

# ENVIRONMENTAL IMPACT ASSESSMENT



## EXECUTIVE SUMMARY

**Extension of Runway with Blast Pad, RESA, Taxiway, Apron, GSE Area, Isolation Bay, New Domestic Terminal Building & Miscellaneous Works at Tuticorin Airport**



### Project Proponent

**Airport Authority of India,  
Tuticorin Airport, Tuticorin – 628103.  
Tamil Nadu.**

### NABET Accredited Environmental Consultant

## ABC Techno Labs India Private Limited

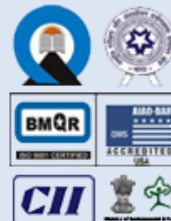
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## **EXECUTIVE SUMMARY**

### **1 Introduction**

Tuticorin Airport is a domestic airport located about 16-km from Tuticorin city, Tamil Nadu, India serving the districts of Tuticorin, Tirunelveli, Kanyakumari, Ramanathapuram and Virudhunagar in southern Tamil Nadu. It is located 15.6 km west from the city center on Tuticorin-Tirunelveli NH-7A. It is the fifth busiest airport in Tamil Nadu after Chennai, Coimbatore, Tiruchirapalli & Madurai. Tuticorin Airport is located at Kumaragiri, Servaikaranmadam, Mudivaithanandal & Kattalankulam villages of Tuticorin Taluk and District. Geographically, airport is located at Latitude 08°43'11.9" to 8°44'09.03" N, Longitude 78°00'30.9 to 78°02'50.1" E and altitude of 25 m above MSL.

Tuticorin Airport is being operated in an extent of 188.56 acres (76.31 ha). The existing Terminal Building has an area of 1000 Sq.m. to handle 78 arriving and 78 departure passengers at any point of time. The existing Apron in front of Terminal Building is of 75 x 45 m suitable for parking of 2 No of ATR 72 / Q400 aircrafts. Existing airport is operating with existing runway with length of 1350 M x 30 M.

Airports Authority of India has planned to carryout development activities at Tuticorin Airport. The EIA studies have been carried out as per TOR approved by MoEF&CC vide letter F. No. 10-41/2020-IA-III Dated 13 August, 2020.

### **2 Project Description**

#### **2.1 Justification of proposed Development at Tuticorin Airport**

The justification for the proposed Development at Tuticorin Airport is given below:

- The passenger handling capacity of the existing old terminal building at Tuticorin Airport has saturated. In view of the future traffic growth, there is an urgent requirement of extension of runway and construction of new Terminal Building with allied works at Tuticorin Airport premises by getting additional land from state govt. adjacent to the existing Airport.
- A large number of industries and infrastructure development in the southern region of the state will avail the facilities of Tuticorin Airport. Besides, passenger traffic growth, a large mix of industries in this region offers a great potential of the enhanced cargo activities. The region offers unlimited scope for the growth of tourism, trade and commercial activities.

Therefore, better air connectivity at Tuticorin is required and demanded by people.

## **2.2 Scope of Proposed Development at Tuticorin Airport**

Brief scope of work for expansion project involves extension of Runway with Blast Pad, RESA, Taxiway, Apron, GSE Area, Isolation Bay, New Domestic Terminal Building & Miscellaneous Works at Tuticorin Airport, Tamil Nadu is given below:

- Extension of Runway in the beginning of RWY 10 by total 1000 M x 45 M and extension of runway in the beginning of runway 28 by 765M x 45M to make total runway length from 1350 M x 30 M to 3115 M x 45 and strengthening of existing runway to cater for the strength of Code 'C' critical aircraft A-321.
- Existing Runway width to be increased from 30m to 45 m by constructing 7.5m wide pavement on either side of centre line of runway.
- Provision of 60 M x 60 M Blast Pad at Runway 10 and Runway 28. Construction of 90 M x 240 M RESA at both the ends of Runway strip of Runway 10/28.
- Construction of centrally air-conditioned Domestic Terminal Building having an area of 10,800 sq.m. capable of handling 600 PAX (300 ARR PAX.+300 DEP PAX) peak hour passengers with all modern facilities and amenities (with provision of three number aerobridges).
- The building provided with aesthetically appealing and soothing interior decoration matching the modern structure. Adoption of GRIHA measures in the design and consideration of the project to achieve the 4-star rating under GRIHA V-2015.
- Provision of 23m wide Link Taxi Track of length 344 m (195 + 149) with 3.5 m shoulder at both sides as well as required fillets, from Runway to Apron to cater for Code-C aircraft (A-321)
- Provision of 23 m wide and 1573 m long part Parallel Taxi Track with 3.5 m shoulder at both sides as well as required fillets to cater for Code-C aircraft (A-321)
- Provision of 23 m wide and 149 m long Link Taxi Track from Runway to Parallel Taxi-Track with 3.5 m shoulder on both sides as well as required fillets to cater for Code - C aircraft (A- 321).
- Provision of Apron of size 191m X 89m for parking aircraft 5 nos. Code-C aircraft (A-321) aircraft in power-in and power-out configuration with 20m wide GSE Area.
- New Isolation Bay of 76 m X 91 m with 3.5 m wide shoulder and provision of 23 m wide link taxi track of length 244.5 m long Link Taxi Track to Isolation Bay with 3.5m shoulder on both sides as well as required fillets to cater for Code - C aircraft (A- 321).
- Construction of 6 Nos of Security hut / Watch Tower-along the perimeter Boundary Wall at newly acquired land.
- Other allied Works including Electrical Work, CNS Works, IT & Airports Systems Works, etc.

About 600.97 acres (243.21 ha) of additional land free from all encumbrances has already been hand over by state Govt. for the proposed development activities. The site for the proposed development activities and allied works is free from vegetation and buildings.

### **2.3 Utilities and Other Features**

- Total power requirement for the proposed development of Tuticorin Airport will be 3000 KVA. There will be power backup through 3 No of DG sets of capacity of 1250 KVA & 2 No of DG sets of 625 KVA used in case of power cut or failure.
- Renewable source of energy in the form of solar will be proposed as per ECBC, 2017 as 5% of connected load (3000 KVA) i.e, 500 KW solar PV power plant will be established to generate solar power.
- Total fresh water requirement for domestic use, HVAC and landscaping will be about 465 KLD. Out of it 235 KLD will be fresh water which will be met through TWAD Board water supply / Bore wells.
- As per water balance diagram, 243 KLD of sewage will be generated after the development of Tuticorin Airport which will be treated in STP of capacity 250 KLD. Moving Bed Biofilm Reactor (MBBR) type STP will be installed for treatment of waste water at the proposed.
- For storm water management at the site, rainwater harvesting has been provided.

### **2.4 Project Cost**

The cost of proposed development of Tuticorin airport is estimated as Rs. 380.87 Crores.

## **3 Description of Environment**

**Topography and Physiography:**–The topography of the most of study area is plain topography. The elevation of the site varies from 22 to 27 m above MSL. Not much hills are located in the study area

**Geology:** Tuticorin District represents a well – developed lithopackage of Meta – sedimentary sequence. Charnockite and pyroxene Granulite are the Charnockite Group. The district has rich sources of Clay, recent River Alluvium, Coastal Sand, Red Teri Sand, Calcareous Sandstone, Pink Granites Charnockite and peninsular gneisses. Charnockite group is represented by acid variants.

**Soil Characteristics:** The study area soil pH indicate that the soil is neutral to slightly alkaline in nature. Conductivity of the soil indicates that the soil in the study area is non-saline in nature. Texture of the soil sample is predominantly clay in nature. Organic Matter in the soil indicates average to more than sufficient quantities of organic matter. The available nitrogen, phosphorus, potassium content are sufficient in the locality.

**Surface Water Resources:** Vaipar, Thamiraparani and Karamanaiyar are the major rivers draining the district. All the rivers are ephemeral in nature and run off is generated in heavy rainfall period only. Madagiri stream flows at 4.5 km, NNE from the project site.

**Ground Water Quality:** Ground water quality of study area does not meets acceptable and permissible limits as per IS: 10500. Ground water resources in the study area were found not fit for drinking purpose.

**Micro Meteorology:** The maximum ambient temperature during the study period was 31.0°C while minimum temperature was recorded as 19.4°C. Maximum relative humidity recorded at Tuticorin Airport was 79% while minimum humidity was recorded as 54%. During the study period, maximum wind speed recorded at Tuticorin Airport was 32 kmph while minimum wind speed was recorded as 8 kmph. Average wind speed was 20 kmph. During the study period, predominant wind direction was recorded from North to East.

**Ambient Air Quality:** Ambient air quality monitoring have been carried out at eight locations during winter season for PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, NH<sub>3</sub>, O<sub>3</sub>, C<sub>6</sub>H<sub>6</sub>, BaP, Pb, As, Ni and CO. All monitored parameters at all AAQM locations met National ambient quality standards for industrial, residential, rural & other areas.

**Noise Level:** Noise measurements were carried out at 10 locations. Measured day and night time Leq noise levels are within the limit stipulated noise standards.

**Natural Hazards and Disaster Risk:** Tuticorin Airport lies in seismic zone II according to zoning map of India. Structure of new terminal building has been designed in view of seismic factor and other natural hazards.

**Land use & Land Cover in the Study Area** - As per satellite image interpretation, agriculture land (45.79%), Waste Lands / Scrub Lands (27.74%), built up area/settlement (5.04%), Open Scrub (11.08 %), Saltpan (4.51) and rivers/water body (5.84%).

**Terrestrial Ecology:** Within 10 km radius area, no species of flora and fauna have been categorized as rare, endangered and threatened (RET) species. There is no wildlife sanctuary, national park or other protected area within 10 km distance from the Tuticorin Airport.

**Socio-Economic Environment of Study Area:** As per census records, the population of settlements in the study area is 116635. The male population constituted nearly 49.23% persons while the female population is 50.77% of the total population. Sex ratio in settlements located in the study area are 1031. Scheduled castes population is 21.88%

and Scheduled tribes population is 0.28%, of the total population of the area. In the study area, the average literacy rate is 72.93%, 77.88% amongst males and 68.13% amongst females.

#### **4 Anticipated Environmental Impacts & Mitigation Measures**

**Topography & Physiography:** Topography of the area is plain. Therefore, for development of Tuticorin Airport and associated facilities, major filling of earth will not be required.

##### Mitigation Measures

- Land clearing at the site will be kept to the absolute minimum practicable; and
- Construction site would be designed to minimize filling of the earths.

**Land Use Pattern:** Land is already available for development of Tuticorin Airport. The land use pattern of the land to be used for development of airport, land use will be changed permanently, however this impact will be localized.

##### Mitigation Measures

- Land clearing for construction site will be kept to the absolutely minimum practicable;
- The filling and cutting of soil would be kept minimum; and
- Construction debris and waste generated during construction activities will be collected and disposed in environmental sound manner as per applicable rules depending upon type of wastes.

**Water Resources and Water Quality:** During the construction phase of the construction of the proposed development at Tuticorin Airport, approx. 30 to 40 KLD water will be required depending upon the type of construction activities. The water requirement will be met through private tankers. Total fresh water requirement for Tuticorin Airport after proposed development is estimated as 465 KLD. Approx. 243 KLD waste water generated from Tuticorin Airport after development will be treated in MBBR technology based Sewage Treatment Plant (STP) and reused for HVAC, flushing, greenery development.

##### Mitigation Measures

- Continuous efforts will be made to reduce water consumption using less water required cisterns;
- Continuous attempts will be made to avoid wastage and leakage of water
- Sewage and domestic waste water will be treated in MBBR based Sewage Treatment Plant
- Reused treated waste water in HVAC, flushing, greenery and landscaping

**Soils:** Approx. 500 kg per day solid waste will be generated during operation of Tuticorin Airport after development, which will be collected, segregated and managed by external agency for disposal as per Solid Waste Management Rules, 2016. Hence, the impact on the soil will be insignificant as an organized solid waste collection and disposal practices will be followed at the Tuticorin Airport.

**Mitigation Measures**

- Compaction and stabilization will be ensured during filling to ensure that no loose soil is washed away with runoff during rains,
- Restoration of land surface with the condition and contours, prior to instigation of construction activities,
- Wastes, fuel, oil drums, used oil, etc. would be collected and disposed properly,
- Dust bins will be placed at requisite locations at construction site and there will be segregation of wastes before disposal,
- Used oil from maintenance of DG sets engines and construction equipment will be collected separately in drums and will be handed over to the authorized used oil recyclers by the Tamil Nadu Pollution Control Board as per the CPCB guidelines.

**Ambient Air Quality:** During the operational phase of the Tuticorin Airport after development, the intermittent air emissions are generated from aircraft engines during approach, landing, taxiing, take-off and initial climb, which is termed as reference Landing and Take-off Cycle (LTO cycle). For power back up, there will be 3 DG sets of 1250 KVA & 2 DG sets of 625 KVA capacity will be available. Vehicular emissions will also be generated from the operation of vehicular traffic at the airport from ground support vehicles, passenger's pickup and dropping vehicles. Exhaust emissions comprising NO<sub>2</sub>, SO<sub>2</sub>, PM, CO, HC, etc will be generated from aircraft, DG sets and vehicular emissions.

**Mitigation Measures**

- Dust suppression systems (water spray) will be used as per requirement at the construction site;
- Construction materials and earth will be fully covered during transportation to the construction site by road;
- Standard prescribed by the CPCB/ Tamil Nadu Pollution Control Board (TNPCB) for stack height and emissions from DG sets will be complied with;
- Preventive maintenance will be carried out for vehicles and pollution check will be mandatory on periodic basis all the vehicles approaching to the construction site;
- Earth moving equipment, typically a bulldozer with a grader blade and ripper, will be used for excavation work;

**Noise Levels:** The terminal building at Tuticorin Airport will be sound proof. DG sets room will be acoustically treated to control noise levels.

### **Mitigation Measures**

- Provision of rubber padding/ noise isolators to DG sets and construction machines
- Preventive maintenance of the machine/ equipment will be carried out;
- Provision of silencers to modulate the noise generated by machines;
- Provision of protective devices like ear muff/ plugs to the workers;

**Terrestrial Ecology:** Greenery and landscaping will be developed at Tuticorin Airport. For irrigation of green belt, treated waste water from STP and accumulated rainwater will be available and used. This will have positive and long term beneficial impact on terrestrial ecology of the area.

**Socio-Economic Environment:** During construction and operation phases of development in Tuticorin Airport will provide additional direct and indirect job opportunities in the area and region. Further, it will attract more and more commercial and developmental activities in the area. Therefore, positive impacts are anticipated on socio-economic environment during operation of Tuticorin Airport.

**Employment and Economic Growth** - The development of Tuticorin Airport will result in a boost in commercial activities in the region. This will improve direct and indirect employment opportunities, revenue generation, commercial and industrial activities; therefore, resulting in positive impact on the employment and economic growth of the region.

## **5 Analysis of Alternatives**

In view of the future traffic growth at Tuticorin Airport, there is an urgent need of extension of Runway with Blast Pad, RESA, Taxiway, Apron, GSE Area, Isolation Bay, construction of new terminal building and Miscellaneous works within the Tuticorin Airport premises. The site for proposed development works has already been handed over by state government which is located adjacent to the existing Tuticorin Airport. Therefore, no alternative site has been considered for this project.

## **6 Environmental Monitoring Plan**

To ensure the effective implementation of the mitigation measures and environmental management plan during construction and operation phases of Tuticorin Airport after development, environmental monitoring plan have been prepared for ambient air quality, water quality, soil characteristics and noise monitoring. Suitable mitigation measures will be taken in case of monitored parameters are exceeding the stipulated limits.



## **7 Additional Studies - Risk Assessment & Disaster Management Plan**

Hazard occurrence at Tuticorin Airport may result in on-site implications, like, fire at the storage of HSD in barrels for DG sets followed by fire, bomb threat at terminal building, cargo terminal & aircraft and natural calamities like, earthquake, flood, etc. Other incidents, which can also result in a disaster at the Tuticorin Airport are agitation/forced entry by external group of people, sabotage, air raids; and aircraft crash while landing or take-off.

Disaster management plan has been prepared comprising key functions of Airport operator, other supporting organizations/agencies/services for response during emergency at the Tuticorin Airport.

## **8 Project Benefits**

The direct and indirect benefits of the development of Tuticorin Airport are as follows:

- Better infrastructure facilities to the passenger at new terminal building,
- More parking facilities for Aircrafts and safe taxiing,
- Increase in regional economy as it will boost tourism and commercial activities in the region.
- Generation of more revenue to the state, hence more development of the region.
- Boost in tourism and more people to travel in the state
- Employment opportunity to people.
- More business and industrial opportunities

## **9 Environmental Management Plan**

The Airports Authority of India will be responsible for the implementation of mitigation measures identified in Environmental Management Plan (EMP) for construction and operation phases of Tuticorin Airport. There will be Environmental Management Cell (EMC) at Tuticorin Airport to look after day to day basis implementation of mitigation measures for construction and operation phases.

## **Budget for Environmental Management and Monitoring Plan**

Total budget of Rs. 3.0 Crores has been kept for implementation of environmental management plan during construction and operation phases of Tuticorin Airport. Total budget of Rs 0.12 Crore has been kept for environmental monitoring during construction and operation phases. The recurring cost per annum for Environmental Management, fund of Rs 30 lakhs has been allocated.

## **10 Conclusions**

Anticipated adverse environmental impacts from development of Tuticorin Airport will be localised, short term and low/moderate in nature, and visible only during construction phase. Adverse environmental impacts identified in EIA study due to the proposed project will be mitigated by implementation of mitigation measures/environmental management plan (EMP) described in EIA report and compliance of applicable environmental regulations. The proposed project will have long term and regional beneficial/positive direct and indirect impacts on employment, socioeconomic conditions, state economy, tourism and development of the area and region.