Project Pre-Feasibility Report for Airport Expansion

Towards Application for Environmental Clearances

April, 2016

GMR Hyderabad International Airport Limited

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Key Abbreviations Used

ATM	Aircraft Traffic Movement
AAI	Airport Authority of India
AERA	Airports Economic Regulatory Authority
BHS	Baggage Handling System
CISF	Central Industrial Security Force
CUSS	Common Use Self Service
CAGR	Compound Annual Growth Rate
DFMD	Door Frame Metal Detector
ETD	Explosive Trace Detection
FY	Financial Year
FSI	Floor Space Index
GAL	GMR Airports Limited
GHIAL	GMR Hyderabad International Airport Limited
HVAC	Heating, Ventilating, and Air Conditioning
HBS	Hold Baggage System
HASSL	Hyderabad Airport Security Services Ltd
IFL	Interest Free Loan
IATA	International Air Transport Association
LOS	Level Of Service
MARS	Multiple Aircraft Ramp System
MPPA	Million Passengers Per Annum
MoCA	Ministry of Civil Aviation
NM	Nautical Mile
PAX	Passenger
PHE	Passenger Handling Equipment
PTB	Passenger Terminal Building
PHP	Peak Hour Passenger
PIF	Project Information File
RGIA	Rajiv Gandhi International Airport
RAB	Regulated Asset Base
SHA	Security Hold Area
Sq. m or Sqm	Square Meter
SOP	Standard Operating Procedure
TXY	Taxiway

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1.0 Executive Summary

GMR Hyderabad International Airport Limited (GHIAL) was incorporated on December 17, 2002 to design, build, finance, operate and maintain the Hyderabad International Airport (named as Rajiv Gandhi International Airport) at Shamshabad, Telangana. GHIAL is operated and managed by the GMR Group, which holds a majority stake (63%) in GHIAL through its holding company GMR Airports Limited (GAL). Other shareholders of GHIAL are Airports Authority of India (13%), Government of Telangana (13%) and MAHB (Malaysia) Private Limited (11%).

GHIAL signed the Concession Agreement with the Ministry of Civil Aviation (MoCA) on December 20, 2004 for a period of 30 years from the Airport Opening Date (i.e. March 23, 2008). The concession is extendable for an additional period of 30 years at the option of GHIAL. The airport was constructed at a cost of Rs. 2,920 crores. It was funded by way of promoter equity contributions of Rs. 378 crores, debt of Rs. 2,120 crores and state government support by way of an Interest Free Loan (IFL) amounting to Rs. 315 crores and Grant of Rs. 107 crores.

The airport presently has a passenger capacity of 12 MPPA and cargo handling capacity of 1,00,000 MTPA. Passenger traffic has grown from 6.2 mn passengers in 2008 after the airport opened, to 10.5 mn passengers in 2015 (CAGR of over 9%).

As we are nearing the design capacity of 12 MPPA, it is pertinent to go in for expansion since operations and passenger experience are typically impacted by passenger throughput during peak hours (PHP). The Concession Agreement also mandates HIAL to ensure that prescribed quality standards are consistently maintained during the tenure of the Concession.

In this Prefeasibility Report, it has been proposed to expand the terminal and associated facilities to augment passenger processing capacity in order to meet the demand of the projected traffic growth. Post the proposed modular expansion, RGIA would have the capacity to handle around 25 MPPA from the current design capacity of 12 MPPA. The projected pax traffic for FY25-26 is 26.16 million and the proposed expansion is expected to meet traffic demand till 2024-25.

2.0 Introduction to Project

2.1 Background

Rajiv Gandhi International Airport (RGIA) (IATA: HYD, ICAO: VOHS), serves the metropolis of Hyderabad located at Shamshabad, about 22 km (14 mi) south of Hyderabad.

Named after former Prime Minister of India, Rajiv Gandhi, It replaced the former international airport at Begumpet and commercial flight operations began on 23rd March 2008. Rajiv Gandhi International Airport is the second public-private partnership venture after Cochin International Airport. Its Domestic terminal is named after former CM of united Andhra Pradesh Late NT Rama Rao. In 2013–14, it was the sixth busiest in India by international and overall passenger traffic.

The airport features as the top among Indian airports for Airport service quality. The Airport has been among the Top 3 Airports globally on Airport Service Quality. It serves as a hub for SpiceJet regional service and is well connected for air cargo with operations by- Lufthansa Cargo, Turkish cargo, Qatar Cargo, Cathay Pacific Cargo and Blue Dart Aviation. The Airport is also a major connecting city in the network of Indigo, Air India and Jet Airways.

2.2 Identification of Project and Project Proponent

2.2.1 Project Proponent

RGIA is owned & operated by GMR Hyderabad International Airport Limited (GHIAL) which is a joint venture company, promoted by the GMR Group (63%) in partnership with government of India (13%), Government of Telangana (13%) and Malaysia Airports Holdings Berhad (11%). The Company was incorporated to design, finance, build, operate and maintain a world class Greenfield airport at Shamshabad, Hyderabad. The project is based on the Public Private Partnership (PPP) model and is structured on a Build, Own, Operate and Transfer (BOOT) basis.

The airport which was commissioned in a record time of 31 months has capacity to handle 12 million passengers (mppa) and 100,000 tons of cargo per annum in Phase IA. The Project has the flexibility to increase the capacity to accommodate over 40 Million Passenger per annum (MPPA) and shall be developed in a phased manner.

2.2.2 Identification of Project

The airport has best in class facilities and infrastructure compatible with International Civil Aviation Organization (ICAO) standards and practices to handle largest of aircrafts and International traffic. The integrated domestic and International terminals have 117,000 m^2 floor space, 12 contact boarding bridges, 10 bus gates, 96 Common User Terminal Equipment (CUTE) including 10 self-check-in kiosks (Common User Self Service- CUSS) and 46 immigration counters. The airport also incorporates modern IT systems like Flight Information Display Screens, Baggage Handling System (BHS) and uses Airport Operational Database (AODB) technology for the first time in India. RGIA is the first Indian airport to have the Airport Operations Control Centre, the nerve center for all coordination within the airport.

The modular integrated Cargo facility spread over 14,330 sq.mt with has the capacity to handle 100000 MT annually. However, it has sanctioned capacity of 3,00,00 TPA. There is an exclusive apron adjoining it that can accommodate Code-F aircraft.

GMR Hyderabad International Airport Limited (GHIAL) is planning to develop an Airport City in its vicinity. It will have a unique concept of integrated ecosystem covering activity centers like education, healthcare, leisure & entertainment, sports, hospitality and offices. This high-end Airport City will focus on sustainable development using Green Technologies and new generation digital infrastructure along with quality physical infrastructure. The Airport City will also house aero related economic activities like logistics and Aero-SEZ. Some of acclaimed accomplishment during last few year are listed for facilitating the Airport city development are listed below:

- GHIAL had formed a joint venture with Malaysian Aerospace Engineering (MAE) and developed India's first of its kind MRO facility. This can provide maintenance services for B737-NG Series, A320 Series and ATR 42/72 Aircraft.
- GHIAL and Airports Council International , (ACI World) Geneva, have signed an agreement for the appointment of GMR Aviation Academy as a Global Training Hub for the Asia Pacific region. The Academy has started offering varied courses.
- GMR School of Business was established at RGIA in 2013 by GMR Group with the partnership of Schulich School of Business (York University), Toronto, Canada - it offers two years full time MBA course, accredited by AICTE, India.

2.3 Achievements

RGIA was rated consistently among the Top 3 ranked Airports in the world in the 5-15 million passengers per annum category in Airport Service Quality by Airports Council International for 2009,2010, 2011, 2012 & 2013. It also bagged the SATTE-2012 award for the "Best Performing Domestic Airport" in the aviation sector, SKYTRAX award for India's 3rd Best Airport, 2012 and the "Certificate of Merit" award 2011 for energy conservation from Ministry of Power, Government of India on December 14, 2011.

RGIA is also the first airport in the world to get the Leadership Energy and Environment Design (LEED) 'Silver' rating for its eco-friendly design.

For enhancing the quality of life in the communities living around the RGIA, GMR Varalakshmi Foundation, the CSR wing of the GMR Group has won the ORBIS award, and the TERI Award. RGIA has bagged the prestigious award, 'FICCI CSR Award 2012-13', for its CSR initiatives by FICCI Aditya Birla CSR Centre for Excellence. It also received the prestigious ASSOCHAM CSR Excellence Award 2012-2013.

RGIA was awarded the 'Sword of Honour' in 2013, in recognition of its effective implementation of Occupational Health & Safety Management Systems from the British Safety Council (BSC) for health & safety works at the airport. It also bagged the prestigious Airport Marketing Award 2013" from Center for Asia Pacific Aviation (CAPA) for airports under 15 mppa across the world. Air Cargo Association of India (ACAAI), during the occasion of 40th Annual Convention held at held at Jaipur in October, 2013, awarded Rajiv Gandhi International Airport "Best Cargo Airport of the year.

The Rajiv Gandhi International Airport at Hyderabad is well set to establish the city prominently on the global aviation map, thereby contributing to the prosperity, growth and all round economic development of the region.

2.4 Need for the Project

2.4.1 Traffic Growth at RGIA

The Rajiv Gandhi International Airport (RGIA) has witnessed strong passenger traffic growth over the past decade:

	2009A	2010A	2011A	2012A	2013A	2014A	2015A	CAGR
Domestic	4.7	4.8	5.8	6.7	6.3	6.4	7.8	9.0%
International	1.6	1.7	1.9	1.9	2.1	2.4	2.7	9.7%
Pax (mn)	**6.2**	**6.5**	**7.6**	**8.6**	**8.4**	**8.7**	**10.5**	**9.1%**
Domestic	69	67	69	86	75	71	76	1.7%
International	12	14	14	14	16	17	18	7.2%
ATMs ('000)	**81**	**81**	**83**	**100**	**91**	**88**	**95**	**2.6%**
Domestic	23.9	29.4	36.4	34.5	33.6	37.4	43.9	10.7%
International	33	37.1	44.4	47.0	50.4	52.8	58.9	10.2%
Cargo ('000MT)	**56.7**	**66.5**	**80.8**	**81.5**	**84.0**	**90.2**	**102.7**	**10.4%**

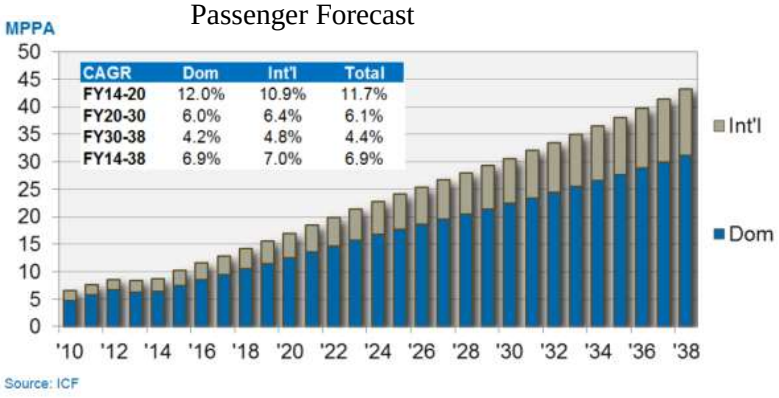
RGIA outpaced the growth seen in the Indian Aviation Sector viz. as compared to around 8% CAGR of passenger growth seen in the Indian Aviation sector, the passenger growth at RGIA has been over 9% during the period FY09-FY15. Additionally, RGIA reached two traffic-related milestones in 2015, by servicing over 10 mn passengers (83.3% of its design capacity) in a fiscal year.

2.4.2 Projected Traffic Growth

India is one of the fastest growing aviation market in the world and is poised become the world's third largest aviation market by 2030. As per Boeing, India will add approx. 1600 new aircraft in the next 20 years which is around four times the current scheduled airline fleet in India. Several policy reforms and other measures are being undertaken by the government of India to accelerate the growth of aviation in India. As a result, several new domestic airlines have been allowed to operate scheduled service in India. Also, International airlines, encouraged by the strong and steady growth in international traffic to/from India, are keen to expand their presence in the market. Additionally, the recent E-visa scheme launched by the GoI is expected to give a major boost to inbound tourism in India and is already showing encouraging results since its launch in October 2014.

This growth in Indian aviation is expected to generate significant demand for the aviation infrastructure and resources available in India. In line with the macro environment trend, the traffic at Hyderabad Airport is also expected to show strong and sustained growth in the future.

The unconstrained forecast for Hyderabad as per SH&E report is 43 mn total passengers by 2038, at a CAGR of 6.3% from 2015. (in Million Passenger Per Annum)

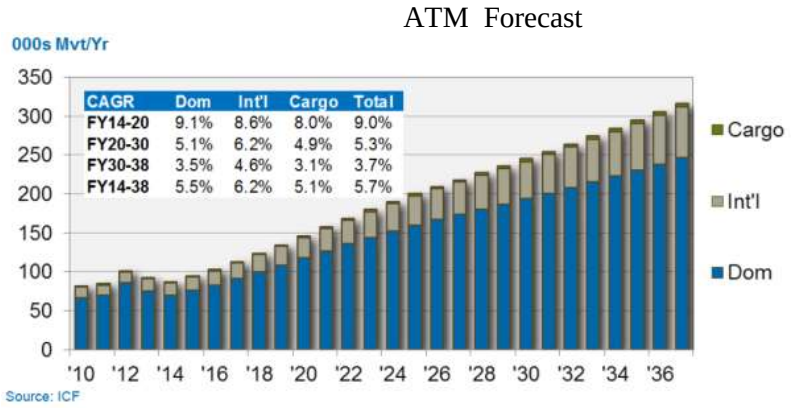


FY Year	Domestic	Intl	Total
2010-11	5.70	1.87	7.57
2011-12	6.70	1.88	8.58
2012-13	6.29	2.08	8.37
2013-14	6.36	2.37	8.73
2014-15	7.78	2.73	10.51
2015-16	8.83	3.06	11.89
2016-17	9.81	3.39	13.20
2017-18	10.83	3.74	14.57
2018-19	11.89	4.10	15.99
2019-20	12.99	4.49	17.48
2020-21	14.11	4.88	18.99
2025-26	19.34	6.82	26.16
2030-31	21.438	7.821	29.259
2035-36	26.536	9.933	36.469
2037-38	31.231	11.923	43.154

Figure 1: RGIA passenger traffic Forecast

It is expected that average aircraft sizes and load factors will increase over time. This results in a slightly lower growth rate in ATMs than in passengers, averaging 5.3% over the forecast period, reaching 327,000 annual movements by 2038.

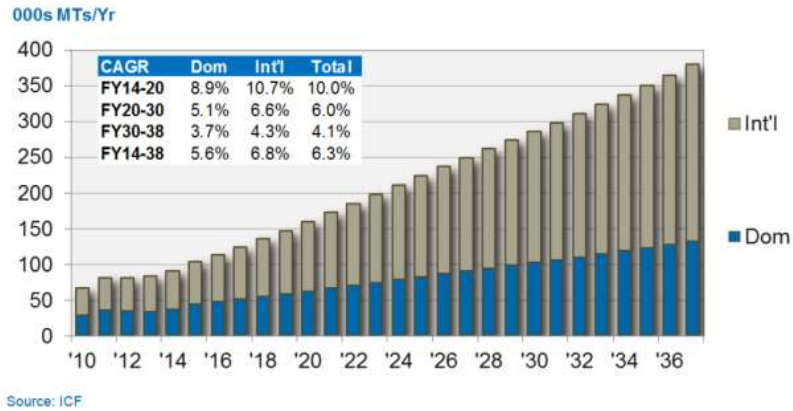
(in '000 Movements/ Yr)



FY Year	Domestic	Intl (incl.)	Total
2010-11	69	14	84
2011-12	86	14	102
2012-13	75	15	91
2013-14	70	16	87
2014-15	76	17	94
2015-16	83	18	103
2016-17	91	20	113
2017-18	100	22	124
2018-19	109	24	135
2019-20	119	28	147
2020-21	128	31	159
2025-26	168	43	211
2030-31	187	46	236
2035-36	223	57	284
2037-38	255	68	327

Figure 2: RGIA ATM traffic Forecast

It can be seen from the table above that ATMs reach 159,000 in 2020-21 and 327,000 by year 2038-39. Similarly, the airport will service over 26.16 mn passengers in 2025-26, and 43.15 million by 2038-39.



FY Year	Domestic	International	Total
2010-11	36	44	80
2011-12	34	47	81
2012-13	34	50	84
2013-14	37	53	90
2014-15	44	60	104
2015-16	47	66	113
2016-17	51	73	124
2017-18	55	81	136
2018-19	58	89	147
2023-24	79	132	211
2028-29	99	176	275
2033-34	119	218	337
2037-38	137	258	395

Figure 3: RGIA Cargo Forecast

It can be seen from the table above that ATMs will exceed 100 thousand in 2015-16, 191 thousand in 2023-24 and 327 thousand by year 2038-39. Similarly, passengers will reach 15.523 million in 2018-19, 22.75 million in 2023-24 and 43.15 million by 2038-39. Cargo handling will reach 102 thousand tons in 2014-15, 147 thousand tons in 2018-19 and 395 thousand tons by year 2038-39.

2.4.3 Rapid Capacity Assessment

Rapid Capacity Assessment of facilities at Rajiv Gandhi International Airport (RGIA, HYD or the Airport) was carried during September – October 2015, for ascertaining the current service level & serviceability of each of the major asset classes. The main objective of the study was to assess the capacity of the airport systems as they exist today following last seven year of majorly incident less operation, and secondly to identify the airport systems that currently limit service capacity & which will require upgradation in immediate Future.

RGIA current facility is built to cater to 12 MPPA. The highlights of the capacity assessment are

- The 12 MPPA capacity was built based on the Lufthansa Traffic projected which forecasted higher growth way back in 2008
- Current capacity assessment have been based on revised Traffic which have projected moderate to high growth taking into account the current improved socio political & economic scenarios
- Existing Airside facility (with an exception for Apron stands), will be sufficient to cater to demand for next 5 year but the Passenger terminal & landside facilities will have constrained development requirement for RGIA

This capacity assessment has used a range of methodologies, some of them empirical in nature, together with benchmarking techniques, and a range of assumptions regarding airport/airfield efficiencies and target load factors. The study reviewed the airfield, gates and stands, passenger terminal, cargo terminals and other main facilities at RGIA. The ground transportation system was addressed only in terms of the approach roads, rotaries, parking and the passenger terminal curbs. The main conclusions are as follows:

The Airfield Capacity

Airfield Capacity is majorly defined by Runway & Stand capacities provided it is supported by efficient taxiway system and effective operational procedures.

The major conclusions on capacity of Airfield are:

- ✈ Practical runway capacity attainable at RGIA will be at 45 mvts that relates to 6NM separations:
- ✈ Max annual service volume with 45 mvts would be 1,95,000 ATM will be reached at year 2024-25; and
- ✈ Stand capacity of 42 will be reached by 2018 as night parking demand tends toward 40 stands.

Runway Capacity Conclusions

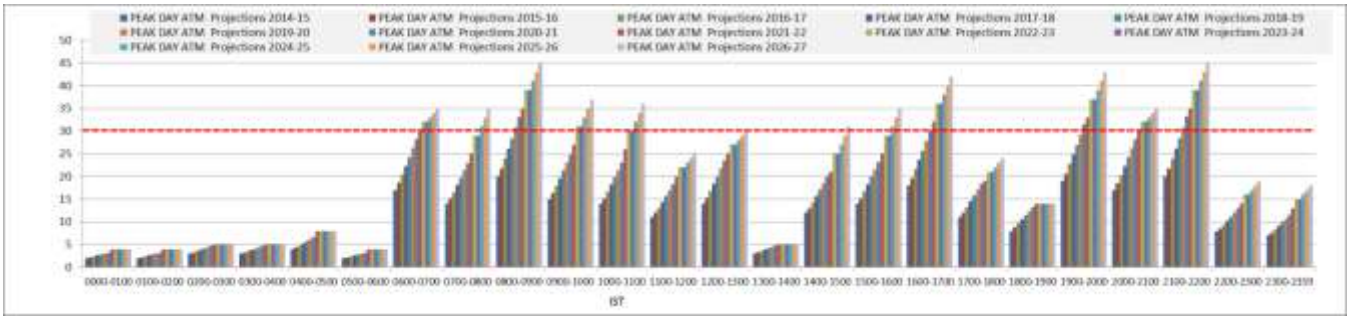
The major assumptions regarding runway capacity relate to the efficient use of airspace and the continual upgrading of technology and equipment. The efficiency that will be seen in the future, however, is beyond the control of GHIAL and resides within AAI and its willingness to adopt revised approved procedures. Although the maximum capacity of 45 movements per hour or an annual service volume of 195000 annual movements may be achieved under ideal operational conditions attainable at RGIA, but for planning purposes an hourly capacity 36 movements per hour has been taken based other current operational procedure constrains & experiences at other Indian airports like in the case of for Mumbai & Delhi. This relates to annual service volume (ASV) of about 156,000 movements which may translate to an annual passenger volume of about 21.5-22 MPPA considering a load factor of aircraft mix & load factor of about 75%. Further, it is envisaged that the given improvement to runway design at RGIA & further possibilities of optimization in approach & departure sequences in line with international practices 45 peak movement would be a near term possibilities which can enable RGIA to handle 25 MPPA traffic or more with the existing single Runway.

Table 2-I: Projection based on Runway peak Capacity

Capacity Factors	Current Peaks	Current Approved Peaks	Attainable peak movement under current conditions (regulatory & runway) with optimisation			Maximum Attainable Peak movement with runway improvements & optimisation of approach & departure procedures at RGIA			
Runway Peak Movements at RGIA	22	30	32	34	36	38	40	42	45
Attainable Annual ATM Traffic relative to Attainable Runway Peak Movement	103314	150000	156098	161905	167442	172727	177778	182609	195652
Attainable Avergae ATM /Day commesurate to Peak Runway	275-295	405-425	410-430	440-460	445-465	470-490	475-495	495-515	510-530
Daily Peak Hour spread at RGIA	6-8hr	6-8hr	6-8hr	6-8hr	6-8hr	6-8hr	6-8hr	6-8hr	6-8hr
Attainable Annual Passenger tarffic commensurate to ATM considering the Aircarft mix & average load factors at RGIA	12.5-13.5 MPPA	19-20 MPPA	20-21MPPA	21-22MPPA	21.5-22.5MPPA	22-23 MPPA	23-24 MPPA	23.5-24 MPPA	24.5-25.5 MPPA

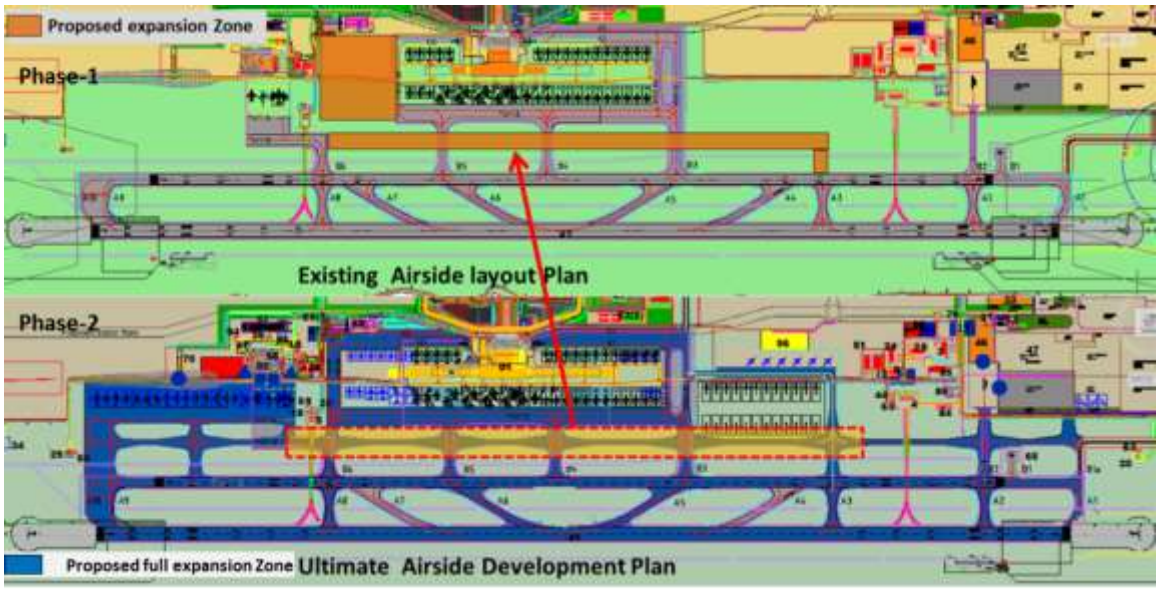
Need for Airside Expansion

Airport's Aircraft handling capacity mainly relates to Airside capacity to handle number of movement across various schedules which mainly relates to Runway & Parking stands capacities. Currently Runway has an approved peak movement capacity of 30 ATM/Hour and it is expected that the same can be optimized to attain higher peak movements. The current design and configuration of Runway system can cater to higher movements with provision of additional taxiway and exit ways provided the approach and departure procedural sequence adopted by AAI mainly with respect to aircraft Separation requirement which currently limits the peak movement.



The traffic projection indicates that the ATM's at RGIA will grow from current 20ATM/Hr to 43 ATM/Hr by 2025-26. Taking the experience at Mumbai Airport where in single runway it has been currently able to attain 38 ATM during peak hours, it is expected that the peak movement at RGIA can be optimized to meet the projected capacity requirement without additional runway.

For efficient runway operation it would require to fine-tuning the Exit/Rapid Exit taxiway along with provision of Taxiway B to a larger extent. Taxiway B will be required to be extended by 2200 m from existing Taxiway B6 to up to Exit Taxiway A3 during the first phase of development & subsequently to full extent as per the Dual taxiway configuration design of Runway to enable higher efficiencies to be attained on runway utilization.



Aircraft Stands Capacity Conclusion

The expression of the capacity of aircraft stands at any airport measured in terms of annual passengers per stand is normally used only as a benchmark for a macro-level estimate of likely stand requirements. The terms of reference for this capacity study required such an estimate to be undertaken and the results were arrived at using two different methodologies.

The first method used was benchmark techniques for airports in the region to establish a range of productivities per stand in terms of annual passengers per stand. When these are applied to the stands currently potentially available, the annual capacity has been derived at 14.4 million passengers per annum as shown below.

Figure 2-4: Maximum Stand Capacity using Benchmarking Indices

Apron Location	Code E/F Contact (Converted to Code C)	All Code E Remote (Converted to Code C)	Code D Contact	Code C Contact	Code C Remote	Total
T1 International	6	4	0	1	5	16
T1 Domestic	0	0	1	5	20	26
Totals	**6**	**4**	**1**	**6**	**25**	**42**
Annual Pax/Stand	600,000	270,000	505,000	410,000	270,000	
Total capacity (mppa)	3.6	1.08	5.05	2.46	6.75	14.40

A second method of measuring capacities involved the calculation of the number of stands required to accommodate the provisional 2014-15 winter schedule. It was determined that there would be a requirement of minimum 26 stands to handle the 10.3 million passengers per annum traffic projected for the 2014-15 year which results in an average productivity of 390,000 passengers per stand. When load factors were factored up from their present averages of 80% across domestic and international respectively stand year productive stands rose to 410,000 Passenger/Stand. When the same where considered and accounted for factoring in the stand capacity taking 42 stands the possible serviceable traffic indicated is between 16.5 to 17.2 mppa.

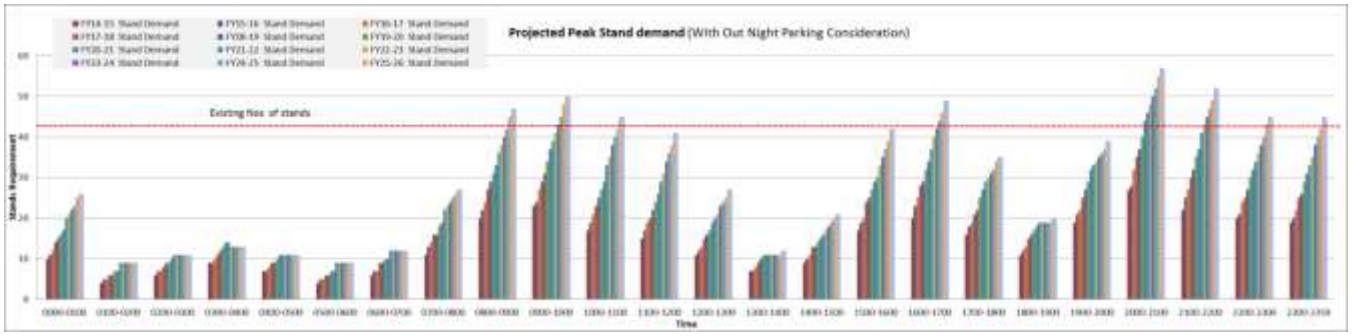
For planning purposes, the first methodology generating the more conservative capacity of 14.40 mppa has been adopted. According to the GHIAL traffic forecasts this capacity will be reached in the 2019-20 timeframe. Although the addition of contact stands would require the extension of the terminal piers, the construction of additional remote stands particularly towards the west would be a straight-forward proposition.

TABLE 2-II:: GATE CAPACITY BASED ON LOAD FACTOR ANALYSIS

Existing average Load factor (2014-15)		
International weighted avg.	85%	
Domestic weighted avg.	77%	
Total Projected Annual Passengers 2014- 2015 (MPPA)		
SECTORS	**Projected (mppa)**	**Factored to 80% for target LF**
Domestic	7.63	8.22
International	2.63	2.48
Total	10.3	10.70
Passengers per gate/stand	**394,651**	**411,538**
Maximum gate utilization (2014-15)		26
Total stands available in year 2014 (after MARS conversions)		42
Capacity considering the existing load factors		16.58
Maximum capacity of existing gates and stands (MPPA)		**17.28**

If we consider the 2014-15 summer and winter schedule and forecast the future schedule upto 2025-26 based on the traffic projection, it has been observed current 42 Apron parking stand wouldn't be sufficient to cater to traffic demand till 2020-21 even if we discount the night parking demand which is on rise at Hyderabad. By not considering night parking demand it would require minimum of 13 more stands to sustain the demand as per the projected traffic.

FIGURE 2-5: STAND REQUIREMENT PROJECTION BASED ON SCHEDULE BASED



Night parking demand at RGIA has grown substantially (current demand of about 21) and in future it is expected to grow further, as new Airlines apart from Existing one's focus more on Hubbing out of RGIA. Taking into context this trend it is expected that by 2025-26, the demand for night parking would grow significantly at RGIA as the airport attracts more airline hub operations, from current 21 to 40 more. The Night parking limits the stand availability between 11pm to 7am which also relates significantly to Night international and Early Morning domestic peak at RGIA. Taking cognizance of the same and projecting, the total stand requirement for traffic projection for 2025-26 will be 74 Apron stands, where translates to the addition of minimum 32 new Apron stands.

FIGURE 2-6: STAND REQUIREMENT PROJECTION BASED ON PROJECTED STAND OCCUPANCY & NIGHT PARKING REQUIREMENT

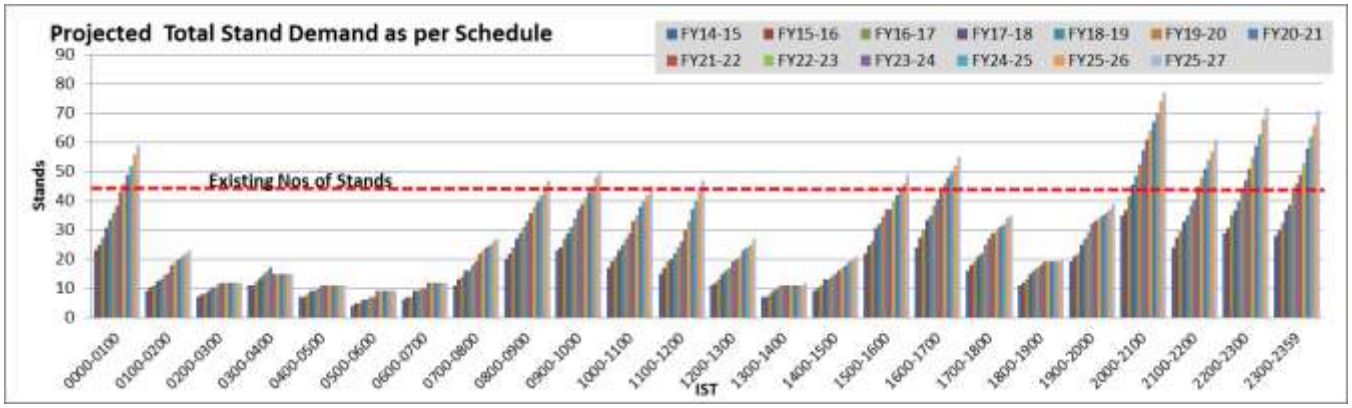
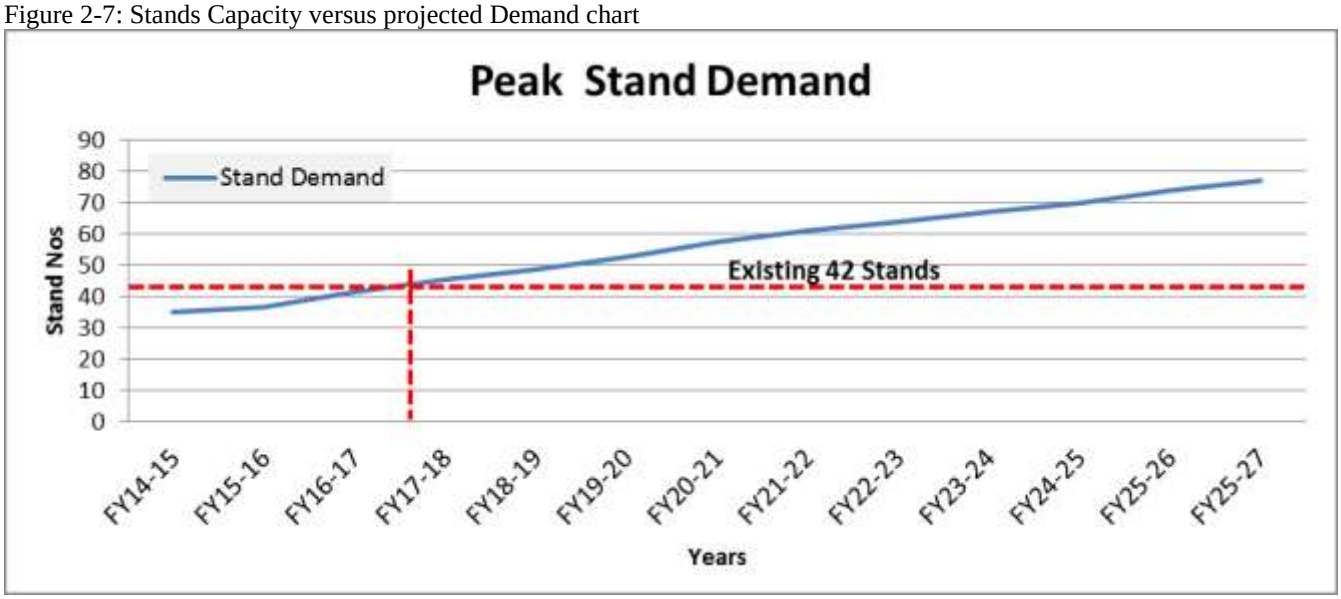


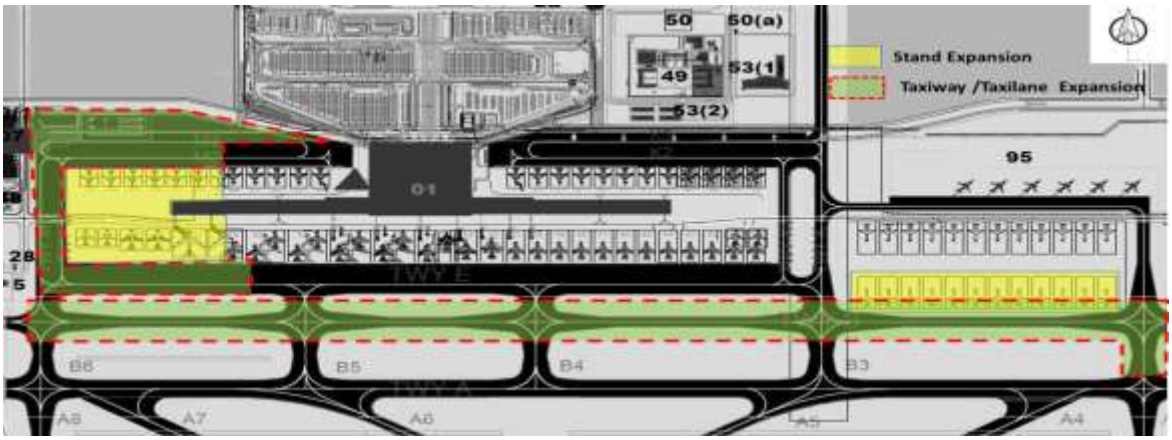
Figure 2-7: Stands Capacity versus projected Demand chart



Taxiway and Taxi Lane

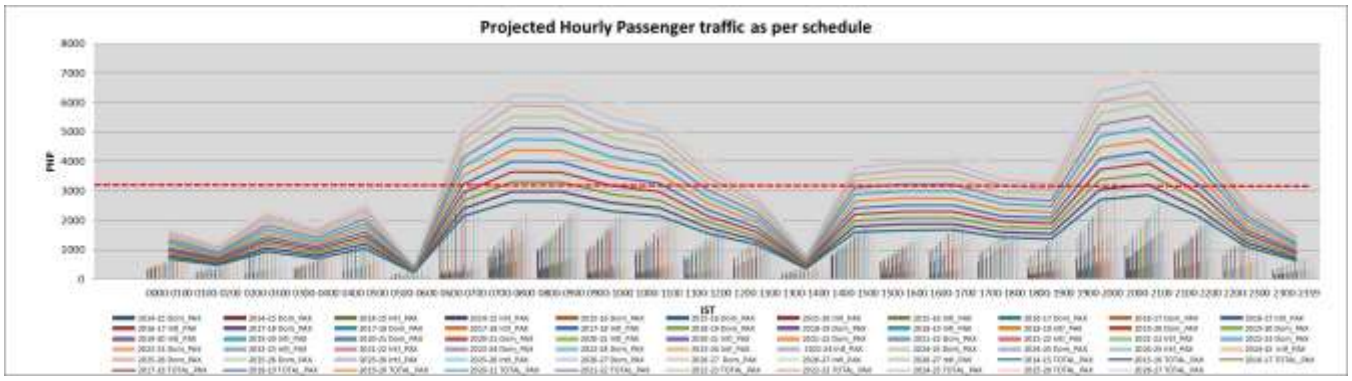
With the expansion of Airside for provisioning of 32 new stands will also necessitate provisioning of additional access taxiway for enabling the aircraft movement across the airfield. The minimum requirement to facilitate aircraft access to stands and Runway given the new provision of 10 stands will be as following:

1. Development of full extent of 4260 m Taxiway B, with first phase being Extension of Taxiway B by 2200 m, connecting B6 to A3 exits Taxiways. This should be a Code F compliant Taxiway in line with the Airfield and Runway configuration
2. Provision of dual access Taxiway (TXY-M and TXY - M1) west of Terminal and Dual Taxi Lane north of terminal (TXY-M2 and TXY-M3). This will only be Code C compliant Taxiway.

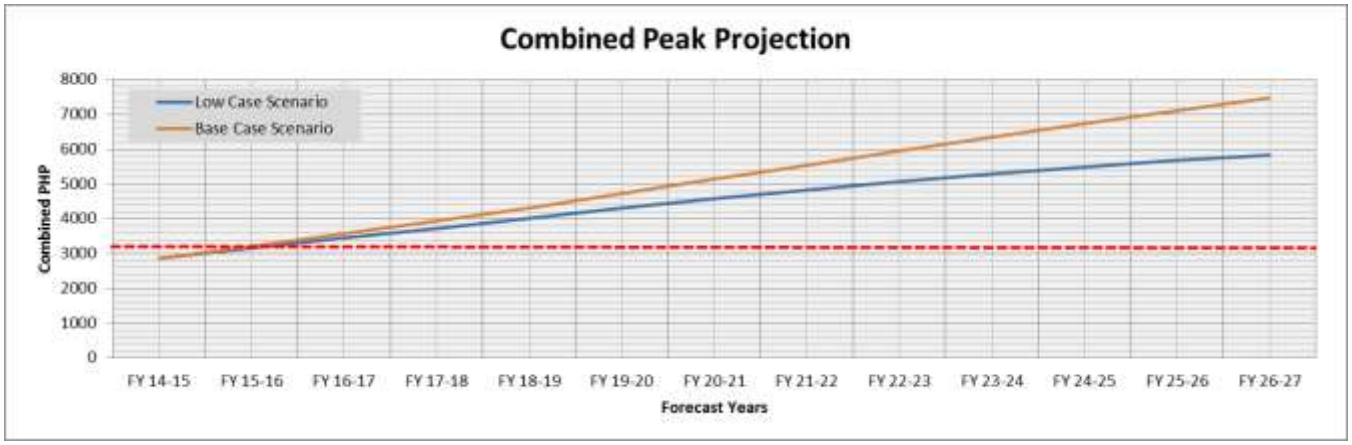


Need for Terminal Expansion

The passenger terminal presently has the capacity of 3200 PHP (peak hour passenger), while it has been observed that in 2014-15 combined PHP traffic was 2855 PHP. The utilization is thus nearing 90% of the design capacity and the same is reflected in the high congestion at the terminal as depicted by the photo gallery of Annexure II.



As per our projections, peak hour traffic will surpass the peak terminal capacity by 2016-17 and touch 7120 PHP by 2025-26. The PHP forecasts are based on the assumption that it would be difficult to achieve peak hour dispersal at RGIA given the peak slot availability. Further, flight schedules to and from RGIA during peak hours are defined based on slot availability at the destinations and sources, which are mainly metro airports. Even if we project terminal requirements on a conservative basis considering peak dispersal, the PHP traffic would exceed 3200 PHP terminal capacity in the next two years and reach 5676 PHP by 2025-26.



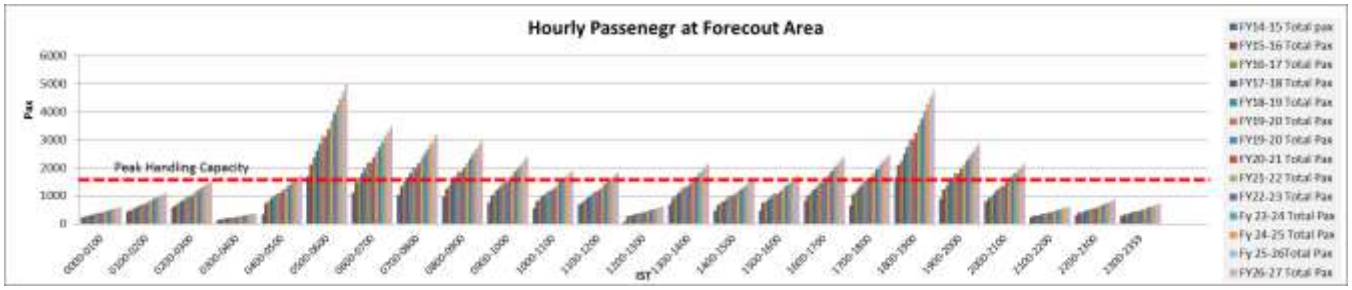
A broad study of the capacity constraints thus clearly demonstrates an urgent need to undertake expansion of the terminal building and associated facilities.

Specific expansion requirements for Passenger Terminal Building (PTB) are defined by various processor capacities and their respective upgradation requirements. These requirements are defined based on space, facilities and system capacities to handle forecasted traffic loads to sustain quality and service levels at all times. It has been proposed to expand the terminal and associated facilities to augment passenger processing capacity to handle around 20 MPPA from the current design capacity of 12 MPPA. The following sections describe the various terminal spaces, facilities and systems that impact terminal throughput.

Forecourt Capacity

RGIA Passenger terminal has a unique design wherein the approach ramp is separated from terminal entry gate by 45 m. At the Arrivals level, this space is utilized as the Airport Village. At the Departures level, passengers moving from the ramp to the terminal have to cross the forecourt through two bridges positioned across the two main access entry gates.

The projected peak hour passenger (PHP) traffic for 2025-26 is 4732 PHP. However, the current peak of 1836 PHP on the departure ramp already exceeds the forecourt handling capacity with the two bridges connecting terminal.



Projected load on approach and entry gates

As mentioned above, at the Departures level, passengers moving from the approach ramp to the terminal have to cross the forecourt through two bridges. The approaches to these two bridges are the control points where passengers are segregated from the meeters and greeters. Once the passenger crosses the bridges and approach the gate, CISF personnel screen the passenger for the validity of travel document and ID check. On random surveys it has been noted that CISF personnel take 6-

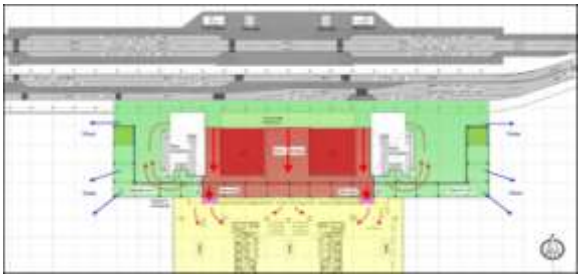
8 seconds per passenger at the entrance gates which along with the access bottleneck posed by existing bridge leads to queuing on the departure level gateways during peak hours.

The bridge connecting the PTB to ramp is 6m wide and 35m Long. If we consider the average passenger walking speed with trolley/bags of 3km/hr across the bridge it is expected that the 6m wide bridge can facilitate between 600PHP to 800PHP to cross over at any given hour. So the two existing bridges can only to cater to a maximum traffic of 1600 PHP.

Due to the access restrictions posed by the current configuration as explained above, a third access & gate to the check-in hall will be essential. Options such as widening of the existing bridges are technically not feasible due to the limitation posed by the current cantilevered bridge design. Other option such as providing entrance through extended plate is not feasible without expansion of the Terminal check-in area.

Hence, it is proposed to have a central bridge constructed in between existing two bridges along with a provision of new central entry gates has been envisaged in the interim improvement plan as illustrated in the Drawing below. This will be the only practical near term option available to ease the congestion in the departure forecourt. In the mid to long-term horizon till 2025-26, as the terminal expands by three modules, additional entry access points will be provisioned which will cater to the projected traffic demand.

Existing departure forecourt layout



Proposed departure forecourt layout

Boarding Gates Capacity

Assessment of gate capacity has been done to ascertain whether the current configuration and number provisions at RGIA are sufficient to accommodate future needs. The aircraft mix and average gate occupancy times observed at RGIA are as listed below:

Inventory of Gates available at RGIA

Aircraft Class	Gate Group	Number of Gates	Mix (%)	Mean Service Time (Min)
C	Contact	6	92.0%	60
	Bus Gates	6		30
E/F	Contact	3	8.0%	120
	Bus Gates	2		45

RGIA current Gate Configuration

Gate Type	Nos (in code 'C' Config.)	Code 'C'	Code 'E/D'
Contact	12	6	3 (Equals 6 Code C Gates)
Remote	8	6	2
Total	**20**	**12**	**5**

Gate Capacity and Demand

Gate Group	Maximum Demand	Designed Capacity (aircraft / hr)		Current Demand
	(aircraft / hr)	Contact	Remote	
'C'	**27**	**6**	12	**18.4**
	(0.92 x 30**)	(6*** x 1)	(6*** x 2)	(0.92 x 20*)
'E'	**3**	**1.5**	3	**1.6**
	(0.08 x 30)	(3*** x 0.5)	(2*** x 0.75)	(0.08 x 20*)
All in C Config.	**30**	**7.5**	**15**	**20**
* Current peak ATM is 20 Movement/Hr				
**Total allowed peak ATM (in code "c") is 30				
***Dedicated Gate for respective Class of Aircrafts (12 gate for NB operation and 3 gate for WB operation), 5 contact and 6 Remote for Domestic, 7 Contact and 2 Remote for International				

The analysis indicates that the existing gates can cater to demand of 22 ATMs/hr which is just enough to sustain current peak operations at RGIA. The projected demand in future will necessitate the addition of new gates.

Projection for Gate Requirement

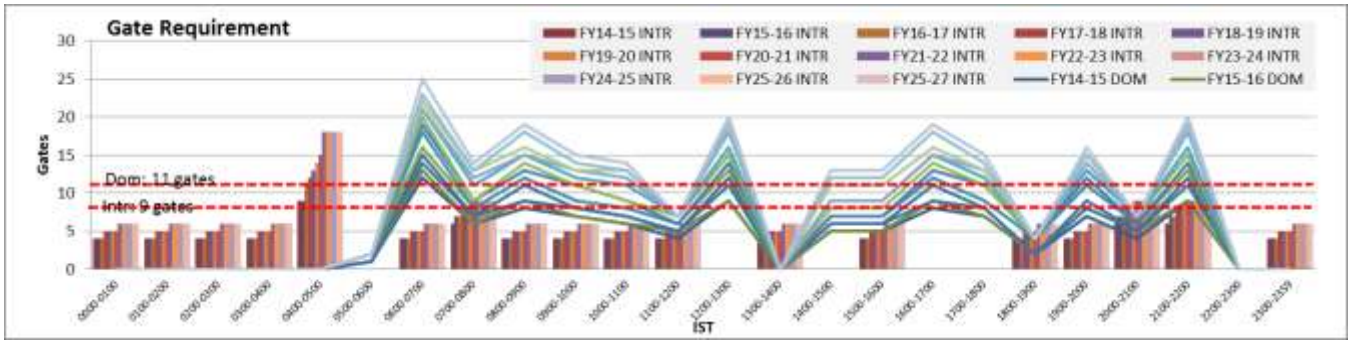
At Hyderabad, 30% of the domestic peak ATM traffic constitutes of turbo-prop aircraft which can only be catered through remote gates. The remaining 70% consists of standard Code-C jet aircraft. It has been observed that the percentage of Turbo-prop aircraft during peak is on a decline as more and more full size Code C jet aircraft are being operated by airlines during peak hour. It is expected that the mix of turbo-prop aircraft will reduce from the present level of 30% to 15% of the total peak ATM traffic. This will result in exponentially growth of demand for contact stands in near future. This trend can also collaborated with demand for parking of turbo-props versus full size Code-C jet aircraft at Hyderabad coming down from 55% of total demand in FY 2008-09 to present level of 29% and is expected to go below 20% by FY 20-21.

Further, to provide best in class comfort to passenger, ease of operations for all stakeholders and higher safety levels due to lower on-ground equipment on airside, it is preferable to use contact stands. In case of international traffic, aircraft mix is of standards size Code C, Code D or Code E Jet Aircrafts with all being serviced through contact gates.

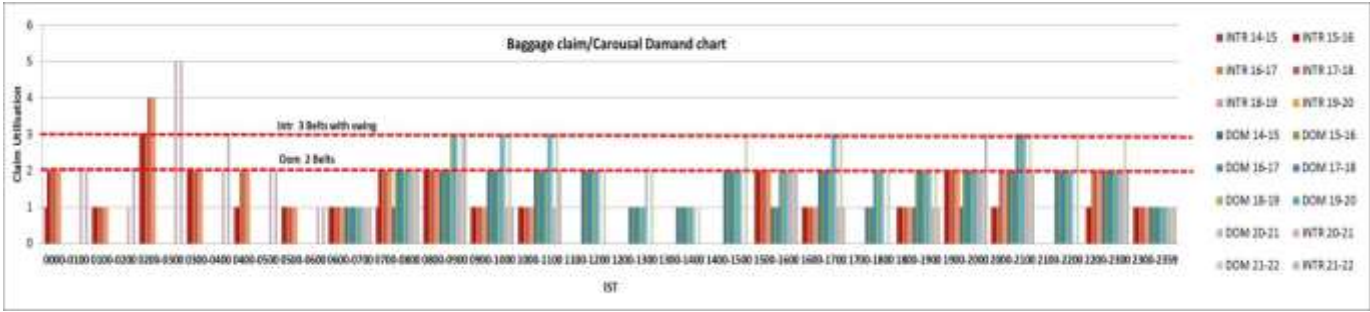
Assessment of the traffic forecasts indicates that the existing gate capacities wouldn't be sufficient to sustain traffic growth. To sustain traffic till 2025-26, we need to add 19 more contact stands (12 in Domestic side and 7 in International side). This will take overall contact gates numbers to 31 including 4 MARS stands.

Domestic and International Departure gate Capacity versus projected Demand chart

(Horizontal Red lines indicate present capacity for International/Domestic side)



For the new addition of contact and remote gates the only option available would be to expand the terminal piers linearly as stipulated by the current modular design.



Need for Fuel Farm Expansion

The Fuel Farm at RGIA has 3 fuel tanks, each of capacity 4500 KL, with a total capacity of 13500 KL. On an average, the current fuel off-take is 850 KL/day catering to a mix of 132 wide bodied and narrow bodied aircrafts. The Fuel stock available cover allows for an average of 15days off take.

The fuel off-take capacity required at airports as per good industrial practice is 8 day. Taking same off take capacity as the desired standard for RGIA, the current capacity is sufficient to cater to demand till 2017-18. But will require adding 2 more tanks to cater to the demand till 2025-26.

Table 2-III: Current Facility capacity & future tank requirement projection

Planning years	Average Fuel daily Uptake (KL)	8 Day Storage (KL)	Tank Requirement
08-09	750	6000	2
09-10	740	5920	2
11-12	940	7520	2
12-13	860	6880	2
13-14	840	6720	2
14-15	850	6800	2
15-16	997	7976	2
16-17	1111	8888	2
17-18	1231	9848	3
18-19	1357	10856	3
19-20	1491	11928	3
20-21	1628	13024	3
21-22	1766	14128	4
22-23	1901	15208	4
23-24	2037	16296	4
24-25	2170	17360	4
25-26	2297	18376	5
26-27	2421	19368	5

Note: The daily peak has demand has been calculated based on current average offtake per ATM & projected traffic as per the 2014 projection

The existing fuel farm facility at RGIA have a provision to add 3 more storage tanks of 6200kl capacities each, which can be added based on above project storage capacity requirement

Need for Airport Access Road development

- **Existing Approach roads and road network Inventory**

The main access road starts from the NH-7 and passes through the centre of the Airport site. It is approximately 8.30 km long and constructed as 4 lane dual carriageway. The carriageway configuration of the main access road consists of the following elements:

- 7.5 m carriageway on either side of median.
- 2.50 m paved shoulder on either side of Road
- 1.0 m earthen shoulder on either side of road
- 3.0 m central median

The wide median at the centre will be provided with suitable arboriculture scheme to make the overall plan for a clean and green airport.

The connections of the loop near the terminal building with the main access road have been provided with a two Rotaries for smooth transfer to and from the terminal. The alignment and profile of the main access road and all the rotaries have been designed in compliance with Indian Road Congress guidelines and the details are given in "Basis of Design" volume.

Airport Approach Road Capacity

It has been observed red from the primary traffic studies that

Load on Main Spine

- On average, **1141** vehicles entered into airport from both ends and 1074 vehicles exited from airport.
- About **60 %** of vehicles are entering / exiting from the West side gate.

The capacity has been derived based on standards defining the Urban Roads capacity as per the Indian Highways standards.

Table 2-4:- Inventory, capacity & traffic details of Main access road

Elements	Feature	Current Capacity PCU/hr	Current Requirement 2015-16 Peak Traffic (PCU/Hr)
Approach Road Capacity	2lane	2400*	1115
Exit Road Capacity	2lane	2400*	1081
*** Source - Highway Standards : Urban Roads capacity (Exhibit 2-1)**			

Exhibit 2-1:- Highway Standards

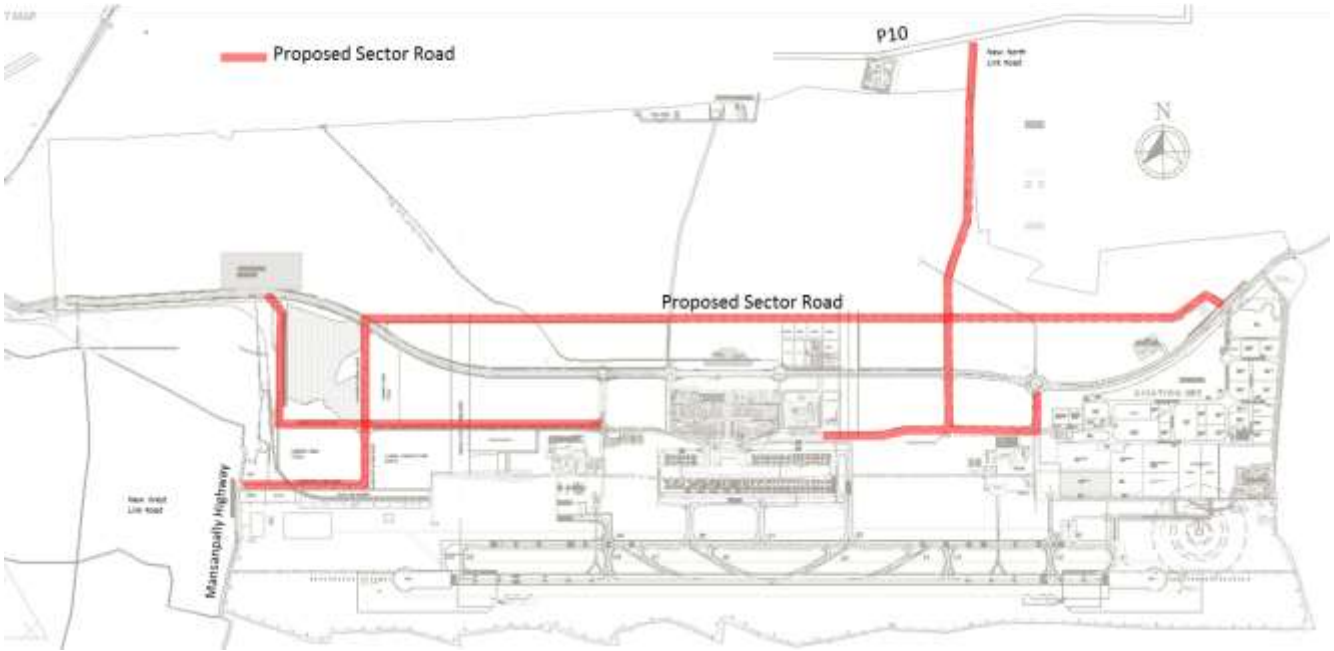
Highway Engineering 3.13 Traffic Engineering

Table 3.5 : Capacity of urban roads

No. of traffic lanes and width	Traffic flow	Capacity pcu/hr. for different traffic roads		
		(i) Roads, no frontage access, very little cross traffic and no standing cars	Roads, frontage, access, high capacity intersections but no standing cars	Roads with free frontage access, parked vehicles and heavy cross traffic
Two lanes (7.0 – 7.5)	One way	2400	1500	1200
Two lanes (7.0 – 7.5)	Two way	1500	1200	750
Three lanes (10.5 m)	One way	3600	2500	2000
Four lanes (14.0 m)	One way	4800	3000	2400
Four lanes (14.0 m)	Two way	4000	2500	2000
Six lanes (21.0 m)	Two way	6000	4200	3600

Requirement of Improvement to Airport Main Access Road

The current road capacity will be sufficient to cater to airport traffic for immediate future provided other traffic including Cargo traffic are better managed by developing alternative circulation routes. Moreover the other development including Commercial & noncommercial activities has picked up in and around Airport, and it has become imperative to develop Other new Airport link road & sector road to divert the non-passenger traffic out of Main access Road. Pertaining to same concept RGAI intent to develop Parallel loop roads connecting Main access road with new Link connecting Mansapally Highway on the west & P7 &p10 Road on the North. (Illustrated below)



Summary of Overall Capacity Requirement

The PTB building has the provision of modular expansion from its current capacity of 12 MPPA to a capacity of about 25 MPPA. In order to achieve this, the current design has provisioned sufficient building depth as this cannot be expanded in an operating airport whereas the length can be easily extended. The general sizing of PTB are based on IATA recommendations combined with experience from other airport designs, while taking into account technological trends that affect the dimensions. The PTB's exiting central building is built up of 2 x 36 m wide modules. Each module is self-contained system, comprising a Check-in island, a section of the Baggage Handling System (BHS), baggage claim carousels, plant rooms, support facilities as well as shops and offices. As the need for expansion arises 3 more modules can be added – one on domestic side, and two on the international side. The analysis in the above sections have brought out the capacity constraints as traffic inches close to the design capacity and requirements of expansion has been mapped with consistent design principles. The required expansion activities are summarized in the table below:

The analysis also clearly indicates that constrained capacity of PTB and requirement for immediate interventions to augment the existing facilities to ensure passenger comfort.

#	Process Zones	Summary of Expansion to meet 2025-26 demand
	Boarding Gates	• Additions of 19 new contact stands are proposed with 12 in domestic and 7 in international zone. This will take overall contact gates numbers to 31 including 4 MARS stands.
	Stand Requirement	• To cater to increased traffic and requirements of night parking total stand requirement as per the traffic will be 74 Apron stands, which translates to the addition of minimum 32 new Aircraft stands.
	Taxiway	• To facilitate aircraft access to proposed additional stands, cargo apron and to improve the Runway utilization will require extension of Taxiway B by 4200m, connecting B6 to A3 exit Taxiways. • Additional Provision of dual access Taxiway (TXY-M and TXY - M1) west of Terminal and Dual Taxi lane north of terminal (TXY-M2 and TXY-M3).
	Fuel Tanks	3 more tank of 6200 kl to cater to demand till 2025-26
	Access Road	Development of 14km Stretch Of sector Road

Summary of Passenger Terminal Building Capacity

Requirements	Existing	2025-26
Traffic (MPPA)	10.51	**26.16**
Peak ATM –(ATM/Hr)	20	**43**
Peak (Departure)- (Passenger/Hr)	1,836	**4583**
Combined peak (Passenger/Hr)	2,855	**7120**
Aircraft apron stands (Nos.)	42	**74**
Total contact stands (Nos.)	12	**31**

2.5 Airport development Context

This report primary focuses on the Immediate & medium term growth with an detailed outlook for the immediate short to medium term in perspective of 5-10 years to sketch out the development requirement on immediate term as well stage the subsequent developments at RGIA to sustain the growth & operational effectiveness till 2025-26, in consistent with the concession period.

3.0 Project Description

3.1 Type of Project

The said project is an expansion of terminal and associated facilities to augment passenger processing capacity in order to meet the demand of the projected traffic growth.

3.2 Location

RGIA is located at about 30 km south of Hyderabad at Shamshabad. The major access points to the airport are from the National Highway NH-7 and Outer Ring Road (ORR) from the west side and Srisailam State Highway on the Eastern side. Also a first of its kind 11.8 km long elevated expressway has been constructed and opened for traffic recently, to enable passengers to reach from the city centre to the expanded six lanes NH-7 road, and arrive at the airport within 30 minutes. Besides these, Multi-Modal Transportation System (MMTS), Metro Rail, Mono Rail Transport System (MRTS) and other alternative modes of transport are being actively explored in collaboration with the state government.

Figure 0-1: The Airport Location in relation to the City of Hyderabad

Located strategically at the geographical center of India, Hyderabad is within a two hour flying radius to all the major cities in India and a four hours radius to all the major cities in the Middle East and South East Asia. The city therefore holds tremendous potential to emerge as one of the main air travel hubs in India and the critical destination-and-transit point for travel between the East and the West. Currently, there are 15 foreign and 5 domestic airlines operating from Hyderabad which fly to over 30 domestic & 21 international destinations. In addition, Lufthansa Cargo has 3 weekly freighter services from Frankfurt; Cathay pacific has 1 weekly service from Hong Kong, 1 weekly service from Turkish airline from Istanbul & Qatar airline with 2 weekly services from Doha apart from daily Blue Dart domestic Freighter services Blue Dart.

RGIA Environmental Setting

Sr.No.	Particulars	Details
1	Latitude	$17^0$13’34" N to $17^0$15’14" N
2	Longitude	78^0 23’16" E to 78^0 27’56" E
3	Elevation above MSL	590-620 m
4	Climatic conditions (IMD, Hyderabad)	a) Annual Max. Temp: 43.0 ºC b) Annual Min. Temp: 11.8 ºC c) Annual total rainfall: 802.4 mm d) Predominant wind directions: North, West & East
5	Present land use at the Airport	Industrial & Mixed Use category
\6	Nearest Highways	National Highway no. 7 connecting Hyderabad to Bangalore at a distance of about 1.0-km from the western side boundary of the Airport. National Highway No. 765, connecting Hyderabad to Srisailam at a distance of 1.0 km from eastern side boundary of the Airport.
7	Nearest Railway Station	Umdanagar on South central BG Line from Hyderabad to Bangalore at a distance of 1.0 km in Northwest direction. Falaknuma is the nearest junction at about 9.0 km on the same line from northern boundary of the Airport.
8	Nearest other airport	Hyderabad (Begumpet) airport at a distance of about 23.0 km in north direction.
9	Nearest Town	Hyderabad/ Secunderabad (20-km, N)
10	Nearest villages	Shamshabad (NW-0.6km), Umdanagar (NW-1.0 km), Mamidipalli (E-0.5 km), from the boundary of the Airport apart from the villages.
11	Hills/valleys	Small rocky hillocks of about 50 m height are on the eastern direction at a distance of 0.8 km from the boundary.
12	Ecologically sensitive zones	No ecologically sensitive zone lies within 10 Km radius of Airport. Nehru Zoological Park which is a tourist place is at a distance of about 12 km in north direction, Kasu Brahmananda Reddy National Park-20 km N, Deer Park at Vanasthalipuram-21 km NE and Chilkur Reserved Forest - 15 km NW from the center of the Airport
13	Reserved Forest	No notified forestland is involved in the Airport vicinity. The nearest reserved forest area having scrubby vegetation is at a distance of 2.5 km from the boundary of the Airport in south direction near Harshagudem village.
14	Historical/Archaeological places	The important nearest places from Airport center are Falaknuma Palace (11 km, NE), Golconda Fort (16 km, N), Qutubshahi Thombs (15 km, N), Charminar (14 km, NE), Mahakali Temple (22 km, NE), Salarjung Museum (15 km, NE).
15	Nearest Defense and other Establishments	Defense Research Laboratory (15 km N) Research Center Imarat (9 km SE) National Police Academy (9 km N) from the Airport center
16	Major Water Bodies	Musa river (8.3 km N), Musi river (11.25 km, N), Himayatsagar (3.95 km NW), Osmansagar (12.7 km NW), Mir Alam Tank (8.6 km N), Husain Sagar (17 km N), Rawiral Cheruvu (3.5 km SE), Umdasagar (3.05 km N) from the nearest boundary of the Airport.
17	Industries/Industrial area	Several small and medium scale industries in the TSIDA Areas in 8 to 20 km radius of the Airport mainly towards north. Many Information Technology companies

3.3 Alternate Sites Considered

Since the proposed project is an expansion project, alternate sites have not been considered.

3.4 Airport Overview

RGIA is located within 5495 acres of land of which about 2000 acres has been developed toward Airport need which is mainly constituting of 1700 acres of Airside & 300 acres of landside facilities. RGIA's Airside facilities include Primary runway (2nd longest in India) with a parallel taxiway capable to function as secondary/standby runway. The Primary runway is Code-F compatible catering to largest aircrafts like Airbus A380 and the secondary/standby runway is capable of catering to Code E aircrafts. The landside mainly constitutes of modularly expandable integrated passenger & cargo terminal facilities along with access & other support facilities.

3.5 Airport Infrastructure outlook

RGIA's Airport infrastructure includes the 75m tall ATC tower (Air Traffic Control), Integrated cargo terminal, MRO (Maintenance and Repair Overhaul), CFR station (Crash, Fire and Rescue) and utilities. The airport is also equipped with latest IT systems and Airport Operational Database (AODB) technology which was for the first time deployed for Airports in India.

RGIA has an integrated Passenger Terminal Building (PTB) having modular design for future expansion and is equipped with multiple contact boarding bridges, remote stands, common user terminal equipment (CUTE), check-in desks, self-check-in kiosks, immigration counters and a transit hotel.

At the forecourt of PTB, 'Airport Village' provides ample facilities for shopping and recreation, area for 'meeters and greeters', dedicated parking facility, etc. Passenger facilities at the PTB also includes Porter Service , free Wi – Fi, Multi cuisine food court, Airport Lounges with night stay option, Children play area, Medical center, Bank/ATM, Forex, facilities for baby care, transfer assistance, etc.

Table 0-I: RGIA, Operational & Passenger broad Infrastructure Outlook

S No.	Parameter		Facilities Description
1	**IATA/ ICAO Code**		HYD/VOHS
2	**Runways**		• One of the longest runway in Asia • Primary Runway (Code F): L=4260m. Secondary Runway (Code E): L= 3707 m • Orientation: 09R/27L (Primary) & 09L/27R (Stand By) • Four Rapid Exit Taxiways
3	**Aerodrome**	ILS Category	ILS Cat I
		Elevation/Reference Temp.	617 m AMSL/39 deg Celsius
		Rescue Fire Fighting Category	CAT-9 upgradable to CAT-10 with 1 hour prior notice
		Isolation Bay	Remote stand 100
		Ground Lighting Facility	Precision Approach Runway Category – 1 for 09R/27L, Apron flood Lighting System
		Communication And Navigation Aids	• ILS CAT-I for runways 09R and 27L • ASR, MSSR, DVOR/DME, ASMGCS, VHF communication, DATIS, VDGS for docking guidance
4	**Terminal Details**	Passenger Capacity	Currently at 12mppa with ultimate design capacity of 40mppa
		Total Built-up Area (Sq. m)	• T Shaped Building having 8 floors with 2 processing levels& 2 piers each of 250m length. with a total area of 117339 m2 • LEED Silver Certified
		No of Stands/ Passenger Boarding Bridges	• 42 (12 Contact & 30 remote Stands.) • Includes 2 Code-F stands, one with Upper Deck docking capability
		Car Parking Capacity	3000 Nos.

5	**Passenger Transportation Centre (PTC)**	• Originating/ terminal stop for State Road Transport services including metro bus & long distances buses as well as RGIA Passenger free shuttles connecting locations within airport • Facilities for parking of radio taxi, prepaid taxi etc. • Has facilities for overnight passenger stay at economical rates in dormitory (both A/c & Non A/c) as well as individual room (Standard & Deluxe) formats • Other facilities include canteen serving breakfast, lunch, tea/snacks and dinner; general stores to meet passenger needs

3.6 Cargo & Free Trade Zone Facilities Outlook

Acting as a gateway to South & Central India, RGIA provides aviation link to all major International freight hubs. It is strategically located with all major Indian cities within 2 hours of flying distance and most major Middle East & South Asian hubs within 4-5 hours flying distance.

RGIA has direct freighter connectivity to major International hubs covering Middle East, Europe, Far East and South East Asia and this is being further enlarged to reach all top cargo hubs globally. Through safe, reliable and highly cost efficient road feeder service & dedicated bonded truck movements, RGIA brings air freight services to the doorstep of its customers spread across West, South & Central India.

Table 0-II: The available cargo infrastructure and facilities at RGIA

S No	Parameter	Facilities Description
1	**Cargo Facilities (Airside)**	• Dedicated Cargo apron, Code F – A 380 compatible • Cargo Facilities are adjacent to cargo terminal for quick & easy turnaround of cargo
2	**Cargo Terminal Facilities (Landside)**	• Integrated Cargo terminal that can handle 1,00,000 MTs per year (sanctioned capacity: 3,00,000 TPA) and which can be modularly expanded to handle up to 10,00,000 MTs per year at its ultimate design capacity • Integrated Cargo village with facilities for cargo handling, cargo processing, storage, customs, banking, etc. under one roof • Modular Integrated Terminal Building spread over 14,330 Sq. m with 24X7 Customs Operations • Pharma Zone – Dedicated cold storage facilities for domestic & international cargo (import & Export). • Dedicated zones with 02 to 08 degrees & 15 to 25 degrees in both non-sterile examination and sterile area for built-up ULDs with data loggers & plug points for cool containers. • Exclusive facilities for storing dangerous goods, hazardous, vulnerable cargo & Airline material. Includes Strong Room and Access control systems to check unauthorized access to the facility • Adequate docking facility, 24X7 surveillance through CCTV cameras, multilevel racking system and State of Art equipment including Dock levelers, Lift & Run system, and battery operated forklifts, high reach trucks, etc. • Dedicated facilities include Bonded Trucking, X – Ray Services, Animal Quarantine & Certification, Directorate of Plant Protection & Storage, Central Drugs Standard Control Organization, etc.
3	**Cargo Satellite Building (landside)**	• Integrated facility with total built up area of 11,983 Sq. m in 3floors • Consisting of office spaces, cargo storage/ warehousing facilities, it provides an enabling workplace for Airlines, Regulatory Agencies, service providers and cargo agents • Business Centre with required business support facilities

4	**Free Trade Zone**	• To foster & boost exports GHIAL has established India's first Airport based multiproduct 250 acres SEZ. A dedicated 20 acre FTZ is established within SEZ making it one of its kind in India and positioning it uniquely to bring down transportation costs and turn-around time for movement of goods • Facilitates re-export, re-invoice, re-sale & International trading of goods without any restriction • Ability to construct customized warehouses as per client specifications & requirements within highly secured ecosystem

3.7 Airport Inventory Listing

A detailed study to assess the current level of RGIA, including infrastructure inventory along with assessment of respective infrastructure needs. Summary inventory listing was prepared for each respective facility, based on site inspections, operational staff interaction & documentary updates available. This inventory listing contains all the airport contact details along with airside & landside facility detail. Illustrates the existing physical layout of the airport, and identifies all of the relevant landside facilities.

RGIA Airside is mainly comprised of:

- The runway and taxiway system including adjacent restricted areas.
- Aircraft Aprons designated for passenger aircraft, cargo and aircraft maintenance.
- Visual aids on runway, taxiways and aprons to secure that aircraft can operate safely on a 24 hours basis.
- Navigational aids to secure the safe operations of aircraft when approaching, landing or taking off from the airport.
- Equipment for collection of surface meteorological data to serve air traffic controllers, local meteorological services and forecasts
- Air traffic control systems such as radio communication equipment and radar systems
- Fuel Hydrant System
- Fences and gates, drainage, water harvesting, a fire drill facility, crash, fire and rescue (CFR) vehicles and other equipment related to the airside.

The landside at RGIA comprise majorly of the following :

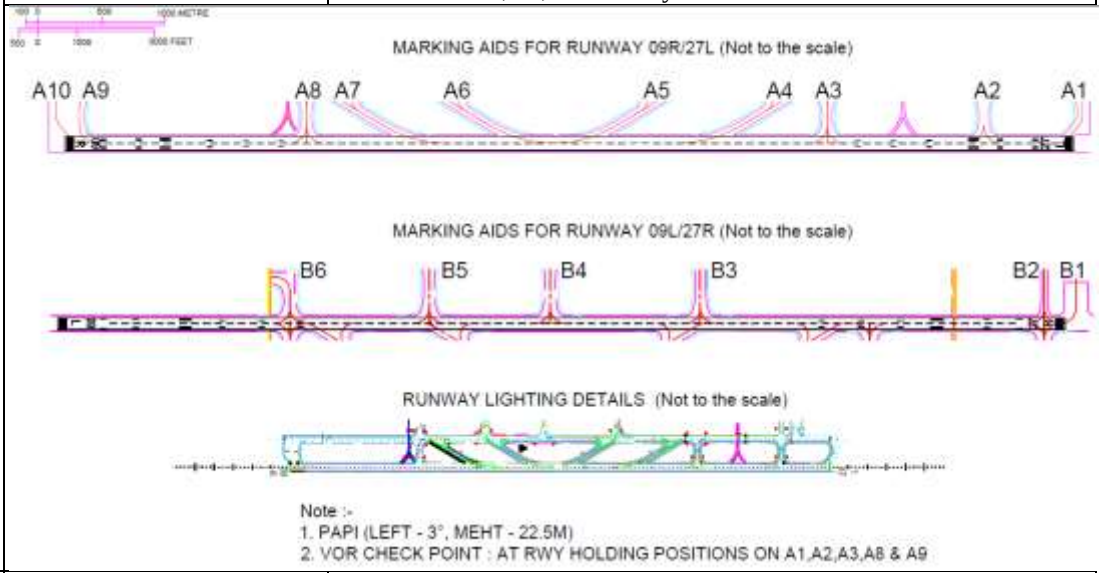
- Passenger Terminal Complex
- Integrated Cargo terminal complex with Cargo satellite Building & Blue Dart Express terminal
- Passenger parking area
- Main access ways
- Airport Office building
- Solar Farm
- Passenger Transport Center
- Special Handling terminal
- Airport Hotel
- Airport City (under development)
- Aviation SEZ & MRO
- Power Substations
- Fuel Farm
- Flight catering
- DecathlonSocial infrastructure such as schools & accommodation centers

The following table provides the detailed inventory update based on existing status of availability within the RGIA complex

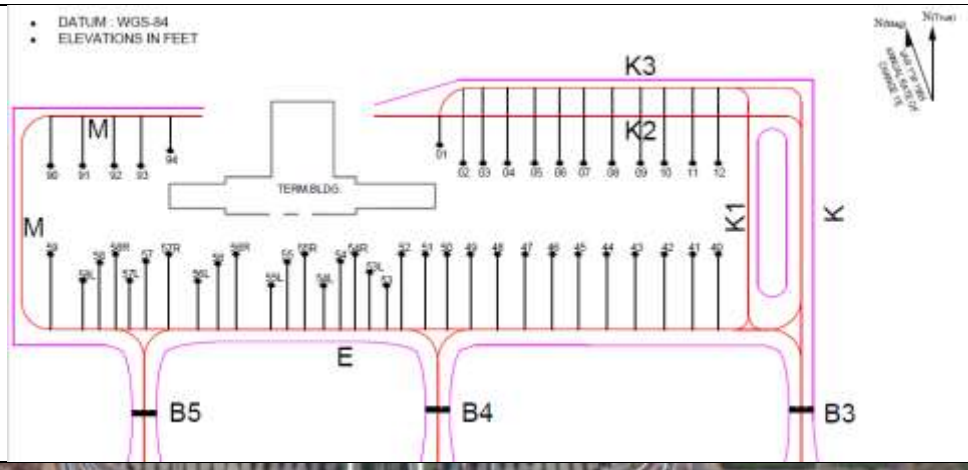
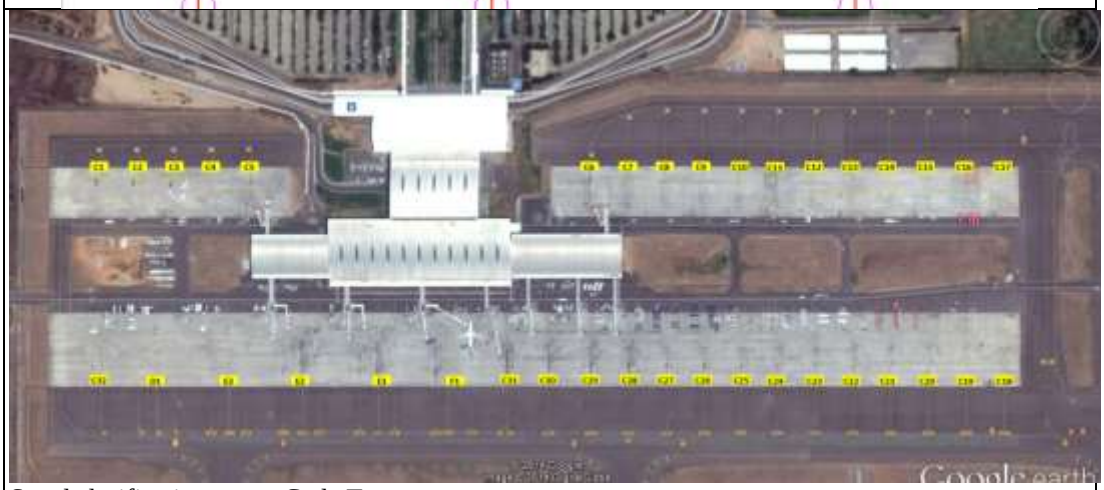
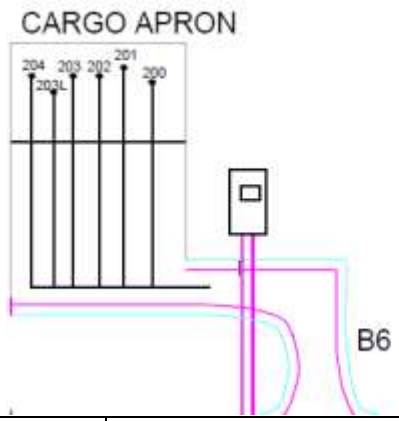
Table 0-III: Details of existing Facilities at RGIA

S.No	HEADS	Sub Heads	Details
1	**General Details**	Physical Address:	RGIA, Shamshabad, RR Dist., Telangana (500409), India

		Official Name:	Rajiv Gandhi International Airport
		Airport Code:	HYD/VOHS
		Ownership/Operator:	GMR Hyderabad International Airport limited
		Latitude / Longitude:	17◦ 14′ 26″ N 078◦ 25′ 44″ E
		ARP Elevation	601M, 1972 AMSL
		Airport Website URL	www.hyderabad.aero.com
		Distance from Hyderabad CBD:	30Km
		Airport Acreage	A total of 5495 acres comprises the Airport property, making it the one of the largest airport in landmass in India
2	**Aerodrome Technical details**	ILS Category	ILS Cat I
		Elevation/reference Temperature	617 m AMSL/39 deg Celsius
		Aerodrome Reference Code	4F
		Aerodrome Traffic Density	Medium
		Rescue Fire Fighting Category	CAT-9 upgradable to CAT-10 with 1 hour prior notice
		Isolation Bay	Remote stand 100
		Ground Lighting Facility	**MAIN RUNWAY :09R/27L** Precision Approach Runway Category – 1 for 09R/27L **SECONDARY RUNWAY :09L/27R** --VFR approach lighting system with PAPI for 09L and 27R --Taxiway edge and centerline lights, Apron flood Lighting System
		Communication And Navigation Aids	ILS CAT-I for both runways 09R and 27L, ASR, MSSR, DVOR/DME, ASMGCS, VHF communication, ATIS, VDGS for docking guidance
3	**Runway**	Description	RGIA has Main runway which is code F compliant, 4260 meter long & 60m wide 09R-27L & a new Secondary runway is 3707 meters long and is 45 meter wide and is certified for operations by Code-E aircraft. Code E includes aircraft such as the A340 and B747, and is defined by wingspan between 52m & less than 65m, and the outer main gear wheel span between 9m up to but not including 14m This Secondary RWY is dependent RWY (operating with restrictions), and available only for day operations in visual flight rules. The main purpose of opening the secondary runway was to prevent disruptions in flight operations during scheduled maintenance. Every Tuesday between 1330-1530 hrs. local the main runway (09R/27L) is closed for maintenance work. **Construction :** The Main runway cross section consists of prepared sub-grade of 95% modified MDD of CBR 12%, selected fill of CBR 12% to 98% MMDD, granular sub base (GSB), fine crushed rock (FCR), wearing course consisting of DBM and BC. The finished surface of the runway has a constant cross slope of 1.5% on the carriageway and a longitudinal slope the runway of not more than 1.4%.
		Numbers	**Two, Main : 09R-27L & Secondary: 09L-27R**
		DETAILS	**Main runway :** Designated as 09R-27L **Secondary Runway :** 09L-27R for day VFR operations
		Runway Surface Types	Asphalt (First 150m of both end Rigid)
		Orientation	Both runway -09/27

		Geometry	**Main Runway** : 4260m x 60m **Secondary Runway :** 3707m x 45m
		Category	**Main Runway** : Code-F **Secondary Runway :** Code –E
		Declared distances	**Main Runway** : 09R/27L - TORA - 4260, TODA - 4260, ASDA - 4260, LDA - 4260 m **Secondary Runway :** 09L - TORA - 3707, TODA - 3707, ASDA - 3707, LDA - 3707 m
			27R - TORA - 3707, TODA - 3707, ASDA - 3707, LDA - 3707 m
		Displaced Threshold	09L- Displacement of 310m, 27R - Displacement of 343m
		Runway End Safety Area (RESA)	09R/27L - RESA - 285*150m, 09L - RESA 283M * 90M, 27R - RESA 250M*90M
		Runway Marking	Designator, Threshold, Touchdown, Aiming Point, Center Line, Side strip Markings
		PAPI/VASI_ WRT respective ends	Rwy 09R/27L - PAPI Left 3◦
		Runway Strip Dimension	RWY 09R/27L: 4380m x 300m / RWY 09L/27R: 3827m x 150m
		Runway operations	Rwy 09R/27L - Precision Approach Category 1, 09L/27R - Non-Instrument Day VFR Operations
		Obstacle Limitation Surfaces (OLS)	Obstacle free zone existing for runway 09R and 27L- 09L/27R - N/A
		ILS	**Main Runway** : Precision Approach Category 1**Secondary Runway :** Non-Instrument Day VFR Operations
		Pavement design	Asphalt
		Pavement type	Asphalt
		Runway Entry & Exits	RET - A6,A7 and A8,A9,A10 Exit Twys for Rwy 27L and RET - A5 and A4 and A3,A2,A1 for Rwy 09R
			
4	**Taxiways**	Taxiway System	N/A
		Taxiway Orientation	North of Main Rwy
		Taxiway Geometry	Linear/Angular
		Taxiway Types	Flexible/(Asphalt)
		Parallel taxiway system	N/A
		Apron taxiways	Available
		Holding Bays	N/A

		Apron Taxiway length & width	E-1130M/25M Width, K-365M/25M, K1-365M/18.6M, K2 - 646M/18M, K3-586/18M, M-596/18M
		Cross Taxiway	N/A
		Pavement design	77/F/B/W/T
		Pavement type	Flexible
		Taxiway Marking	Provided
5	**Visual and Navigational Aids (NAVAIDS)**	Runway and Taxiway Lighting	Cat-1 Approach Lightning System for 09R/27L
		Runway End Identifier Light (REIL) systems	RETIL's provided for 4 RET's
		Airport Windsocks and Airport Beacons	3 Two on either side of rwy 27L and one on the North of Rwy 09R
		Automated Weather Reporting Equipment	Provided
		Visual Approach Slope Indicators (VASI) and Precision Approach Slope Indicators(PAPI)	PAPI for both the Runways
		Approach Lighting Systems	Cat- 1 Approach Lighting system for Rwy 09R/27L
		Instrument Approach Capabilities	Cat -1
		Automatic Terminal Information Service (ATIS)	Provided
		ASR & MSSR	Provided
		Advanced Surface Movement Guidance and Control System/ Ground Control	Provided
		VOR/DME	Provided
		Docking guidance/ VDGS	25 stands (out of 42 stands) provided with VDGS
		Stop bars or runway guard lights	Rwy Guard Lights are provided on all Rwy Entry Points
		Apron lighting	Provided
		Cabling and intensity control	Provided
		Obstacle lighting	provided
		Signage's	Provided as per Requisite standards
6	**Aircraft Parking Apron**	Numbers of Passenger Stands	42 Passenger stands
		Number of Cargo Stands	2 Code "F" or 3 Code "D" or 4 Code "C"
		Stands classification	Passenger terminal Apron and Cargo Apron
		Pavement Specification	Rigid

		  Stand clasification as per Code Type	
			
7	**Airside Facilities**	Fuel Hydrant system	• 11 km of 18” dia piping with 3 layer polyethylene coating and lining. • 58 fuel pit valves. • 14 drains and 14 vents. • Entire piping pressure tested with JETAI fuel • Pressure maintained at @ 19 bar for 24 hrs.
		Airside/landside boundary wall	11 km airside/landside boundary wall, Airside boundary of 9 km boundary wall to BCAS spec
8	**ARFF**	ARFF Facility	Available

		Storage	Water - 50000 liters, AFFF - 6000 liters, DCP - 2000 kg
		List Of ARFF vehicles/Equipment's	Fire tender – 6, with additional 1 Mini Tender
9	**Automobile & equipment parking**	Ground Power	FEGP provided at 18 Stands for the main apron and provided for Code F and Code C Stands at Cargo Apron
10	**Passenger Terminal Complex**	General Description	The Existing terminal has the capability to handle 12 million passengers per annum & at its maximum size it can handle up to 20-25million Passengers per annum. The passenger terminal is essentially a linear concept with central processing and piers at either end. There are a total of 42 aircraft parking positions consisting of 12 contact gates and 30 remote parking positionsThe central building is 96 m long and 157 m deep.
		Terminal Space	T Shaped Building having 8 levels and 2 piers -The distance between the pier ends is 410 m and the pier width is 39 m. The terminal complex measures 1,17,339 square Meter or 1.25 Million square feet. The complex includes the domestic and international terminals building and Domestic & international Piers. Within these Piers, there are a total of 20 gates comprised of 14 domestic and 6 international gates. The Airport is designed barrier free for the conveniences of passengers with disabilities.
		Passengers per year:	Currently at 12MPPA Peak Hour Passenger Capacity: 3200
		Terminal Levels	2 level with 8 floors
		Passenger Process	Process segregated by Level Level C- Bus lounges Level E – Arrivals Level D – Baggage reclaim area Level F- Departures
		Airport Forecourt	For the first time in the country an "Airport village" was created between the terminal building and the public land side at level D. This consists of a shopping arcade with a wide variety of stalls and food courts to serve as a place for people to "meet and greet." With total extent of 2,500m² 'Airport Village' is a spacious covered area complete with shopping, kiosks and stalls where 'meters and greeters' can interact with passengers
		Security systems	RGIA Terminal Security systems are basically for following categories: • Passenger hand baggage • Hold baggage • Staff and goods delivery
		The Pier	410 m
		Gates (contact & Remote Gates)	20 Nos. (12 contact & 8 Bus Gate)
		Passenger Aircraft Stands	42,(12 contact & 30 remote stands)
		Passenger Boarding Bridges/ Aerobridges	12 Aerobridges
		Remote Gates	10 Busgates
		Remote stands	30 Stands

		Airport Medical Center Facility	The Licensee for Airport medical Centre facility is Apollo Hospital enterprise Ltd. This Medical centre has an Area of Approximately 305 Sq.m in Level B of the basement and approx. 6 Sq.m for first aid booths at Level D, E and F of in the Passenger Terminal Building of the Airport.Medical Center Facility Features are as follows:i. • Full-fledged Medical Center housing minimum 17 beds; • Triage / Isolation room; • First – Aid, procedure and emergency rooms; • Radiological (X-ray) facility, Ultrasound facility • Observation and recovery rooms for patients • In-house laboratory facility; • ECG Machines; • Automated external defibrillators; • Facilities to handle acute medical emergencies like strokes, heart problems, asthma, delivery, fractures etc.; • Dental and surgery facility with full-fledged dental services; • Advanced life saving ambulances 4 No's (2 Airside, 2 Landside) + 2 (owned by GHIAL); First aid counters at Level D, E and F.Services provided are: • First – Aid, Emergency and Routine primary care; • Disaster Management services 24/7/365 days; • Aviation Medicine consultancy services;iv. Medical examinations, preflight tests (Pilots and Airline crew members); The medical centre has Accreditation with International Hospitals/Associations which enabling International Passengers to avail Insurance/Claims
		Air-conditioning system	There exists a central air-conditioning system for the terminal building which consists of adequate number of water cooled centrifugal chilling units, primary and secondary chilled water pumps, condensing water pumps and air handling units
		Electrical services	Electrical power for the passenger terminal is being provided via the airport's 11kV distribution system and converted to the consumer voltage 415/240V in transformer substations placed near the load centres in the terminal building and piers

		IT systems	The information systems in the Terminal building comprise among others: • Telephones for staff, airlines and passengers (credit card phone boots) • Public Address for announcements including flight information, standard airport fixed messages, emergency messages, temporary and ad-hoc messages etc. in passenger areas inside the terminal building and outside the main entrance of the Terminal building • CCTV used for security monitoring and surveillance purposes. Coverage shall include access doors, security areas and the apron area not visible from the ATC tower • Flight Information Display System (FIDS) shall guide passengers to the correct check-in and boarding positions and automatically display flight status information to passengers through the use of state-of-the-art display technology like plasma displays and liquid crystal displays (LCD) • Common Use Terminal Equipment (CUTE) shall be provided at Check-in, departure gates and Transfer desks, equipped with facilities enabling reliable, fast and easy check-in, boarding and transfer. The cute workplaces shall be multi-user desks interfacing to the airline legacy systems • Security (access control) and computer services related to the day-to-day operation
11	**Other buildings**	ATC tower (Air Traffic Control)	Tower Height : 75m, Total Floors Area : 3,500sqm
		Special Handling Terminal	Special Handling Terminalis a standalone Facility with parking near to ATC catering to Airport's Haj Operations , Built-up Area : 2600sqm ,Capacity : 417 Peak Haj Passenger Load
		Cargo Terminal	Area : 14,330 Sqm
		Cargo Satellite building	Area : 10777 Sq.m
		CFR station (Crash, Fire and Rescue)	RGIA has two fire stations viz. a Main Fire Station and a Satellite Fire Station. The Main Fire Station is a two floor building with 5-appliance bays for housing the fire vehicles and has direct access to taxiways and runway. The station is equipped with operational section, training room, store, admin section, conference room. The Satellite Fire Station is a single floor building with 2-appliance bays for housing the fire vehicles and has direct access to taxiways and runway. The other facilities like locker room, Crew resting room, Office room and store room are also available at Satellite Fire Station.
		AIRSIDE FUEL STATION	Area: 1 Acre
		GMR Office Complex	G+5 Storied building, Built-up area = 18,950 Sq.M G+1 Storied Building, 5 Nos = 10,000Sqm Other Utility Building = 2000Sq.M
		Airside Equipment Shed	Area :954 Sq.m
		Catering facilities	Two exiting Caterers LSG & SKY CHEF, who been allotted a land of 2.5 Acres each Each of of them has a capacity to cater 30,000 meals/day. This is capacity is enough for the next 10-15 yrs.;
		GMR MRO	Plot Area: 29 acres Apron : 13.05 Acres Built-up : 42,000sqft

		NACIL MRO	The size of the Hangar is about 100 metres x 90 metres x 24 metres (height). The new Hangar is capable of accommodating two A320 family aircraft simultaneously or one B777/B747 aircraft.
		Blue Dart Terminal	I Operational Area: 1479 sqm Offices & other Amenity & utility Spaces: 433 Sqm Total Terminal area : 1912 Sqm
		Compost Plant	Capacity-3 tons/Day Built Up area – 516 Sq.m
		Passenger Transport Center	Built-up: 2000sqm Room : 2 Dormitories, (AC/Non AC) & 7 Rooms
		DG YARD Building	Building Yard: 1200 sqm
		Engineering Building	Two Block, Area : 3000 sqm
		Main Power Substation	Plot Area: 5 Acres Built-up : 500sqm
		Compost Plant	Capacity-3 tons/Day Built Up area – 516 Sq.m
		Ground handling workshop	3 Building , with total Area of about 2560 sqm
		Decathlon Store	Plot area : 2 acres Built-up: 2050sqm
		CFM Training	Built-up : 800sqm
		Indian Rotorcraft Limited (IRL)	Built-up : 10,000sqm
		Novotel HOTEL	Rooms: 308Plot Area : 5 Acres Built-up: 40,075sqm
		BPCL Petrol Bunk	Area : 0.6 Acres Built-up : 30sqm
12	**Parking**	General	Parking areas inside the traffic loop – 2 lakh sq.m
		Passenger Car Parking	Total Passenger Parking -56 Bays with 3000 Parking slots
		Taxi Parking	Main PTB Parking : 30 -60 Slots PTC - 300 queuing Slots
		Bus Parking	PTC - 6 Bays PTB : 3 Bays
		VIP Parking	Guest/Government Parking : 6 bays with 240 Parking slots
		Long term Parking	100 Parking Slots (PTB)
		Staff Parking	150 Parking Slots (PTB)
13	**FUEL FARM**	Operator	The RIL, operates and maintains the farm, as well as provide 'into-aircraft' services
		Storage	consisting of three huge storage tanks with an initial capacity of 13,500Kl of Aviation Turbine Fuel (ATF) and
		Tanks & Tank Capacity	3 No's, 4500Kl each
		Supply system	supply of fuel to the aircrafts through hydrant as well as fuel bowser in the airport premises The storage tanks are connected to the apron through underground pipelines forming the hydrant system
		Access	Open access model' fuel farm
		Area	10 acres (office buildup: 1200sqm)
14	**Road & Transport System**	Air side Road	Airside entry Gate: 3 No's SERVICE Roads : 10.5 Carriageway , Length : 5 Km Periphery Surveillance Road : 4m Carriageway : 12km
		Landside	MAR : Length 8.425km, ROW-30m, 18m carriageway with 3m median Sector Road : ROW- 30m, 15m carriageway (proposed)
		Road Lighting	LED Lighting

		MMTS	Details of Proposed MMTS Station at RGIA are listed below Area : 30 acres Alignment Inside Airport : 1.2km Platform : Dual Platform @ 300m long
		METRO	It is envisaged that the Metro link to airport will originate from Falaknuma, trucking along Srisailam Highway to enter Airport from East.
15	**Landscaping**	Landside plantation/Green Cover	318 acres
		Airside Grass/Green Cover	1281 Acres
		Landside undeveloped Open area	3532 Acres
16	**Airport System**	Power Utilities	The power requirement of 15.7 MVA is being sourced from TSTRANSCO. In addition six DG sets of 2 MVA capacities each have been installed as standby arrangement during power interruption. The detailed inventory of existing DG sets are listed below 1. AIRPORT 1 Mobile DG (320 KVA) – 3nos 2 Mobile DG set (6 KVA) – 2nos 3 DG Yard 2 MVA DG's – 6Nos 2. PSOB & NOB 1 DG SET 2Nos - NOB(770 KVA) 2 DG SET 1 Nos - PSOB (320 KVA) 3 DG SET 2Nos - PSOB (125 KVA) ✓
		Water Utilities	The water requirement of 0.7mld for the airport operations is being supplied by HMWS&SB. Underground tanks to meet the water requirement of the airport have been constructed.
		External Sewage System	This involved collecting the sewage from various building clusters of the airport and transporting them to STPs. Basically, this is a closed system with 100% utilization of treated water from STP, which is being used for flushing, cooling towers make up and irrigation. Two Sewage Treatment Plant (STP) of 925 KL capacity to treat the wastewater is existing
		Fire Fighting System	The firefighting system with water as medium extended to all ancillary buildings and the aprons consisting of the following:
		Electrical Systems	Electrical systems at RGIA includes Airfield Ground Lighting System, HT Power Distribution and LT Electrical Distribution
		CNS, Ground Handling and Cargo Handling Equipment	Communication, Navigation and Surveillance (CNS) system is designed to meet the requirement of future expansion. ILS (Cat 1) on both ends of the runway and Precision Approach Cat 1 Lighting System on both sides of the Runway are installed. Required facilities for Ground Handling and Cargo Handling are also provided.

17	**Drainage & Rainwater Harvesting**	Airside	The storm water at Airside of Airport is collected through a series of drain constructed parallel to runway, Taxiway & aprons. These constructed drains lead the storm water collected into a collection tank of 135,000 M3 Holding capacities. Storm water then flows into oil water separator (capacity – 10,000M3) for removal of oil & grease from Storm water collected. Storm water free from oil and grease will flow into retention tank of 35,000 M3 Capacity. A pumping station with 4 x 100Hp motors located in the western end of the Airport will pump the storm water from western end to eastern end of Airport through a dedicated pipe line of 600mm Diameter. Waster harvesting structures are constructed in an area of 40 acres where the storm water pumped is allowed to infiltrate. 50 numbers of bore well in 5 clusters has been constructed for the same.

The Support Infrastructure of RGIA provides the airport with the capability to support unconstrained aviation operations beyond typical Operating characteristics of Indian airports. The entire current asset base at RGIA Airside & Landside aviation facility has been developed & maintained to confirm to best of benchmark standards which enable the airport to provide with best of service conditions to passengers, its concessioners & service providers.

3.8 Details of Proposed Expansion Facilities at the Airport Terminal

In addition to the above mentioned existing facilities, to cater to growing traffic it is now proposed to expand the existing terminal and Airside facilities along with associated facilities to enhance the passenger handling capacity form current 12MPPA to 25 MPPA. The cost of additional facilities at the existing airport terminal is estimated as Rs. **2629** Crores.

The proposed amendments to the airport facility are given in Table 0-IV.

Table 0-IV: Proposed Amendments to the Existing Airport Facilities

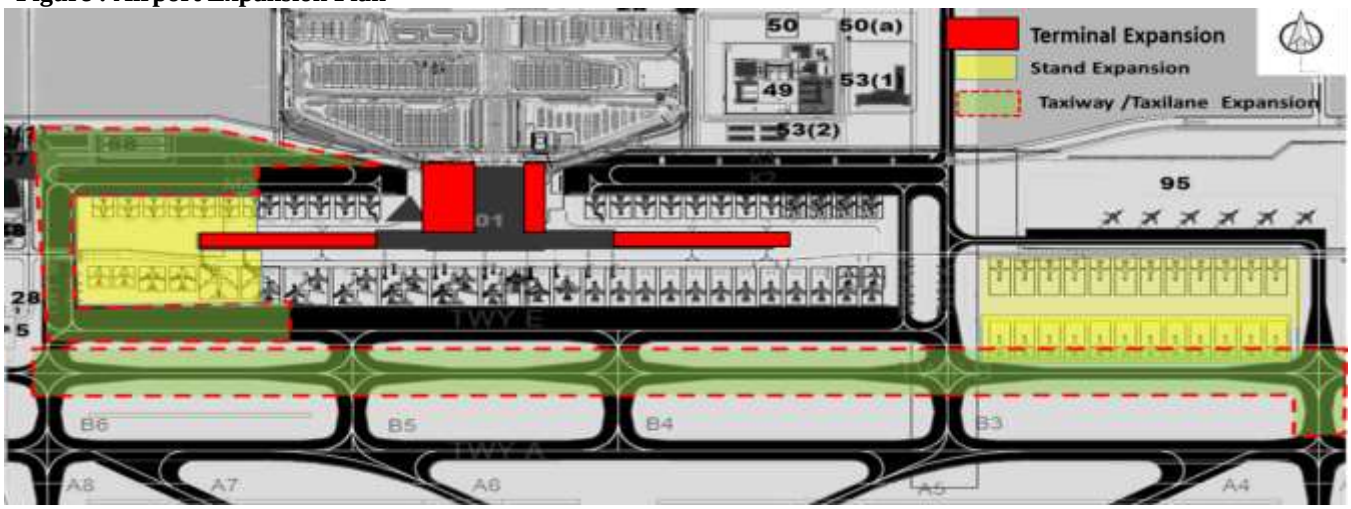
S.No.	Facilities	Existing Design Features (Capacity 12 MPPA)	Proposed Additional Facilities
1	**Main Runway**		
	Main Runway Orientation	09R-27L	No change
	Runway Length (Designed to Handle Code F aircrafts including A380 Aircrafts and Existing Long Haul Air Crafts	4260m	No change
	Runway Width	60 m+ 7.5 m shoulder on either side	No change
	Lighting System	Precision Approach Category 1 type Approach Lighting System on both sides of the Runway	No change
2	**Secondary Runway/ Taxiway A**		
	Secondary Runway Orientation	09L-27R	No change
	Length	**SECONDARY RUNWAY :** 3707m Taxiway of 4395 m length (Including isolation bay), which will be parallel to runway.	
	Width	45 m+ 7.5 m shoulder on either side (used as secondary runway for visual approach	No change

		landing in case of Emergency)	
3	**Taxiways**		
	Number of rapid exit taxiways	4 no. Rapid exit ways	No change
	Other Taxiways	Apron Taxiway : Linking Apron area to the parallel Taxiway	No change
		Cargo Taxiway : Linking Cargo area to the Parallel Taxiway	No change
		Maintenance Taxiway : Linking Maintenance Hangars to Parallel Taxiway	No change
		Other Taxiway	✓ Taxiway B : 4260m ✓ Taxiway link to SEZ: Linking Taxiway A to IRL PLOT
		Taxi lane	✓ Dual access Taxiway (TXY-M and TXY - M1) west of Terminal ✓ Dual Taxi Lane north of terminal (TXY-M2 and TXY-M3). ✓ Code C compliant Taxiway
4	**Parking Apron**		
	PTB	Contact Stands: 12 no. Remote : 30 no.	Contact Stands: 31 no. Remote : 43 no.
	Cargo	4 no.	No change
5	**Maintenance Hangars**	1 no.	No change
6	**Passenger Terminal Building**		
A	Built Up area	117339 m2	2,33, 250 m2
B	Aerobridges	12 no.	31 Nos
C	Expansion of domestic bus gates	10 no.	20 No.
K	Passenger Transport Center (PTC)	1020 m2 (28 m x 36 m)	Capacity to be doubled by addition an additional area of 1020 m2 to cater higher traffic
L	Special Handling Terminal(SHT)	2592 m2 (72 m x 36 m)	Will be relocated to facilitate Airside expansion
6	**Cargo Terminal Building – Current Approved capacity of 3.0 LTPA**		
	Cargo Terminal Building	14740 m2	Expanded from current 1.5LTPA to 3.0LTPA Capacity , Additional Built-up Area: 15,000 m2
	Additional Cargo facility (Blue Dart) Building	1425 m2 (70 m x 20.55 m)	No change
	Additional two Storage Warehouses	-	2 no' each of 5000 m2
	Cargo Agents Satellite Building	3735.9 m2 (188.9 m x 20 m)	No change
7	**Communication, Navigation**	Up-gradable Category 1 Approach Lighting	No change

	and Surveillance Systems	System on both sides of the Runway: Increased safety under low visibility weather condition for RVR of 800 m	
8	Infrastructure Facilities Main Access road from Rotary 3 to western end boundary	4 Lane Road	4 Lane parallel sector Road to divert Airport City & Cargo side traffic away from Airport Main access Road
9	Fuel Facility	Fuel Farm with Hydrant facility (3 Tanks of 4500 KL each)	5 Tanks in Fuel Farm with Hydrant facility (3 existing Tanks of 4500 KL + 2 Tanks of 6200KL each)
10	Car Park	3000 car parks	No change
11	**Other Facilities**	Maintenance work shop and stores	No change
		Office Block for Airport Management – One more floor will be constructed over a present building	No change
		CFR Station and ATC Control Tower	No change
		New office building	No change
12	**Miscellaneous Systems**	Ground Handling Equipment	No change
		Cat 10 CRF Equipment	No change
		Fire Detection Alarm and Fire Hydrant System	No change
13	Airport Management Systems	✓ Use of Building Management System Software ✓ Monitoring of Air conditioning Equipment, Lifts, Electrical Systems ✓ Centralized monitoring of all operational and security Equipment and Lighting Systems. ✓ Semi-automatic storage and retrieval systems with minimum human intervention for smaller shipments for cargo handling ✓ EDI implementation for Airport to receive the general manifest electronically before arrival of Aircraft at Airport	No change
14	Solar Farm	5 MVA	5MVA
15	Rainwater Collection & Reuse Tanks (Flood management)	Rainwater Harvesting Reservoir- R1-Collection tank of 135,000 M3 Holding capacities Rainwater Harvesting Reservoir- R2 : Reservior tank Holding capacity of 6.00 lakh m3	Rainwater Harvesting Reservoir- R6 & R7 – Holding capacity of 3.00 lakh m3 each
16	Compost Plant	• Capacity-3 tons/Day Built Up area – 516 Sq.m	• Additional Capacity-3 tons/Day , Built Up area – 516 Sq.m

The location of the each proposed expansion Zone & facilities at the existing airport complex is shown in **Figure-2.3.**

Figure : Airport Expansion Plan



3.9 Options for Capacity Enhancement

Our assessment of capacity requirement based on traffic growth projections necessitates expansion. The existing Passenger Terminal at RGIA is modular in nature and has been initially designed to be a facility to be spread over 8 levels. Any expansion considered has to factor in existing structural layout and design possibilities along with its constraints. Owing to the technical constraints, it is not technically feasible to incorporate any new design at this stage and hence to meet the projected traffic growth, the only available option is to modularly expand the terminal.

3.10 Project Components

From the analysis of requirements for expansion, five major project components have been identified. The terms of reference for the design are as follows:

- Entire expansion work will be taken up in one phase taking into account minimization of the passenger inconvenience and optimizing the capex
- The expansion work will commence immediately after obtaining EC and is expected to be completed by 2020.
- On completion of proposed expansion works the Passenger Terminal Building would have a capacity to handle around 20 MPPA.

Expansion work to have five major components as detailed below:

#	Project	Addition to Built-up Area
1	**Terminal Forecourt Improvement**	3,000 Sqm
2	**Terminal Expansion**: East-side West-side	 14,381 Sqm 35,350 Sqm
3	**Pier Expansion:** East-side & West Side	66,181 Sqm
4	**Apron Development**	2,48,737 Sqm
5	**Taxiway B Extension**	3,58,130Sqm

The following facilities are proposed under expansion works:

1. **Terminal Forecourt**

- Infilling of Existing Voids at departure Forecourt to creat additional access & space with add of 3000Sqm
- Expansion of Airport Village by two modules
- Weather-proofing of Airport Village extended plates
- Increasing the circulation space at Airport Village departure level by providing a cantilever slab on the south side of ramp
- Four additional lanes for up and down ramp including associated works

2. **Terminal Expansion:**
   - East-side expansion by 1 check-in module, leading to additional space of 14,381 Sq. m
   - West-side expansion by 2 check-in modules, with additional space of 35,350 Sq. m

3. **Pier Expansion**
   - East-side pier expansion (addl. space of 36725 Sqm) to accommodate 12 contact stands
   - West-side pier expansion (addl. space of 29456 Sqm) to accommodate 7 contact stands

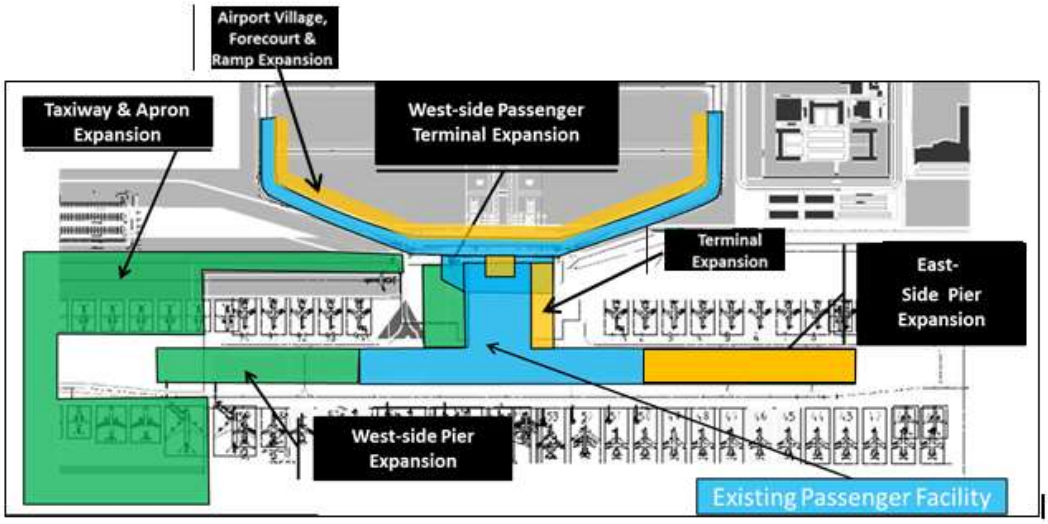
4. **Apron expansion**

- West-side covering an area of 1,26,437 Sqm for stands and access taxi provision
- East Side Covering an area of 1,22,300 Sqm for stands and access taxi provision

5. **Taxiway B** extension by a length of 4,260 m covering an area of 3,58,130Sqm

Common facilities such as HVAC, BHS, Check-in counters, Security Screening, Toilets, PHE System, etc. shall be augmented and/or provided as required

On a macro-level, the expansion will impact the existing terminal as follows:



The drawings for each of the levels are provided in Annexure I .

3.11 Passenger Terminal Expansion

To meet the Terminal capacity requirement for the increased passenger throughput based on projected traffic growth the following modifications are proposed in order to sustain passenger service levels at the terminal:

East-side Passenger Terminal Expansion

- Expansion of the Terminal by an area of around 14,381 Sq. m, a sum total of all floor levels on the Eastern / Domestic side (table below)
- Addition of a check-in Island
- Addition of Baggage carousel

West-side Passenger Terminal Expansion

- Expansion of the total built up area of Terminal by around 35,350 Sq. m, a sum total of all floor levels on the Western / International side (table below)
- Addition of 2 check-in Islands
- Addition of 2 Baggage carousels

This floor-wise space expansion details for terminal are as below:

Level	East Side (Area in Sq.m)	West Side (Area in Sq.m)
Level B	4225	8413
Level C	2439	7517
Level D	3078	8300
Level E	1471	2928
Level F	3168	8191
Total Area Increase	**14381**	**35349**

3.12 Pier Expansion

To meet the growing demand for contact stands as projected in the above sections it is proposed to have, the following modifications in order to meet the operational requirements at the pier and boarding gates as per the projected traffic demand:

East-side Pier Expansion

- Expansion of the East-side Pier by an area of around 36,725Sq. m, a sum total of all floor levels on the Eastern / Domestic side (table below)
- Addition of 12 contact stands at the expanded pier
- Addition of remote gates

West-side Pier Expansion

- Expansion of the West-side Pier by an area of around 29,456 Sq. m, a sum total of all floor levels on the Western / International side (table below)
- Addition of 7 contact stands at the expanded pier

This floor-wise space expansion details for pier are as below:

Level	East Side (Area in sq.m)	West Side (Area in sq.m)	Space Utilisation for
FLB/RH	2,018	1,345	-

Level C	6,125	60,69	Remote gates, provision for additional office spaces for ground handling agencies, airlines, terminal operations, handling HAJ pilgrims, Plant Rooms, etc.
Level D	5,748	5,508	arrival baggage claim provisions and associated facilities
Level E	11,417	8,693	Facilities for arrival passengers sequence viz. lounges, transit facilities, immigration, visa, health, customs etc
Level F	11,417	7,841	Passenger seating and provision of conveniences
Total Area	36,725	29,456	

3.13 SUSTAINABILITY OVERVIEW-RGIA

GMR Hyderabad International Airport Limited (GHIAL) consider Sustainable development which emphasize on environmental protection & green development as an integral part of our business and are committed to conducting our business in an environment-friendly and sustainable manner, in line with our Vision, Mission, Values and Beliefs and Corporate Policies. As part of this commitment, we have taken the following green initiatives:-

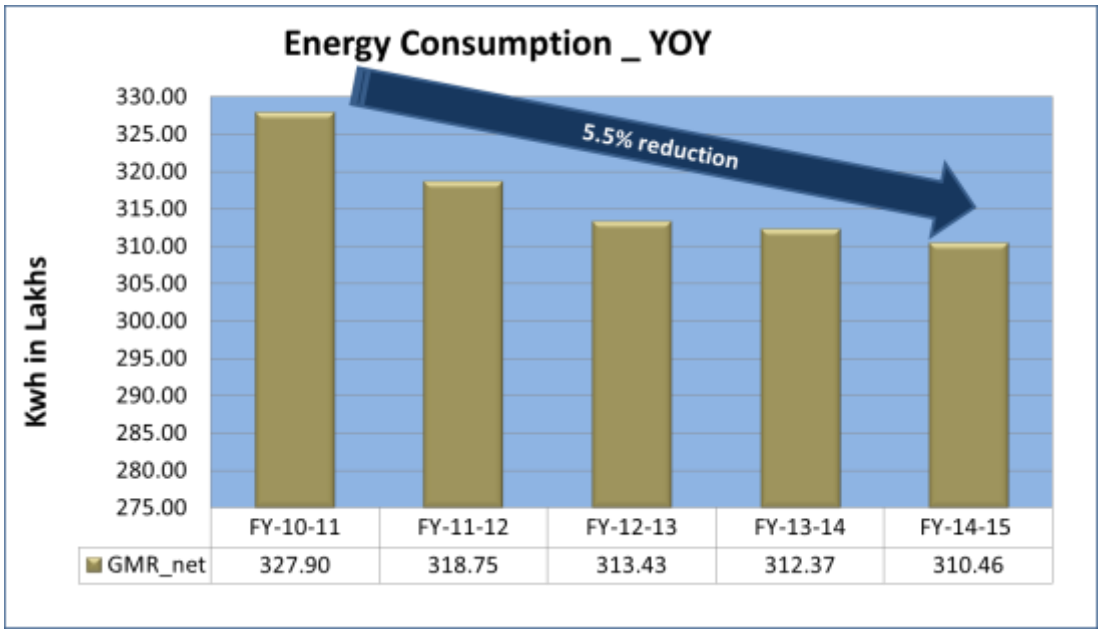
Greening the Airport:

RGIA is one of the prominent and widely landscaped areas within the topographical region with extensive green cover. As recognition of its positive impact among the airport users as well as on the Hyderabad city itself, RGIA has been conferred with the best landscape award at the 'Garden festival' for the fifth consecutive year in 2015 organised by the Dept. of Horticulture, Govt. of Telangana.

Also it is worth mentioning that approximately 169 tonnes of CO_2 / annum has been calculated to be removed from the atmosphere by the extensive green cover provided at RGIA.

Energy Conservation:

1. Energy conservation is one of the key initiatives being adopted at RGIA. In this regard, RGIA has achieved energy saving of 3.397million kWh in the last five years from various energy conservation practices jointly implemented with the cooperation of entire airport community. GHIAL has significantly reduced its carbon footprint by 5268 tonne during the year 2014 over the base line year 2009 which amounts to 17% reduction.
2. Also RGIA has been conferred with "Certificate of Merit" by the government of India during the 'National Energy Conservation Awards-2011' for its energy conservation initiatives and achievements.
3. GMR Hyderabad International Airport has received the Confederation of Indian Industries (CII) Award for "Excellent Energy Efficient Unit" during the 15th National Award for Excellence in Energy Management 2014.



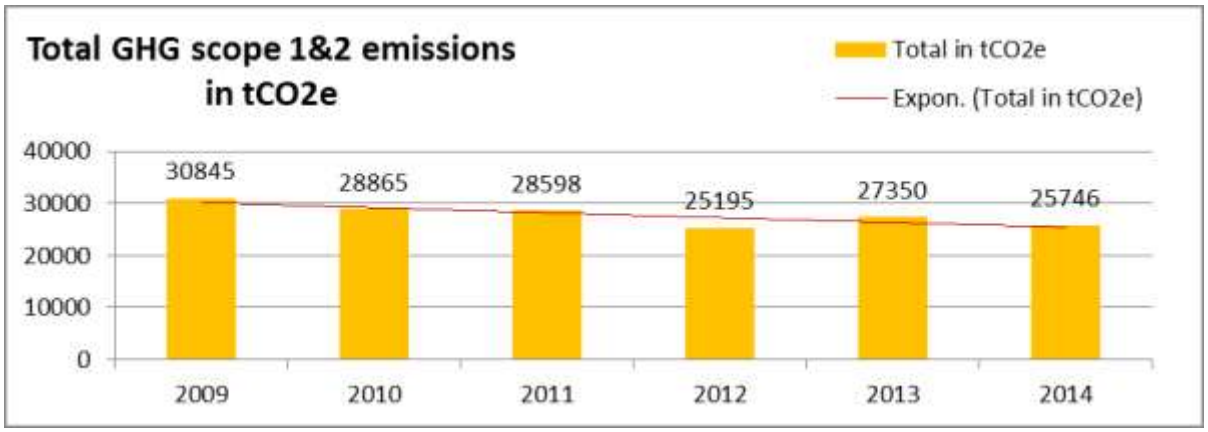
S No	Energy Saving Project	Year of Implementation	Annual Savings Units in Lakhs	Annual Savings Rs. in Lakhs
1	Replaced 50W halogen lights with 4W LED Lights in VIP Lounges	2012-13	**0.09**	**0.47**
2	Chilled water balancing in PTB	2013-14	**3.82**	**25.59**
3	Chiller condenser descaling	2013-14	**3.29**	**22.03**
4	Cooling tower fills descaling	2013-14	**0.87**	**5.86**
5	Replacement of T8 with T5 lamps	2013-14	**0.09**	**0.59**
6	Replacement of Metal halide lights with LED	2013-14	**0.39**	**2.6**
7	Signage Boards Lighting Modification	2014-15	**0.56**	**3.95**
8	Replacement of Metal halide lights with LED in BMA area	2014-15	**4.65**	**32.51**
9	Replacement of Metal halide lights with LED DG yard	2014-15	**0.05**	**0.38**
10	Chiller Condenser Descaling in PTB	2014-15	**3.33**	**2.32**
11	Signage boards Optimization	2012-13	**0.92**	**5.05**
12	Lighting & HVAC optimization through BMS(Lighting & AHU time program)	2012-13	**8.45**	**46.39**

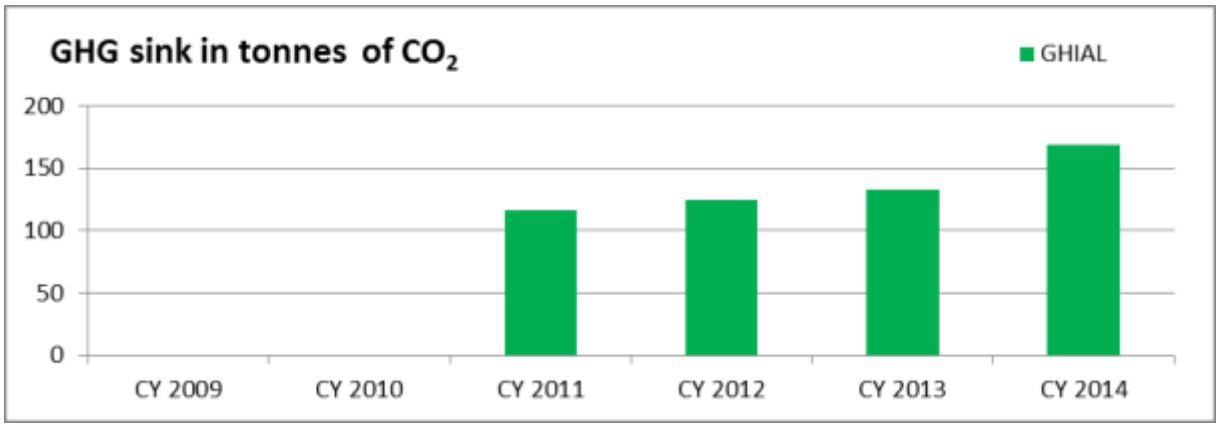
13	Lighting & HVAC optimization through BMS	2013-14	**2.06**	**13.79**
14	AHU Frequency & Running Hours Optimization in PTB	2014-15	**3.97**	**27.74**
15	Regulate the usage of Elevators for Energy Saving in NOB	2014-15	**0.04**	**0.28**
16	Conversion of CFL to LED in NOB	2014-15	**0.09**	**0.66**
17	Conversion of Halogen to LED in NOB	2014-15	**0.14**	**0.98**
18	AHU Switch off in NOB GF Reception area	2014-15	**0.04**	**0.26**
19	Chiller Timing optimization at NOB & PSOB	2014-15	**0.71**	**4.98**
20	Switched off Dep. ramp indirect flood lights	2014-15	**0.09**	**0.62**
21	Optimization of Chiller Operation in CSB	2014-15	**0.82**	**5.71**
22	Switch off 315KVA Transformer at KSA for saving No load losses	2014-15	**0.06**	**0.39**
Total Saving (No Investment Projects)			**17.38**	**106.86**
Over all Savings			**34.53**	**224.13**

GHG Management and Airport Carbon Accreditation

GHIAL has voluntarily enrolled in the Carbon accreditation programmed launched by the Airports Council International (ACI) worldwide. In this initiative GHIAL has directly achieved Level-2 (Reduction) accreditation in the year 2012 for the effective GHG management during the years 2010 and 2011. This was followed by Level-3 (Optimisation) accreditation in the year 2013. Significantly, Level-3 involves extended scope wherein the stakeholders (airlines, Ground Handling agencies, flight kitchens and other service providers) are also influenced for effective reduction in the GHG emission. With that achievement RGIA has become the 1st Airport in the country and 2nd airport in the Asia Pacific Region to be awarded with the level 3 accreditation.

GHIAL reduced 5268 tonnes [5099 tonnes of GHG emissions + 169 t GHG sink] of its net GHG emissions in 2014 over base year 2009 i.e. 17%





Green Buildings

The Passenger Terminal Building (PTB) at RGIA has been created to provide a pleasant surprise to any visiting passengers with its unique aesthetic look, energy and water efficient design. The building offers natural lighting naturally cooled ambient air through HVAU and other special features to reduce fresh water usage and recycle waste water generated from the building. For this unique achievement GHIAL has been awarded with the 'Leadership in Energy and Environmental Design' (LEED) certification in the year 2008 by the US Green Building Council

RGIA Passenger Terminal Building

Wastewater Reuse & Recycle

GHIAL has created an efficient Sewage Treatment Plant (STP) within the airport premises to treat the wastewater being generated at the airport. The treated wastewater is recycled for flushing and reused for irrigation of the extensive greenery within the airport. Also sludge generated from the STP is being used as manure for the plants in the airport. Further, the domestic wastewater generation itself (all airport buildings) has been reduced to 33 litres per passenger in 2014 from 37 litres per passenger in 2013. During the year 2014 a total of 670 KLD of wastewater has been recycled and reused.

Sewage Treatment Plant

Rainwater Harvesting

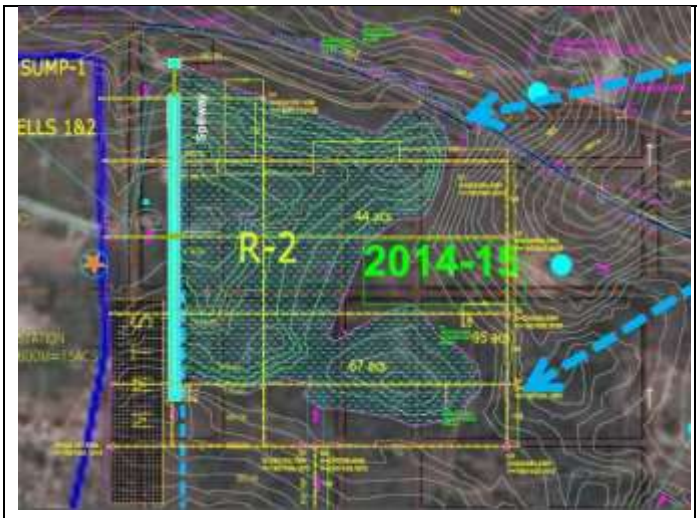
GHIAL is harvesting rainwater in large scale within the premises of the airport with a built-up capacity of 0.185 million cubic metre. The rainwater net recharge at RGIA is estimated to be1.729 million cubic metre per annum. This rainwater recharge has effectively augmented ground water table in and around the airport.

During rainy season the surface water is used for domestic and flushing purposes after preliminary treatment. This practice is being carried out for 4-6 months every year on availability of surface water. Consequently, this effectively reduces the dependency of municipal water.

Rain Water Harvesting at Westside of the Airport

Recharge well

RGIA has recently initiated the development for development of water storage reservoir (r2), in a extent of about 80 Acres, to protect the Gollapally village from flooding as well as Conserving the storm water for facilitating sustainable development. The project details are illustrated in below.

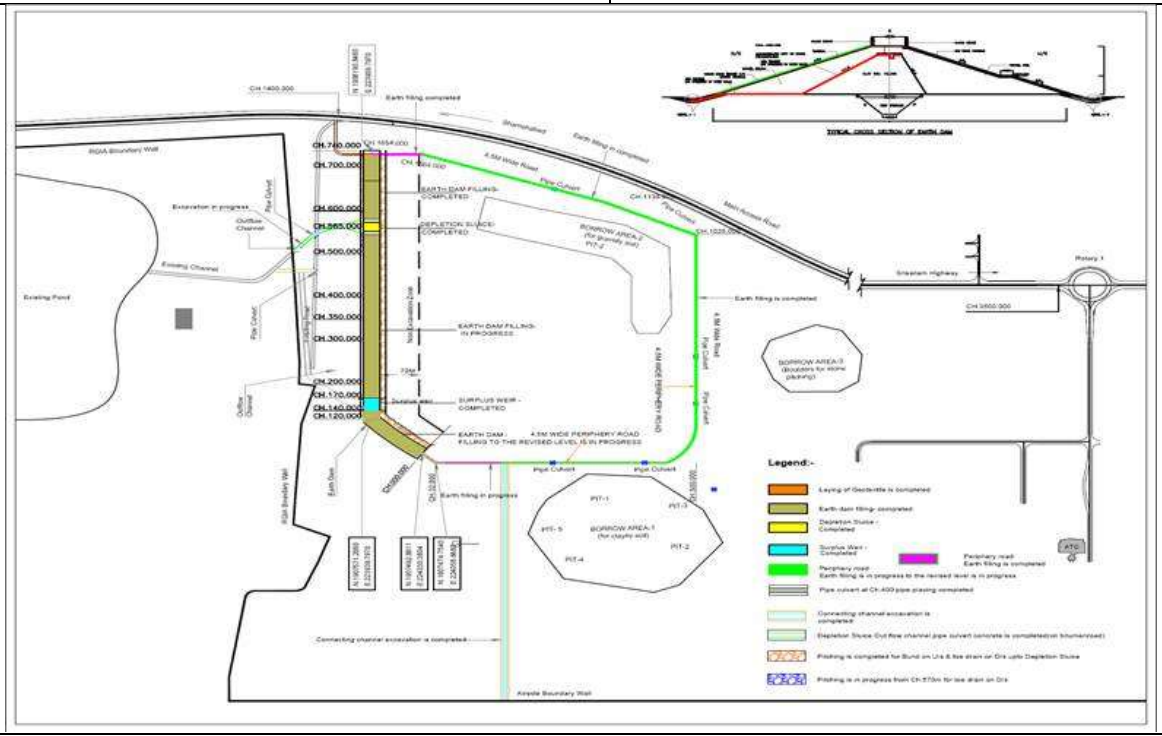


Technical Features :

- ✓ Annual water saving potential > 12.00 lakh m^3
- ✓ Original proposal was to have a holding capacity of 6.00 lakh m^3
- ✓ About 4.20 lakhs m^3 capacity can be achieved only due to formation of bund
- ✓ 100 m space left from the Gollapalli boundary wall for MMTS
- ✓ Down streamside existing wells (1 and 2) are not disturbed

Physical Features:

- ✓ Water spread area : 67 acres
- ✓ Bund length :710 m -750 m
- ✓ Bund height :6.00 m at the centre
- ✓ Top width of bund :3 m
- ✓ Bottom width of bund :30 m appx



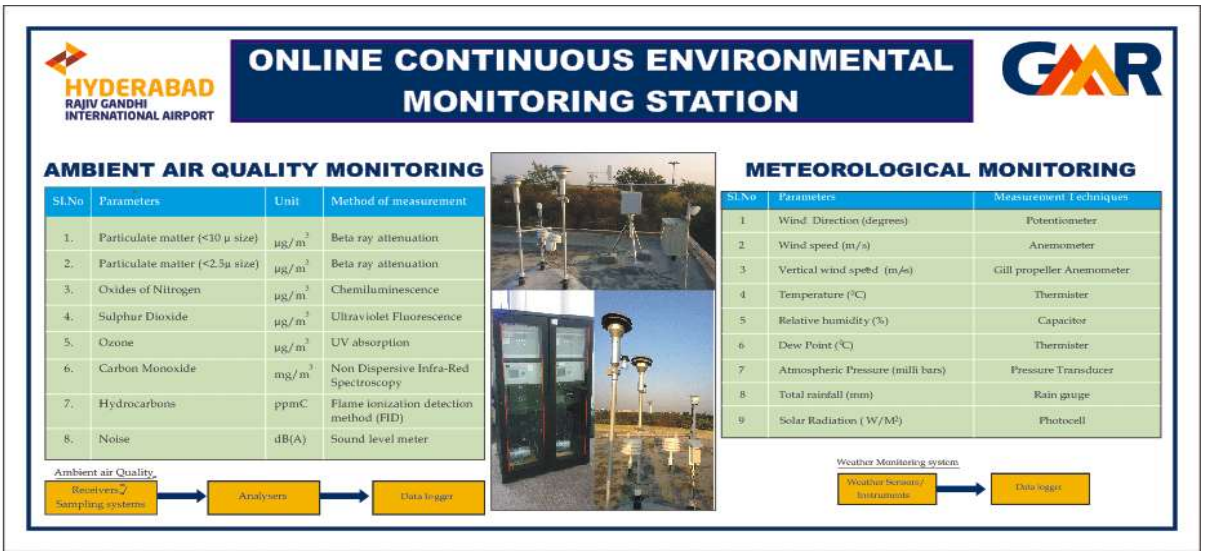
Solid Waste Management

At RGIA there is a sophisticated solid waste management system to make very good use of the food waste generated from the airport. GHIAL has established a compost plant within the airport premises where all the food waste generated from various sources from the airport is processed and converted into compost which is used as natural manure to the plants of the vast airport landscape within the airport. Further, the paper and plastic waste are handed over to authorized recyclers for reprocess and reuse.



Online Continuous Environmental Quality Monitoring

Rajiv Gandhi International Airport is the first airport in the Country to commission an integrated online continuous environmental monitoring station to monitor and automatic recording of environmental parameters on 24 x 7 basis throughout the year.



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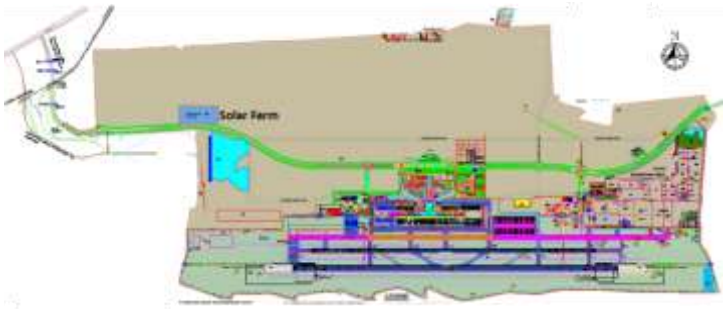
Renewable Energy Uuse - Solar Farm

RGIA has commissioned a 5 MW solar power plant for its captive consumption and plans to gradually scale the capacity up to 30 MW over the next two-three years.

Located within the airport premises, the solar plant set up with an outlay of Rs 25 Crores, has started generating around 25,000 units per day of pollution free energy and meeting the airport's peak power demand during day time. The green energy produced by the plant is equivalent to meet requirement of about 4,800 homes.

The plant has been set up in about four months time will cater to about 30 per cent of the airport's terminal power requirement. RGIA in next phase intents to ramped the capacity of the solar power project to 7 MW more and eventually to 30 MW, thereby meeting the entire requirement of the airport and its related establishments. The solar power plant has over 16,000 modules of solar panels, each having a fixed tilt for maximum sun exposure. These modules based on poly crystalline technology are considered to be amongst most efficient. The Grid-connected system would be used for captive consumption of the airport



FEATURES:

- Capacity - 5 MW
- Area - 21 acre
- Average Daily power generation - Appx 2.2 MW
- Date of commissioning - 8th Nov 2015
- Technology : PolyCrystalline
- Module : 310 Watts (19% Efficiency)
- Internal grid interconnection at 33KV level
- Theoretical expected generation units: 8 Mn. kWh per annum

GHIAL Community Service Activities

The Hyderabad airport has been a proactive organization in terms of its societal responsibilities, going much beyond the obligated benefits for the surrounding communities. The community-service activities for GHIAL are fulfilled by a team of social-work professionals who are part of the GMR Varalakshmi Foundation – the CSR arm of the GMR Group of companies. The activities started in 2005, more than 3 years before the commencement of operations in 2008 and have grown ever since, further reflecting airport's commitment to the community stakeholders.The foundation works in surrounding villages with the aim of strengthening village communities and their institutions through various participatory rural development programmes and initiatives. The foundation conducts several vocational training programmes for the youths and women. Some of the training programs are focused towards environmental conservation like making of jute bags and providing training for landscaping and maintenance. The foundation also conducts

awareness programmes on environmental conservation for school children. As recognition for its significant contribution to the society, the foundation has been conferred with the President's award for social responsibility.

Vision - To make sustainable impact on the human development of under-served communities through initiatives in education, health and livelihoods.

Mandate and Coverage

With this vision as the focus, intensive activities are taken in 5 villages, while various other extension services are spread in more than 20 villages around the airport. The span of activities covers the most significant areas of education, health and livelihoods, with need-based programmes being implemented in each programme.

Some of the major highlights are given below:

Education

- As govt schools are often not only lacking in infrastructure but also leave a large gap in the learning levels of the students in neighbouring govt schools. It has adopted 7 govt schools in the 4 neighbouring villages of the airport to work towards improving quality of education. Year-long and regular activities include after-school tuitions, extra teacher support, teacher training, providing teaching learning material, notebooks and any other means to aid education. Total students covered are more than 2000.
- To further enhance the learning levels, a tie-up has seen made with IBM to install their IBM Kidsmart Centres in the 4 adopted primary schools to provide technology aided and activity-based learning.
- The gap in infrastructure in these schools has also been supplemented with provision of benches, school toilets, drinking water facility, etc. Every year close to 2000 students are benefitted by these activities.
- Adopted all govt anganwadis (pre-schools) in the neighbouring villages to work with smaller children and prepare them better for schooling. Teaching-learning and educational support through workshops, infrastructure, snacks, etc. Covers around 300 children every year
- Built and running GMR Chinmaya Vidyalaya – an English medium CBSE school providing affordable education to all in the vicinity. The school since its opening in 2008 has been attracting a large number of students and in 2012, the first batch of 10th class board exam students had 100% results.
- A 'Gifted Children' scheme runs in this GMR Chinmaya Vidyalaya for poor but meritorious students from neighbouring villages. Such children are selected from the villages through a process and fully-sponsored to the school. Currently 91 students sponsored from Std 1st to 10th.
- Community Libraries are being run at 5 villages Around 2500 users utilize the services of these libraries.
- Education support activities would have impacted more than 12,000 students in the last 6 years and continues to do more.
- Health and Sanitation
- Running a Mobile Medical Unit (MMU), esp catering to elderly (55+ age group) in the neighbouring villages. A qualified doctor, pharmacist and social worker provided free medical advise and medicines in a weekly schedule to more than 500 beneficiaries every week. Covers people from around 20 villages and yearly treatments are around 30,000. From 2006, this service has provided more than 1.8 lakh treatments.
- Weekly Evening Clinics in 5 villages for all age groups. Free doctor advise and medicines for all needy patients. Covers around 700 patients every month.
- A RO Water Filter plant installed at Airport Rehabilitation village for providing quality drinking water to the inhabitants. Benefitting around 150-200 households daily.
- Conducts health check up for pre-school and primary school children, covering around 1200 to 1500 children every year.

- Supplementary Nutrition Centre for Pregnant and Lactating women in two villages. Provides daily food supplements to cover deficiencies in calories, iron, folic acid, etc. Health awareness sessions are coupled with this. More than 1000 women benefited in the last 5 years as better nutrition and pre/post natal awareness has led to more than 90% institutional deliveries, good immunization follow-up, average baby weight has been found to be around 3.0 kgs.
- Several eye camps, general medical camps, cataract surgeries, aids for disabled etc. are organized every year.
- Around 150,000 people benefitted in the last 7 years through the various health related activities.
- Empowerment and Livelihoods
- Running a residential vocational training centre for skilling school and college drop out youth through short-term, job oriented courses. Courses conducted with industry partners like Voltas for Refrigeration and Air-conditioning, Schneider for Electrician, Hero MotoCorp Dealers Association for Automobile, VLCC for Beautician, Volvo for Excavator Operator, etc.
- Trained close to 2800 candidates in the last 8 years, where jobs have been facilitated for over 80% of these trained candidates.
- Hyderabad airport being a Greenfield airport had lot of requirement of entry-level technicians and other staff at its opening in 2008. Through tie-ups with different concessionaires, more than 800 candidates were placed in suitable jobs at the airport. These not only included the trained electricians, AC technicians, computer operators, etc. but also lot of raw people for jobs such as parking attendant, trolley pushing, housekeeping, etc.
- To provide income-generation training for women at the village level, tailoring and stitching programmes have been undertaken, post which some of them were provided specialized training for making jute products, uniform stitching, bag making, chocolate making, etc. These initiatives are now clubbed under - EMPOWER (Enabling Marketing of Products of Women Entrepreneurs) initiative, where not only the training part but also the marketing part is taken care of.
- The products are marketed through two shops at Hyd airport, one at Delhi airport, office sales, bulk orders for conference and seminars and an online store also.
- The turnover in the last financial year reached close to Rs 76 lakhs benefitting hundreds of women and artisans.
- Others
    - A ‘Grievance Redressal Mechanism’ has been created to record and address different types of requests and complaints from the airport rehabilitation colony and other affected villages. The system records with date, the nature of request and the action taken and any follow up needed.
    - As there are more 11 different types of benefits being provided to the residents of the Airport Rehab colony, a ‘digitized benefit map’ of the colony has been created which on a click of a button gives household-wise data of the benefits being availed by each family in the colony.

CSR-Self-help initiative

Handy craft product showcase

Group Chairman receiving TERI award from the President of India

Udyannam

RGIA, as part of promoting greening even beyond its campus, has a shop at the arrivals for selling plants, under the brand name of Udyannam. These plants are reared at GHIAL nursery and marketed through this outlet, thus cultivating a culture of 'green gifting'!!

Environmental Promotion: RGIA very actively promotes environmental awareness to the airport community and to the passengers by observing various days like World Environment Day, World Forestry Day, Ozone Layer Protection Day, Earth Day, etc., .

E-boarding @ RGI Airport, Hyderabad: Promoting Paperless Efficient Travel

RGIA is the 1st Airport in India to Pilot as well as successfully implement End-to-End, E-enabled Passenger Processing at all Check Points!

The E-boarding project at RGIA has been recognized by International Air Transport Association (IATA) as being aligned to their "Fast Travel" vision and "Simplify the Business" initiative that allows for greater passenger choice through access to self-service options.

The unique passenger workflow designed for the E-boarding pilot not only provides an enhanced passenger experience but also ensures a high level of security. This automated process promises a better environment by going paperless; lesser manual interface and convenient journey for passengers at RGIA – all these at no additional cost to the passengers. Further, RGIA has gone the extra mile by ensuring that the E-Boarding facility implemented is an end-to-end process covering all key passenger touch points at the airport without compromising on any security aspect.

From entry into the terminal, to boarding the aircraft, a passenger need to only use their e-boarding card. Movement through this channels ensures that the passenger's movements are tracked electronically (with timestamp) and through dedicated HD CCTV cameras at each of these checkpoints. This enhances the security at the airport by adding an extra layer of technologically advanced tracking to the existing security apparatus.

All these initiatives are paving the way for a tech-savvy, paper-less future for Indian aviation.

Wild Life Management

To address wildlife/Bird hazard mitigation measures from the flight safety point of view RGIA has adopted various scientific approaches within its premises. The broad strategy is divided into reactive, preventive & proactive methodologies. Among the reactive measures in-site deterrents like Acoustic & trained personal are being engaged to keep the bird & wild life from the aircraft movement areas. The preventive measure includes continuous bird/wildlife patrols in the movement area by the trained operation team with appropriate Expertise/ Equipment. The Proactive measure includes Regulated landscaping & food cycle control for the predatory bird/wildlife. Further RGIA has employed a domain expert agency "Vanamitra" (NGO), to conduct an all season study on the bird /wildlife deterrence covering 1 year , which has been completed in 2015. All wildlife bird control measures are based on this scientific approach to ensure overall safe aircraft operation. We also work closely with local government agencies to take care of bird/wildlife issues associated with the areas outside the airport boundary.

4.0 Site Analysis

4.1 Connectivity

Rajiv Gandhi International airport is serving the metropolis of Hyderabad located at Shamshabad, about 22 km south of Hyderabad. The airport is about 40 km from Secunderabad railway station. 11.6 km PV Narasimha rao expressway from Mehdipatnam to Rajendranagar provides dedicated high speed travel to the airport and Nehru outer ring road serves as a controlled access highway.

Further, metro rail extension from Faluknama to Shamshabad and a dedicated train corridor from Secunderabad to airport are under planning.

4.2 Land form, Land use and Land ownership

4.2.1 Airport Land use

The two broad areas of refined land use designations are:

- Airside –include mainly following facilities
  - Runway, Taxiway & Aprons etc.
  - Other facilities directly supporting aero activities

- Landside
  - Airport Related Facilities (Passenger terminal, Cargo Terminal, Airport Hotel Etc.)
  - Fuel farm
  - ATC Tower and Technical Building
  - Airport Supporting Business Park/SEZ
  - Institutional Zone- Training Institutes, Schools etc.
  - Airport City which constitutes of Mixed Commercial Zone, health port, Eduport, Entertainments &Recreational Port, etc.

The airside is a highly restrictive contiguous secured land parcel which facilitates the Aircraft landing, takeoff & ground movements whereas landside has all the facilities which will cater to passenger & other commercial & business needs of associated with Airports. The following Tables gives the update on the current status of land utilization pattern.

Table 0-I: Statement on Existing Airside landuse

AIRSIDE LANDUSE	Extents (Acres)	Relative %
Total airside land	1,671	100%
Runway pavement	101	6.0%
Taxiway & apron pavement	214	12.8%
Passenger terminal plinth area	17	1.0%
Airside road (17 km of road)	32	1.9%
ARFF pavement & built area	3	0.2%
Area under other building & facilities (STP, sump, radar building, maintenance, etc.)	4	0.2%
Area under water harvesting facility	20	1.2%
Open area	1,281	76.7%
Note: Area mentioned refers to ground Cover of respective facilities/Building		

Table 0-II: Statement on Existing Landside land use

LAND SIDE LAND USE	Extent (Acres)	Relative %
Total existing landside	3,821	100%
Car parking	59	3.5%
Road ways	184	11.0%
GMR office complex (site & aero towers)	3	0.2%
Cargo Village comprising of Cargo terminal, Blue Dart terminal & CSB	6	0.4%
ATC complex	1	0.1%
Built-up In Aviation SEZ (MRO, CFM, Etc.)	12	0.7%
Novatel Built-up	2	0.1%
Other Facilities & build-up (decathlon, LSG SKY CHEF, Engineering & other building, blue dart, etc.)	10	0.6%
Apron	13	0.8%
Open Area/Green Space	3,532	92.4%
Note: Area mentioned refers to ground Cover of respective facilities/Building		

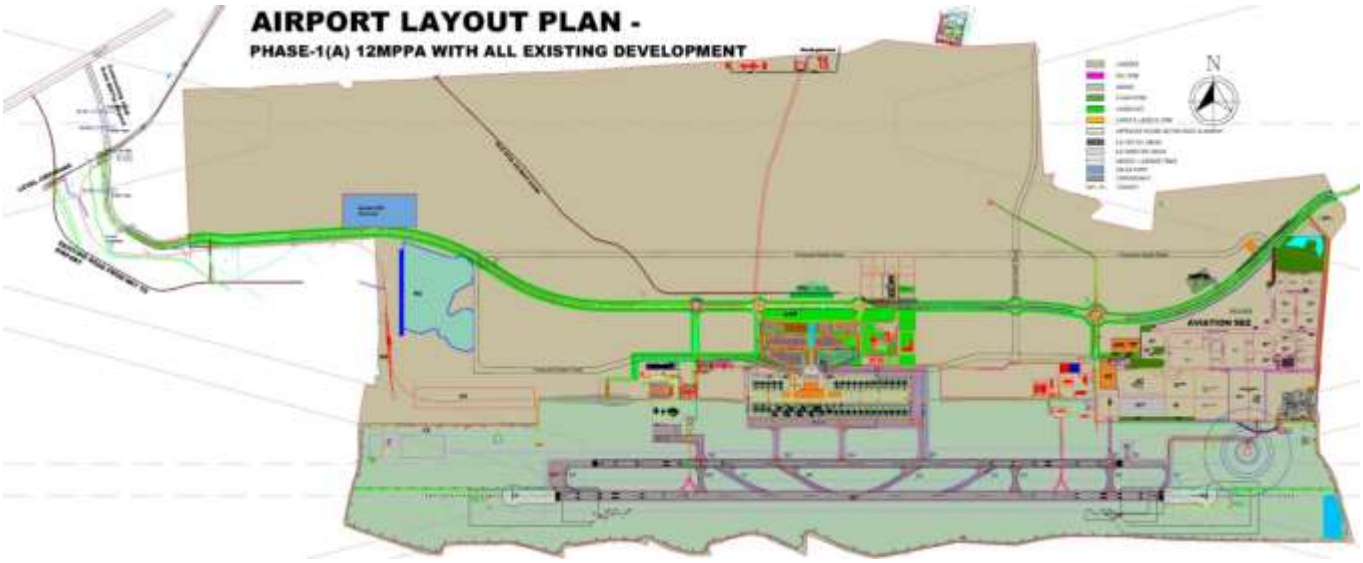


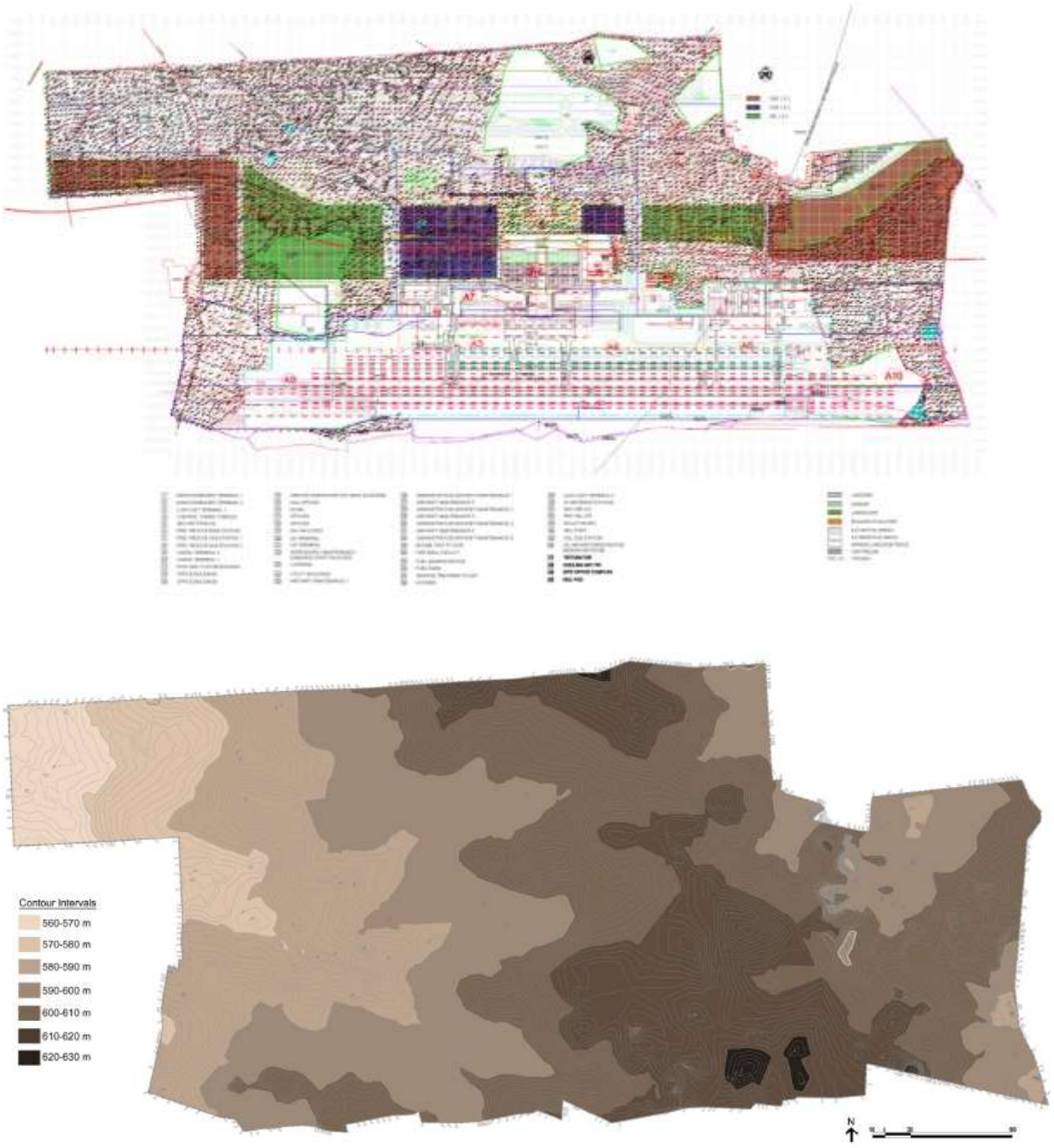
Figure 0-1: RGIA existing landuse map

4.3 Topography

The additional facilities at the airport terminal will be developed within the existing terminal area, which already has uniform topography. Thus, no major changes in the topography are envisaged. The land is sloping from west end of the airport land to the eastern end. The terrain around the proposed site is open, devoid of any high obstructions and safe for aircraft operations. The general topography can be overcome for operational uses with adequate site preparation.

The topography of the land at proposed SEZ area has minor undulations. The topographic map, showing different contour levels at the proposed Development zone area is illustrated in the below figure.

Figure: Topography Map with Airport master Grading plan



5.0 Proposed Utility Infrastructure

5.1 Water Requirement

The peak water demand of the existing 12 MPPA airport is 8647.7KLD. The water requirement at the facilities Passenger Transport Center (PTC) and Special Handling Terminal (SHT) is in the tune of 40 KLD, which is be fed from Airport common supply lines. There be an increase of 11819.7KLD in domestic water demand at terminal facilities as the number of passengers will increase to 25MPPA. However, additional domestic water requirement of 30 KLD is envisaged at the cargo terminal due to increase in cargo handling capacity for domestic use in PTC, SHT, additional cargo facility and satellite cargo agents building.

The break-up of the existing and proposed water requirement is given in Table 6-I:

Table 6-I: Water Requirement Breakup for RGIA

S.No	Particulars	Average Water Requirement (KLD)			Remarks for New Facility
		Existing Airport Terminal - 12 MPPA	Proposed Expansion	Total	
A	**Potable Water**				
1	Passenger Terminal Building	1375	1575	2950	Requirement of catering additional daily Passenger traffic of 35000 Pax/day
2	Cargo Terminal	105	105	210	
3	Hangar, Flight Kitchen, Radar Station, Aircraft, Fuel Farm, Bus,shelter/car parking, Novotel Hotel etc.,	910	0	910	
4	Landscaping/ Irrigation	1780	678		
5	Aviation SEZ	2897.7	0	2897.7	
	Total Potable Water [A]	7067.7	2358	9425.7	
B	Flushing and washing	110	120	230	Additional Service Water for PTB Expansion Zone
C	AC Make-up	450	450	900	
D	Landscaping/ Irrigation	1020	244	1264	Toward additional landscape zones
Total [B+C+D]		1580	814	2394	
Total water Demand		8647.7	3172	11819.7	Additional Requirement to be catered from existing supply

Fresh water Requirement of 9425.7 KLD & STP Recycled water requirement of 2394KLD

5.2 Power Requirement

The additional power requirement due to the proposed terminal expansion at the airport complex would be 4000 KWH. The total power requirement for the additional proposed facilities will be met from the existing power supply of Telangana Power Transmission Corporation Limited (TSTRANSCO) to the airport. The existing back up power supply available for the airport will be extended for the expanded facility in the complex.

The existing power demand for airport operation of 16.4 MVA is being sourced from TSTRANSCO. Over and above the same the demand projected for Aviation SEZ of 72MVA will also be sourced from TSTRANSCO commensurate to actual development.

5.3 Utilities

There will be requirement to enhance the capacities of existing utilities for catering to the proposed expansion facilities at the airport terminal. The upgradation of capacities would be commensurate to the additional demand & will be expanded in a due course and will be extended to the expanded facilities also.

5.4 Economic Impact of GMR Airports - Hyderabad

Hyderabad Airport is contributing significantly to the overall economic and social growth of the Region. Some of the highlights are listed below

- ✓ RGIA's operations contributed about USD 1.5 Bn to the national GDP in 2009-10.
- ✓ RGIA's construction contributed 122,000 jobs during the construction phase.
- ✓ RGIA's operations overall contributed 840,000 jobs (0.18 % of national employment) in 2009-10. As a ratio to State employment this contribution was 2.5%.

(Source: Economic Impact Study of Hyderabad Rajiv Gandhi International Airport (RGIA), National Council of Applied Economic Research Report, September 2012

5.5 Employment Generation Commensurate to Expansion

Project construction is expected to generate more than 5000 direct employment and double the figure indirect employment which will span across 5-6 years.

Operational of Enhance capacities will also generate additional direct employment generation which might be double the existing level due to enhance operating environment due to the expansion at the airport terminal. Alone with the same there will be also substantial indirect employment generation due to the development higher traffic & expansion of activities commercial & service activities which will have the potential to generate employment which would be 5-6 time the direct employment numbers. So it is expected that the expansion will result having a tertiary support workforce in tune of about 10000. This includes indirect employment generation of about 4000 persons is envisaged for utility services along with other 5to 6 thousand in commercial & support services.

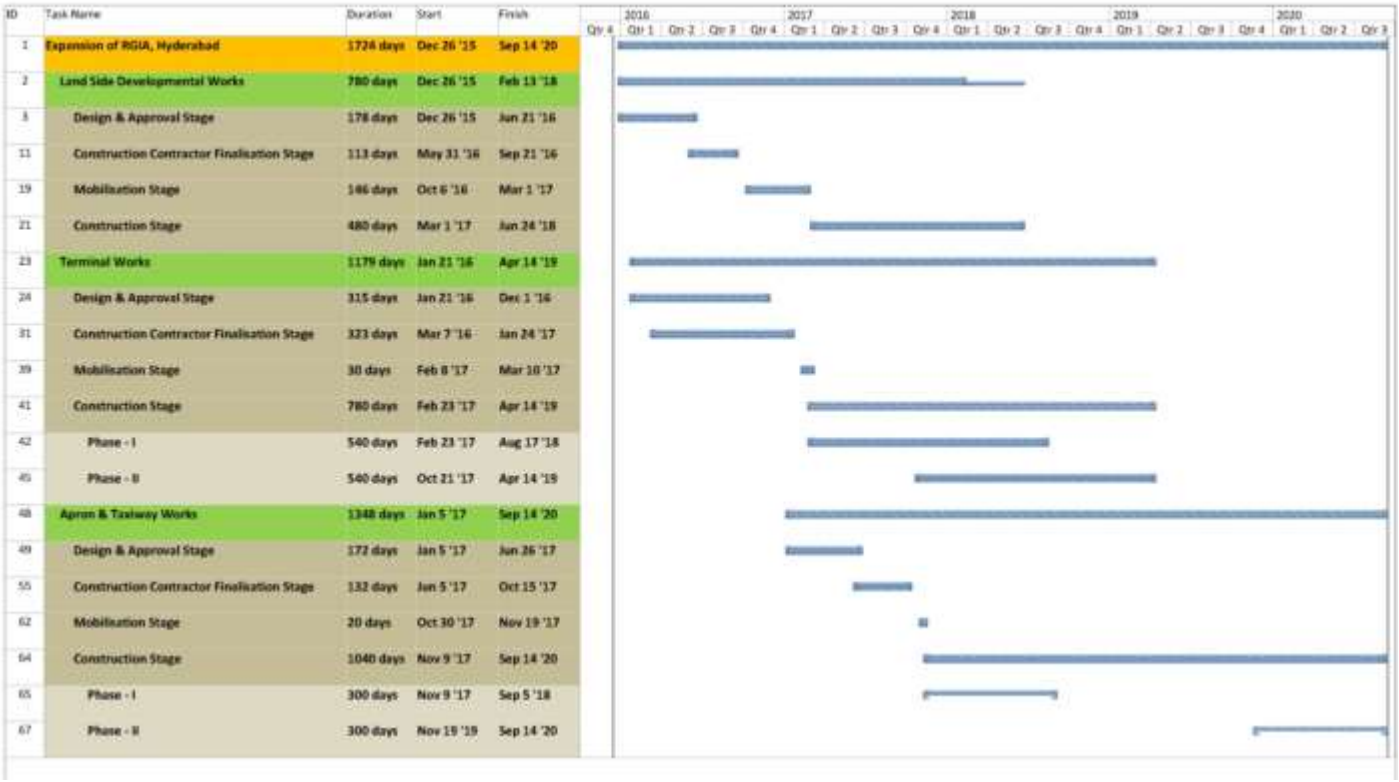
6.0 Rehabilitation and Resettlement (R&R)

The present proposal is for expansion of the airport terminal from 12 MMPA to 25 MPPA and other air side facilities within the existing airport premises. No additional land acquisition is involved as part of the proposed expansion.

Hence, no resettlement and rehabilitation is involved.

7.0 Project Schedule and Cost Estimate

7.1 RGIA Expansion Schedule



ID	Task Name	Duration	Start	Finish
1	Expansion of RGIA, Hyderabad	1724 days	Dec 26 '15	Sep 14 '20
2	Land Side Developmental Works	780 days	Dec 26 '15	Feb 13 '18
3	Design & Approval Stage	178 days	Dec 26 '15	Jun 21 '16
11	Construction Contractor Finalisation Stage	113 days	May 31 '16	Sep 21 '16
19	Mobilisation Stage	146 days	Oct 6 '16	Mar 1 '17
21	Construction Stage	480 days	Mar 1 '17	Jun 24 '18
23	Terminal Works	1179 days	Jan 21 '16	Apr 14 '19
24	Design & Approval Stage	315 days	Jan 21 '16	Dec 1 '16
31	Construction Contractor Finalisation Stage	323 days	Mar 7 '16	Jan 24 '17
39	Mobilisation Stage	30 days	Feb 8 '17	Mar 10 '17
41	Construction Stage	780 days	Feb 23 '17	Apr 14 '19
42	Phase - I	540 days	Feb 23 '17	Aug 17 '18
45	Phase - II	540 days	Oct 21 '17	Apr 14 '19
48	Apron & Taxiway Works	1348 days	Jan 5 '17	Sep 14 '20
49	Design & Approval Stage	172 days	Jan 5 '17	Jun 26 '17
55	Construction Contractor Finalisation Stage	132 days	Jun 5 '17	Oct 15 '17
62	Mobilisation Stage	20 days	Oct 30 '17	Nov 19 '17
64	Construction Stage	1040 days	Nov 9 '17	Sep 14 '20
65	Phase - I	300 days	Nov 9 '17	Sep 5 '18
67	Phase - II	300 days	Nov 19 '19	Sep 14 '20

7.2 Proposed Capital Expenditure

The estimated Capital expenditure for the proposed project is Rs **2629** Cr. The detailed of the cost components for these two phases is provided below.

#	Capex Components	Cost (Rs Cr.)
1	**Land side approach Improvements**	120
2	**Terminal Expansion**	734
3	**Pier Expansion**	1060
4	**Apron Development**	435
5	**Taxiway-B Extension**	200
6	**Fuel Tank Expansion**	30
7	**Sustainability Projects (Solar Plant & Water Reservoirs)**	50
	Total	**2629**

Note: The above Capex estimates exclude Interest During Construction (IDC).

7.3 Basis of Costing

Capex estimates are based on Historical data, Current Market prices and Expert judgment. Unit rate for Items of work are estimated based on present market prices and a consideration of 5.03% escalation as per CPI of Construction Industry Development council (CIDC)

The broad cost head composition for working out the abstract Cost for expansion are illustrated in the table below

Table 0-I: Bill of Material for GHIAL Expansion (environmental Capex - Cost)

S.No	Description	Unit	Quantity
	CIVIL		
1	Earth works	Cum	68542
2	Reinforcement	MT	10305
3	Concrete	Cum	64640
4	Structural Steel	MT	4941
5	Flooring	SQM	102039
6	Roofing	SQM	34635
7	Glass / Aluminum Façade	SQM	16922
	HVAC		
1	Centrifugal water cooled Chillers - 500TR	Nos	6
2	HVAC Pumps	Nos	16
3	Cooling Towers	Nos	6
4	AHUS and other low side works	Lot	1
	Electrical		
1	Dry type 1600 kVA Transformers and accessories	Nos	6
2	DG 1000 kVA Sets	Nos	3
3	HT & LT panels	Lot	1
4	Low side LT works	Lot	1
	Fire Fighting		
1	Fire Pumps	Nos	6
2	Fire Pipe works	Lot	1
3	Fire Fighting accessories	Lot	1
	Fire Alarm Works		
1	Fire Alarm Control Panels	Nos	4
2	Smoke and Heat Detectors	Nos	3000
3	Low side Fire Alarm works	Lot	1
	Plumbing and Drainage Works		
1	Pumps	Set	6
2	Sanitary fixtures and CP Fittings	Lot	1
3	Pipe and other works	Lot	1
	Baggage Handling System		
1	Departure Baggage Handling System	Lot	1
2	Arrival Baggage Handling System	Lot	1
	Passenger Boarding Bridges		
1	Passenger Boarding Bridges	Nos	19
2	VDGS	Nos	11
	People Movers		
1	Passenger Elevators	Lot	16
2	Escalators	Lot	34
3	40 mtr Travelators	Lot	8
	Security Screening Systems		
1	Hand Baggage Screening Machines	Nos	20

2	Registered Baggage Screening Machines	Nos	7
3	DFMDs	Nos	40
4	HHMDs	Nos	40
5	ETDs	Nos	13
	Building Management System		
1	Servers and Controllers	Lot	1
2	Instruments and Low side works	Lot	1
3	Software	Lot	1
	Fuel Farm		
1	Fuel storage Tanks	Nos	2
	Sustainability Initiatives		
1	Water Storage Reservoir	Nos	2
2	Solar Farm Expansion	MVA	5
3	Landscaping	Acres	100

7.4 Procurement Strategy

The development works for the expansion of the Terminal and associated infrastructure would be undertaken by GHIAL. All major contracts such as those for construction, purchase of equipment, finishing works etc. are proposed to be awarded on a competitive bidding process.

7.5 Sources of Financing

The project is expected to be financed through a combination of internal accruals and Debt. Debt to be in the range from 70-80% and balance to be through internal accruals.

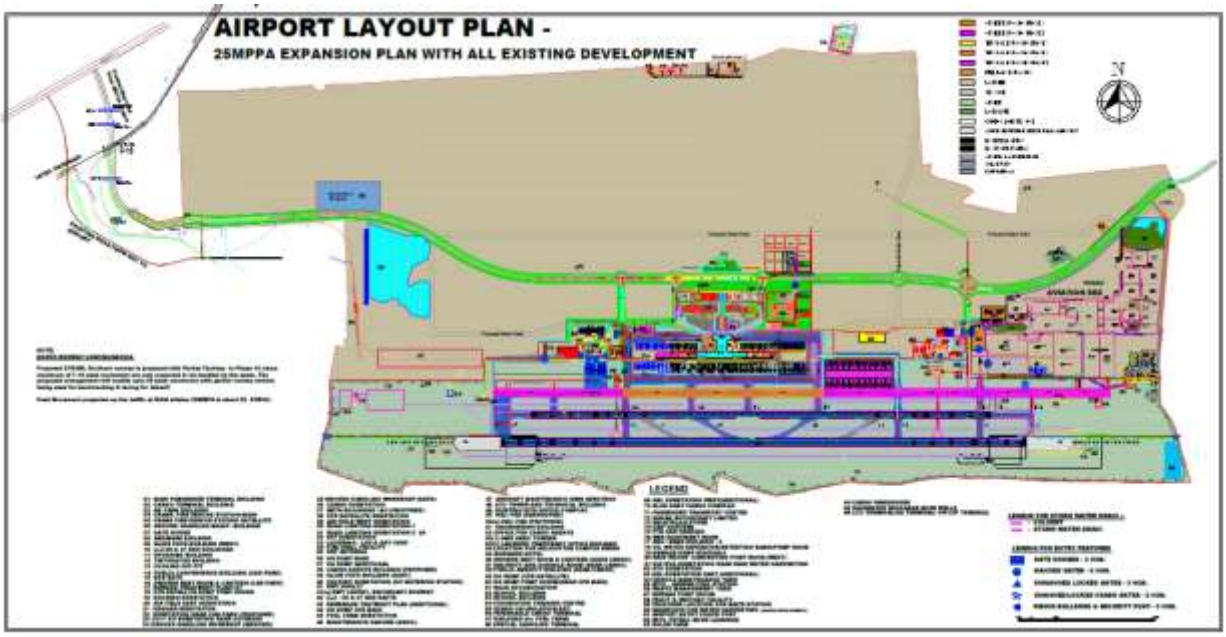
8.0 Analysis of Proposal

RGIA has outpaced the growth seen in the Indian Aviation Sector and is presently operating at over 83% of its design capacity. RGIA Hyderabad has seen strong traffic growth. The Passenger Traffic has increased from 6.2 mn in FY 09 to 10.5mn in FY 15 showing a 20% year on year growth. This strong growth has led to congestion of most passenger processing points.

As the original design of the airport is modular, the current expansion and all future expansions will follow the same concept for capacity augmentation.

Post current proposed expansion, RGIA would have the capacity to handle 25 MPPA from the current design capacity of 12 MPPA to meet projected traffic requirement for next control period. **The required expansion must be initiated immediately, in order to sustain the service levels.**

Annexure I: Proposed Expansion Design Layouts



Annexure II: Picture Gallery of Some of the Congestion Points

Access Road to Passenger Terminal Building and Departure Ramp

Departure Forecourt Area

Passenger Entry Gates

Check In Area

Pre-Embarkation Security Check Area (International SHA and Domestic SHA)

Bus Boarding Area

Baggage Claim Area