

Environmental Impact Assessment

For

***The Greenfield Unit to Manufacture Commercial
Explosive Products
At***

***Thathanaickenpatti North Village, Palani Taluk, Dindigul
District, Tamil Nadu***

Executive Summary



Project Proponent


***M/s. SUA Explosives & Accessories Pvt Ltd
Dindigul
Tamil Nadu***



EIA Consultant

***M/s. Vimta Labs Limited
Hyderabad / Coimbatore
QCI/NABET Accredited EIA Consultant***

DECEMBER 2021

	Environmental Impact Assessment for the Greenfield Unit to Manufacture Commercial Explosive Products at Thathanaickenpatti North Village, Palani Taluk, Dindigul District, Tamil Nadu
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1.0 SUMMARY & CONCLUSION

M/s. SUA Explosives & Accessories Private Limited (herein after called as **SEAPL**) has proposed to establish a new unit at SF No. 116(p), 120, 122(p),123(p),124, 126,136(p),137,138, 139, 140, 141, 142, 143, 144, 145, 147, 153, 170, 171, 172(p), 173(p), 220(p), 221(p) at Thathanaickenpatti North Village, Palani Taluk, Dindigul District, Tamil Nadu for manufacturing of commercial explosive products such as Cast Boosters, PETN, Detonating Fuse etc.,

The SEAPL established their first plant in 1985 in Hosur, Tamil Nadu for manufacturing of Boosters, PETN, Detonating Fuse and slurry explosives. Later, the second manufacturing plant was setup in year 1999, Wardha, Maharashtra mainly to cater the markets in and around central India. Both the manufacturing facilities are certified for ISO 9001 & 14001. SEAPL have also been certified with the 'CE' marking for all the Detonating cords.

The capital cost of the proposed project is Rs. 9.32 Crores and the capital cost for environmental protection measures is proposed as Rs. 1.15 Crores. Annual recurring cost is 0.17 crores per annum.

Project Scoping Category

As per the EIA Notification and its amendments, the project has been proposed outside the notified industrial area and hence the project falls in "**Category-A**" and categorized in schedule No: 5(f)-Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals) therefore conductance of public hearing is mandatory.

The TOR application for prior environmental clearance for the proposed unit was submitted to MoEF&CC and received standard ToR vide letter no IA-J-11011/170/2021-IA-II(I) dated: 15.06.2021. The EIA report has been prepared in line with the TOR conditions specified by MoEF&CC, New Delhi.

1.1 Location of the Project

The proposed plant of SEAPL is located at the SF.No. 116(p), 120, 122(p),123(p),124(p), 126,136(p),137,138,139,140,141,142,143,144,145,147,153,170,171,172(p),173(p),220(p) ,221(p) of Thathanaickenpatti North Village, Palani Taluk, Dindigul District, Tamil Nadu. The project site is close to NH-209 at 3.06 km in ENE direction & 8.05 km from the SH-153 in East direction. The nearest railway station in Pushpathur at 4.30 km in North direction. The airport is located in Coimbatore at a distance of 72.3 km in North West direction from the project site.

97.22 ha (240.255 acres) of land has been procured for the proposed unit. The plant area is under the Ownership and also in the Lease of the promoter. The Index map and the study area map of 10 km radius is shown in **Figure - 1.1** and **Figure - 1.2** respectively. Aerial view of the plant site and layout plan of the site is shown in **Figure - 1.3** and **figure 1.4**. The details of environmental setting are given in **Table - 1.1**.


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TABLE - 1.1
ENVIRONMENTAL SETTING OF THE PLANT SITE (10 KM RADIUS)

S. No.	Particulars	Details		
		Pts	Latitude	Longitude
1.	Latitude & Longitude	A	10°29'08.93"N	77°25'01.09"E
		B	10°29'04.00"N	77°25'26.83"E
		C	10°28'48.56"N	77°25'33.07"E
		D	10°28'24.99"N	77°25'23.87"E
		E	10°28'22.26"N	77°24'34.07"E
		2.	Elevation above MSL	330-335 m
3.	Land use at the project site	Unclassified land use		
4.	Nearest Habitation	Thathanaickenpatti North village-0.9 km, E		
5.	Nearest Highway	1.National Highway 209 -(3.06 km, ENE) (Dindigul – Bangalore road) 2.State Highway 153-(8.05 km, E) (Palani-Dharapuram)		
6.	Nearest Railway station	Puspathur R.S(4.30 km, N)		
7.	Nearest Air Port	Coimbatore Intl. Airport -(72.3 km, NW)		
8.	Nearest Sea Port	VOC port, Tuticorin- (207.1 km, SSE) Kamarajar Port- Chennai- (425.5 km, NE)		
9.	Nearest Major Town	Palani-(10.5 km, E)		
10.	Reserve Forest within 10-km radius	1. Palani hills northern slope east R.F (7.7 km, S) 2.Amaravathi R.F-(11.2km, NW)		
11.	Nearest water bodies	1. Muthukulam pond (3.0 km, WSW) 2. Amaravathi river (5.4 km, W) 3. Shanmuga river (6.9 km, E) 4. Sirunayakankulam (8.6 km, E) 5. Vaiyapuri tank (8.75 km, ESE) 6. Kudhriyar dam (10.05 km, SSW) 7. Palar dam (13.08 km, SE) 8. Amaravathi reservoir (16.6 km, SW)		
12.	Hills/ Valleys	1. Periya Ivar Malai (Adjacent, W) 2. Chinna Ivar Malai (0.5 km, WNW) 3. Chaklichimalai (5.9 km, SW) 4. Palani Hills (10.9 km,ESE)		
13.	Ecologically sensitive zones like Wild Life Sanctuaries, National Parks and biospheres	None within 10-km radius		
14.	Defense Installation / Archaeological	Samanar Caves- (0.5 km, WNW)		
15.	Historical places	None within 10-km radius		
16.	Socio-economic factors	No resettlement and rehabilitation involved		



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S. No.	Particulars	Details
17.	Nearest Hospitals	1. Primary Health Centre- (4.0km, S) 2. Government Hospital-Palani,(10.6 km, ESE) 3. Government Hospital- Balasamudram, (10.4 km, ESE)
18.	Religious places	1. Haleema Masjid - (1.04 km, N) 2. Kulanthai Vellapar Temple-(1.28 km, W) 3. Ivarmalai Ashram- (1.65 km, W) 4. IPC YGM Church- (2.65 km, WNW) 5.Palani Murugan Temple- (10.90 km, ESE)
19.	Nearby Major Industries	1. Gudan Paper Mill, (2.45 Km, WNW) 2. Lambodhra Textile (4.0 km, NE) 3. Kaleesuware Oil Refinery (4.65 Km,N) 4.KSE Dairy Division (5.27 Km, N) 5. Arthi Textiles (6.1 km, N) 6. Lantax Pvt Ltd (6.5 km, N)
20.	Fire and rescue service	Tamil Nadu Fire and Rescue service, Palani- (10.3 km- ESE)
21.	Seismic Zone	Seismically, this area is categorized under zone-II by Ministry of Earth Science,2020

**Note that the above-mentioned distances are aerial distances from plant boundary*

**NOC has been from archaeological department obtained for presence of samandar caves.*

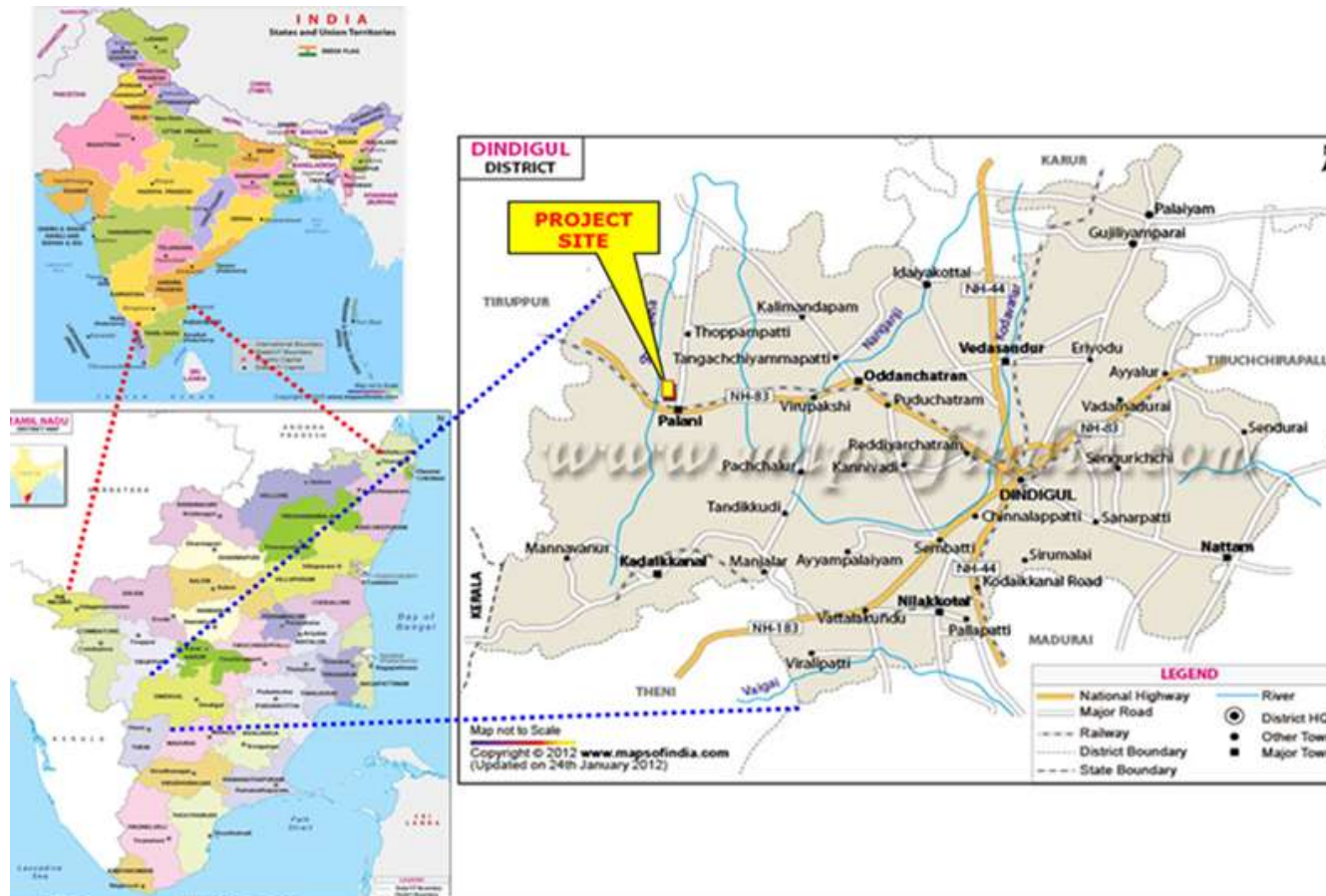


FIGURE - 1.1
INDEX MAP

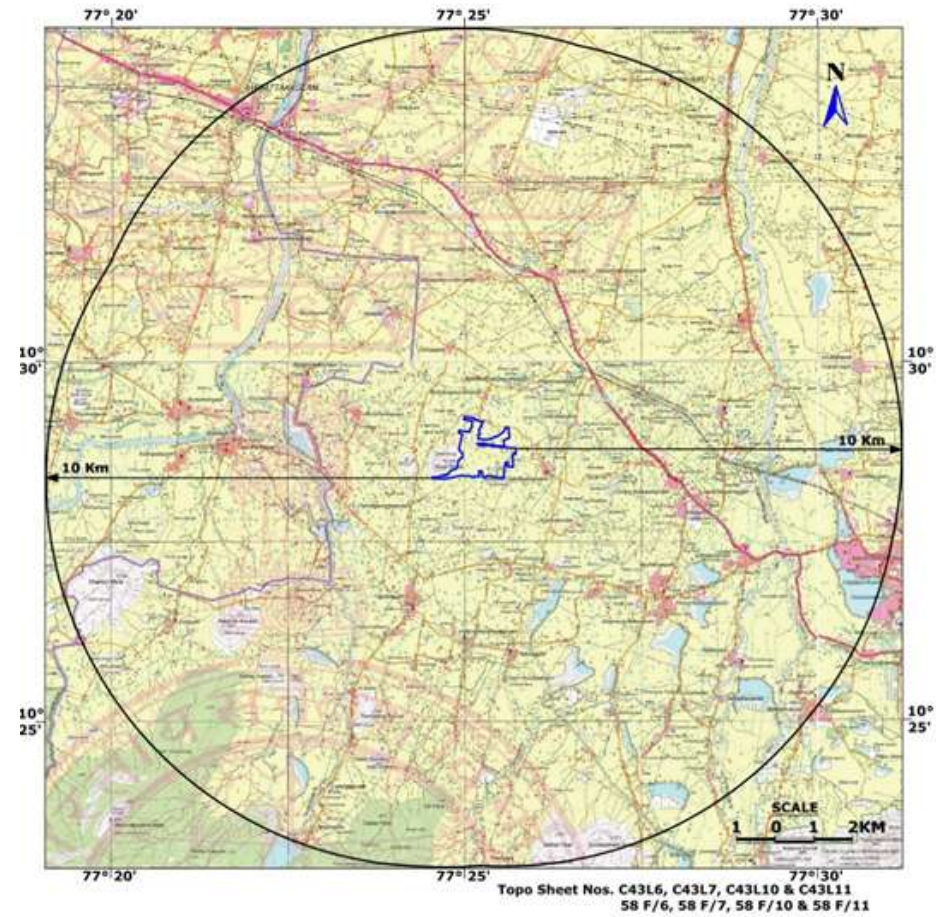
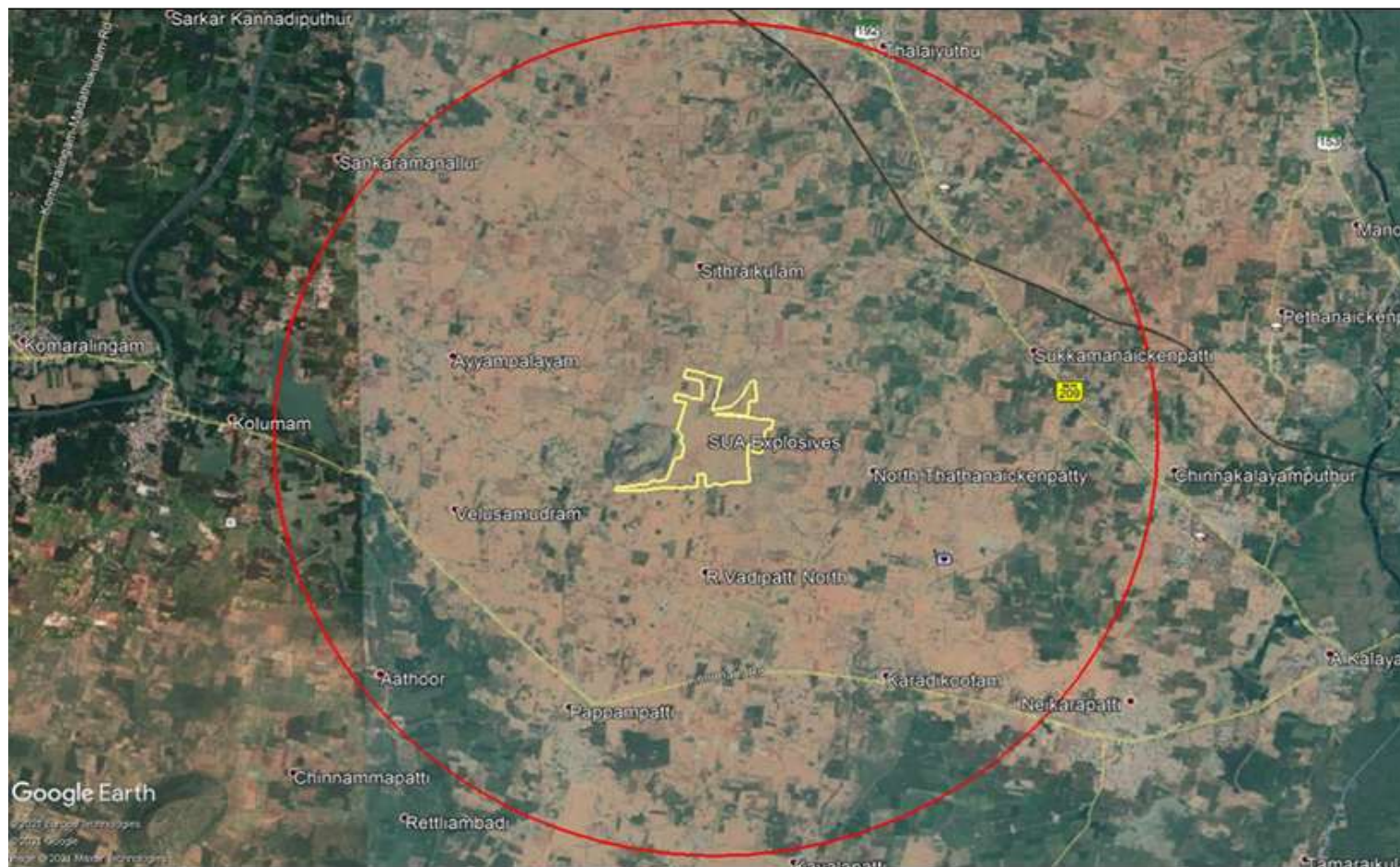



FIGURE – 1.2
STUDY AREA MAP



**FIGURE – 1.3
AERIAL VIEW OF THE PLANT**



FIGURE - 1.4
PLANT LAYOUT

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1.2 Project Details

1.2.1 Manufacturing Details

The details of manufacturing capacity of explosive products are listed in **Table - 1.2**.

TABLE - 1.2
DETAILS OF MANUFACTURING CAPACITY

S.No.	Product	Production Capacity	
		TPM	TPA
1	Penta Erythritol Tetra Nitrate (PETN)	125.0	1500.0
2	Pentolite/ Cast Booster (PETN+TNT)	42.0	504.0
3	Detonating Fuse (DF)	21.0 Lakh Metres/Month (15.6 TPM)	252.0 Lakh Metres/Annum (187.2 TPA)
Total Plant Capacity		182.6	2191.2

1.2.2 Land Requirement

97.22 ha (240.255 acres) of land has been procured for the proposed unit. The plant area is under the Ownership and also in the Lease of the promoter. About 42.465 acres of land is available under the ownership of SEAPL and 197.79 acres is under the leasehold. All the leaseholders are the sister concerns of SEAPL. The site falls in the unclassified land use zone by DTCP. The details of land-use breakup of the proposed plant are given in **Table - 1.3**.

TABLE - 1.3
DETAILS OF LANDUSE BREAK-UP

S. No.	Land use	Area (ha)	Area (Acres)	Percentage (%)
1	Plant Facilities Including Magazines, Admin office etc.,	0.64	1.60	0.65
2	Raw Material Storage Area	0.08	0.20	0.08
3	Solid Waste Storage	0.02	0.05	0.02
4	Greenbelt development	35.48	87.70	36.50
5	Internal Road	4.53	11.17	4.67
6	Open Area	56.47	139.535	58.08
Total		97.22	240.255	100

Source: SUA Explosives & Accessories Private Limited, Palani

1.2.3 Raw Material Requirement

The details of requirement of raw materials, sources and their mode of transportation are given in **Table-1.4**.


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TABLE - 1.4
DETAILS OF RAW MATERIALS REQUIREMENT

Sr. No	Particulars	Quantity (TPM)	Storage Facility	Source	Transport
1.	Concentrated Nitric Acid	252.0	Aluminum Tanks	Maharashtra	By trucks
2.	Penta Erythritol	57.0	HDPE Bags	Tamil Nadu, UP & Maharashtra	By trucks
3.	Acetone	6.0	Epoxy coated Drums	Karnataka & Tamil Nadu	By trucks
4.	Sodium carbonate	2.1	Bags	Tamil Nadu	By trucks
5.	Nilofoam	0.23	HDPE Cans	Maharashtra & Karnataka	By trucks
6.	Cotton Yarn	0.22	Cardboard Boxes	Tamil Nadu	By trucks
7.	BOPP Film	1.05	Cardboard Boxes	Karnataka & Tamil Nadu	By trucks
8.	Polypropylene Yarn	5.9	Cardboard Boxes	Tamil Nadu	By trucks
9.	PVC Compound	21.0	HDPE Bag	Tamil Nadu	By trucks
10.	Penta Erythritol Tetra Nitrate	42.0	HDPE Bags with double liners	In-House Production	By trucks
11.	Tri Nitro Toluene	21.0	Cardboard Boxes with HDPE liner	Maharashtra	By explosive van


1.2.4 Power and Fuel Requirement

Power consumption in the unit will be met with a sanctioned demand of 350 KVA which will be supplied from the state grid of Tamil Nadu Generation & Distribution Corporation Limited (TANGEDCO). During the grid failure the emergency power will be met from the diesel generator sets having capacity of 2 Nos. X 250 KVA, 1 No. X 25 KVA. The fuel required for DG operation will be 85 lit/hr of Low Sulphur High Speed Diesel (LSHSD). Furnace oil of 1.0 TPD will be used as fuel for boilers of 2 x 0.85 TPH capacity (1 boiler is standby).

1.2.5 Water Requirement

The one-time water requirement for the proposed project will be 75.60 KLD and the daily fresh water requirement will be 56.5 KLD which will be sourced from the existing wells in the plant premises. The NOC for extraction of Ground water has been submitted to the State Ground and Surface Water Resources. Considering water resource management, the quantum of treated water re-used in the process will be 24.1 KLD. The treated water from the STP (5.0 KLD) will be used for dust suppression.

After the project implementation, the water requirement for greenbelt will be met from the rainwater harvesting system. Thus, the water requirement during the operation phase will be 11.5 KLD only. The details of water requirement are presented in **Table - 1.5**

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**TABLE - 1.5
DETAILS OF WATER REQUIREMENT**

S.No	Category	Water requirement in KLD	
		One Time water	Fresh Water
1.	Process (DM Plant & Boiler)	15.0	4.1
2.	Cooling Tower Makeup	2.0	0.4
3.	Floor Washing	6.9	0.5
4.	Scrubber Makeup	0.7	0.5
5.	Domestic	6.0	6.0
6.	Greenbelt	45.0	45.0
Total Water Requirement		75.6	56.5

Source: SEAPL, Palani

1.2.6 Manpower Requirement

The Total manpower employed in the proposed unit will be 120 Persons as direct which includes Managers, Supervisors, Technical assistants and Skilled/semiskilled workers etc., 130 persons will be engaged as indirect employees.

1.3 **Baseline Environmental Status**

The 10 km radial distance from the existing plant boundary has been considered as study area for Environmental Impact Assessment (EIA) baseline studies. Environmental monitoring for various attributes like meteorology, ambient air quality, surface and ground water quality, soil characteristics, noise levels and flora & fauna have been conducted at specified locations and the secondary data collected from various government and semi-government organizations. Baseline environmental monitoring studies for the various environmental attributes were carried out during 1st March, 2021 to 31st May, 2021. The details of the baseline study are presented as follows:

1.3.1 Meteorology

Meteorological data at the site was monitored during 1st March, 2021 to 31st May, 2021. It was observed that during study period temperature ranged from 23°C to 41°C. During the same period of observations, the relative humidity recorded was ranged from 26% to 100%. Predominant wind directions are mostly from the South-southwest followed by Southwest.

1.3.2 Ambient Air Quality

To establish the baseline status of the ambient air quality in the study area, the air quality was monitored at Ten (10) locations. The summary of the ambient air quality monitoring results is given in **Table - 1.6**

TABLE - 1.6
SUMMARY OF AMBIENT AIR QUALITY IN THE STUDY AREA

Sr.No	Parameters	Concentration ($\mu\text{g}/\text{m}^3$)		NAAQS Limits, 2009 ($\mu\text{g}/\text{m}^3$)
		Minimum	Maximum	
1	Particulate matter PM _{2.5}	13.8 Pappampatti (AAQ 4).	26.6 Kalayampudur (AAQ 7)	60
2	Particulate matter PM ₁₀	39.2 Velusamudram (AAQ 6)	58.4 Kalayampudur (AAQ 7)	100
3	Sulphur dioxide (SO ₂)	5.8 Vadipatti-North (AAQ 5)	11.5 Thalayuthu (AAQ 8)	80
4	Oxides of Nitrogen (NO _x)	8.6 Vadipatti-North (AAQ 5).	21.6 Thalayuthu (AAQ 8)	80
5	Carbon monoxide, CO	193.0 Pappampatti (AAQ 4) & Velusamudram (AAQ 6)	330 Plant Site (AAQ 1)	2000
Note: All the values are in $\mu\text{g}/\text{m}^3$ Ozone (O ₃), VOC, Ammonia (NH ₃), Lead (Pb), Arsenic (As) (ng/m ³), Nickel (Ni) (ng/m ³), Mercury (Hg), Benzene (C ₆ H ₆ and Benzo (a) Pyrene (BaP) (ng/m ³) are below the Detectable Limit				

1.3.3 Water Quality

Eight (8) ground water samples and Six (6) surface water samples within the study area were considered for assessment. The water samples are compared with the standards of drinking water IS 10500:2012.


Ground water Quality

The results of the ground water samples are compared with the standards for drinking water as per IS: 10500:2012. The analysis results indicate that the pH ranges in between 7.12 to 7.58, which is well within the specified standard of 6.5 to 8.5. The maximum pH of 7.58 was observed at Peddanaickanpatipudur (GW2) and the minimum pH of 7.12 was observed at Kalayampudur (GW7). Total hardness was observed to be ranging from 103 to 196 mg/l. The maximum hardness was recorded at Peddanaickanpatipudur (GW2) and the minimum hardness was recorded at Thalayuthu (GW8). The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 220 to 943 mg/l. The maximum TDS was recorded at Chithraikulam (GW3) and the minimum TDS was recorded at Vadipatti-North (GW5).

Chlorides at all the locations were within the permissible limit, ranging in between 24.6 to 183.2 mg/l. Fluorides are ranging in between 0.3 to 0.9 mg/l and are found to be within the permissible limit. Nitrates were found to be in the range of from 3.9 mg/l to 13.5 mg/l. The heavy metal content is below detectable limits

Surface water Quality

During the baseline period season, 6 samples were taken for analysis. The results of the parameters analysed for the surface water samples are presented in **Table - 3.18**. The analysis results indicate that the pH ranges in between 7.1 to 7.63, which is well within the specified standard of 6.5 to 8.5. The maximum pH of 7.63 was observed at Kudhiriyar Dam

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(SW6) and the minimum pH of 7.1 was observed at Vaiyapuri Tank.

Total hardness was observed to be ranging from 40 to 205 mg/l. The maximum hardness of 205 mg/l was observed at Shanmuga River (SW3) and the minimum hardness of 40 mg/l was observed at Muthukulam Pond (SW1). The Total Dissolved Solids (TDS) concentrations were found to be ranging in between 96.5 to 467.5 mg/l. Chlorides were ranging in between 27.6 and 74.5 mg/l. Fluorides are ranging in 0.2 to 0.5 mg/l. Nitrates were found to be in the range of from 2.2 mg/l to 4.9 mg/l. Desolved oxygen are ranging in 4.1-6.3 mg/l . Biological oxygen demand were ranging in between <3-4.2 mg/l. Chemical oxygen demand are ranging in 10-20 mg/l. The total suspended solids are ranging in 4.6-9.2 mg/l. heavy metal content is below detectable limits.

1.3.4 Soil Characteristics

Eight (8) soil samples were collected in and around the plant site to assess the present soil quality of the region. It has been observed that the texture of the soil is mostly "sandy clay soil" in the study area. The common colour of the soil is pale brown. The pH of the soil ranged from 7.63 to 8.06, indicating that the soil is slightly Alkali in nature. The bulk density of soil ranges from 1.32 to 1.46 gm/cc.

1.3.5 Noise Levels

The noise monitoring has been conducted for determination of ambient noise levels at ten (10) locations in the study area. The daytime (L_{day}) noise levels were found to be in the range of 38.5 dB (A) to 57.6 dB (A). The night time (L_{night}) noise levels were observed to be in the range of 30.5 dB (A) to 53.8 dB (A). Hence, the noise levels were found to be well within the range specified by CPCB norms.

1.3.6 Ecological Environment

The impacts on aquatic ecology due to the proposed activity would be negligible as the treated water will be properly reused and no waste water is discharged outside the plant premises. The proposed activity does not create any significant impact on aquatic bodies.

1.3.7 Socio Environment

The study area (10-km radius) has a total population of 1,36,973 persons according to 2011 Census. The male and female constitute 50 % and 50 % of the total population respectively. As per census, the study area comprises 31% population belonging to Scheduled Castes (SC) and 0.3% belonging to Scheduled Tribes (ST).

The literacy rate is found to be 67%. As per census 2011 records, the main workers were found to be 43% of the total population. The marginal workers and non-workers constituted to 5% and 52% of the total population.

1.4 Anticipated Environmental Impacts and Mitigation Measures

Impacts during Operational Phase

1.4.1 Impact on Soil

The soil quality remains the same as the proposed activity does not involve a change in land use pattern. The probable sources of degradation of soil quality will be due to settling of airborne particles and generation & disposal of hazardous wastes and sludges. The generated hazardous wastes will be disposed to CTSDF. The airborne fugitive dust from the plant process such as raw material handling area and vehicular movement will be likely to be deposited on the topsoil in the immediate vicinity of the plant boundary. However, the fugitive emissions are likely to be controlled to a great extent through pollution control measures like water sprinkling and the greenbelt development. Hence, no impact is envisaged on soil quality of the project site.

1.4.2 Impact on Air Quality

Particulate Matter (PM), Sulphur dioxide (SO₂) and Oxides of Nitrogen (NO_x) will be the major pollutants from the proposed activity. In order to control the emissions of particulates, the pollution control equipments are proposed. Adequate stack height has been provided to disperse gaseous emissions over a wider area. The maximum resultant ground level concentration of PM, SO₂ and NO_x are given in **Table - 1.7**

TABLE - 1.7
RESULTANT CONCENTRATIONS DUE TO INCREMENTAL GLCs


Parameters	Concentration (µg/m ³)			Distance and Direction	NAAQS Limits (2009) (µg/m ³)
	Baseline	Incremental	Resultant		
PM10	58.4	0.45	58.85	0.9,NE	100
PM2.5	26.6	0.13	26.73		60
SO ₂	11.5	8.15	19.65		80
NO _x	21.6	5.06	26.66		80

Gaseous Emission Control Measures:

The flue gas generated from the processes will be treated in wet scrubber and taken to the atmosphere through dedicated stacks. The impact of fugitive emissions from the proposed activity on air quality of the region is insignificant. All the process emissions are complying the standard prescribed.

1.4.3 Impact on Water Quality & Management

The entire water demand for the proposed activity will be met from existing well in the plant premises. SEAPL has estimated the one-time water requirement for the proposed project to be 75.60 KLD. Out of this, the daily fresh water requirement will be 56.5 KLD. To minimize the impacts on groundwater table, SEAPL has proposed to develop rainwater harvesting structures to store the water for the plant use and this reduce the consumption of fresh water. Water is mainly used at certain stages in the process like cooling tower, DM plant, backwash,

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vessel cleaning, greenbelt development, drinking and domestic needs. The main source of effluent generation in the proposed plant will be from process, cooling tower blow down, boiler blow down, DM plant reject, equipment cleaning and domestic usages. The entire effluent generations of quantity will be 7.80 KLD. The condensate water from the boiler of quantity 10.90 KLD will be recycled back to the process.

The domestic wastewater of 5.4 KLD will be treated in the Sewage Treatment Plant of 10 KLD and treated water will be used for dust suppression. Hence, zero liquid discharge would be maintained in the proposed project.

1.4.4 Impact due to Solid Waste Generation


In order to avoid problems associated with solid waste disposal, an effective solid waste management system will be followed. Hence, the impact due to solid waste generation during the plant operation is not envisaged. The sources, quantity of the solid waste generated and waste management measures for proposed activity are presented in **Table - 1.8**

TABLE - 1.8
DETAILS OF SOLID WASTE GENERATION AND MANAGEMENT

S. No	Solid Waste	Category No.	Existing (TPA)	Method of Disposal
Non-Hazardous Waste				
1.	Cotton waste, paper Core, Cotton Yarns, Cardboard boxes, PP Yarns	--	3.6	Wastes will be sold to the authorized vendors for recycling
Hazardous Waste				
1.	Explosive Wastes	--	0.1	Burnt in open pit and ash generated will be sent to TSDF.
2.	Chemical Sludge from ETP	35.3	0.55	The sludge will be treated in solar pan and dried residue will be burnt in open pit and ash generated will be sent to TSDF.
3.	Used or spent Oil from maintenance	5.1	0.1	Stored in HDPE/MS barrels and sent to SPCB authorized recycle dealers
4.	Barrels/ Containers contaminated with hazardous wastes	33.3	1.2	Disposal to authorized recyclers
Source: SEAPL				

1.4.5 Impact on Noise levels

The major noise generating sources are from the areas of DG-sets, boiler feed water pumps, loading and unloading operations, vehicle movements. The predicted noise level through mathematic modeling at the boundary due to various plant activities will be ranging in between 65-80 dB (A). It is seen from the modelling results that the incremental noise levels are within the CPCB standards.

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1.4.6 Impact on Ecology

The proposed industry is not going to discharge any treated or untreated effluents. Hence, it is not going to have any direct or indirect impacts on the Schedule I / REET species that are most likely to occur in the study area of the project site. No direct or indirect damage is expected to the flora and fauna of the Study area. Further, as there are no rare or endangered or endemic or threatened (REET) terrestrial animal species within the project area, the project does not pose any direct threat to the flora and fauna of the study area. Further, the greenbelt is going to be developed in 36.5% of the total project area. Hence, the anticipated environmental impacts on the flora and fauna of the study area are negligible and easily reversible. It is not going to create any kind of environmental stress to the local flora and fauna.

The incremental concentrations of the air quality modelling show that the resultant levels of PM, SO₂ and NO_x are well within the permissible limits as per National Ambient Air Quality Standards, 2009. The impacts on aquatic ecology due to the proposed activity would be negligible as the treated water will be properly reused and no waste water is discharged outside the plant premises. The proposed activity does not create any significant impact on aquatic bodies.

1.4.7 Impact on Public Health

The discharge of waste materials (stack emission, wastewater and solid wastes) from process operations can have some adverse impact on public safety and health in the surrounding area, if appropriate treatment procedures are not followed. As the plant pollution control equipments will be designed as per the modern available technology for controlling the impacts, no adverse impacts on public health in the area are anticipated.

1.5 **Environmental Management Plan**

Environmental Management Plan during the Erection Phase

1.5.1 Soil Environment Management


Preparation of site will involve excavations and fillings. The earthen material generated during excavations and site grading periods, will be properly dumped and slope stabilisation will be taken. The topsoil generated during erections shall be preserved and reused for plantations.

The greenbelt area will be delineated before start-up of earthwork and tree plantation will be taken up during erection stage itself.

1.5.2 Air Quality Management

The activities like site development, grading and vehicular traffic contribute to increase in PM and NO_x concentrations. The mitigation measures recommended to minimize the impacts are:

- Water Sprinkling in construction area;
- Proper maintenance of vehicles and construction equipment; and
- Tree plantation in the area earmarked for greenbelt development.

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1.5.3 Water Quality Management

- The earthwork (cutting and filling) will be avoided during the rainy season and will be completed during the summer season.
- Stone pitching on the slopes and construction of concrete drains for storm water to minimize soil erosion in the area will be undertaken.
- Soil binding and fast-growing vegetation will be grown within the plant premises to arrest the soil erosion.

1.5.4 Noise Level Management

Operation of construction equipment and vehicular traffic contribute to the increased noise level. Recommended mitigation measures are:

- Enclosures for noise making units like pumps, DG sets, compressors etc.,
- Good maintenance of vehicles and construction equipment;
- Plantation of trees around the plant boundary to attenuate the noise; and
- Provision of earplugs and earmuffs to workers.

1.5.5 Ecological Management

Minimum clearing of vegetation will be required. The existing trees will be preserved in the operation phase of the project. Thus, there will not be any ecological impact due to the project activity in its erection stage.

Environment Management Plan during the Operation Phase

During operation phase, the impacts on the various environmental attributes should be mitigated using appropriate pollution control equipment. The Environment Management Plan prepared for the proposed project aims at minimizing the pollution at the source itself.

1.5.6 Air pollution Management


Fugitive and flue gas emission from plant will contribute to increase in concentrations of PM, SO₂ and NO_x. The mitigation measures recommended are as follows:

- Raw material handling sections are major source for fugitive emissions;
- Adopting good housekeeping practice will also help in control of fugitive emission. Maintaining shop floor and roads in good condition minimizes the chances of fugitive emission; and
- The trucks and other vehicles shall be maintained and serviced regularly to reduce air emissions.

1.5.7 Water pollution management

The recommended measures to minimise the impacts are as follows;

- Recycling of wastewater will be used in plant process;
- Adequate treatment of wastewater prior to recycling/reuse to maximum extent;
- Utilization of treated domestic wastewater in greenbelt development and plant operation;

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- Lining of effluent dyke suitably to prevent any seepage into ground to avoid any groundwater contamination;
- Provision of storm water system to collect and store run-off water during rainy season and utilization of the same in the process to reduce the fresh water requirement; and
- Suitable rainwater harvesting structures to be constructed.

1.5.8 Noise pollution Management

The major noise generating sources are the DG-sets, boiler feed water pumps, loading and unloading operations, ETP, and vehicle movements. Some recommendations are;

- Adequate protective measures in the form of ear muffs/ear plugs have been provided to the workers working in high noise areas;
- In addition, reduction in noise levels in the high noise machinery areas could be achieved by adoption of suitable preventive measures such as suitable building layout in which the equipment is to be located; and
- Adequate greenbelt development is also being developed in the plant boundary.

1.5.9 Solid Waste Management

The quantities of the solid waste generation after the proposed project are listed below:

- The quantity of non-explosive wastes such as cotton , yards from the explosive plant will be 3.6 TPA, which will be sold to the authorized vendors for recycling;
- Explosive wastes (0.1TPA) generated in the plant will be Burnt in open pit and ash generated will be sent to TSDF;
- The Chemical Sludge (0.55 TPM) generated from ETP Will be treated in solar pan and dried residue will be burnt in open pit and ash generated will be sent to TSDF;
- Used or spent Oil From maintenance (0.1 TPA) will be Stored in HDPE/MS barrels and sent to SPCB authorized recycle dealers;
- Barrels/ Containers contaminated with hazardous wastes (1.2 TPM) will be Disposal to authorized recyclers;

1.5.10 Ecological Management

List of the Rare or endemic or endangered or threatened (REET) and Schedule I species found in the study area. None of the plant species is listed under the threatened Taxa by the Botanical Survey of India (BSI). Peacock (*Pavo cristatus*) and Common monitor (*Varanus bengalensis*) are the only schedule I species found both in the core area and the buffer zone. Peacocks were pretty common and they were found in small groups of 1 to 4 in the whole area except in wetlands. *Varanus bengalensis* was not actually seen in the core area during the survey but it was found only once in the nearby mountain. Since they are found both in the core area and the buffer zone, both the project proponent and the State Forest and wildlife department are responsible for their conservation. The wild life conservation plan for Schedule I species has been prepared and submitted to the authentication of Chief Wildlife Warden. Budget of about 2.5 lakhs has been allocated for the WL conservation.

1.6 **Traffic Study**

The project site is located at a distance of 3.06 Km from the National highway-209 Dindigul –

Bangalore road. The engine driven vehicles were classified into various levels like two wheelers, auto rickshaw, car/utility, buses and trucks. The proposed activity involves the transport of raw material and finished goods near to and from the plant site. The present level of traffic on the existing Dindigul – Bangalore road found to be 421 PCUs/hr. The total traffic generated from the proposed activity will be 567 PCUs/hr (421+146=567). The transportation in the proposed activity not create any significant impacts to the environment.

**TABLE-1.9
TRAFFIC SCENARIO**

Road	V	C*	V/C Ratio	LOS
Dindigul – Bangalore road	Existing			
	421	1500	0.28	B
	After proposed project			
	567 (421+146)	1500	0.37	B

*V= Volume in PCUs/hr & C= Capacity in PCUs/ hr
* Note: Capacity as per IRC Guidelines*

The existing level of service (LOS) of the Dindigul – Bangalore Roadway is 'B' which is Very Good. After considering the transportation of trucks due to the proposed project activity, meagre impact was envisaged. The level of service predicted to be 'B' (Very Good) even after the proposed activity.

There will be a movement of trucks in the plant premise for the transportation of raw material and products but the proposed activity involves only a small increase in truck numbers which may never cause a significant impact. The vehicular movements can discharge SO₂, NO_x and particulate emissions due to combustion engines. The emission from the vehicular movements can be controlled by good management practices of the vehicles.

- Vehicles used for transportation will be equipped with novel engine for reducing emissions.
- Low sulphur-High Speed Diesel will be used for fuelling vehicles.
- Periodical maintenance of vehicles with emission testing will be carried out.

1.7 Environmental Monitoring Program

The environmental monitoring program is important in terms of evaluating the performance of pollution control equipment installed in the plant. The sampling and analysis of the environmental attributes will be as per the guidelines of CPCB/TNPCB. The frequency of air, noise, surface water and ground water sampling and location of sampling will be as per the directives of Tamil Nadu Pollution Control Board.

1.7.1 Budgetary Allocation for Environmental Protection

The capital cost of the project is about Rs. 9.32 Crores. It is proposed to invest about Rs.1.15 Crores on pollution control, treatment, green belt development, rainwater harvesting, environmental monitoring systems and others. The break-up of the investment is given in **Table - 1.10**


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TABLE - 1.10
COST PROVISION FOR ENVIRONMENTAL MEASURES

Sr. No.	Description of Item	Capital Cost (Rs. in Lakhs)	Recurring Cost (Rs. in Lakhs)
1	Air pollution control systems	30.0	2.5
2	Water pollution control system	35.0	4.0
3	Environmental Monitoring	10.0	5.0
4	Greenbelt development, rainwater harvesting and others	40.0	6.0
Total		115.0	17.5

1.7.2 Greenbelt Development

The greenbelt area of the proposed plant will be of 35.48 ha which is 36.5 % of total area. Mango, Neem, Teak, Gulmohar, Ber, Polyalthia, Arjuna, are the species proposed to be planted along the periphery of the industrial premises. No trees will be cut-down for the proposed project. With the existing green cover additional greenbelt will be developed based on the suggestions of DFO and Horticulturist.

1.8 **Disaster Management Plan**

To tackle the consequences of a major emergency inside the plant premises or its immediate vicinity, a Disaster Management Plan has been formulated. The objective of the Disaster Management Plan is to make use of the combined resources of the commercial explosive Plant and the outside services, to achieve the following:


- Effect the rescue and medical treatment of casualties;
- Safeguard other people;
- Minimize damage to property and the environment;
- Initially contain and ultimately bring the incident under control;
- Identify any dead;
- Provide for the needs of relatives;
- Provide authoritative information to the media;
- Secure the safe rehabilitation of affected area; and
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the Emergency.

1.8.1 Occupational Health & Safety Measures

Large projects where multifarious activities are involved during construction, erection, testing, commissioning, operation and maintenance, the men, materials and machines are the basic inputs. Along with the benefits, the industrialization generally brings several problems like occupational health and safety. The industrial planner therefore has to take steps to minimize the impacts and to ensure appropriate occupational health and safety in the commercial explosive Plant.

The following measures are proposed:

- Conducting awareness programs at regular intervals to the employees;

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- Providing safety kits and prevention kits; and
- Provision of Clinic at the plant site to handle emergency situations that may arise.
- An amount of Rs. 3.2 lakhs will be allocated annually for the safety and health of the workers.

1.9 Corporate Environmental Responsibility

M/s. SUA Explosives & Accessories Private Limited proposes to take part in various CER activities like potable water facility for nearby school, Improvements of water bodies in the Palani region, Road facilities to the nearby villages, infrastructure facility to Govt School and revamping of water pumps at nearby villages. Under CER activity 20.0 lakhs (2% of project cost) will be allotted for the above-mentioned works. The CER activity plan for the proposed plant is shown in **Table - 1.11**

TABLE - 1.11
CORPORATE ENVIRONMENTAL RESPONSIBILITY ACTION PLAN


Sr. No	categories	Activity	Capital cost (Rs. in Lakhs)	21-22	22-23	23-24	24-25	25-26
1.	Drinking Water	Installation of RO Units in villages panchayat and schools	4.5	2.0	2.5	--	--	--
2.	Infrastructure	Maintenance of village Roads	5.0	-	2.0	3.0	--	--
		Installation of solar street lights in villages.	4.5	2.0	2.5	--	--	
3.	Health	Organisation of Health Camps in nearby villages	5.0	1	1	1	1	1
4.	Green belt development	Plantation of trees in villages	1.0	0.25	0.25	0.25	0.25	--
Total			20.0	5.25	8.25	4.25	1.25	1.0

1.10 Project Benefits

The basic requirement of the community needs will be strengthened by extending health care, educational facilities to the community, providing drinking water to the villages and taking part in various health care activities.

Implementation of the project will result in the following benefits

- Temporary employment for people from the neighboring villages during construction phase;
- 120 persons will be employed as direct and 130 persons will be employed as indirect.
- providing drinking water facility and revamping of bore wells facilities in the nearby villages;
- State will get revenue from payment towards taxes and water cess etc.,

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- Reduces the demand and supply gap of explosives.

1.11 Conclusion

The proposed project of commercial explosive Plant has certain level of marginal impacts on the local environment. Thus, it can be concluded that with the judicious and proper implementation of the pollution control and mitigation measures, the proposed project would be beneficial to the society as well as to reduce the demand-supply gap of manufacturing products which contributes to the economic development of the region in particular and country in general.