# EXECUTIVE SUMMARY
# ON
# ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

*Proposed New API & Intermediate Manufacturing Unit of*

Saroja Pharma Industries India Pvt. Ltd

# M/s. Saroja Pharma Industries India Pvt. Ltd.

***Gut No. – 56/2 & 57, Village : Harsule***

***Taluka: Sinnar, District: Nashik,***

***Maharashtra, India. Pincode - 422103***

## EIA CONSULTANT

## M/S SADEKAR ENVIRO ENGINEERS PVT. LTD.

QCI-NABET Accredited EIA Consultancy for Schedule 5 (f) Cat 'A'.
Certificate No – NABET/EIA/2124/SA 0146,Valid up to 16/06/2023
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**Baseline Monitoring Period: December 2022 to Feburary 2023**

***Project Schedule & Category – 5(f), 'A'***

***JUNE, 2023***

# EXECUTIVE SUMMARY

## ES-1 Introduction

M/s. Saroja Pharma Industries India Pvt Ltd. is planning to setup greenfield project of synthetic organic chemicals & formulation manufacturing unit of capacity 211 Mt/M at Gut No. - 56/2 & 57, Village – Harsule, Taluka - Sinnar, District – Nashik, 422103, Maharashtra. The project is located outside the notified industrial area comprising of total plot area of around 16400 Sq. m.

The directors of M/s. Saroja Pharma Industries India Pvt Ltd, are well experienced. Mr. Biju Gopinathan Nair as Managing Director, Mr. Manish Dasharath Kamble as Director & Mr. Pratik Desai as Director- Marketing International.

The project activities are listed in serial No. 5(f) Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates) of the schedule of EIA Notification, 2006. It is categorized under category 'A' as it is located outside the notified industrial area/estate and needs the Environmental clearance from Ministry of Environment, Forest and Climate Change. The Environmental study undertaken is aimed at identifying existing Environmental conditions; predicting Environmental impacts associated with the proposed unit and suggesting mitigation measures to mitigate the adverse Environmental impacts. The various activities that are likely to take place have been analyzed and proposed mitigation measures are assessed for their adequacy. Where necessary, proposed mitigation measures have been taken into consideration.

The study also aims to reflect the project's acceptability to various stockholders and incorporate their concerns into the impact assessment and subsequent comprehensive Environmental Management Plan, as well as suggest preventive and mitigation measures to minimize negative environmental impacts and maximize positive impacts.

## ES-2 History of the project

**M/s. Saroja Pharma Industries India Pvt Ltd.** is a Private Limited Company, incorporated in the year 2023. They are amongst the leading traders, exporter and suppliers of specialty chemicals. They offer various range of products which are widely praised for its superior effectiveness, shelf life and perfect composition. Under the guidance of Managing Director, Mr. Biju Nair, they have managed to attain several heights of success in the past. His managerial skills and ability to understand the market and determine changes have helped us tackle several hurdles in their growth journey.

The land purchased for the proposed project is located outside the notified industrial area. Originally the land containing the Gut No. 56/2 and 57 was owned by farmers Sharad Bahiru Shinde & Yogesh Dattatray Shinde respectively. The said land is declared as proposed Industrial Non-agricultural (Ind-NA) land by Land Revenue Department of Maharashtra Government. The total land admeasuring 16400 Sq. m has been purchased by M/s. Saroja Pharma Industries India Pvt Ltd through execution of the sale deed agreement of Gut No. 56/2 & 57 duly registered by the Asst. registrar office Sinnar, Nashik.

M/s Saroja Pharma Industries India Pvt Ltd. has been granted Consent to Establish vide letter no:-Format1.0/RO/UAN No.0000159962/CE/2304001477 dated 21/04/2023 from Maharashtra Pollution Control Board. The Consent to Establish has been granted under red category for Albendazole & Oxyclozanide for Purification by Distillation process only for capacity of 20 MT/M.

Since the type of activity i.e. no chemical synthesis process only purification process would be carried out as per the Consent to Establish it doesn't attract any provisions of EIA Notification, 2006 and its amendments thereto for obtaining prior Environmental Clearance for the said activity mentioned in the Consent to Establish.

Further the industry would be starting the construction work strictly related to the activity mentioned in the consent to Establish at the project site.

Since the proposed activity is a new activity **M/s. Saroja Pharma Industries India Pvt Ltd.** has not violated any stipulated conditions of EIA Notification 2006. There are no litigations present against the Project Proponent or Project Site.

**Table No. ES-1: Salient Features of the Project**

| | | | |
|---|---|---|---|
| **Name & Address of Company** | **M/s. Saroja Pharma Industries India Pvt Ltd.<br>Gut no – 56/2 & 57, Village – Harsule, Taluka -Sinnar, District – Nashik, Maharashtra, Pincode-422103** | | |
| **Schedule of project as per EIA Notification, 2006** | **5(f)** | | |
| **Category of Project** | **'A'** since the project is located outside the notified industrial area. | | |
| **Type of Project** | Greenfield | | |
| **Total Area Details** | **Particulars** | **Area (Sq.m.)** | **% of Total Plot Area.** |
| | **Total Plot Area** | 16400 | -- |
| | **Total Built-up Area** | 8913 | -- |
| | **Proposed Greenbelt Area (Inside Plot Premises)** | 5412 | 33% |
| | **Parking Area** | 1640 | 10% |
| **Production Details** | Total Production Capacity: 211 MT/M | | |
| **Water Requirement of Project** | **Proposed Total water requirement :210.9 CMD<br>Fresh Water Requirement: 106.3 CMD<br>Source of water:** Ground Water (CGWA & Harsule Gram Panchayat) | | |
| **Effluent Generation** | **Total Effluent Generation: 65 CMD Domestic: 4.0 CMD<br>Effluent: 61 CMD, (High Conc.–36 CMD, Low Conc.–25 CMD)** | | |
| **Effluent Treatment** | 1. Unit will be operated on Zero liquid Discharge principle.<br>2. The HCOD/HTDS effluent stream from Process (36 CMD) will be subjected to Stripper followed by MEE & ATFD.<br>3. The LCOD/LTDS effluent stream from boiler blowdown (5 CMD) and cooling tower blowdown (20 CMD) will be treated in a full-fledged ETP with primary, secondary and tertiary treatment along with MEE condensate. | | |

4. The domestic effluent (4 CMD) will be treated in STP with MBBR treatment.
5. The treated effluent from the ETP will be further subjected to RO treatment. RO permeate will be used for reactor washing, scrubber, boiler and in cooling tower makeup. RO reject will be sent back to the MEE for further treatment.
6. About **50.4 CMD** treated water will be reused at site along with **3.8 CMD** of treated sewage.

**Hazardous waste**

| Sr. No. | Particulars | Category | Proposed | Method of Disposal |
|---|---|---|---|---|
| 1 | Residue & Waste | 28.1 | 11 MT/ M | To Authorized Vendors or Co-processing or pre-processing or CHWTSDF |
| 2 | Discarded Container /Barrels/ Liners | 33.3 | 500 Nos/M | To authorized recyclers |
| 3 | ETP Sludge | 35.3 | 5 MT/M | CHWTSDF |
| 4 | ATFD Residue | 37.3 | 114 MT/ M | To Authorized Vendors or Co-processing or pre-processing or CHWTSDF |
| 5 | Spent oil | 5.1 | 0.1 MT/ M | To authorized recyclers |
| 6 | Distillation Residue | 36.1 | 8 MT/ M | To Authorized Vendors or Co-processing or pre-processing or CHWTSDF |
| 7 | Spent solvents | 28.6 | 5 MT/M | To Authorized Vendors or Co-processing or pre-processing |
| 8 | Spent Carbon | 28.3 | 2.5 MT/M | Co-processing or pre-processing or CHWTSDF |
| 9 | Spent Catalyst | 28.2 | 0.05 MT/M | To Authorized Vendors or Co-processing or pre-processing or CHWTSDF |
| 10 | 30% HCl | 28.1 | 16 MT/M | To Authorized Vendors or Co-processing or pre-processing or |

| | | | | |
|---|---|---|---|---|
| | | | | CHWTSDF |
| 11 | NaHCO3 Solution | 28.1 | 26 MT/M | To Authorized Vendors or Co-processing or pre-processing or CHWTSDF |
| 12 | Date Expired Product | 28.5 | 1 MT/ A | CHWTSDF |
| 13 | Off Specification Product | 28.4 | 1 MT/ A | CHWTSDF |

**Non-hazardous waste**

| Sr. No. | Particulars | UOM | Quantity | Method of Disposal |
|---|---|---|---|---|
| 1 | M.S Scrap | MT/A | 10 | Sent to MPCB Authorized Vendor |
| 2 | Wooden Pallet | Nos/A | 500 | Sent to MPCB Authorized Vendor or registered scrap vendors |
| 3 | Paper Waste | Kg/M | 100 | Sent to MPCB Authorized Vendor |
| 4 | Canteen waste | TPA | 7.3 | Disposed to local municipal facility |
| 5 | Plastic waste | TPA | 2 | Send to authorized scrap dealers |
| 6 | Briquette Ash | TPD | 2.3 | To brick manufacturer |

**Battery waste**

| Particulars | Proposed | Method of Disposal |
|---|---|---|
| Lead batteries from D.G. Sets, UPS system | 0.005 TPA | Sent to MPCB Authorized vendor or returned to supplier |

**Bio-Medical waste**

| Particulars | Proposed | Method of Disposal |
|---|---|---|
| Contaminated face mask, Hand Gloves, Cotton waste, bags | 0.010 TPA | To Common Bio-medical Waste Treatment Facility |

**E-waste**

| Sr. No. | Particulars | E Waste Category | Proposed (Kg/A) | Method of Disposal |
|---|---|---|---|---|
| 1 | Personal Computers (Central Processing Unit with input and output devices) | ITEW2 | 1 | Sold to MPCB authorized recycler / returned to manufacturer / supplier |
| 2 | Personal Computing: Laptop Computers (Central Processing Unit with input and output devices) | ITEW3 | 1 | |
| 3 | Printers including cartridges | ITEW6 | 2 | |

| | | | | | |
|---|---|---|---|---|---|
| | 4 | Telephones | ITEW12 | 1 | |
| **Power requirement of project** | **During Construction Phase:**<br>**Demand Load:** 25 KVA<br><br>**During Operation Phase:**<br>**Connected Load: 1000** KVA<br>**Demand Load: 750** KVA<br>**Source: Maharashtra State Electricity Distribution Company Limited (MSEDCL)** | | | | |
| **D.G. Set** | 250 KVA x 1 No.<br>**Fuel:** HSD - 60 Lit./Hr.<br>(D.G. fuel consumption will be based on actual hours of power failure) | | | | |
| **Boiler and Thermopack** | **Steam boilers – 2 Nos.**<br>**Capacity:** 3.0 MT/Hr x 2 Nos.<br>One Boiler will always be on stand – by | | | **Thermopack boiler – 1 No.**<br>**Capacity:** 2 Lakh Kcal/Hr. | |
| **Fuel Requirement** | • Briquette– Steam boiler - 18 MT/D & Thermopack - 0.8 MT/D<br>• HSD – 60 Lit/Hr. | | | | |
| **Scrubber details** | **For Process Emissions:**<br>• 2 Nos. of Two stage scrubbers each of 500 CFM capacity | | | | |
| **Stack height** | A) **Common Stack for Boiler & Thermopack**<br>• Common stack of 4**0-meter** height will be provided for 2 Nos. Steam boilers of capacity 3.0 MT and 2 Lakh Kcal/Hr x 1 No. thermopack<br><br>B) **For D.G. Set:**<br>• 1 no. of Stack having **3.5meter** height above roof will be provided to the D.G. set of capacity 250 KVA.<br><br>C) **For Scrubber:**<br>• 2 nos. of Stacks having **5 meters** height above roof will be provided to the proposed 2 nos. of scrubbers. | | | | |
| **Man power** | **Total manpower = 100 Nos.**<br>Unskilled workers = 75 Nos.<br>Skilled workers = 25 Nos. | | | | |
| **Project Cost (Rs.)** | **INR 23 Cr.** | | | | |
| **EMP capital cost (Rs.)** | **Operation Phase:**<br>Capital Cost – 576.5 INR Lakhs<br>Recurring cost – 208.5 INR Lakhs/Year<br><br>**Construction Phase:**<br>Capital Cost – 25.76 INR Lakhs | | | | |

| | |
|---|---|
| | O&M Cost – 7.71 INR Lakhs/Year |
| **CER cost (Rs.)** | **INR 46 Lakh (Considering 2.0% of the project cost)** |

**ES-3 Justification of project**

In today's environment there is a need for reliable supply of high-quality pharmaceutical materials, specifically for niche chemical molecules. The company expects to cater to both domestic and international customers, delivering quality products. The biggest risk in today's market is a manufacturer's supply chain – which is heavily reliant on imports. Aim is to empower domestic suppliers and start from an early stage to reduce the countries reliance on imports.

The project will provide direct & indirect employment opportunities to local people and as the industry has the export market, it will add to the net foreign exchange earning of the country.

## ES-4 Process Description:

The process of the company is depicted in Figure. ES -1 and ES-2.

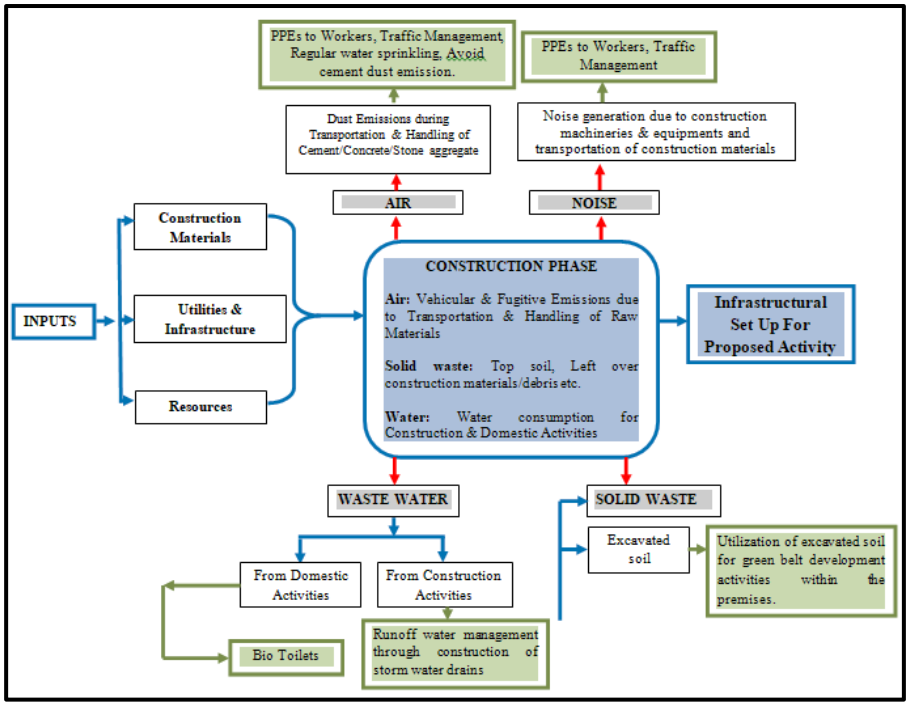


**Figure No. ES-1: Description of Mitigation Measures during construction phase**

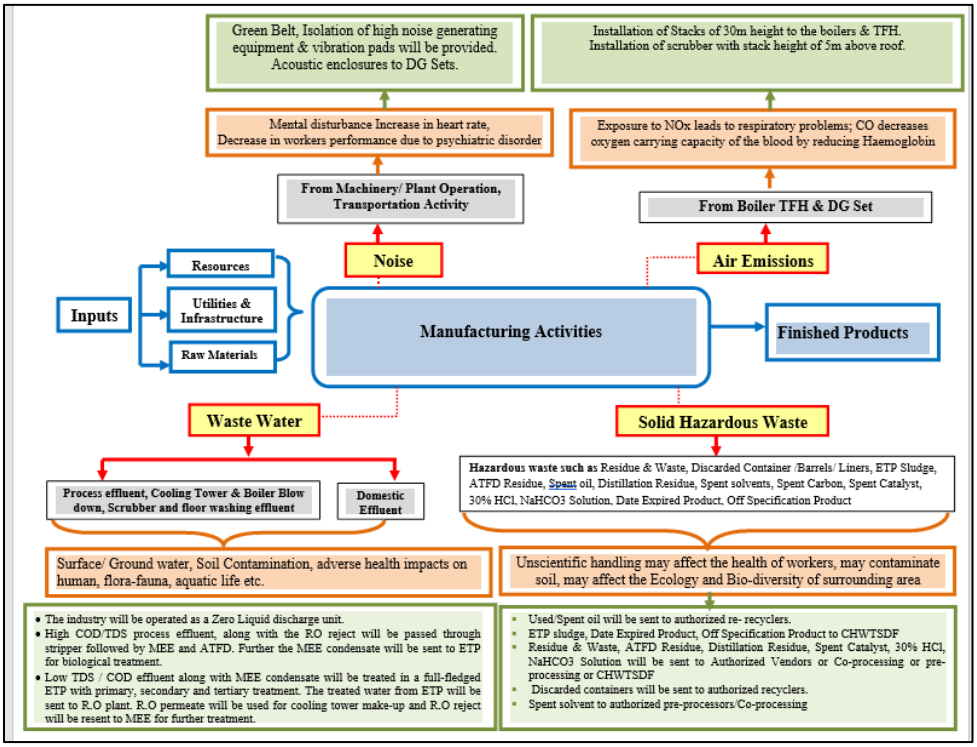


**Figure No. ES-2: Description of Mitigation Measures during operation phase**

## ES-5 Baseline Environmental Status

The baseline environmental monitoring period was from December 2022 to February 2023. The ambient air quality monitoring network of eight locations was designed based on the understanding from the meteorological data obtained from the Indian Meteorological Department. The sampling was carried out twice a week as per the NAAQ Notification of November 2009. The Ambient Air Quality Monitoring was carried out for all the 12 parameters for which standards are prescribed by the CPCB at location A1 (Project premises), and criteria pollutants namely $PM_{2.5}$, $PM_{10}$, NOx, $SO_2$, CO at remaining 7 stations. The details of the parameters monitored are provided below. The criteria applied for selection of the monitoring location is discussed as under.

## ES-5.1 Air Environment

### $PM_{10}$

The maximum & minimum concentrations recorded for $PM_{10}$ was 54.8 and 38.9 µg/m$^3$ respectively. The maximum concentration was recorded at sampling location (A4) which is near Mohadari and the minimum concentration was recorded at location at A3 (Vadgaon Sinnar village). The average concentrations of $PM_{10}$ during the study ranged between 43.2 µg/m$^3$ to 50.3 µg/m$^3$. The maximum concentration of particulate matter recorded at station near Mohadari. The high results compared to other stations under consideration may be due to the presence of Stone Quarry and Crusher. Further the transportation activity from the nearby road can also be a possible source of air pollution. Malegoan MIDC is also in a close proximity which can be another possible source of air pollution.

### $PM_{2.5}$

The maximum concentration of $PM_{2.5}$ 30.6 µg/m$^3$ during the study period was recorded at location A4, whereas the minimum concentration 20 µg/m$^3$ was recorded at A3 & A5 location. The maximum concentration recorded at location A4 is an indicative of presence of Stone Quarry and Crusher. Further the transportation activity from the nearby road can also be a possible source of air pollution. The average 24 hourly concentrations of $PM_{2.5}$ during the study period were in the range of 21.1 to 28.3 µg/m$^3$.

### Sulphur dioxide ($SO_2$)

High levels of $SO_2$ in the ambient air are generally an indicative of combustion of fossil fuels in the vicinity. The ambient air monitoring results indicate that the highest average concentration of $SO_2$ was recorded at the station near Mohadari, i.e. location A4. The regular movement of vehicles on road can be considered as principal source of $SO_2$ emission.

The minimum & maximum concentrations of $SO_2$ recorded at all the monitoring locations during the study period were in the range of 7.4 µg/m$^3$ to 10.9 µg/m$^3$ and 10.4 µg/m$^3$ and to 20.0 µg/m$^3$ respectively. The lowest and highest concentrations of $SO_2$ viz. were recorded at locations A1

and A4 respectively. The average concentration of $SO_2$ at all the monitoring locations varied in the range of 9 to 16.5 µg/m$^3$.

**Oxides of Nitrogen (NOx)**

The various forms of Nitrogen in NO, $NO_2$ and $N_2O$ are collectively called as Oxides of Nitrogen ($NO_x$). During the study period amongst all the monitoring locations the maximum value 29.6 µg/m$^3$ of $NO_x$ was recorded at location A4 and the minimum value 9.6 µg/m$^3$ was recorded at location A1 and the average concentrations of $NO_x$ were in the range of 10.8 to 24.6 µg/m$^3$.

**Carbon monoxide (CO)**

The source of CO in the ambient air for the study area in consideration can be attributed to vehicular movement in the study area. The maximum concentrations of CO at all the locations recorded during the study period were in the range of 0.8 to 1.5 mg/m$^3$ whereas the minimum concentrations ranged between 0.3 to 0.8 mg/m$^3$. The highest average value for CO was recorded at location A4 i.e. 1.2 mg/m$^3$.

**Conclusion:** The descriptive statistics of ambient air quality results of all the monitoring locations are indicating that pollution levels during the study period did not exceed the standards prescribed by the Central Pollution Control Board (CPCB). Furthermore**,** the additional parameters monitored at the sampling location no. A1 also indicated that the parameters monitored did not exceed the standards provided by CPCB.

**ES-5.2 Noise Environment**

**Industrial Zone**

The day time noise level at the proposed project premises was observed to be 46.8 dB (A) Leq while during night time the noise level was recorded to be 38.2 dB (A) Leq. It should be noted that the noise levels during the day time as well as night time were observed to be within the prescribed standards by Central Pollution Control Board.

**Residential Zone**

The noise monitoring was conducted at representative sites at seven locations for 24hr. As prescribed the sampling was carried out once in a week and average hourly readings were recorded. The minimum noise level recorded during the daytime was 48.7 dB (A) which was observed at location N3 whereas the maximum noise levels recorded during the daytime was 53.3 dB (A) which was observed at location N6. The minimum noise level recorded during the night time was 39.3 dB (A) which was observed at location N2, whereas the maximum noise levels recorded during the night time was 43.4 dB (A) which was observed at location N6. It is observed that the day time and night time maximum noise level are at location N6 i.e. Sinnar. The high values of noise may be due to the close proximity of the station to road in the vicinity and densely polluted area. It should be noted that the permissible limits for noise did not exceed at any of the locations selected for sampling.

**ES-5.3 Water Environment**

***Surface Water Study***

Based on the analysis results of water samples, the pH of all the samples was found to vary between 7.72 –8.67. This is to infer that the values obtained were within the desirable limit for pH as prescribed by IS 2296–1982 for inland surface water for parameter E i.e. -Irrigation, industrial, cooling, controlled waste disposal except for location SW4.

The electrical conductivity of all the locations were in the range of 312 µs/cm to 1798 µs/cm. the values were well within the prescribed limit of 2100 µs/cm of IS 2296–1982 for inland surface water for parameter E i.e. -Irrigation, industrial, cooling, controlled waste disposal.

The concentration of total dissolved solids was in the range of 212 mg/l to 1240 mg/l. The maximum concentration of total dissolved solids (TDS) was observed at SW1 whereas the minimum TDS concentration was observed at SW7. Further TDS value for all the locations were well within the prescribed standard of IS 2296–1982 for inland surface water for parameter E i.e. -Irrigation, industrial, cooling, controlled waste disposal.

The concentration of chlorides & sulphates was in the range of 6.43 mg/l to 222.7 mg/l & 14.16 mg/l to 233.8 mg/l respectively. As per the prescribed standard of IS 2296–1982 for inland

surface water for parameter E i.e. -Irrigation, industrial, cooling, controlled waste disposal all the values of chlorides & sulphates were within the range.

Most of the surface waters in the 10 Km study area is subjected to use of irrigation purposes. Therefore, in view of the above interpreted results it is concluded that the surface water of all location can be used for irrigation purpose as it is meeting the criteria of parameter E of IS 2296–1982 for inland surface water except for location SW4 where the pH value is out of the prescribed limit.

Further to support the above conclusion SAR value was taken into consideration and was observed to be in the range of 1.11 to 2.55. The SAR value below 3 for all the locations indicate that there is no problem to use the water for irrigation purpose as the water is non-sodic.

Also, the concentration of heavy metals such as Zinc, Arsenic, Mercury, Cadmium and Lead was observed to be below the detection limit.

Furthermore, it is important to note the nitrate concentration in the surface water ranges from 6.87 to 127.2 mg/l. The high values of nitrate & presence of phosphate & ammonia in some of the surface water can accelerate eutrophication, causing dramatic increases in aquatic plant growth and changes in the types of plants and animals that live in the stream. The contamination can be due to mixing of domestic sewage from the surrounding activities. Moreover, some parts of the study area are well known to be engaged in agricultural activities, which involves utilization of chemical fertilizers, which can also be a possible source of the same.

The total hardness was observed to be ranging between 124 to 650 mg/l. The maximum value of hardness was recorded at SW1 and the minimum value was recorded at SW5.The Chemical Oxygen Demand (COD) & Biochemical Oxygen Demand (BOD) values were calculated to be in the range of 16.13 mg/l to 56.45 mg/l & 6.97 mg/l to 17.93 mg/l respectively.

The analysis of microbiological parameters reveals that Total coliforms & E-coli are present at all the locations in the selected water bodies. It is possible that the water bodies are experiencing

contamination due to discharge of uncontrolled and untreated domestic waste in the form of sewage and storm water drainages.

***Ground Water Study***

The above results indicate that the pH of all the ground water samples were in the range of 7.38 – 7.72 which was well within the prescribed IS10500:2012 standards for drinking water.

The nitrate concentration was in the range of 13.38 mg/l to 106.32 mg/l. Except for GW 2, GW5 & GW8 all the other locations were displaying high level of nitrate concentration i.e. above the acceptable range of 45 mg/l. High level of nitrate concentration in the ground water indicate contamination due to anthropogenic sources like agriculture, industry, domestic effluents and emissions from combustion engines. For reference the secondary data was referred i.e. report from Ministry of Water Resources Central Ground Water Board 2014, which also concluded that the ground water quality in the wells monitored in the district is affected with high Nitrate ($NO_3$) concentrations.

Iron concentration in all the locations were in the range of 0.027 mg/l to 0.059 mg/l which were well within the prescribed IS10500:2012 standards for drinking water.

The concentration of heavy metals like arsenic, chromium, lead, mercury, nickel & cadmium were below the detection limit, which is well below the acceptable standards of IS: 10500:2012 standards for drinking water.

It can be observed that the microbiological analysis of all the ground water samples indicate the presence of Total coliforms and E. Coli whereas as per IS10500:2012 standards for drinking water it should be absent.

Continuous intake of high nitrate concentration water causes infant methaemoglobinamea, popularly known as Blue Babies disease. Further the presence of Total coliforms and E. Coli in all the ground water sample indicates microbiological contamination. Therefore, in view of the above it is highly recommended that all the wells if intended to be used for drinking purpose, should be first analyzed for nitrate contents and if the nitrate content is found to be beyond the permissible limit i.e. 45 mg/l along with the presence of Total coliforms and E. Coli then it may

be used for purposes other than drinking. Adequate sanitary protection to the wells are recommended to be provided to control the nitrate contamination.

**ES-5.4 Soil Environment**

The findings of the study reveal that pH of the soil in the study area ranged between 7.03 to 8.27 This is indicative of the neutral to moderately alkaline nature of soil. The values for Nitrogen at all locations varied between 0.0740 to 0.2019 mg/kg. Maximum concentration of nitrogen was observed at location S1, while the minimum concentration was observed at location S7.

The concentration of phosphate was estimated to be between 31.9 to 183.3 mg/kg. The highest concentration can be observed at location S7, while the lowest concentration can be observed at location S1.

The concentration of potassium was estimated to be between 117.35 – 1772 mg/kg. The highest concentration can be observed at location S6, while the lowest concentration can be observed at location S2.

**ES-5.5 Biological Environment**

The recorded **30 bird** species the IUCN assessment of **24 species** is as Least Concern ver 3.1 and **6 species** was Yet to be assessed whereas as per the WPA (1972) **17 species** are listed as **Schedule-IV** & **1 species** as **Schedule - V** and remaining **12 bird species** were not listed in any Schedule of WPA (1972). The IUCN and WPA (1972) assessment of the **9 mammals** & **6 reptiles, 6 butterflies' species** as known from the secondary sources revealed that none belonged to any categories of concern and is **not listed as Schedule - I species** hence conservation related aspects are not anticipated.

**ES-5.6 Socio Environment**

The findings of the study indicate that the sample population which was surveyed is satisfied in terms of accessibility to the public resources and is of view that the activity of M/s. Saroja Pharma Industries India Pvt Ltd will not hamper or impact in any way to them. The local body must try to improve the health and educational facilities. Hence it can be summarized that the attitude of people towards project of M/s. Saroja Pharma Industries India Pvt Ltd. is found to be favorable.

**Educational Facilities:**

The Maximum and Minimum score from the study, for Educational Facilities was recorded to be 4 (Satisfied) and 2(dissatisfied) respectively. Off the Max score i.e. 250, the total score obtained from the survey, for Educational Facilities was 139. Subsequently, the percentage obtained from the response for satisfaction from the samples for Educational Facilities was calculated to be 55.6%.

**Health Facilities:**

The Maximum and Minimum score from the study, for Health Facilities was recorded to be 4 (Satisfied) and 1 (strongly dissatisfied) respectively. Off the Max score i.e. 250, the total score obtained from the survey, for Health Facilities was 140. Subsequently, the percentage obtained from the response for satisfaction from the samples for Health Facilities was calculated to be 56%.

**Water Facilities:**

The Maximum and Minimum score from the study, for Water Facilities was recorded to be 4 (Satisfied) and 1 (strongly dissatisfied) respectively. Off the Max score i.e. 250, the total score obtained from the survey, for Health Facilities was 130. Subsequently, the percentage obtained from the response for satisfaction from the samples for Water Facilities was calculated to be 52 %.

**Transport Facilities:**

The Maximum and Minimum score from the study, for Transport Facilities was recorded to be 4 (Satisfied) and 2 (dissatisfied) respectively. Off the Max score i.e. 250, the total score obtained from the survey, for Transport Facilities was 161. Subsequently, the percentage obtained from the response for satisfaction from the samples for Transport Facilities was calculated to be 64.4%.

**Local Body Functioning & support:**

The Maximum and Minimum score from the study, for Local Body Functioning & support was recorded to be 4 (Satisfied) and 2 (dissatisfied) respectively. Off the Max score i.e. 250, the total score obtained from the survey, for Local Body Functioning & support was 175. Subsequently, the percentage obtained from the response for satisfaction from the samples for Local Body Functioning & support was calculated to be 70%.

From the above Socio-economic study result, the percentage obtained for the study parameters i.e. Educational Facilities, Health Facilities, Water Facilities, Transport Facilities, Local Body Functioning & support are 55.6,56,52,64.4,70. The Minimum percentage for satisfaction obtained was 52 % i.e. for Water Facilities and the maximum percentage for satisfaction obtained was 70 % i.e. for Local Body Functioning & support.

Looking into the results obtained for socio economic study, M/s. Saroja Pharma Industries India Pvt Ltd. plans to spend its CER fund on the parameters for which the study sample is least satisfied i.e. Water facilities and Educational facilities. The CER Plan in accordance to the results obtained for social economic study has been prepared and provided in the chapter 8 & 10 of this EIA report.

## ES-6 Prediction of Impacts & Mitigation Measures

The summary of mitigation measures is presented in tabulated format in Table ES-2 & ES-3.

**Table No. ES-2: Overview of probable environmental pollution & mitigation measures during construction phase**

| A) Construction Phase | | | | |
|---|---|---|---|---|
| **Sr. No.** | **Environmental Parameters** | **Aspect Attributes** | **Impact** | **Proposed Mitigation Measures** |
| 1 | Air Quality | Dust emissions from handling & transportation of cement/concrete/stone aggregates. | The emission would be around 1.2 tons/month of the construction activity. 70 Nos. workers will be getting exposed to the dust pollution generated due to the construction activity can suffer from respiratory problems and prolonged exposure can lead to malfunctioning of lungs. | • Installation of wind barriers.<br>• Traffic management for loading and unloading of the materials.<br>• Regular sprinkling of water on the working site |
| 2 | Noise Quality | Noise generated from construction equipment's / machinery like spade, shovel, dabber, drill, hammer, concrete mixer etc. Transportation of construction materials. | The impacts of high noise level would be Temporary/Permanent hearing loss, Mental disturbance, increase in heart rate, Affecting worker's performance. | • Appropriate PPEs to 70 nos. of construction workers.<br>• Implementation of Traffic management. |
| 3 | Water Quality | Water used for construction activity mainly for concrete mixing, sprinkling etc. | Contamination of the soil at the project site and nearby water bodies due to the surface runoff. | • Proper surface water runoff management would be implemented. |

| A) Construction Phase | | | | |
|---|---|---|---|---|
| **Sr. No.** | **Environmental Parameters** | **Aspect Attributes** | **Impact** | **Proposed Mitigation Measures** |
| | | | | • Construction of Storm water drain<br>• Provision of 3 Nos. of Bio Toilets |
| 4 | Soil | Soil erosion due to construction activity | Unhealthy work conditions at project site. | • Use of silt fences and/or sand Bags in areas that are susceptible to erosion. |
| 5 | Solid Waste Management | Solid waste management in construction phase | The nutrient in the top soil will get wasted if is not utilized for green belt development. | • Utilization of excavated soil for green belt development activities within the premises. |
| 6 | Safety & Health | Site Safety | Unsafe conditions at workplace compromising safety at work place | • Construction Area barricading, Sign Boards etc.<br>• Provision of mask and hand sanitizers to workers. |

**Table No. ES 3: Overview of probable environmental pollution & mitigation measures during operational phase**

| B) Operational Phase | | | | |
|---|---|---|---|---|
| **Sr. No.** | **Environmental Parameters** | **Aspect Attributes** | **Impact** | **Proposed Mitigation Measures** |
| 1. | Air Quality | Operation of Boiler, TFH D.G Set & Gaseous emission from manufacturing process, Non-spontaneous emissions from transportation of raw materials & finished goods.<br>VOC emission generated due to the handling and storage of the solvents & other raw materials. | The Maximum Incremental concentration of<br><br>**<u>For Briquette Fuel</u> :-**<br><br>PM10 (Uncontrolled) – 1.55g/s<br>PM10 (Controlled) – 0.0031g/s<br><br>SO2 (Uncontrolled) – 0.4 g/s<br><br>NOx (Uncontrolled) – 0.12 g/s<br><br>The Health effects related to particulate matter are majorly respiratory, pulmonary injury & lung cancer etc. Exposure to $SO_2$ and NOx majorly leads to respiratory problems. Carbon monoxide decreases the oxygen carrying capacity of the blood by reducing the hemoglobin. The health effects related to VOC emission are eye, nose and throat irritation headaches, loss of coordination | 1) Installation of stacks of 40 m height will be done for efficient dispersion of pollutants<br>2) Dust collector followed by bag filter will be provided as an APCD for boiler & thermopack.<br>3) 1 No. of D.G Set of 250 KVA capacity will be provided with a stack height of 3.5 m above roof level.<br>4) 2 No. of alkali scrubber will be provided to mitigate the process emissions with a stack height of 5 m above roof level.<br>5) The roads within the premises will be concreted / paved to avoid the dust generation from vehicular activity.<br>6) It will be ensured that all the vehicles used for transportation activity will have a valid PUC |

| | | | | |
|---|---|---|---|---|
| | | | and nausea, damage to liver, kidney and central nervous system etc.<br>The air emissions in long course of time may affect the immediate surrounding vegetation stature physically (leaf senescence, hampered growth etc.) & biologically thus may affect the overall surrounding ecology. | (Pollution under Control) Certificate.<br>7) Proper servicing & maintenance of vehicles will be carried out. Same practice will be continued in future.<br>8) Regular sweeping of all the roads & floors will be done.<br>9) Development of the green belt will help to capture the fugitive emission.<br>10) To control VOC emission carbon adsorption system can be implemented.<br>11) Industry to ensure that at no point of time the air emission concentrations does not exceed the prescribe standards. |
| 2. | Noise Quality | Operation of D.G set, Boiler, Reactors, ancillary utilities & transportation activity. | The impacts of high noise level would be Temporary/Permanent hearing loss, Mental disturbance, increase in heart rate, decrease in workers performance due to psychiatric disorder, Workers developing Tinnitus due to high level of noise exposure on regular basis. | 1) Acoustic enclosure will be provided to D.G set for attenuation of noise level during operation.<br>2) Boiler & Thermopack will be placed in a confined space viz. boiler house where the surrounding walls acts as a barrier for noise propagation.<br>3) Isolation of high intensity noise generating equipment's. |

| | | | | |
|---|---|---|---|---|
| | | | | 4) Appropriate traffic management to be implemented.<br>5) Greenbelt developed in the company premises will acts a noise barrier.<br>6) Appropriate PPE will be provided to workers. |
| 3. | Water Quality | 1) Effluent from manufacturing process<br>2) Effluent from Scrubber operations and equipment washing.<br>3) Blow down water from Boiler and Cooling Tower.<br>4) Domestic wastewater | Indiscriminate release/discharge of effluents may contaminate the surrounding surface and groundwater & there by affecting the overall ecology & agricultural productivity. | 7. Unit will be operated as Zero Liquid Discharge.<br>8. The HCOD/HTDS effluent stream from Process, scrubber, reactor washing i.e. 36 CMD will be subjected to Stripper followed by MEE & ATFD.<br>9. The LCOD/LTDS effluent stream from boiler blowdown (5 CMD) and cooling tower blowdown (20 CMD) will be treated in a full-fledged ETP with primary, secondary and tertiary treatment along with MEE condensate. |

| | | | | |
|---|---|---|---|---|
| | | | | 10. The domestic effluent (4 CMD) will be treated in STP with MBBR treatment.<br>11. The treated effluent from the ETP will be further subjected to RO treatment. RO permeate will be used for reactor washing, scrubber, boiler and in cooling tower makeup. RO reject will be sent back to the MEE for further treatment.<br>12. About **50.4 CMD** treated water will be reused at site along with **3.8** CMD of treated sewage |
| 4. | Solid Waste Management- Hazardous Waste | 1. Residue & Waste<br>2. Discarded Container/Barrels/ Liners<br>3. ETP Sludge<br>4. ATFD Residue<br>5. Spent oil Distillation Residue | Unscientific handling & disposal may lead to contamination of surrounding soil, water sources & there by affecting the ecology & health of the workers coming in direct contact with the hazardous waste like skin allergies/rashes/burns etc. | • Membership with CHWTSDF will be obtained for disposal of hazardous waste.<br>• The recyclable/ recoverable wastes will be disposed to authorized vendors.<br>• The remaining waste will be disposed to co-processors or CHWTSDF facility for disposal. |

| | | | | |
|---|---|---|---|---|
| | | 6. Spent solvents<br>7. Spent Carbon<br>8. Spent Catalyst<br>9. 30% HCl<br>10. NaHCO3 Solution<br>11. Date Expired Product<br>12. Off Specification Product | | |
| 5 | Solid Waste Management - Non-Hazardous waste | 1. 1.M.S Scrap<br>2. Wooden Pallet<br>3. Paper Waste<br>4. Canteen waste<br>5. Plastic waste<br>6. 7. Briquette Ash | Hap-Hazard handling& storage may lead to inadequate open space in plant premises & it may lead to rodent breeding. | 1) Designated area for Scrap materials will be provided in the plant.<br>2) General scrap materials will be recycled through registered scrap vendors.<br>3) Daily housekeeping waste and food waste will be disposed through municipal waste management facility.<br>4) STP Sludge will be used as a manure for green belt development. |

**ES-7 Risk Assessment Study**

**ALOHA –**

Based on the unsafe distances identified by the software output, the MCLS (maximum credible loss scenario) for the factory works out to about 433 meters for N- Proponal. The failure considered is leak from hole in horizontal cylindrical tank, whereas the scenario which provided the maximum unsafe distance is for BLEVE, Tank explodes and chemicals burns in a fireball. The failure considered for assessing the impact by quantitative risk assessment was taken from CPR18 E. The probability of occurrence of the said scenario is 5 × 10-6 y -1 , which is very less. .

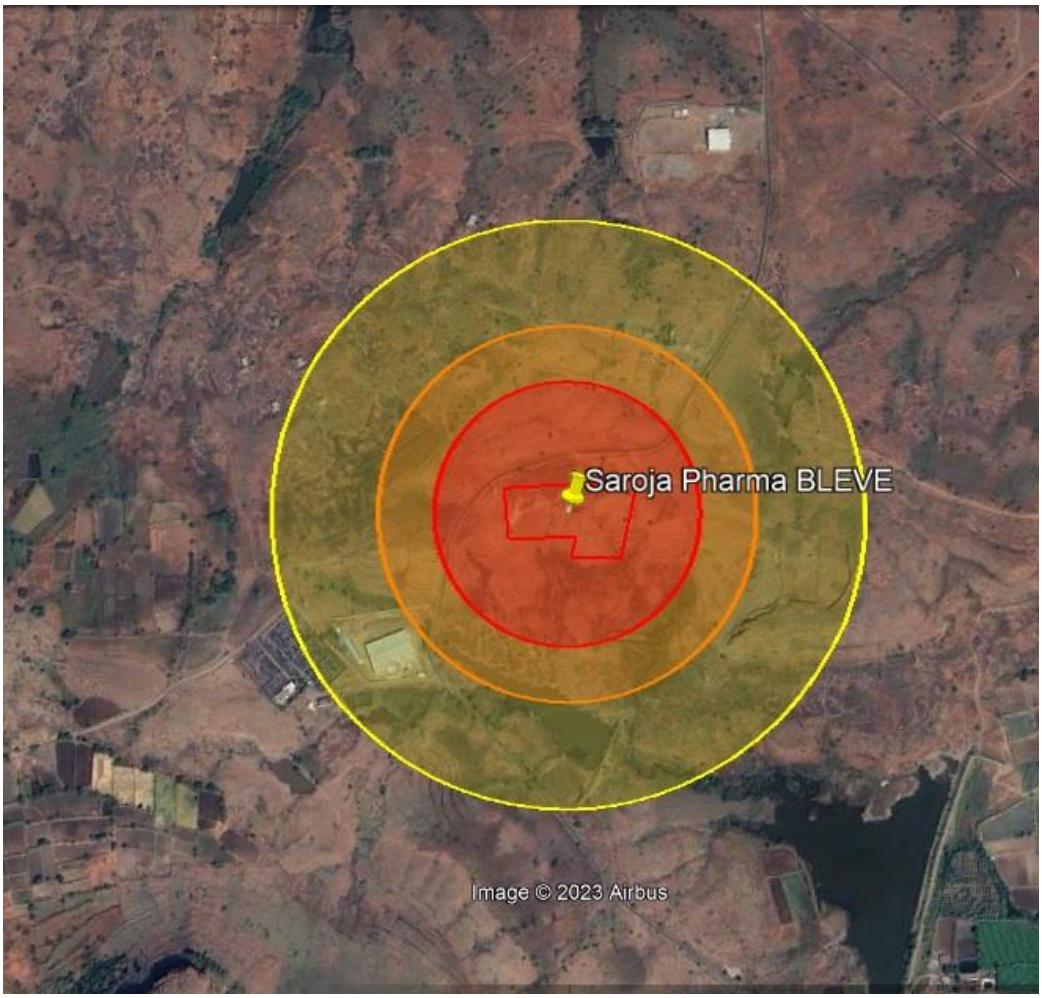


**Figure ES 3: Maximum Credible Loss Scenario (MCLS) for N- Proponal**

| Threat zone | Toxic Level of Concern | Receptors | Effects |
|---|---|---|---|
| Red - 194 m | 10.0 kW/(sq m | Factory premises, Village Road & Barren Land with no human habitation or presence of other industrial units. | Potentially lethal within 60 sec |
| Orange - 276 m | 5.0 kW/(sq m) | Village Road & Barren Land with no human habitation or presence of other industrial units. | 2nd degree burns within 60 sec |
| Yellow - 433 m | 2.0 kW/(sq m) | Presence of Khaprale Substation, Village Road & Barren Land with no human habitation or presence of other industrial units. | Pain within 60 sec |

**DOW Index**

The DOW Index has been performed for materials which are stored in drums and are flammable and storage in higher quantity. DOW Index is calculated for the chemicals in storage having N (f) = 3 & 4. The chemicals and their quantities considered for DOW Index are tabulated below. Accordingly, a worst-case scenario has been considered for DOW wherein the entire inventory is considered as Diethyl amine has lowest flash point.

The calculation for Dow Fire and Explosion Index is given and from the calculations it is seen that the storage will have a Dow Index of 100 indicating Intermediate Hazard Potential. Based on the unsafe distances identified by the DOW Index, the radius of exposure from the raw material storage area is around 25 meters and the Area of Exposure is around 1962 Sq. m.

**Mond's Index**

Raw materials stored in the site are toxic in nature. Hence appropriate standard operating procedures are established by the company for ensuring the safety of the workers handling the raw materials on daily basis. Some selected toxic raw materials are used for calculating the toxicity using Mond's index. Monds index has been performed for the raw materials having the maximum storage capacity more than 1.5 MT and having critical specified exposure limit.

According to the Mond's Index the toxicity calculated for Sodium Hydroxide, Hydrochloric Acid, Phosphorous trichloride, Chlorine Gas, Methyl Chloroformate, Hydrogen Cyanamide, Thionyl chloride, Hydrogen Peroxide indicates Moderate degree of hazard.

**ES-8 Disaster Management Plan**

In view of the proposed manufacturing activity, Onsite and Offsite Emergency Plans are important hence, has been prepared for the industry. During operational phase, surrounding population shall be made aware of safety precautions to be taken in case of any emergency situation due to the overall project activity. On-site disaster management plan and Off-site emergency management plan, commands communication and controls will be established and maintained. Adequate provisions like emergency response, response organization, response plan, Material Safety Data Sheets (MSDS), command and control, capabilities, transportation, medical facilities, mitigation measures, training, education, public awareness emergency plan review etc. to control any disaster situation will be made available.

**ES-9 CER Activity**

As per O.M. No. F. No. 22-65/2017-IA.III given by MoEF & CC dated 1st May 2018, **M/s. Saroja Pharma Industries India Pvt Ltd.** should allocate **2.0%** of the project cost for implementation of need based CER activities. The proposed capital investment for project is **INR 23 Cr.**, thus **INR 46 Lakh.** is allocated for implementation of need based CER activities for a period of 5 years.

**Table No. ES-4: List of CER Activity**

<table>
<tr><th>Cost of Project</th><th>Cost for the CER Activity</th><th>Year of Implement ation</th><th>Amount in Lakhs</th><th>Activity</th><th>Cost Estimate</th></tr>
<tr><td>23 Cr. is the Project Cost.</td><td>46 lakhs</td><td>2024</td><td>20,00,000/-</td><td>Well preparation for 5 nos. of farmers in harsule village near their agricultural field for boosting the agriculture activity in the surrounding village.</td><td><table><tr><th>Particulars</th><th>Amount (Approx.)</th></tr><tr><td>Well preparation (5 nos.)</td><td>20,00,000/-</td></tr></table></td></tr>
<tr><td></td><td></td><td>2025</td><td>3,00,000/-</td><td>Providing Rain Water Harvesting System in Gram Panchayat Office of Paste Village, Sinnar Taulka. Pandhurli (Revenue Circle).</td><td><table><tr><th>Particulars</th><th>Amount (Approx.)</th></tr><tr><td>Tank and Filter</td><td>1,00,000/-</td></tr><tr><td>Piping and Installation</td><td>1,00,000/-</td></tr><tr><td>Underground recharge pit</td><td>1,00,000/-</td></tr></table></td></tr>
</table>

<table>
<tr><th>Cost of Project</th><th>Cost for the CER Activity</th><th>Year of Implement ation</th><th>Amount in Lakhs</th><th>Activity</th><th>Cost Estimate</th></tr>
<tr><td></td><td></td><td>2026</td><td>5,40,000/-</td><td>Providing water purification system for Zilla Parishad Primary School, Harsule Sinnar; Nashik, Maharashtra</td><td>
<table>
<tr><th>Particulars</th><th>Amount (Approx.)</th></tr>
<tr><td>1 Nos. Water Purification System</td><td>30,000/-</td></tr>
<tr><td>Fitting and Installation charges</td><td>5000/-</td></tr>
<tr><td>Transportation</td><td>5000</td></tr>
<tr><td>Construction of boundary wall for Zilla Parishad school.</td><td>5,00,000/-</td></tr>
</table>
</td></tr>
<tr><td></td><td></td><td>2027</td><td>5,60,000/-</td><td>Providing Solar Street light in Harsule Village around 20 nos.</td><td>
<table>
<tr><th>Particulars</th><th>Amount (Approx.)</th></tr>
<tr><td>Solar Street Lights</td><td>20,000/- each i.e. 4,00,000/-</td></tr>
<tr><td>Fitting and Installation charges</td><td>8000/- each i.e. 1,60,000/-</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>Cost of Project</th><th>Cost for the CER Activity</th><th>Year of Implement ation</th><th>Amount in Lakhs</th><th>Activity</th><th>Cost Estimate</th></tr>
<tr><td></td><td></td><td>2028</td><td>12,00,000/-</td><td>Primary Health Centre Pandhurli. At Post Pandhurli Tal. Sinnar Dist. Nashik.</td><td>
<table>
<tr><th>Particulars</th><th>Amount (Approx.)</th></tr>
<tr><td>Providing ECG machines 4 nos.</td><td>1,20,000/-</td></tr>
<tr><td>Rain Water Harvesting System along with Fitting and Installation charges</td><td>3,00,000/-</td></tr>
<tr><td>Solar Street light with Fitting and Installation charges 10 nos.</td><td>2,80,000/-</td></tr>
<tr><td>Construction of boundary wall for Zilla Parishad school.</td><td>5,00,000/-</td></tr>
</table>
</td></tr>
</table>

## ES-10 Occupational Health Measures

The objective of occupational health environment is to provide safe working environment to the employees of the company. Good occupational health management keeps workers physical conditions healthy or non-deteriorating in work environment which keeps the worker physically and psychologically sound. It results in

- High productivity
- Improved work efficiency
- Work satisfaction
- Less medical expenses toward employees thereby less recurring cost.

The company has planned all the necessary control measures to prevent air pollution, water pollution and degradation of soil in the project surrounding areas. Since all the pollution control measures are planned. Minor accidents, noise, poor ventilation and accidental chemical exposure are the only possible occupational health hazards from the manufacturing activities. For the prevention of it, the company will educate the operators and workers for the safety rules, procedure and preventive measures and to use personnel protective measures.

The company has provided budgetary allocation of Rs.5,00,000/- for purchase of Personal Protective Equipment's (PPEs) & Rs. 3,00,000/- per annum as recurring expenditure for annual medical, health checkup& other occupational safety related aspects of workers for 100 Nos. of manpower as a part of Occupational Health & Safety measures.

## ES -11 Post Project Monitoring Plan

Monitoring of environmental parameters shall be done as per the guidelines provide by MoEF&CC / CPCB / MPCB. The method followed shall be recommended / standard method approved/recommended by MoEF&CC/CPCB. The table below explains the approach for environmental monitoring program.

**Table No. ES-5: Environmental Monitoring Program**

| Sr. No. | Activity / Area | Pollutant | Pollutant Characteristics | Frequency | Period | No. of samples (Per Quarter) | Sampling Cost per sample | Analysis Charges Per Sample | Estimated Cost (Quarterly) | Estimated Cost (Annual) |
|---|---|---|---|---|---|---|---|---|---|---|
| **OPERATION PHASE** | | | | | | | | | | |
| 1. | Ambient Air | Air Emission | $SO_2$, $NO_X$, PM, CO, Benzene, Ammonia, Benzopyrene, Lead, Nickel, Arsenic, Ozone in Ambient Air | Intermittent / Periodic | Quarterly | 3 | 5000 | 30000 | 95000 | 380000 |
| 2. | Diesel power Generators, Boiler stack | Air emissions | TPM, SO2, CO, NOX from boiler, D.G. Set stacks | Intermittent / Periodic | Quarterly | 2 | 5000 | 6000 | 17000 | 68000 |
| 3. | Boiler Area, ETP, Work Place Area, DG Set Area. | Sound | Noise Level dB (A) | Intermittent / Periodic | Quarterly | 4 | 5000 | 1000 | 9000 | 36000 |
| 4. | Effluent treatment | All parameter | pH, O & G, TDS, TSS, | Intermittent / Periodic | Monthly | 4 | 5000 | 12000 | 53000 | 636000 |

| Sr. No. | Activity / Area | Pollutant | Pollutant Characteristics | Frequency | Period | No. of samples (Per Quarter) | Sampling Cost per sample | Analysis Charges Per Sample | Estimated Cost (Quarterly) | Estimated Cost (Annual) |
|---|---|---|---|---|---|---|---|---|---|---|
| | plant | s | COD, BOD. Heavy Metals & Organic Compounds | | | | | | | |
| 5. | Hazardous Wastes | E.T.P sludge Distillation residue, etc. | H.W. characteristics | As per CHWTSDF | Annual | 5 | 5000 | 10000 | 55000 | 55000 |
| 6. | Work Place | Air pollutants, Heavy metals | Heavy Metals in ambient Air specific | Intermittent / Periodic | Quarterly | 3 | 5000 | 6000 | 23000 | 92000 |
| 7. | Monitoring of six monthly compliance by third party audit | -- | -- | -- | Six Monthly | -- | -- | | -- | 2,00,000 |
| | **TOTAL** | | | | | | | | **252000** | **1467000** |
| Hence, budgetary allocation of INR 15,00,000 has been made in Environmental Management Plan | | | | | | | | | | |

*The monitoring will be carried out by MoEF & NABL accredited laboratory.*

## ES - 12 EMP Cost & Budgetary Allocation

The proposed capital investment of the company is envisaged to be INR 23 Cr. and the proposed capital investment for EMP (Operation phase) is INR 576.5 Lakhs and recurring cost of INR 208.5 Lakhs/Year.

The cost details for Environmental Management are as below:

**Table No. ES-6: Cost details for environmental management**

| Environment Management Plan (Operation phase) | | | | |
|---|---|---|---|---|
| **Sr. No.** | **Component** | **Description** | **Capital cost (Lakh Rs.)** | **O&M cost (Lakh Rs./yr)** |
| 1 | Air Pollution Control | • Installation and maintenance of dust collector followed bag filter for stacks of steam boilers, Thermic Fluid Heater,<br>• Installation and maintenance of 2 nos. of scrubbers and its stacks.<br>• Installation and maintenance of online emission monitoring system. | 150 | 20 |
| 2 | Water Pollution Control | • The treated effluent will be recycled by passing through Stripper, MEE with ATFD, a full-fledged ETP with primary, secondary and tertiary treatment followed by R.O treatment. The recycled water will be used for cooling tower make – up.<br>• Installation of continuous effluent monitoring system will be done. | 350 | 75 |
| 3 | Noise Pollution Control | Acoustic enclosures to DG Sets and controlmeasures for noise generating equipment's. | 5 | 2 |
| 4 | Occupational Health and Safety | PPE's to employees and health check-ups ofemployees | 5 | 3 |
| 5 | Green Belt development | Development and maintenance of green belt. | 10.5 | 4.0 |
| 6 | Rain water harvesting | Installation of Rain Water Harvesting collection system with 30 KL storage capacity. | 8 | 1 |

| | | | | |
|---|---|---|---|---|
| 7 | Environmental Monitoring | Monitoring of workplace for air monitoring,ambient air, noise, stack ETP inlet and outlet. | 15 | 25 |
| 8 | Fuel & Energy | Installation and maintenance of rooftop solarharvesting system. Installation and maintenance of solar streetlights. | 25 | 2.5 |
| 9 | Solid waste | Providing separate storage area for storage area for storage of solid waste. Purchase of solid waste storage bags, containers and its disposal. | 3 | 1 |
| 10 | Hazardous waste | Providing separate storage proper segregation and storage of hazardous waste. Purchase of solid waste storage bags,containers and disposal of hazardous waste | 5 | 75 |
| **Total** | | | **576.5** | **208.5** |