

1.0 EXECUTIVE SUMMARY

1.1 Project Proponent

Rashtriya Chemicals and Fertilizers Limited (RCF), a Public Sector Undertaking is engaged in the manufacture and marketing of Fertilizers and Industrial Chemicals.

1.2 Proposed Project

RCF, Trombay at present is producing AN-melt @ 1.4 LMT per annum using Ammonia and dilute Nitric acid in Calcium Ammonium Nitrate (CAN) section of existing Ammonium Nitro Phosphate (ANP) plant after in-house modification of AN Melt section of ANP plant. RCF can safely produce upto 600 MTPD AN Melt from existing plant. So the enhanced production is possible without any modification / addition in the existing plant. 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, it is proposed to regularize existing AN Melt plant along with production enhancement from 1.4 Lakh MTPA to 1.9 Lakh MTPA (considering production of 575 MTPD and 330 stream days) of AN Melt.*

1.3 Salient Features

S. No.	Table – 1: Salient Features	
A	Introduction of Project	
1	Need of Project	<p>Importance & Benefits of the proposed project are as follows:</p> <ul style="list-style-type: none"> 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. Use of Ammonium Nitrate (AN) in the production

		<p>of fertilizers and explosive materials has significantly grown over the years and taken a major share of the organic chemicals market.</p> <ul style="list-style-type: none"> • AN is popular for its readiness to mix with the soil and hence, is used as a favourable crop fertilizer to improve nitrogen content of soil. • It is also used for hay fertilization and pasture due to its less susceptibility towards volatilization losses in comparison with the urea-based fertilizers. • It is a solution for foliar sprays that enables the plant to absorb the necessary elements through their leaves. 												
2	Demand Supply Gap	The growth of global AN market is highly dependent on factors such as the shifting preference towards bio-based chemicals, the increasing demand for industrial explosives and blasting agents, as well as the rising consumption of AN at existing industrial facilities.												
3	Import Vs Indigenous production	Estimated annual requirement of AN by the explosive industries is approx. 6.55 Lakh MT which is met through import @ 2.68Lakh MT per annum and indigenous supply @ around 3.87 Lakh MT												
4	Export Possibility	<p>The production of around 1.9 Lakh MT annually from the proposed project shall substantially reduce the imports.</p> <p>However, following market areas may be explored for export of AN in future in view of increasing demand as of now:</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">User type</th> </tr> <tr> <th>End user</th> <th>Application industry</th> </tr> </thead> <tbody> <tr> <td>Fertilizers</td> <td>Agriculture</td> </tr> <tr> <td>Commercial & Civilian Explosives & Blasting Agents</td> <td>Explosives / mining</td> </tr> <tr> <td>Military Explosives</td> <td>Defense</td> </tr> <tr> <td>Nitrous Oxide Manufacture</td> <td>Others</td> </tr> </tbody> </table>	User type		End user	Application industry	Fertilizers	Agriculture	Commercial & Civilian Explosives & Blasting Agents	Explosives / mining	Military Explosives	Defense	Nitrous Oxide Manufacture	Others
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6	Employment Generation (Direct / Indirect)	Not applicable 79 nos. of manpower are engaged in operation of the AN melt plant at existing capacity.
B	Project Description	
1	Interlinked & Interdependent Project	<ul style="list-style-type: none"> • RCF- Trombay, at present, is producing AN-melt using Ammonia and dilute nitric acid in Calcium Ammonium Nitrate (CAN) section of existing Ammonium Nitro Phosphate (ANP) plant. • The projects related to use of AN melt viz. mining industry, explosives industry, paints, plastics, fabrics, anaesthetic gases, fertilizers, instant cold packs, mining industry (Coal and Iron Ore mining), etc. and production of AN melt are interdependent in view of consumption and supply
2	Location of Project <ul style="list-style-type: none"> • Coordinates • Location • Environmental Sensitivity 	<ul style="list-style-type: none"> • 19°02'19.01"N, 72°53'08.53"E at Elevation 6 m • The proposed revamping project is located within existing RCF Trombay unit in Maharashtra, Mumbai. • There is no Environment/Ecological sensitive area within study area. <p>Details of environment sensitivity are mentioned in Table 6.</p>
3	Details of Alternate Site	The proposed project is production augmentation of existing plant within premises of RCF Trombay. No alternative site was considered for the proposed revamping project
4	<ul style="list-style-type: none"> • Size/Magnitude • Capacity 	<ul style="list-style-type: none"> • Proposed: 1.9 Lakh MTPA as 100% w/w AN Melt • Existing: 1.4 Lakh MTPA
5	Project Details & Process Description	<p>In view of the national vision of "Atmanirbhar Bharat" and to meet the growing domestic demand, RCF proposes to increase the production of AN Melt from 1.40 to 1.90 Lakh MT per annum.</p> <p>The industrial production of Ammonium Nitrate entails the acid-base reaction of ammonia with nitric acid:</p> $\text{HNO}_3(\text{g}) + \text{NH}_3(\text{lg}) \rightarrow \text{NH}_4\text{NO}_3(\text{lg})$
6	Raw material & finished product, quantity, source, mode of transport	<p>Following raw materials will be used from the existing RCF facility through pipeline:</p> <p>Ammonia: 0.25 MT/MT of AN Melt Nitric Acid: 0.90 MT/MT of AN Melt STP Water: 0.82 M³/MT of AN Melt Steam: 0.72 MT/MT of AN Melt</p>

7	Resource optimization/Recycling and reuse	<p>The proposed project does not envisage resource recycling and reuse as efficiency of the plant operation is quite high and necessary recovery system like scrubbing system is in place to ensure minimal discharge/emissions.</p> <p>Moreover, the process water used in the plant operations is water generated from sewage water in RCF's Sewage water Treatment Plant.</p>
8	Availability of <ul style="list-style-type: none"> • Water, • Power • Steam_(Sp.) 	<ul style="list-style-type: none"> • STP water: 0.82 M³/MT • 20 kWh/MT • 0.72 MT/MT <p>Source: Existing RCF Facility</p>
9	Quantity of Waste (Solid & Liquid)	<ul style="list-style-type: none"> • Site has existing facility to treat the wastewater Approximately 1 m³ per MT of AN Melt which is sent to common Effluent Treatment Plant. • No Solid waste is envisaged to be generated. • Hazardous waste, if any, will be disposed off as per Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules 2016.
C Site Analysis		
1.	Connectivity	Site is well connected to all the local amenities as it is production augmentation of existing plant only.
2.	Land Form/Land Use & Land ownership	<p>Trombay, there would be no change in existing land use pattern and land ownership.</p> <p>There is no Wild Life Sanctuary, National Park and Reserved Forest within 10 km radius of the project area.</p>
3.	Topography	The topography of the area in common with other Deccan Trap regions is undulating with a few small water courses, usually dry during the fair season, dissecting the area.
4.	Existing land-use pattern	The AN melt plant site falls within existing industrial premises of RCF, Trombay.
5.	Existing Infrastructure	<ul style="list-style-type: none"> • Raw Material Storage & Handling Facilities • Ammonia Facility • Nitric Acid Facility • Steam Generation Facilities • Water Supply Facility • Instrument Air Facilities
6.	Soil Classification	The soils of the area are essentially derived from the Deccan trap, which is the predominant rock formation of the study area with small outcrops of laterite at few places. The main types of soils found

		in the area are coastal Alluvium and Laterite soils.
7.	Climatic Data from secondary sources	Barometric Pressure: 995 - 1007 mbar Temperature: 9 - 38 °C Rainfall: 2500 - 2821 mm Relative humidity: 50 - 100% Seismic Zone: III & IV
8.	Social infrastructure	RCF owns its township within its industrial area spread over in an area of about 309.72 Ha at Chembur. The existing infrastructure of RCF Trombay with respect to residential colony, green belt, social infrastructure like school and hospital, road facilities, supply of water, sewerage facilities, power requirement etc. are working efficiently.
D PANNING BRIEF		
1.	Planning Concept	The proposed production augmentation project is limited to 100% capacity utilisation of existing AN Melt Plant. All other associated utilities required for smooth operation of the plant shall be extended from the existing facilities available in RCF, Trombay unit.
2.	Population Projection	79 nos. of manpower are engaged in operation of the AN melt plant at existing capacity. The same will remain unchanged post-production augmentation of the plant.
2.	Land use Planning	As the project proposal is limited within the existing factory complex premises. Hence, additional land use planning is not envisaged.
4.	Assessment of Infrastructure demand	The existing infrastructural facilities available at RCF Trombay are able to meet the requirements.
5.	Assessment of amenities/Facilities	RCF Trombay is having all the required amenities and facilities: <ul style="list-style-type: none"> • Safety, • Health, Environmental, • Social, • Cultural
6.	Proposed Infrastructure	production augmentation of AN Melt Plant @1.9 Lakh MTPA
7.	Rehabilitation & Resettlement Plan	Not Applicable
8.	Project Schedule & Cost Estimation	Not applicable as the existing plant has capacity to produce projected production @ 1.9 LMT and does not require any modification in the existing facility.

1.4 Project 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 Pre-Feasibility Report (PFR), online submission of Form-I and obtaining environmental clearance from MoEF&CC.

2.0 INTRODUCTION OF THE PROJECT

2.1 Identification of Project & Project Proponent

RCF, Trombay at present is producing AN-melt using Ammonia and dilute Nitric acid in Calcium Ammonium Nitrate (CAN) section of existing Ammonium NitroPhosphate (ANP) plant after in-house modification of AN Melt section of ANP plant it is proposed to produce 1.9 Lakh MTPA based on 100% capacity utilisation of existing plant.

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, Argon etc.

RCF promotes balanced use of fertilizers for improving the farm productivity and also to help maintaining soil health, RCF has established 8 static and 6 mobile Soil Testing Laboratories (STL) located pan India. This service is rendered free of cost to farmers. RCF's NPK & Micronutrients soil samples analysing capacity is around 61,700 Soil samples per year. As per assessment of critically polluted industrial areas by CPCB (26.04.2016), RCF Trombay as such does not fall under critically polluted industrial zone.

RCF has spent more than Rs.400 Crore over the years in pollution abatement and environment improvement schemes. This includes massive drive for tree plantation under "Chembur Green" Project. Real time emission levels are displayed through an illuminated board placed at the entrance of the factory for public viewing. Both the manufacturing units are accredited with ISO 9001 for Quality Management System, ISO 14001 for Environment Management System, ISO 50001 for Energy Management System, ISO 45001 for Occupational Health and Safety Management System and ISO 27001 for Information Security Management System.

It is proposed to produce 1.9 Lakh MTPA based on 100% capacity utilisation of existing plant using ODDA process of Stamicarbon Technology.

2.2 Brief description of nature of Project

RCF, Trombay proposes production enhancement of AN Melt Plant within existing RCF Facility. The plant was commissioned back in 80s when EIA notification and concept of obtaining environmental clearance was not in notified. Hence, the AN Melt section of the plant was being operated @ 75% capacity based on the consent to operate issued from Maharashtra Pollution Control Board (MPCB) and renewed from time to time. The existing plant has inherent capacity of safely producing upto 600 MT per day of AN Melt.

In view of emerging new market and surge in demand of ammonium nitrate due to import restrictions during COVID-19 pandemic, it is essential to increase the existing production quantity by from 1.40 to 1.90 Lakh MT per annum using inherent production capacity of the plant.

In this regard, RCF pursued MPCB for amendment in Consent to Operate, who advised to obtain environmental clearance for the existing plant and enhanced production quantity as well. Thus, proposal for production augmentation of AN melt plant and subsequent grant of environmental

clearance is applied under 5(a) category of Industrial Projects-3 of MoEFCC.

2.3 Need of Project& its importance to the country/region

Importance & Benefits of the proposed project are as follows:

1. 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.
2. 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.
3. AN is popular for its readiness to mix with the soil and hence, is used as a favourable crop fertilizer to improve nitrogen content of soil.
4. It is also used for hay fertilization and pasture due to its less susceptibility towards volatilization losses in comparison with the Urea-based fertilizers.
5. It is a solution for foliar sprays that enables the plant to absorb the necessary elements through their leaves.
6. 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, RCF proposes to regularize existing AN Melt plant along with production enhancement from 1.40 to 1.90 Lakh MT per annum..

Hence, the project is of national interest for self-sufficiency in AN Melt production and in-turn for the securing energy supply of the country as AN melt is mainly used in Coal Mines which is the key raw material for Power Generation plants.

Locational Advantage

1. The existing AN Melt plant is located in industrial area Trombay, Maharashtra and is proximate to major markets which use AN Solution as industrial product in explosives industry, paints, plastics, fabrics etc. and mining industry (Coal and Iron Ore mining) in Maharashtra and Madhya Pradesh.
2. RCF is already manufacturing AN melt at lower quantity at this site and the requisite supporting infrastructure is in place.
3. Location of plant is close to the major Mining hub i.e. Maharashtra and Madhya Pradesh.
4. Proximity to major port to facilitate export of finished product.
5. Location is well connected with rest of the country for movement of finished product by land.
6. Suitability of land from topography & geological aspects, synergy and business point of view.

2.4 Demand Supply Gap

The growth of global Ammonium Nitrate market is highly dependent on factors such as the shifting preference towards bio-based chemicals, the increasing demand for industrial explosives and blasting agents, as well as the rising consumption of Ammonium Nitrate at existing industrial facilities.

The global ammonium nitrate market is anticipated to witness extensive growth in the coming years, especially in the Asia Pacific region. The rising consumer awareness regarding the benefits of ammonium nitrate is broadly spreading across agriculture-oriented countries such as Vietnam, India, Thailand & China.

Also, RCF has received a letter Ref. no. 'CIL/CH/1729' dated 01.02.2021 from Coal India Limited wherein CIL has said that, in case RCF takes necessary steps for enhancing their production capacity of AN, CIL from their side are in a position to assure market availability for consumption of substantial quantity of AN through IOCL, who have a Long Term

Agreement with CIL. It is also stated that, the possibility of some sort of tripartite agreement may be explored.

2.5 Import Vs Indigenous production

Estimated annual requirement of AN by the explosive industries is approx. 6.55 Lakh MT which is met through import @ 2.68 Lakh MT per annum and indigenous supply @ around 3.87 Lakh MT. This import has adversely affected in recent past due to decline / restriction on imports during COVID-19 pandemic. In view of the national vision of “Atmanirbhar Bharat”, there is growing domestic demand for AN Melt.

2.6 Export Possibility

The production of around 1.9 LMT of AN Melt annually from the existing AN melt plant shall be able to fulfil the current market demand to some extent by compensating the import quantity reduced due to pandemic.

Alternatively, following market areas can be explored for export of AN in future:

Table-2
Possible export area

User type	
End user	Application industry
Fertilizers	Agriculture
Commercial & Civilian Explosives & Blasting Agents	Explosives and mining
Military Explosives	Defense
Nitrous Oxide Manufacture	Others

2.7 Domestic / Export Markets:

As per the information available with the Ministry of Commerce and Industry, GOI level of indigenous manufacture and imports of Ammonium Nitrate are as follows mentioned below:

Table-3
Domestic & Import statistics

	2018-19 (LMT)	2019-20 (LMT)
Import	2.73	2.68
Domestic Manufacture	4.90	3.87
Total	7.63	6.55

Source: Ministry of Commerce and Industry, GOI

Major domestic markets for use of AN Solution as industrial product are explosives industry, paints, plastics, fabrics, anaesthetic gases, fertilizers, instant cold packs, etc. and mining industry (Coal and Iron Ore mining) in Maharashtra, Madhya Pradesh, Jharkhand, Odisha, Chhattisgarh & West Bengal.

2.8 Employment Generation (Direct / Indirect)

This clause is not applicable as 79 nos. of manpower are engaged in operation of the AN melt plant at existing capacity. The same will remain unchanged post-production augmentation of the plant.

Table- 4
Manpower for AN melt Plant

Officers	Operations Manager -1 Production officer- 11 Mechanical-3 Electrical- 2 Instrumentation- 3
Operators/Technicians	Production Operators- 36 Mechanical technicians – 3 Instrument technicians -1 Electrical Technicians- 2
Mazdoors	17
Total	79 nos.

3.0 PROJECT DESCRIPTION

3.1 Type of Project including interlinked & interdependent projects:

Proposed production enhancement of AN Melt Plant is located within existing RCF Facility. It is only utilisation of existing AN Melt plant @ 100% production capacity.

3.2 Location of Project

The project site is located within existing RCF Trombay unit in Maharashtra.

The geo-coordinates of the proposed project site are as follows:

**Table-05
Geo-coordinates**

Location	Latitude	Longitude	Elevation (MSL)
General Location	19°02'N	72°53'E	6 m
Specific Location	19°02'19.01"N	72°53'08.53"E	

**Table-06
Environmental Setting**

Amenities	Name	Distance & Direction
State Boundary	Maharashtra - Gujarat	121 km in North
Nearest City	Mumbai	Falls in Mumbai
National Highway	NH - 3	1.5 km in NNW
State Highway/Road	Ramakrishna Chemburkar Marg	1 km in East
Railway Station	Matunga Railway Station	3km in West
Airport	Chhatrapati Shivaji Maharaj International Airport	8km in NNW
Hospital	Om Sai Baba Hospital	2km in North
School	St. Sebastian High School	2.5 km in NNE
Nearest Water Body	Arabian Sea	9 km in West
Nearest RF/PF	Chheda Nagar RF	4 km in NE

The plant layout is attached as Annexure-I.

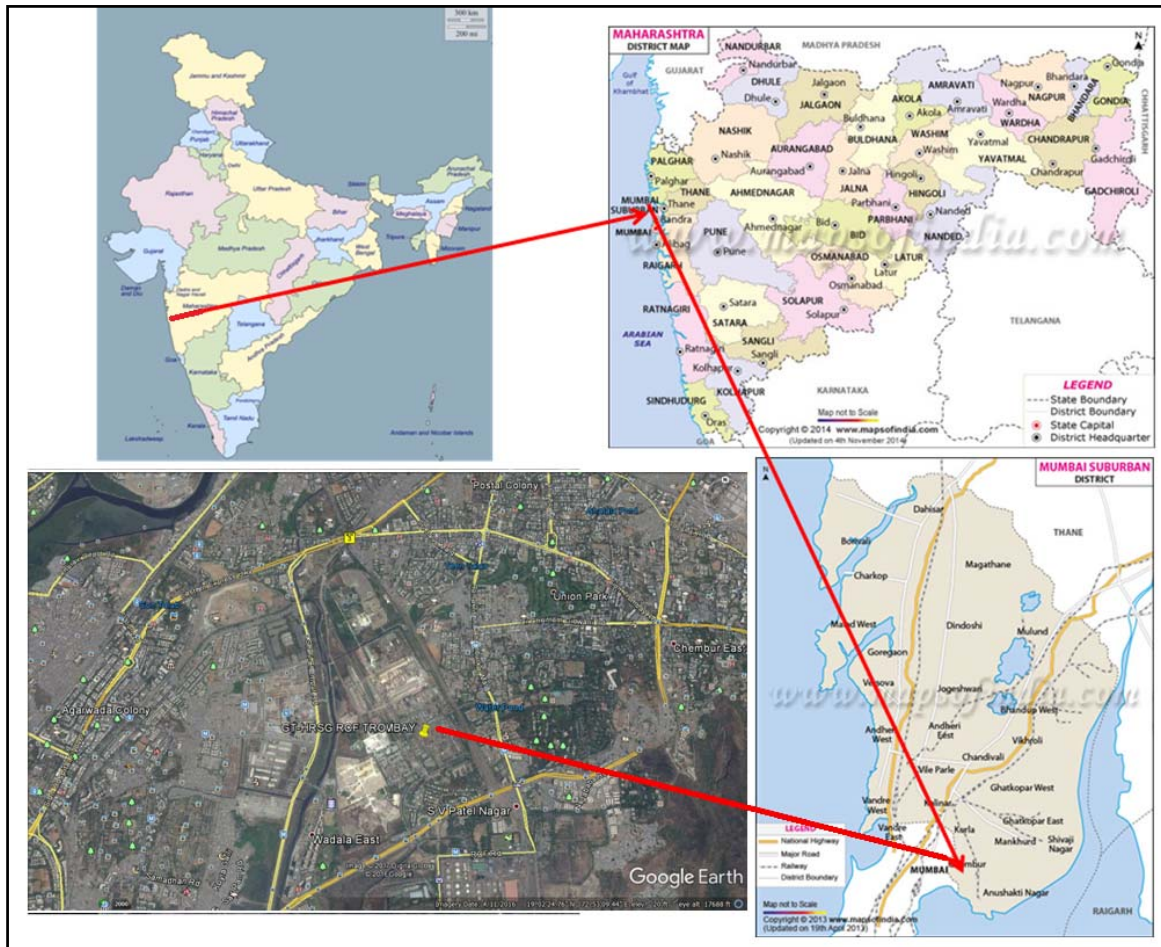


Fig.-1 Proposed Project Location

3.3 Details of Alternate Site

This clause is not applicable as the project proposal is for production enhancement of existing AN Melt plant within premises of RCF Trombay

3.4 Size / Magnitude of operation

As the proposal is limited to the production augmentation in the existing plant hence, this clause is not applicable.

Table- 7
Existing Plant & Facilities

Sr. No.	Equipment	Details
1	Reactors	2 nos., 172203 and 172283
2	Reactor circulation pumps	3 nos., 171125/171109/171189 Capacity - 80 m ³ /hr
3	AN evaporators	3 nos., shell and tube type heat exchangers Shell side fluid – steam, Tube side fluid – Dilute AN
4	Dil. AN (65%) storage tank and pumps	Dilute AN storage tank capacity 120 m ³ Dil. AN pumps 2 Nos.- 171115/171195\ Capacity 55 m ³ /hr
5	Concentrated AN (83%) storage tank	Tank capacity -150 m ³
6	Tanker loading pumps	2 nos., 171118/171198 Capacity – 40 m ³ /hr
7	Fresh/STP water pumps	3 nos., 401113/401173/401193 Capacity 45 m ³ /hr
8	Vacuum pumps	Vacuum pumps for reactor - 171002/171042 Capacity - 2400 m ³ /hr Vacuum pumps for AN evaporators Capacity - 2400 m ³ /hr
9	Exhaust Fan	Exhaust fan for reactor- 171051
10	Scrubber	Pack bed scrubber for scrubbing vent gases from reactor and AN evaporators
11	Cooling tower	Basin capacity – 450 m ³ ID fans- 2 nos., south and north Cooling tower pumps- 3 Nos., Capacity of each pump- 1000 m ³ /hr
12	Ammonia vaporizer	409832 Shell and tube heat exchanger for ammonia vaporization. Tube side fluid- water Shell side fluid – ammonia.

3.5 Project Description with process details

ANP (Ammonium Nitro Phosphate) plant came up under Trombay IV expansion scheme in 1978. The plant is based on ODDA process based on Stamicarbon Technology. The main product was ANP (NPK grade 20:20:0) and Ammonium Nitrate (AN) melt was the by-product produced in the ANP plant.

Owing to poor economic viability, ANP plant operation has been suspended since Dec, 2015. After carrying out some in-house modifications, AN melt production is being continued by directly feeding Ammonia and Dilute Nitric acid in the Calcium Ammonium Nitrate (CAN) section of ANP plant.

3.5.1 Process Description:

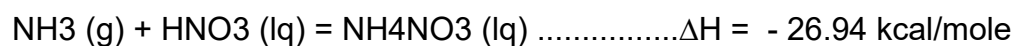
a) Liquid Ammonia vaporization:

Liquid Ammonia received from ammonia plant is vaporized in Ammonia Vaporizer and auxiliary ammonia vaporizer. Ammonia vaporizer is shell and tube heat exchanger, in which cooling water is used in tube side for vaporization of ammonia in shell side. Vapour ammonia obtained from ammonia vaporizer is superheated to 45-50 °C temperature in ammonia super heater using 2.5kg/cm² steam.

b) Reaction:

Vapour Ammonia and Nitric Acid (60% concentration) is fed to reactor in the desired ratio. AN Reactor is vertical back mixing type of reactor.

Ammonia and nitric acid react to produce 65% concentrated ammonia nitrate as follows:



Reaction is exothermic in nature. Heat released during reaction is taken away by the cooling water. There are three cooling zones in the reactor which consist of network of cooling water tubes. Temperature of reactor is maintained around 60-65 °C and pH is maintained between 7.0 - 7.2. Dilute Ammonium nitrate (65%) from reactor is collected in holding tank,

which is in circulation with reactor. Level in the reactor is maintained using level control valves. Dil. AN from holding tank is pumped to AN buffer tank (Dil. AN storage tank). Reactor vent is connected to scrubber for scrubbing of gases leaving the reactor.

c) Concentration of the AN solution

Dilute AN (65% concentration) is further concentrated in AN Evaporators using 12 kg/cm² steam. Dilute AN solution from AN Buffer tank is pumped to AN evaporators where concentration of solution is increased up to 83 - 85%. Evaporator consists of heater (heat exchanger) and separator. Temperature of the AN evaporators is maintained around 126 - 132 °C and vacuum in the separator is maintained around -0.20 to -0.25 kg/cm². In each evaporator, solution is heated in the heat exchanger and by means of Thermo-syphon effect the solution comes to the separator. There the solution is separated from the vapours. The vapours from the each separator go to the surface condenser and are condensed by means of cooling water. Concentrated AN solution of around 85% concentration, from separator is sent to final storage tank.

d) Storage and dispatch

Concentrated AN (83 - 85%) is stored in final storage tank. Temperature of the tank is maintained around 125°C with the help of tracing steam. AN melt from this tank is then dispatched through dedicated sealed tankers.

e) Scrubbing system

Unreacted gases from reactor and holding tanks are scrubbed in scrubber using water. Reactor vent is connected to vacuum pump and blower through scrubber, where primary scrubbing is done. Discharge of vacuum pump and reactor vent lines are connected to final packed bed scrubber. Reject water from Sewage Treatment Plant (STP) is used as scrubbing media. Scrubbing water is collected in dirty water tank, which is re-circulated to scrubbers using pumps. Part of scrubbing water is

continuously bled to maintain concentration of pollutant in re-circulating water. Bleed Scrubbing water and surface condensate from AN evaporators are mixed together and collected in effluent pit, which is then transferred to common Effluent Treatment Plant (ETP) plant for further treatment.

3.6 Raw material& finished product, quantity, source, mode of transport

The requirements for ANmelt plant is summarized in the below Table:

Table- 8
Daily Raw Material & Utility Requirement

Ammonia	0.25 MT/MT of AN Melt
Nitric Acid	0.90 MT/MT of AN Melt
Power	20 kWh/MT ; Source: Presently TATA power. RCF is commissioning Gas Turbine Generator (GTG). Once it is commissioned, source of power shall be GTG.
Water	STP water for Cooling Tower make up: 240 m ³ /day STP water for scrubbers and process use: 230m ³ /day Source: Treated Water from Sewage Treatment Plant (STP)
Steam	Specific consumption: 0.72 MT/MT Pressure: 12 kg/cm ² , temp: 180-210°C Source: In-house boilers. Capacity: 170 MT/hr x 3 No. of Boilers.

3.7 Resource optimization/Recycling and reuse

The proposed project does not envisage resource recycling and reuse as efficiency of the plant operation is quite high along with necessary recovery units like scrubbing system is in place. The bleed off from scrubbing system is treated in common effluent treatment plant. Moreover,

the process water used in the plant operations is water generated from sewage water in RCF's Sewage water Treatment Plant.

3.8 Availability of water, steam&power

The total requirement of water, steam&power for the proposed production augmentation are as follows:

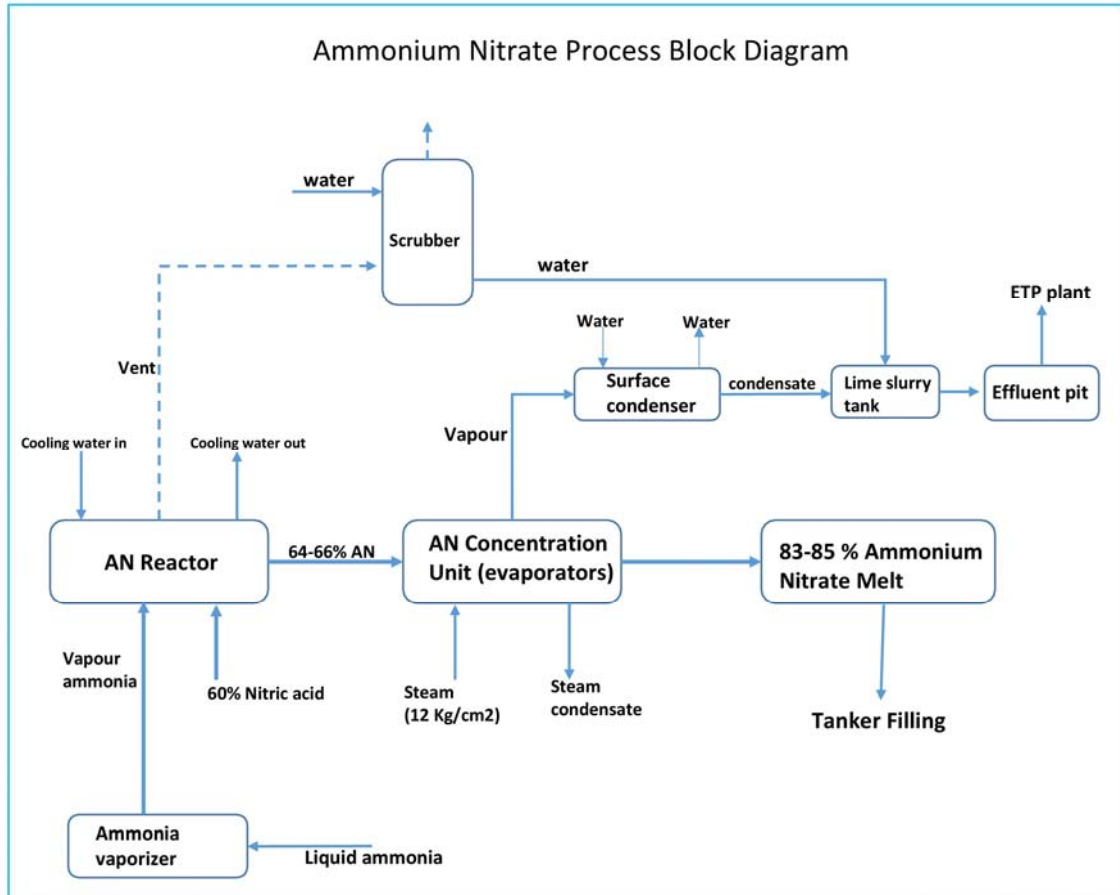
Table- 9
Daily Utility Requirement

Sl. No.	Utility	Unit	Existing Quantity (for 1.4 LMT)	Existing Additional Quantity (for 1.9 LMT)	+	Source
1	Water	m ³ /day	347	470		existing facility within RCF
2	Power	MW/day	8.5	11.5		
4	Steam _(Sp.)	MT/day	306	414		

3.9 Quantity of Waste (Solid & Liquid)

- There is existing facility to treat the wastewater generated i.e. approximately 1 m³ per MT of AN Melt produced, which is sent to Common Effluent Treatment Plant.
- No Solid waste is envisaged to be generated due to the proposed production enhancement in AN Melt plant.
- Hazardous waste, if any will be disposed off as per Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules 2016.
- Gaseous emission mostly consists of water vapors and traces of Ammonia (3-5 ppm). Flue gas emission is Nil.

3.10 Schematic presentation of feasibility drawing (Process flow chart)



4. SITE ANALYSIS

4.1 Connectivity

The ANP plant is located at existing RCF Trombay unit in Maharashtra, Mumbai. The coordinates of the plant location are 19°01'N 72°52'E at an altitude of about 6m from MSL. The site is well approachable and connected to all basic amenities as mentioned below:

Table- 10
Local Connectivity

Amenities	Name	Distance & Direction
Nearest City	Mumbai	Falls in Mumbai
National Highway	NH - 3	1.69 km in NNW
State Highway/Road	Ramakrishna - Chemburkar Marg	0.97 km in East
Railway Station	Matunga Railway Station	3.53 km in West
Airport	Chhatrapati Shivaji Maharaj International Airport	8.46 km in NNW
Hospital	Om Sai Baba Hospital	2.12 km in North
School	St. Sebastian High School	2.60 km in NNE

4.2 Land Form/Land Use & Land ownership

The proposed project is the production augmentation of existing AN Melt Plant within the fertilizer plant of RCF at Trombay, there would be no change in existing land use pattern and land ownership.

There is no Wild Life Sanctuary, National Park and Reserved Forest within 10 km radius of the project area.

4.3 Topography

The proposed project site is located in eastern Mumbai at Chembur in the district of Mumbai Suburban. It is at about 8 km away from eastern shore of Arabian Sea. The Eastern Expressway passes at a distance of 1 km. The topography of the area is common with other Deccan Trap regions is undulating with a few small water courses, usually dry during the fair season, dissecting the area. The Chembur village is located on the

northwestern extremity of the Bombay Island, lying to the north-east or east of the main Bombay Island.

4.4 Existing land-use pattern

Lan-use pattern of existing RCF site as below:

Table- 11
Land-use / Land-cover Statistics within 10 km radius of RCF Trombay

Classification	Area in Ha	%
Built-up Land	12482.42	39.73
Industrial Land	1264.92	4.03
Barren/Unculturable/Waste lands, Scrub Land	2901.21	9.23
Airport	542.45	1.73
Mangroves	2644.06	8.42
Water Body	11580.53	36.86

There is no Wild Life Sanctuary, National Park and Reserved Forest within 10 km radius of the project area.

4.5 Existing Infrastructure

As it is the production enhancement of existing AN melt plant, hence, additional infrastructure is not envisaged. Following are the existing facilities available at site.

Table- 12
Existing Infrastructure

Sl.No.	Plant & Facilities	Provisions
1.	Product, Raw Material Storage & Handling Facilities a) Ammonia b) Nitric Acid	Existing Facility to be used Existing Facility to be used
2.	Power supply	Existing Facility to be used
3.	Steam Generation Facilities a) MP Steam b) LP Steam	From Existing Steam gen. plant Existing Facility to be used
4.	Water Supply a) Process Water Supply b) DM Water Supply	Existing Facility to be used Existing Facility to be used
7.	Instrument Air Facilities	Existing Facility to be used
8.	Safety & Fire Fighting System including fire water ring with Hydrant System	Available for existing supply

4.4 Soil Classification

The soils of the area are essentially derived from the Deccan trap, which is the predominant rock formation of the study area with small outcrops of laterite at few places. The main types of soils found in the area are coastal Alluvium and laterite soils. Detailed soil characterisation shall be done during baseline environmental data generation.

4.5 Climatic Data from Secondary sources

Table- 13
Climatic details of the site

Climate	Value	Unit	Frequency
Barometric Pressure	995	mbar	Minimum
	1006	mbar	Mean
	1007	mbar	Maximum
Temperature	38	°C	Design
	40	°C	Maximum
	9	°C	Minimum
Rain Fall	2500	mm	Mean Annual
	2821	mm	Heaviest in Year
Relative Humidity	85	%	Design
	100	%	Maximum
	50	%	Minimum
Seismic Zone	III & IV	-	-

4.5 Social infrastructure

RCF owns its township within its industrial area spread over in an area of about 309.72 Ha at Chembur. The existing infrastructure of RCF Trombay with respect to residential colony, green belt, social infrastructure, road facilities, supply of water, sewerage facilities, power requirement etc. are working efficiently. No additional infrastructure is envisaged.

5.0 PLANNING BRIEF

5.1 Planning Concept

The proposed project is limited to production enhancement of existing AN Melt Plant. All other associated utilities required for smooth operation of the plant are available in existing unit of RCF Trombay.

In view of emerging new market and surge in demand of ammonium nitrate due to import restrictions during COVID-19 pandemic, it is essential to increase the existing production quantity by operation the plant at its full capacity.

5.2 Population Projection

79 nos. of manpower are engaged in operation of the AN melt plant at existing capacity. The same will remain unchanged post-production augmentation of the plant.

5.3 Land Use Planning

The proposed project is limited within the existing factory complex premises. Hence, additional land use planning is not envisaged.

5.4 Assessment of Infrastructure Demand

The existing infrastructural facilities available at RCF Trombay are able to meet all the basic requirements and are updated from time to time. Hence, there shall be no demand of additional infrastructure during establishment of proposed project.

5.5 Assessment of Amenities/ Facilities

RCF Trombay is having all the required amenities and facilities. Safety, health, environmental, social, cultural requirements are periodically assessed and updated as per requirements.

6.0 PROPOSED INFRASTRUCTURE

The proposed project is limited to production enhancement of existing AN Melt Plant @1.9 Lakh MTPA capacity. The Plant shall be on stream for around 330 days per year.

Cooling water & DM Water supply and distribution

The requirement shall be fulfilled by using the existing facility.

Steam & Power supply and distribution

Required steam and power shall also be supplied from the existing facility.

Instrument Air Facilities

The normal instrument air requirement for the plant will be met from existing Process Air Compressor.

Fire-fighting System

Existing facility is adequate to meet the requirement of proposed enhancement in production of AN melt.

7.0 REHABILITATION & RESETTLEMENT PLAN

Planning with regard to rehabilitation & resettlement is not applicable as the proposal is only for enhancement of production from 1.4 LMT to 1.9 LMT per year in the existing facility of RCF Trombay.

8.0 PROJECT SCHEDULE & COST ESTIMATES

Not applicable as the existing plant has capacity to produce projected production @ 1.9 LMT and does not require any modification in the existing facility.

9.0 CONCLUSION & RECOMMENDATION

9.1 Conclusion

RCF has always striven for upkeep of the plants through modernizing and upgrading technology which facilitated plants to sustain operations and meet technological challenges of improved efficiency, lower energy consumption and maintain environmental norms.

The project is located in industrial area Trombay, Maharashtra, Mumbai and is proximate to major markets which use AN Solution as industrial product in explosives industry, paints, plastics, fabrics etc. and mining industry (Coal and Iron Ore mining) in Maharashtra and Madhya Pradesh.

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, RCF proposes to increase the production capacity by revamping of AN Melt plant at its Trombay Unit.

9.2 Recommendation

In view of emerging new market and surge in demand of ammonium nitrate due to import restrictions during COVID-19 pandemic, it is essential to increase the existing production quantity by operation the plant at its full capacity. MPCB advised to obtained environmental clearance for the existing plant and enhanced production quantity as well for amendment in Consent to Operate.

Considering the rising consumer awareness regarding the benefits of Ammonium Nitrate spreading across agriculture-oriented countries which in turn is converting to increasing demand and in view of national vision of “*Atmanirbhar Bharat*” , it is strongly recommended that the proposal for production augmentation of AN melt plant and grant of environmental clearance may be generously considered for an early approval.
