

Sanctioned Executive Summery

for

**Chhatrapati Shivaji Maharaj International Airport Notified Area
(CSMIANA), Mumbai**

Mumbai Metropolitan Region Development Authority, Mumbai

EXECUTIVE SUMMARY

1. PROJECT BACKGROUND

Chhatrapati Shivaji International Airport, Mumbai (IATA Airport Code:BOM, ICAO Airport Code:VABB), named after the great Maratha Emperor and a legendary son of India 'Shri Chhatrapati Shivaji Maharaj' is the busiest airport in the country. In 1932, Juhu aerodrome commenced operations and functioned as the sole airport of Mumbai up to and during the 1939-45 war. Due to operational constraints of Juhu aerodrome the airport moved to suburb of Santacruz in 1948. Sahar terminal was constructed in 1981 for international flights. At the turn of the millennium, entire Mumbai Airport (including Santacruz & Sahar terminal) was renamed as Chhatrapati Shivaji International Airport (CSIA). In January 2006 Airport Authority of India (AAI) entered into agreement with Mumbai International Airport Ltd (MIAL) and transferred the responsibility of operation, management and development of CSIA to MIAL for 30 years, extendable by another 30 years.

Mumbai International Airport Ltd (MIAL) is actively progressing on development of Chhatrapati Shivaji International Airport (CSIA) with objective of creating world class airport and related aviation infrastructure facilities for people of Mumbai and Maharashtra. CSIA is being developed to serve as 'Gateway to India' for international passengers, tourists, business travelers and as a major domestic aviation hub. CSIA is India's busiest airport with domestic and international air traffic of over 25 million ppa in 2006-07. CSIA accounts for approx. 26% and 31% of the country's total air passenger and cargo movements, respectively and handles about 400 flights daily for average daily passengers of around 7000. CSIA connects India globally to 41 destinations through 40 international airlines and to 44 domestic destinations with 7 domestic carriers. CSIA is being planned to serve 40 million passengers by 2014 and to handle 1 million tonnes of Cargo. Development of airport shall generate large employment opportunity for people of Mumbai (approx 25,000 by 2015), in addition to creation of an international landmark for the city.

2. DEVELOPMENT PLAN PROCESS

Govt. of Maharashtra in exercise powers conferred by subsection (1)(c) of section 40 of the Maharashtra Regional and Town Planning Act, 1966 and all the powers enabling it in this behalf has appointed "Mumbai Metropolitan Regional Development Authority (MMRDA)" as the Special Planning Authority (SPA) for the area bounded by Airport boundary through notification no. TPB-4308/3709/CR-347/08/UD-11 dated 14th May 2009.

A Global FSI of one will be available for development of the area for which MMRDA is appointed as SPA. Mumbai International Airport Pvt. Ltd., (MIAL) on behalf of the Airport Authority of India (AAI) may utilize the available FSI for the entire CSIA Notified Area (CSIANA) area, anywhere in the area, after deducting utilized FSI. The Utilized FSI will include FSI consumed by slums, leased premises, developments on goathan lands (if any within notified area) and any other structure existing on the airport land.

MMRDA as Special Planning Authority under provisions of MRTP Act, 1966; has prepared Draft Interim Development Plan for the total notified area of CSIA to ensure fast track development of the airport. A large part of CSIA, more than 300 acres is currently under encroachments. Availability of this land is necessary for proper long term planning for CSIA as a modern international airport and aviation hub. Pending the availability of land under encroachments; MMRDA plans to initiate planning & development of CSIA in two phases, starting immediately with Interim Development Plan (2010-2014) and second phase with Development Plan (2010-2025).

3. NEED FOR DEVELOPMENT

CSIA covers an area of approx. 802.03 Ha (1981.85 Acres) of land in the heart of Mumbai. Globally, there are very few instances of major International Airport being located in heart of a Metropolis. Schiphol Airport, Amsterdam, is perhaps the only other example. Also CSIA is the most constrained airport in the world, with severely limited available site area of 678 Ha (excluding area under encroachments, etc) which is less than 5.5 % the site area of Kuala Lumpur Airport, 16.96 % the site area of Pudong, Shanghai Airport, less than 16.76 % the site area of Suvarnabhumi Airport, Bangkok & 54.33 % the site area of Hong Kong Airport. In Indian context, CSIA site area is only 32.71% and 30.86% the site area of Delhi and Hyderabad airports respectively.

CSIA shall serve as Mumbai's only airport for at least next four to five years, as development of Navi Mumbai Airport is yet to commence. Also, even after Navi Mumbai Airport comes up CSIA shall continue to handle major part of Mumbai's international & domestic traffic i.e., around 40 million passengers annually and 1 million tonnes per annum of cargo.

Like all major airports evolved beyond their basic roles as transport nodes into drivers of local & regional economic development enabling financial growth & promoting travel, tourism, hospitality, trade, cargo, etc leading to employment and revenue generation for local/ regional economy, development of CSIA shall also enable employment and revenue generation for Mumbai & Maharashtra.

Given Mumbai's status as the Financial Capital of India and a Global Financial Centre in Asia, and the base for numerous domestic and international companies, there will be a significant amount of demand in hospitality sector that will be generated as India's economy continues to exhibit strong growth in the future. Mumbai is also expected to become a major convention, conferencing, business destination, as well as an increasingly popular tourist destination. The diverse set of industries and demand generators for the market have made Mumbai less susceptible to downturns in any one sector and bode well for the lodging market in Mumbai.

To meet the demand generated by rising affluence and globalizing domestic firms, airports throughout India have committed to expanding their share of the Asia-wide and global air network, bringing more international travelers through their terminals. Five of the top 25 fastest growing major airports in the world in 2007 were in India. These must keep pace with new advanced airport developments in the region, such as Changi International Airport, (Terminal-3), Singapore; Chek Lap Kok International Airport, Hong Kong (HKIA); Suvarnabhumi International Airport, Bangkok; Pudong International Airport, Shanghai; Al Maktoum International Airport, Dubai, etc.

4. VISION STATEMENT

World over, all major airports are seen as symbols of national achievement, pride & aspiration. This is particularly true in case of CSIA, being located in the financial, business & entertainment capital of the country. CSIA is planned and positioned as modern Gateway to India. High quality physical infrastructure, world class service standards and facilities and stringent safety systems are essential to present global face of India to all foreign and domestic airport users. With Mumbai as financial, commerce, trade, entertainment capital of India, CSIA serves as gateway for international business to Mumbai & to industrial states of Maharashtra, Gujarat, entire central & western India & acts as the first interface between our international guests and Mumbai, as well as India.

The vision for CSIA is ***"to be one of the world's best airports that consistently delights customers and be the pride of Mumbai"***

Mumbai holds a certain panache and allure embodied by its cosmopolitan lifestyles and as the nexus of Bollywood. CSIA, as the gateway between outbound locations and the city itself, therefore represents an important gateway for travelers arriving to India from the outside, for travelers arriving to Mumbai from the rest of India, and for Mumbaikars traveling outward to domestic and international destinations.

There is a greater opportunity for CSIA to complete, reinforce and guide land use patterns already emerging around the airport and help to develop this part of Mumbai as an important epicenter of the region. Like all major airports evolved beyond their basic roles as transport nodes into drivers of local & regional economic development enabling financial growth & promoting travel, tourism, hospitality, trade, cargo etc. leading to employment and revenue generation for local/ regional economy.

5. EXISTING LANDUSE

The notified site area of Chhatrapati Shivaji International Airport (CSIA) is approx 802.03 HA (1981.85 acres) and excludes existing goathan areas of Sutar Pakhadi, Talao Pakhadi and Church Pakhadi. Due to the need based expansion approach, specific landuse zoning is not clearly evident in CSIA.

The broad existing landuse categories in CSIANA are:

- Aeronautical area (59%)
- Non Aeronautical area (25.42%)
- Area under Encroachments/ Slums (15.58%)

Aeronautical/ Airside area of approx 473.21 HA (1169.32 acres) includes land under area runways, taxiways, aprons, terminals, cargo terminal & warehouses, hangars, internal roads, utilities, and other related uses etc.

Non-Aeronautical/ landside area (excluding land under encroachment/ slums) of approx 203.79 ha (503.58 acres) includes airport support facilities, commercial, hospitality, public - semi public/ social infrastructure like Police Station, Hospital, etc. along with utilities, airport support activities such as cabin catering, fuel farms, cargo offices, airlines offices, airport related public and semipublic offices, residential quarters of AAI, CISF, Air India, Indian Airlines, parking area, roads (internal and public), encroachments, vacant land, major drains etc. and other uses conforming to Commercial - C2 zone uses.

A large part of CSIANA measuring approx 125.03 ha (308.95 acres) is currently under encroachment/ slums. The area under encroachments/ slums is spread over various parts of notified area like in Kurla, Sahar, Santacruz & Agripada, Gaodevi, Kalina etc.

A part of land in Aeronautical as well as non-Aeronautical area is currently undeveloped or vacant. Existing Landuse area statement for CSIA notified area is as under:

Landuse	Area (Ha)	Area (Acre)	%
Aeronautical	473.21	1169.32	58.98
Non Aeronautical	27.41	67.73	3.46
Residential	61.02	150.79	7.61
Area under Encroachments	125.03	308.95	15.58
Utilities	9.51	23.51	1.19
Social Infrastructure / Facilities	6.35	15.69	0.79
Green & Open Spaces	13.72	33.91	1.71
Roads & Parking	30.26	74.78	3.77
Vacant/Undeveloped	55.51	137.16	6.92
Total Landuse Area	802.03	1981.85	100.00

Source: Primary Survey (June 2010)

Existing Landuse Area Statement

6. EXISTING ECONOMIC ACTIVITIES, WORKFORCE & EMPLOYMENT

As the Airport passenger traffic has grown up substantially in last few years, the aeronautical revenues have also grown in recent times due to improvements in airport infrastructure and in airport operations & management. One of the other revenue sources for airport are non-Aeronautical revenue, which is almost equal to Aeronautical revenues of CSIA in recent years, but world over, the general trends indicate a much larger contribution of non-aeronautical revenues in overall airport revenue generation. There is a large opportunity and need to explore all possibilities to increase non-aeronautical revenues at CSIA. In case of Cargo revenues a growth of approx 61% can be seen from 2007 to 2009-2010 inspite of existing sever land and infrastructure constraints.

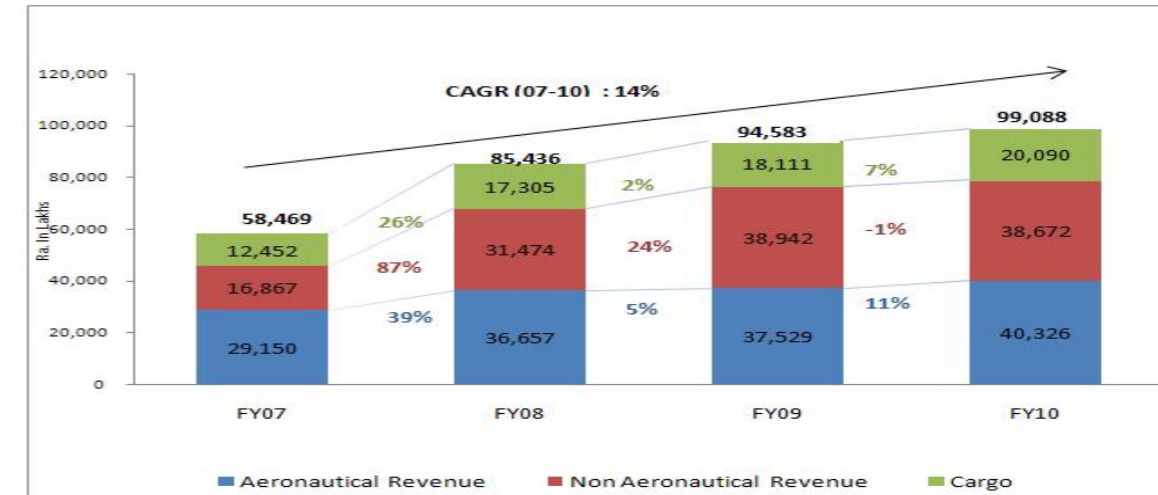


Figure-1: Summary of Revenue (in Rs lakhs)

Total existing workforce at CSIA is around 40,000 persons; consist of approx 25,000 persons engaged directly in operational, technical, management, maintenance, & administrative activities; approx. 11,000 persons in existing non-Aeronautical businesses and approx. 4000 persons in service employment.

7. EXISTING TRAFFIC & TRANSPORTATION

CSIA being the major international airport in western India, domestic & international travelers connect to rest of western India through Mumbai because of good regional connectivity by means of road, rail and air transport. At city level, CSIA enjoys the benefit of being located on WEH which further extend in north to NH-8, and in south to Sion-Panvel Express Highway (through Bandra-Sion Link road) providing connectivity to northern and eastern hinterland respectively. Andheri-Ghatkopar Link Road (AGLR) also provides connectivity to NH-3, NH-4 through Eastern Express Highway (EEH).

The two terminals of CSIA, Terminal-I for domestic operations and Terminal-II for international operations, are situated about four kilometers apart within the notified area of CSIA. The said two terminals are connected to each other from landside via WEH & Sahar Road, and also from within CSIA airside area by airside perimeter road. Proposed six lane 27.6 m wide dedicated elevated road to new CSIA Sahar Terminal is currently under construction from WEH. Marol Pipe Line Road & Cargo Road are two other roads serve CSIA site area in Sahar. Cargo Road caters to traffic leading to & from CSIA Airside Gate No 5, CSIA Cargo Terminal at Sahar, goathans of Sutar Pakhadi, Church Pakhadi and Talao Pakhadi along with residential colony of CPWD and P&T. Road network within Santacruz Terminal area of CSIA is currently adequate; however there is a need for uni-directional traffic flow around T1 forecourt area by avoiding existing road leading

to T1-A from Sahara Star hotel and creation of new exit road on to WEH from existing road in front of T1A through IOCL fuel Station, with required merging length and road geometry.

In Kalina, existing 6.00 m wide road provides access to CSIA landside as well airside area. CSIA General Aviation Terminal, Gate No 8, residential and institutional areas of IAF, Indian Navy, AI & IA Colonies, etc are accessed by this road. Although the right of way / road width is adequate some re-alignment of this road may be required to permit expansion of CSIA airside development in Kalina in future. Currently CSIA aeronautical area lacks adequate link up with external roads, particularly near runway 09 end near WEH. The said airside roads also serve as important emergency exit routes for VVIPs, medical emergencies and other such unforeseen needs. Currently there are no roads within CSIA area for connecting various parts of airport areas to each other. This has led to fragmented development, within required homogeneity. This is affecting internal traffic movement as this has to now depend on external links even for intra CSIA movement.

Existing suburban transportation systems near CSIA are under pressure due to gradual increase in residential, commercial and other developments at city and suburban level. This is affecting movement of airport related traffic, leading to increasing travel time. Implementation of Metro connectivity for CSIA needs to be advanced. CSIA is a unique airport where a high volume of city/ public/ non-airport traffic moves through airport site area. This is a cause of concern & is affecting efficient, fast movement to/ from CSIA.

Excess numbers of taxis are staged at the Airport premises causing hindrance to airport users, posing security concerns on premises. Since land is a major constraint for the said Airport, the taxi numbers need to be cut down to the required levels. The surface parking area is not sufficient to cater the needs of existing passenger and cargo demand and in view of severe land constraints at CSIA future parking demand needs to be addressed through Multi Level Car Parks (MLCPs).

8. EXISTING AMENITIES, UTILITIES & OPEN SPACES

CSIA Notified area includes several public facilities which not only support the airport, but in some cases serve much larger catchment area. Currently total area for amenities & social infrastructure is 6.35 Ha. The said area is distributed across the notified site area of CSIA. Most of the said existing public facilities and uses were planned & developed in early stages of airport development in 1960's/ 70's, and are therefore in need for transformation and up-gradation, also relocation in some cases due to incompatibility of their current locations.

Currently total area under open spaces and recreation in non-aeronautical zone of CSIA is 13.72 Ha, & is distributed across the entire notified site area. This area includes all parks & play grounds, recreational open spaces, landscaped areas in forecourt area of terminals, etc. Large part of airport's airside area is retained as open space as per aviation requirements. Currently this area is approx. 31.98 Ha i.e. 6.85% of total aeronautical area.

The existing utility infrastructure of CSIA includes Power Distribution Network, Jet Fuel distribution network, Telecom & IT network, water supply network, sewage collection and disposal network, storm water drainage, etc. The existing utility networks were planned and as per the demands & needs of the two existing airport terminals and periodically augmented in parts & phases in the past.

9. EXISTING ENVIRONMENTAL STATUS

In 2007, MAIL received MoEF approval for CSIA development for Phase-I and Phase-II (work up to 2015), inclusive of terminal developments, runway, ATC Tower, apron expansion, parking development, STPs, etc.

The CSIA has prepared an Environmental Management Strategy for its operations. The impacts associated with the project activities are being mitigated by an appropriate Environmental Management Plan as per the Environmental Impact Assessment Report. The impact assessment study conducted in 2006 indicates that the impacts of the project are on environmental parameters related to noise, water quality, and air quality. The present EMP involves environmental sampling at certain locations which were corresponding to various installations at CSIA and the construction activities at CSIA. Over a period of two years, MIAL has been monitoring the Environmental Quality of CSIA.

10. EVALUATION OF EXISTING DEV. PLAN

The planning proposals for social infrastructure & open space provisions indicated in Zonal/ Ward wise existing Plans of this area have mostly not been enforced or implemented due to existing encroachments & slums. As existing proposals were framed in 1980's, most of said proposals are not related or required as part of airport planning and are therefore incompatible for future CSIA development. These were perhaps proposed earlier based on then existing perceptions & landuse preferences, and in some instances were proposed due to lack of clarity/confirmation on CSIA boundary on eastern part of the notified area. Total existing DP reservation area in CSIANA is around 85.60 Ha. The total area of existing DP reservation, on CSIA site area excluding encroachments/ hutments is 56.45 Ha. The DP reservations have not been implemented in the areas currently occupied by slums, and these reservations are therefore not available for use to public. The total area of existing DP reservation, in non-Aeronautical area of CSIA (area accessible to general public) excluding area under encroachments/hutments is 35.45 Ha.

11. OBSERVATIONS & CONCLUSIONS

The issues identified from existing situation analysis is the premise for formulation of planning proposal and various planning and design interventions in landuse, traffic & transportation, amenities & utilities etc. The observations & conclusions are summarized as follows:

Observations & Conclusions: Airport Connectivity and Transportation

- Absence of high speed, high volume connectivity to CSIA
- Through traffic on Airport Critical External Roads
- No availability of dedicated roads to cater to airport traffic
- No availability of space for road capacity augmentation
- Absence of roads connecting various parts of airport area
- Absence of dedicated road connecting both terminals
- Lack of adequate link up from the airside to the external roads
- Excessive Taxi Staging at CSIA
- Insufficient Surface Parking at CSIA
- Lack of integration of traffic within CSIA to External Roads
- Need for Pedestrian Facilities
- Longer distance between present public transport nodes to CSIA
- Congestion on External Roads affecting the Freight Traffic Movement

Observations & Conclusions: Existing Land use

- Limited available site area
- Non-contiguous Non-Aeronautical/ landside area
- Presence of encroachments and slums
- Undeveloped or vacant Non-Aeronautical/ landside area
- Absence of high speed airport connectivity
- Creation of cohesive Urban Form

- Relocation & re-densification of existing uses
- Land parcels optimization due to realignment of drains and public utilities & facilities
- Rehabilitation of encroachments/ slums

Observations & Conclusions: Aeronautical Zone

- Limited land availability, handling capacity, delay in development of Navi Mumbai Airport,
- Airfield improvements for increased ATMs
- Requirement of additional taxiways, new terminals, apron expansion
- Restructuring & Expansion of Cargo Complex
- Shifting of ATCT, ATS building
- Relocation of Air catering facilities
- Relocation of Run-up bays operated by two airlines

Observations & Conclusions: Existing Utilities

- Needs for improvement of existing drainage/ nallah network
- Need for planning of low lying areas to resolve the issue of flooding and other environmental aspects
- Relocation of some of the existing utility sites

Observations & Conclusions: Amenities & Socio-Cultural facilities

- Lack of convention/ exhibition facility for large scale events
- Relocation of existing Police Stations
- Up-gradation, relocation of existing public facilities
- Lack of airport related, high profile cultural, retail, entertainment facilities

12. PROPOSED ZONING & LANDUSE PLAN

Proposed Landuse Plan of CSIA showcases the holistic approach required for a multidimensional large scale public infrastructure project. In view of severe scarcity of land for airport expansion along with urgent need to include contemporary airport uses, integration of scattered land parcels into a holistic contiguous integrated airport landuse plan. Proposed Landuse Plan of CSIA defines proposed airport development approach with special emphasis on ensuring increased airport security, operational efficiency and adequate land allocation for aeronautical and non-aeronautical airport uses. Also the Landuse Plan responds to the vision, objectives and functional requirements for a world class international airport and aviation hub, local context, land constraints, requisite infrastructure for expected workforce, domestic and international travelers, projected resident population etc. and expectations & aspirations of people of Mumbai.

The proposed Landuse Plan provides location, size and intensity of use of primary airport related landuses like aeronautical/ airside, non-aeronautical commercial, utilities, facilities and social infrastructure, residential (for staff), open space and transport etc. Several sub-uses and projects have been identified as part of proposed airport development like Runway, Taxiway and Apron expansion, additional aircraft parking stands, New Integrated Terminal (T2), New ATC Tower, Cargo Terminal Expansion, additional Housing for Central Airport Security personnel, Elevated Expressway, underground/ at grade/ elevated/ cut & cover Metro, expansion of roads, multi-level car parks, hospital, additional utilities, Convention Centre, performing art centre, etc.

Key objectives for successful development of CSIA in a phased manner, being outlined and addressed through proposed landuse plan & overall Interim Development Plan for CSIA are:

1. Holistic, integrated planning of CSIA as a global aviation hub, world class airport with capacity of 40 mppa with all required airside, landside, cargo and terminal facilities, to serve as Gateway to India.

2. Planning and implementation of new T2 Terminal construction by 2012, with all related roadway, utility infrastructure and enabling works on airside and landside.
3. Direct Metro connectivity to CSIA by 2015 to be planned and implemented as extension to Metro 3 line from Colaba to CSIA Sahar Terminal, via BKC.
4. Planning & development of CSIA as world class airport with state of the art infrastructure, positioned as global destination for business, tourism and travel, and as economic driver for Mumbai
5. Resolution of severe land scarcity for airport development by clearing/ rehabilitation of encroachments on approx 308.95 acres of notified CSIA site.
6. Relocation/ re-organization/ removal of some of existing land uses in view of future immediate and long term requirements, in a holistic and integrated Master Plan development.
7. Planning and implementation of drainage and utility infrastructure for overall airport development.
8. Optimization, increased efficiency and intensity in land utilization for available land area at CSIA.

The primary airport uses are planned under the following broad Landuse Zones in total notified site area of 802.03 HA (1981.85 acres) as part of Interim Development Plan for CSIA are:

- **Aeronautical Zone:** Aeronautical Zone is planned to provide all required aviation infrastructure to enable ultimate passenger capacity of 40 mppa and 1 million tonnes of cargo handling per year. Aeronautical Zone is high security area, with controlled access and shall include principal uses like Runways, Taxiways, Aprons, parking stands, Terminals (inclusive of all required uses, sub uses within it), Hangars, Security Offices & installations, Cargo terminals, etc. with related and dependent aeronautical uses.
- **Non-Aeronautical Zone:** Non-Aeronautical Zone is planned to offer all required social infrastructure, facilities, major airport access roads, Metro connectivity & stations, parking, MLCPs, commercial, institutional, entertainment, convention, hospitality, retail, health & related landuses to sustain and support expected inflow of 40 mppa of domestic and international travelers, VVIPs, VIPs, employees, staff, employees and all airport users.
- **Aeronautical/ Non Aeronautical Zone-1:** The Aeronautical/ Non-Aeronautical Zone 1 shall consist of area which may be used for the existing, operational or aeronautical uses. The land under this zone is not encroached and is under MIAL possession and shall available for development post redevelopment of these lands. This shall ensure requisite flexibility in airport development for future and the said classification shall assist in addressing emerging airport needs in future.
- **Excluded Portion (E.P.):** The encroachments/ slums in Notified Area surround existing airport development at CSIA and are a severe constraint for contiguous, efficient, secure and holistic airport development. The said CSIA land area is needed to implement airport infrastructure projects, in phases. MIAL, under MMRDA as nodal agency, has proposed & initiated rehabilitation programme for inhabitants in the said encroached area/ slums. The proposed rehabilitation programme is expected to be implemented in phases. Interim Development Plan for CSIA limits planning intervention in-currently encroached areas to only few pockets approx. 42.15 Ha (104.11 acres). This area of 42.15 Ha is included in the Aeronautical Zone and the remaining area under encroachments outside Aeronautical Zone is indicated as Excluded Portion (E.P.)

Broad Landuse Zones				
Sr. No.	Land Use Zone	Area In Hectare (Approx.)	Area In Acre (Approx.)	Percentage
1	Aeronautical Zone **	533.83	1319.07	66.55%
2	Non-Aeronautical Zone	165.93	410.03	20.69%
3	Aeronautical/ Non Aeronautical Zone-1	19.39	47.91	2.42%
4	Excluded Portion (E.P.)	82.88	204.99	10.34%
	Total	802.03	1981.85	100.00%

** inclusive of Green belt and 42.15 Ha (104.11 Acres) of currently encroached land

The proposed airport landuse pattern for development for entire CSIA is intended to be an integrated, contiguous development wherein a holistic transportation, utility and social infrastructure framework along with open spaces are pooled and integrated together in a common spatial physical structure, with segregation of vehicular and pedestrian movements as far as possible. This is aimed at achieving higher land utilization efficiency, increasing landuse intensity with adequate open space, improving the quality of environment, providing required airport facilities for common public use with minimum disruption and offering holistic live-work-travel experience. The proposed landuse in above mentioned broad landuse zones are as follows:

Proposed Landuse				
Sr. No.	Land Use Zone	Area In Hectare (Approx.)	Area In Acre (Approx.)	Percentage
1	Aeronautical **	533.83	1319.07	66.55%
2	Non-Aeronautical	53.88	133.14	6.72%
3	Residential	16.61	41.03	2.07%
4	Utilities	8.58	21.20	1.07%
5	Social infrastructure / Facilities	8.09	20.00	1.01%
6	Recreational Green & Open space	34.77	85.92	4.34%
7	Roads & Parking	45.91	113.46	5.72%
8	Existing and Operational/Aeronautical	17.48	43.19	2.18%
9	Excluded Portion (E.P.)	82.88	204.99	10.34%
	Total	802.03	1981.85	100.00%

** inclusive of Green belt and 42.15 Ha (104.11 Acres) of currently encroached land

The total current work force is 40,000 spread over entire CSIA notified area out of which approx. 11,000 persons employed in Non-Aeronautical functions. Based on industry norms for various proposed uses & development mix, total employment in non-Aeronautical functions is expected around 1,04,030 persons. The projected total workforce is 1.58 lakhs including aeronautical, non-aeronautical & employees from supportive services. Thus the the gross workforce density shall be around 197 persons per Ha for CSIA. However, as almost 85% of this workforce of 1.58 lakhs

shall be in shifts (3 shifts) due nature of operations at airport, therefore actual workforce density in CSIA area is expected to around 66 ppha.

The non-aeronautical area in existing landuse plan of CSIA is 27.41 Ha and total vacant area is 55.51 Ha. The entire vacant area at CSIA is under C2 zoning i.e. commercial. Therefore the effective actual provision for non-aeronautical area at CSIA under existing DP is 82.92 Ha. Ironically CSIA currently serves only 1.71% of its passengers, however, globally all international airports are being planned to capture minimum of 15-20% of the daily passengers. The space requirement for all airport supportive uses has been carried out based on global benchmark study, demand assessment and land availability of non-aeronautical land. The total non-aeronautical area land requirement is therefore as follows:

Activity/ Use	Area Required (in Ha)
Hospitality	32.75
Entertainment, Leisure & Retail	17.50
Offices and Commercial	12.50
Convention Centre, Cultural Arena	3.55
Hospitals and Health Care	0.93
Total non-aeronautical area requirement	67.23

Non-Aeronautical Area Land Requirement

Although the non-aeronautical land area demand is approx. 67 Ha, the proposed area for the same is 53.88 Ha as remaining area in non-aeronautical zone shall be developed for social facilities, public utilities, recreational greens, roads etc. to facilitate the functioning of these proposed non-aeronautical uses.

13. COMPARISON OF EXISTING AND PROPOSED DP RESERVATION

The total existing DP reservation area in CSIANA is around 85.60 Ha. The total area proposed for reservations under open space, social infrastructure, amenities etc. as part of CSIA Development Plan (Interim) is 217.23 HA. This shall be an increase of around 254%. The total area of existing DP reservation, on CSIA site area excluding encroachments/ hutments is 56.44 Ha. The DP reservations have not been implemented in the areas currently occupied by slums, and these reservations are therefore not available for use to public. The area provided for various reservations under proposed CSIA Development Plan (Interim) is 217.23 Ha.

The total area of existing DP reservation, in Non-Aeronautical area of CSIA (area accessible to general public) excluding area under encroachments/ hutments is 35.45 Ha. The total area proposed for reservations under open space, social infrastructure, amenities, etc as part of CSIA Development Plan (Interim) in Non-aeronautical zone of CSIA is 97.36 Ha. The proposed area is therefore substantially more than existing DP reservation area (an increase of approx 275%).

Comparison of DP Provision

Sr. No	Description of Existing DP reservation	Existing DP Reservations & Proposed Land Use in total Notified Area of CSIA (802 Ha)		DP Reservations in Aeronautical & Non-aeronautical Area in CSIA (677 Ha) excluding Encroachment		DP Reservations in Non-aeronautical area in CSIA (excluding Encroachment & Aeronautical area)		% Increase in Provision of Social Infrastructure Facilities/Amenities in total Notified Area of CSIA (802 ha)	% Increase in Provision of Social Infrastructure Facilities/Amenities in Non-aeronautical area in CSIA (excluding Encroachment & Aeronautical area)
		Existing DP reservation in total area (802 Ha)	Proposed Land Use in total Aeronautical and Non-aeronautical Area (677**Ha)	Existing DP reservation in Aeronautical & Non-aeronautical Area (677 Ha)	Proposed Land Use in Aeronautical & Non-aeronautical Area (677 Ha)	Existing DP reservation in Non-aeronautical area in CSIA (203.79 Ha)	Proposed Land Use in Non-aeronautical area (185.32 Ha)		
1	Dobhi ghat	8.107	Non compatible with Airport Development	8.107	Non compatible with Airport Development	0.000	0.000	-	-
2	Social Infrastructure	2.537	8.094	2.537	8.094	2.537	8.094	319.04%	319.04%
3	Utilities	0.155	8.578	0.000	8.578	0.000	8.578	5534.34%	-
4	Public Housing	5.580	0.000	0.000	0.000	0.000	0.000	-	-
5	Green and open space	32.584	154.641	16.051	154.641	5.566	34.771	474.59%	624.69%
6	Roads & parking	36.640	45.914	29.740	45.914	27.350	45.914	125.31%	167.87%
7	Total area in Acre	85.603	217.226	56.435	217.226	35.453	97.356	253.76%	274.61%

** Further areas to be added after possession of area under encroachment

14. PLANNING PROPOSAL

The future development in CSIA is envisaged, based on land availability, functionality, locational potential and suitability. For planning, & implementation purpose the overall site area and landuse plan of CSIA is classified under five sectors - Central Sector, Northern Sector (Sahar), Western Sector (Santacruz), Southern Sector (Kalina, Agripada, etc), Eastern Sector (Kirol, Kurla).

The broad landuse zoning and sub-zoning strategy for the development of CSIANA broadly addresses the following major goals:

1. Tapping the opportunity of restructuring the airport development pattern for efficient functioning and infuse the area with a required land uses that ensures sustainability, relevance, vibrancy and caters to the growing needs of all airport users.
2. Address the existing deficiencies identified in terms of accessibility, traffic, pedestrian movement, location/size of airport support facilities, landside airport facilities, parking's, etc.
3. Improving the environmental conditions of the area by channelizing the major drains, and proper drainage planning, with focus on water harvesting and recycling of water, connecting

various uses with pedestrian and transit links that reduce demand on construct road infrastructure.

4. Feasibility and flexibility of proposed plan to be implemented in phases due to existing encroachments on significant part of CSIA site area. Landuse planning to ensure integration of sequential airport development, in phases as per land availability.
5. Integration of segregated airport land pockets sites in terms of common utility distribution for the purpose of integrated and optimized resource and land utilization. Focus on environmental sustainability through rain water harvesting & recycling of waste water.
6. Establishing and ensuring seamless functional relationship between airside development, Terminals and landside development. The landside of the terminals is very crucial in terms of landuse as all the major airport facilities required for the passenger handling, passenger movement, smooth transfer of air passengers, car parks and other airport users take place in this sector. Therefore, the terminals thrust an over whelming effect in shaping the landuse of the area towards the landside.

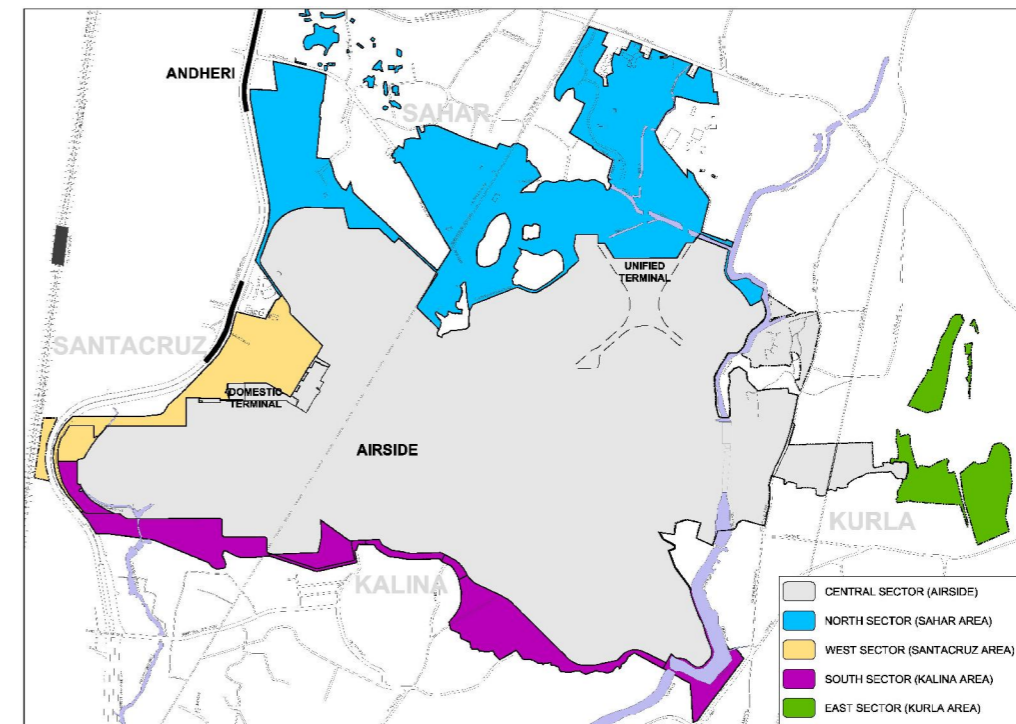


Figure-2: Planning Sectors in CSIANA

The details of planning proposals for each of the said sectors/ areas are as under:

Central Sector

Central Sector shall cover an area of approx 533.83 Ha. (1319.07 acres) and is designated for Aeronautical uses as a part of Interim Development Plan. Planning proposals in this Sector conform to the requirements of DGCA, ICAO, and AAI guidelines as applicable and are being planned and implemented by MIAL as per the provisions of Master Plan submitted to AAI and MoCA. The total area of Central Sector as part of Interim Development Plan, excluding existing encroachment / slum area admeasures approx. 491.68 Ha (1214.96 acre). This sector shall be the largest in CSIA site area covering approx 61.30 percent of total CSIA notified area. From the overall site level global FSI of 1.0 applicable on total notified area of CSIA a share of FSI is apportioned for Central Sector. Total FSI requirement within Central Sector is proposed to be

approx 1.15 msqm*, including all existing and proposed developments, inclusive of Terminals 1A, 1B, 1C, new Terminal T2, Cargo Terminal, and other existing and proposed uses within Central Sector.

Planning proposals in Central Sector include the most important and prestigious project in the entire CSIA Notified area i.e. Construction of the new Common User Terminal-T2 of approximately 4 million sqft (approx. 0.4 msqm*) which is designed to handle an annual capacity of 40 million passengers (domestic and international) and is proposed for completion & operation by 2012/13. One of the important proposals for central sector is up-gradation (resurfacing & widening) of existing Runways to international standards and to meet ICAO safety requirements for the larger Code F aircraft along with relocation of ATC tower and up-gradation of ATC facility to relieve the operational restrictions. Other proposals include up-gradation of other runway safety and capacity improvements majors such as NAVAID equipment, airport lighting system, ASMGCS, GBAS etc., upgrading existing taxiways and construction of new taxiways for full unrestricted access to each runway end, including rapid exit taxiways, expansion of apron to handle the aircraft parking demands, both operational demands as well as maintenance needs, expansion and re-structuring of the existing Sahar Cargo area, development of a new R&FF facility near the existing secondary station in the domestic area.

Several ancillary proposals in the central sector include relocation/ realignment of Security Gates 5 & 6 to allow for the new CUT; development of ground service equipment (GSE) parking and support facilities; relocation of LMB Hangar, GSD, Canteen, etc; Construction of new Hangars in old airport areas; GSE area at 09 end; Airline maintenance warehouse; Construction of new hangars in the old airport (OAP) areas; GSE area for domestic airlines near the Runway 09 threshold; a 4 MLD (million liter per day) Sewage Treatment Plant for T1 (Santacruz area); New fuel facilities and an underground fuel hydrant system; re-routing, widening and strengthening of the airport perimeter road to 10 meters for airport service vehicles, maintenance, busses, and other airport-related traffic; major modifications to the drainage system to improve the operating conditions during monsoon; Construction of a utility complex for the CUT, including a 33/11 KV power substation, 10 MLD STP and a 13,800 ton air-conditioning plant, along with a diesel generator (DG) and other utility systems.

North Sector (Sahar area)

North Sector shall cover an area of approx 147.70 Ha. (364.97 acres) and is designated largely for Non-Aeronautical uses, along with Aeronautical/ Non-aeronautical uses. This zone shall include entire notified area of CSIA in Sahar, between Central Sector to south, from Western Expressway to west to CSIA site boundary on east and Andheri Ghatkopar Link Road (AGLR) on north, along with distributed lands pockets in Chakala area, as shown in Figure-2. From the overall site level global FSI of 1.0 applicable on total notified area of CSIA a share of FSI is apportioned for Northern Sector. Total FSI requirement within Northern Sector is proposed to be approx 2.35 msqm* including all existing and proposed uses within Northern Sector.

Northern Sector is proposed to have non-aeronautical uses like hospital, leisure & health facilities, tourism & travel offices/ facilities, residential service apartments/ hotels, Multi Level Car Parks (MLCPs), police station, offices, shops & retail, entertainment, cultural and performing art center etc. International Convention Center for capacity of around 8,000 to 10,000 persons is proposed on approx 7.5 acre area, along with conferencing and hotel facilities in this sector to draw international events to Mumbai, in close proximity of new T2 Terminal.

Other major proposals are construction (addition/ widening/ realignment) of a well planned network of roads along with two lane vehicular underpass at WEH which will join to six lane Elevated Airport Expressway connecting new T2 Terminal to WEH, Creation of large entrance to CSIA & T2 Terminal from WEH; Development of T2 Forecourt area to create an image/ first experience for the international & domestic passengers coming to Mumbai; Construction of underground/ elevated Metro Station for CSIA as part of Metro 3 project and a large state-of-the-art Multilevel Car Park (MLCP) for approx 5000 cars and other three MLCPs of approx.1000 ECS, 430 ECS and 549 ECS. As a part of distribution of Global FSI 1, allocation of approx 2.35 msqm* FSI including all existing and proposed uses within the sector is proposed considering development potential in various sectors. Net FSI on individual plots shall be limited to maximum of 4.0 subject to height availability as per AAI guidelines

Other supportive infrastructure projects proposed in Northern Sector include construction of two underground/ elevated stations for Metro-3, one in forecourt area of T2 Terminal connected via pedestrian link to T2 Terminal & MLCP and other underground/ elevated metro station is in IAD colony, Construction of new Sahar Police Station building, construction of new entrance with requisite security, screening facilities for expanded Cargo terminal complex at location of existing CPWD Colony, a 0.5 MLD STP, 33/11 KV power sub-station and construction of warehouse, office building with underground water storage tank; pedestrian walkways and skywalks, widening of existing drains; densification of residential development and additional number of residential quarters for AAI staff and residential development for CISF etc.

Relocation proposal include relocation of existing IOCL Petrol Pumps; existing reservation for cemetery on an adjoining plot of equal area, adjoining Marol Pipeline Road; relocation of existing power sub-station currently located on Sahar Road in IAD Colony to proposed utility plot along the northern boundary of IAD Colony area etc.

West Sector (Santacruz Area)

West Sector of CSIA shall cover an area of approx 32.82 Ha. (81.10 acres) and is designated largely for Non-Aeronautical uses. This sector shall include entire notified area of CSIA in Santacruz and Vile Parle areas, between/ around/ along Western Express Highway and the present domestic terminals known as Terminal 1, as shown in Figure-2. Also, airport property on the west of WEH is part of the said zone. As a part of distribution of Global FSI 1, allocation of approx 0.35 msqm* FSI including all existing and proposed uses within the sector is proposed considering development potential in various sectors.

West Sector is proposed to have non-aeronautical uses like leisure and hotels, tourism & travel offices/ facilities, business and conferencing facility, Air Traffic Control Tower (ATC) Multi Level Car Parks (MLCPs - approx.1250 ECS), basement car parks, police station, commercial/ offices, shops & retail, entertainment, utility provision for water and power, new integrated fuel storage facility for the airport by way of enhancing the existing storage facility and cargo etc.

Other major proposals are strengthening and up-gradation of the existing loop road to 15.0 mts wide in the forecourt area and another 15 m wide exit road is proposed through existing IOCL Fuel Station on WEH, grand entrance experience in the form of a large portal gateways, construction of service road connecting the at-grade Sahar Road (and Elevated Expressway) to Terminal 1 beyond Runway 14 end, Planning and construction of Metro Line-3 and one underground/ elevated metro station in forecourt area of Santacruz Domestic Terminal, pedestrian walkways and proposed skywalks to provide direct pedestrian movement from Metro Station to T1 Terminal, a large central landscape green area of approx 0.83 Ha (2.05 acres) in the center of T1 forecourt area surrounding the ATC tower, construction of new Vile Parle police station along with office for BCAS.

* msqm - million square meters

* msqm - million square meters

Other supportive infrastructure projects proposed in Western Sector include relocation of existing power DSS site to a location south of Runway 14, other utilities like water reservoirs for fire fighting and domestic use etc.

South Sector (Kalina, Agripada Area)

South Sector shall cover an area of approx 63.10 Ha. (155.95 acres) and is designated for Aeronautical & Non-Aeronautical uses. This sector shall include entire notified area along & outside operational boundary in the south of the airport, in Agripada, Kalina, and NACIL residential colony along the Kalina Kurla Road, covering CSIA site area between Western Express Highway and LBS Road, as shown in Figure-2. As a part of distribution of Global FSI 1, allocation of approx 0.7 msqm* FSI including all existing and proposed uses within the sector is proposed considering development potential in various sectors.

South Sector is proposed to have aeronautical and airport support uses like residential facility for airport and airline staff like CISF, NACIL (re-densification of NACIL Colony and CISF barrack accommodation), etc. and non-aeronautical uses like leisure and hotels, tourism & travel offices/ facilities, business facility, offices, shops & retail, utilities, along with residential/operational facilities for CISF, BDDS, etc.

Other proposals are widening of the existing Kalina-Kurla road to 27.45mts wide (6lane) road, up-gradation of Gate No. 8 (airport south entry), integration of segregated non-contiguous land parcels abutting Kalina-Kurla road etc. Area under the slums/ encroachments (approx 17.74 Ha) shall be used for Aeronautical/ Non-Aeronautical development post rehabilitation in this sector in next few years. Other supportive infrastructure projects proposed in Southern Sector include parking provision for General Aviation Terminal, Multi level car parking (MLCP - approx.280 ECS), STP etc.

East Sector (Kirol, Kurla Area)

East Sector shall cover an area of approx 25.29 Ha (62.49 acre), and is currently encroached by slums. This zone consists of physically segregated non-contiguous land parcels in Kurla, Kirol, Mohili and Aslapha areas on eastern part of CSIA notified area. Therefore, this Sector is currently excluded from the Interim Draft Development Plan and is shown as Excluded Portion (E.P.).

Large part of the Sector falls under the flight path, and therefore future development in this Zone shall be subject to the permissible height as per AAI guidelines.

15. IMPLEMENTATION OF INTERIM DEVELOPMENT PLAN

Mumbai International Airport Pvt. Ltd (MIAL) has been appointed by AAI under MoCA guidelines as developer for entire notified area of CSIA for 30 years, from April 2006 onwards, extendable by another 30 years, with discretion on part of MIAL. The implementation programme shall include development and construction of airside and landside works/ projects. MIAL shall also develop, construct & maintain social infrastructure facilities and all relevant airport infrastructure.

City level infrastructure services within CSIA notified area like water mains, drains/ nallahs, power lines, sewerage lines etc. are part of MCGM responsibility and shall continue to be maintained/ developed by MCGM. MMRDA as Special Planning Authority shall co-ordinate the same with MIAL & MCGM. Implementation of major infrastructure projects like Metro connectivity to CSIA, additional drainage channel for Mithi River, etc being city level projects are to be taken up for implementation by Govt. of Maharashtra and MMRDA.

The Development Control Regulations and Guidelines for CSIA have been prepared after detail study of existing Development Control Regulations of MCGM & various Nodal agencies, and with

due regard & considerations to the needs, objectives of airport development in general & CSIA development in particular. The total notified area being a single plot has been suitably considered to draw requisite benefits for expeditious airport development with world class facilities. MMRDA as Special Planning Authority shall implement the said regulations as part of Interim Development.

Implementation of critical airport infrastructure work/ projects has been initiated by MIAL and other projects shall be taken up as part of Interim Development Plan implementation from 2010 to 2013. MIAL shall raise required resources, in phases and fund proposed airport infrastructure development as outlined in the Interim Development Plan for development of airport infrastructure within notified CSIA site area and as per its obligations under its agreement with AAI. MIAL shall, in part raise resources through revenues generated from aeronautical and non-aero-nautical assets created as part of proposed development. MIAL shall for the foresaid purpose utilizes all provisions accorded to it under its agreement with AAI for development of CSIA.

Project cost for the proposed development of CSIA is approx Rs 10,000 crores inclusive of Terminals, airside and part of landside development. The project cost shall be spread over foresaid three phases of implementation. This is however excluding cost of external infrastructure like city level drains, Metro etc. Maintenance, augmentation, development of city level infrastructure networks & services and related future projects within CSIA notified area need to be funded by concerned local authorities, GoM and or concerned government and private agencies/ institutions.

Details of Projects at CSIA				
Sr. No	Major Projects	Start Date	End Date	Cost (Cr Rs)
A1	Projects			
1	New Integrated Terminal (T2) (Phase 2, w/o SE Pier)	Feb'2009	Dec 2012	3201
2	Multilevel Car Park	Jan'2010	Dec2011	270
3	T2 Elevated Expressway	Jan'2010	Dec2011	380
4	New Air Traffic Control Tower (incl. Technical block within tower)	Oct'2009	May2011	80
5	New Domestic Terminal (T1 C)	Dec'2007	Mar'2010	210
6	Up gradation of Existing Domestic Terminals (T1 A & B)	Aug'2006	Mar'08	180
7	Up Gradation of Existing International Terminal (T 2B & 2C)	Aug'2006	Mar'08	365
8	Up gradation of Existing Runways (9-27, 14-32)	Oct'2009	Jun'2011	223
9	Up gradation of Existing & Construction of New Taxiways	Nov'2007	Dec'2011	324
10	New state of art Hanger facilities (NACIL and Other NACIL facilities)	Jan'2010	Jun'2011	246
11	Up gradation and Expansion of Commercial Aircraft Aprons	Feb'2008	Dec'2012	575
12	Police Station	Jan'2010	Mar'2010	3
13	Ancillary facilities (Enabling works for Processor Terminal, LMB, CCR Buildings, General Aviation Terminal, Consolidated Rescue And Fire Fighting, Airport Management Building, Cargo Terminals, GSE, Yellow Fever Hospital Etc)	May2006	Dec 2012	377
14	Misc. and Contingencies			354
	Sub Total Projects			6788

* msqm - million square meters

A2	Technical Services & Consultancies			733
A	Total Hard Costs (A1+A2)			7521
B	Soft Cost and Other Costs			2282
	Total (A+B)			9803
C	Utilities and Infrastructure			
1	Utility Plants & Network			150
2	Roads			250
3	Landscape & Site development			100
	Total (A+B+C)			10,303

Source: CSIA

Development of CSIA is one of the largest and most complex infrastructure development projects. The complexity of planning and implementation for this project is further accentuated as the entire airport has to be operational during the period of up-gradation and development. Proposed development and implementation works shall involve co-ordination with several local agencies to ensure synergy in effort and resource utilization, and fast decision making. MMRDA as Special Planning Authority may serve as nodal agency for assisting in plan implementation for expeditious implementation of this project. Implementation of proposed Development Plan for CSIA shall require assistance and support of several state authorities and agencies like Office of Collector, MCGM, Mumbai Traffic Police, PWD, MPCB, etc.

16. ENVIRONMENTAL MANAGEMENT & STRATEGY

The strategy for environmental up-gradation and sustainability of CSIA is based on improvement of existing physical condition and implementation of sustainability majors like green technology, long term planning, construction of requisite infrastructure and regular maintenance. This shall be implemented/ enforced by constructing green buildings, storm water disposal, recycling of sewage/ waste water system, rainwater harvesting, introducing public mass transit system, encouraging pedestrian friendly atmosphere, solid waste disposal system etc. In 2007, MAIL received MoEF approval for CSIA development vide letter No. 10-5/2007 IA-III, dated 03.04.2007 for Phase-I and Phase-II (work up to 2015), inclusive of terminal developments, runway, ATC Tower, apron expansion, parking development, STPs, etc. Extension of said approval for balance/ additional development work at CSIA shall be requested from MPCB/ MoEF.

As a part of environmental strategy for CSIANA, the annual storm water stagnation & flooding conditions are proposed to be improved through appropriate formation of land and augmenting drainage system. Drainage proposals for widening of existing major drains has been proposed and finalized for integration with MCGM's Storm Water Drainage proposals under BRIMSTOWAD for this area. Proposal for additional drainage channel beyond runway 09/27 for augmentation of Mithi River discharge has been prepared and is in final stages of discussions with MCGM and MMRDA. Underground sewerage network with energy effective sewerage treatment plants for 90% recycling of waste water is proposed in CSIANA. Recycled waste water shall be used for non-potable purposes like flushing, cleaning, landscaping, washing, etc. leading to considerable saving in water demand. Rainwater harvesting system also is proposed in the form of large water bodies as part of landscape planning of CSIA. The harvested water shall be stored, aerated & used for non-potable purposes like flushing, cleaning, landscaping, washing, etc. leading to considerable saving in water demand.

With vision to offer green urban landscape, large part of overall notified area of CSIA shall be developed as green open spaces with provision for recreational facilities, local species of vegetation etc with due regard and provisions in detail planning and design to avoid bird menace. As part of environmental strategy use of plastic bags, inorganic disposable packaging materials at various locations like terminals, hotels, cargo area, etc shall be controlled, discouraged and premium charged on its use. MIAL is planning for a detailed mechanism for management of organic & inorganic aviation solid waste in the CSIA i.e. the collection, transfer & its treatment (recycling/ land filling) outside the city.

Planned, high speed, high volume Mass Rapid Transport System (MRTS) in the form of Metro Rail connectivity (Line 3) shall not only provide relief to commuters on this section and offer much needed airport connectivity, but shall lead to positive environmental impact at city and CSIA level. As part of environment strategy for CSIA, as well as transportation proposals of Interim Development Plan for CSIA, elevated walkways and skywalks are proposed in several locations connecting all major activity nodes at the airport, linking airport terminals and all airport facilities to one-another and finally leading to Metro 3 & Metro 1 stations, bus stops, etc.

The said environmental strategy shall extend to formulation of sustainable revenue model for overall utility infrastructure within CSIA notified area. Incentives for future occupants to adopt green building principles, innovations leading to optimization in energy, water demand are proposed as a part of overall strategy for environment management.

Draft development plan of CSIANA is a balanced approach in planning & designing a special infrastructure project like airport which shall become a benchmark at international level for its holistic/ integrated planning and it shall not only serve as an interface for international & domestic travelers but also shall become a destination for Mumbaikars.