

PRE-FESIBILITY REPORT
For
MANUFACTURING OF TECHNICAL
GRADE PESTICIDES

By

CENTRAL INSECTICIDES & FERTILIZERS,

At PLOT NUMBER: E-23A SKS INDUSTRIAL AREA REENGUS
DISTRICT SIKAR (RAJASTHAN)

ENVIRONMENTAL CONSULTANT:



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1 EXECUTIVE SUMMARY

1.1 Plant Features and Production Capacity

CENTRAL INSECTICIDES & FERTILIZERS Pvt Ltd proposes a Greenfield project for manufacturing of technical grade pesticides (fungicides) namely - Thiram, Ziram at plot no E-23A, SKS industrial area Reengus, dist- Sikar (Rajasthan). The proposed project falls under category 5 (b), Pesticides industry and pesticide specific intermediates (excluding formulations) which shall be treated as category "A" as per the EIA notification dated 14th September 2006 as amended till date.

The plot is an Industrial land. Plot area of the project is 2601.2851 m². Around 858 m² (~ 33 %) of total plot area will be developed as greenbelt.

The new plant will be designed with the basic concept of green chemistry with modifications to optimize energy utilization and with significant reduction of manual interface. To meet the target production rate, all equipments capacities and their sizes will be optimized.

1.2 Salient Features of the project

Sr. no	Parameters	Description
1	Plant capacity	Product Capacity (TPA)
		Thiram 400
		Ziram 100
		Total 500
2	Total area of the plant	2601.2851 m ²
3	Capital cost	Rs. 6.00 crores
4	Water requirement	Daily fresh water demands 5 KLD. Around 3.5 KLD will be required for industrial purposes, 1.5 KLD water will be required for domestic purposes. 1 KLD water will be recycled in the process.

5	Source of water	Water demand of the industry will be met from RIICO water supply
6	Waste water generation	Domestic : 1.2 KLD which will be disposed in septic tank & soak pit Industrial effluent: 2.8 KLD to be treated in ETP.
7	Manpower	25-30 persons
8	Fuel Requirement	FO/LDO and HSD will be used for the proposed Boilers.
9	Power	The power requirements will be 300 KVA. DG set of capacity 250 KVA will be used in the plant for power back up. The permission for 300 KVA power supply from electricity board will be obtained

1.3 Conclusion

Basic facilities of infrastructure Like Storage area, processing area, internal roads etc. shall be developed on The Project site. Transportation of raw material and finished goods will be carried out through proposed internal roads and finally through the existing national highway.

During the construction phase, around 25 workers and during operational phase around 25-30 workers will be required .Local skilled and semi-skilled workers will be engaged during construction phase of the project.

Section -II

Introduction of the project / Background information

2.1 Identification of Project and project Proponent

As per the EIA notification dated 14th September, 2006, as amended till date, the proposed project falls under category 5(b), Pesticides Industry and Pesticide Specific Intermediates of Activity: Manufacturing Process, which shall be treated as Category "A".

Manufacturing of Pesticides used for the pest control in the agriculture & public health. The raw materials and finished products are chemicals and will be manufactured with most modern technology which will be environment friendly.

2.2 Brief Description of Nature of the Project

Proposed project is a Greenfield project consisting of manufacturing units of technical grade pesticides which will include Thiram and at plot no E-23A, SKS industrial area Reengus, dist- Sikar (Rajasthan).

2.3 Need for the Project and its Importance to the Country and or Region

Pesticide usage has become essential in order to maximize agriculture production and reduce public health pestilence. The rapid changes in cropping patterns, increased fertilization and adoption of programs for high yielding varieties have all contributed to increased use of pesticides.

Agriculture is an important sector of the Indian economy and vital for the food and nutritional security of the nation. Ensuring food security for more than 1 billion Indians with diminishing cultivable land resources is a herculean task. This necessitates use of high yielding variety of seeds, balanced use of fertilizers, judicious use of quality pesticides along with education of farmers and use of modern farming techniques. In order to meet the needs of a growing population, agricultural production and protection technology have to play a crucial role. Substantial food production is lost due to insect pests, plant pathogens, weeds, rodents,

birds, nematodes and during storage.

Pesticides industry has developed substantially and has contributed significantly towards India's agriculture and public health. In value terms the size of the Indian pesticide industry is \$3.8 billion in the year 2011. India is a predominant exporter of pesticides to USA, Europe and African countries.

Pesticides are essential input for agriculture and the project will provide adequate availability of the required products at cheaper rates and will also reduce the import quantities.

2.4 Demand Supply Gap

The Indian pesticides industry is characterized by low capacity utilization. The present total installed capacity is 146,000 tonnes and has a low capacity utilization of < 60%. The industry suffers from high inventory owing to seasonal and irregular demand on account of monsoons. The consumption of pesticides in India is low in comparison to other countries. There is a marked difference in the consumption pattern of pesticides in India vis-à-vis the rest of the world. Insecticides account for 76% of the total domestic market. On the other hand, herbicides and fungicides have a significantly higher share in the global market. Crops like cotton, wheat and rice together account for 70% of total agrochemical consumption. The consumption of pesticides in India is low in comparison to other countries. The industry suffers from high inventory (owing to seasonal & irregular demand on account of monsoons) and long credit periods to farmers, thus making operations' working capital' intensive. India due to its inherent strength of low-cost flow manufacturing and qualified low-cost manpower is a net exporter of pesticides to countries such as USA and some European & African countries. Exports formed ~37% of total industry turnover in FY 13.

Since the requirement of Pesticides is increasing @ 10% to 15% every year, there is a huge gap between the demand and supply

2.5 Imports vs. Indigenous Production

India is the 4th largest producer of pesticides after USA, Japan and China. India is the second largest producer of pesticides in Asia. The Indian pesticides industry has been growing at 8-9% p.a. over the past five years (FY07-FY11). Industry size is estimated to be \$3.8 billion in FY11 with exports accounting for 50% of the market. Over the XIIth plan period, the segment is expected to grow at 12-13% p.a. with domestic demand growing at 8-9% p.a. and export demand at 15-16% p.a. Three broad categories of companies are present in the industry-Multi-National, Indian including the public sector companies and small sector units. There are about 125 technical grade pesticides manufacturers in the country of which about 60 are in the organized sector, and 10 are, multinationals. There are about 800 pesticides formulators in the country. Most Indian technical manufacturers are focused on off patent pesticides.

At present more than 70% requirement is fulfilled by import and there is urgent need to create indigenous manufacturing facilities to provide better Quality at optimum cost.

2.6 Export Possibility

Global generic market of pesticides was \$45 billion. Export opportunities for Indian companies are immense with Key markets being USA, France, Netherlands, South Africa, and Bangladesh.

All the products have very high possibilities of Export

2.7 Domestic/Export Markets

The Indian pesticides industry grew at a rate of 8-9% over the past five years (fy07-fy11). Industry size is estimated to be \$3.8 billion in FY11

With exports accounting for ~50% of the market. Over the XIIth plan period, the segment is expected to grow at 12-13% p.a. with domestic demand growing at 8-9% p.a. and export demand growing at 15-16%

P.A. Based on the Export Potential and Potential for increased penetration in the domestic market, the Indian agrochemical industry target a size of

US \$7.7 billion by FY17.

The technical grade pesticides will be sold to many formulators all over the country. At the same time export will be done to Middle East, Latin America and south Asian countries

2.8 Employment Generation (Direct and Indirect) due to the project

During the construction phase, around 25 workers and during operational phase around 20-25 workers (including contractors) will be required .Local skilled and semi-skilled workers will be engaged during construction phase of the project. Local skilled and semi-skilled workers will be engaged during construction phase. The positives impact includes enhanced direct employment for technical/ administrative works and in direct employment opportunities for transporters of raw materials and finished goods.

Section -III
PROJECT DESCRIPTION

3.1 Type of Project Including Interlinked And Interdependent Projects, if any

As per the EIA notification dated 14th September, 2006, as amended till date, the proposed project falls under category 5(b), Pesticides Industry and Pesticide Specific Intermediates of Activity: Manufacturing Process, which shall be treated as Category "A".

3.2 Location (map Showing General Location, specific Location and Project boundary & Project Layout) with co-ordinates.

The project is coming at plot NO E-23A SKS Industrial Area Reengus District Sikar (Rajasthan). The project site falls in geological survey of India of toposheet no-45 M -11. The co-ordinates of the project site are given below:

Table: 3.1: Co-ordinates of the project site

Corner	Latitude	Longitude
A	27°20'03.07	75°35'02.14"
B	27°20'03.21	75°35'03.65"
C	27°20'05.91	75°35'01.58
D	27°20'06.07	75°35'03.06"

Map Showing General Location, specific Location and Project boundary &, Toposheet (buffer map of 10 km radius from the project site) Project Layout is enclosed at **Annexure-1, 2, 3 & 4** respectively.

3.3 Details of alternate sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone in to should be highlighted

Proposed site is owned by the proponent and same is situated in the

notified RIICO industrial area hence, alternative sites are not identified.

3.4 Size or Magnitude of Operation

Plot area of the project consists of 2601.2851 m² of land which includes manufacturing of technical grade pesticides plant. The design capacity of the multi-purpose plant will be 500 MTA.

.Details Of the Proposed products are listed below

S. No.	Name of Product	Production(MT/Annum)
1	Thiram	400
2	Ziram	100
Total		500

Plot area of the project consists of 2601.2851 m² of land which includes manufacturing of technical grade pesticides plant. The design capacity of the plant will be 500 MTA. It is proposed to manufacture two Pesticide products on a daily basis based on the prevailing market requirement. Details of all the proposed products are listed in

Table. 3.2: List of Proposed Products and Production Capacity

S. No.	Name of Product	Production(MT/Annum)
1	Thiram	400
2	Ziram	100
Total		500

3.5 Project Description with process details (Schematic diagram/ flowchart showing the project layout, components of project etc. should be given)

Manufacturing process steps of pesticides with their mass balance are described in this section

Thiram

Sodium complex salt is chlorinated under presence of water and Na₂CO₃. Bottom aqueous layer is disposed of to ETP whereas top organic layer is washed with water to form crude Thiram. End technical grade product is obtained after filtration and drying.

Table 3-3: Mass Balance – Thiram

S. No.	Raw Materials				Input/MT of Product (MT)	
1	Sodium Complex Salt Na				11.5152	
2	Chloride				1.5992	
3	Water				38.6512	
4	Na2CO3				0.4	
Total					52.1656	
S. No.	Output/MT of Product					Remarks
	Product	Liquid Effluent	Air Emission	Recovery	Solid Waste	
1	Thiram	-	-	8.0000	-	Product
2	Aqueous Layer	43.8992	-	-	-	To ETP
3	Drying Loss	-	0.2664	-	-	Vent Scrubber
Total		43.8992	0.2664	8.0000		
		52.1656				

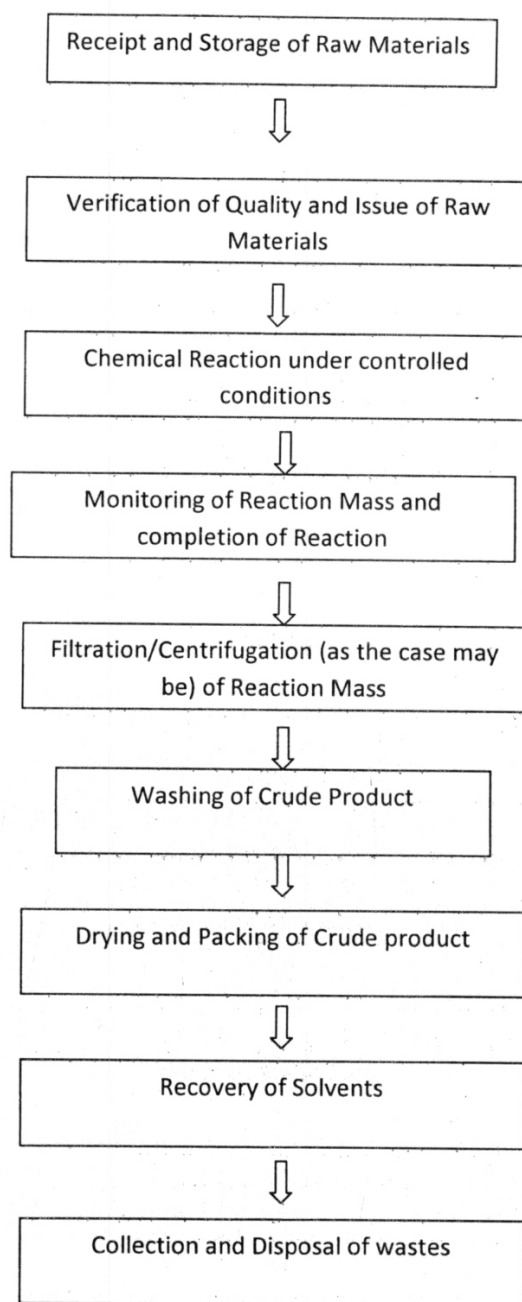
Ziram

Sodium dimethyl dithio carbamal 40% solution is charged into the reactor to which water and zinc sulphate heptahydrate is added. The reaction mass is stirred for two hours and filtered, washed to give ziram.(C) Water is charged into the reactor to which added ziram wet cake. The reaction mass is stirred for 2-3 hrs and packed Ziram 27% cs.

Table 3-4: Mass Balance – Ziram

S. No.	Raw Materials					Input/MT of Product (MT)
1	Sodium Dimethyl Dithio Carbamal 40% Solution					1.4076
2	Water					3.1346
3	Zinc Sulphate Heptahydrate					0.5602
Total						5.1024
S. No.	Output/MT of Product					Remarks
	Product	Liquid Effluent	Air Emission	Recovery	Solid Waste	
1	Ziram	-	-	2.0000	-	Product
2	Aqueous Layer	3.102	-	-	-	To ETP
Total		3.102	-	2.0000	-	
		5.1024				

Process Flow Diagram for the manufacturing of Technical Grade Pesticides



3.6 Raw Materials required along with estimated quantity, likely source, marketing area of final products, mode of transport of raw material and finished product

Raw material shall be sourced from registered supplier within India and Imported (if required) based on the need and availability. Details of raw material along with the Quantity and Means of storage is given in **Table 3.5**

Table 3.5: Details of Raw Material with Quantity

Sr. No	Raw Material	Consumption (TPA)
Thiram		
1	Dimethyl amine (40%)	400
2	Carbon di sulphide	280
3	Caustic soda	132
4	Hydrogen peroxide	60
5	Sulphuric acid	80
Ziram		
1	Dimethyl amine (40%)	90
2	CS ₂	60
3	Caustic soda	32
4	Zinc sulphate	95

3.7 Resource optimization/recycling and reuse envisaged in the project, if any, should be briefly outlined

Not envisaged

3.8 Availability of water its source, Energy/power requirement and source should be given

3.8.1 Power Requirement

The power requirements will be 300 KVA. DG set of capacity 250 KVA will be used in the plant for power back up. The permission for 300 KVA power supply from electricity board will be obtained

3.8.2 Fuel Requirement

FO / LDO and HSD will be used for the proposed Boilers, DG Sets. Details of the same are tabulated in **Table 3.6**.

Table 3.6: Fuel Details

Sr. No	Type of fuel	Used in	Source
1	FO	Boiler	FO from local suppliers
2	HSD	DG sets	Local Dept suppliers

3.8.3 Water Requirement

Daily water demand will be 5 KLD which will be sourced from RIICO water supply. By implementing various recycle/reuse schemes water will be reused/recycled. Water consumption & Waste water generation breakup is given in **Table 3.7**

Table 3.7: Water Requirement

Sr. No	Particulars	Water quantity (KLD)	Waste water Generation (KLD)	Mode of treatment
1	Domestic	1.5	1.2	Septic tank & Soak pit

	Process			
3	Cooling tower	1.0	2.8	ETP
4	DM plant	1.0		
	Boiler	1.5		
5	Recycled water	1		

3.9 Quantity of wastes to be generated (liquid and solid) and scheme for their Management/disposal

3.9.1 Waste Water Generation

The waste water will be generated from the process, utilities and domestic area. The process effluent will be treated in ETP (Capacity 10 KL). Also, utilities blowdowns and domestic sewage will be disposing off in to septic tank followed soak pit.

Permeate from RO will be reused in cooling tower and reject will be treated to achieving Zero Liquid discharge.

Reverse osmosis or ultrafiltration is used to recover and concentrate active ingredients. Effluent treatment normally includes flocculation, coagulation, settling, carbon adsorption, detoxification of pesticides by oxidation (using ultraviolet systems or peroxide solutions), and biological treatment. Exhausted carbon from absorption processes may be sent for regeneration or combustion

3.9.2 Hazardous Waste and Other Solid Waste

Main solid wastes of concern include process and effluent treatment sludge, spent catalyst and container residues

Hazardous solid waste shall be handled, stored and disposed of as per HWR, 2008 amended till date.

Section IV

SITE ANALYSES

4.1 Connectivity

4.1.1 By Road

The site is well connected to NH-11 (Agra—Jaipur-Bikaner) at an aerial distance ~2.05 Km in ENE direction.

4.1.2 By Rail

Major railway station for public transportation is Jaipur Railway Station located at an aerial distance of ~24 Km in SW Direction from the project site.

4.1.3 By Air

Nearest airport from project site is Jaipur Airport located at an aerial distance of ~ 60.73 Km in SSE Direction.

4.2 Land Form, Land Use and Land ownership

The site is owned by proponent. The present landuse of the proposed site is industrial and No permanent change in Land Use is envisaged.

4.3 Topograph

Topography The district can be divided into two main topographic units the western half characterized by dunal country and waste land, and the eastern half characterized by NE-SW trending hill ranges. These hill ranges act as natural barriers and restrict large scale sand migration from the west. Topography of the Sikar town whole area is divided into following two zones based on the ground level and feasibility of laying of sewer at required depth and are denoted as

A. North-East zone

- Area surrounding Nawalgadh Road

- Area surrounding Udaipurwati Road up to railway line
- Area surrounding Fathepur Road
- Area surrounding
- Bajaj Road, Bakra mandi and Kabristan

B. South-West zone

- Area surrounding Jaipur Road
- Area surrounding Fathepur Bye- Pass Road

4.4 Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forest, national park, wild life sanctuary, eco sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette Notification should be given

The proposed project is coming in the notified RIICO Industrial area
Water Bodies- Mendha River -1.6 km, NW

4.5 Existing Infrastructure

The proposed site is a Greenfield project and does not have any existing infrastructure.

4.7 Climatic Data from Secondary Sources

Sikar has a hot semi-arid climate, rains occur in the monsoon months between June and September. Temperatures remain relatively high throughout the year, with the summer months of April to July having average daily temperatures of around 30 °C (86 °F). The maximum temperatures during the months of May & June can reach close to 50 °C (122 °F) with little to no humidity. During the monsoon there are frequent, heavy rains and thunderstorms, but flooding is not common. The winter months of November to February are mild and pleasant, with average temperatures ranging from 15–18 °C (59–64 °F) and with little or no humidity. There are however occasional cold fronts that lead to temperatures near freezing. The average rainfall is 466 mm.

SECTION-V PLANNING BRIEF

5.1 Planning concept (type of industries, facilities, transportation etc) Town and Country Planning/ Development Authority Classification

Basic facilities of infrastructure like admin building, processing area, storage area, internal roads etc. shall be developed on the project site. Transportation of raw material and finished goods will be carried out through proposed internal roads and finally through existing state high NH-78.

5.2 Population Projection

The Sikar had population of 2,677,333 of which male and female were 1,374,990 and 1,302,343 respectively. In 2001 census, Sikar had a population of 2,287,788 of which males were 1,172,753 and remaining 1,115,035 were females. Sikar district consists 76.3 percent rural and 23.7 percent urban population whereas the State percent of rural and urban population is 75.1 and 24.9 respectively.

The sex ratio of Sikar district (947) is significantly higher than the State sex ratio (928). The literacy rate in Sikar district is 71.9 percent which is higher• than the State Average (66.1 percent) and it ranks 4th among the other districts of the state. Gender Gap of the literacy rate is 26.9 percent in the district

5.3 Landuse Planning (breakup along with greenbelt etc.)

Site layout of the proposed project is shown in ***Annexure -3***

5.4 Assessment of Infrastructure Demand (Physical & Social)

Assessment of infrastructure demand will be done during social survey to be performed at the time of EIA.

5.5 Amenities/Facilities

Basic Amenities like public transport, water supply, telecommunications, educational institutions, hospitals etc. are available in nearby area.

Section VI

PROPOSED INFRASTRUCTURE

6.1 Industrial Area (Processing Area)

The industrial area shall comprise of following sections:

1. Batching section
2. Technical grade process area
 - a. Wet/Slurry section
 - b. Fine particle section
3. Raw material storage
4. Packing material storage
5. Finished product storage
6. Scrubbing area
7. Solid & Hazardous waste storage area
8. ETP area

Cooling tower, Boiler, Chilled Water Plant, Chilled Brine Plant and Nitrogen Plant will be located adjacent to the Plants.

6.2 Residential Area (Non-Processing Area)

Requirement of residential area will be developed as shown below:

1. Administration building

2. Truck parking area
3. Security cabin
4. Utility area
5. Laboratory
6. Canteen

6.3 Equipment List

For the proposed project equipment mentioned in **Table 6.1** shall be in place:

Table 6.1: LISTS OF PLANT AND MACHINES

S. No.	Machine Description	Capacity – No.
1	S.S. REACTOR	2KL-1
2	S.S. REACTOR	3KL-1
3	S.S. REACTOR	4KL-1
4	S.S. REACTOR	5KL-1
5	FILTER PRESS	23*18-2
6	FILTER PRESS	46 x 36-1
7	ROTATORY VACCUM DRIER	760 Kg.-2
8	NOTCH FILTER	2000 LT-1
9	CENTRIFUGE	250-300 Kg.-1
10	FLUID BED DRIER	60 Kg.-1
11	RIBBON BLENDER	600 Kg.-2
12	LATHE MACHINE 14'	14'-2
13	DRILL MACHINE	Normal-1
14	GRINDER MACHINE	Normal-1
15	COOLING TOWER	25 TR-2
16	COOLING TOWER	35 TR-2
17	HOT WATER BATH	1 KL-2
18	CHILLING COMP.	17 TR-2
19	HOT WATER BATH	3 KL
20	CHILLING COMP.	17 TR

21	OIL BOILER (THERMAL)	850 kg/hr-2
22	VACCUM EJECTOR	730 mm/hg-2
23	STEAM EJECTOR	740 mm/hg-2
24	OPIL VACCUM PUMP	730 mm/hg-3
25	SCRUBBER SYSTEM	1500 rpm-2
26	SUBMERSIBLE BOREWELL-1	Size 4"-3

LIST OF UTILITIES

S.NO.	MACHINE DESCRIPTION	MAKE	CAPACITY
1	TUBEWELL PUMP	ROCKWELL	700 LTR/MIN
2	FIRE PUMP	KIRLOSKAR	18LPS/90M/30HP RPM2830
3	BLOWER (AIR POLLUTION)	AIR TECH	1000CFM
4	BLOWER (AIR POLLUTION)	AIR TECH	100 CFM
5	GEN-SET	CIMINS	250 KVA
6	AIR COMPRESSOR	IONGERSOL RAND	12 CFM
7	FIRE SIREN	EXPRESS	50 KM
8	SOLVENT PUMP-1	KIRLOSKAR	6.0 KL/HR
9	SOLVENT PUMP-2	KIRLOSKAR	6.0 KL/HR
10	SOLVENT STORAGE TANK	SAIFA ENGG.	100 KL
11	SOLVENT STORAGE TANK	SAIFA ENGG.	100 KL
12	WATER COOLER	SHRI RAM	80 LTR/Hrs/60/120

6.4 Green Belt

Around 12,681 m² (~ 33 %) of total plot area will be developed as greenbelt as shown in ***Annexure-4***

6.5 Social Infrastructure

Refer **Chapter 4, Section 4.8**

6.6 Connectivity (Traffic and transportation road/rail/metro/water ways etc)

Refer **Chapter 4, Section 4.1**

6.7 Drinking Water Management (Source & Supply of Water)

Water shall be met from RIICO.

6.8 Sewage System

Domestic Water shall be disposed off in to septic and followed by soak pit.
Industrial effluent will be taken to ETP.

6.9 Solid & Industrial Waste Management

Solid and hazardous waste as mentioned in **Chapter 3, Section 3.9.2** shall be collected, stored, disposed to authorized vendors and sold to local suppliers as per it's characterization and based on the prescribed Hazardous Waste Rules, 2008 amended till date.

6.10 Power Requirement & Source/ Supply

Refer **Chapter 3, Section 3.8.1**

SECTION -VII

REHABILITATION AND RESETTLEMENTS (R& R) PLAN

7.1 Policy to be adopted (Central/State) in respect of the project affected persons including home oustees, land oustees and landless laborers (a brief outline to be given)

Not Envisaged as the proposed project site is an Industrial land.

SECTION –VIII
PROJECT SCHEDULE AND COST ESTIMATE

8.1 Likely date of start of construction and likely data of completion (Time Schedule for the project to be given)

The construction is likely to start after getting Environmental Clearance and NOC/CTE from the EAC and SPCB. The EIA studies are likely to get completed in 14-16 months.

Project implementation schedule describing various activities from finalization of site to project commissioning is tabulated in ***Table 8.1***

Table 8-1: Project Implementation Schedule

Activity	december-15	Jan-16	June-16	August-16	October-16	December-16	Jan-17	Feb-17	March-17	May-18
Form 1 submission & PFR										
ToR presentation at MoEF										
Final EIA preparation & submission to MoEF										
Presentation at MoEF										
Receipt of EC										
Application for NOC										
NOC receipt										
Execution & Commissioning										

Section -IX

Analysis of proposal (Final Recommendations)

9.0 Analysis of proposal (Final Recommendations)

(i)	Financial and social benefits with special emphasis on the benefits to the local people including tribal population, if any, in the area.	Project will provide direct & indirect benefit to more than 200 people.
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