
Tamilnadu Newsprint and Papers Limited
Modernisation and Upgradation of Cement Plant (0.22 MTPA to 0.33 MTPA) at Kagithapuram
EIA Findings

1.0 Project Description

M/s. Tamilnadu Newsprint and Papers Limited (TNPL), a Govt. of Tamil Nadu Enterprise, are successfully operating one of the largest integrated Pulp & Paper Mill in India at Kagithapuram in Karur District of Tamil Nadu since 1984 and the present production capacity of the Paper Plant is 4,00,000 tonnes of printing and writing papers per annum. TNPL also has its Captive Power Plants (CPPs) of 103.62 MW capacity and a Township (about 700 Quarters in 80.3 Ha) at Kagithapuram.

To fully utilize the wastes from the Paper Plant viz. Lime Sludge and Fly Ash, TNPL has established a Cement Plant of capacity 600 TPD (0.22 MTPA), a first of its kind by a Paper Mill in India, at Kagithapuram after obtaining the Environmental Clearance (EC) accorded by TNSEIAA and Consents from TNPCB. The Public Hearing under EIA Notification 2006 for the initial proposal of 600 TPD Cement Plant was held on 01.12.2009 and all the issues are addressed fully by TNPL.

The Cement Plant has been established in TNPL lands at Kagithapuram over an extent of 13.0 Ha falling in SF Nos. 803-805, 807-810, 837, 838, 840-846 of Punjai Pugalur village, Kagithapuram Town Panchayat, Manmangalam Taluk in Karur District of Tamil Nadu with a total cost of Rs.136 crores. TNPL has implemented all Environmental Management Plan (EMP) Measures in the Cement Plant at a cost of Rs.10.65 crores. The production from the Plant was commenced on 15.12.2012. The Cement Plant operations are in full compliance with the conditions stipulated in the Environmental Clearances awarded by TNSEIAA and Consent Orders issued by TNPCB. The Corporate Responsibility for Environmental Protection (CREP) Guidelines for Cement Industry are also complied with.

Presently, inconsistent Clinker quality is being experienced in the production which impacts the Cement quality also. Addition of the Precalciner before the Kiln will eliminate the quality problem totally. To manage the increased generation of lime sludge over the years in Paper Plant, it is proposed to upgrade the Cement Plant capacity so as consume the entire lime sludge as its raw material. TNPL is establishing its Unit-II, Multi Layer Double Coated Paper Board Plant with its 30 MW CPP at Mondipatti village, Manapparai Taluk in Trichy District. As committed to TNSEIAA in obtaining the EC for the Unit-II, the entire Boiler Ash of 80 TPD has to be utilised in the Cement Plant for PPC manufacture.

Due to the above reasons, it is necessary to modernize and upgrade the TNPL Cement Plant at Kagithapuram which will also enhance the Cement production from existing 0.22 MTPA to 0.33 MTPA. The following Units need modifications / upgradations :

- ❖ Crushing system,
- ❖ Raw Mill system,
- ❖ Precalciner,
- ❖ Chloride Bypass system,
- ❖ Reverse Air Bag House capacity addition,
- ❖ Cooler Capacity and

- ❖ Coal Firing system.

These Modifications/Upgradations are proposed within the existing industrial premise with :

- ❖ no additional land.
- ❖ no additional infrastructures other than Precalciner and its auxiliary units.
- ❖ no additional water demand.
- ❖ no change in wastewaters generation, treatment and disposal.
- ❖ no change in solid wastes disposal.
- ❖ no increase in man power.

There is no major change in the Layout due to the Proposal. Only Modernisations/Upgradations of Plant Machineries are proposed which do not demand any additional infrastructures. Existing infrastructures are adequate for the proposal. As it is proposed within the existing Cement Plant, there is no Rehabilitation & Resettlement (R&R) issues also. Thus, no R&R Plan is envisaged. There is no litigation pending against the project and / or any direction / order passed by any Court of Law against the project/proposal.

As per Environmental Impact Assessment Notification 2006 [SO 1533 (E) dated 14.09.2006], all the Cement Plants <1.0 MTPA production capacity have been kept at Sl. No. 3 (b) under Category B for the Environmental Clearance from the State EIA Authority with applicability of General Conditions. Thus, the proposed Modifications/Upgradations of the Cement Plant requires prior EC from TNSEIAA. Accordingly, TNPL has submitted the Application/Form-1 and the Feasibility Report along with the required Annexures to TNSEIAA.

As the Spatial Impacts due to the Proposal are negligible/insignificant, the proposal has been considered by the Authority in determining the Terms of References (TORs) with Public Hearing (PH) Exemption under Clause 7(ii) of EIA Notification 2006. The EIA Report has been prepared as per awarded TORs and using the permitted Premonsoon Season (Jul.-Sep.) 2014 data. As per the direction of the Authority, Public Notices both in English and Tamil newspapers by TNPL on 17.12.2014. The proposed Project and the EIA Findings are published in TNPL Website for the comments/responses/ views/objections, in writing, from the concerned persons having a plausible stake in the environmental aspects of the project or activity.

2.0 Description of the Environment

TNPL Cement Plant is to be located in-between 11°02'05" -11°02'20" N Latitude and 78°00'25" -78°00'38" E Longitude and site & the study area falls in Survey of India-SOI Topo Sheet Nos. 58 E/16, F/13, I/4 and J/1. There are no eco sensitive areas like National Parks, Wildlife Sanctuaries, Biosphere Reserves, Reserved Forests, Elephant Corridors, Mangroves, Archaeological/Historical Monuments, Heritage sites, etc. within 10 km from the Plant boundary. Cauvery River (@ 5.5 km in northeast) drains the region.

National Highway NH-7 (Karur-Salem Section) runs at a distance of 3 km in the east. Major District Road (MDR) and State Highways (SH-84 & 172A) are also passing through the study area. Southern Railway BG Line (Trichy-Karur-Erode Section) runs adjacent to the Cement Plant in the west. TNPL Railway sidings are from Pugalur Station.

The findings of baseline environmental status of the study area are summarized below :

- ❖ The collected meteorological data during this season represented the local weather phenomena.
- ❖ The monitored ambient air quality in the study area was found to be in compliance with the Revised National Ambient Air Quality (NAAQ) 24-hourly Norms of 60 ug PM_{2.5}/m³, 100 ug PM₁₀/m³, 80 ug SO₂/m³ and 80 ug NO_x/m³ for Industrial, Residential, Rural and other areas.
- ❖ Ambient equivalent noise levels (Leq) during day and night times were found to be well within the MoEF Norms.
- ❖ The water quality of surface waters were found to be in compliance with CPCB Norms. The ground water quality was found to be in compliance with the IS:10500 Norms.
- ❖ The soil in the study area would very well support vegetation after amending it suitably.
- ❖ There is no eco sensitive area exists in the study area and only domesticated animals exist.
- ❖ The area is thinly populated and basic amenities are available almost in all villages.

Thus, there is **adequate buffer** for the proposed Project in the physical, biological and edaphic environments of the study area.

3.0 Anticipated Environmental Impact and Mitigation Measures

Various impacts during the construction and operation phase on the environment have been studied to estimate the impacts on the environmental attributes and are discussed in the subsequent sections.

Construction Phase : The Proposal involves only Modernisation and Upgradations of the Cement Plant and thus there is no significant construction activities, other than structurals, during this Phase. Existing labours, water supply, sewage treatment facilities, etc. are adequate for carrying out the Modernisations/Upgradations. Thus, there will not be any significant impacts on the existing baseline environment during Construction Phase.

Operation Phase :-

Land Use : The expansion activities are proposed within the Cement Plant. Thus, **the proposed Project will not alter the existing land use pattern** significantly.

Transportation : National Highway NH-7 (Karur-Salem Section) runs at a distance of 3 km in the east. Major District Road (MDR) and State Highways (SH-84 & 172A) are also passing through the study area. Southern Railway BG Line (Trichy-Karur-Erode Section) runs adjacent to the Cement Plant in the west. TNPL Railway sidings are from Pugalur Station. The Cement Plant material transports are mainly by road networks. Presently, about 43 trucks & bulkers/bowsers are plying to the Cement Plant for transporting the raw materials as well as finished product cement. The existing Major District Road (MDR), State Highways (SH-84 & 172A) and National Highway-7 are adequate to handle the traffic volume due to the Cement Plant.

On Modernisation, additional 35 Trucks movements per day will be there to the existing 69 Trucks per day. Existing Major District Road (MDR), State Highways (SH-84 & 172A) and National Highway-7 are

adequate to handle the traffic volume due to the Cement Plant. Thus, there is no impact due to transport of raw materials and end product to the surrounding environment including agricultural land.

Air Pollution Control Measures : The plant is equipped with essential pollution control equipments viz. Bag House, Electro Static Precipitators, Bag filters, etc. to control SPM emission $<50 \text{ mg/Nm}^3$. Reverse Air Bag House (RABH) is provided for the Raw Mill/ Rotary Kiln. The filtration area of RABH will be increased in order to handle the additional exhaust process gases from Raw mill and Kiln after the production enhancement. Thus, it is proposed to introduce two more compartments in addition to the existing six nos. compartments. There is no modification/upgradation for Grate Cooler Electro Static Precipitator (ESP) and Coal Mill Bag Filters. The existing ESP can handle the excess volume of gases on Upgradations. A new Bag Filter is proposed for the Limestone Tertiary Crushing Unit to control SPM emission $<50 \text{ mg/Nm}^3$. It is proposed 2 Nos. insertable Bag Filters for Belt Conveyors in the Tertiary Crusher Circuit. It is also proposed a new Bag Filter for the upcoming Chloride Bypass System.

Industrial Source Complex Short Term (ISCST3) model by USEPA was used for carrying out the prediction of maximum concentration, the direction and the distance of its occurrence from the project site. **There is only 0.89 ug/m^3 incremental increase in PM Level** in the atmosphere and thus, there will not be any additional impact on the Air Environment due to the Proposal. Also, adequate Buffer (62.75%) exists in the Air Environment for the proposed expansion activities.

Noise : Noise levels from turbine, fans, centrifugal pumps, electric motors etc, shall be kept below the permissible level of 85 dB (A) at 1m away from the source by proper design. Noise from safety valves, start up vents, steam jet ejectors of condensers etc, are reduced by providing silencers at the outlet of down steam piping. The specifications for procuring major noise generating machines/ equipment shall include built in design requirements to have minimum noise levels meeting Occupational Safety and Health Association (OSHA) requirement. Appropriate noise barriers/shields, silencers, etc. are provided in the equipment, wherever feasible. As far as possible noise emanating from noisy equipment are adequately attenuated by enclosure, insulation etc. Ear plugs are provided to workmen working near high noise generating sources.

Water Environment : The raw water demand of TNPL Cement Plant is being met from TNPL supply and is not exceeded the consented quantity of 450 cu.m/day. However, actually, the fresh water demand of the Cement Plant is being maintained below 300 cu.m/day. There will not be any additional water demand to the existing water quantity on the Modernisations/Upgradations and it will be within the consented quantity of 450 cu.m/day only.

There is no effluent generation from the Cement Plant. The domestic sewage generation from the Cement Plant is found to be only 18 cu.m/day. Thus, a packaged **Sewage Treatment Plant of 20 cu.m/day** (Diffused Aeration System) has been installed. The treated sewage of 18 cu.m/day is used for Green Belt development (13 cu.m/day) and Dust Control (5 cu.m/day) in the Plant area. Thus, Zero Effluent Discharge is practiced/adopted. The water conservation measures and rain water harvesting measures are also being undertaken in the existing Plant.

Solid Wastes : All the dust collected from the Bag Filters are recycled in the process for cement manufacturing. The STP sludge from Sludge Drying Beds (about 50 kg/month-on dry basis) is being

composted and used as manure for Green Belt development. Waste oils to the tune of 1.6 Tons/annum is generated which will be sold to TNPCB authorised recyclers. There is no Township proposed for the Cement Project. The domestic/municipal solid wastes from the Plant with percapita of 0.5 kg/person/day is about 65 kg/day. While the inorganic wastes of 45 kg/day (papers & other wastes) are being sold to the scrap dealers, the organic wastes of 20 kg/day is being composted and used as manure for Green Belt. Thus, **there is no solid wastes disposal from the Plant.**

Biological Environment : There is no cutting of trees or clearing of bushes, etc. due to the proposal within the Cement Plant. Thus, there is no impact on the existing baseline due to the Proposal. TNPL is developing the Green Belt and Lawns as per the existing Environmental Quality Policy of the Company. The Green Belt will have significant long term impact during the Operation Phase.

Socioeconomic Environment : The projects would help in generation of direct and indirect employment for the local people. This would be a positive long term impact due to the Project. There will be a general upliftment of standard of living in the region.

4.0 Environmental Monitoring Programme

For effective implementations of Environmental Management Plan, TNPL has the Environment Monitoring Cell under the overall supervision of the Director (Operations). Also, the quality of air, water, soil and noise levels are already being monitored at TNPL as per specified norms and the reports are being submitted to MoEF and TNPCB on regular basis. The same practice will be continued during the Modernisation period also.

5.0 Additional Studies

Detailed risk assessment and mitigative measures are delineated and an effective Disaster Management Plan is also submitted.

6.0 Project Benefits

There are 59 direct employees and 71 contract employees working in the TNPL Cement Plant. Though, there is no increase in Man Power during the Modernisations/Upgradations, there will be indirect employment to about 50 persons in the transportation sector. In addition to the environmental benefits like utilization of Lime Sludge, Fly Ash, etc., there will be positive impacts by way of employment, better socioeconomic conditions, improved local and regional economy, etc.

7.0 Environmental Management Plan

EMP is formulated for mitigation of adverse impacts and is based on present environmental status and impact appraisal. EMP includes formulation, implementation and monitoring of environmental protection measures. It is mandatory to comply with the various regulatory Norms for Prevention and Control of Pollution. Alongside, it is also imperative to go beyond compliance through adoption of cleaner technologies and improvement in Management practices.

EMP for Air Environment :

- ❖ All sources of dust generation in the Cement Plant shall be well designed for producing minimum dust and shall be provided with high efficiency Bag Filters.
- ❖ Suction arrangements with suitably designed Bag Filters shall be provided at discharge points to conveyors, conveyor transfer points, feeding hopper, feeding point, fly ash discharge point, storage silos and its transfer points to the cement mill, cement storage silos, etc. to arrest the fugitive emissions.
- ❖ Truck unloading shall be in a closed shed with sides covered. Water spray arrangements shall also be provided.
- ❖ SPM emission level in exhaust air shall be $<50 \text{ mg/Nm}^3$. Also, it may be noted that the new SPM Norm for the Cement Plant will be $<30 \text{ mg/Nm}^3$ with effect from 01.01.2016 as per GSR 612(E) dated 25.08.2014.
- ❖ Fugitive emissions shall be in compliance with CREP Guidelines for the Cement Industries.
- ❖ The periodical evaluation for the efficiency performance of ESPs and Bag Filters shall be carried out.
- ❖ The collected dusts shall be taken back to the system.
- ❖ For controlling fugitive dust, in dump hopper, reclaimers, belt conveyor discharge, silos etc., bag filters shall be installed.
- ❖ Fugitive emissions due to storage, transportation, etc. and the leakages and spillages shall be continuously monitored and controlled.
- ❖ Thermal insulation shall be provided wherever necessary to minimize heat radiation from the equipment, piping, etc. to ensure protection of personnel.

EMP for Noise :

- ❖ The design features of machineries shall be provided to ensure low noise levels in the working areas.
- ❖ Noise generating sources would be maintained properly to minimise noise and vibrations.
- ❖ Control cabins/chambers would be made sound proof and automatic door closures would be provided for control cabins and plant laboratories.
- ❖ All rotating items shall be well lubricated and provided with enclosures to reduce noise.
- ❖ For all fans, compressors etc. vibration isolators shall be provided to reduce vibration and noise.
- ❖ Though the total noise is expected to be well within the permissible limit at the boundary level, the plant personnel working near to higher noise sources like induced and forced draft fans shall be provided with ear plugs/muffs
- ❖ Green Belt will also act as noise reducers.

EMP for Water Environment :

- ❖ Water control measures shall be undertaken.
- ❖ No trade effluent shall be discharged from the Plant.
- ❖ The domestic sewage shall be treated in the Sewage Treatment Plant to meet the Statutory Discharge Norms and the treated sewage shall be used for Green Belt.
- ❖ No percolation of treated sewage to the deep ground water table is done.
- ❖ Periodical monitoring for specific parameters shall be done regularly.
- ❖ TNPL shall also develop rain water harvesting structures.

EMP for Land Environment :

- ❖ It should be ensured that there is no industrial solid waste from the Plant.
- ❖ Solid wastes from STP Plant shall be used as manure for Green Belt.
- ❖ Waste Oil shall be collected and sold to the MoEF/TNPCB authorised Agency for further treatment & disposal.
- ❖ The municipal wastes shall be collected, transported, treated in a landfill (composting) within the Plant vicinity to make use of it as manure for Green Belt.

Green Belt :

- ❖ An effective Green Belt shall be carried out in 33% of total extent and maintained with the guidance of DFO.
- ❖ A mixture of fruit, fuel, fodder and quick growing timber tree saplings, predominantly local flora/vegetations, are proposed to be planted keeping in view the agro-ecological and edaphic conditions of the areas.

Rain Water Harvesting :

An effective rain water harvesting shall be implemented and realized water shall be used effectively to supplement the water supply from the river.

Occupational Health Measures :

- ❖ TNPL shall provide a safety & healthy working conditions and continually improve the occupational health and safety performance.
- ❖ TNPL s objectives shall be to achieve zero accident and safe work environment, to improve moral and health of all employees and to maintain the emission levels below the norms.
- ❖ TNPL shall provide ergonomic support in work comfortness with periodical review.

Social Measures :

TNPL is presently carrying out various Socio Measures for the local as well as regional populations which shall be continued as per existing CSR Norms.

10.0 EMP Budget

The Cement Factory was established at a total cost of **Rs.136 crores** with Environmental Management Plan (EMP) Measures at a cost of Rs.10.65 crores. The Modifications and Upgradations are proposed at a cost of **Rs.30.00 crores**. A budgetary allotment of Rs.2.50 crores has been made as Capital Cost for Pollution Control Measures and Rs.5.00 lakhs per annum towards its Operating Cost.
