

**Environmental Clearance Conditions – Compliance Status**  
**October 2021 to March 2022**

**Subject:** Environmental Clearance for the expansion of Rajiv Gandhi International Airport (RGIA) from 12 MPPA to 25 MPPA at village Shamshabad, in Hyderabad, Telangana by M/s. GMR Hyderabad International Airport Limited (GHIAL).

**Reference:** Ministry of Environment, Forest and Climate Change (MoEF&CC) clearance F. No. 10-35/ 2016-IA-III dt. 28/7/2017 and corrigendum issued for F.NO. 10-35/2016-IA-III dated 19/07/2019.

S.NO	CONDITIONS	COMPLIANCE STATUS
<b>PART A - SPECIFIC CONDITIONS</b>		
i	As proposed, environmental clearance is for Expansion of Rajiv Gandhi International Airport at Village Shamshabad, Hyderabad, Telangana.	Noted.
ii	Project proponent shall obtain clearance from Directorate General of Civil Aviation (DGCA) and Airports Authority of India (AAI) for safety and project facilities.	As advised necessary clearances will be obtained from DGCA and AAI before commissioning the facilities. * In March 2022 GHIAL has obtained commissioning level approval from DGCA for vehicular movement in GSE Tunnel, for Taxiway J, extended portion of Taxiway D and recommissioning of a portion Taxiway K1 at RGI Airport, Hyderabad.
iii	Construction site should be adequately barricaded before the construction begins.	All the adjoining construction sites are barricaded without any openings for the airside access/intrusion.
iv	Soil and other construction materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty material wet.	Water is being sprayed on soil and other construction materials prior to unloading or transfer or during stacking up to prevent dust generation.
v	The soil/construction materials carried by the vehicle should be covered by impervious sheeting to ensure that the dusty materials do not leak from the vehicle.	The vehicles carrying Soil/ Construction materials are covered by impervious sheet to prevent leakage of dusty material.
vi	The excavation working area should be sprayed with water after operation so as to maintain the entire surface wet.	Excavation working area is sprayed with water after operation to keep the entire surface Wet.
vii	Soil stockpile shall be managed in such a manner that dust emission and sediment runoff are minimized. Ensure that soil stockpiles are designed with no slope greater than 2:1 (horizontal/vertical). Top soil shall be separately stored and used in the development of green belt.	Excavated soil is separately stored at designated low level areas and ensured the heap slopes maintained not greater than 2:1 (horizontal/vertical).

viii	A detailed drainage plan for rainwater shall be drawn up and implemented.	Currently, the Airport is having the rainwater drainage system for its paved areas and building rooftops. The runoff is collected in the rainwater storage tanks and allowed for recharge within the airport premises. Further, the drainage network is being extended in line with the airport expansion work plan.
ix	Ground water abstraction and rain water recharge shall be as may be prescribed by the CGWA. A clearance of the CGWA shall be obtained in this regard.	Telangana state is having its own regulation i.e. Water, Land and Trees Act - 2002. Accordingly, the water resource management is coming under the State Ground Water Department jurisdiction. Accordingly, GHIAL has obtained permission for the Ground water abstraction and rainwater recharge plan from the state ground water department vide letter no. 65/OS/GWD/RRD/2020/214 dated 19/3/2021.
x	Noise from vehicles and power machinery and equipment on-site should not exceed the prescribed limit. Equipment should be regularly serviced. Attention should also be given to muffler maintenance and enclosure of noisy equipment.	Noise generated from vehicles, power machinery and Equipment onsite are kept under the prescribed limits by undertaking regular servicing, maintenance of mufflers and enclosures of equipment.
xi	Where construction activity is likely to cause noise nuisance to nearby residents, restrict operation hours between 7 am to 6 pm.	Noted and the construction activity is restricted between 07:00 a.m. to 6:00 p.m.
xii	Solid inert waste found on construction site consists of building rubble, demolition material, concrete, bricks, timber, plastic, glass, metals, bitumen etc. shall be reused/recycled or disposed off as per Solid Waste Management Rules, 2016 and Construction and Demolition Waste Rules, 2016.	All the solid waste, Construction & Demolition waste generated at construction site is managed as per the Solid Waste Management Rules, 2016 and The Construction and Demolition Waste Management Rules, 2016.
xiii	Diesel power generating sets proposed as source of backup power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use of low Sulphur diesel. The location of the DG sets may be decided with in consultation with State Pollution Control Board.	Acoustic enclosure type DG sets are used as source of backup for elevators and common area illumination during operation phase. The noise levels and emissions of the DG sets are ensured to conform with the Environment (Protection) Act, 1986. The height of DG set stack is maintained as per the norms. Low Sulphur diesel is used for the DG set operations. The location of the DG sets will be decided in consultation with the State Pollution Control Board (SPCB) if any proposed.
xiv	Aircraft maintenance, sensitivity of the location where activities are undertaken, and control of runoff of potential contaminants, chemicals etc. shall be properly implemented and reported.	The aircraft maintenance activity is being performed in the closed workshop i.e., Maintenance, Repair, and Overhauling (MRO) facility of the airport. The washings and floor cleanings of the MRO facility are routed to an in- house ETP with in the workshop.
xv	Proper drainage systems, emergency containment in the event of a major spill during monsoon season etc. shall be provided.	Runoff drainage system has been established as per the Master plan of the Airport. Emergency containment for the spill controls has also been provided.
xvi	The runoff from paved structures like Runways, Taxiways, can be routed through drains to oil separation tanks and sedimentation basins before being discharged into rainwater harvesting structures.	For the current airport operations, runoff from runways and taxiways is collected and routed through drains to oil separation tanks before being discharged into rainwater harvesting structures. Similarly, for the airport expansion, the same procedure has been implemented.

xvii	Storm water drains are to be built for discharging storm water from the air-field to avoid flooding/water logging in project area during monsoon season / cloud bursts.	The runoff from the airfield is being taken care by constructing storm water drains.
xviii	Rainwater harvesting for roof run-off and surface run-off, as plan submitted should be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease.	The runoff from roof top is collected in drains and passed through oil and water separation tanks and sedimentation basins before recharge into rainwater harvesting structures as per the submitted plan.
xix	Total freshwater requirement from Hyderabad Metro Water Supply and Sewerage Board shall not exceed 7765 KLD.	Noted and the water consumption shall be limited within the prescribed quantity 7765 KLD.
xx	Wastewater generation shall not exceed 7162 KLD as proposed and treated in the STP. Treated sewage shall be recycled/reused for cooling tower makeup, flushing and horticulture.	Wastewater generation shall be limited to 7162 KLD and the water is treated and recycled to reuse the water for cooling tower makeup, flushing and horticulture.
xxi	Acoustic enclosures for DG sets, noise barriers for ground- run bays, ear plugs for operating personnel shall be implemented as mitigation measures for noise impact due to ground sources.	Presently, the DG sets are equipped with acoustic enclosures. Necessary noise mitigation measures are being practiced by the airlines and ground support departments. Further, the same will also be practiced for the airport expansion project to reduce the noise from DG sets, ground-run bays and ear plugs for operating personnel.
xxii	During airport operation period, noise should be controlled to ensure that it does not exceed the prescribed standards. During night time the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations. A monitoring station for ambient air and noise levels shall be provided in the village nearest to the airport.	An online continuous environmental monitoring station with ambient noise and ambient air quality monitoring equipment is being operated at the boundary of the airport. The monitoring results are found within the prescribed limits. In the surrounding villages, ambient air and noise levels are being monitored by an authorized environmental laboratory.
xxiii	The solid wastes shall be segregated as per the norms of the Solid Waste Management Rules, 2016. Recycling of wastes such as paper, glass (produced from terminals and aircraft caterers), metal (at aircraft maintenance site), plastics (from aircraft, terminals and offices), wood, waste oil and solvents (from maintenance and engineering operations), kitchen wastes and vegetable oils (from caterers) shall be carried out.	All the solid waste, generated from construction site, PTB, Flight Kitchens, Canteens are properly segregated & managed as per the Solid Waste Management Rules, 2016.
xxiv	Traffic congestion near the entry and exit points from the roads adjoining the Airport shall be avoided. Parking should be fully internalized and no public space should be utilized.	Traffic congestion near the entry and exit points from the roads adjoining the Airport is avoided by construction of 4 & 6 lane (from Hyd –Bangalore highway to the Srisailam highway) road. A fully internalized dedicated parking area has been developed and no public space is utilized.
xxv	Provision of Electro-mechanical doors for toilets, meant for disabled passengers. Children nursing/feeding room to be located conveniently near arrival and departure gates.	Provision of electro-mechanical doors at toilets meant for disabled passengers is included in the terminal expansion works and implemented. In addition, the nursing/feeding rooms for children near arrival and departure gates have been provided.

xxvi	An assessment of the cumulative impact of all activities being carried out or proposed to be carried out by the project shall be made for traffic densities and parking capabilities in a 05 K.M. radius from the site. A detailed traffic management and a traffic decongestion plan drawn up through an organization of repute and specializing in Transport Planning shall be implemented to the satisfaction of the State Urban Development and Transport Departments shall also include the consent of all the concerned implementing agencies.	Traffic management and decongestion plan has already been carried out by the specialized agency i.e., IBI Consultancy India Private Limited in December 2018.
xxvii	Energy conservation measures like installation of LED/CFLs/TFLs for the lighting the areas outside the building should be integral part of the project commissioning. Used CFLs and TFLs should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/ rules of the regulatory authority to avoid mercury contamination.	GHIAL had included several energy conservation measures in the project design and installed energy efficient lighting equipment like Compact Fluorescent Lamps (CFLs) /Tubular Fluorescent Lamps (TFLs) and Light-emitting diode (LEDs) for lighting the areas outside the building. The electrical waste is disposed of as per the e-waste Management and Handling Rules, 2016.
xxviii	An onsite disaster management plan shall be drawn up to account for risks and accidents. This onsite plan shall be dovetailed with the onsite management plan for the district.	Airport is having an onsite disaster management plan, which covers fire accidents, natural calamities etc. The plan has been developed to cascade and integrate with the district onsite management plan.
xxix	The concerns of the Public hearing panel shall be suitably addressed to and the recommendations adopted as part of the Environmental Management Plan and in the plan for C.S.R as applicable.	Noted. To address the concerns of the public, suitable remedial measures are being implemented as part of the Environmental Management Plan and C.S.R activities.
xxx	A water security plan to the satisfaction of the CGWA shall be drawn up to include augmenting water supply and sanitation facilities and recharge of ground water in at least two villages and schools, as part of the C.S.R. activities.	Water security plan is not required as per the latest notification published by CGWA. GOI notification no: File No. 25-231CGW A/NOCAP/2018 Dated 01.02.2019.
<b>PART B: SPECIFIC CONDITIONS</b>		
i	The project authorities must strictly adhere to the stipulations made by the SPCB, State Government and any other statutory authority.	GMR Hyderabad International Airport Limited (GHIAL) shall strictly adhere to the stipulations of the Telangana State Pollution Control Board, State Government and other statutory authority.
ii	No further modification of expansion in the project shall be carried out without prior approval of the Ministry of Environment, Forest and Climate Change. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to this Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	Noted and if such situation arises, GHIAL will bring to the notice of the Honourable Ministry.
iii	The overall noise levels in and around the plant area shall be kept well within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. On all the sources of noise generation. The ambient noise levels shall conform to the standards prescribed under the EPA Rules,	The noise levels at the airport are being measured and maintained well within the standards by practicing suitable noise abatement procedures. The ambient noise levels are being complied with the standards prescribed under the EPA Rules, 1989 viz. 75 dB(A) (daytime) and 70 dB(A) (night-time).

	1989 viz. 75 dB(A) (daytime) and 70 dB(A) (night-time)	
iv	A separate Environmental Management Cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	GHAL has set up a separate environmental management cell (EMC) with qualified staff.
v	Adequate funds shall be earmarked towards capital cost and recurring cost/annum for environment pollution control measures and shall be used to implement to conditions stipulated by the Ministry of Environment, Forest and Climate Change as well as the State Government along with the implementation schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	An adequate fund has been allocated as capital cost and recurring cost for environmental Pollution control measures, shall also be used to conditions stipulated by MoEF&CC, State Government. Funds allotted shall not be diverted for any other purposes.
5	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, the Forest Conservation Act, 1980 and the Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities. This clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.	All the necessary permissions were taken from competent authority for present storage capacity and for future coming storage facilities the permissions will be taken as per the guidelines from competent authority.
6	The Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	The six monthly compliance report is being submitted to the Regional office, MoEF&CC, CPCB, and State Pollution Control Board.
7	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat/ Zila Parishad/Municipal Corporation, Urban Local Body and the local NGO, if any, from whom any suggestion/representation, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Copies of the clearance letter have been shared with the offices of Notified Area Committee, Panchayat and local bodies. Also the clearance letter was uploaded on the website of the airport in the link. <a href="https://www.hyderabad.aero/greensky-initiatives.aspx">https://www.hyderabad.aero/greensky-initiatives.aspx</a> .
8	The project proponent shall also submit six monthly reports on the status of compliance of the stipulated Clearance conditions including results of monitored data (both in hard copies as well by e-mail) to the respective Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB.	The six monthly report is being submitted to the Regional office, MoEF, CPCB, and State Pollution Control Board. The results of the environmental parameters monitoring have been enclosed as <b>Annexure – 2</b>
9	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-v as in mandated to be submitted by the project proponent to the concerned State Pollution Control Board as	The Annual Environmental Statement 2020-21 in Form-V was submitted to TSPCB on 29.09.2021 and soft copy of the same uploaded in the company website.

	prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of Clearance conditions and shall also be sent to the respective Regional Office of MoEF&CC by e-mail.	<a href="https://www.hyderabad.aero/green-skyinitiatives.aspx">https://www.hyderabad.aero/green-skyinitiatives.aspx</a> .
10	The project proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with SPCB and may also be seen at website of the Ministry of Environment, Forest and Climate Change at <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . This shall be advertised within Seven days from the date of receipt of the Clearance letter at least two local newspaper that are widely circulated in the region of which on shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional Office of this Ministry.	The copy of the Environmental Clearance has been put on the website of the company. The Environmental Clearance information was also published in two newspapers for the information of the public. The copy of the advertisement is attached as <b>Annexure – 1</b> .
11	The project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing of land development work.	GHAL issued USD 300 mn through offshore bonds in April 2019. With this the debt envisaged for funding the expansion project has been met and financial closure of the project has been achieved.
12	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Noted.
13	The Ministry reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environment(Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Noted and agreed.
14	Any appeal against this clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted.
15	The above stipulations will be enforced interalia under the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act, 1986, Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 and the Public Liability (Insurance) Act, 1991 along with their amendments and rules.	Noted.

--- End ---





# ENVIRONMENTAL QUALITY MONITORING REPORT

March 2022

Rajiv Gandhi International Airport



Submitted to:



**M/s. GMR Hyderabad International Airport Limited,**

Shamshabad, Hyderabad - 500108.

Prepared by:



**M/s Pragathi Labs and Consultants Pvt. Ltd.**

(Recognized by MoEF & CC., GOI, New Delhi

Certified by ISO 9001:2015, & ISO 45001:2015)

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### **ACKNOWLEDGEMENT**

**M/s. Pragathi Labs & Consultants PVT LTD** expresses sincere debt of gratitude to **M/s. GMR Hyderabad International Airport Ltd.**, for the opportunity given by assigning the preparation of Environmental Quality Monitoring Study for **Rajiv Gandhi International Airport** located at Shamshabad, Hyderabad. Special mention needs to be made for executives of M/s. GMR Hyderabad International Airport for their co-operation and assistance during the preparation of this report. We also wish to acknowledge our gratitude to all of them who helped during the monitoring period.

For and on behalf of  
**M/s. PRAGATHI LABS & CONSULTANTS  
PVT LTD**

  
**Authorized Signatory**

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### ABBREVIATIONS

Short	Expanded Form	Short	Expanded Form
%	Percentage	L <sub>eq.</sub>	Equivalent levels
°C	Degree Celsius	m	Meter
µg	Microgram	mg	Milligram
µm	Micrometer	mg/l	Milligram per liter
µs	Micro Siemens	mg/Nm <sup>3</sup>	Milligram per normal cubic meter
AAQ	Ambient Air Quality	max	Maximum
ACF	Activated Carbon Filter	min	Minimum
AGL	Airfield Ground Lighting	mm	Millimeter
a.m.	After meridian	m/sec	Meter per second
TSPCB	Telangana State Pollution Control Board	Nm <sup>3</sup>	Normal cubic meter
APHA	American Public Health Association	Nm <sup>3</sup> /hr	Normal cubic meter per hour
BOD	Bio-Chemical Oxygen Demand	NO <sub>x</sub>	Oxides of Nitrogen
BDL	Below Detectable Limit	NW	Northwest
COD	Chemical Oxygen Demand	pH	Potentiality of hydrogen ions
CFO	Consent for Operation	PM <sub>2.5</sub>	Particulate Matter size less than 2.5 µm
cm	Centimeter	PM <sub>10</sub>	Particulate Matter size less than 10 µm
CO	Carbon Monoxide	p.m.	Post meridian
dB(A)	Decibels on scale A	ppm	Parts per million
ds/m	Decisiemens per meter	RGIA	Rajiv Gandhi International Airport
D.G. Set	Diesel Generator Set	RWHS	Rain Water Harvesting Structure
E.C.	Electrical Conductivity	SE	Southeast
ENE	East of Northeast	SO <sub>2</sub>	Sulphur Dioxide
g/cc	gram/centimeter cube	SPM	Suspended Particulate Matter
GHAL	GMR Hyderabad International Airport Ltd	Sq.m	Square meter
IS	Indian Standards	SSW	South of Southwest
kg/ha	Kilogram per hectare	STP	Sewage Treatment Plant
km	Kilometer	TDS	Total Dissolved Solids
km/h	Kilometer per hour	WNW	West of Northwest
KVA	Kilo Volt – Ampere	WTP	Water Treatment Plant
g/KW-hr	Gram per Kilo Watt hour		

## 1.0 Introduction

M/s. GMR Hyderabad International Airport Limited has awarded **M/s. Pragathi Labs & Consultants Pvt Ltd (PLCPL)** the environmental consultancy service contract for carrying out monthly environmental parameters monitoring study for their ongoing works of Rajiv Gandhi International Airport, Shamshabad and Hyderabad. This monitoring report is an overview of the findings of the field investigations carried out for the month of March, 2022. The field monitoring data was collected during **03-03-2022 to 08-03-2022** at Rajiv Gandhi International Airport, Shamshabad and surrounding area. The study area for Environmental Monitoring is airport premises and its surrounding area is taken as buffer zone which is located towards east of Hyderabad, NH-44 (Bangalore Highway). This site is approximately 20 km away from the Hyderabad city premises.

### 1.1 Objective

The objective of the environmental parameters monitoring is to create an overview of the existing environmental quality using the field investigations in and around the study area.

### 1.2 GMR Hyderabad International Airport Limited

GMR Hyderabad International Airport Limited (GHIAL) is a joint venture company promoted by the GMR Group (63%) in partnership with Airport Authority 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, and Telangana.

### 1.3 Environmental Monitoring Study

The environmental monitoring study and analysis is carried out for air, water, soil, wastewater quality and Noise Levels in and around the airport site. The samples collection measurements are carried out within a radius of 10 km with the airport site as epicenter.

The ambient air quality monitoring is carried out for 24 hours for assessing air pollutants levels. Instantaneous duplicate for the water and wastewater samples are collected to assess the quality of water and wastewater characteristics.

## 2.0 Environmental Status of Study Area

### 2.1. Meteorological Monitoring

#### 2.1.1 Data Analysis - Micro Meteorological Status

Meteorological parameters are important factors in the study of air pollution. The transport and diffusion of the pollutants in the atmosphere are governed by meteorological parameters. Wind velocity, wind direction and diffusion of pollutants depend mainly on three factors. Ambient temperatures, humidity, rainfall, atmospheric pressure etc. are known as secondary meteorological parameters as these factors control the dispersion of the pollutants indirectly by affecting the primary factors. Thus, to assess the air pollution impact, it is essential to collect the above meteorological parameters in the project area.

#### 2.1.2 Meteorological Data

Meteorological data was recorded continuously in RGIA Core Zone, during the study period of March 2022. Recorded average values for the month of March 31<sup>st</sup> 2022.

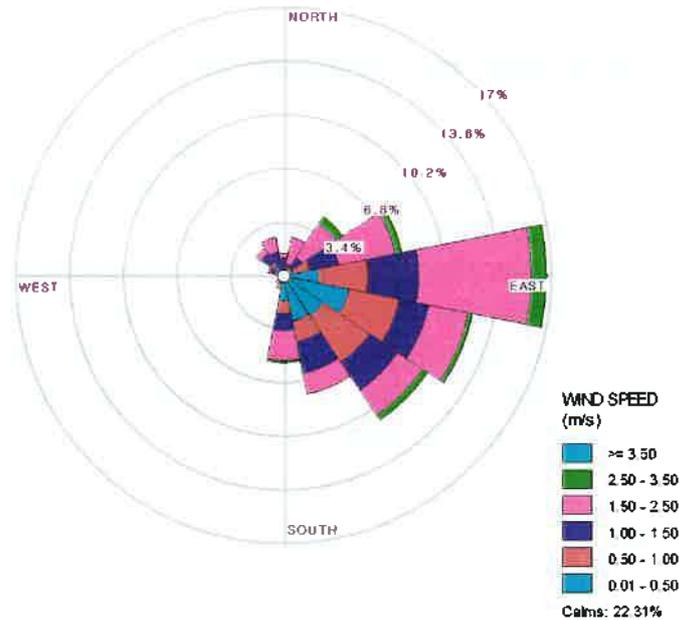
**Table 1 Meteorological data of March 2022**

S. No.	Parameters	March 2022		
		Min	Max	Average
1	Relative humidity (%)	7.4	88.7	41.8
2	Temperature (°C)	17.1	40.2	28.9
3	Total rainfall (mm)	0.0		
4	Predominant Wind Direction	E ,ESE,SE		
5	Wind speed (m/s)	0	2.99	0.90
6	Atmospheric Pressure (mille bars)	599.86	600.18	599.88

#### 2.1.3 Results

The predominant wind direction found during study period of March month was predominantly East followed by East South East & South East. Wind frequency in the East (16.9%), East South East (12.2%), and South East (11.4%).The blowing wind speed varies from 0 to 2.99 m/s of the total time.Calm conditions prevailed for 22.31 % (<1km/hr) of the total time. The minimum and maximum temperature is 17.1 °C of 40.2 °C in the total time.

**Note:** -Data source for Meteorological data is Meteorological Station (weather monitoring system) installed at Airside of the RGIA.



**Fig. 1 Wind Rose Diagram of March 2022**

## 2.2 Ambient Air Quality

### 2.2.1 Analysis Techniques and Method of Measurement

**Table 2 Ambient Air Quality Monitoring Methodology and Protocol**

S. No.	Parameter	Method of Measurement
1	Particulate Matter (PM <sub>10</sub> )	Respirable Dust Sampler (IS:5182 (Part-23), 2006
2	Particulate Matter (PM <sub>2.5</sub> )	PM <sub>2.5</sub> Dust Sampler (IS:5182-Part-24),
3	Sulphur Dioxide (SO <sub>2</sub> )	IS:5182 (Part-2), 2001 (Improved West & Gaeke Method)
4	Nitrogen dioxide(NO <sub>2</sub> )	IS:5182 (Part-6),2006 (Modified Jacob & Hocchheiser Method)
5	Carbon Monoxide (CO)	IS:5182 (Part-10), 1999 (Non-Dispersive Infra-Red Method)
6	Hydrocarbons (HC)	IS:5182 (Part-17), 1979 (Adsorption and Desorption followed by GC)
7	Ozone (O <sub>3</sub> )	IS:5182 (Part-9), 1974 (Chemical Method)

## 2.2.2 Details of Monitoring Locations

Ambient air quality monitoring is conducted in and around RGI Airport in 4 locations and the details of Location is mentioned in Table 3.

**Table 3: Ambient Air Quality Monitoring Locations**

S. No	Name of the Location	Direction	Distance from the Aerodrome Reference (km)	Specification of the Location
1	Near East Pier Flg-4	-	---	Core Zone
2	GMR Vara Lakshmi Foundation	North west	---	Core Zone
3	GMR Township, Mammidipalli	North East	3.43	Buffer Zone
4	Rasheedguda	South West	3.29	Buffer Zone

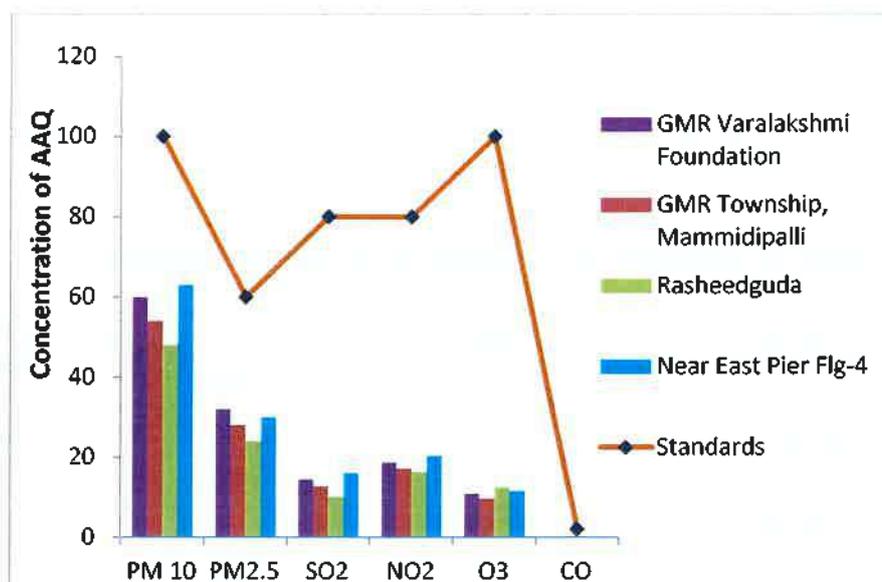
## 2.2.3 Ambient Air Quality Results

Ambient Air samples are collected as per the procedure mentioned in Table 2 and collected samples are analyzed for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>x</sub>, Ozone, CO, and Hydrocarbons. Ambient air quality results are given in Table 4.

**Table 4: Ambient Air Quality Results in Expansion Sites**

Parameter	Unit	Limit	GMRVF	GMR Township, Mammidipalli	Rasheedguda	Near East Pier Flg-4
Date of Monitoring			03-03-2022	03-03-2022	03-03-2022	03-03-2022
PM <sub>10</sub>	µg/m <sup>3</sup>	100	60	54	48	63
PM <sub>2.5</sub>	µg/m <sup>3</sup>	60	32	28	24	30
Sulphur Dioxide (SO <sub>2</sub> )	µg/m <sup>3</sup>	80	14.5	12.8	10.2	16.1
Oxides of Nitrogen (NO <sub>x</sub> )	µg/m <sup>3</sup>	80	18.7	17.2	16.4	20.3
Ozone (O <sub>3</sub> )	µg/m <sup>3</sup>	100	10.9	9.7	12.5	11.6
Carbon Monoxide (CO)	mg/m <sup>3</sup>	2	0.34	0.28	0.25	0.46
Hydrocarbons (HC)	ppm	-	<1.0	<1.0	<1.0	<1.0

\*Note: AAQ Standard limits: - as per GHIAL's CFO dated 01.02.2022.



**Fig. 2 Ambient Air Quality in Buffer and Core Zone**

## 2.3 Ambient Noise Levels Monitoring:

### 2.3.1 Details of monitoring locations:

During Ambient Noise monitoring, noise levels are recorded in and around airport premises in 4 locations. Details of location are mentioned in Table - 5.

**Table - 5: Ambient Noise Monitoring Locations**

S. No	Name of the Location	Direction	Distance from the Aerodrome Reference Point (ARP) (km)*	Specification of the Location
1	AGL West	West	0.0	Core Zone
2	AGL East	East	0.0	Core zone

**2.3.2 Ambient Noise Levels Results:** Results of Ambient Noise Levels in and around airport premises is in Table - 6.

**Table 6: Ambient Noise Levels**

S.No	Sampling Location	Date of Monitoring	Units	Result		Standard Limit	
				Leq Day	Leq Night	Day Time	Night time
1	AGL West	March '22	dB (A)	51.25	49.75	75	70
2	AGL East	March '22	dB (A)	67.05	66.98	75	70

**Table - 7: Ambient Noise levels standards**

- As per Noise Pollution (Regulation and Control) Rules, 2000 Noise Limits are.

Category of Area	Limits in dB(A) Leq*	
	Day Time	Night Time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

**TABLE - 8: Ambient Noise levels standards for Airports - GSR 568 (E)**

- As per MoEF & CC - GSR 568 (E) Noise Standards for Airports are as follows

Category of Airports	Limits in dB(A) Leq*	
	Day Time	Night Time
Ambient Noise Levels in Airport Noise Zone		
Busy Airports	70	65
All other Airports excluding Proposed Airports	65	60
Within Airport Boundary	75	70

- Rajiv Gandhi International Airport, Hyderabad comes under Busy Airports Category

**Note:**

1. Day Time is recorded in between 6 a.m. and 10 p.m.
2. Night time is recorded in between 10 p.m. and 6 a.m.
3. Silence zone is defined as areas up to 100 meters around such premises as hospitals, educational institutions and courts. The silence zones are to be declared by the Competent Authority.
4. Use of vehicular horns, loudspeakers and bursting of crackers shall be banned in these zones.

5. Mixed categories of areas should be declared as one of the four above mentioned categories by the Competent Authority and the corresponding standards shall apply.
6. Source: EPA Notification [G.S.R. 106-01-123 (E), dt. 26.12.1989 published in the Gazette No. 643 dt. 26.12.1989]
  - \*dB (A)  $L_{eq}$  denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.
  - A "decibel" is a unit in which noise is measured.
  - "A" in dB (A)  $L_{eq}$ , denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

$L_{eq}$ : It is energy mean of the noise level over a specified period.

## 2.4 Ground Water Quality Monitoring:

### 2.4.1 Details of monitoring locations

Four ground water samples were collected and analyzed for different parameters. Locations details are given in Table 9

**Table 9: Ground Water Sampling Locations (Bore wells)**

Code	Location	Direction	Distance (km)	Location Description
GW1	Rasheedguda	South West	7	Rural & Residential Area
GW2	GMR Town Ship, Mammidipalli	North East	3.5	Rural & Residential Area
GW3	Airport Borewell sample	Nodal Center	0	Industrial Area
GW4	Gollapalli Village	North West	6	Rural & Residential Area

### 2.4.2. Ground Water Quality Results

Physico-chemical analysis of Ground water locations at selected sites (Table 10 & 11) are listed below.

**Table 10: Ground Water Quality Results**

Date of Collection: 03<sup>rd</sup> and 04<sup>th</sup> March, 2022

Date of Analysis: 04<sup>th</sup> to 12<sup>th</sup> March, 2022

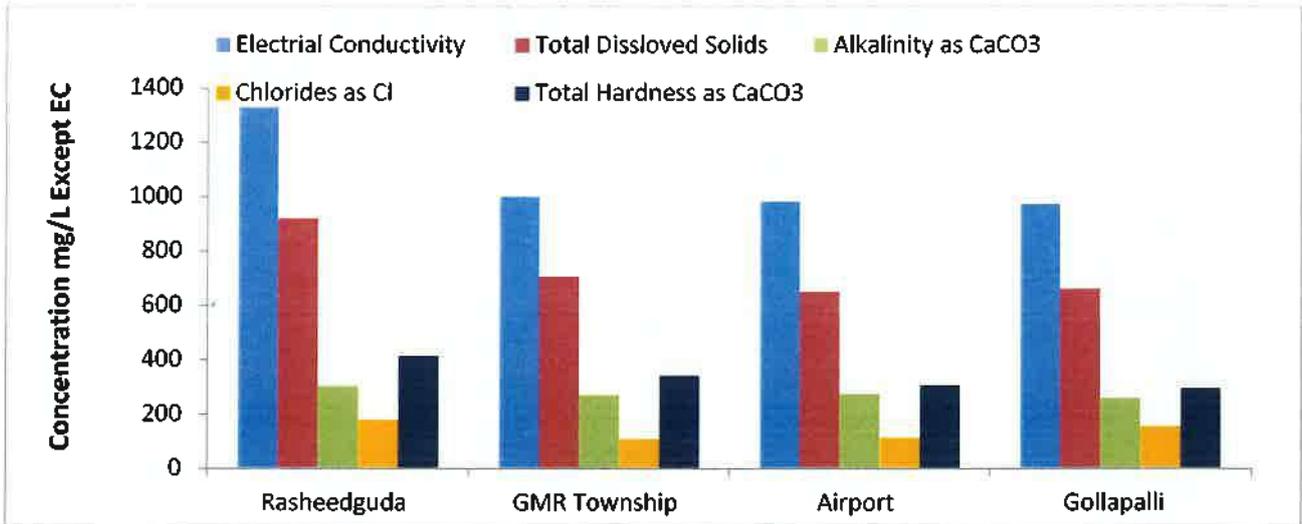
S.No	Parameter	Unit	Locations		IS 10500 : 2012 Standard	
			GW <sub>1</sub>	GW <sub>2</sub>	Acceptable Limits	Permissible Limits
1	pH @ 25.0°C	-	8.1	7.8	6.5-8.5	No relaxation
2	Electrical Conductivity	µmhos/cm	1330	1002	Not Specified	Not Specified
3	Total Dissolved solids	mg/l	920	708	500	2000
4	Alkalinity as CaCO <sub>3</sub>	mg/l	304	272	200	600
5	Hardness as CaCO <sub>3</sub>	mg/l	416	344	200	600
6	Calcium as Ca	mg/l	102	112	75	200
7	Magnesium as Mg	mg/l	39	15	30	100
8	Sodium as Na	mg/l	113	73	Not Specified	Not Specified
9	Potassium as K	mg/l	1.6	1.9	Not Specified	Not Specified
10	Chlorides as Cl <sup>-</sup>	mg/l	180	110	250	1000
11	Fluoride as F	mg/l	1.0	1.2	1	1.5
12	Sulphates as SO <sub>4</sub>	mg/l	48	69	200	400
13	Iron as Fe	mg/l	0.24	0.2	0.3	No relaxation
14	Phosphates	mg/l	2.8	2.3	Not Specified	Not Specified
15	Nitrates as N	mg/l	16	6.7	45	No relaxation

**Table 11: Ground Water Quality Results**

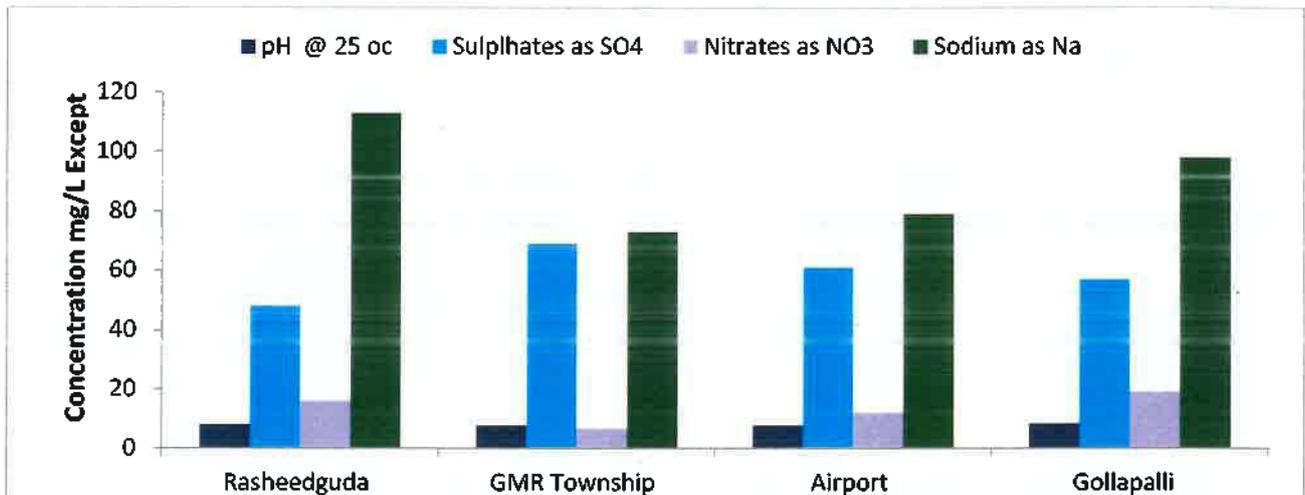
Date of Collection: 03<sup>rd</sup> and 04<sup>th</sup> March, 2022

Date of Analysis: 04<sup>th</sup> to 12<sup>th</sup> March, 2022

S. No	Parameter	Unit	Locations		IS 10500: 2012 Standard	
			GW <sub>3</sub>	GW <sub>4</sub>	Acceptable Limits	Permissible Limits
1	pH @ 25.0°C	-	7.8	8.4	6.5-8.5	No relaxation
2	Electrical Conductivity	µmhos/cm	984	974	Not Specified	Not Specified
3	Total Dissolved solids	mg/l	652	661	500	2000
4	Alkalinity as CaCO <sub>3</sub>	mg/l	276	260	200	600
5	Hardness as CaCO <sub>3</sub>	mg/l	308	296	200	600
6	Calcium as Ca	mg/l	88	85	75	200
7	Magnesium as Mg	mg/l	20	20	30	100
8	Sodium as Na	mg/l	79	98	Not Specified	Not Specified
9	Potassium as K	mg/l	2.0	1.4	Not Specified	Not Specified
10	Chlorides as Cl <sup>-</sup>	mg/l	115	155	250	1000
11	Fluoride as F	mg/l	1.1	1.1	1	1.5
12	Sulphates as SO <sub>4</sub>	mg/l	61	57	200	400
13	Iron as Fe	mg/l	0.12	0.18	0.3	No relaxation
14	Phosphates	mg/l	1.4	3.1	Not Specified	Not Specified
15	Nitrates as N	mg/l	12	19	45	No relaxation



**Fig. 3 Variation of Ground Water Quality**



**Fig. 4 Variation of Ground Water Quality**

## 2.5 Wastewater Quality

Wastewater samples are collected from STP Inlet, Filter Feed, ACF Outlet and Softener outlet of STP to analyse its water quality through which treatment efficiency is assessed.

### 2.5.1 Details of Monitoring Locations

Four wastewater samples have been collected and details of sampling location are given in Table 12.

**Table 12: Details of Wastewater Sampling Locations**

Code	Location	Direction from ARP	Description
SW-1	STP Inlet	Nodal Center	Airport -Airside
SW-2	Filter Feed		
SW-3	Ultra feed outlet		
SW-4	Softener outlet		

### 2.5.2 Wastewater Quality Results

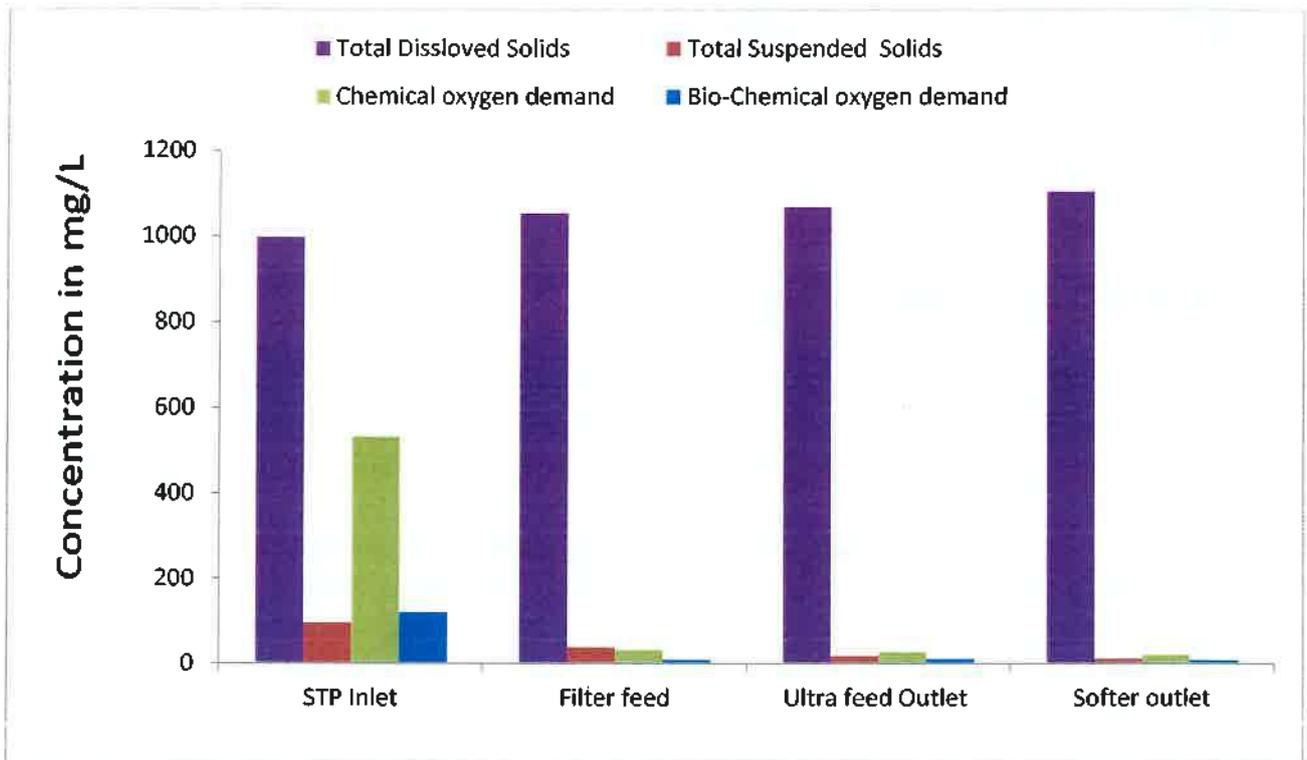
Waste water sample is collected in each phase of STP treatment process to assess and analyse the treatment efficiency. In Softener outlet water sample which is outlet water from STP all the parameters are within the prescribed limits and the results of sample are in Table 13.

**Table 13: Wastewater Quality Results of STP**

Date of Collection: 03<sup>rd</sup> and 04<sup>th</sup> March, 2022

Date of Analysis: 04<sup>th</sup> to 12<sup>th</sup> March, 2022

S.No	Test Parameters	Units	SW-1	SW-2	SW-3	SW-4	Limits
1	Apparent Color	Hazen	Light brown	Light Yellow	Colorless	Colorless	-
2	True Color	Pt-Co	6.0	5.0	< 5.0	< 5.0	-
3	Odour	-	Mild pungent	Agreeable	Agreeable	Agreeable	-
4	Turbidity	NTU	1.0	1.0	1.0	1.0	-
5	pH @ 25.0 °C	-	6.7	7.1	6.4	6.8	6.5 – 9.0
6	Electrical Conductivity	µmhos/cm	1502	1595	1626	1688	-
7	Total Dissolved solids	mg/l	998	1054	1069	1105	2100
8	Total Suspended Solids	mg/l	96	38	18	12	200
9	Hardness as CaCO <sub>3</sub>	mg/l	256	240	148	164	-
10	Total Residual Chlorine	mg/l	1.0	0.5	<0.1	<0.1	-
11	Ammonical Nitrogen as N	mg/l	30	19	8.0	9.0	-
12	Nitrites	mg/l	5.0	2.5	1.5	2.1	-
13	Nitrate as NO <sub>3</sub>	mg/l	6.0	4.2	3.0	2.9	-
14	Phosphates	mg/l	3.2	1.1	1.6	2.3	-
15	Oil and Grease	mg/l	9.0	5.0	3.0	3.0	10
16	COD	mg/l	532	32	28	20	-
17	BOD (3 days at 27 °C)	mg/l	120	9.0	11	8.0	10
18	Dissolved Oxygen	mg/l	4.2	4.7	5.5	6.6	-
19	Sulphides as S	mg/l	7.0	5.0	5.0	4.0	-



**Fig. 5 Variation of Wastewater Quality in STP**

## 2.6 D.G. Stack Emissions

### 2.6.1 D.G. Stack Emission Results

**Table 14: DG Stack Emission Results**

Sample Collected on	08-03-2022		
DG Set No	4		
DG Set Capacity	2000 KVA		
DG Location	D.G. Yard		
Stack diameter (m)	0.65		
Stack Height (m)	30		
Stack Cross section (m <sup>2</sup> )	0.33		
<b>Flue Gas characteristics</b>			
Temperature (K)	426		
Velocity (m/sec)	8.9		
Flow rate (Nm <sup>3</sup> /hr)	9222		
<b>Emission Data</b>			
<b>Parameters</b>	<b>Units</b>	<b>Limits</b>	<b>Test Results</b>
Particulate matter (PM)	(mg/Nm <sup>3</sup> )	75	29.3
Oxides of Nitrogen (NO <sub>x</sub> )	(mg/Nm <sup>3</sup> )	360	79.6
Carbon monoxide (CO)	(mg/Nm <sup>3</sup> )	150	11.5
Non Methane Hydrocarbon (as C)	(mg/Nm <sup>3</sup> )	100	15
Sulphur Dioxide (SO <sub>2</sub> )	(mg/Nm <sup>3</sup> )	--	35.4

## **2.6 Conclusion**

### **2.6.1 Ambient Air Quality**

Ambient Air Quality in and around the airport premises are well within the prescribed limits of National Ambient Air Quality Standards (NAAQS) notified by CPCB.

### **2.6.2 Ambient Noise Levels:**

Ambient Noise levels is recorder in airport premises (core zone) and in surrounding area (buffer zone) and it is observed that noise levels in day and night are within the standard limits of CPCB (Noise Pollution (regulation and Control) rules 2000 and GSR 568(E).

### **2.6.3 Ground Water Quality**

Ground water samples are drawn from various locations in and surrounding villages and their quality is found well within the permissible portable water limits (IS 10500:2012).

### **2.6.4 Wastewater Quality**

Wastewater samples are collected from each stage of treatment process in STP and analyzed. The Outlet water quality of STP is within the limits prescribed in CFO issued by Telangana State Pollution Control Board.