EXECUTIVE SUMMARY

INTRODUCTION

The closed unit of Talcher Fertilizer complex of the Fertilizer Corporation of India Limited (FCIL) was based on the gasification of coal. Since 2002 FCIL Talcher is totally closed and there is no activity related to production of Urea. Several attempts were made to revive Talcher fertilizer unit by Government of India.

A proposal was put-up before Cabinet Committee of Economic Affairs (CCEA) for setting up a coal based fertilizer and chemical complex within plant premises of closed unit of FCIL Talcher. The CCEA also approved formation of Joint Venture Consortium (JVC) to set up proposed fertilizer plant. As per the approval of CCEA, a JVC was proposed to be incorporated jointly by Rashtriya Chemicals & Fertilizers Ltd (RCF), GAIL (India) Limited, Coal India Ltd. (CIL) & Fertilizer Corporation of India Limited (FCIL).

Formation of JVC was already in the process after approval of CCEA and after completing all the formalities, a JVC in the name of Talcher Fertilizers Limited (TFL) was formed in 2015 and incorporated on 13 November 2015. It is registered at Registrar of Companies, Cuttack with registered office at Plot No. 2/H, Kalpna Area, BJB Nagar, Khurda, Bhubaneshwar-751014. RCF, CIL, GAIL (India) Limited & FCIL are the members of the consortium.

RCF & FCIL are Public Sector Units under the Ministry of Chemicals & Fertilizers, CIL is public sector undertaking under the Ministry of Coal, Govt. of India and GAIL (India) Limited is the public sector undertaking under the Ministry of Petroleum & Natural Gas, Govt. of India.

Initially after approval of CCEA in 2013 and when the formation of JVC was under process, the project proposal was to install five plants like Coal Washery, Ammonia, Urea, Nitric Acid and Prilled Ammonium Nitrate. The Terms of Reference (TOR) was awarded by MoEFCC vide *J-11011/231/2013-IA II (I) dated 23.06.2013* on the basis of installation of above five plants. After formation of JVC in the name of TFL, the project proposal has now been revised and TFL has decided now to go for installation of two major plants like Ammonia of 2200 MTPD and Urea of 3850 MTPD. TFL has abandoned installation of three major plants like Coal Washery, Nitric Acid and Prilled Ammonium Plants.

After formation of the JVC- TFL, the project proposal was revised as per prevailing Govt. Policy for revival of old closed units of FCIL and it was decided to install coal based Ammonia and Urea plants only. TFL now proposes to set-up coal based new 2200 MTPD Ammonia and 3850 MTPD Urea plants along with necessary offsite and utilities available/reusable within the premises of FCIL at Talcher Unit.

The project proposal is to set up coal based new ammonia and urea fertilizer plants based on recent best available technology comprising of Coal Gasification, Ammonia, Urea and related offsite & utility facilities. As per EIA Notification, published in the Gazette of India, Extraordinary, Part-II, Section-3, sub-section (ii) of Ministry of Environment & Forest dated 14.09.2006 & subsequent amendments, the proposed project falls in Activity 5(a), Category-A of "List of Projects or Activities Requiring Prior Environmental Clearance" and shall require prior environmental clearance from Ministry of Environment, Forests & Climate Change (MoEFCC) on the recommendations of an Expert Appraisal Committee (EAC).

M/s TFL has appointed Projects & Development India Limited (PDIL), a Government of India Undertaking and a NABET accredited EIA consultant organization, listed at *Sr. No. 120 as of 05.06.2017*, for the preparation of EIA / RA Reports for proposed coal based new ammonia and urea fertilizer plants within the plant premises of the closed unit of FCIL- Talcher.

Project Proposal

The important facilities are presented below in Table-E1:

Table-E1
Important Facilities Proposed at TFL, Talcher

Sl.No.	Name of the Facility	Capacity
01.	Ammonia Synthesis gas for production of Ammonia from Coal Gasification	200000 Nm^3 /hr
02.	Ammonia	2200 MTPD
03.	Urea	3850 MTPD
04.	Ammonia Storage	2x5000 MT
05.	Power Generation, STG	2x35MW
06.	Urea Silo (Existing to be used)	45000 MT

The project shall also utilize some of the existing facilities, which are in good condition or which can be made useable after refurbishment.

PROJECT COST

The total cost of the above proposed project has been estimated at *Rs. 7887 Crores* approximately and it is expected to be completed within 42 months.

Justification of Proposed Site

- It will reduce overall gap between demand and supply in the region
- The main raw materials for production of Urea are coal and water and FCIL Talcher is located nearer to the source of Coal i.e. MCL.
- MCL, which is a subsidiary of CIL, is having a number of coal blocks in Talcher Coal field area.
- Availability of vacant industrial land within existing closed unit of FCIL Talcher
- Availability of existing infrastructures within plant premises and offsite utilities.
- Proposed project does not require acquisition of new land and existing free unencumbered land is free from R&R issues.

Project Benefits

The proposed project shall yield following benefits:

- Timely availability of fertilizer to farmers in the command area.
- Lessen dependency on import of Urea
- It will check the import possibility of fertilizers to some extent and yield national savings
- It will generate employment opportunity for the people in the region.

Sources of Raw Materials & Utilities

The project would require Run-of Mines (ROM) coal as feed (112.1 MTPH) and fuel (157.3 MTPH) which will be transported to the site by CIL. In order to enhance the feed quality, pet coke (37.4 MTPH) shall be used.

Power requirement for the proposed facilities will be met by installing 2 nos. of STG of 35 MW capacity each. Water requirement for the proposed facilities is 1500 m^3/hr. FCIL had a long term agreement with State Government for the supply of 64,800 m^3/day of water from Brahmini River. All the infrastructure facilities i.e. Intake Well, Pump House and 900 mm dia. 10km long U/G pipeline network are readily available and can be utilized after minor refurbishment.

Project Location

The proposed fertilizer plant will be set up within the existing land of FCIL- Talcher unit. Total area of proposed fertilizer plant is 904.53 Acre. Out of this total area, 584.15 acres of land is available for fertilizer plant and remaining area is for residential colony.
For utilization of FCIL land for establishment of proposed fertilizer plant, an MOU has been signed with FCI on 05.9.2013 & presented as Annexure-I of the report. Geographically, the project site falls at $20^0$54'46.27"N and $85^0$09'45.02"E at an elevation of 104m above MSL. Old

closed Talcher fertilizer unit is located at Vikrampur village in Angul district of Odisha on the Cuttack - Sambalpur National Highway, NH-42 passing at distance of about 8 km from the site. The nearest railway station is Talcher at about 7 km and nearest airport Bhubaneswar is at 150 km, 3 hours journey by road/ rail from proposed site. Nearest port is Paradeep, at 200 km by rail/road. The project site is well connected with Cuttack and the capital of Odisha-Bhubaneswar by rail and road. Major lotic system Brahmini, a perennial river is located at a distance of about 8km from site. The requirement of water for the proposed project shall be met from Brahmini River with the existing pumping station at the bank of river and existing network of pipelines shall also be utilized after necessary refurbishment. An alternate arrangement to meet power requirement during emergency/CPP failure shall be met from the existing substation of Odisha State Electricity Board (OSEB) which is about 2 km from the site.

BRIEF PROJECT/ PROCESS DESCRIPTION

Coal Gasification Unit

The Gasification Island will be designed for a gas load of 2,00,000 Nm^3/h ($CO+H_2$) which shall be used in coal based fertilizer project to manufacture Ammonia & Urea.

Process Units

The Gasification unit consists of Air separation, Gasification, Gas Cooling, Gas Liquor Separation, Phenosolvan, Ammonia Recovery, Rectisol, Cryogenic Purification unit, Sulphur Recovery. They collectively allow for production of raw gas from coal and separation, purification, treatment & disposal of associated co-products.

Ammonia Plant

Ammonia Plant will be having a capacity of 2200 MTPD. The process technology for Ammonia plant shall be obtained from reputed Licenser M/s SHELL. The main process sections shall be Rectisol Gas Purification Process with raw gas cooling, Acid gas (H_2S) removal by Rectisol, CO Conversion, CO_2 removal by Rectisol, Nitrogen Wash System, Synthesis gas compression, Ammonia Synthesis, refrigeration and storage.

Urea Plant

Urea Plant will be having capacity of 3850 MTPD prilled neem coated Urea with the stripping process technology. High pressure steam imported from Ammonia plant will be used to drive the CO_2 compressor with extraction arrangement for meeting the process requirements.

Power Generation

The power requirement for proposed project would be met by installing two nos. of STG of 35 MW each.

DESCRIPTION OF ENVIRONMENT

Land Environment

The proposed facilities shall be established within existing closed FCIL Talcher Unit, where sufficient land and other common infrastructure facilities are available. The area earmarked for proposed plants, is more or less an undulating terrain.

Land Use Pattern (Based on Satellite Imagery)

For analysis of land-use pattern and for preparation of land-use/land-cover map of the area falling within 10-km radius, digital image processing of remote sensing satellite imageries were utilized. Land use pattern of the study area within 10-kms radius obtained from satellite imagery has been discussed in Chapter 3.1.

Geology

The general geological succession of the various formations in and around Talcher, is summarized below in Table- E.2.

Table- E.2
Geological Succession of Talcher coalfield

Age	Formation	Lithology
Recent		Alluvium and Laterite
Up. Permian To Triassic	Kamthi	Fine to medium grained Sandstone, Shale, Coal bands, with greenish sandstone, pink clays and pebbly sandstones at top (250m+)
Lower Permian	Barakar	Medium to coarse grained sandstones shales, coal seams with oligomictic conglomerate at base (500m+)
Lower Permian	Karharbari	Medium to coarse grained sand stones,shales and coal seams (270m)
Lower Permian	Talchir	Dimictite, fine to medium grained greenish sandstones, shales, rhythmite, turbidite etc.(170 m +)

Topography
The old Talcher fertilizer unit, township and the areas within the plant are more or less a flat terrain. However, the areas beyond 5 km are hilly terrains and hills as high as 300 to 600m are located at a distance of about 15 to 50 km. Co-ordinates of plant boundary along with elevations have been presented in the main report.

Surface Hydrology
The ground water of the area is recharged through rain water and Brahmini river which is located at 8 km distance from project site. The river is also recharged from the drains of the command area. The river water during lean period is being charged from the surrounding banks.
The project area falls under the command of Brahmini river basin of 4,235 Km^2 and the gross recharge has been calculated equivalent to 547.18 x 10^6 m^3 out of which 85% (465.1 x10^6) is utilizable recharge in this area.

Soil Quality
The soil of the area varies from rich red loam to gravelly soil of hill slopes. The texture of soil is Sandy Clay. The percentage of sand content ranged between 52.16 to 55.24%. The percentage of silt content ranged between 9.24 to 12.33%. The percentage of clay content ranged between 32.43 to 37.42%. The pH of the soil ranged between 6.4 and 7.2. The bulk density of the soil ranged between 1.29 to 1.33 g/cm^3.The infiltration rate ranged between 3.71 to 6.17 cm/hr. Organic carbon was found in the range of 0.86 to 1.17%. Level of Nitrogen as N ranged between 122.54 and 157.24 Kg/ha. Level of Phosphorous as P_2O_5 ranged between 3.9 & 4.7 Kg/ha. Level of Potash as K_2O ranged between 30.26 & 47.12 Kg/ha.

Climate & Meteorology
The climate of the study area falls under tropical monsoon climate zone. The study area experiences heavy rainfall of about 1287 mm during rainy season. The bulk of the rainfall, i.e., about 79% is received during south-west monsoon. Relative Humidity is high throughout the year. The relative humidity at an average is above 82% during the south-west monsoon period. During the rest of the year, the relative humidity is in the range of 33% to 75%.
Ambient temperature varies from the minimum of 13.9^{0}C to 40.2^{0}C. The highest monthly mean wind speed of 9.6 kmph has been reported in the month of May and the lowest mean wind speed of 4.8 kmph is reported in the month of January.

Air Quality
Ambient air quality monitoring was conducted during December 2013 to February, 2014 at 8 sampling stations to evaluate the 24-hour average concentrations of $PM_{2.5}$, PM_{10}, SO_2, NOx, NH_3, HC and VOC. The summary of the observations of four criteria pollutants like $PM_{2.5}$, PM_{10},

SO_2, NOx made during the study period at the eight sampling stations is presented below in Table-E.4.

Table- E.4
Summary of Observations

LOCATION	$PM_{2.5}$			PM_{10}			SO_2			NO_2		
	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	AVG
Main Gate of FCI	38	47	42.5	77	90	84.3	7.9	10.2	9.1	15.3	17.8	16.6
Technical Buildg of FCI	36	46	40.9	75	92	83.4	8.3	9.5	8.8	15.2	16.9	16.0
Balanda village	40	54	47.5	87	106	98.0	9.6	11.5	10.7	19.4	21.8	20.8
Karnpur village	34	43	37.8	69	85	78.0	8.9	11.7	10.4	15.7	18.9	17.1
Tentulei village	44	56	49.1	89	108	99.7	10.3	13.7	12.3	20.7	23.9	22.5
Bikrampur village	39	49	44.6	81	102	91.1	9.9	12.4	11.2	18.7	22.1	20.4
Kukudang village	33	45	38.2	73	85	79.5	7.9	9.5	8.8	15.8	17.8	17.0
Housing Board Colony	32	46	39.0	70	88	79.6	9.5	12.1	10.8	17.2	20.5	18.9

The AQI of $PM_{2.5}$ and PM_{10} at all the eight stations are almost “Satisfactory”, whereas AQI with respect to SO_2 and NOx are observed to be “Good”.

Water Environment

Surface Water:

Surface water samples were collected from eight locations within the study area. It has been observed that the values of all the parameters for the surface water samples are well below the limits specified under IS:10500(2012).

Ground Water:

The physico-chemical characteristics of the ground water samples were in good agreement with IS: 10500 (2012). All the parameters are within the limits specified under Drinking Water Standard. As regards heavy metals, only Fe and Zn have been recorded with lower concentration & rest of the heavy metals were not traceable.

Ecology

About 33% of the factory area shall be brought under green belt development program. The main species of trees, mainly exotic flora in the area are Acacia auriculformis, Azardiracta indica, Eucalyptus, etc.

Snake diversity was found to be good in the study area according to the local people. The common snakes are Cobra (Naja tripudians), Common Krait (*Bungarus coeruleus*) have been reported. The existing agricultural field in the study area supports a variety of avi-fauna.

Noise Levels

To evaluate the ambient noise level in the proposed project area, noise monitoring was carried out during study period.

Presently, there is no industrial activity within plant premises During day time, the ambient noise level was recorded in the range of 44.4 to 54.8 dB(A) and during night hours the noise level was recorded in the range of 40.2 to 47.5 dB(A).

During day time, noise levels in the villages located around the plant premises were recorded in the range of 47.2 to 52.0 dB(A) and during night hours ambient noise levels were recorded in the range of 42.1 to 44.6 dB(A).

Socio-economic Environment

Amenities

Significant development work has been done in the district during the past few decades. The number of educational institutions is also fast increasing. The medical facilities provided by State Government are sufficient enough.

Economy

The last few years has witnessed a steep rise in the Public Sector Undertakings like NALCO, MCL, NTPC and TTPS. There has been an increase in the total production of power from 15.5 MT to 36.5 MT, with the revenue increasing by a staggering 400%.

Agriculture

Agriculture is the major contributor to the District's Economy with about 2,16,403 Ha of land being cultivated, providing direct and indirect employment to about 70 % of the total workforce of the District.

ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

Land Environment

A little impact on the environment has been envisaged due to following which will remain under the buffering capacity of the existing environment.

The plant shall be designed with a concept of zero effluent discharge and removal of SO_2 using lime as absorber. The cooling tower will be designed to operate on the basis of recent cooling water formulation.

Air environment

Main sources of emissions from proposed facilities may be summarized as under:

Construction Phase

During the construction phase, land preparation and civil construction activities will lead to generation of dust and generation of gaseous pollutants mainly from the exhausts of earthmovers and other construction equipment. These activities will be for a limited time and confined within boundary walls.

Operation Phase

The details of identified sources of air pollution during operation phase are as follows:

Urea Prilling Tower

The process emission from urea plant is summarized as below:

Table- E.6
Process Emission from Proposed Urea Prilling Tower

Volumetric flow rate, Nm^3/h	12,70,000	Mass Emission rate of Urea Dust, Kg/hr	50.0
Exhaust gas temperature, °C	55	Urea dust emission Kg/ Te of product	**0.32**
Concn. of Urea Dust, mg/Nm^3	40	Emission Std., Kg/Te of product	**0.50**

Power Generation

The requirement of power for the proposed project would be met by installing two nos. of STG of 35 MW each.

Table- E.7
Emission from Proposed Power Generation Unit

Volumetric flow rate, Nm^3/h	1118000
Exhaust gas temperature, °C	< 120
SO_2 mg/Nm^3	348
NOx, mg/Nm^3	< 50
PM, mg/Nm^3	< 50

Water Environment

The water requirement of the proposed project has been estimated to be around 1500 m^3/hr which shall be sourced through the existing pipeline network from Brahmini River.

Table- E.8
Water Consumption (Total= 1500 m^3/hr)

Sl. No	Name of the Plant	Water Consumption, m^3/hr
01.	Cooling Tower Ammonia Plant	257
02.	Cooling Tower - Urea Plant	290
03.	Cooling Tower - CGP	329
04.	Cooling Tower - CPP	305
05.	DM Water Plant	157.7
06.	Gasification Island	61.3
07.	Miscellaneous Use	100
	TOTAL	**1500**

Waste Water Generation/Disposal

The details of wastewater generation for proposed Talcher Fertilizer is shown below in Table-E.9

Table- E.9
Wastewater Generation (414.0 m^3/hr)

Source of wastewater generation/ Plant(s)	Quantity, m^3/hr
Cooling Tower (CT) Blow- down from Gasification Plant	183
Cooling Tower (CT) Blow- down from Ammonia Plant	48
Cooling Tower (CT) Blow down Urea Plant	57
Regeneration Liquid - DM Water Plant	25.1
Regeneration Liquid - Polishing Unit	41.1
Miscellaneous Effluent	60.0
Total	414.2 ≈ 414

The wastewater generated in DM Plant and Ammonia Plant during normal operation will be treated in the In-plant Treatment Systems so that the same is recycled/ neutralized in the plant and treated effluent shall be utilized for green belt and floor washings.

Impact on Ground Water System

As ground water shall not be used in the process operations or in the township, no impact on ground water system is envisaged. However, the plants effluent shall be properly treated in ETP and no leaching of effluent through soil is envisaged. Hence, there will be no impact on the ground water quality.

Impact on Source of Water

FCIL Talcher has already got allotment of 64,800 m^3/day withdrawal from Brahmini River. (*Source: Water Resource Assessment of Brahmini Basin, prepared by International Commission on Irrigation & Drainage (ICID), New Delhi August 2005)*. The water demand of study area from Brahmini river is given below in Table-E.10:

Table- E10
Water Demand by Industries Within Study Area

Sl.No.	Name of Industry	Water withdrawal (m^3/day)
01.	NALCO	2,33,000
02.	Proposed Talcher fertilizer plant	64,800
03.	NTPC	1,15,200
04.	TTPS	39,000
05.	Bhusan Steel	2,29,200
06.	Ancilliary Industries	45,800
	Total	**7,27,000**

Total Withdrawal per month from Brahmini River : 21.81×10^6 m^3

Lean period flow of Brahmini River (May) : 282 x10^6 m^3

Total withdrawal for industrial purpose is less than 10% of lean season flow (minimum flow) Thus, the proposed project will have no adverse impact on the water resource.

Ecology

Terrestrial Ecology

The impact on vegetation in the study area may be through two ways:

- Clearing of vegetation on the proposed site for plant setup
- Effects on terrestrial ecosystem due to stack emissions.

Construction Phase

The proposed plant site shall be temporarily affected during the construction phase; the vegetation from the site will be cleared to the extent required. However, this impact will be for a short duration and reversible.

Operation Phase

The impact on terrestrial ecology due to air emissions from the proposed facilities shall be due to particulate matter and gaseous pollutants such as SO_2, NOx, NH_3. However, results of modeling indicate that the ambient air and water qualities shall remain well within the specified standards. Thus, no impact on ecology is envisaged.

Aquatic Ecology

The effluents from the proposed plants will be suitably treated, recycled and utilized within the premises. Thus, no impact on the aquatic ecology is foreseen.

Noise Environment

The sources of noise generation in the proposed facilities are construction & various moving machineries. For attenuation by the green belt, the width of the green belt has been considered as 20-m. It is, therefore, concluded that the existing noise level in the area will remain almost unchanged

Socio-economic Environment

During construction phase, the peak labour force requirement is estimated around 1500 persons and will be made available from local area. Generation of employment opportunity during construction will have significant positive impact on the local economic environment.

ENVIRONMENTAL MANAGEMENT PLAN

Solid Waste Management

Construction Phase: For establishment of proposed facilities some old unused structures shall be demolished. Solid wastes in the form of civil debris, defective materials scraps and packing materials shall be disposed shall be disposed of as per Construction & Demolition Waste Management Rules, 2016 dt 29.3.2016 of MoEFCC.

Operation Phase: The main solid waste to be generated from Ammonia Plant would be spent catalysts. Proper precautionary measures would be adopted during storage, transportation and disposal of solid wastes. TFL would keep a record of the type, quantities and characteristics of the solid wastes.

During transportation of solid wastes, the following measures should be adopted:

- Proper labeling and marking on the containers should be checked before loading on the vehicles
- Condition of the containers for suitability of transportation.

In case it is not possible to sell the solid wastes, it would be stored in inert and leak proof containers.

Air Environment

Ammonia Plant

- Flare Stack: During plant start-up, shut-down and when plant trips, the gases from different sections will be flared in a flare stack of 98 m height, Safety valve and control valve discharges will also be connected to flare stack.
- Ammonia Vapours from Storage System: For control of hazards due to accidental release of ammonia vapours from the storage system, a flare system using LPG has been provided.

Urea Plant

In Urea plant, the urea dust concentration shall be below 50 mg/Nm^3 or below 0.5 Kg/Te of urea produced. Following controls measures shall be adopted to ensure the above concentration:

a) Providing a free fall height of about 65 m
b) Maintaining the moisture content in the melt below 0.5% to increase prill strength.
c) Special design of Prilling Tower to maintain uniform and low velocity profile of cooling air.
d) Maintaining optimum melt temperature.
e) Use of prilling buckets of special design, etc.

Besides above, all safety valves exhaust, which operate during occasional upsets, shall be connected to Blow-down Stacks and the inerts are vented through Vent Stacks of more than 90 m height.

Mitigation Measures

- Generation of fugitive dust during construction phase due to movement of vehicles, earthmovers as well as due to filling & leveling shall be controlled through frequent spray of water.
- The afforestation plan shall be aimed to cover all the vacant areas around the facilities.
- Concentrations of PM_{10}, $PM_{2.5}$, SO_2, NOx and NH_3 shall be monitored regularly.

Water Environment

Urea Plant

A deep Urea Hydrolyzer Stripper System shall be provided to treat the process condensate and leakages containing NH_3 and CO_2 shall be sent to Battery Limit and can be re-used as BFW after polishing.

Mitigation Measures

The waste water generated in Urea & Ammonia Plants will be treated in the in-plant treatment system and the same is recycled/ neutralized in the plant and only the treated effluent leaves the plant battery limit.

Water Conservation Measures

The In-built pollution control system not only helps in reducing the pollution load but also helps in recovery of valuable raw materials. The in -built control systems namely are:

a) Hydrolyser stripper in Urea Plant shall help in recovering ammonia using steam and recovering cooling tower makeup water. This water shall be sent to boiler as BFW.
b) Process condensate stripper of Ammonia Plant using medium-pressure steam to recover Ammonia and water. This water will also be sent to boiler for BFW after marginal polishing.
c) Treated sewage water will be used for irrigation of green belt and for transportation of ash as, when & where required. This would reduce consumption of raw water.
d) Process condensate, Steam condensate and turbine condensate shall be completely recycled back in the process.
e) The Urea and Ammonia CTs shall run with use of latest cooling tower formulations based on phosphonate, polymers and non-oxidising biocides. The CTBD shall be used as medium for transportation and disposal of ash generated from CGP & CPP.
f) The ETP effluent after treatment shall be used as make-up water for ash transportation.

g) The sludge of ETP and blow-down of process water treatment plant shall be centrifuged and the centrate shall be used for transportation of ash.
h) The total quantity of ash including gypsum and slag has been estimated to be 92 Te/hr (approx.). Total water requirement for transportation of ash including Gypsum & Slag to abandoned colliery has been estimated equivalent to 610 m^3 at solid consistency of 12%.

Noise Environment

Measures for control and mitigation are as follows:

- Vendors of individual items shall ensure that the noise level at a horizontal distance of 1 m from the equipment does not exceed the indicated levels 90 dB(A).
- The high noise level generating equipment will be provided within acoustic walls.
- The LSTK Contractor shall guarantee maximum noise level of 85 dB in the working environment.
- A proper green belt development program has been formulated.
- Control rooms shall be provided with acoustic glass walls.
- During visits to the areas of higher noise levels, the operational and maintenance personnel will use earplugs as a safety measure.
- Moving parts of equipment and earthmovers shall be properly maintained and lubricated to minimise the generation of noise.

Environment Management and Monitoring

A monitoring schedule, prepared in consultation with OSPCB, shall be maintained for monitoring AAQ, stack emissions, waste water streams, river water during monsoon season, ground water, and noise..

RISK ANALYSIS

Detailed Risk Analysis study has been discussed in Chapter- 7. The RA study report reveals that hazard distances are confined within the plant premises particularly for credible scenarios.

SOCIAL WELFARE ACTIVITIES

TFL shall undertake a number of welfare activities for increasing the quality of life of people residing in and around Talcher. As per CSR policy, the welfare activities shall be as under:

i. Free soil testing services for farmers
ii. Farmers' Training Program
iii. Rural Development Program

Apart from the above, TFL shall also undertake the following social activities:

- Free accommodation for under privileged cancer patients during treatment
- Blood donation camps
- Free medical check-up of slum residents in the vicinity
- Free medical facilities to under-privileged and their rehabilitation
- Opening of schools for primary education and providing educational infrastructure.

ENERGY SAVING MEASURES

Few important measures for Energy Management shall be; use of WHRB for Power Generation, Corro-coating, Evaporating cooling for PAC, use of ACS in ammonia, use of VFDs, use of solar water heaters.

Compliance of Terms of Reference (TOR)

Compliance of TOR has been presented separately in Annexure-VIII.