter	Short Term Exposure Limit (15 min) Conc. ppm
Acetone	1000
Ammonia	35
Hydrochloric Acid	--
Toluene	150

7.0 Project Benefits

This project development will give rise to social and economic development measures in the study area.

7.1 Improvement in Physical Infrastructure

- Road Transport facilities
- Educational facilities
- Water supply and sanitation

7.2 Improvement in Social Infrastructure

- Education facilities
- Banking facilities
- Post offices and Communication facilities

- Medical facilities
- Recreation facilities
- Business establishments
- Community facilities

8.0 Environmental Management Plan

Environmental Management Plan (EMP) includes the protection, mitigation and environmental enhancement measures to be implemented to nullify the adverse impact on the environment. EMP is a document designed to ensure that the commitments in the EIA and subsequent condition of any approval or license are carefully implemented.

SKPL will set up an Environmental Management Cell (EMC) to take environmental issues related to factory. The cell will be manned by qualified persons who will be responsible for regular environmental quality monitoring proper operation of pollution control equipment as well as the ETP. This EMC will be headed by an experienced senior official and will liaison with regulatory bodies like Maharashtra Pollution Control Board (MPCB) to ensure effectiveness of pollution control devices installed and operated.

During the operation of the factory, the EMC shall be responsible for the following:

- To ensure that ETP at factory functions properly and meet requisite effluent discharge Standards.
- To monitor and analyze air, noise, water, and soil samples on a regular basis.
- To ensure systematic and routine housekeeping at the different sections of the factory.
- To maintain green belt inside factory as well as outside it.
- To create awareness of pollution hazards among all plant personnel related to the production, especially those involved with maintenance and surveillance.
- To monitor and control knowledge of damage if any in the industrial process.
- To ensure safety of plant and personnel and maintain the records

8.1 Project Cost and Expenditure for Environmental Activities

Estimated Proposed project cost will be approximately 125 Crores. Proposed EMP capital cost and recurring cost will be 801.50 laks and 393.3laks respectively. Environmental Cost benefit analysis produces more efficient decision by increasing monetary values of the life, health and natural resources. In order to assess the pros and cons of any particular regulatory standard for proposed activity, cost- benefit analysis seeks to translate all relevant considerations into monetary terms.

- **CSR Activities**

As a part of CSR activity, SKPL proposes to launch several projects / schemes.

- Free education and books & notes for the students of deprived sections.
- Support scholarship scheme, tuitions, etc. and other facilities.
- Promoting Sports & Cultural activities
- Health camps in surrounding areas

SKPL will invest Rs. 10 laks per year as funds towards CSR activity.

9.0 Conclusion

The industry will manufacture Bulk Drug & Intermediate which is in good demand for growing Medical facilities in India. Project activity will not disturb the environmental setting because SKPL have proposed all preventive and mitigation measures required for pollution prevention.Land selected is in notified Industrial estate. Trees will be planted and not to be cut down. No Rehabilitation issue is involved. There will not be problematic waste materials as all will be utilized/safely disposed.

It can be concluded that proposed project activity of Sri Krishna Pharmaceutical Ltd.is in the interest of common man, the society, the state and as the country as a whole.

- The proposed project would provide a quality drugs product at lower cost to the users.
- There would be considerable saving in energy resources on account of transportation.
- Socio-economic benefits due to creation of direct/indirect employment. Moreover due to project other direct and indirect business will be benefited.
- Country will save valuable foreign exchange as import of these drugs will reduce by corresponding amount.
- These drugs also have export potential. Hence, possibility of earning foreign exchange.
- No air pollution, the flue gas emission from boiler will be left out through stack. The stack with adequate height as per CPCB norms will be provided.
- Industrial wastewater will be treated by ETP within the premises. The treated wastewater will reuse for floor washing and cooling tower.
- The domestic wastewater generated will be treated separately in STP and treated water will be used for gardening.
- The noise generation will be reduced due to the measure provided in Environmental Management plan.
- The risk associated is identified by conducting risk assessment, HAZOP and recommendations of the same will be implemented. Moreover on site emergency plan will be prepared to tackle the emergency when it arises.

Sri Krishna group believes in **"Sustainable Development"** and take care that no pharmaceuticals should release in the environment from manufacturing process. SKPL has a unique effluent treatment plant which results in zero discharge. Thus, it can be concluded on a positive note that after the implementation of the mitigation measures and Environmental Management Plan, the normal operation of Sri Krishna Pharmaceutical Ltd. unit will have negligible impact on environment and will benefit the Country as a whole.