

1.0 INTRODUCTION

Chennai International airport is located in Meenambakkam Sriperumbudur, Alundur, Pallavaram tehsil, Kanchipuram district, Tamil Nadu. Airport is spread over in an area of 1301.28 acres and is linked to the rest of city by an elevated metro line, the 6 - lane GST highway and a rail link opposite the main terminal building.

Background

Chennai Airport Phase-I environmental clearance was granted by MoEF&CC vide letter no. 10-140/2007-IA (III) dated 25th August, 2008. EC letter is enclosed as **Annexure-I**. The certified compliance of the environmental clearance is enclosed as **Annexure-I(A)**.

The phase-II environmental clearance for Chennai airport was obtained vide letter F.No:10-16/2016-IA-III dated 26th June, 2018. Copy is attached as **Annexure-I(B)**.

2.0 PURPOSE OF THE REPORT

Chennai International Airport proposed construction of Multi Level Car Park (MLCP) facilities along with commercial facilities. For this purpose, Airports Authority of India has demarcated 17230 m² of land, in two parcels within the operating airport premises. The total cost of the proposed project is about Rs. 250 crores.

Now the present proposal is for amendment in EC granted for phase-II (dated 26th June, 2018) to Chennai Airport for addition of integrated commercial complex with Multi Level Car Park (MLCP) at Chennai Airport, Chennai, Tamil Nadu.

Proposed Facilities in MLCP & Integrated Complex:

West MCLP

- Hotel (29,590 sft);
- Parking (6 levels);
- F&B Retail (51,719 sft).

East MCLP

- Parking (7 levels);
- Cinema Multiplex (1245 seats) – 40,016 sft;
- Retail Mall (3 levels)-1,51,020 sft.

As per Environmental Impact Assessment Notification dated 14th September, 2006 and 01.12.2009, the proposed project falls under category 'A' under project type 7(a) and requires Environmental Clearance (EC) to be obtained from Ministry of Environment, Forest and Climate Change (MoEF&CC) before the commencement of any ground activity. Which requires Form-I along with Environment Management Plan to be prepared and submitted to MOEF&CC for obtaining amendment in Environmental Clearance.

3.0 ENVIRONMENTAL SETTING OF THE PROJECT

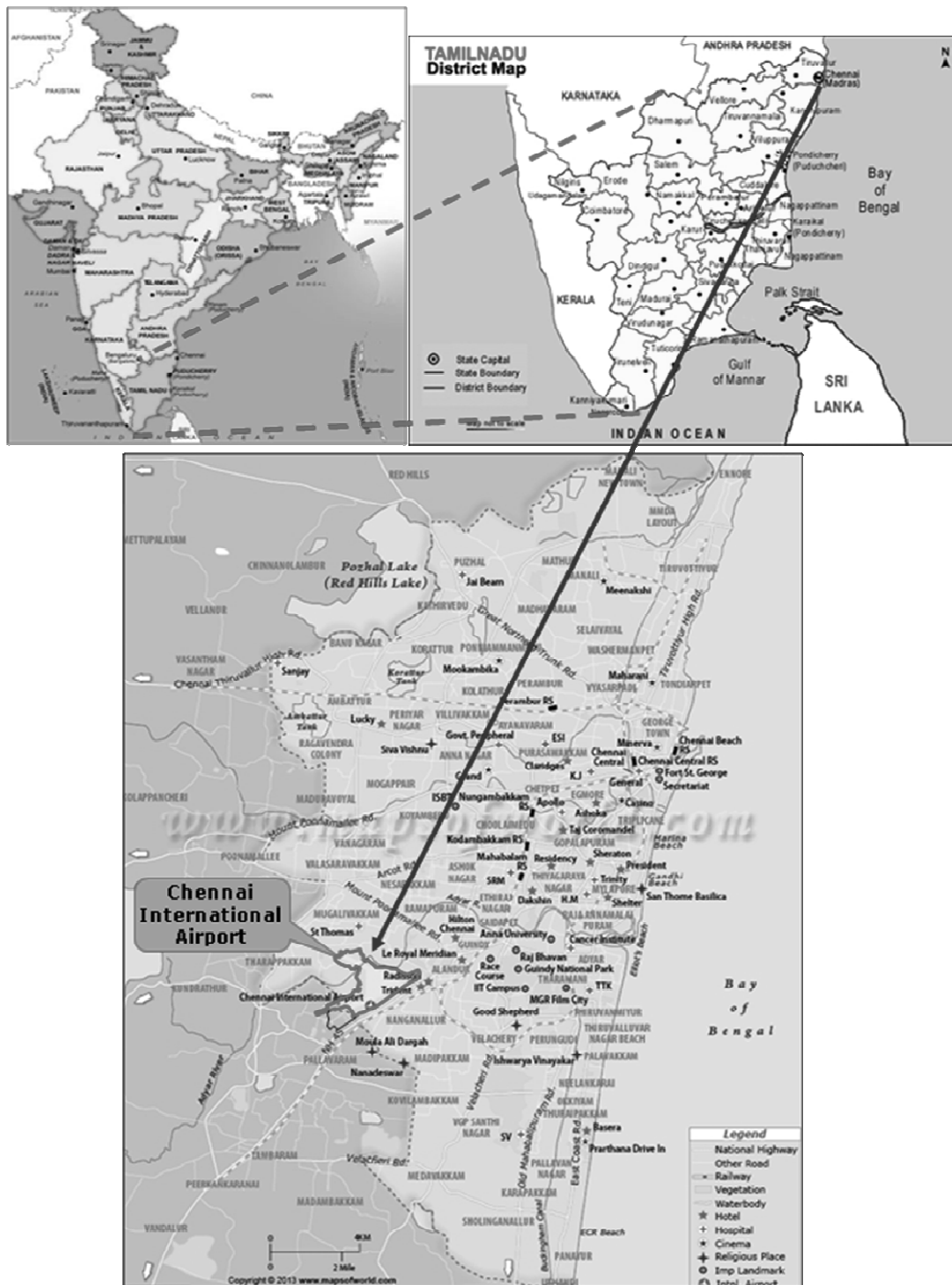
The location map is given in **Figure-1**. The study area representing 10 km radius is shown in **Figure-2**. The environmental setting of the project is given in **Table-1**.

**TABLE-1
ENVIRONMENTAL SETTING AROUND THE PROJECT SITE**

Sr. No.	Particulars	Details
1	Coordinates of Airport	Latitude: 12°58'41.9" to 13°00'35.5" N Longitude: 80°08'42.5" to 80°11'22.1" E
2	General Elevation above MSL	20 m above MSL
3	Nearest Highways	NH-45, Chennai to Trichy (0.1 km, E)
4	Nearest Railway Station	<ul style="list-style-type: none"> • Trisulam suburban railway station (0.3 km, SE) and • Metro rail airport station (within the airport premises)
5	Nearest other airports	• Tambaram Air Force Station (7.5 km, SSW)
6	Nearest Village/City	<ul style="list-style-type: none"> • Alandur (1.3 km, E) • Tambaram (5.6 km, SSW)
7	Ecologically sensitive zones	Guindy National Park (3.0 km, SE)
8	Forest areas in 10 km radius	<ul style="list-style-type: none"> • Pallavaram Forest (0.6 km, S) • Pulikkuradu RF (4.0 km, SW) • Nanmangalam RF (4.7 km, S) • Tambaram RF (5.5 km, SW) • Nallur RF (7.3 km, WSW) • Vandalur RF (9.1 km, SSW)
9	Notified Historical/ Archaeological/ Tourist Places	Nil within 10 km radius
10	Defense and other related Establishments	Nil within 10 km radius
11	Major Water Bodies	Adyar River (Passing through airport in NW side) Kuvam (Cooum) River (5.9 km, N) Chembarambakkam Tank (7.3 km, W) Bay of Bengal - Sea (8.7 km, E)
12	Seismic Zone	The project area falls under seismic zone-III as per IS: 1893 (Part-1): 2002

Note: all distances mentioned above in () are aerial distances

Environment Management Plan for Amendment in Environment Clearance for the Proposed Multi Level Car Parking & Integrated Commercial Complex, Chennai Airport, Chennai, Tamil Nadu



**FIGURE- 1
INDEX MAP**

4.0 PROJECT DESCRIPTION

Existing Airport

The environmental clearance for the existing airport has been issued by MoEF&CC vide letter no. 10-140/2007-IA (III) dated 25th August, 2008. EC letter is enclosed as **Annexure-I**. The certified compliance of the environmental clearance is enclosed as **Annexure-I(A)**.

Further, the phase-II environmental clearance for the airport has been obtained vide letter F.No: 10-16/2016-IA.III dated 26th June, 2018 for which amendment is sought.

Present Proposal

Airports Authority of India has demarcated 4.25 acre of land (within the airport complex), in two parcels at Chennai International Airport for the purpose of constructing multi-level car parking facilities along with commercial facilities. The proposed construction is 2 Multi-Level-Car park (MLCP) buildings on either flank of the metro station, at a distance of 100 m from the façade line of the airport terminal buildings. It is proposed to have a link bridge between each of the MLCP blocks to the elevated walkway at traveler level.

The buildings are planned and designed to accommodate a minimum of 2000 equivalent car parking spaces (ECS) within 7,73,000 sft of built area, as well as a maximum 2,70,000 s.ft. of commercial space. Of the minimum 2000 ECS, 1250 ECS will be accommodated within West MLCP block and 750 ECS with in East MLCP. The design intent to accommodate retail & cinema multiplex complex of approximately 2,34,000 Sq.m with a large F&B component as well as a 36,000 sq.ft. transit hotel facilities will be placed on the landscaped roof of the West block. The retail occupancies in both blocks will be set out so that they spill activities out on to the open spaces around the blocks, energizing these area and creating much needed pedestrian plazas.

Both blocks are designated for Ground Floors + 6 Floors and at height of approximately 27.0 m. Total construction duration is 18 months from the commencement of construction. This project aspires to meet the Green Rating for Integrated Habitat Assessment (GRIHA) system version 2015 for 3 star rating.

Design Proposal

The design being presented envisages a retail & cinema multiplex component of approximately 2,50,000 sft with a large F&B component as well as 30,000 sft transit hotel facility. The retail occupancy will be positioned to serve the needs of arriving and departing passengers, as well as to serve as a community mall/multiplex for residential localities situated in the vicinity of the airport complex.

The retail occupancies in both blocks will be set out so that they spill activities out onto the open spaces around the blocks, energizing these areas and creating much needed pedestrian plazas. The hotel facilities with 59 keys and associated business and food / beverage facilities will be placed on the landscaped roof of the west block. This section describes the factors which influence site selection for the proposed development, infrastructure and utilities available, water requirement and power requirement etc. The layout map is given in **Figure-3**.

4.1 Land Resources

Airport is spread over in an area of 1301.28 acres. Airports Authority of India has demarcated 4.25 acre of land (within the airport complex), in two parcels at Chennai International Airport for the purpose of constructing multi-level car parking facilities along with commercial facilities. The Airports Authority of India has demarcated 17230 m² of land, in two parcels at Chennai International Airport for the purpose of constructing multi-level car parking facilities along with commercial facilities. Each parcel measures approximately 175 m x 50 m and is located on either flank of the Airport Metro Station, between the metro viaduct and the airport terminal building.

The buildings will have to accommodate a total of 2000 equivalent car parking spaces within 750,000 Sft of built area, as well as a maximum of 250,000 Sft of commercial space. The existing circulation of the airport parking lot-within which these parcels sit will have to be re-designed so that traffic circulation is integrated with the building design, while servicing the needs of the airport terminal buildings. Departures of elevated will operate in two opposing loops. The elevated level will be accessed off the ramps at the flanks, while the two metro ramps will be used as exists to return to grade level. Separating the traffic for the western and eastern terminal will result in considerable reduction in traffic volume at the elevated bridge.

West Block

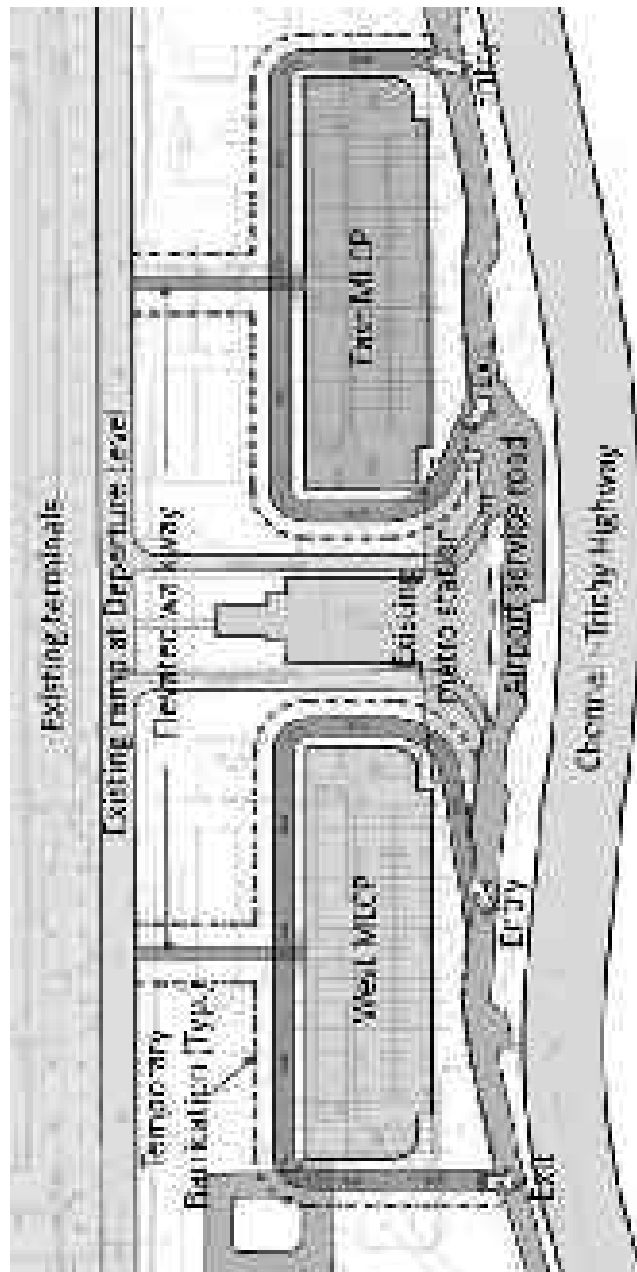
The west block (MLCP-2) will comprise a large food court at the ground level with 6 levels of parking facilities stacked against it. A budget transit hotel (59 keys) will be located in a single level above the structure.

East Block

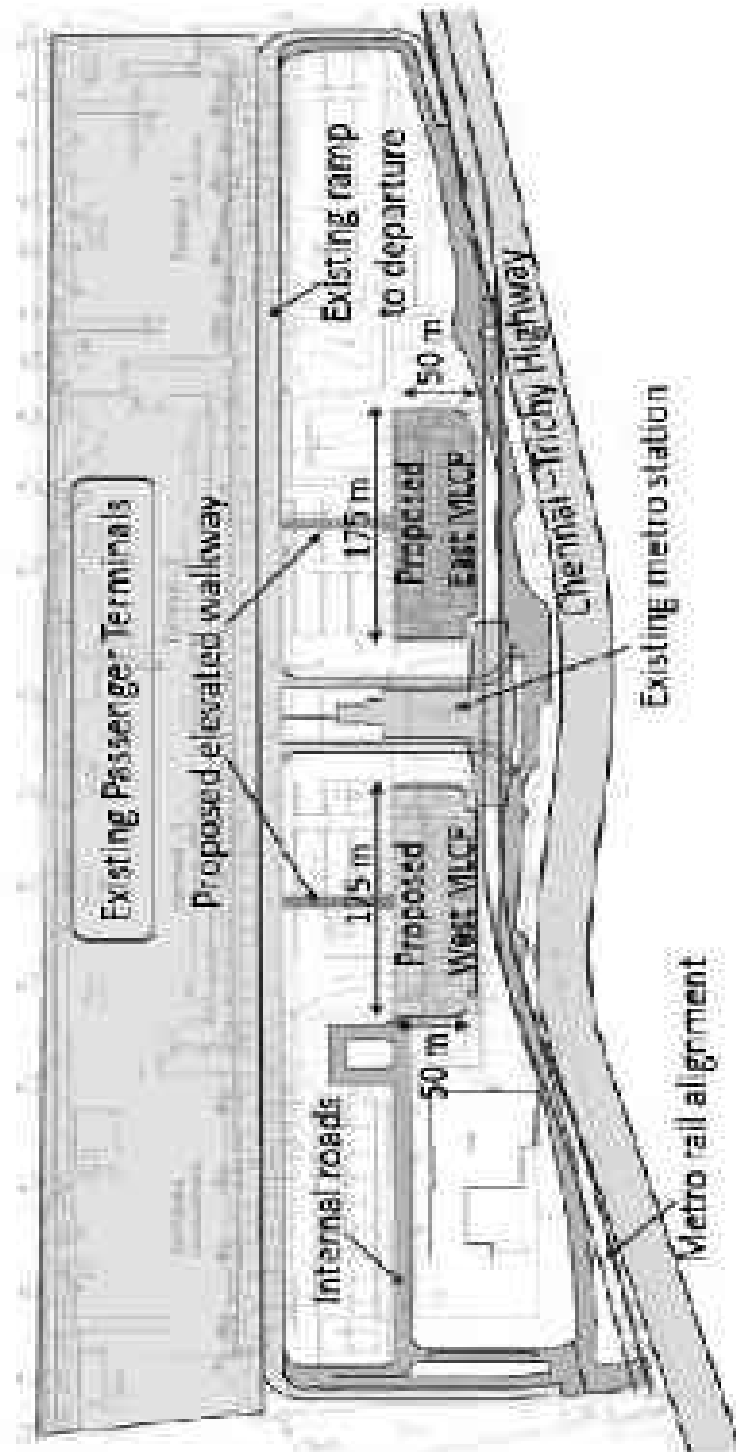
The east block (MLCP-1) will compromise a 1.9 L sft retail mall arranged around a central atrium on three levels. A 1245 cinema multiplex will be accessed off the upper most retail level. This will adjoin a 7 level parking facility adjacent to it. The proposed structure in west block are given in **Table-2**.

**TABLE-2
DETAILS OF MLCP**

Sr.No	Description	West Block MLCP-1	East Block MLCP-2
1	Hotel	29,590 sft	-
2	Parking Levels	6 levels	7 Levels
3	F&B Retail	51,719 sft	-
4	Cinema multiplex	-	40,016 sft
5	Retail Mall	-	1,51,020 sft (3 Levels)
Out of total area of 1301.28 acres – MLCP with integrated commercial complex proposed in an area of 4.25 acres			



**FIGURE-3
MASTER PLAN-MLCP**



**FIGURE-3(A)
MASTER LAYOUT**

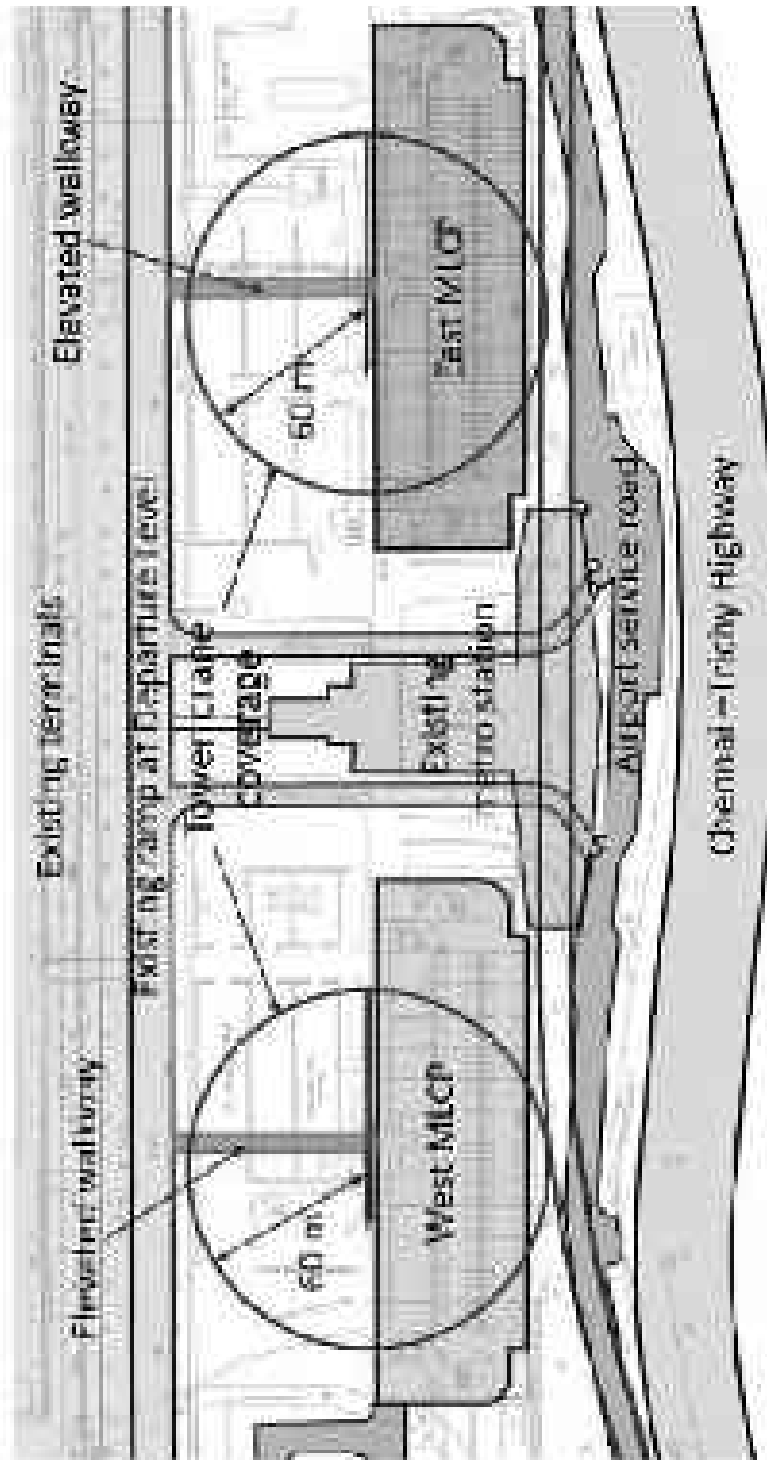


FIGURE-3(B)
TOWER CRANE LAYOUT

The presence of a food court and retail occupancies spilling out onto the open spaces around it will result in a vibrant and energized pedestrian space forming a nucleus of activity outside the terminal building. Parking facilities in both these blocks will be accessed through the retail occupancies, resulting in footfalls and high commercial viability.

4.2 Water Requirement

Airport

Total water required for entire airport is about 4.1 MLD. The required water shall be sourced from municipal supply, treated water & recycled water from STP within the airport.

Proposed MLCP with Integrated Commercial Complex:

Water required for the proposed MLCP with integrated commercial complex would be around 294 KLD (~300 KLD approx.). The required water shall be sourced from municipal supply.

4.3 Power Requirement

Airport

Presently, about 17.25 MVA of power is being utilized for the various operation of the airport is met from Tamil Nadu Generation & Distribution Corporation. The total power required for the after phase-II modernization would be about 27.25 MVA of power is being utilized for the various operation of the airport is met from Tamil Nadu Generation Distribution Corporation.

Proposed MLCP with Integrated Commercial Complex:

About 1250 kVA for West block and 1600 kVA for East block is the maximum demand load and will be met from Tamil Nadu Generation & Distribution Corporation.

DG sets: Self acoustic prime rated DG sets

East block – 1250 kVA and West block – 1700 kVA

4.4 Employment

The MLCP with integrated commercial complex will create direct and indirect employment opportunities for the local population and overall development of the area. There will be a positive change with regard to the welfare of the people.

5.0 TRANSPORTATION NETWORK & NODES

The detailed traffic studies were conducted by M/s. GMD and detailed study report is attached as **Annexure-II**.

As per GMD study report, the parking required for the project is being accommodated within the project premises. An automated parking system has been provided. The parking statement is given in **Table-3**.

**TABLE-3
PARKING STATEMENT**

BLOCK	PARKING NO'S
West Block	1263
East Block	750
Total	2013

The project is expected to be commissioned by the year 2022. This would generate additional trips during day and peak hours. The trips generated by the project are given in **Table-4**.

**TABLE-4
TRIP GENERATION**

No of trips Generated during Peak hour (PCU/hr)	201
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A traffic growth of 5% is considered per year for the surrounding network.

6.0 ENVIRONMENT MANAGEMENT PLAN

The Environment Management Plan (EMP) is required to ensure sustainable development. Hence it needs to be an all-encompassing plan for which the project authorities, Government, Regulating agencies like Pollution Control Board etc. working in the region and more importantly the affected population of the study area need to extend their cooperation and contribution.

The Management Action Plan aims at controlling pollution at the source level to the extent possible, with the available technology, followed by treatment measures before they are discharged. The Management Action Plan aims at controlling pollution at the source level to the maximum possible extent with the available and affordable technology followed by treatment measures before they are discharged. Specifically, the EMP lays stress on key environmental aspects and issues of the project during operation phase by:

- Identifying potential environmental impacts;
- Recommending mitigation measures for the negative impacts;
- Identifying opportunities for enhancement measures;
- Formulating Environmental Action Plans (EAPs) which specify mitigation, activities during project implementation and operation.

The potential environmental impacts from the proposed project are identified and the magnitude of these impacts also predicted. The potential environmental impacts to be regulated from the proposed are summarized below:

- Air pollution due to the emission of particulate matter, sulphur dioxide and oxides of nitrogen;
- Noise pollution due to various noise generating equipment;

- Wastewater generation from domestic activities; and
- Solid waste (STP sludge) disposal.

In order to minimize these adverse impacts and to ensure that the environment in and around the project site as well as the neighbouring population is well protected, an effective Environment Management Plan is developed for construction phase as well as operational phase.

6.1 Environment Management Measures during Construction & Operation Phase

The construction phase involves site preparation, transportation of construction materials, equipment and construction of the infrastructure. During this phase it is imminent that workers/labourers would be staying on site till the completion of construction. However, this is not a long term impact as this is a temporary phase. It is envisaged that there would be some effect on the existing environment. The project proponents, in order to minimize these impacts, would undertake the required preventive and remedial measures which are outlined hereunder.

6.1.1 Land use and Topography

There will be marginal change in land use within the MLCP project area. The MLCP will be within the airport land only. Hence, no additional land acquisition involved. The land is already categorized under public utility zone and there will not be any change in land use pattern. The proposed project does not involve any tree felling or disturbance in vegetation cover.

6.1.2 Soil Management

Excavated soil from the construction area will be partly used for back filling and for reclamation of low laying areas in the site. This excess volume after utilizing for green belt development will be treated as a contingency to cover any additional losses that may occur during construction such as losses during clearing & grubbing, settlement and consolidation of native soils underlying proposed embankment areas and for any removal & disposal of unsuitable or unstable materials encountered (wet areas, organics, buried debris, etc.).

Management Measures:

The dripping of oil from construction vehicles might cause soil contamination. In order to prevent soil contamination likely to result from the oil spill and dripping from vehicles, drip pans shall be placed at the parking places of vehicles and the dripped oil shall be collected and subsequently sent to the authorized recycling agencies.

During construction phase there shall be import of material from outside specially the construction material like bricks, cement, murrum, lining material, insulation bricks, HDPE pipes, backfill material, sand, clay, etc, which will change the characteristic of the soil in the construction area.

The hazardous materials used during the construction may include petrol, diesel, welding gas and paints. These materials shall be stored and handled according to

the guidelines specified under Manufacture, Storage and Import of Hazardous Chemical Rules (MSHIC) and Hazardous Wastes Storage, Handling and Transportation Rules of MoEF&CC. Some of the precautions of storage and handling of hazardous materials and waste includes the following:

- Dyked enclosures shall be provided which can contain complete contents of the largest tank;
- Diesel and other fuels shall be stored in separate dyke enclosures;
- Wherever possible, hazardous raw materials to be substituted by non-hazardous materials, e.g. cleaning solvents can be replaced with film-free biodegradable cleaners, usage of non-chlorinated strippers instead of strippers containing methylene chloride and substitution of water based paints for oil-based ones;
- Separate storage of waste paints and thinners, contaminated rags and brushes to facilitate recycling and reuse. Rags could be laundered for reuse;
- Installation of on-site recycling equipment to be considered by large painting sub-contractors;
- Vehicle maintenance area to be designed to prevent contamination of ground water by accidental spillage of oil; and
- Maintaining appropriate inventory control.

Apart from localized constructional impacts within airport site, no adverse impact on the soil in the surrounding area is anticipated.

6.1.3 Air Quality Management

Anticipated Impact

Construction phase would involve site clearances and preparation, infrastructure development and other related activities and Operational phase would involve emissions from vehicular movement and diesel generators and negligible emissions from sewage and solid waste handling and disposal.

In order to control emission of pollutants during operation of the DG sets, adequate stack height will be provided for wider dispersion into the atmosphere. The stack height for DG sets will be as per CBCB/MOEF&CC prescribed norms. This will be supported on the building. Further adequate green belt and green cover will be provided to absorb the dust and gaseous emissions due to the traffic within the campus.

Mitigation Measures for Fugitive Emission Control

Adopting techniques like, air extraction equipment, and covering scaffolding, hosing down road surfaces and cleaning of vehicles can reduce dust and vapour emissions. Measures include appropriate containment around storage tanks and materials stores to prevent spillages entering watercourses.

The other measures to reduce the air pollution on site are:

- Sprinkling of water and fine spray from nozzles to suppress the dust.
- On-Road- Inspection should be done for black smoke generating machinery.
- Promotion of use of cleaner fuel should be done.

- All DG sets should comply emission norms notified by MoEF&CC.
- Use of covering sheet to prevent dust dispersion at buildings and infrastructure sites, which are being constructed.

Material storages / warehouses –should be handled properly to keep all material storages adequately covered and contained so that they are not exposed to situations where winds on site could lead to dust / particulate emissions. Fabrics and plastics for covering piles of soils and debris is an effective means to reduce fugitive dust.

Management of Dust Emission due to Transportation

- Construction area consists of large open area;
- To reduce dust emission due to vehicle movement, vehicle access area is limited through designated pathway;
- Speed limit of 30 km/hr is fixed for vehicles, and speed monitoring is done;
- All aggregate transporting vehicles are covered on top to prevent emission of dust;
- Use of covering sheets should be done for trucks to prevent dust dispersion from the trucks, implemented by district offices;
- Paving is a more permanent solution to dust control, suitable for longer duration projects. High cost is the major drawback to paving;
- Speed bumps are commonly used to ensure speed reduction. In cases where speed reduction cannot effectively reduce fugitive dust, it may be necessary to divert traffic to nearby paved areas.

Water Sprinkling To Suppress the Dust

- ✓ Water tankers are engaged for water sprinkling to suppress the dust
- ✓ Sprinkling is done along access roads, runways, taxiways, plant areas, site peripheries etc
 - Excavation area are surrounded by green cloth to prevent the spread of dust
 - Aggregate and sand heap at work area are covered by green cloth or tarpaulin sheet
 - Green cloth fencing done along site fencing

➤ Impact on Traffic and Road Network

The proposed project of expansion of phase-II (ultimate capacity) of passenger handling capacity will lead to an increase in road traffic due to increase in aviation activity.

✚ Metro-connectivity

The airport consists of 4 terminals, the newly constructed domestic terminal 1 and international terminal 4. The old terminal 2 is closed and not in use since the opening of the new terminals. Part of the existing terminal 3 is used for international gate seating and arrivals. All the terminals are connected by the single forecourt road with the proposed link pedestrian walkway located underneath connecting all 4 terminals to the metro station.

Traffic due to Phase-II Project

There will be incremental traffic due to modernization (Phase-II) at the existing airport. The modernization will allow bigger aircrafts to come in and the airport capacity will thus increase. The existing road connectivity of the airport is a four lane road. It will be adequate to carry in the traffic load to airport.

Thus, there will be increase in the traffic volumes due to daily plying vehicles. Considering the maximum vehicles/day, it has been assumed that the peak daily vehicle traffic due to airport operation would be about 1980 Passenger Car Units (PCU).

Proposed MLCP with Integrated Complex

The traffic on GST Road was analyzed to assess its traffic impact on the existing roads. Future traffic on adjoining roads shall comprise of following two major components:

- Base Road Traffic (forecasted to year 2022)
- Project Traffic (2022)

The road traffic has been forecasted for year 2022. This total traffic on the road is compared with its capacity. This V/C ratio of peak traffic volume and capacity is used as an index to determine level of congestion on link which is likely to occur when projected traffic is operative on link. Pedestrian traffic is assumed to use footpaths and not affect the road capacity. The summary of results for future traffic link flow conditions at different access roads is shown in **Table-5**.

**TABLE-5
TRAFFIC CAPACITY ANALYSIS OF ACCESS ROADS – 2022**

Road Name	Peak Traffic Volume in 2022 (PCU/hr)(A)	Project Traffic (PCU/hr) (B)	Total Traffic in 2022 (A + B)	Design Traffic Capacity as per IRC 108 1999 (PCU/hr)	V/C Ratio (Peak volume /capacity)	LOS
GST Road	3266	326	3592	5126	0.44	B

**Note: If V/C ratio <1.0, it indicates acceptable level of service (LOS)*

The above results indicated that there are no concerns on account of project traffic and the traffic will continue to run as usual even after commissioning of project in year 2022. Under present configuration the roads will operate at V/C ratio of maximum 0.44 for the year 2022 during the peak hour. It is within acceptable limits.

6.1.4 Water Quality Management

➤ Construction Phase

The construction phase would involve water requirements for the following activities:

- ✓ Site preparation: Involves levelling for infrastructure development.
- ✓ Water is required for dust settlement, consolidation, and compaction and curing.

- ✓ Construction of building infrastructure involves water for construction activities and domestic and other water requirements for labour and staff onsite.

• **Wastewater Generation and Utilization of Treated Wastewater- Existing Airport**

The ultimate stage of water demand after modernization of the airport is estimated at a maximum of 4.1 MLD. The required water shall be sourced from municipal supply. Necessary permissions are already available with AAI. There will not be any utilization of ground water.

Wastewater Management

Management of wastewater generated from the new international and domestic terminals is important and will be recycled for using in flushing of WC, gardening and makeup water for AC plant cooling towers. Presently, the wastewater is being treated in the existing STP of capacity 2 MLD. The treated water is further purified through tertiary treatment plant.

In the course of time, it is expected that the effluent generated will be increasing proportionate to the growth of air traffic and passenger. Foreseeing the future requirement, it has been proposed to construct a sewage treatment plant of capacity 4.1 MLD for treating wastewater from WC's, wash basins, canteen kitchens, and restaurants, etc. The proposed scheme will be based on membrane bio-reactor (MBR) technology. The effluent collected in the collection sump will be pumped through a manual screen chamber, an oil and grease trap into an equalization tank using submersible pumps.

Wastewater Generation – Propose Integrated Commercial Complex with MLCP

The population in buildings for this project has been considered as per floor area calculation. The water demand has been calculated based on liter per head water requirement given in NBC 2016. The water requirement as per NBC 2016 for different population category expected in these buildings are given below:

Visitors/Floating populations	-	15 LPCD
Fixed population /staff	-	45 LPCD

The water demand for the proposed project is summarized in **Table-6** and **Table-7**.

**TABLE-6
WATER DEMAND- INTEGRATED COMMERCIAL COMPLEX WITH MLCP**

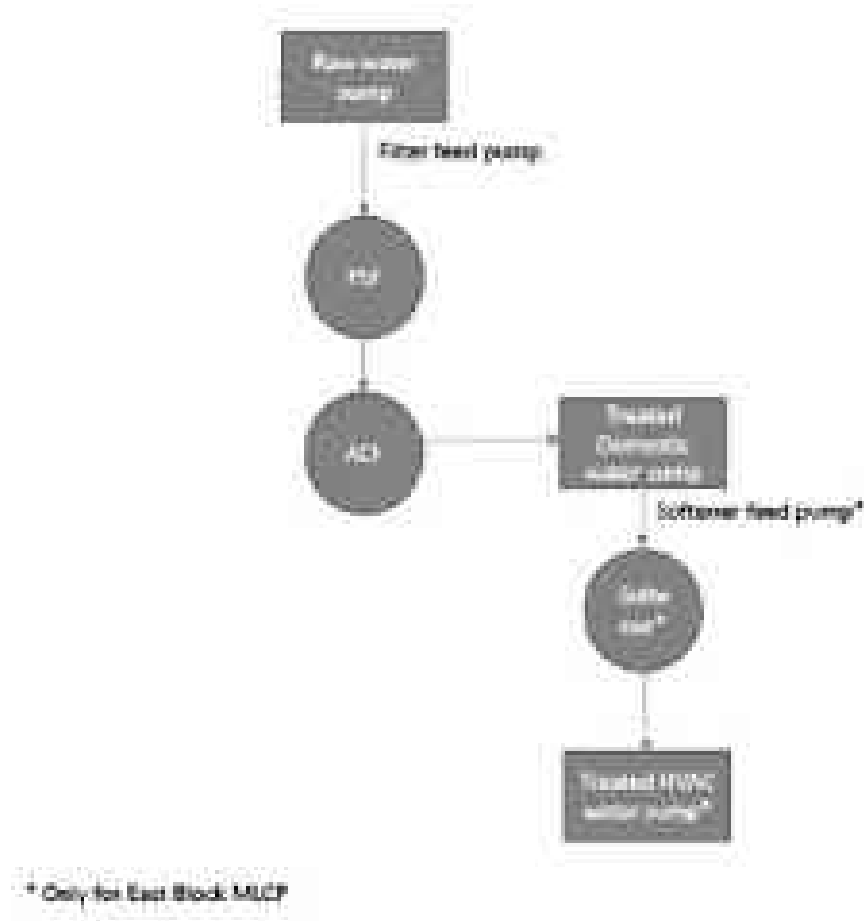
Sr.No	Description	MLCP WEST (KLD)	MLCP EAST (KLD)	TOTAL
1	Domestic water	29	35	64
2	Flushing water	36	62	98
3	Wastewater generation	58.5	87.3	145.8
4	Recycled water	90% of STP treated wastewater will be utilized for domestic and	90% of STP treated wastewater will be utilized for	-

Environment Management Plan for Amendment in Environment Clearance for the Proposed Multi Level Car Parking & Integrated Commercial Complex, Chennai Airport, Chennai, Tamil Nadu

Sr.No	Description	MLCP WEST (KLD)	MLCP EAST (KLD)	TOTAL
		flushing purpose	domestic and flushing purpose	
5	STP Capacity	60 KLD	90 KLD	150

Source: DPR

Water will be treated by filtration like Pressure sand filtration and activated carbon filtration for domestic purpose. Water required for HVAC system will be softened and stored in treated HVAC water sump. Raw water treatment plant given in **Figure-5**. Water balance diagram for West and East block are given in **Figure-6** and **Figure-7**.



**FIGURE-5
WATER TREATMENT PLANT**

Environment Management Plan for Amendment in Environment Clearance for the Proposed Multi Level Car Parking & Integrated Commercial Complex, Chennai Airport, Chennai, Tamil Nadu

**TABLE-7
WATER DEMAND FOR WEST BLOCK**

Building name	Floor	Area type	Area	Occupancy load	Calculated population	Floating Population	Staff Population	Floating population		Staff population		DOMESTIC WATER REQUIREMENT (L/d)	FLUSHING WATER REQUIREMENT (L/d)	Remarks
								Per capita Domestic water requirement	Per capita flushing water requirement	Per capita Domestic water requirement	Per capita flushing water requirement			
West block	Ground	BTMCL	6790	0	1987	2927	80	5	10	25	20	9180	24780	occupancy load considered is as per NBC 2006, Part 4- Table 5 : Occupant load Per capita water demand considered is as per NBC 2006, PART 6, clause 4.1.1 - table 1 - water requirement for buildings other than residences
		PARKING/MECH	2467	30	82	78	4	5	10	25	20	492	862	
	1st floor	BTMCL	148	6	34	34		5	10	25	20	218	340	
		PARKING/MECH	7328	30	244	252	12	5	10	25	20	1461	2562	
	2nd floor	PARKING/MECH	7818	30	266	262	18	5	10	25	20	1886	2780	
	3rd floor	PARKING/MECH	7818	30	266	262	18	5	10	25	20	1886	2780	
	4th floor	PARKING/MECH	7818	30	266	262	18	5	10	25	20	1886	2780	
	5th floor	PARKING/MECH	7855	30	265	252	15	5	10	25	20	1585	2760	
	6th floor	HOTEL (50 rooms)	2852	2 per room	60	68	15	180	60	25	20	9670	3600	
		RESTAURANT												
	PARKING/MECH	1878	30	88	84	8	5	10	25	20	588	1040		
Total water requirement (cum)												29	36	
Staff population is considered as 3% of the calculated population														

Environment Management Plan for Amendment in Environment Clearance for the Proposed Multi Level Car Parking & Integrated Commercial Complex, Chennai Airport, Chennai, Tamil Nadu

**TABLE-8
WATER DEMAND FOR EAST BLOCK**

Building name	Floor	Area type	Area	Occupancy	Calculated population	Flooding Population	Staff Population	Flooding population		Staff population		DOMESTIC WATER REQUIREMENT (L/d)	FLUSHING WATER REQUIREMENT (L/d)	Remarks
								Per capita Domestic water requirement	Per capita Flushing water requirement	Per capita Domestic water requirement	Per capita Flushing water requirement			
East Block	Ground	RETAIL	1668	1	2284	1764	88	1	30	21	30	11136	19492	Occupancy load considered is as per NBC 2016, Part 4- Table 3-Occupant load Per capita water demand considered is as per NBC 2016, Part 6, Clause 4.1.2 - Table 1 - Water requirement for buildings other than residences For multiples Occupant load is calculated as per NBC 2016 (L./No. of seats) x 1.4
		PARKING/MECH	1274	30	66	63	3	1	30	21	30	396	690	
	1st Floor	RETAIL	1121	6	294	221	28	1	30	21	30	1188	2178	
		PARKING/MECH	3081	30	67	64	1	1	30	21	30	595	780	
	2nd Floor	RETAIL	113	5	32	18	18	1	30	21	30	95	180	
		PARKING/MECH	1588	30	65	62	4	1	30	21	30	510	600	
	3rd Floor	RETAIL	1028	6	308	178	28	1	30	21	30	801	1477	
		Multiplex	1174	1100 (seats)		1588	10	1	30	21	30	9926	17350	
	4th Floor	PARKING/MECH	1647	30	66	64	4	1	30	21	30	626	830	
		PARKING/MECH	5696	30	317	178	9	1	30	21	30	1134	1898	
5th Floor	PARKING/MECH	1638	30	316	189	10	1	30	21	30	1176	2080		
6th Floor	PARKING/MECH	6942	30	211	218	12	1	30	21	30	1389	2480		
7th Floor	RETAIL	418	5	70	66	4	1	30	21	30	480	760		
Total Water Requirement (cum)												18	61	

Staff population is considered as 7% of the calculated population

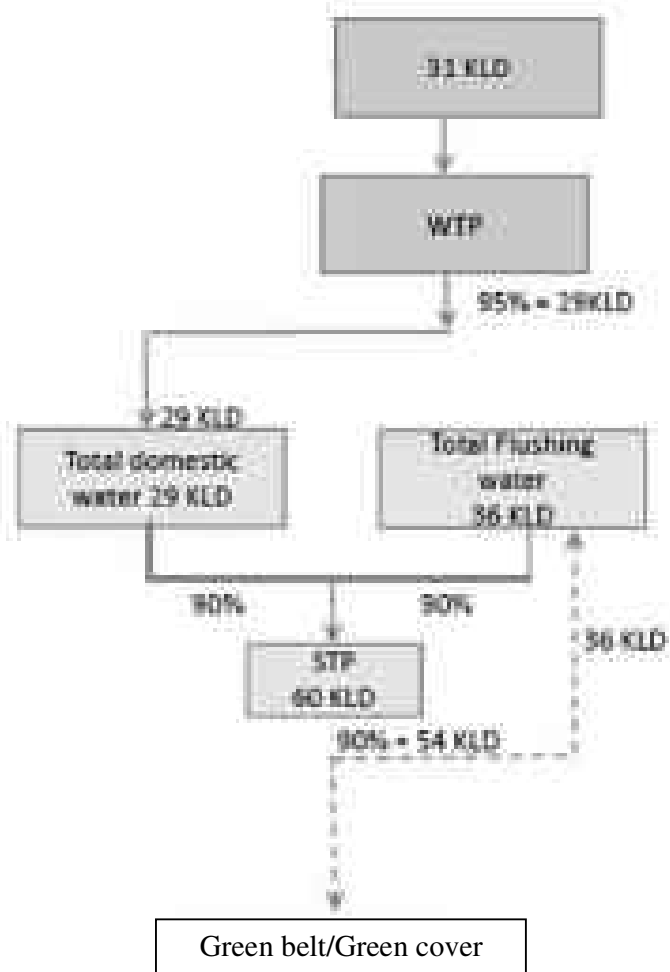
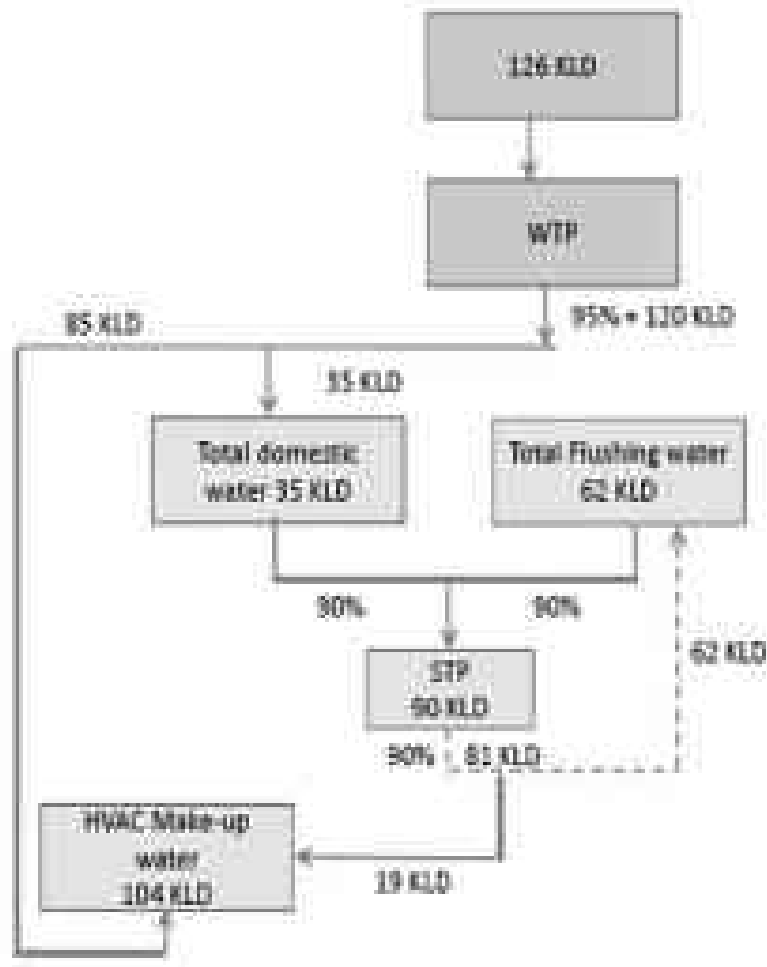


FIGURE-6
WATER BALANCE – WEST BLOCK



Water Balance for East Block

**FIGURE-7
WATER BALANCE – EAST BLOCK**

Sewage Treatment Plant

The sewage generated from the West and East MLCP will be treated in the separated sewage treatment plants. Treatment process proposed is Membrane Bed Bio Reactor (MBBR) of 60 KLD capacity for West Block and 90 KLD capacity in East block.

The treated water further will be used for toilet flushing purpose. Treated effluent quality shall be as per the required effluent standard for reuse for flushing. STP will be provided with flow measurement meters at inlet & outlet of STP to monitor flow. Schematic layout of proposed STP is given in **Figure-8**.

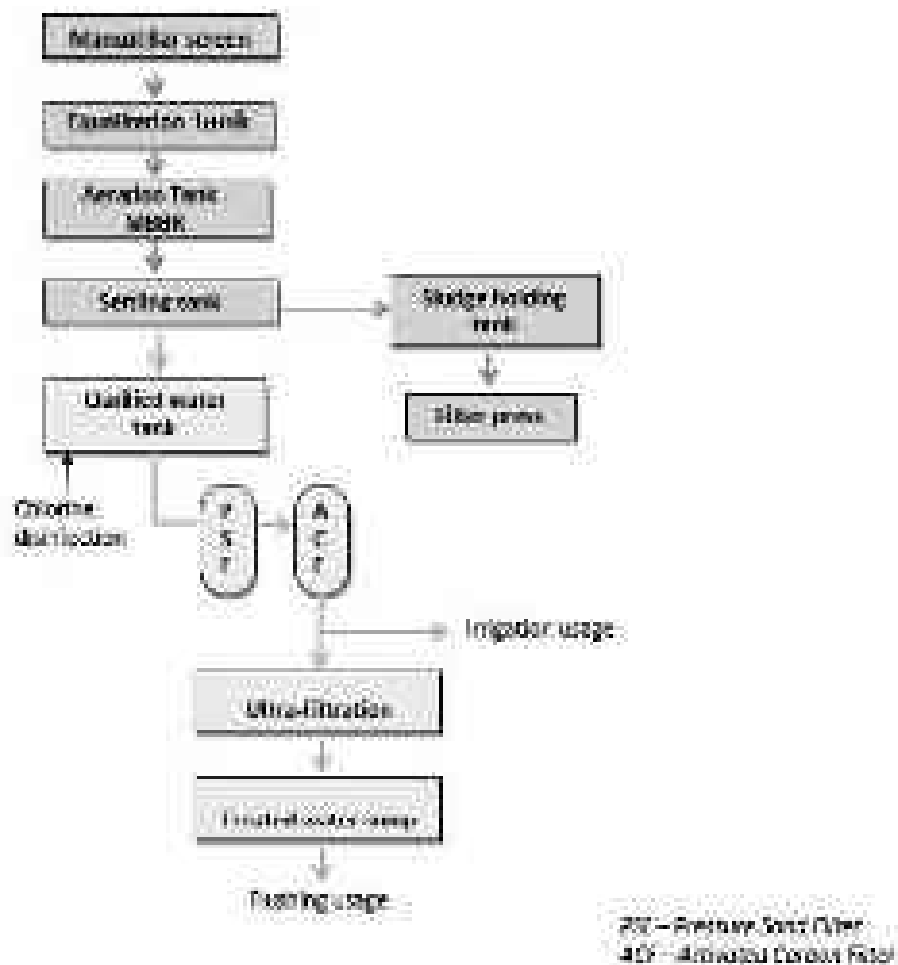


FIGURE-8
SCHMATIC LAYOUT AND UNITS PROPOSED OF STP

Noise Level Management

➤ Anticipated Impact

During the construction phase of the site, the following source of noise pollution is expected

➤ Construction equipment

During operational phase the following sources of noise pollution is expected:

- ✓ Diesel generator operations
- ✓ Increase in transport noise from within the site from nearby roads

➤ Mitigation Measures

It is important that no new development is carried out within areas where expected noise levels will cause mental and physical fatigue or permanent loss of hearing. In case of development in such areas is essential, adequate sound insulation should be provided for the building. There are two ways of applying controls or measures. The first is to plan so as to keep the noise at a distance. Under this aspect comes the separation of housing from traffic noise by interposing buffer zones, and the protection of schools and hospitals by green belts, public gardens, etc. The second is the principle of shading or screening. Use of noise deflectors can also help in reducing the noise. This consists of deliberately interposing a less vulnerable building to screen a more vulnerable one or by providing a solid barrier such as a wall between the source and the location to be protected and the protection of schools and hospitals by green belts, public gardens, etc. The second is the principle of shading or screening. Use of noise deflectors can also help in reducing the noise. This consists of deliberately interposing a less vulnerable building to screen a more vulnerable one or by providing a solid barrier such as a wall between the source and the location to be protected.

Control of Noise from Road Traffic: Trees with heavy foliage planted on both sides of carriage way help slightly muffle the noise provided; the foliage extends for a considerable distance of 30 m or above.

6.1.5 Waste and Hazardous Material Handling

Existing Airport

The existing solid waste quantities are as given in **Table-9**. The solid waste generation due to the proposed modernization phase-II is given in **Table-10** and **Table-11**.

**TABLE-9
FOOD AND GARBAGE WASTE GENERATION AND MANAGEMENT**

Sr. No.	Type of Waste	Solid Waste Generation (kg/day)	Mode of Disposal
1	Food waste and garbage from the Terminal	4110	Bio-degradable waste will be composted and used within the facility for gardening purpose. Remaining waste will be disposed through authorized dealers

Source: AAI, Chennai

**TABLE- 10
SOLID WASTE GENERATION**

Sr. No.	Details	Waste Generation (Kg/day)
1	Total no. of passengers 82,192	12,328
2	5000 nos. permanent staff in airport on duty	1,500
3	Sludge from STP (2 MLD)	400
	Sub Total	14,228

Source: AAI, Chennai

**TABLE-11
PLASTIC & E- WASTE GENERATION AND MANAGEMENT**

Sr. No.	Type of Waste	Solid Waste Generation (kg/day)	Mode of Disposal
1	Plastic, E-Waste & other metallic waste	5753 ~5760 kg/day	Will be given to authorized dealers

Source: AAI, Chennai

It is expected about 1000 litres/year of used oil from DG sets, spent fuels and lubricants from new electrical and maintenance workshop will be generated. This used oil and oil-contaminated wastes shall be disposed of through authorized recyclers/re-refiners.

Waste Generation due to Integrated Commercial Complex with MLCP

The construction phase waste will comprise of excavated material while operational phase waste may comprise of domestic, commercial and biomedical wastes, depending upon the type of the project. The different types of wastes need to be handled as per their needs and regulatory requirements. It is not possible to dispose off all type of wastes onto the land and has to be dealt with depending upon their type and characteristics. Building construction leads to generation of sand, gravel, concrete, stone, bricks, wood, metal, glass, polythene sheets plastic, paper etc. as waste.

Hazardous materials such as diesel, fuel oil, lubricating oil during construction phase should be stored properly as per the safety regulations. Combustible wastes should be burnt in a controlled manner and other category of wastes should be disposed of at identified dump site. Accidental spillages of oil from construction equipment and storage sites should be prevented.

Major solid waste generation from the premises is mostly municipal solid waste. Municipal solid waste from labour camp and office area are disposed on daily basis. Separate storage area are identified for other waste materials generated and will be disposed through authorized dealers. The sludge generated from the Sewage Treatment Plant is be used as manure for greenbelt development.

➤ **Used Oil from DG Sets**

The quantity of used oil generated from the DG sets will be stored in separate tank as per Hazardous Waste management Rules, 2008 and send to the authorized agencies recognized by SPCB.

Solid Waste Management:

Solid waste generation is calculated as per NBC 2016 considering 0.15 kg/capita/day demand. Organic solid waste will be converted to manure in Organic waste converter. The manure generated will be used for landscaping.

➤ **Mitigation Measures**

The existing solid waste management practice is summarized as under and the same would be extended for the proposed project.

- ❖ The bio-degradable waste is segregated, composted and utilized for gardening purpose;
- ❖ The recyclable waste is being given to identified recyclers;
- ❖ E-waste and bio-medical waste are given to the authorized agencies;
- ❖ The remaining non bio-degradable waste is being disposed along with municipal solid waste collecting vehicles;
- ❖ The sludge generated from the STP is used as manure for greenbelt development; and
- ❖ Used oil from the DG sets is stored as per Hazardous Storage & Management Rules and is being be given to SPCB authorized agencies.

6.1.6 Compliance to ECBC

There is a need to adopt energy efficient technologies for conservation of energy. This section discusses some important recommendations of the energy conservation building code and the National building code on energy conservation. The proposed project will comply with standards included in NBC for lighting levels, HVAC, comfort levels, natural ventilations and other system performance criteria. Other requirements of ECBC 2017 like building envelope, heating ventilation and air conditioning system, lighting schedule will be considered during the construction and operational phase of the project. The components of ECBC and its compliance is given below in brief:

- ❖ ECBC Envelope;
- ❖ Heating Ventilation & Air Conditioning (HVAC);
- ❖ Lighting;
- ❖ Electrical Power; and
- ❖ ECBC Compliance.

❖ **ECBC Envelope**

The building envelope refers to the exterior façade and is comprised of opaque components and fenestration systems. Opaque components include walls, roofs, and slabs on grade, basement walls and opaque doors. Fenestration systems include windows, skylights, ventilators, and doors that are more than one-half glazed. The envelope protects the buildings interiors and occupants from the weather condition and shield them from other external factors.

Envelope design strongly affects the visual and thermal comfort of the occupants, as well as energy consumption in the buildings. The design for making the building envelope will be energy-efficient and complies with the mandatory and prescriptive requirement of the code for the future buildings. The present terminal is old terminal and is complying with ECBC earlier guidelines.

The building façade will aspire to comply with the following:

- ❖ Will assembly U value to meet : 0.44 W/m²K
- ❖ Roof assembly U value to meet : 0.519 W/m²K
- ❖ Glazing U value to meet : 0.25
- ❖ Glazing VLT should higher than 40%

❖ **HVAC (Heating Ventilation & Air Conditioning)**

Heating, Ventilation and Air Conditioning (HVAC) refers to the equipment, distribution systems, and terminals that provide, either collectively or individually, the heating, ventilation or air-conditioning requirements to a building or a portion of building.

The best HVAC design considers all the interrelated building systems while addressing indoor air quality, thermal comfort, energy consumption and environmental benefits. Optimizing both the design and the benefits requires with schematic design phase and continually revise the remaining designing process. It is also essential that a process be implemented to monitor proper installation and operation of the HVAC system throughout construction.

Buildings with low-energy comfort system is proposed to be installed with cooling and heating requirement of the building will be deemed equivalent to building mandatory provisions of clause 5.2 of ECBC 2017.

The following are the brief on HVAC considerations to attain 20% energy savings.

- ❖ Water cooler screw chiller with COP 5.63 and LPLV greater than 8.57 & air cooler chiller with COP 3.05 & IPLV of 3.32 is considered;
- ❖ Fan efficiency shall be greater than 65%;

- ❖ Motors efficiency shall be EFF1;
- ❖ Heat recovery wheels for treated fresh air units with efficiency of 75% for sensible & latent loads;
- ❖ Split units inline BEE 5 rating equivalent to be considered;
- ❖ Chillers, pumps, cooling towers and air handling units is incorporated with variable frequency drivers (VFD's).

Lighting

Lighting systems and equipment will comply with the mandatory provisions of clause 6.2 and the prescriptive criteria of clause 6.3. The fulfilling requirements are given in brief below:

- ✓ Interior spaces of terminal building;
- ✓ Exterior building features including facades, illuminated roofs, entrances, exists and illuminated canopies; and
- ✓ Exterior building grounds lighting that is provided through the building's electrical service.

Emergency or security lighting that is automatically off during normal building operations will be complied as per exception clause 6.1.

Lighting Control

- Interior lighting fittings in building will be equipped with automatic control devices;
- Provision of occupancy sensors
 - ✓ Habitable spaces less than 30 m², enclosed by walls or ceiling height partitions;
 - ✓ Public toilets more than 25 m², controlling at least 80% of lighting fitted in the toilet. The lighting fixtures, not controlled by automatic lighting shutoff, will be uniformly spread in the area.

Interior Lighting Power:

The installed interior lighting power calculated for compliance with the prescriptive requirements of the ECBC will include all power used by luminary devices.

Exterior Lighting Power

The connected lighting power for these applications may not exceed the allowed limits. Lighting power density (LPD) for the project considered as per ECBC for base case simulation. LPD levels considered for various spaces are given in **Table-12**.

**TABLE- 12
LIGHTING COMPONENT - LPD LEVELS**

Input Parameter	Base case	Proposed
Terminal building/ hall(W/sqft)	0.7	0.7
Toilet (W/sqft)	0.9	0.9
Daylight areas > 25 sq.m shall be equipped with manual/automatic control device that a) is capable of reducing light output of the luminaires in daylighted areas by at least 50%. And b) Controls only the luminaires located entirely within the daylighted area.	All luminaires provided in the terminal building have been provided either with automatic control system or manual switching control system.	
Exterior lighting to be controlled by automatic control like photosensor or astronomical time switch.		

Electrical Power

Energy Metering: For services exceed >1000 kVA Metering has to be done to record demand (kVA), energy (kWh), and total power factor. The metering shall also display current (in each phase and the neutral), voltage (between phases and between each phase and neutral), and total harmonic distortion (THD) as per percentage of total current.

A part from metering, following metering has to be done: Electrical meters to be installed to measure energy units generated on site electrical sub meters for measuring energy consumption by HVAC plant, AHU fans and indoor lighting separately. Compliance to electrical power supply are given below in **Table-13**.

**TABLE-13
ELECTRICAL POWER COMPONENT**

Component	Compliance
Power transformers of proper ratings & design must be selected to satisfy the minimum acceptable efficiency at 50% and full load rating. In addition, the transformer must be selected such that it minimizes the total of its initial cost in addition to the present value of the cost of its total lost energy while serving its estimated loads during its respective life span.	Proposed distribution transformers comply with ECBC-2017 & IS-1108.
Maximum allowable Losses for dry type distribution transformers with highest voltage for equipment 24 kV at 50% and 100% of the load.	Proposed distribution transformers comply with ECBC-2017 & IS-1108.
Maximum allowable Losses for oil filled distribution transformers with highest voltage for equipment 36 kV at 50% and at 100% of the load	Proposed distribution transformers comply with ECBC-2017 & IS-1108.
All measurement of losses shall be carried out by using calibrated digital meters of class 0.5 or better accuracy and certified by the manufacturer. All transformers of capacity of 500kVA and above would be equipped with additional metering class current transformer (CTs) and potential transformers (PTs) additional to the requirements of Utilities so that periodic loss monitoring study may be carried out.	Not provided energy meter at transformer secondary terminal.
Power Cabling shall be adequately sized to maintain the distribution losses not to exceed beyond 1% of the total power usage. Record of design calculation for the losses shall be maintained.	Adequate size of power cables has been selected to maintain the distribution losses

100 % of outdoor lighting fixtures shall meet the luminous efficacy of at least 75 lumens/watt. Artificial lighting system are proposed to fall within limits (lower and higher range limits) as recommended space/task specific lighting levels to meet the minimum uniformity ratio. All ceiling fans shall be BEE 5 star rated.

On site renewable energy system installation to offset 0.5% of Annual energy consumption for internal artificial lighting and HVAC systems. Overall mercury content of the light fixtures shall be less than 90 picogram/lumen hour.

Energy Efficiency

Efficient building envelope such that peak heat gain through building envelope meet the GRIHA building envelope peak heat gain factor thresholds of 35. Incorporation of energy conservation measures to achieve energy performance index (EPI) 20% lower than GRIHA baseline EPI.

ECBC-2017 Compliance

Project will be following energy conservation or efficiency measures in compliance with ECBC requirement

- ✓ Energy efficient packages single zone HVAC system will be considered for the areas which are under developers scope;
- ✓ Energy efficient lighting fixtures like LED is proposed;
- ✓ Transformer maximum losses will be maintained less than the ECBC recommended values
- ✓ Energy metering will be provided by the project as recommended by ECBC. Metering will be installed to record demand (kVA), energy (kWh), and total power factor. The installed energy meter will also display current (in each phase and neutral), voltage (between phases and apart from above metering, following metering has to be done, each phase and neutral), and total harmonic distortion (THD) as a percentage of total current.

6.1.7 Socio-Economic Environment

Given that the project and related developments like construction camps will be dependent on local resources (power, water), during both construction and operations, the only likely impact on infrastructure would be on the roads. Considering the high traffic during construction phase an effective traffic management scheme will be developed to avoid congestion on the nearby and local roads.

6.1.8 Health and Safety

Medical care is provided for the laborers in the camps. Awareness programs will also be conducted on communicable diseases and their spread. The movement of heavy equipment should be done with proper precaution to prevent any accidents on the road. Occupational risk should be minimized at the project site through implementation of a full proof safety system. Speed limit set for movement of vehicles will be 30 km/hr on village roads to reduce risk of accidents or injuries.

Safety training should be provided to all construction workers on operation of equipment. Security should also be extended during non-working hours to ensure there is controlled access to the machinery and equipment. The measures taken for workman welfare are given below:

- Pre deployment medical checkup is done for all workmen. Well-equipped medical center is functioning inside the camp with scheduled doctor visit
- Well facilitated rooms are provided for workmen at labour camp with beds, cots, drinking water and other arrangements
- Adequate toilet and washing facilities are provided
- A canteen is set up inside the camp for workmen
- Potable water is supplied to workmen through RO plant

7.0 GREEN BELT/ GREENERY DEVELOPMENT

The green belt will be developed in the area designated for planting in the airport premises in the open areas and buffer zone areas. The plants should be ideally 1 to 2 years old, chosen from notified social forest nurseries or private nurseries and care should be taken to adhere to the native and local species, avoiding as far as possible the planting of exotic species for the green belt development. Ideally the plants could be sourced from the existing forest nurseries in the vicinity.

Additional greenbelt/green cover development will be improve as a part of proposed development.

8.0 EXPENDITURE ON ENVIRONMENT MANAGEMENT PRACTICES

Total project cost for the modernisation (phase-II) project is Rs. 2476 Crores. It is proposed to invest about Rs.49.52 crores towards pollution control measures. The proposed cost of proposed integrated commercial complex with multi-level car park (MLCP) is about Rs. 250 crores. And approximately 2% of the project cost will be spent on environmental protection aspects.



No.3-16011/21199-1A-HI
Government of India
Ministry of Environment & Forests

Prakashan Bhawan, C.O.D Complex,
Lodhi Road, New Delhi-110001

Dated the 7th October, 1999

**Subject: Extension and Modification to Anna International Terminal
at Chennai Airport - Environmental Clearance - reg.**

Reference is invited to Airports Authority of India's letter No. ENGG/CW/334/902/99/1249 dated 12.7.99 regarding the subject mentioned above. Subsequent information/clarifications furnished by the project proponents vide their letter No. ENGG/CW/334/902/99/1585 dated 2nd September, 1999 have also been examined. The proposal is for extension of existing Anna International Terminal to augment its passenger handling capacity, which will provide additional building area of 30671 sq.m. The proposal is hereby accorded environmental clearance subject to strict compliance of the following conditions:

A) SPECIFIC CONDITIONS

- i) No ground water shall be tapped for this project. Even the existing water requirements, which are presently being met by drawl of ground water shall be subsequently met by the water to be supplied from the Annadu Pallavaram Scheme. The proponents shall inform this Ministry within three months after consulting the Chennai Metropolitan Water Supply and Sewerage Disposal Board, the date by which they will be able to stop extraction of ground water for use in the Airport.
- ii) All the conditions stipulated by the Tamil Nadu Pollution Control Board vide their letter No. P2/TNPCR/DF 24/8/KPMWL/W&A/99 dated 8.7.99 shall be strictly implemented.
- iii) A full-fledged treatment plant to treat the increased load of sewage generated from this facility to conform to the standards prescribed by Tamil Nadu Pollution Control Board shall be installed.
- iv) The treated effluents shall be utilized by the project proponents for irrigation of their own land.

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10/10/99

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10/10/99

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- vi) Proper storm water drainage arrangements shall be made so as to dispose of the rain water efficiently to Adyar river during monsoon period to avoid water logging in the surrounding areas. The storm water drain should collect all the accumulated rain water within the airport area and discharge downstream of the existing drain through drain No 131, 132 and 133, indicated in the map submitted vide letter dated 2.9.99.
- vii) Detailed air quality data for one season other than monsoon season shall be provided to the Ministry within six months from the date of issue of this letter.
- viii) Effective safeguard measures shall be taken to ensure that the noise levels within the Terminal Building do not exceed the prescribed standards.
- ix) Measures will be taken for retarding of ground wear stress by using turf top drainage and rain water discharge from paved areas in consultation with the Ground Water Authorities.
- x) The project shall not be commissioned till adequate power supply is made available by the Tamil Nadu Electricity Board.
- xi) It should be ensured that the trees to be planted are of appropriate species. The fruit bearing trees which would attract birds and those which do not provide adequate foliage should not be planted.
- xii) The treated effluent quality and the ambient air quality including noise levels in the area shall be regularly monitored on monthly basis and the relevant records properly maintained for inspection of the concerned authorities.

B. GENERAL CONDITIONS

- i) All construction should be undertaken as per the plans approved by the concerned local authorities/local administration conforming meticulously to the existing local and Central rules and regulations.
- ii) No additional land shall be acquired for this project. — (1/3/99)
- iii) The borrow pits as well as scars left as a result of removal of earth for construction of this project shall be suitably rehabilitated.
- iv) For disposal of excavated material and the road rubble including the bituminous material, if any, suitable sites should be identified so that it does not affect the landscape and the material is not disposed of down slope, thereby aggravating the problems of run off and soil erosion.

- v) It shall also be ensured that as a result of the proposed construction, the normal drainage system is not affected adversely.
- vi) Adequate infrastructure facilities like water supply, power and fire fighting arrangements must be provided before completion of the buildings for the Aerodrome Complex.
- vii) Proper arrangements should be made for collection of solid waste and garbage generated in the Airport Complex for its proper treatment/incineration/management.
- viii) Appropriate sanitary facilities and satisfactory waste water/sewage treatment system should be provided for the Airport Complex.
- ix) Green belt of adequate width with suitably selected local species should be developed taking into account the regulations of Civil Aviation authorities.
- x) A Disaster Management Plan with respect to specific cases like fire/explosion, oil spill, terrorist attack, flood, etc., should be prepared and submitted to this Ministry within six months.
- xi) Adequate noise control measures may be taken to avoid any adverse impact of increased noise levels during operation of the Airport.
- xii) Adequate financial provision must be made in the project to implement the stipulated environmental safeguards. The funds so allocated should not be diverted for any other purposes.
- xiii) A six monthly compliance report regarding status of implementation of each of the conditions shall be submitted to this Ministry as well as to its regional Office at Bangalore. The Regional Office shall be provided with one full set of documents submitted to this Ministry by the project authorities.
- xiv) The implementation of these conditions shall be monitored by the Regional Office of this Ministry located at Bangalore. Full support shall be extended to the officials of the regional Office of this Ministry as well as to the Central State Pollution Control Boards during monitoring of the stipulated conditions.
- xv) This Ministry or any other competent authority reserves the right to modify/alter or stipulate additional conditions, if felt necessary in the interest of environmental protection.

3412 This Ministry also reserves the right to withdraw the environmental clearance accorded to the project in case implementation of the conditions stipulated in the clearance letter are found to be not satisfactory.

These stipulations shall be enforced through others, under the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Environment Impact Assessment Notification, 1986, the Public Liability Insurance Act, 1991 and the Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 and the amendments made thereunder from time to time.


(D.K. Aggarwal)
Addl. Director

To

The General Manager, Enge (C),
Airports Authority of India,
Gurgaon Road,
NEW DELHI-110 017

Copy to:

1. The Secretary, Ministry of Civil Aviation, Rajiv Gandhi Bhawan, Safdarjung Airport, New Delhi.
2. The Chief Conservator of Forests (C), Regional Office, Ministry of Environment & Forests, Kanchiya Sadan, 4th Floor, 222F Wing, 7th Main Road, Bangalore-34.
3. The Chairman, Central Pollution Control Board, Panchsheel Bhawan, Janshikhar Nagar, Delhi - 110 011.
4. The Chairman, Tamil Nadu State Pollution Control Board, Chennai.
5. The Senior Advisor (H), MOEF, New Delhi.
6. The Director, Regional Office C-1, MOEF, New Delhi.
7. The Monitoring Cell.
8. The Guard File.


(D.K. Aggarwal)
Addl. Director

F.No. 10-51/2016-IA-III
Government of India
Ministry of Environment, Forest and Climate Change
(A.III Section)

Julia Parvathi Bhowan,
Jor Road, New Delhi - 11

Date: 26th June, 2016

To,
Mis Airports Authority of India Chennai
Chennai Airport -Project, Link Building, 2nd Floor
Chennai Airport, Chennai - 600 016, (Tamil Nadu)
Email: smanna@aai.aero

**Subject: Modernization of Chennai Airport (Phase-II), Chennai, Tamil Nadu by
Mis Airports Authority of India Chennai - Environmental Clearance -
req.**

Sir,
This is in reference to your online proposal No. W/TN/MIS/66339/2016 dated 10th May, 2016, submitted to this Ministry for grant of Environmental Clearance (EC) in terms of the provisions of the Environment Impact Assessment (EIA) Notification, 2006 under the Environment (Protection) Act, 1986.

2. The proposal for grant of environmental clearance to the project 'Modernization of Chennai Airport (Phase- II) Chennai, Tamil Nadu by Mis Airports Authority of India Chennai' was considered by the Expert Appraisal Committee (EAC) in its 91st meeting held on 29-30 May, 2016. The details of the project, as per the documents submitted by the project proponent, and also as informed during the above meeting, are as under -

- (i) Airports Authority of India (AAI) took up modernization of Chennai airport during the year 2008 and completed the phase- I modernization during the year 2012.
- (ii) Chennai airport is located at Mambakkam Village, Sripadamkur, Alandur, Pallavaram taluk, Kanchipuram district, Tamil Nadu. The airport reference point is located at latitude 13°58'41.7"N and longitude 80°10'31.6"E at an average field elevation of 20 m above sea level.
- (iii) The environmental clearance for the existing airport has been issued by MoEF&CC vide letter no. 10-140/2007-A (III) dated 26th August, 2008.
- (iv) Terms of Reference (ToR) for the proposal was granted by MoEF&CC vide -No. 10-51/2016-IA- III dated 26th October, 2016.
- (v) Public hearing for the proposed project was conducted by Tamil Nadu Pollution Control Board, on 29th April, 2016 under the supervision of District Collector, who presided over the PH meeting, as per the Environment Impact Assessment Notification dated 14th September 2006. Based on the proceedings of the public hearing, the EIA report has been upgraded and submitted for the Environmental Clearance to the Ministry of Environment, Forests and Climate Change, New Delhi.

(vi) The land in possession by AAJ is around 1301.20 acres. Phase-II modernization of Chennai airport project shall include:

- a. Demolition and reconstruction of old domestic terminal (T2);
- a. Demolition and reconstruction of old International terminal (T1);
- a. Re-construction of airside corridor for seamless integration;
- a. Interlocking provision in the new terminal for future connection of tunnel from satellite terminal;
- a. Augmentation of contact bays;
- a. Development of multi-level car park;
- a. Development of Integrated common user cargo complex after demolishing the old unused terminal at Meenambakkam; and
- a. Development of contact bays for category C cargo flights etc.

(vii) The passenger capacity after modernization of proposed Chennai airport will be 30 Million Passenger Per Annum (MPPA). Estimated time of completion of the modernization project (Phase-II) is 42 months. The present proposal of modernization of Chennai airport is pressed by demolishing and reconstructing the existing old domestic and international terminals with additional 13 MPPA (domestic 10 MPPA & international 3 MPPA) and other associate facilities will help in easing out congestion during peak hours in both domestic and International terminals particularly at Immigration area and with the equal distribution of flights in the proposed terminal building (Phase-II) will be able to cater to passenger traffic.

(viii) Chennai Airport is well connected by the metro rail airport station which lies within the airport premises and also through the National Highway 45 which is 0.1 km away from the airport premises. Suburban rail connectivity is through Tirupur railway station which is 0.5 km away from the airport on SE direction. Guindy National Park is located at a distance of about 3.5 km SE from Chennai airport boundary and Adyar River passes through the airport in NW direction.

(ix) The proposed modernization project will be carried out within the existing airport premises in an area of 1301.20 acres. Entire land is already under possession of Airports Authority of India (AAI). Hence, no additional land acquisition is involved.

(x) Total water required after modernization of the terminal and other buildings would be around 4.1 MLD. The required water shall be sourced from municipal supply, treated water & recycled water from STP and existing hand wells within the airport.

(xi) Presently the waste water is being treated in the existing STP of capacity 2 MLD. The treated water is further purified through tertiary treatment plant. In the course of time, it is expected that the effluent generated will be increasing proportionate to the growth of air traffic and passenger. To meet the future requirement, it has been proposed to construct a sewage treatment plant of capacity 4.1 MLD for treating wastewater from WC's, wash basins, carwash bays, etc. and restaurants, etc. The treated wastewater from the STP is used for air conditioning, cooling water make up and green belt development. No

wastewater will be discharged outside into a drain complex. With the proposed treatment system, the impact due to the wastewater generation will be minimized.

- (xi) Solid waste generated from the proposed airport mainly comprises of food waste and garbage waste. Further, small quantities of sludge from STP, medical waste and other waste will be generated. Collection and handling of domestic solid waste would be done in line with the provisions of the Municipal Solid Waste Rule, 2000 (as amended). Bio-degradable waste will be composted and used within the facility for gardening purpose. Remaining waste will be disposed through authorized dealers. Plastic E-Waste & other metallic waste will be given to authorized dealers.
- (xii) The total power required for the proposed modernization would be 25.26 MVA of power is being utilized for the various operation of the airport is met from Tamil Nadu Generation & Distribution Corporation.
- (xiii) Baseline monitoring was carried out for four months from 1st December 2016 to 31st March 2017, representing winter and part of pre-monsoon season of 2016-2017 to determine the existing conditions of various environmental attributes. Ambient air quality parameters were observed to be within prescribed standards and the noise levels in general found within the acceptable levels as per standards prescribed by Central Pollution Control Board. The ground and surface water quality in the study area does not indicate any industrial contamination.
- (xiv) Chennai Airport authorities have planned a fund of about Rs. 7 crores for the next financial year 2017-2018 and based on the recommendations made by the committees formed, the fund shall be allocated accordingly.
- (xv) EMP: It is proposed to invest about Rs.40.52 crores towards pollution control measures. EMP also includes institutional set up for implementation of various measures: greenbelt development plan and environmental monitoring plan.
- (xvi) Investment cost of the modernization project (Phase-I) is about Rs. 2476.93 Crores.
- (xvii) Employment potential: Direct employment of about 350 persons and indirect employment of 300-900 persons is envisaged.
- (xviii) Benefits of the project: The present proposal of modernization of Chennai airport in phase-II by demolishing and reconstructing the existing old domestic and international terminals with additional 15 MPPA (domestic 10 MPPA & international 5 MPPA) and other associated facilities will help in easing out congestion during peak hours in both domestic and international terminals particularly at Immigration area and with the equal distribution of flights in the proposed terminal building (Phase-II) will be able to cater to passenger traffic.

3. The project/activity is covered under category 'A' of Item 7 (a) i.e. 'Airports' of the schedule to the EIA Notification, 2006 and its subsequent amendments, and requires appraisal at Central level by sectoral FAC.

4. The FAC deliberated upon the issues raised during the Public Hearing/Public Consultation meeting conducted by Tamil Nadu Pollution Control Board on 25th April, 2018. The concerns were raised regarding land acquisition, socio-economic activities, EMP and noise control measures. The Committee noted that issues have


Date: 21/5/18

calls/objection responded by the project proponent and incorporated in the final EIA-EEMP report.

5. The DAC, on being satisfied with the submissions of the project proponent recommended the project 'Modernization of Chennai Airport (Phase II), Chennai, Tamil Nadu by M/s Airports Authority of India Chennai for grant of environmental clearance and stipulated the following specific conditions along with other environmental conditions while considering for accord of environmental clearance:-

PART A - SPECIFIC CONDITIONS:

- (i) As proposed, Environmental Clearance is for Modernization of Chennai Airport (Phase II), Chennai Tamil Nadu by M/s Airports Authority of India Chennai.
- (ii) Clearance from Directorate General of Civil Aviation (DGCA) and Airports Authority of India (AAI) for safety and project facilities shall be obtained.
- (iii) Consent to Establish/Operate for the project shall be obtained from the State Pollution Control Board as required under the Air (Prevention and Control of Pollution) Act, 1986 and the Water (Prevention and Control of Pollution) Act, 1974.
- (iv) Construction site should be adequately fenced before the construction begins.
- (v) Soil and other construction materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dust material wet.
- (vi) The soil/construction materials carried by the vehicle should be covered by impervious sheeting to ensure that the dusty materials do not leak from the vehicle.
- (vii) The excavation working area should be sprayed with water after operation so as to maintain the entire surface wet.
- (viii) Soil stockpile shall be managed in such a manner that dust emission and sediment runoff are minimized. Ensure that soil stockpiles are designed with no slope greater than 2:1 (horizontal:vertical). Top soil shall be separately stored and used in the development of green belt.
- (ix) A detailed drainage plan for rain water shall be drawn up and implemented.
- (x) Ground water abstraction and rain water recharge shall be as may be prescribed by the CGWA. A clearance of the CGWA shall be obtained in this regard.
- (xi) Noise from vehicles and power machinery and equipment on-site should not exceed the prescribed limit. Equipment should be regularly serviced. Attention should also be given to muffler maintenance and enclosure of noisy equipments.
- (xii) Where construction activity is likely to cause noise nuisance to nearby residents, restrict operation hours between 7 am to 6 pm.
- (xiii) Solid inert waste found on construction sites consists of building rubble, non-flammable material, concrete, bricks, timber, plastic, glass, metals, bitumen

etc shall be reused/recycled or disposed off as per Solid Waste Management Rules, 2016 and Construction and Demolition Waste Management Rules, 2016.

- (xiv) Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use of low sulphur diesel. The location of the DG sets may be decided with in consultation with State Pollution Control Board.
- (xv) Airfall maintenance, sensitivity of the location where activities are undertaken and control of runoff of potential contaminants chemicals etc shall be properly implemented and reported.
- (xvi) Proper drainage systems, emergency containment in the event of a major spill during monsoon season etc shall be provided.
- (xvii) The runoff from paved structures like Runways, Taxiways can be routed through drains to oil separation tanks and sedimentation basins before being discharged into rainwater harvesting structures.
- (xviii) Storm water drains are to be built for discharging storm water from the air field to avoid flood/highwater logging in project area during monsoon season / cloud bursts.
- (xix) Rain water harvesting for roof run-off and surface run-off as plan submitted should be implemented. Before recharging the surface run-off, pre treatment must be done to remove suspended matter, oil and grease.
- (xx) Total water requirement from Municipal supply and bore wells shall not exceed 4.1 MLD. Groundwater shall only be extracted with permission from SGWA.
- (xxi) Sewage Treatment Plant of 1.5 MLD capacity (in addition to existing 2.0 MLD) based on MBBR technology shall be provided to treat the wastewater generated from airport. Treated water will be reused for landscaping, horticulture and HVAC purposes. As proposed the Airport will operate on zero liquid discharge principle.
- (xxii) Continuous on line air monitoring system shall be in place for expansion project.
- (xxiii) The project proponent shall implement the following flood control measures as recommended by I.I. Madras.
 - Strengthening the Airport Compound wall to withstand static and dynamic pressure of the water encountered during floods.
 - Shall resist and route the internal storm water drains to prevent or minimize the surcharging from its 10 year design storms.
 - Shall resist and route the external storm water drains from Palavaram and Panama area into Arjuna lake externally to minimize the flooding inside the Airport area and simultaneously involving the storm drainage infrastructure outside the area.

- Adyar river passing through the airport shall be protected without causing any disturbance to the flow and all the measures shall be carried out as per the recommendation of IT.
- (xxvi) Acoustic enclosures for DLS sets, noise barriers for ground-run ways, ear plugs for operating personnel shall be implemented as mitigation measures for noise impact due to ground sources.
- (xxvii) During airport operation period, noise should be controlled to ensure that it does not exceed the prescribed standards. During nighttime the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevailing regulations. A monitoring station for ambient air and noise levels shall be provided in the village nearest to the airport.
- (xxviii) The solid wastes shall be segregated as per the norms of the Solid Waste Management Rules, 2016. Recycling of wastes such as paper, glass (produced from terminals and aircraft catering), metal (at aircraft maintenance shed), plastics (from terminals, terminals and offices), wood, waste oil and solvents (from maintenance and engineering operations), kitchen wastes and vegetable cuts (from catering) shall be carried out.
- (xxvix) Traffic congestion near the entry and exit points from the roads adjoining the Airport shall be avoided. Parking should be fully utilized and no public space should be utilized.
- (xxxi) Traffic Management Study and Mitigation measures as given in the CIA Report shall be implemented in letter and spirit. Apart from the traffic management plan described by the PP against the advertised project proposal in consultation with Ministry of Urban Development, Chennai, Metro Rail, CMDA, PWD and NHAI shall review the traffic management plan periodically during construction of the project to satisfy the expansion requirement and Ministry of Civil Aviation will be the Nodal Agency for review and coordinate the improved traffic management plan.
- (xxxii) Energy conservation measures like installation of LED/CFLs/TFLs for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Used CFLs and TFLs should be properly collected and disposed off/ward for recycling as per the prevailing guidelines/ rules of the regulatory authority to avoid mercury contamination.
- (xxxiii) An on-site disaster management plan shall be drawn up to account for risks and accidents. This on-site plan shall be coordinated with the on-site management plan for the district.
- (xxxiv) The company shall draw up and implement a corporate social Responsibility plan as per the Company's Act of 2013.
- (xxxv) A water security plan for the substitution of the GDA shall be drawn up to include augmenting water supply and sanitation facilities and recharge of ground water in at least two villages and schools, as part of the CSR activities.
- (xxxvi) As per the Ministry's Office Memorandum F.No. 22-85/2017-IA, dated 1st May 2016 and proposed by the project proponent, an amount 20.25% of project Cost shall be earmarked under Corporate Environment Responsibility

(CER) for the activities such as infrastructure creation for drinking water supply, sanitation, health, education and development, roads, cross drains, electrification including solar power, solid waste management facilities, scientific support and awareness to local farmers to increase yield of crop and fodder, rain water harvesting, soil moisture conservation works, avenue plantation, plantation by community areas. The activities proposed under CER shall be restricted to the affected area around the project. The entire activities proposed under the CER shall be treated as project and shall be monitored. The monitoring report shall be submitted to the regional office as a part of half yearly compliance report, and to the District Collector. It should be posted on the website of the project proponent.

PART B - GENERAL CONDITIONS

- (i) The project activities must strictly adhere to the stipulations made by the SPCB, State Government and any other statutory authority.
 - (ii) No further modification or expansion in the project shall be carried out without prior approval of the Ministry of Environment Forest and Climate Change. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to this Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required if any.
 - (iii) The overall noise levels in and around the airport area shall be kept well within the standards by providing noise control measures including acoustic fences, silencers, enclosures etc. On all the sources of noise generation. The ambient noise levels shall conform to the standards prescribed under the EPA Rules, 1989 i.e. 70 dBA (daytime) and 70 dBA (night-time).
 - (iv) A separate Environmental Management Cell equipped with full fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.
 - (v) Adequate funds shall be earmarked towards capital cost and recurring expenditure for environment pollution control measures and shall be used to implement the conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.
6. The Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.
7. A copy of the clearance order shall be sent by the proponent to concerned Panchayat / Zilla Parishad / Municipal Corporation, Urban Local Body and the local NGO, if any from whom any suggestion/representation, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.
8. The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Clearance conditions including results of monitored data.

(both in hard copies as well as by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB.

9. The environmental statement for each financial year ending 31st March in Form V as is amended is to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986 as amended subsequently, shall also to put on the website of the company along with the status of compliance of Clearance conditions and shall also be sent to the respective Regional Office at MoEF&CC by e-mail.

10. The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with SPCB and may also be seen at website of the Ministry of Environment, Forest and Climate Change at <http://www.mefcc.nic.in>. This shall be advertised within Seven days from the date of receipt of the Clearance letter at least two local newspapers that are widely circulated in the region at which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional Office of this Ministry.

11. The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the start of commencing of land development work.

12. The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.

13. The Ministry reserves the right to stipulate additional conditions, if necessary. The company in a time bound manner shall implement these conditions.

14. This clearance is subject to the order of the Hon'ble Supreme Court of India in the matter of Oca Foundation Vs Union of India in Writ Petition (Civil) No.420 of 2004 as may be applicable to this project.

15. Any appeal against this clearance shall lie with the National Green Tribunal if provided, within a period of 30 days as prescribed under Section 19 of the National Green Tribunal Act, 2010.

16. The above stipulations will be enforced inter-alia under the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2013 and the Public Liability (Insurance) Act, 1991 along with their amendments and rules.

17. This issues with approval of the Competent Authority.


(Kushal Vashist)
Director

Copy to:

- 1) The Secretary, Department of Environment, No.1, Jeeva Road, Paragal Building Ground Floor, Seidaper Chennai-600 015, Tamil Nadu.

- 2) The Addl. Principal Chief Conservator of Forests (Central), Ministry of Environment, Forests and Climate Change, 1st and 11th Floor, Hanslam, Export Promotion Council, 34, Cathedral Garden Road, Nungambakkam, Chennai 24, (Email: rsefccc@gmail.com).
 - 3) The Chairman, Central Pollution Control Board Parvash Bhawan, CSD-Forum Office Complex, East Arjun Nagar, New Delhi - 110002.
 - 4) The Member Secretary, Tamil Nadu Pollution Control Board, 75, Anna Road, Gundy Industrial Estate, Race View Colony, Gundy Chennai, Tamil Nadu 600032.
- a) Monitoring Cell, MoEF&CC, India Parvasharan Bhawan, New Delhi.
 - b) Guard File/Record File/Notice Board.
 - c) MoEF&CC website.

(Kushal Vashist)
Director

CHENNAI AIRPORT
COMPLIANCE TO ENVIRONMENTAL CLEARANCE ISSUED FOR PHASE - I

Sl.No	Conditions	Compliance
SPECIFIC CONDITIONS		
1	The Airport Authority of India shall implement all the measures and commitment that have been provided by them in the clarification letter dated 12.9.2008 to the ministry.	Copy of the letter dated 12.08.2008 is enclosed as Annexure - 1 and all the issues mentioned in the letter are Complied / Implemented.
2	All the issues in the public hearing held on 11.6.2009 shall be strictly implemented.	Minutes of the public hearing is enclosed as Annexure - 2 and all the issues are Complied / Implemented.
3	Only 131 acres of additional land shall be acquired for the project.	No additional land has been acquired for this project.
4	The project proponent shall ensure that the sewage/effluents generated from the airport including the existing terminal shall be treated and discharged as per the norms laid down by Tamil Nadu State Pollution Control Board. A detailed plan with regard to the treatment facilities, capacities of the Effluent Treatment Plant and Sewage Treatment Plant shall be submitted to the Ministry within three months from the date of receipt of this letter.	Description on existing STP with capacity and flow diagram and analysis reports of the same enclosed as Annexure-3.
5	The noise level surrounding to runway within 300m periphery shall be 70dB and at 50m away shall be optimized to 52dB.	The noise monitoring reports are enclosed as Annexure - 4.
6	Appropriate acoustic screen or other measures including installing diffuser in the main runway shall be provided to mitigate the noise levels especially along the interface with surrounding habitations. The monitoring of noise level in and around the airport shall be regularly conducted and data furnished to the Authorities including State Pollution Control Board.	Not Applicable.
7	All recommendations listed in the Disaster Management Plan report shall be implemented.	Implemented.
8	The terminal building shall be designed taking into account the National Building Code guidelines and local heritage values.	Terminal building designed as per / in NBC guidelines.
9	The project proponent shall provide a copy of the approval letter from the local Municipal Authorities for supplying the drinking water. The sewage water and municipal water may be furnished to this Ministry within three months from the date of receipt of this letter.	Water allocation from Municipal Authorities enclosed as Annexure-5.

[Signature]
 Director

[Signature]
 Director

Sl.No	Conditions	Compliance
10	No addition of ground water shall be tapped to meet the water requirement of the project.	Water requirement of the operating airport is about 2000 KLD and will be sourced from Municipal water & existing bore well. No additional ground water has been tapped.
11	A detailed plan shall be worked out for proper disposal of solid waste generated in the airport and implemented. The airport proponent shall ensure that the solid waste generated from various sources within the airport complex shall be disposed off as per norms laid down by the central and state agency.	Detailed solid waste disposal plan enclosed as Annexure-6.
12	On-site emergency plan including fire fighting measures shall be fully in place.	On-site emergency plan is already in place and enclosed as Annexure-7.
13	The project proponent shall install adequate measures to harvest rainwater system to meet at least aerial water requirement of the airport.	There are four rainwater harvesting tanks in the premises of airport each of capacity - 1.50 lakh liters. The harvested water will be recharged into the ground.
14	The quarry material required for construction of the project shall be brought from approved quarries.	Material required for construction was brought from approved quarries.
15	The funds earmarked for environment protection measures shall be maintained in a separate account and there shall be no diversion of these funds for any other purpose. A year-wise expenditure on environmental safeguards shall be reported to this Ministry.	The total budget allocation for environment protection measures is about Rs 55 lakh.
16	All necessary clearances as applicable for the project shall be obtained from the concerned agencies.	Complied

GENERAL CONDITIONS

1	Construction of the proposed structure shall be undertaken meticulously conforming to the existing Central/State rules. All the construction design/drawings relating to the proposed construction activities must have approvals of the concerned State Government Department/Agencies.	Complied.
2	A well-equipped laboratory with suitable instruments to monitor the quality of air and water shall be set up. The quality of ambient air and water shall be monitored periodically in all seasons and the results shall be properly maintained for inspection of the concerned pollution control agencies. The periodic monitoring reports at least once in 6 months must be sent to this Ministry (Regional office at Bangalore) and State	The monitoring and analysis works are conducted either from TNPCB/other approved and authorized laboratory and the seasonal reports are being submitted to MoEF & regional office as per the requirement. Copy of the periodic monitoring

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Sl.No	Conditions	Compliance
	Pollut or Control Board	reports are enclosed as Annexure - B.
3	Adequate provisions for infrastructure facilities such as water supply, fuel for cooking, sanitation etc., must be provided for the laborers during the construction period to avoid damage to the environment. It shall also be ensured that the construction workers do not cut trees including mangroves for fuel wood purpose.	Complied.
4	To prevent discharge of sewage and other liquid wastes into the water bodies, adequate system for collection and treatment of the wastes must be provided.	AAI Channel has already provided with 2 H.D STP and all the relevant activities like collection and treatment process are in place operating with MBB technology. The details enclosed as Annexure - B.
5	The project authorities shall take appropriate community development and welfare measures for the villagers in the vicinity of the project site, including drinking water facilities. A separate fund shall be allocated for this purpose.	AAI propose to spend an amount of Rs. 55 Lakhs against CSR activities.
6	The quarrying material required for the construction purpose shall be obtained only from the approved quarries/hardrock areas. Adequate safeguard measures shall be taken to ensure that the overburden and rocks at the quarry site do not find their way into water bodies.	Complied.
7	For employing unskilled, semi-skilled and skilled workers for the project, preference shall be given to local people.	Complied.
8	The recommendations made in the Environment Management Plan and Disaster Management Plan, as contained in the Environmental Impact Assessment and Risk Analysis Reports of the project shall be effectively implemented.	Implemented.
9	A separate Environment Management Cell with suitable qualified staff to carry out various environment related functions shall be set up under the charge of a Senior Executive who will report directly to the Chief Executive of the Company.	Hierarchy of Environment Management Cell already in place.
10	The project affected areas, if any shall be properly compensated and rehabilitated.	Complied.
11	The funds earmarked for environment protection measures shall be maintained in a separate account and there shall be no diversion of these funds for any other purpose. A year-wise expenditure on environmental safeguards shall be reported to the Ministry.	The total budget allocation for environment protection measures is about Rs. 20 lakhs.

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Sl.No	Conditions	Compliance
22	Full support shall be extended to the officers of this Ministry's Regional Office at Bangalore and the officers of the Central and State Pollution Control Boards by the project proponents during their inspection of monitoring purposes, by furnishing full details and action plans including the action taken reports in respect of mitigation measures and other environmental protection activities.	Noted and agreed upon.
23	In case of deviation or alteration by the project including the implementing agency, a fresh reference shall be made to this Ministry for modification on the clearance conditions or imposition of new ones for ensuring environmental protection. The project proponents shall be responsible for implementing the suggested safeguards measures.	Noted and agreed upon.
24	The Ministry reserves the right to revoke this clearance, if any of the conditions subsequently, if deemed necessary, for environment protection which shall be complied with.	Noted and agreed upon.
25	The Ministry or any other competent authority may stipulate any other additional conditions subsequently, if deemed necessary, for environment protection, which shall be complied with.	Noted and agreed upon.
26	The project proponent shall advertise at least in two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locally concerned informing that the project has been accorded environmental clearance and copies of clearance letters are available with the State Pollution Control Committee and may also be seen at website of the Ministry of Environment & Forests at http://www.mepco.gov.in . The advertisement shall be made within 7 days from the date of issue of the clearance letter and a copy of the same shall be forwarded to the Regional office of this Ministry at Bangalore.	Complied.
27	The project proponents shall inform the Regional Office at Bangalore as well as the Ministry the date of financial closure and final approval of the project by the concerned authorities and the date of start of Land Development work.	Financial approval of the project was obtained on 01.31.2008 and the date of start of the work was on 01.31.2008.
28	Any appeal against this environmental clearance shall lie with the National Environment Appellate Authority, if preferred, within a period of 90 days as prescribed under Section 11 of the National Environment Appellate Act 1997.	Noted and agreed upon.

Sd/-
Name

Sd/-
Date

F.No. EP/12.1/172 & 753/TN | 1920
Government of India
Ministry of Environment, Forest and Climate Change
(Regional Office - Chennai)

1st and 2nd floor, HEPC Building,
No.34, Cathedral Garden Road,
Nungambakam,
Chennai - 600034

E-mail: regofceci@moef.gov.in
Tel: 644-38233326

Dated: 28th November, 2017

Sri Kastur Vashita,
Director,
IA Division - Infrastructure Sector,
Indira Paryavaran Bhawan,
Ministry of Environment, Forest & Climate Change,
Jorbagh Road, (Aiger),
New Delhi - 110 003.

Subject: Expansion of Phase-I of the Chennai International Airport by M/s. Airports Authority of India (AAI) - Certified copy of the compliance report - regarding.

Ref: (i) MoEF&CC letter no. 19-140/2007-IA-I dated 25/08/2008
(ii) MoEF&CC letter no. J-16311/20/00-IA-I dated 07/12/1999

Si:

In response to the letter dated 08/08/2017 of M/s. Airports Authority of India (AAI), the above said project was monitored by the Undersigned during 14/11/2017. The certified compliance report of the above existing project is enclosed herewith for kind perusal and further appropriate action. The non-compliances observed during the site visit are furnished under:

A. With respect to EC letter no. 19-140/2007-IA-III dated 25/08/2008

- i. Consent to Operate (CTO) for the expansion of Chennai International Airport has not been obtained from Tamil Nadu Pollution Control Board (TNPCB). Construction activities have been carried out by M/s. Airport Authority of India (AAI) without obtaining CTE from TNPCB (General Condition No.i).
- ii. M/s. AAI is continuing operation without obtaining valid Consent to Operate (CTO) from TNPCB, since 1/09/2016 (General Condition No.I and paragraph no. 9).
- iii. As per the Environmental Clearances awarded, total built up area is 1,28,000 m² whereas M/s. Airport Authority of India established an built up area of 2,74,041 m² (T1: 78,341 m²; T2: 20,177 m²; T3: 51,784 m² and T4: 55,739 m²) without obtaining prior approval from MoEF&CC and necessary consents (CTE & CTO) from TNPCB (General Condition No.i & xiii).

- iv) M/s. AAI has deviated from the original dimensions of the bridge as approved by M&EF&CC by establishing a bridge with a span of 200 meters x 452.84 meters or a RCC column of 0.67 meters diameter on Adyar River. Further, height of the bridge is 10.88 meters only whereas approved height of the bridge was 11.15m (General Condition No. xiii).
- v) Adyar River wherein the bridge has been established by M/s. AAI appears to be falls within the Coastal Regulation zone (CRZ). In view of this, CRZ classification of this area and status of the land may be sought from the Competent Authority. Thereafter, appropriate view may be taken by the M&EF&CC (Specific condition no. i).
- vi) Setting up of effluent Treatment Plant for the treatment of water from wash basins, canteens, kitchens and restaurants etc. as envisaged in the Commitment letter dated 15/06/2008 has not been implemented (Specific condition no. i).
- vii) Final site implementation status to the issues raised during the public hearing held on 11/08/2008 has not been made available during the visit. Hence, the compliance status could not be ascertained (Specific condition no. ii).
- viii) Details of the land break up for 1328 acres shall as submitted to the Regional Office of the M&EF&CC at Chennai (Specific condition no. iii).
- ix) Fecal Coliform (FC) parameter in the treated STP water has not been analyzed. The quantity of sewage/domestic effluents treated in the STP has not been made available during the visit. Further, detailed plan with regard to the effluent treatment facilities has not been submitted to the Regional Office of the M&EF&CC within three months as stipulated in this condition (Specific condition no. iv).
- x) Appropriate acoustic panels or other measures including installing diffuser in the main run way has not been provided to mitigate the noise levels as stipulated in this condition (Specific condition no. v).
- xi) Final site implementation status to the recommendations listed in the Disaster Management Plan (DMP) has not been made available during the visit. Hence, the compliance status could not be ascertained (Specific condition no. vi).
- xii) Data regarding sewage water and municipal water has not been furnished to the Regional Office of the M&EF&CC within three months as stipulated in this condition (Specific condition no. vi).
- xiii) Actual fresh water requirement for the Airport is 2045,375 KLD which is exceeding the water requirement of 1938 KLD stipulated in the EC. Further, no information has been made available during the visit regarding the no. of bore wells exists within the Airport site and approval obtained from Central Ground Water Authority for the water drawn from the bore wells. Besides, it is noted that there is a unaccountable loss of \$ 20,182 liters of water per day in the Airport. It is advised to identify and close out the water leakages at the earliest in order to reduce the fresh water consumption of the Airport. (Specific condition no. x & General Condition No. xiii).

- ix. Year wise expenditure on environmental safeguards has not been reported to the Regional Office of the MoEF&CC (Specific condition no. x & General Condition No.xi)
- x. MVAAI has not carried out any community development and welfare measures for the villagers in the vicinity of the projects e/ta even after the decade of grant of environmental clearance (General Condition No.v).
- xi. Part wise implementation status to these recommendations prescribed in the Environmental Management Plan, Disaster Management Plan and Risk Analysis report has not been made available during the visit. Hence, the compliance status could not be ascertained (General Condition No.viii).
- xii. Date of financial closure and final approval of the project by the concerned authorities and the date of start of the project has not been informed to the Regional Office (General Condition No.xiii).
- xiii. Six monthly compliance reports (hard and soft copy) in respect of the conditions stipulated in the environmental clearance issued 25/06/2008 have not been submitted to the Regional Office of the MoEF&CC/Zone Office at CPOA/SPOB and also not been updated on the company's website. Further, the ambient air quality monitored data has not been displayed at a convenient location near the main gate of the Airport.

B. With respect to EG letter no. J-18811/2009 (A-II) dated 07/10/2009

- i. Ground water is being still tapped for the Airport even after two decades of grant of environmental clearance. No efforts have been taken by MVAAI to stop extraction of groundwater as stipulated in the condition (Specific condition no. 1)
- ii. Date of commencement and completion details with respect to the Environment Clearance dated 21/01/09 has not been made available during the visit. Conditions stipulated in the Consent to Establish accorded by MPCR on 22/01/09 are not being complied with. Further, there are 12 DG sets with a capacity 1500 KVA each exists in the Airport. The stack emission levels from these DG sets are not being monitored (Specific condition no. 2 and General Condition no.1).
- iii. Paving work carried out in the city side of the Airport is not satisfactory and the needs further improvement (Specific condition no. 3 and General Condition no.v)
- iv. Treated effluent quality and Ambient Air Quality are not being monitored on monthly basis as stipulated in this condition (Specific condition no. xi)
- v. Disaster Management Plan does not cover the oil storage facilities exist within the Airport premises. DMP shall be revised to include the hazards due to the oil storage facilities exist within the Airport premises. Copy of the revised DMP shall be submitted to the Regional Office of the MoEF&CC at Chennai (General condition no. 10).

- v) Stormwater compliance reports (hard and soft copy) in respect of the conditions stipulated in the environmental clearance dated 07/10/2016 have not been submitted to the Regional Office of the MoEF&CC/ zonal Office of CPCB/SPOC and also not been uploaded on the company's website. Further, the annual air quality monitored data has not been displayed at a convenient location near the main gate of the Airport (General condition no. xiii).
- vi) CTO renewal obtained from TNPCB was expired on 31/03/2016. Thereafter, CTO renewal has not been obtained. M/s Airport Authority of India (AAI) is continuing operation without obtaining valid CTO from TNPCB, since 1/04/2016. Insurance under the provisions of the PL Act, 1991 has not been obtained.

This is approved by the Addl. EC/OP (Central), EC-Chennai recorded vide diary no. 1720 dated 28/11/2017.

End of cover

Yours faithfully,

(Sundar Ramanathan)
Scientist D

Copy to:

1. Dr. Radheer Chinnappa, Scientist D, Monitoring Cell, A Division, Indira Park/Varan Shivan, Ministry of Environment, Forests & Climate Change, Jorbagh Road, Albany, New Delhi - 110 003.
2. The Member Secretary, Tamil Nadu Pollution Control Board, 76, Mount Road, Guindy, Chennai-600 032: It is to inform that M/s. AAI is continuing operation without obtaining valid Consent to Operate (CTO) from TNPCB, since 1/04/2016. Consent to establish (CTE) for the expansion of Chennai International Airport, has not been obtained from TNPCB. Construction activities have been carried out by M/s. AAI without obtaining CTE from TNPCB. Further, as per the Environmental Clearance accorded, total built up area is 1,28,000 m² whereas M/s. AAI has established an built up area of 2,14,641 m² without obtaining necessary consents (CTE & CTO) from TNPCB. In view of this, TNPCB is requested to take appropriate action in the matter.
3. The General Manager (Engg-Civil), M/s. Airports Authority of India, Admin Building, Chennai Airport, Meenambakkam, Chennai - 600027 - With reference to your letter No. AAI/CAP/PH-4566/17/2016 dated 9/08/2017. It is requested to take necessary corrective on the observed non-compliances and send action taken report within a month.

(Sundar Ramanathan)
Scientist D



भारतीय विमानपत्तन प्राधिकरण AIRPORTS AUTHORITY OF INDIA

Spaced font with AFD

AAO/CPD/CPD-1296/17 | 336

December 19, 2017

To
Shri Sundar Ramasathan,
Joint Director,
Ministry of Environment, Forests and Climate Change,
Electronic Office (Public-Access Office),
1st and 2nd floor, Hindustan Export Refinery Compound,
24, Salt Lake, Garden Road,
Vidyanagar, Kolkata - 700 032.

Sub: Expansion of Phase - I of Chennai International Airport by Airports Authority of India (AAI) - Certified copy of compliance report - Reg.

- REF: 1. This office letter vide No. AAO/CPD/CPD-1296/17/544, dt. 13.09.17.
 2. This office order vide No. AAO/CPD/CPD-1296/17/1157, dt. 18.11.17.
 3. Your DIN letter vide No. EP-52-1472 & 788/157/500, dt. 28.11.17.

Sir,

With reference to your office order dt. 28.11.17, please refer enclosed AAI's Taken Report on observations made by MOEF(AI) at its final report and 652 received on 18.11.17.

It is brought to your kind notice that AAI is taking representation of existing and forthcoming and for obtaining EA for the project, that EA is prepared and submitted to MOEF(AI). The EA submission is getting delayed in view of delayed compliance of earlier EA's. In view of this and considering the facts brought to us earlier, necessary certification may kindly be issued on compliance as per enclosed.

Thanking you,

Yours faithfully,

B. R. Narain

Asst. General Manager (Engg-Civil) I
Airports Authority of India
Chennai International Airport
Chennai
Ph: 4256 4552 / 4553
EM Id: aai@aaiaa.ae

End. As above

OBSERVATIONS FROM MOEF & CL & MD REPORT ON ACTION TAKEN BY AAI

[Ref. Lr. No.39/121/172 & 753/TN/1026, dt. 20.11.17 from Regional Office, NSEPSOC.]

Sl.No	Observations made by MOEF&CL	Action Taken by AAI
<u>With respect to EC letter No.19-140/2007-15-III dt. 25.08.2008</u>		
i.	Consent to Establish (CTE) for the expansion of Chennai International Airport has not been obtained from TNPCB. Construction activities have been carried out by AAI without obtaining CTE from TNPCB (General Condition No.3)	Airports Authority of India had applied for consent to establishment (CTE) during 2014. Payment towards CTE has also been deposited to TNPCB and Technical Presentation was also given by AAI to TNPCB on this regard. However, TNPCB has issued CTO for use & water on 27.03.16 without issuing CTE.
ii.	AAI is conducting operation without obtaining valid Consent to Operate (CTO) from TNPCB since 01.08.16 (General Condition No.3 and paragraph No.6)	The CTO issued to AAI was valid up to 31.03.2016. Further, necessary payments has been made and all the conditions in CTO were fulfilled by sending reports to TNPCB regulator. The Application for renewal of CTO is pending with TNPCB, Head Quarters.
iii.	As per the Environmental Clearance accorded, total built up area is 1,38,000 sq. Whereas AAI established an built up area of 2,14,641 sq. (T1-78,341 sq, T2-36,177 sq, T3-51,754 sq and T4-53,756 sq) without obtaining prior approval from MOEF&CL and necessary consents (CTE&CTO) from TNPCB. (General Condition No. 3 & 6)	As per EC accorded, the built-up area is 1,38,000 sqm for T3 & T4 built up and the established built up area is 1,32,097 sqm only is for T1 & T4. It may be noted that T2 & T3 buildings were constructed much earlier and the EC obtained is for T1 & T4 only. The change in area has been intimated to TNPCB in renewal application.
iv.	AAI has deviated from the original dimensions of the bridge as approved by MDEF&CL by establishing a bridge with a span of 200 meters & 462.86 meters on a RCI column of 0.87 meters diameter on adjacent pier. Further, height of the bridge is 13.50 meters only whereas approved height of the bridge was 11.15m (General Condition No.6)	The skew dimension of the bridge provided is 200x462.86 mtr. But the rectangular dimensions of the bridge comes to 200x467 mtr. However, regarding height of the bridge the clear span was provided according to the recommendation of Public Works department, Govt. of Tamilnadu. (Copy of letter enclosed as Annex-1) <i>etc</i>

(Signature)
 Director for Airports

vi.	<p>Adyar river wherein the bridge has been established by AAI appears to be fall within the Coastal Regulation Zone (CRZ). In view of this, CRZ classification of this zone and status of the land may be sought from the competent authority. Therefore, appropriate view may be taken by the MOEF&CC. (Specific Condition No.1)</p>	<p>The bridge established by AAI on Adyar River was not falling under CRZ. A certificate in this regard is enclosed as Annex-2.</p>
vii.	<p>Setting up of Effluent Treatment Plant for the treatment of water from wash basins, canteens, kitchens and restaurants etc as envisaged in their Commitment letter dt. 12.08.08 has not been implemented (Specific Condition No.ii)</p>	<p>The outlets from wash basins, canteens, kitchens and restaurants have been connected to the STP established in the project. Hence, a separate effluent TP has not been established.</p>
viii.	<p>Point wise implementation status to the issued raised during the public hearing held on 11.06.08 has not been made available during the visit. Hence, the compliance status could not be ascertained (Specific Condition No.iii)</p>	<p>The points raised during public hearing were implemented in total. It may please be noted that main issues raised during public hearing were requirement of additional land and recycling of water. Public got convinced on additional land requirement during public hearing itself and regarding recycling of water an STP of 7 MLD capacity has been provided to take care of recycling.</p>
ix.	<p>Details of land break up for 1326 acres shall be submitted to the Regional Office of the MOEF&CC at Chennai (Specific Condition No.iii)</p>	<p>We express regret for miscommunication of extent of AAI land. The land under possession of AAI is only 1501.28 Acres. The Land break-up details are enclosed as Annex-3.</p>
x.	<p>Fecal Coliform (FC) parameter in the treated STP water has not been analysed. The quantity of sewage/domestic effluents treated in the STP has not been made available during the visit. Further, detailed plan with regard to the effluent treatment facilities has not been submitted to the Regional office of the MOEF&CC within three months as stipulated in this condition (Specific Condition No.ii)</p>	<p>Next action will be taken to conduct this test from the next testing done and the report will be submitted to MOEF&CC. Around 1.7 MLD of sewage is under treatment in STP. Since all the sewer, sewage water lines are connected to STP, the ETP has not been established.</p>
xi.	<p>Appropriate acoustic panels or other measures including installing diffuser in the main runway has not been provided to mitigate the noise.</p>	<p>Since, the noise levels in and around airport are within the permissible limits, Acoustic Panel provision will not arise.</p>

	level as stipulated in this condition (Specific Condition No.37).	
x.	Plan wise implementation status of the recommendations listed in the Disaster Management Plan (DM7) has not been made available during the visit. Hence the compliance status could not be ascertained (Specific Condition No.38)	The recommendations mentioned in DM7 shall be issued to all the concerned sections in Airport and at the time of mock drill all the sections will take action as per DM7 of their respective management plans. A report of the recent ward drill conducted at Airport is is enclosed as Annex - 4. However, A copy of risk analysis report of Fire section mock drill has been submitted along with our letter dt 10.11.2017 to your good office.
81.	Data regarding usage water and municipal water has not been furnished to the Regional office of the MDD&CC within three months as stipulated in this condition (Specific Condition No.39)	You apologise for not furnishing data regarding usage of water within three months of issue of EC. However, the details were furnished during site inspection by Joint Director, MDD&CC.
82.	Actual fresh water requirement for the airport is 2045.875 KLD which is exceeding the water requirement of 1800 KLD stipulated in the EC. Further no information has been made available during the visit regarding the No. of bore-wells exists within the airport site and approval obtained from Central Ground Water Authority for the water drawn from the bore wells. Besides, it is noted that there is a unaccountable loss of 3,20,162 liters of water per day in the Airport. It is advised to identify and close out the water leakages at the earliest in order to reduce the fresh water consumption of the Airport. (Specific Condition No. 3 & General Condition No.40)	The water requirement has been increased based on increase of passenger movement than anticipated in the year 2008. The present requirement is 171 MLD from which 100 MLD is being supplied by Metro water and 0.70 MLD is from 6 Borewells drawn in airport premises. We appreciate your concern on unaccountable loss of water and action has already been taken to correct the leakages.
83.	Year wise expenditure on environmental safeguards has not been reported to the Regional office of the MDD&CC (Specific Condition No.39 & General Condition No.38)	Several proposals like reconstruction of airport yard, construction of terminal on vacant site in State Govt. for accounts and allocation of land but it is regretted to say that not even one proposal is approved by State Govt. Hence no expenditure made.

xx.	AAI has not carried out any community development and welfare measures for the villages in the vicinity of the project site even at an the levels of grant of environmental clearance (General Condition No.v)	Since the lands handed over by the state Govt was not having habitation, AAI has not taken up any community development measures.
xxi.	Point wise implementation status of these recommendations prescribed in the Environment Management Plan, Disaster Management Plan and Risk Analysis report has not been made available during the visit. Hence, the compliance status could not be ascertained (General Condition No.viii)	The recommendations mentioned in DMP shall be circulated to all the concerned sections. In Airport and at the time of mock drill all the sections will take action as per DMP of their respective management plans. A report of the recent mock drill conducted at Airport is enclosed as Annex - 4. However, A copy of risk analysis report of Fire section mock drill has already been submitted along with our letter dt 16.11.2017 to your good office.
xxii.	Date of financial closure and final approval of the project by the concerned authorities and the date of start of the project has not been confirmed by the Regional office (General Condition No.xv)	We apologize for delay in informing financial closure, final approval and date of start and completion of the project. All these details were submitted during site visit.
xxiii.	Six monthly compliance reports (hard and soft copy) in respect of the conditions stipulated in the environmental clearances dt 25.06.06 have not been submitted to the Regional Office of the MOEF&CC/Zoneal Office of CECB/SPCB and also not been uploaded on the company's website. Further, the ambient air quality monitored data has not been displayed at a convenient location near the main gate of the Airport.	We apologize for not submitting six months compliance reports and not uploading in AAI website. Action will be taken to upload compliance report in AAI website and display of ambient air quality monitored data at the earliest.

B. With respect to EC letter No. J-16011/20/99-IA-III, dt. 07.10.1999

4.	Ground water is being still tapped for the airport even after two decades of grant of environmental clearance. No efforts have been taken by AAI to stop extraction of ground water as stipulated in this condition. (Specific Condition No.1)	The Chennai Metro Water is supplying 102 MLD water at Chennai Airport against the requirement of 1.71 MLD. The Chennai Metro Water Board has continuously been requested to supply the balance required water, but Metro Water Board expressing their difficulty in supply due to shortage. Due to unavoidable circumstances AAI is still
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		extracting ground water to meet the requirements.
ii	<p>Time of commencement and completion details with respect to the Environment Clearance of 02.10.99 has not been made available during the visit. Conditions stipulated in the Consent to Establish issued by TNPCB on 29.10.99 are not being complied with. Further, there are 12 DG sets with a capacity 1500 KVA each exists in the airport. The stack emission levels from these DG sets are not being monitored (Specific Condition No.ii and General Condition No.ii)</p>	<p>We apologise for not informing the commencement and completion details. The details are as below: Date of commencement: 13.11.1995 Date of completion: 11.06.2003 Regarding conditions of TNPCR all the conditions were complied and stack emission tests have also been conducted at regular intervals and the copy of report has been enclosed in the compliance report submitted on 12.09.17. However a copy of test report is enclosed as Annex-4</p>
iii	<p>Plantation work carried out in the city side of the airport is not satisfactory and the needs further improvement.</p>	<p>Around 5.75 acres of land in front of both the terminals have already been developed with horticulture. Further possibility will be explored.</p>
iv	<p>Treated effluent quality and Ambient Air Quality are not being monitored on monthly basis as stipulated in the condition (General Condition No.iii)</p>	<p>Quality of treated effluent and Ambient Air is being monitored monthly and copy of latest reports were enclosed with letter dt. 16.12.17 submitted to your good office.</p>
v	<p>Disaster Management Plan does not cover the oil storage facilities exist within the airport premises. DMP shall be revised to include the hazards due to the oil storage facilities exist within the airport premises. Copy of the revised DMP shall be submitted to the Regional Office of the MOEF&CC at Chennai (General Condition No.ii)</p>	<p>The oil companies established in and around the airport are having their own Disaster Management Plans and they will be doing mock drills in particular intervals. Hence inclusion of oil storage facilities in AAI DMP may not be required. More over oil companies will also participate in mock drill conducted by AAI regularly.</p>
vi	<p>Six monthly compliance reports (hard and soft copy) in respect of the conditions stipulated in the environmental clearances dt. 07.10.99 have not been submitted to the Regional Office of the MOEF&CC/Regional Office of CPCB/SPCB and can not been uploaded on the company's website. Further, the ambient air quality monitored data has not been displayed on a prominent location.</p>	<p>We Apologize for not submitting six monthly compliance reports and not uploading in AAI website. Action will be taken to upload compliance report in AAI website and display of ambient air quality monitored data at the earliest.</p>

	near the main gate of the Airport. (General Sanitation Matter)	
62	CTO renewal obtained from TNPCB was expired on 31.03.19. Thereafter CTO renewal has not been obtained. AAI is continuing operations without obtaining valid CTO from TNPCB since 01.04. 18 Insurance under the provisions of the PIA Act 1901 has not been obtained.	AAI paid the renewal fee and applied for renewal of CTO, the case is under consideration at TNPCB head quarters. Regarding Insurance AAI has insured all the airports/air employees and third party. Copy of the insurance was submitted along with letter dt. 16.11.2017 to your good office.

Sd/-
AG/PLS/2017

PUBLIC WORKS DEPARTMENT

Public Works Department
General Services Division
Muzaffargarh

Public Works Department
General Services Division
Muzaffargarh

PROCESSED BY THE PUBLIC WORKS DEPARTMENT

Subject: Request for Salary and Pension of Mr. [Name] of [Post] of [Division] of [Department] of [District] of [Province].

Reference: [Number] of [Date] of [Year].

The request of Mr. [Name] for the salary and pension of [Post] of [Division] of [Department] of [District] of [Province] is being considered. The request is being processed in accordance with the rules and regulations of the Government of Punjab.

Maximum Basic Pay (including DA)	Rs. 10,000/-
Dear Allowance	Rs. 1,000/-
Gratuity	Rs. 1,000/-

Yours faithfully,
[Signature]
[Name]
[Designation]

DEPARTMENT OF ENVIRONMENT

To: Mr. Manoj K. P. S.
Member Secretary, Tamil Nadu
Department of Environment,
Ground Floor, Pongal Building,
Bamboo Chamber, Chennai 600 016

From: Mr. Jeyapalan Senthil,
Project Director,
Kerala Aardram Project Office,
Chennai Airport
Chennai - 600 016

Ref: No. P1 / 2005 / 2016 dated 14.11.2015

- Re: CRZ - Expansion of Project of the Coastal Interceptors, Airport by 4 ports Authority of India - Application by 157 of 2015 filed at Chennai CRZ (32) - CRZ Sanctioning requested - Policy - Regarding
- Re: Letter from Project Director, Airport Authority of India, Chennai Airport, Chennai - 3 dated No. AA/CRZ/1/ Vaga. Project/2014 dated 14.11.2015

With reference to the aforesaid letter from the said Coastal Regulation Zone (CRZ) authority to the above project however, it is to be noted that within 100 meters of the shoreline on the seaward side along the Coastal Interceptor exists that are converted to the sea side and such effects are experienced in water quality across a part of the CRZ No. 32/CRZ (32) vide para 1.10.

Accordingly, as per the approved Coastal Zone Management Plan (COMZMP) of Tamil Nadu, the CRZ (32) shall be on the either side of Poyar River from the project site. The CRZ (32) shall be covered as CRZ (32).

There is a request for the proposed project area to be expanded over Project of Chennai International Airport Authority at CRZ.

The said and mentioned

Yours faithfully,
S. H. Muthuswami,
Member Secretary, Tamil Nadu
Department of Environment

Approved: Mr. Jeyapalan Senthil


Project Director, Kerala Aardram Project Office

15/11/2015

EXTENT OF LAND AVAILABLE WITH AAI, CHENNAI AIRPORT

The areas of land available at Chennai Airport are 1301.23 acres and the details are mentioned below.

Sl.No.	Village No.	Village Name	Extent in Acres
1	94	Nandambakkam	57.79
2	95	Paavanthanga	6.82
3	96	Neerambakkam	497.68
4	97	Cow Bazar	25.64
5	66	Pozhichalur	4.32
6	100	Panna	5.03
7	129	St. Thomas Mount Conventment	223.87
8	131	Pallavaram Conventment	345.86
9	79	Manspakkam	6.15
10	79	Kolapakkam	118.37
		TOTAL	1301.23

MINUTES OF THE DEBRIEFING MEETING HELD ON 15/08/2016 AFTER UNDERTAKING THE FULL MOCK EXERCISE OF AIRCRAFT ACCIDENT AT CHENNAI AIRPORT.

Members attendance sheet (As per Annexure - 1)

General Manager (GMS) welcomed the members and stated that Full Scale mock exercise has been undertaken as planned with AOC Core Group and discussions held with the stakeholders in the presentative meeting held on 11/08/2016. He further stated that all the units and officials have actively participated in the exercise and since there is always a scope for improvement, observations/recommendations of Critiques and members who participated in the exercise including observations of DGCA representative shall be looked into and shall be included in the Contingency Plan. He also requested Chairman, AOC to brief the House with the observations of Critiques.

Mr. Jay Kumar Menon, Chairman, AOC informed that AOC has prepared a list with the necessary items are required to be provided in addition to the existing and request AA to take action. Further he requested the Critiques to give their observations and the same were recorded as under:

1. Location of Critique: Control Tower

Deficiencies	Classification/Action proposed
1. ATCO's voice has received the details only in EM/ATM. Informing that as the log book maintained on a plain paper had been noted that on the log at ATCO's log book, it is being practiced to enter the details only after verification.	
2. CRT could not be conducted on VFR as for heavy workload departure of Spicejet flight from Run 22.	The Officer informed that after crossing the runway, the entire crew became busy with the departure and hence there was a delay. He also informed that the same will be corrected in future.

2. Location of Critique: Fire Control Room

There was no observation for observation and the actions at Fire Control Room was initiated as per SOP.

3. Location of Critique: Fire Watch Tower

Deficiencies	Classification/Action proposed
1. Alarm bell was not audible and its arrangement was not clear.	Gm (GMS) informed that the audibility of bell and its system will be checked.
2. DGMS (L) control room was not attended.	
3. The names of notified persons were not mentioned. The details were either written on paper and then in log book.	

6. Location of Critique: Rescue and Fire Services

Deficiencies	Clarifications/Actions proposed
<ol style="list-style-type: none"> The performance of the crew in extinguishing the fire and rescue operation was appropriate. The Police and DWP personnel who were already available were not involved in rescue operations. Clear messages could not be seen at site. Suggestion to have more prominent boards, more signs and lights. 	<ol style="list-style-type: none"> (SMT/IGPS) informed that the action was as per pre-designed plans in which the roles were specified. Hence they were not involved in rescue operation. If SMT (IGPS) informed that they reported as Command Post. Noted for our file/acc.

7. Location of Critique: Accident site (to discuss traffic yard etc)

Deficiencies	Clarifications/Actions proposed
<ol style="list-style-type: none"> The area assigned for P1, P2 & P3 needs to be located with sufficient space in between. It was suggested not to provide the area for P1, P2 and P3. 	<ol style="list-style-type: none"> It was agreed.

8. Location of Critique: Incident area (Command Post)

Deficiencies	Clarifications/Actions proposed
<ol style="list-style-type: none"> Large tents must be used. Process (P1/P2/P3) must be brought from left to right. 	<ol style="list-style-type: none"> Noted. Noted.

9. Location of Critique: AFD

Deficiencies	Clarifications/Actions proposed
<ol style="list-style-type: none"> Telephone lists were written on pieces of paper. Two multiple lines to reach the correct number - total 24 mins total 2nd phone. Control Briefing call list did not signal urgent. 	<ol style="list-style-type: none"> Noted. Noted. Hand urgent.

i. Location of Critique: Emergency Medical Center (ER Station)

Deficiencies	Clarifications/Actions proposed
1. No sufficient place to wait waiting patient. 2. FI was brought to EMT.	1. None 2. None 3. None

ii. Location of Critique: ICU/IV room (night)

Deficiencies	Clarifications/Actions proposed
1. CST was not near the gate as proper information was not provided. Later he was informed about the drill and the gates were opened.	1. Noted



भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

क्र. AA/आय/एड-1/588/ए/ए-124

January 30, 2018

To
Shri Kunal Vashist,
Director,
IS Division - Infrastructure Section,
Indira International Airport,
Ministry of Environment, Forests & Climate Change,
Jorbagh Road, A-10/3,
New Delhi - 110 035.

Sub: Expansion of Phase 3 of the Chennai International Airport by M/s. Airports
Authority of India (AAI) - Certified copy of the compliance report - Reg.

Ref: MOEF/CC, Regional Office, Chennai letter vide P. No. EP/13-11728/588/W
1920, dt. 28.11.2017

Sr,

With reference to the subject work and letter referred above, please find
enclosed Action Taken Report on observations made by the Regional Office,
MOEF/CC, Chennai in compliance report and site visit letter enclosed for
reference].

Subjitted for your information and issue of necessary certification on
compliance of the AAI.

Thanking you,

Yours faithfully,



R. Chandra
Joint General Manager (Engg. Civil)
Email ID: rchandra@aaiaero.aero
Mobile: 97899 65443

Encl. AS 53349

Copy to:
Shri Sunder Ramanathan, Joint Director,
Ministry of Environment, Forests and Climate Change,
Regional Office (South-Eastern Zone), 1st and 2nd Floor,
Handloom Export Promotion Council, No. 2, Central Canal Road,
Aungamakkam, Chennai - 600 034.

YGO

2. A. E. Encl. SR, MO, C. Q. New Delhi & Wire and request to follow up with
Ministry for early issue of certification on earlier EC compliance.

2. A. P. D. / 1. 4. 3 M. 123 / 3 G. R. (DE)

e/c

OBSERVATIONS FROM MOEF & CC AND REPORT ON ACTION TAKEN BY AAJ

(Ref: In No:IP/131/1738-755/TN/1920 dt. 29.11.17 from Begana Office, MOEF&CC.)

Sl.No	Observations made by MOEF&CC	Action Taken by AAJ
<u>With respect to EC letter No.10-140/2007-13-III dt. 25.06.2008</u>		
i.	Consent to Establish (CTE) for the expansion of Chennai International Airport has not been obtained from TNPCB. Construction activities have been carried out by AAJ without obtaining CTE from TNPCB (General Condition No.1)	Chennai Airport Authority of India had applied for Consent to Establishment (CTE) during 2014. Payment towards CTE has also been deposited to TNPCB and Technical Presentation was also given by AAJ to TNPCB in this regard. Since the project is completed and the newly constructed Terminals were already put in to operations, Consent to Operate for air & water was issued by TNPCB on 27.05.16 without issuing CTE. (Copy of CTO is enclosed as Annex - 1)
ii.	AAJ is continuing operation without obtaining valid Consent to Operate (CTO) from TNPCB dt: 31.04.16 (General Condition No.1 and paragraph No.6)	TNPCB, Chennai has extended the validity of CTO up to 31.03.2016. (Copy of renewed CTO is enclosed as Annex - 2)
iii.	As per the Environmental Clearance awarded total built up area is 1,10,000 m ² . Whereas AAJ established on built up area of 3,14,041 m ² (T1:78,241 m ² , T2:40,195 m ² , T3:51,744 m ² and T4:43,756 m ²) without obtaining prior approval from MOEF&CC and necessary consents (TE/NO/10) from TNPCB. (General Condition No.1 & xiii)	The established built up area of T1 & T4 terminals is 1,22,037 sqm against the built up area for T1 & T4 of 1,38,500 sqm as per EC accorded. It may be noted that T1 & T4 buildings were pre-sessional made earlier and the EC obtained is for T1 & T4 only. The change in area is mainly due to change in passenger amenities based on the drastic growth of passengers. The change has been intimated to TNPCB in CTO renewal application.
iv.	AAJ has deviated from the original dimensions of the bridge as approved by MOEF&CC by spanning a bridge with a span of 200 meters & 42.81 meters on a 200 column of 0.87 meter diameter on A side. Further height of the bridge is 10.50 meters only whereas approved	The cross dimension of the bridge provided is 200x42.84 m. The length of the bridge was increased to accommodate the perimeter road and operational compound wall. The change in length was deliberated by

	Height of the bridge was 11.25m (General Condition No.iii)	The Tamilnadu state government vide their G.O. No. 125 Dt. 11.07.2009 Copy of G.O enclosed as Annex-3). Regarding height of the bridge the clear span was provided according to the recommendation of Public Works department, Govt. of Tamilnadu. (Copy of letter enclosed as Annex-4)
v.	Adyar River wherein the bridge has been established by AAI appears to be falls within the Coastal Regulation Zone (CRZ). In view of this, CRZ classification of this area and status of the land may be sought from the competent authority. Hereafter appropriate view may be taken by the MCEP&CC. (Specific Condition No.ii)	This bridge established by AAI on Adyar River is not falling under Coastal Regulation zone CRZ. A certificate in this regard is enclosed as Annex-5.
vi.	Setting up of Effluent Treatment Plant for the treatment of effluent from wash basins, canteens, kitchens and restaurants etc as envisaged in their Commitment letter dt. 12.06.09 has not been implemented. (Specific Condition No.ii)	The outlets from wash basins, canteens, kitchens, and restaurants have been connected to the STP established in the project. Hence, a separate effluent TP has not been established.
vii.	Point wise implementation status to the issues raised during the public hearing held on 11.06.08 has not been made available during the visit. Hence, the compliance status could not be ascertained. (Specific Condition No.iii)	The points raised during public hearing were implemented as per. It may please be noted that main issues raised during public hearing were requirement of additional land and recycling of water. Public got convinced on additional land requirement during public hearing itself and regarding recycling of water an STP of 2 MLD capacity has been provided to take care of recycling. (Copy of the MOM enclosed as Annex-6)
viii.	Details of land break up for 1326 acres shall be submitted to the Regional Office of the MCEP&CC at Chennai (Specific Condition No.iii)	The land under possession of AAI is 1201.59 Acres only. The land break up details are enclosed as Annex-7.
ix.	Biochemical Oxygen Demand (BOD) parameter in the treated STP water has not been analysed. The quantity of sewage/domestic effluents treated in the STP was not been made available during the visit. Further, detailed plan with regard to the	Noted, action will be taken to conduct this test from the next testing done and the report will be submitted to MCEP&CC. Approx. 1.5 MLD of sewage is treated in STP. Since all the



	off-site treatment facilities has not been submitted to the Regional office of the MOEF&CC within three months as stipulated in this condition. (Specific Condition No.4)	sewer, wastage water lines are connected to STP, the ETP has not been established.
i.	Appropriate acoustic panels or other measures including installing diffuser in the main runway has not been provided to mitigate the noise levels as stipulated in this condition (Specific Condition No.5)	Since, the noise levels in and around Airport are within the permissible limits, Acoustic Panel provisions will not arise. However, The newly constructed terminals are provided with Double Glazing units with an air gap in an external facade of the building as an acoustic measure.
ii.	Point wise implementation status of the recommendations listed in the Disaster Management Plan (DMP) has not been made available during the visit. Hence the compliance status could not be ascertained (Specific Condition No.6)	A copy of the Environmental Management Plan prepared by AAI for Coimbatore Airport is enclosed as Annex-8. A copy of Disaster Management Plan is also enclosed as Annex-9. The recommendations mentioned in DMP shall be circulated to all the concerned sections in Airport and at the time of mock drill all the sections will take action as per DMP of their respective management plans. A report of the recent mock drill conducted at Airport is enclosed as Annex - 10. A copy of risk analysis report of Fire situation mock drill which was submitted along with our letter Dt 10.11.2017 to Regional Office is enclosed as Annex-11.
iii.	Data regarding usage water and municipal water has not been furnished to the Regional office of the MOEF&CC within three months as stipulated in this condition (Specific Condition No.7)	We apologize for delay in furnishing data regarding usage of water within three months of award of EC. The details were furnished during site inspection by Joint Director, MOEF&CC. However, the detailed water usage report conducted by Coimbatore Airport is enclosed as Annex - 12.
iv.	Actual fresh water requirement for the airport is 2042.372 KLD which is exceeding the water requirement of 1800 KLD stipulated in the EC. Further no information has been made available during the visit regarding the No. of	The water requirement has been increased based on increase of passenger movement than anticipated in the year 2009. The present requirement is 2042 KLD from which

Shilpa

	<p>bores wells water within the airport zone and approval obtained from Central Ground Water Authority for the water drawn from the bore wells. Besides, it is noted that there is a unaccountable loss of 5.29 TPD liters of water per day in the airport. It is advised to identify and close out the water leakages in the earliest in order to reduce the fresh water consumption of the airport. (Specific Condition No. 8 & General Condition No. 21)</p>	<p>1.02 MLD is being supplied by Metro water and 0.76 MLD is from six bore wells drawn in airport premises. We appreciate your concern on unaccountable loss of water and action has already been taken to correct the leakages.</p>
<p>862.</p>	<p>Year wise expenditure on environmental safeguards has not been reported to the Regional office of the MCOE&CC. (Specific Condition No. 9 & General Condition No. 2)</p>	<p>Several proposals for construction of compost yard, reconstruction of incineration were sent to State Govt for acceptance and allocation of land but it is regretted to say that so far no proposal is approved by State Govt. Hence no expenditure made.</p>
<p>863.</p>	<p>AAI has not carried out any community development and welfare measure for the villages in the vicinity of the project site even after the decade of grant of environmental clearance. (General Condition No. 7)</p>	<p>Since the land handed over by the state Govt was not having habitation, AAI has not taken up any community development measures. However, Tamil Nadu Government is being persuaded / requested in several meetings to allot community development scheme to AAI, Chennai for development. Reply awaited from TN Govt.</p>
<p>864.</p>	<p>Recent wise implementation status to these recommendations provided in the Environment Management Plan, Disaster Management Plan and Risk Analysis report has not been made available during the visit. Hence, the compliance status could not be ascertained. (General Condition No. 10)</p>	<p>A copy of The Environmental Management Plan prepared by AAI for Chennai Airport is enclosed as Annex-8. A copy of Disaster Management Plan is also enclosed as Annex-9. The resource persons mentioned in ISM 2012 are circulated to all the concerned sections in Airport and at the time of mock drill all the sections will take action as per ISM of their respective management plans. A report of the recent mock drill conducted at Airport is enclosed as Annex - 10. A copy of risk analysis report of Fire section mock drill which was submitted along with</p>

[Handwritten Signature]

		our letter Dt 10.11.2017 to Regional Office is enclosed as Annex-11.
vii.	Date of financial closure and final approval of the project by the concerned authorities and the date of start of the project has not been referred to the Regional Office (Annex Condition No.11)	We apologize for delay in informing financial closure, final approvals and date of start and completion of the project. The details which were submitted during site visit of 11, Mar 17 are enclosed in Annex-13.
viii.	six monthly compliance reports (hard and soft copy) in respect of the conditions stipulated in the environmental clearance dt. 25.08.08 have not been submitted to the Regional Office of the MOEF&CC/ Zonal Office of CPCB/SPCB and has not been uploaded on the company's website. Further, the ambient air quality monitored data has not been displayed at a prominent location near the main gate of the Airport.	We apologize for delay in submitting six months compliance reports and not uploading to AAI website. Action has been initiated to upload compliance report on AAI website and display of ambient air quality monitored data as advised.

B. With respect to EC letter No. 1-16011/20199-14-PL dt. 07.10.1999.

i.	Ground water is being still tapped for the airport even after two decades of grant of environmental clearance. No efforts have been taken by AAI to stop extraction of ground water as stipulated in the conditions. (Specific Condition No.1)	The Chennai Metro Water is supplying 1.02 MLD water to Chennai Airport against the requirement of 1.71 MLD. The Chennai Metro Water Board has continuously been requesting to supply the balance required water, but Metro Water Board expressing their difficulty in supply due to shortage. Due to unavoidable circumstances AAI is still extracting ground water to meet the requirements.
ii.	Date of commencement and completion details with respect to the Environment Clearance dt. 07.10.99 has not been made available during the exit. Conditions stipulated in the Clearance to Establish accorded by TNPCB on 22.10.88 are not being complied with. Further, there are 12 DG sets with capacity 1300 KW each, noise in the airport. The noise emitting levels from these DG sets are not being monitored. (Specific Condition No. 1 and General Condition No.1)	We apologize for delay in informing the commencement and completion details. The details are as below: Date of commencement: 14.11.1999 Date of completion: 11.05.2005 Regarding conditions of TNPCB, all the conditions were complied and stack emission tests have also been conducted at regular intervals and the copy of report has been enclosed in the compliance report submitted on

S. S. Srinivasan

iii.	Planation work carried out in the city side of the airport is not satisfactory and the needs further improvement.	13.09.17. However a copy of the report is enclosed as Annex-14. A total 5.75 acres of land in front of both the terminals have already been developed with horticulture. Further possibility will be explored.
iv.	Treated effluent quality and Ambient Air Quality are not being monitored as monitoring costs as stipulated in the condition (General Condition No.4).	Quality of treated effluent and Ambient Air is being monitored monthly and copy of latest reports were enclosed with letter dt. 16/12/17 submitted to MoEF Regional office. However a copy of test report is enclosed as Annex-15.
v.	Disaster Management Plan does not cover the oil storage facilities either within the airport premises. DMF shall be revised to include the hazards due to the oil storage facilities exist within the airport premises. Copy of the revised DMF shall be submitted to the Regional Office of the MOEF&CC at Chennai (General Condition No.4).	All oil companies established in and around the airport are having their own Disaster Management Plans and they will be doing mock drills in particular intervals at their units. Hence inclusion of oil storage facilities in AAI DMF may not be required. More over oil companies will also participate in mock drills conducted by AAI regularly.
vi.	Six monthly compliance reports (hard and soft copy) in respect of the conditions stipulated in the environmental clearance no. A.07.10.99 have not been submitted to the Regional Office of the MOEF&CC/Zone Office of CPCB/SPCB and also not being uploaded on the company's website. Further, the ambient air quality monitored data has not been displayed at a convenient location near the main gate of the Airport. (General Condition No.iii)	We do agree for delay in submitting six monthly compliance reports and not uploading in AAI website. Action has been initiated to update compliance report in AAI website and display of ambient air quality monitored data at site.
vii.	CPC renewal obtained from TNPCB was expired on 31.03.15. Thereafter CPC renewal has not been obtained. AAI is continuing operation without obtaining valid CPC from TNPCB since 31.03.15. Insurance under the provisions of the PII Act-1991 has not been obtained.	TNPCB, Chennai has extended the validity of CPC up to 31/03/2019. (Copy of renewed CPC is enclosed as Annex-2)



TRAILBLAZER / CELLULOSE CONTROL BROWNS

100% Cotton

1. Select 10 to 15 pieces, wash in

Color	Quantity	Wash Time
White	10	15

2. Add a small amount of bleach to the water. Wash for 10 minutes.

100% Cotton

3. Do not use more than 1/2 cup of bleach per load. Wash for 10 minutes.

Color	Quantity	Wash Time
White	10	15

4. Wash in a separate load for 10 minutes. Wash for 10 minutes.

5. Do not use more than 1/2 cup of bleach per load. Wash for 10 minutes.

Color	Quantity	Wash Time
White	10	15

6. Wash in a separate load for 10 minutes. Wash for 10 minutes.

100% Cotton

7. Do not use more than 1/2 cup of bleach per load. Wash for 10 minutes.

Color	Quantity	Wash Time
White	10	15

8. Wash in a separate load for 10 minutes. Wash for 10 minutes.



TAMILNADU POLLUTION CONTROL BOARD

1. The water quality

S.No	Point	Result

2. The air quality near the plant is as follows

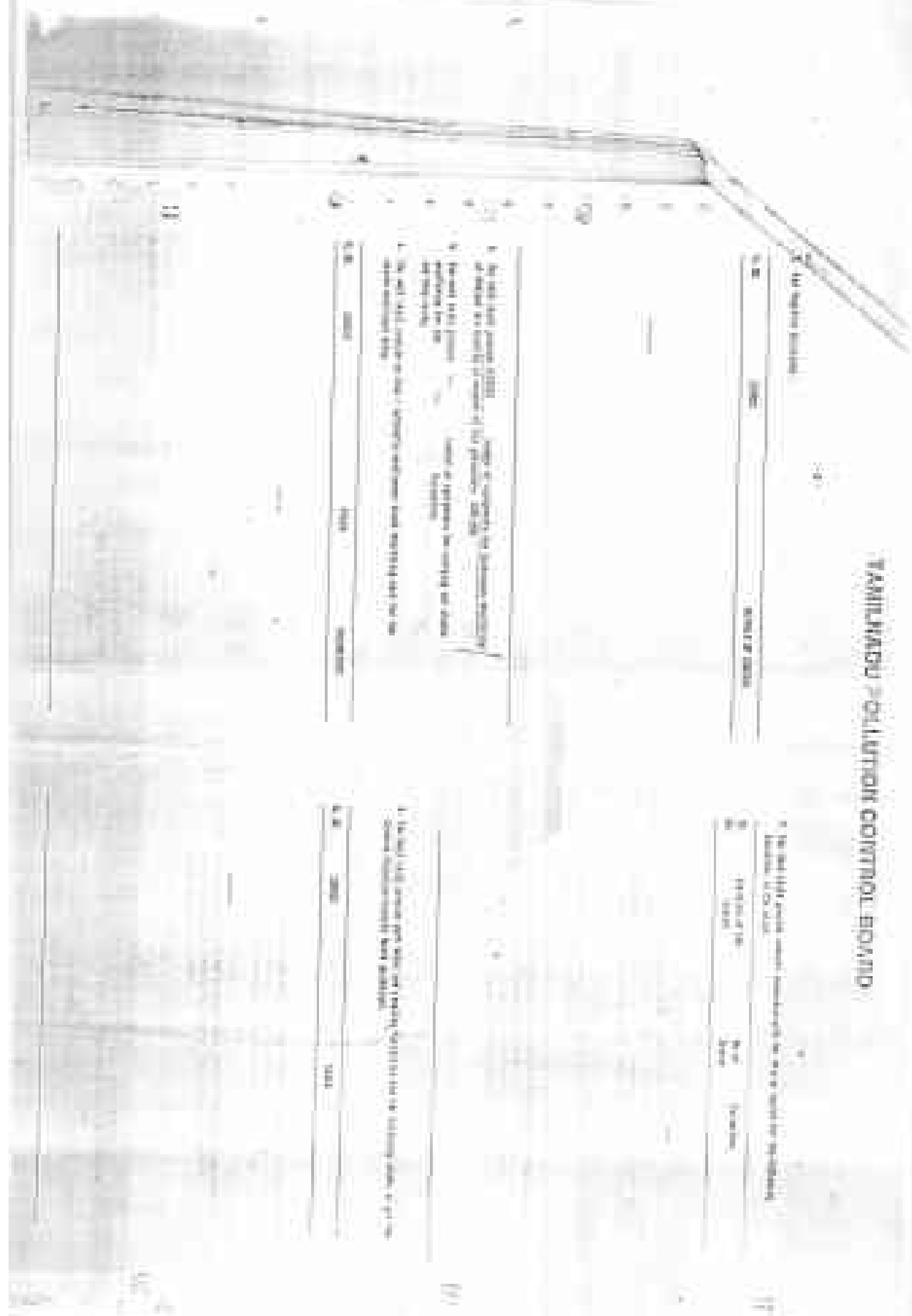
S.No	Parameter	Unit	Result

3. The water quality near the plant is as follows

S.No	Point	Result

4. The air quality near the plant is as follows

S.No	Parameter	Unit	Result



TAMILNADU POLLUTION CONTROL BOARD

1. The following information is submitted for the purpose of

NAME	_____	TITR TO BE MADE
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2. The following information is submitted for the purpose of

NAME	_____	TITR TO BE MADE
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3. The following information is submitted for the purpose of

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4. The following information is submitted for the purpose of

NAME	_____	TITR TO BE MADE
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5. The following information is submitted for the purpose of

NAME	_____	TITR TO BE MADE
------	-------	-----------------

FAMILIARIZATION POLLUTION CONTROL BOARD

Application for
Pollution Control Board

Application No. _____

Applicant Name _____

Address _____

Date of Application _____

By: _____
Signature of Applicant

In the presence of the Polluting Board members
at _____

At _____

Signature of _____

Date: _____

For the purpose of this application, the applicant is hereby declaring that the information furnished is true and correct to the best of his knowledge and belief. He is also aware of the provisions of the Pollution Control Act, 1974 and the rules thereunder. He is also aware of the consequences of providing false information and is ready to accept the consequences thereof.

Signature of _____
Name: _____

Signature of _____
Name: _____

By: _____
Signature of the Board Member

By: _____
Signature of the Board Member

By: _____
Signature of the Board Member

By: _____

CONTROL PANEL ESTABLISHED WITH IN THE

ANNEXURE - 1

NO. OF OPERATIONS IN THE UNIT IN MONTHS IN

GENERAL CONDITIONS	
1. THE GENERAL CONDITION	1. 0.00000000
2. INSTALLATION DATE	1. 12.00000000
3. OUTSTANDING DEFECTS AND REMEDY	1. 0.00000000
4. FUEL CONSUMPTION	1. 0.00000000
5. THE UNIT OPERATING TIME	1. 0.00000000
6. THE UNIT OPERATING TIME	1. 0.00000000

5. THE UNIT SHALL OPERATE IN THE CONDITIONS SPECIFIED IN THE SPECIFICATIONS ATTACHED TO IT. THE UNIT SHALL BE KEPT IN A STATE OF READINESS AT ALL TIMES AND SHALL BE OPERATED IN ACCORDANCE WITH THE INSTRUCTIONS OF THE BOARD.

NOTE: CONDITION NO. 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.

THE MEMBER SECRETARY,
TAMILNADU POLLUTION CONTROL BOARD

TAMIL NADU POLLUTION CONTROL BOARD

NOTICE UNDER ESTABLISHMENT ACT NO. 1988

ANNEXURE - II

- 18. Air-Port Authority shall implement Environment Management Plan as developed under Environmental Impact Assessment study for expansion project as per Environmental Impact Assessment Notification 1986 issued on 4.3.86 issued by Ministry of Environment & Forests, Government of India.
- 19. Airport Authority shall construct additional building terminal with auxiliary facilities to avoid congestion under expansion project according to ICAO standards as proposed.
- 20. Airport Authority shall supply water to the existing terminals from the existing bore wells within the premises. The unit shall also supply water to the terminal buildings under expansion project from the proposed bore well within the premises in consultation with Geological Survey of India and Central Ground Water Board.
- 21. As the terminal is dependent on ground water supplies it has to be assured that appropriate water management techniques be adopted to avoid over pumping which will deplete the fresh water or maintain the sandy water with salt water of sound amount of mineral sulfate chlorides.
- 22. It has to be assured that large areas are not covered with impervious materials which will affect the infiltration rate of soil thereby depleting fresh water supplies.
- 23. Airport Authority shall treat sewage generated from terminals and passengers in Airport in the existing effluent pond to satisfy the standards prescribed by the Board till the unit installs full scale treatment system.
- 24. Airport Authority shall treat sewage generated from terminals and passengers in Airport under existing expansion project in a full scale physical and biological treatment system including tertiary treatment system like sand media filter and disinfection system to satisfy the standards prescribed by the Board.
- 25. Airport Authority shall utilize treated effluent effluent on its own land for watering lawns and lawn by adopting a suitable irrigation rate of 90 efficiency.

1/5/88

For satisfying the standards prescribed by the
a.

16. Airport Authority shall install mechanical
dewatering system with filter press for dewatering
sludge generated from effluent treatment plant and
draining shall be taken to effluent treatment plant
for further treatment.

17. Airport Authority shall collect solid waste from
terminals and aircraft under existing/expansion
project and dispose through proper agency alongwith
mechanical solid waste as per the land fill.

18. The proposed terminal building structure within the
site shall have architectural features which will
merge with land scape and will enhance the beauty of
airport area as proposed.

19. The protective vegetation cover shall be removed as
far as possible to avoid soil erosion.

20. It has to be ensured that no permanent structures
shall be allowed in sites which are subject to
slides or low lands/areas to avoid by storm surge.

21. Care should be taken to maintain proper gradient
during excavation for building structures. For slopes
steeper than the natural angle of repose of the soil,
artificial supports to be provided. The slopes may be
stabilized by stone pitching or planting with grass
and other soil binding vegetation.

22. Subsidence damage can be minimized either by
precautionary measures as surface to protect
installations or by appropriate modification of
excavating method so as to minimize deformation of
surface especially during construction of terminal
building in Airport area.

23. While construction of terminal building structures,
possibility of dumping excess excavated earth in
suitable available low lying areas surrounded by
levelling and providing soil cover to utilize the land
for other use may be explored.

24. The use of heavy machinery which could affect the
stress conditions of the underlying soil shall be
avoided in initial earth work stage if possible.

25. Trench shall not be excavated too deep below the
existing ground level. The construction activities
involved in excavation and filling of earth materials
shall be carried out during dry period of the year.

Handwritten notes on the left margin, including the word 'CONDENSATION' and other illegible scribbles.

10/11/14

TAMILNADU POLLUTION CONTROL BOARD

All activities as a consequence of construction shall proceed in such a manner as to minimize dust, noise and vibration. In such areas it may be necessary to incorporate special protective measures such as fencing of construction, covering of soil, roads and living of drains.

37. Airport Authority shall utilize sludge from treatment treatment plant as manure for developing green belt within airport premises and excess if any shall be disposed along with other solid waste generated from airport.

38. The soil shall collect samples of water from monitoring wells as envisaged in Environmental Impact Assessment report and analyzed in toxic Laboratory every quarter and furnish report to Board to assess the level of the quality of ground water due to the activity within airport premises.

39. Green belt of airport area shall be developed within the premises to absorb noise and air pollution.

40. It has to be ensured that the storm water within the premises shall be collected and disposed off suitably.

41. Under no circumstances the untreated sewage effluent shall be allowed either directly or indirectly to surface or ground water or on land.

[Signature]
FOR MEMBER SECRETARY
THIRU. CHENNAI

[Handwritten notes and scribbles]

Table of Contents

1	INTRODUCTION	4
1.1	BACKGROUND	4
1.2	SCOPE	4
1.3	ASSUMPTIONS.....	4
1.3.1	CODES AND MANUALS	4
1.3.2	DESIGN PARAMETERS.....	5
1.4	TRAFFIC STUDY METHODOLOGY	6
1.5	TRAFFIC MODEL.....	6
1.6	OUTLINE OF THE REPORT	7
2	SITE APPRECIATION, EXISTING TRANSPORT NETWORK AND BASE TRAFFIC	8
2.1	PROJECT LOCATION.....	8
2.2	SURROUNDING ROAD NETWORK.....	9
2.3	TRAFFIC SURVEYS	10
2.4	BASE TRAFFIC	11
3	PROPOSED DEVELOPMENT	13
3.1	PROJECT CONNECTIVITY AND ACCESS.....	13
3.2	PARKING STATEMENT.....	13
4	TRAFFIC ANALYSIS	14
4.1	TRAFFIC FORECAST	14
4.2	TRAFFIC ASSIGNMENT	15
4.3	VEHICLE CIRCULATION.....	15
4.4	TRAFFIC IMPACT ANALYSIS	17
5	CONCLUSIONS & RECOMMENDATIONS	18



List of Figures

Figure 1-1 Traffic Study Methodology	6
Figure 1-2 Traffic Model	7
Figure 2-1 Project Location	8
Figure 2-2 Surrounding Road Network and Traffic Survey Location	9
Figure 2-3 GST Service road	10
Figure 2-4 Hourly Traffic Distribution for GST Road	12
Figure 2-5 Modal Split (vehicles) for GST Road	12
Figure 3-1 Access Points for Project Area	13
Figure 4-1 Traffic Circulation – Departure level	16
Figure 4-2 Traffic Circulation – Arrival level	16



List of Tables

Table 1-1 Roadway Capacities as per IRC 106: 1990.....	5
Table 1-2 Description of LOS based on V/C Ratio	5
Table 2-1 Hourly Traffic Volume on GST Road	11
Table 3-1 Parking Statement	13
Table 4-1 Trip Generation	14
Table 4-2 Base Traffic Forecast for Project Network Roads	15
Table 4-3 Trip Assignment on Existing Road Network	15
Table 4-4 Traffic Capacity Analysis of Access Roads – 2022	17



1 INTRODUCTION

1.1 BACKGROUND

Project proponent has proposed MLCP Buildings at Chennai Airport. Two Multi level car parking buildings i.e west block & east block is proposed to construct near airport terminals. On completion, the project will provide 2013 car parking spaces within the premises.

GMD Consultants has been commissioned by the project proponent to provide a Traffic Impact Study for this project.

1.2 SCOPE

The scope of this study is listed below:

- **Traffic Surveys:** To conduct traffic surveys of area project site in order to capture base traffic:
 - Assess current traffic pattern on access road – neighboring road network
 - Capture traffic emanating from new developments and from adjacent properties
- **Traffic Circulation:** To review traffic circulation plan considering various types of vehicles users (cars, 2W, fire tender)
- **Impact Analysis:** Analyze the forecast project traffic in conjunction with base traffic. Conduct an Impact Analysis of project traffic as well as study impacts and suggest mitigation measures.

1.3 ASSUMPTIONS

GMD Consultants follows standard procedures and guidelines to determine the impact of added traffic on proposed facilities. In the following sections, the assumptions considered as well as selected design standards and parameters for the analysis have been discussed.

1.3.1 CODES AND MANUALS

Design standards are generally followed bottom-up or part to whole. Local bylaws are given highest priority to meet the requirements set by local development control agency. Other standards, although explicitly not mentioned by local development control agency, are referred from national or international design manuals that are accepted and widely referred by other professionals in the industry.

Following Codes and Manuals have been referred in this study:

- Codes by Indian Road Congress
- A Policy on Geometric Design of Highways and Streets' by American Association of State Highway and Transportation Officials (AASHTO)
- Trip Generation and Parking Generation handbooks by Institute of Transportation Engineers (ITE)



- Guidelines for Preparation of Traffic Impact Assessment Reports by LTA, Singapore
- Design recommendations for multi-storey and underground car parks 3rd Edition, IStruct, UK.

1.3.2 DESIGN PARAMETERS

The basic design parameters considered for the study has been illustrated below:

- 1) The social status as well as economic well-being of the residents plays an important role in determining the parking demand for any residential project.
- 2) The visitors will expect a safe and efficient circulation with good levels of service, i.e. minimum waiting time at security check, proper traffic control at entry / exits, minimum congestion delays and pleasing aesthetics.
- 3) The maximum number of traffic a road can carry is referred to as its Capacity or design Service Volume. The service volumes considered for the project is given below.

Table 1-1 Roadway Capacities as per IRC 106: 1990

Type of Roadway	Road Capacity*	Category
3 lanes one way	5143	Arterial

*Indian Road Congress 106: 1990 Urban Road Capacity

- 4) Level of Service (LOS) can be defined as a letter designation that describes a range of operating characteristics on a given facility. Six Levels of Service are defined for capacity analysis. They are given letter designations from A to F, with LOS 'A' representing best level of operational standards and LOS 'F' the worst.

Table 1-2 Description of LOS based on V/C Ratio

Level of Service (LOS)	Volume/Capacity Ratio (V/C)	Level of Comfort	Nature of flow
A	<0.30	Highest	Free Flow
B	0.30 – 0.50		Reasonably free flow
C	0.50 – 0.70		Stable flow
D	0.70 – 0.90	Threshold	Approaching unstable flow
E	1.00		Unstable flow
F	>1.00	Lowest	Forced flow



1.4 TRAFFIC STUDY METHODOLOGY

The methodology adopted for traffic analysis for this project is represented in the form of a flowchart as shown in Figure 1-1.

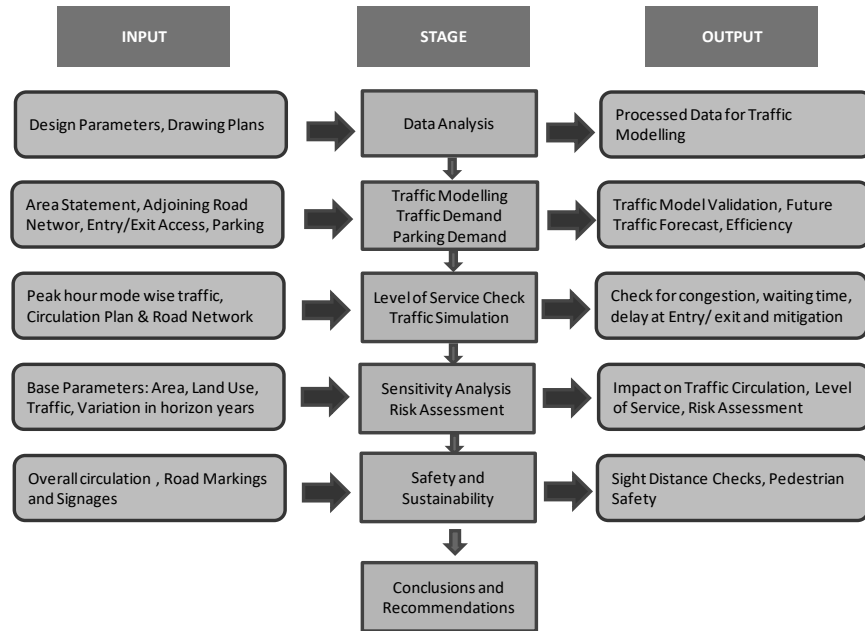


Figure 1-1 Traffic Study Methodology

1.5 TRAFFIC MODEL

Traffic modeling is the process of analyzing the pattern in which an area’s transport network would be used by traffic given the distribution and characteristics of the area’s population, employment and other land uses. The output of traffic analysis is forecast of vehicles using each road segment within the study area. Traffic forecast is best achieved by transportation modeling. The conventional transportation modeling is a four stage process. The most widespread form of model utilized is gravity model and the same is utilized for this project. The broad outline of this four stage gravity model is illustrated in Figure 1-2 below.



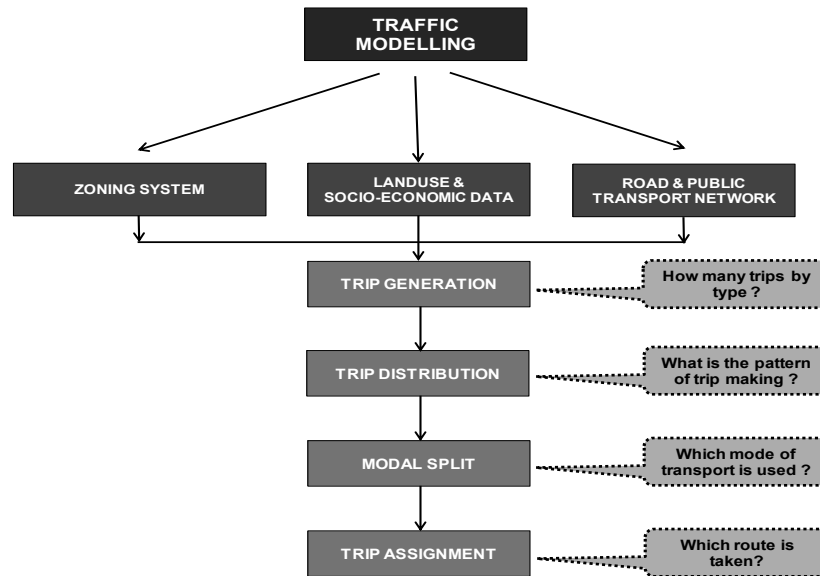


Figure 1-2 Traffic Model

1.6 OUTLINE OF THE REPORT

The report has been organized in the following order:

Chapter 1 Introduction, scope, assumptions and methodology

Chapter 2 Illustrates the existing road network and the present traffic scenario at the project site as well as details on external road network considered and neighbouring region profile to give an overview of the baseline (existing) traffic conditions.

Chapter 3 Explains the salient features of the proposed development.

Chapter 4 Describes the analysis of traffic survey and road network data for neighbouring roads and gives a better picture of where they stand as far as level of service is concerned. Also, the likely number of trips that would be generated by the project has been forecasted and its likely impact on road traffic was studied.

Chapter 5 Summarises the conclusions and recommendations of the study.



2 SITE APPRECIATION, EXISTING TRANSPORT NETWORK AND BASE TRAFFIC

The existing transport network surrounding the project has been illustrated in the section below.

2.1 PROJECT LOCATION

The project is in Tirusulam, 21 km from the city Centre. Chennai international airport Metro Station is inside the airport which provides local connectivity. The site is well connected to major landmarks in and around Chennai City by road as well as rail. The project has direct access to GST service road, The project provides easy access to other amenities such as educational, medical and shopping facilities. Figure 2-1 shows an aerial view of the location.



Figure 2-1 Project Location



Following pictures depict the surrounding road network.



Figure 2-3 GST Service road

The site is well connected to major urban centers around Navi Mumbai via road and rail. It is connected to all basic services like hospital, police station, fire station, post office and others.

2.3 TRAFFIC SURVEYS

Traffic surveys are necessary to gather base data information about existing traffic and travel pattern on surrounding roads. Traffic surveys were carried out on 14th February 2018 (Wednesday) and 17th February 2018 (Saturday). The traffic surveys included classified traffic volume counts. Traffic survey was conducted at GST Road.



2.4 BASE TRAFFIC

Traffic survey was conducted for 24 hours to understand the hourly traffic variation for the roads. The observed peak hour volume for GST service road has been illustrated below. Also, modal split along with directional distribution of traffic for each road has been illustrated in the figures below.

Table 2-1 Hourly Traffic Volume on GST Road

Time Period	2W	Cars	Taxi	Mini Bus	LCV	Total Vehicles	Total PCU
8 to 9	198	1140	98	8	5	1449	1410
9 to 10	102	684	48	4	3	841	821
10 to 11	99	685	46	4	3	837	817
11 to 12	86	638	38	4	3	769	753
12 to 13	100	1134	33	6	5	1278	1261
13 to 14	66	879	17	5	4	971	961
14 to 15	117	1261	40	7	6	1431	1411
15 to 16	165	1357	70	8	6	1606	1575
16 to 17	176	1682	34	16	6	1914	1888
17 to 18	327	1711	76	10	4	2128	2058
18 to 19	220	1417	96	12	4	1749	1708
19 to 20	175	1392	79	4	11	1661	1626
20 to 21	208	1530	98	7	7	1850	1808
21 to 22	118	842	54	5	4	1023	1000
22 to 23	150	1045	69	7	5	1276	1248
23 to 24	138	1021	61	6	5	1231	1205
24 to 1	236	1683	107	10	8	2044	1998
1 to 2	175	1409	75	8	7	1674	1641
2 to 3	168	1409	70	8	7	1662	1631
3 to 4	201	1428	92	9	7	1737	1699
4 to 5	216	1654	95	4	12	1981	1936
5 to 6	272	1401	126	4	12	1815	1756
6 to 7	181	1542	164	21	4	1912	1889
7 to 8	181	1613	166	8	3	1971	1935
Total	4075	30557	1852	185	141	36669	36033



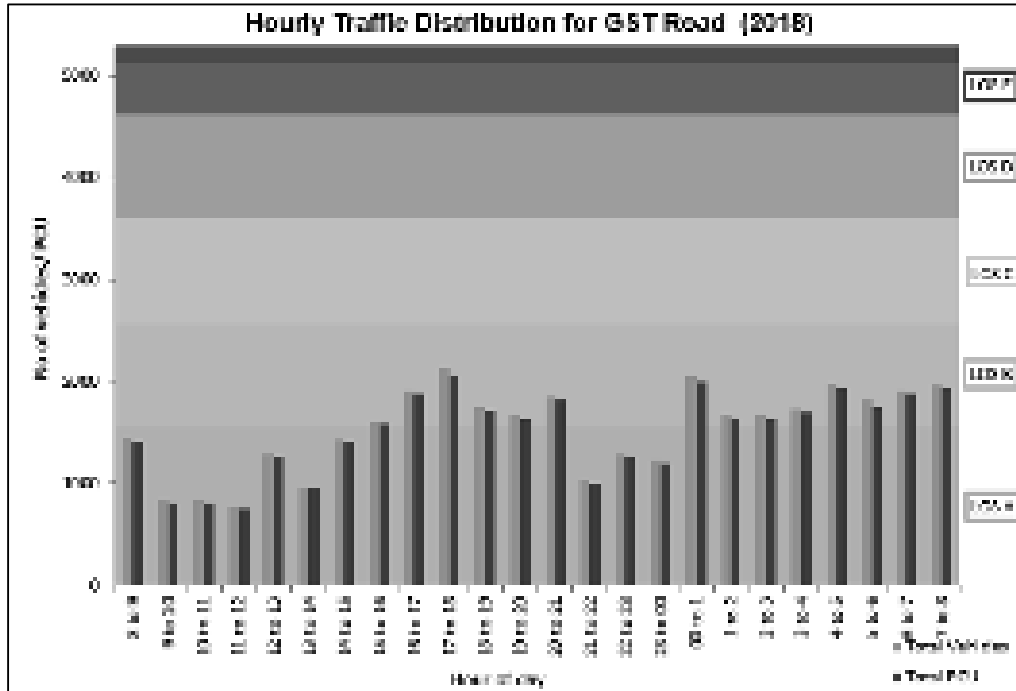


Figure 2-4 Hourly Traffic Distribution for GST Road

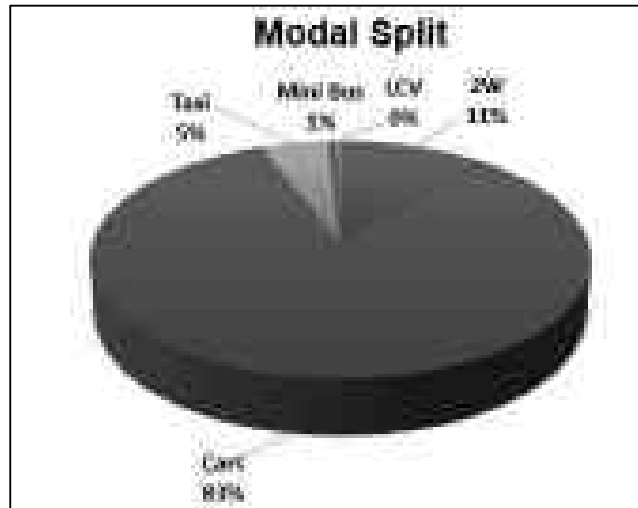


Figure 2-5 Modal Split (vehicles) for GST Road

- Based on preliminary analysis it was observed that:
- Peak morning traffic was observed between 7 and 8 AM and peak evening traffic was observed between 5 to 6 PM.
 - The vehicular traffic predominantly consists of cars



3 PROPOSED DEVELOPMENT

3.1 PROJECT CONNECTIVITY AND ACCESS

Provision of access points to drop off /pickup have been planned to facilitate efficient circulation and dispersal of traffic. These access points shall provide entry / exit facility to parking and drop off locations and are strategically located and designed in such a way that it not only adds efficacy to circulation and accessibility but also helps in safety, security and traffic management. The access points provided for the project is illustrated in Figure 3-1.

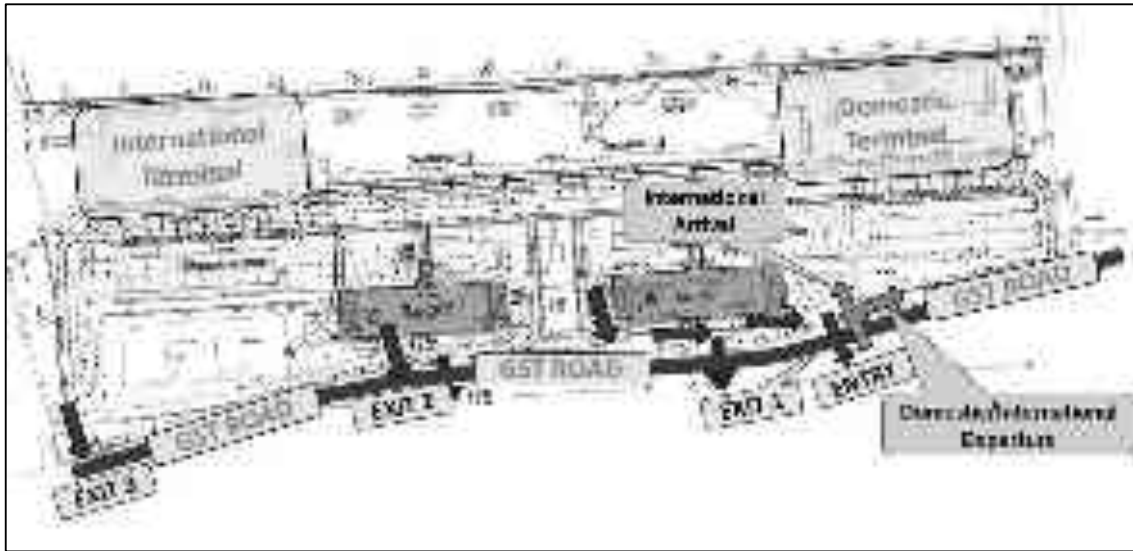


Figure 3-1 Access Points for Project Area

3.2 PARKING STATEMENT

All the parking required for the project is being accommodated within the project premises. An automated parking system has been provided. The parking statement is given in Table 3-1.

Table 3-1 Parking Statement

BLOCK	PARKING NO'S
West Block	1263
East Block	750
Total	2013



4 TRAFFIC ANALYSIS

The traffic analysis comprises of:

- Traffic Forecast
- Traffic Impact Analysis
- Traffic Circulation

4.1 TRAFFIC FORECAST

Traffic forecasting is the process of estimating the total number of trips generated and attracted by each land-use.

Traffic forecasting is done using trip generation rates which are developed to estimate the number of trips generated from specific household and/or land use. For the purpose of this study, ITE trip generation manual were referred for arriving at basic trip generation rates and these rates were further modified suitably to represent Indian conditions. The no of trips includes visitors, services and other trips attracted by residential, educational and commercial land use.

Trip: A trip is an individual's one way travel from one point (origin) to other (destination). The trip can be for various reasons such as work, business, education, shopping, recreation, etc

The project is expected to be commissioned by the year 2022. This would generate additional trips during day and peak hours. The trips generated by the project are given in table below:

Table 4-1 Trip Generation

No of trips Generated during Peak hour (PCU/hr)	201
--	------------

A traffic growth of 5% is considered per year for the surrounding network. Based on this, the traffic has been forecasted and has been summarized in Table 4-2.



Table 4-2 Base Traffic Forecast for Project Network Roads

Road Name	Description	Peak Traffic Volume in AM Peak	Design Traffic Capacity in PM Peak	V/C Ratio (Peak Volume / Capacity)	Level
		(V)	(C)		
GST Road	Signal (One Way)	1700	2100	0.80	D
	(Signal)				

This project being of residential land use, once commissioned will be generating predominantly outgoing and incoming traffic during morning and evening peak hours respectively. There will be various modes of vehicles contributing to the traffic.

4.2 TRAFFIC ASSIGNMENT

Trip distribution essentially describes that how the generated / attracted traffic arrives and departs from the project development site and in which direction. An overall trip distribution was developed for the site after a review of the existing travel patterns in the area. The volume of traffic generated / attracted will have a defined pattern of distribution both for entry and exit. Locations of the residential zones, major roadways and highways that will serve the development have been considered to arrive at trip distribution.

The project site is surrounded by a well-planned road network. Existing neighboring roads will carry traffic from and towards the site. The impact of the project traffic would be predominantly on GST Road. Following has been assumed for assignment of trips on existing road network.

Table 4-3 Trip Assignment on Existing Road Network

Project Traffic Contribution to	%
GST Road	100%

4.3 VEHICLE CIRCULATION

Multiple access points for vehicles have been provided in order to ensure smooth vehicle movement. This has been illustrated in Figure 3-1. Also, the floor wise circulation proposed for the project has been illustrated in Figure 4-1 to Figure 4-3.



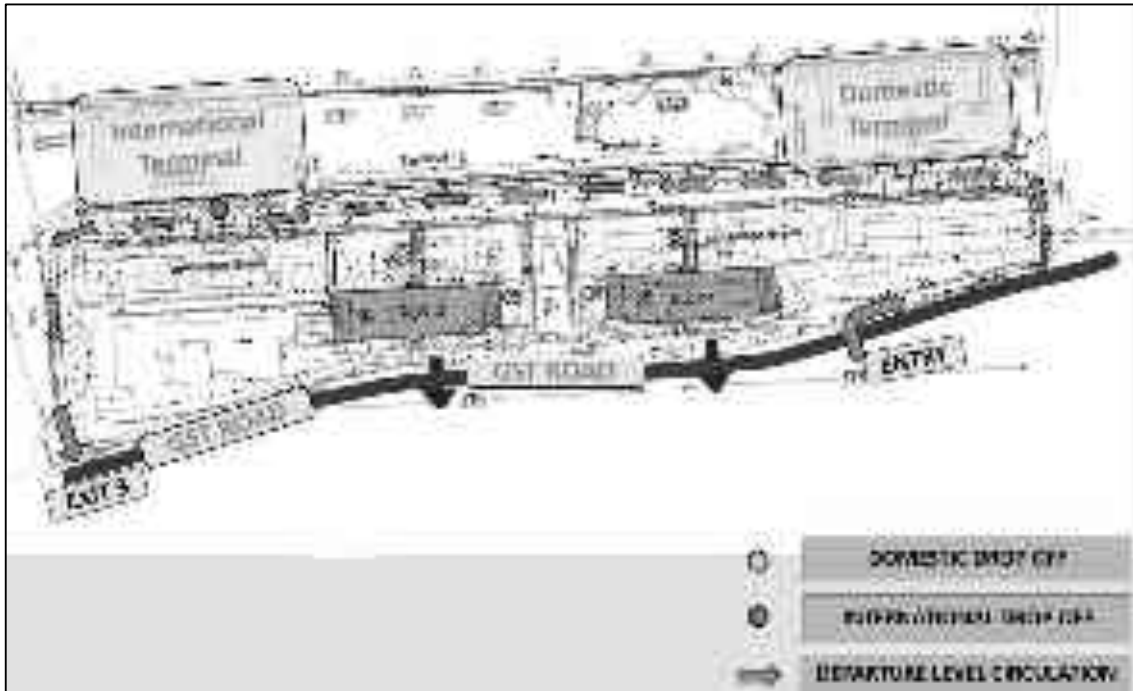


Figure 4-1 Traffic Circulation – Departure level

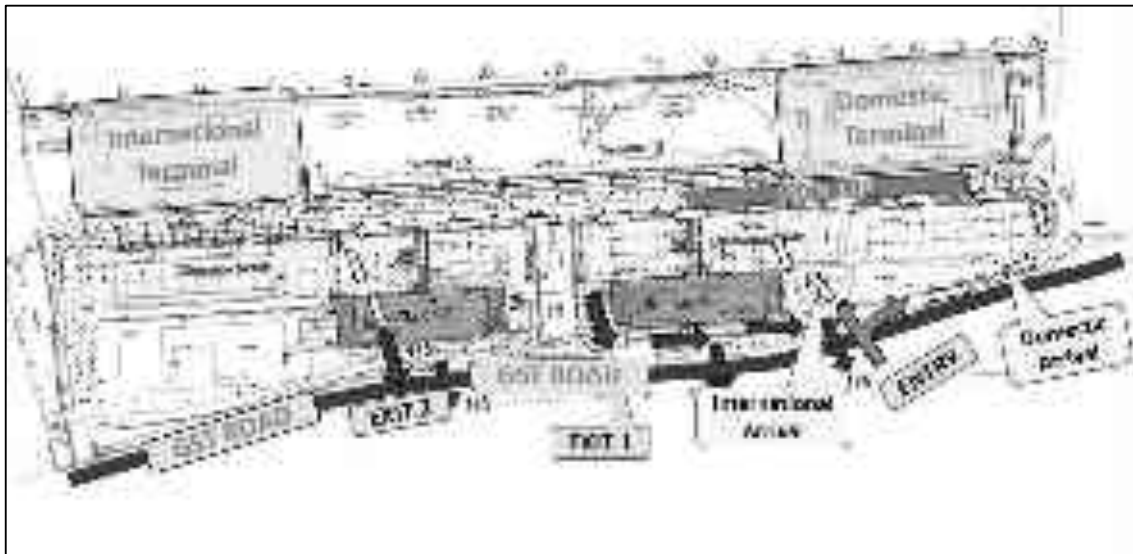


Figure 4-2 Traffic Circulation – Arrival level



4.4 TRAFFIC IMPACT ANALYSIS

The traffic on GST Road was analyzed to assess its traffic impact on the existing roads.

Future traffic on adjoining roads shall comprise of following two major components:

- Base Road Traffic (forecasted to year 2022)
- Project Traffic (2022)

The road traffic has been forecasted for year 2022. This total traffic on the road is compared with its capacity. This V/C ratio of peak traffic volume and capacity is used as an index to determine level of congestion on link which is likely to occur when projected traffic is operative on link. Pedestrian traffic is assumed to use footpaths and not affect the road capacity. The summary of results for future traffic link flow conditions at different access roads is shown in

Table 4-4 Traffic Capacity Analysis of Access Roads – 2022

Road Name	Peak Traffic Volume in 2022 (PCU/hr)(A)	Project Traffic (PCU/hr)(B)	Total Traffic in 2022 (A + B)	Design Traffic Capacity as per ISD 190:1996 (PCU/hr)	V/C Ratio (Peak volume / capacity)	LOS
GST Road	2020	107	2127	4725	0.44	B

**Note: If V/C ratio <1.0, it indicates acceptable level of service (LOS)*

The above results indicated that there are no concerns on account of project traffic and the traffic will continue to run as usual even after commissioning of project in year 2022.

Under present configuration the roads will operate at V/C ratio of maximum 0.44 for the year 2022 during the peak hour. It is within acceptable limits.



5 CONCLUSIONS & RECOMMENDATIONS

The traffic impact analysis was conducted and the results were discussed in earlier section. The conclusions and recommendations are summarized below:

- 1) The project traffic has been forecasted for year 2022 and this has been superimposed along with existing projected traffic to arrive at future traffic for year 2022.
- 2) The forecast traffic on the roads adjoining the project namely GST Road will operate at acceptable level of service in future 2022 year.

