Executive Summary

EIA for Extension of Runway with Blast Pad, RESA, Taxiway, Apron, GSE Area, Isolation Bay, Construction of New Domestic Terminal Building, ATC tower cum Technical Block cum Fire Station and Other Miscellaneous Works at Kolhapur Airport

Project Proponent

Airport authority of India
Kolhapur Airport, Kolhapur Maharashtra

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(Accrediated by NABL, NABET, MoEF)

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0.1 Introduction

Kolhapur is an important city in Maharashtra and is known as Dakshin Kashi from ancient time. It is a famous religious place due to Mahalakshmi & Jotiba temples. Kolhapur is seat of Goddess Mahalaxmi and is one of the Shaktipeeths mentioned in India. Kolhapur is world famous for Kolhapuri Chappals as well. The city is situated at a height of 1790 feet above mean sea level and 16-42 North latitude and 74 - 14 East longitude. The city stands on the bank of river Panchaganga, a tributary of the river Krishna. By road, Kolhapur is 228 km south of Pune, 615 km north-west of Bangalore and 530 km west of Hyderabad. The coastal line (western) is only 75 km away from Kolhapur & hence is known as 'Door of Konkan'. The national highway no.4 (Pune-Bangalore Highway) passes through Kolhapur. Kolhapur is having a railway terminal station named "Chhatrapati Shahu Tarminus".

Kolhapur Airport is located at a distance of 9 km from the City Centre. It is an operational airport having total land area of 748.78 acres. At present, there are no schedule flights. Non-scheduled Charters operate their flights for business, ceremonies and other several important occasions. Latitude and Longitude of the Kolhapur Airport are 16° 39’ 55” N and 74° 17’ 29” E.

Airports Authority of India has planned for proposed development at Kolhapur Airport.

The EIA studies have been carried out as per TOR approved by MoEF&CC vide letter F. No. 10-10/2018-IA-III Dated 12 April, 2018.

0.2 Project Description

0.2.1 Justification of proposed Development at Kolhapur Airport

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

- Sugar and jaggery of Kolhapur is very famous in all over India and more than 20 sugar factories present in Kolhapur district.
- Cotton mills also very popular and reached at top most position.
- Different kinds of machineries are produced in Kolhapur which is oil engines, printing machines, lathe machines, Electronic motors, spare parts of machineries, tractor engines, watches, furniture's etc.
- Approximately 300 foundry units located in the Kolhapur and Sangli districts of the region
- Kolhapur area is the land of magnificent temples, and the religious pride of Maharashtra.

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

0.2.2 Key Scope of Proposed Development at Kolhapur Airport

Brief scope of work for extension of runway with blast pad, RESA, taxiway, Apron, GSE area, Isolation bay, construction of new domestic terminal building, ATC tower cum Technical block cum fire station and other Miscellaneous works at Kolhapur Airport (Maharashtra) is given below:

- Extension of Runway by total 930 m x 45 m (i.e. 820 m x45 m towards south west and 110m x 45m towards North east) to have total runway dimension of 2300 m x 45 m to cater for the strength of Code 'C' critical aircraft B737-900W / A-320-200.
- Strengthening of the existing runway 1370 m x 45 m to cater for the strength of Code 'C' critical aircraft A-320-200.
- Provision of 2.5 M wide shoulder on both sides of 2300 M Runway pavement for operation of code -"C" critical aircraft A-320-200.
- Construction of Turn pad for code 'C' critical aircraft A-320-200 at both ends of Runway 07 & 25.
- Provision of 60 m x 60 m Blast Pad at Runway 07 & 25.

- Construction of 240 m x 90 m RESA at both ends of Runway strip of Runway 07 / 25.
- Provision of 213 m x 23 m Link taxi track with 2.5m shoulder on both sides to cater for code – 'C' aircraft (B-737- 900W) for new Apron.
- Construction of new Apron of size 148.5m x 93.5m for parking aircraft 3 nos. Cat- "C" aircraft (1 No. AB-320/ B737- 900W and 2 Nos. ATR-72) or (2 Nos. AB-320/ B737- 900W) in power-in and power out configuration with 75 x 20 M wide GSE Area
- Provision of new Isolation Bay 91 m X 76 M and 217.5 m x 23m Link Taxiway with 2.5 m wide shoulder suitable to cater for code-"C" type of aircraft. (Subject to handing over of Forest land having an area of 27.01 acres).
- Provision of centrally air-conditioned New Domestic Passenger Terminal building to handle 300 Peak Hour passengers (150 Arrival & 150 Departure) with covered area 3900 sqm. as per IMG norms.
- City side car parking for 100 cars, VIP parking for 10 cars, taxi parking, coach parking, approach road and utility buildings
- New ATC tower cum Technical block (Category-2) cum Fire Station (Category - 6) similar to as per drawings enclosed.
- Horticulture-landscaping, drainage system, water supply in the city side area.
- Provision of drainage system for the apron connecting to the main storm water drains and required culverts.
- Other related/auxiliary facilities.

0.2.3 Utilities and Other Features

- Total land available with existing Kolhapur Airport is 748.83 Acres.
- Total power requirement for the proposed development of Kolhapur Airport will be 250 kW. It is proposed to install 2 numbers of DG sets considering one additional standby DG set of 250 kVA capacity.
- Central Airconditioning plant is proposed and total estimated air-conditioned load is 125 TR after diversity. Microprocessor based control system (BMS) will also be installed at the Terminal building.
- At the new terminal building Energy Conservation will be as per Energy Conservation Building Code 2007 (ECBC). 250 kW solar PV power plant will be esteblished to generated solar power.
- Total fresh water requirement for Domestic use, CFT and HVAC will be

Approx. 95 KLD and same shall be met through MIDC suply/ground water using bore well after obtaning permission from competent authority.

- As per water balance diagram, 108 kl/d sewage will be generated from the airport which will be treated in STP of capacity 120 kl. Moving Bed Biofilm Reactor (MBBR) type STP will be installed for treatment of waste water at the proposed Civil Enclave.
- For storm water management at the site, rectangular sections for side drains will be provided. The drains have been kept sufficiently away from the taxiway / runway.

0.2.4 Project Cost

The cost of proposed development of Kolhapur airport is estimated as Rs. 275 Crores.

0.3 Description of Environment

Topography and Physiography:–The topography of the study area is influenced by Deccan Trap and almost plain. The study area, on the whole, is a part of the Deccan table-land with ground ranging 541 to 702 m above sea level. The average ground level at the airport is 608 m amsl. Panchganga River is flowing at distance of about 5 km in north direction from the Kolhapur Airport.

Geology: The major portion of district is covered by Basaltic lava flows of upper Cretaceous to lower Eocene age. These flows are part of the plateau Basalt of the Peninsular India, and believed to have been extruded by fissure type of Volcanoes. In the Basaltic Terrain, in parts of Kolhapur district, the ground water occurs under un-confined conditions in the phreatic zone up to the depth of 15 m in the weathered zone, joints and fractures in the massive units, and weathered vesicular units.

Soil Characteristics: Soil of the area are generally shallow black soil. Soil samples from all eight locations are loam, sandy loam and sandy clay loam in texture.

Surface Water Resources: In the study area, Panchganga river is flowing at distance 5 km in north direction. Kaneri lake, Kandal gaon lake, Jaisingrao talav, Pazar talav, Tamgaon Lake, etc are located in the study area.

Ground Water Quality: Ground water quality of study area meets desirable limit. Ground water resources in the study area were found fit for drinking purpose.

Micro Meteorology: The maximum ambient temperature during the study period was 40.6˚C while minimum temperature was recorded as 16.1˚C. maximum relative humidity recorded at Kolhapur Airport was 78.6% while minimum humidity was recorded as 34.7%. During the study period, maximum wind speed recorded at Kolhapur Airport was 9.9 kmph while minimum wind speed was recorded as 1.8 kmph. Average wind speed was 7.6 kmph. During the study period, predominant wind direction was recorded from West to East.

Ambient Air Quality: Ambient air quality monitoring have been carried out at eight locations during pre-monsoon season for $PM_{2.5}$, PM_{10}, SO_2, NO_2, NH_3, O_3, C_6H_6, BaP, Pb, As, Ni and CO. National ambient air quality standards for industrial, residential, rural & other areas are met for all monitored parameters at all AAQM locations during the study period.

Noise Level: Nose measurements were carried out at 8 locations. Measured day and time Leq noise levels are within the limit stipulated noise standards.

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

Landuse & Land Cover in the Study Area - As per satellite image interpretation, agriculture land (47.14%), built up area/ssettlement (21.65%), vegetation/plantation (19.32 %) waste & fellow land water (8.4 %), and rivers/water body (3.49 %).

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 Kolhapur Airport.

Socio-Economic Environment of Study Area: As per census records, the population of settlements in the study area is 716256. The male population constituted nearly 51.2% persons while the female population is 48.8% of the total population. Sex ratio in settlements located in the study area are 952. Scheduled castes population is 14.1%, 13.8% amongst males and 14.4% amongst females. Scheduled tribes population is 1.04%, 1.06% amongst males and 1.02% amongst females of the total population of the area. In the study area, 80.5% is literate, 83.4% amongst males and 77.5% amongst females.

0.4 Anticipated Environmental Impacts & Mitigation Measures

Topography & Physiography : Topography of the area is plain. Therefore, for development of Kolhapur 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.
- Borrowing of earth will be ensured only from approved borrow area having valid environmental from District Level Environmental Impact Assessment Authority (DEIAA).

Land Use Pattern: Land is already available for development of Kolhapur 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 Kolhapur Airport, approx. 30 to 40 kl/day water will be required depending upon the type of construction activities. The water requirement will be met through existing MIDC water supply. Total fresh water requirement for Kolhapur Airport after proposed development is estimated as 95 kld. Approx. 108 kld waste water generated from Kolhapur 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;
- Water efficient urinal and toilets will be provided at Kolhapur Airport.
- Efforts will be made to stop 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. 170 kg per day solid waste will be generated during operation of Kolhapur 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 Kolhapur Airport.

Mitigation Measures

- Agency will be hired for disposal of solid wastes as per the provisions of the Solid Waste Management Rules, 2016;
- Solid waste generated from the Kolhapur Airport is transported in close containers;
- Used lubricating waste oil and oil contaminated clothes etc is collected separately in containers and is sold to authorized recyclers as per CPCB/ Maharashtra Pollution Control Board guidelines.

Ambient Air Quality: During the operational phase of the Kolhapur 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 2 DG sets of 250 KVA capacity each will be available. Vehicular emissions will also be generated from the operation of vehicular traffic at the airport from ground support vehicles, passengers' pickup and dropping vehicles. Exhaust emissions comprising NO_2, SO_2, PM, CO, HC, etc will be generated from aircraft, DG sets and vehicular emissions.

Mitigation Measures

- Compliance of all standards prescribed by the ICAO during operation of aircrafts by preventive maintenance and monitoring;
- 8 m high chimney for DG sets will be provided as per the CPCB guidelines;
- Proper traffic management plan will be prepared to ensue that there is no traffic congestion at in front of new terminal building. It will help in reduction of vehicular emissions from the airport.
- Ground vehicles at the airport will be maintained and have a "Pollution Under Control" certificate;
- Development of greenery and landscaping at the airport for improving ambient air quality.

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

Mitigation Measures

- The compliance of all standards prescribed by the ICAO during operation of aircrafts by preventive maintenance and monitoring,
- Proper traffic management will be prepared to ensue that there is no traffic congestion at the airport. It helps in reduction of vehicular noise emissions from the airport,
- DG sets will be provided with acoustic enclosure as per CPCB guidelines,
- Green belt, landscaping and boundary at the airport act as barrier for noise;

- Monitoring of ambient air quality/source emission will be carried out as per monitoring plan.

Terrestrial Ecology: Greenery and landscaping will be developed at Kolhapur 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 phase of Kolhapur Airport after development will open 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 Kolhapur Airport.

Employment and Economic Growth - The construction of development of Kolhapur 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.

0.5 Analysis of Alternatives

During design, construction and operation of terminal building at Kolhapur Airport necessary measures will be taken for conservation of energy in line with "Energy Conservation Building Code–2017" and "National Building Code 2016". The important energy conservation measures proposed terminal building are described below:

- New terminal building at Kolhapur Airport will be designed and constructed for GRIHA Rating 4 star,
- Use of Energy Efficient building material & glass,
- Use of LED lamps instead of GLS lamps,
- Use of Solar Backed up Light Emitting Diode Lamps instead of par lamps,
- Energy efficient HVAC system,
- Solar passive techniques for terminal building,

- Use of 5 star BEE energy efficiency rating electrical equipments,
- Microprocessor-based Building Management System (BMS) will be installed for minimization of energy consumption,
- Automatic lighting on/ off control system will be provided in the airport area for optimum utilization of energy.

It is proposed that 100 KW solar power generation plant will be established at the Kolhapur airport to produce clean energy. By adopting above measures more than 30% energy will be saved.

0.6 Environmental Monitoring Plan

To ensure the effective implementation of the mitigation measures and environmental management plan during construction and operation phases of Kolhapur 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.

0.7 Additional Studies - Risk Assessment & Disaster Management Plan

Hazard occurrence at Kolhapur 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 Kolhapur 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 Kolhapur Airport.

0.8 Project Benefits

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

- Batter infrastructure facilities passenger at new terminal building,
- More parking faculties 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

0.9 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 Kolhapur Airport. There will be Environmental Management Cell (EMC) at Kolhapur 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 2.67 Crores has been kept for implementation of environmental management plan during construction and operation phases of Kolhapur Airport. Total budget of Rs 0.11 Crore has been kept for environmental monitoring during construction and operation phases.

0.10 Conclusions

Anticipated adverse environmental impacts from development of Kolhapur 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.