

EXECUTIVE SUMMARY

ON

ENVIRONMENTAL IMPACT ASSESSMENT & ENVIRONMENTAL MANAGEMENT PLAN (EIA/EMP)



FOR

SETTING UP NEW AN MELT PLANT (425 MTPD) AT EXISTING RCF FACILITY, TROMBAY, MAHARASHTRA

OF



RASHTRIYA CHEMICALS AND FERTILIZERS (RCF)

Prepared By



PROJECTS & DEVELOPMENT INDIA LIMITED

(A Govt. of India Undertaking)

PDIL Bhawan, A-14, Sector – 1, Noida

Gautam Buddh Nagar, UP

List 'A' - Accredited EIA Consultant Organization by QCI-NABET
Certificate No. NABET/EIA/1821/SA 0124 (07th Jan, 2021)



JOB NO: EN-00247

July, 2021



EXECUTIVE SUMMARY

The EIA report has been prepared based on standard TOR in addition to Generic requirement as per EIA notification, 2006. It has been covered in 12 no. of chapters along with the supporting annexure excluding executive summary.

In March 2021, the Rashtriya Chemicals and Fertilizers Limited (RCF) applied for Grant of TOR (Terms of Reference) to Ministry of Environment and Forests & Climate Change (MoEF&CC) to obtain Environment Clearance (EC) for the proposed project "Setting up New Ammonium Nitrate (AN) Plant of capacity 425 MTPD in the existing RCF Trombay facility.

This Executive Summary highlights the key findings of the Environmental Impact Assessment (EIA) for the Project to comply with the TOR granted by competent authority.

BACKGROUND

RCF is one of the most revered Public Sector Undertaking (PSU) of the Ministry of Chemical and Fertilizers of Government of India. It was established in 1978 after re-organization of Fertilizer Corporation of India (FCI).

RCF, a Public Sector Undertaking is engaged in the manufacture and marketing of Fertilizers and Industrial Chemicals. The company has presently two manufacturing units, located at Trombay and Thal, both in Maharashtra. The Trombay unit of RCF produces Urea, Complex Fertilizers, Bio-fertilizers, 100% water soluble fertilizer and variety of industrial chemicals such as Ammonia, Methanol, dilute Nitric Acid, Concentrated Nitric Acid, Sodium Nitrite/ Nitrate, Ammonium Bi-carbonate, Sulphuric acid, Ammonium Nitrate (AN), Argon etc.

In view of the national vision of "Atmanirbhar Bharat" and to meet the growing domestic demand for AN melt in recent past from PSUs like Coal India Limited, especially post COVID-19 pandemic, RCF proposes set-up New Ammonium Nitrate (AN) Plant of 425 MTPD capacity within the existing RCF Trombay Unit premises on 100% w/w based on latest design / technology using Ammonia & dilute Nitric Acid as raw materials.

In this regard, RCF is advised to obtain environmental clearance (EC) from MoEF&CC for the establishment of New AN Melt Plant proposed to be set-up within the existing RCF Facility, which attracts the provision of obtaining environment clearance under the EIA Notification 2006 and its amendment.

As per EIA Notification 2006, published in Gazette of India, Extraordinary Part-II, Section-3, sub-section (ii) of Ministry of Environment & Forest dated 14.09. 2006 and subsequent amendments, the proposed project falls in Activity 5(a), Category-A of "List of Projects or Activities Requiring Prior Environmental Clearance". All projects or

EXECUTIVE SUMMARY

activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, shall require prior environmental clearance from the Central Government in the Ministry of Environment Forests and Climate Change (MoEF&CC) on the recommendations of an Expert Appraisal Committee (EAC) constituted by the Central Government for the purposes of this notification.

The Environmental Impact Assessment and Management Plan has been undertaken to fulfill the basic requirement for protection of the environment according to the standard TOR granted on 08.06.2021 vide letter no. **No. IA-J-11011/216/2021-IA-II (I)** against proposal no. **IA/MH/IND3/212615/2021** for conducting environment impact assessment study for chemical fertilizers and information to be included in EIA/EMP report issued by the MoEF&CC for seeking environmental clearance.

PROJECT PROPOSAL

The project proposal by RCF relates to setting-up Ammonium Nitrate (AN) Melt plant of 425 MTPD on 100% w/w based on latest design / technology using Ammonia & dilute Nitric Acid as raw materials. There is increase in demand for AN melt in recent past from PSUs like Coal India Limited, especially post COVID-19 pandemic. In view of the national vision of "Atmanirbhar Bharat" and to meet the growing domestic demand of AN Melt, RCF proposed to set-up new AN Melt plant at its Trombay Unit.

DETAILS OF EIA CONSULTANT

Projects & Development India Limited (PDIL), a premier engineering and NABET accredited EIA consultant organization (NABET/EIA/1821/SA 0124), have been retained by RCF for preparation of EIA Report, online submission and obtaining environmental clearance from MoEF&CC..

PDIL is a Mini Ratna, Category-I, Govt. of India Undertaking under Department of Fertilizers. PDIL is an ISO 9001:2015, ISO-45001:2018 Certified and ISO/IEC 17020:2012 accredited premier Engineering & Consultancy Organization which has played pivotal role in the growth of Indian Fertilizer Industry.

PROJECT COST & COMPLETION SCHEDULE

The estimated project cost of the project is Rs. 88.50 Crore and the schedule period to setting up the plant is 28 months (Mechanical completion).

EXECUTIVE SUMMARY

PROJECT LOCATION

RCF Trombay Unit is located in Chembur Industrial Area in Ward M west, Chembur, suburban Mumbai, Maharashtra around geo-coordinates of 19°02'10.579" North and 72°53'19.233" East at an altitude of about 6m from MSL. Chembur is a suburb in eastern Mumbai. Eastern Express Highway is located at a distance of about 1 km from the unit. Chhatrapati Shivaji International Airport is located in north direction at a distance of about 6 km from Trombay Unit.

NEED & BENEFITS

The need and justification of the proposed project is summarized as under:

1. There is increase in demand for AN melt from PSUs like Coal India Limited. In view of the national vision of "Atmanirbhar Bharat" and to meet the growing domestic demand.
2. The project is of national interest for self-sufficiency in Ammonium Nitrate production and in-turn for the securing energy supply of the country as Ammonium Nitrate is mainly used in Coal Mining which is primarily used in Thermal Power Generation plants.
3. Use of Ammonium Nitrate in the production of fertilizers and explosive materials has significantly grown over the years and taken a major share of the organic chemicals market.
4. AN is popular for its readiness to mix with the soil and hence, is used as a favorable crop fertilizer to improve nitrogen content of soil.
5. It is also used for hay fertilization and pasture due to its less susceptibility towards volatilization losses in comparison with the Urea-based fertilizers.
6. It is a solution for foliar sprays that enables the plant to absorb the necessary elements through their leaves.

PRESENT ENVIRONMENTAL STATUS

Climate & Meteorology

The climate of the study area falls under tropical wet and dry climate under the *Köppen climate classification*, with seven months of dryness and peak of rains in July. The cooler season from December to February are followed by the summer season from March to June. The study period for the proposed project was between (23rd March 2021 to 23rd June 2021).

Ambient temperature was in the range of **24.5 to 35.9°C**

Relative humidity was in the range of **37.5 to 96.4%**.

Total rainfall (during study period) - **877mm***

(*influence of Cyclone Takutae)

EXECUTIVE SUMMARY

Soil Environment

The soils of the area have following characteristics:

The texture of soil in the study area was **SANDY LOAM**.

Level of Nitrogen as N ranged between **276.8 to 295.5 mg/Kg**

Level of Phosphorous as P₂O₅ ranged between **54.8 to 72.8 mg/Kg**.

Level of Potash as K₂O ranged between **128.4 & 140.0 mg/Kg**

The proposed project activity will not impart any visible impact on the soil component of the environment.

Air Environment

Air pollution due to NO_x and SO₂ does not invite any adverse comments.

**Table-E1
Summary of Air Quality**

LOCATION CODE	PM ₁₀ /100			PM _{2.5} /60			SO ₂ /80			NO ₂ /80			AQI
	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	
SA1	50	78	63.8	23	47	35.3	16	23.2	19.8	31.9	45.2	37.5	Satisfactory
SA2	42	82	62.7	19	50	35.0	13.5	24.5	19.4	26.8	47.4	36.8	Satisfactory
SA3	36	86	62.3	16	52	35.0	10.5	23.8	17.8	22.5	49.8	36.4	Satisfactory
SA4	54	77	65.0	16.2	36.6	27.8	16.2	25.5	19.6	32.1	52.8	40.6	Satisfactory
SA5	49	75	61.1	24.9	39.2	30.4	15.2	23.9	18.4	31.2	46.5	37.8	Satisfactory
SA6	49	77	61.3	22.5	34.1	28.2	13.2	20.6	16.6	30.1	45.5	37.6	Satisfactory
SA7	47	74	60.0	21.6	33.7	27.2	16	23.2	19.8	29.5	46.5	37.0	Satisfactory
SA8	45	70	57.9	20	45	32.9	13.5	24.5	19.4	28.0	43.1	34.9	Satisfactory

The air environment has a good buffering and tolerance capacity to remain in the II category of (satisfactory) as per the study conducted by PDIL. Thus no noticeable impact of air environment due to the project during construction and operation has been envisaged.

National Air Quality Index

AQI	Possible Health impacts
Good (0-50)	Minimal Impact
Satisfactory (51-100)	Minor breathing discomfort to sensitive people
Moderate (101-200)	Breathing discomfort to the people with lung, heart disease, children and older adults
Poor (201-300)	Breathing discomfort to people on prolonged exposure
Very Poor (301-400)	Respiratory illness to the people on prolonged exposure
Severe (>400)	Respiratory effects even on healthy people

EXECUTIVE SUMMARY

The AQI dwells between good to satisfactory as per categorization under **Swachhh Bharat Abhiyaan** with health impacts of minor breathing discomfort to sensitive people. It has been envisaged that the proposed plant will have well sustainable impact on the air component of the environment.

Water Environment

Eight numbers of ground water and eight numbers of surface water samples have been collected and characterized during the study period. The calculation of Pollution Index is as follows:

Where,

$$EF = \frac{\text{Analytical value}}{\text{Standard}}$$

$$SNLF = \frac{EF \times \text{No. of samples exceeding standard}}{\text{Total No. of sample under study}}$$

Calculation of EPI for Surface Water within study area

PARAMETERS	AVG. RESULT VALUE	STANDARD AS PER IS: 10500	SW	
			EF	SNLF
Total Dissolved Solids	37820	500	33.4	25.1
Total Alkalinity	800	200	0.9	0.1
Total Hardness	6800	200	16.7	16.7
Chloride as Cl	21000	250	36.4	22.8
Sulphate as SO ₄	1675	200	4.0	2.5
Nitrate as NO ₃	194	45	0.6	0.1
DO as O ₂ (Saturation level)	6.8	--	--	--

Calculation of EPI for Ground Water within study area

PARAMETERS	MAX RESULT VALUE	STANDARD AS PER IS: 10500	GW	
			EF	SNLF
Total Dissolved Solids	600	500	1.3	0.8
Total Alkalinity	168	200	0.7	0.1
Total Hardness	420	200	1.8	1.8
Chloride as Cl	250	250	1.0	0.2
Sulphate as SO ₄	50	200	0.3	0.0
Nitrate as NO ₃	1.72	45	0.0	0.0
Iron as Fe	0.52	0.3	1.9	1.4

Noise Environment

The noise generation during construction phase may temporally have impact on the existing ambient noise levels. The major works associated with installation/ construction activities would be carried out during day time. The heavy construction equipment may result in high noise, which may affect the personnel in the work zone. However, use of

EXECUTIVE SUMMARY

Personal Protective Equipments (PPE) such as earplugs, ear muffs will mitigate any adverse impact of the noise on working personnel.

Estimation of HSD Affected Persons

Location Code	Name of Location	Day time Leq. Value dB(A)	Night time Leq. Value dB(A)	% HSD	
				Day	Night
SN1	AAQMS,1	63.7	55.4	14.21	8.24
SN2	AAQMS,2	61.7	52.0	12.59	6.38
SN3	AAQMS,3	63.4	52.9	13.96	6.84
SN4	AAQMS,4	62.8	52.8	13.47	6.79
SN5	Near Priyadarshini	56.8	49.5	9.10	5.24
SN6	Near I-Max Wadala	57.3	48.0	9.42	4.64
SN7	RCF Colony Gate IV	56.8	50.3	9.10	5.58
SN8	Gangadhar Deshmukh Hall	30.8	32.5	2.56	2.40

*HSD: highly sleep disturbed, *HA: Highly Annoyed Persons HA> HSD in the area.

Risk Analysis

This chapter covers ten failure cases with multiple scenarios in each in the existing and proposed plant. Iso-risk contours have been plotted by PHAST Risk Micro software of M/s DNV Technica, by considering proposed project and other allied facilities which infers that acceptable limit of individual risk of 1.0×10^{-9} per year remains mainly confined within the plant premises. The Societal Risk has been observed in acceptable region. Hence, the plant operations may be considered environmentally safe from risk point of view.

The downwind distances to GLC of Ammonia may extend beyond factory boundary in case of major failure. Hence, the population outside should be made aware of the properties of gas/s and what to do in case of gas leakage.

Socio-Economic Status

The 10 km radius study area around RCF Fertilizer complex covers 23 wards/ villages falling in Kurla, Sion, Chembur, Maravali Church. Wadala Truck Terminus, Sewri Fort etc. The total population of the entire wards/villages under study area was 33,10,657 (District Census handbook - 2011). Under the category of sex ratio, the number of females per 1000 males is 869. The social compositions in the study area are such that nearly 5.34 % of total population is Scheduled Caste population and 0.80% of total population is Scheduled Tribe population. The literacy rate in the study area was 81.4% out of which the literacy rate in male category is 84.3% whereas the literacy rate is 77.9% in female category and both are far above the national average.

Flora & Fauna

EXECUTIVE SUMMARY

The surrounding area of RCF at Trombay, Mumbai has different kinds of habitats namely mangrove forest, tidal lagoon, mudflats, scrub vegetation and roadside plantations. No adverse impact has been estimated due to operation activity on the existing flora & fauna of the study area.

Traffic

All raw material and utilities required will be fulfilled through RCF existing facility no additional transport requirement for Raw material and utilities. There will be nominal increase in traffic due to transportation for supply of enhanced product but the existing infrastructure is so that it can smoothly accumulate the increase load. Traffic study is reveals that any adverse impact on the environment as well as existing traffic network is not envisaged.

ENVIRONMENTAL IMPACT

As the project is limited to setting-up New AN Melt plant in existing RCF Facility thus during construction No significant Environmental impact is envisaged. Although operation phase of project comprises various activities, each of which may have either positive or negative impact on some or other environmental attributes which may be regarded as temporary or short-term & reversible. As per the Study no adverse impact on environment is envisaged.

ENVIRONMENTAL MANAGEMENT PLAN

Impact on Topography

During the construction topography can be slightly impacted such as preparation of Bore/holes, Site work line excavation of soil/filling of demolition waste, Temporary facilities such as Sheds, approach roads, sanitary facility, Site Clearance and removal of shrubs and grass can impact topography temporarily.

Mitigation Measures: The soil investigation is limited to construction of bore wells/holes which will have no impact on the topography and environment. After the Soil investigation, the bore/hole will be covered or refilled, As the project site is under the existing plant, No leveling of land is required, Project site is vacant land no trees need to be cut off hence no impact envisaged, Due the plant erection, change in topography is envisaged on micro level which may be considered insignificant in view of product demand & benefits arising out of it.

EXECUTIVE SUMMARY

Impact on Climate

The climate of the study area falls under tropical wet and dry climate, as it is a small project and limited to installation of AN Melt plant, impact on climate is not envisaged.

Land Environment

There will be no change in land use as the proposed site is demarcated for industrial use only. As the land is devoid of any trees thus no clearance of land is required. Construction/installation shall be done as per the industrial area and local norms. Leveling of site shall be maintained as per the local drainage pattern at the site.

Mitigation Measures: proposed plants would be established on a small piece of land within existing factory premises of the fertilizer plant. Hence, there shall be no change in land use pattern; existing drainage pattern shall be maintained even after establishment of the proposed project. Proposed project shall be based on latest AN Manufacturing Technology which is supposed to be one of the cleanest processes.

Air Environment

Land preparation, demolition and civil construction activities will lead to generation of dust. Installation of equipment and mechanical fabrications will also lead to generation of gaseous pollutants like SO₂ & NO_x mainly from the exhausts of earthmovers and other construction equipment. However, these activities will persist for a limited period of construction and will be confined within boundary walls and the corridor of trees existing.

Mitigation Measures: Water sprinkling shall be done at regular intervals wherever required. Roads in the area are already paved thus this will reduce the abrasion and thereby reduce the dust generation. Temporary road will be constructed wherever required for movement of trucks. Raw materials/debris/excavated muck shall be properly stacked and stored under covered conditions at designated areas/storage yards and removed regularly. Storage of raw materials like cement, sand, soil, etc. shall be done in covered area or should be covered by tarpaulin cover. Construction workers shall be equipped with mask, helmet, gloves, & other PPEs at construction site.

Noise Environment:

Temporary impact on the existing ambient noise levels. The major works associated with installation/ construction activities would be carried out during day time. The heavy construction equipment may result in high noise, which may affect the personnel in the work zone. However, use of Personal Protective Equipments (PPE) such as earplugs, ear muffs will mitigate any adverse impact of the noise on working personnel.

Mitigation Measures: The construction activity shall be carried out mostly during daytime.

EXECUTIVE SUMMARY

Regular noise level monitoring shall be carried out for taking corrective action. All the construction machinery and equipment used shall be provided with adequate noise mufflers and noise suppression equipment along with proper lubrication. Adequate parking space will be provided at the project site to minimize the honking requirement due to congestion and jams and restricting the speed limits. Protection devices (earplugs or earmuffs) shall be provided to those workers who cannot be isolated from the source of noise and reducing the exposure time of workers to the higher noise levels by rotation.

Water Environment:

During construction phase, about 200 labourers would be engaged by the contractors. During peak period of construction, about 20 m³/day of water shall be required. During excavation and other non-building jobs about 2-3 m³/day of water shall be required. This water requirement shall be fulfilled through the water available from existing facilities of RCF Unit. Drinking water shall be supplied separately through existing source of Municipality. The process water shall be made available from the existing Sewage Treatment Plants (STP) .

Mitigation Measures: No vehicle washing or maintenance shall be carried out at construction site. The domestic sewage shall be disposed through municipal sewage system. No ground water shall be extracted for construction purpose and no excavation works shall be undertaken during monsoon season. Water supply and sanitation facilities shall made available at labour camp and other areas at site. Loose Raw material and construction debris shall be stored in covered areas and paved areas to avoid direct exposure and mixing with run-off. No wastewater shall dispose to nearby water body.

Solid Waste Management

Construction activities lead to generation of concrete, muck, metal scraps, stone, bricks, glass, polythene sheets, plastic, paper etc. as waste. Various operations during the construction activities lead to the varied compositions in the total solid waste stream and affect the site.

Mitigation Measures: The waste is required to be collected, segregated and disposed in manner that it does not mixes or polluting air, water and soiling environment. Excavated topsoil shall be used for backfilling/ greenbelt development & plantation. Municipal waste will be minimal as most of construction workforce will come from near areas and no construction camp is proposed. The waste generated will be collected, segregated and disposed off suitably as per C&D waste management rules 2016. Hence impacts will be insignificant and for short duration only.

EXECUTIVE SUMMARY

RCF is relentlessly adopting the recent technology for the benefit of environment and to maintain the profitability even after the increase in the cost of raw material. Emphasis is given on adoption of 4R methodology (Reduce, Recover, Reuse and Recycle).

Impact on Ecology

The proposed project would be installed within premises of RCF Trombay Unit. The land earmarked for proposed project is devoid of any remarkable vegetation No fruit bearing and costly/timber trees exist within the proposed plant area hence, clearance during construction period is not required. There shall not be any adverse impact on terrestrial ecology during construction phase. As there is no water body falling within the project site area, No impact on Aquatic Ecology is envisaged.

Impact on Socio Economic

There will be a positive impact on the socio economic of the project area. Construction phase will generate employment options for skilled and unskilled labour. There will requirement of 200 labour for construction which will be hired from nearby area resulting in employment generation in the area.

CONCLUSION

The proposal for the establishment of New AN Melt plant (Capacity 425 MTPD) doesn't envisage any adverse environmental impacts on the surrounding environment. Removal of vegetation is not envisaged. The green belt will also be strengthened to contain the dust and noise due to various activities. Hence no significant impact on ecology is expected during construction phase and operation phase.

RCF has also been involved in executing various Corporate Sustainability Activities, which address issues on environment and community. The RCF has been consistently working for the betterment of community and its contribution in this area has a long history. RCF is taking up various activities related to CSR much before the incorporation of CSR activity under Company's act 2013.

Based on the EIA study and various safety and security measures mentioned above for the proposal for production enhancement project, it may be inferred that the project may be considered acceptable from environment point of view.

.....