

# ENVIRONMENTAL BULLETIN OF SANTORINI AIRPORT (JTR)

## Reference year 2022

Fraport Regional Airports of Greece B S.A.

Issue July 2023

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## 1. INTRODUCTION

### 1.1. Location

The airport of Santorini is located at the east part of the Cycladic island of Santorini, near the settlement Monolithos, at a distance of approximately 6km to the south-east of the town of Thira (Fira), the capital of the island.

### 1.2. Administration

The airport administratively belongs to the Municipal Unit of Thira of the Municipality of Thira of the homonym Regional Unit that belongs to the Region of South Aegean. The airport is within the limits of the Local Communities of Vothonas and Exo Gonia and of the Municipal Communities of Messaria, of the Municipal Unit of Thira.

### 1.3. Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	51227/25.10.2016
E.T. Amendment Decision Reference Number	1758/23.01.2018
	12710/861/03.02.2023

### 1.4. Airport Basic Data

Airport name IATA / ICAO	JTR / LGSR
Airport location – Airport Reference Point (ARP)	Latitude: 36° 23' 57" N Longitude: 25° 28' 45" E
Altitude	37.5m
Number of runways	1
Operation hours (summer)	00:00-23:59
Operation hours (winter)	06:30 – 22:15

Runways	Length/Width					Code
Runway	2,125m x 30m					15L/33R
Full length of parallel taxiway	16R/34L - 2,122m					
Number of taxiways	5					
Apron capacity	A	B	C	D	E	
	-	-	4	1	-	
Employees	High season (31.08.2022)			Low season (30.11.2022)		
Fraport Greece (FG) employees	44			34		
Employees of other companies	826			472		

Terminal	
➤ Total area (m <sup>2</sup> )	15.412

<b>Other buildings and service/storage areas</b>	
➤ RFF Station (m <sup>2</sup> )	1.144

<b>Parking Areas</b>	
Car parking spaces	146
Bus parking spaces	12
Taxi parking spaces	22

## 1.5. Airport facilities

### 1.5.1. Fuel Handlers

<b>Number of fuel handler companies</b>	
Number of fuel handler companies operating at the Airport	2

<b>Installations inside the airport</b>	<b>EKO</b>	<b>GISSCO</b>	<b>HAFCO</b>
Environmental Management System (EMS)	YES	YES	Not operating at the airport

### 1.5.2. Ground Handlers

<b>Number of ground handler companies</b>	
Number of ground handler companies operating at the Airport	3

<b>Installations inside the airport</b>	<b>SKYSERV</b>	<b>SWISSPORT</b>	<b>GOLDAIR</b>
Environmental Management System (EMS)	YES	YES	YES

## 2. TRAFFIC DATA STATISTICS

### 2.1. Annual Traffic Data

Annual Traffic Data for the year 2022	
Overall Annual Air Traffic Movements <sup>1</sup>	24.337
Percent of increase or decrease in relation to the previous year	51,5%
Annual passenger traffic	2.744.651
Percent of increase or decrease in relation to the previous year	77,5%
Annual cargo transferred (tn)	54
Percent of increase or decrease in relation to the previous year	-7,3%

Aircraft types	
<b>Prevailing aircraft types for domestic flights</b>	
Aircraft type	No. of flights
AT76	4.141
A320	1.502
A319	1.140
B73H	890
A21N	647
AT72	528
A32A	447
A20N	343
DH8D	315
AT75	306
Other	1.557
<b>Prevailing aircraft types for international flights</b>	
Aircraft type	No. of flights
A320	3.541
B73H	1.692
A32A	1.593
B738	1.158
A321	746
A319	724
A20N	614
A32B	376
A21N	333
7M8	318
Other	1.426

<sup>1</sup> Military and training flights not included.

**2.2. High season traffic data**

<b>High season traffic data (June-September)</b>	
Highest traffic month	July
Air traffic movements during the month with highest traffic	4.404
Air traffic movements daily average number during the month with highest traffic	142

**2.3. Low season traffic data**

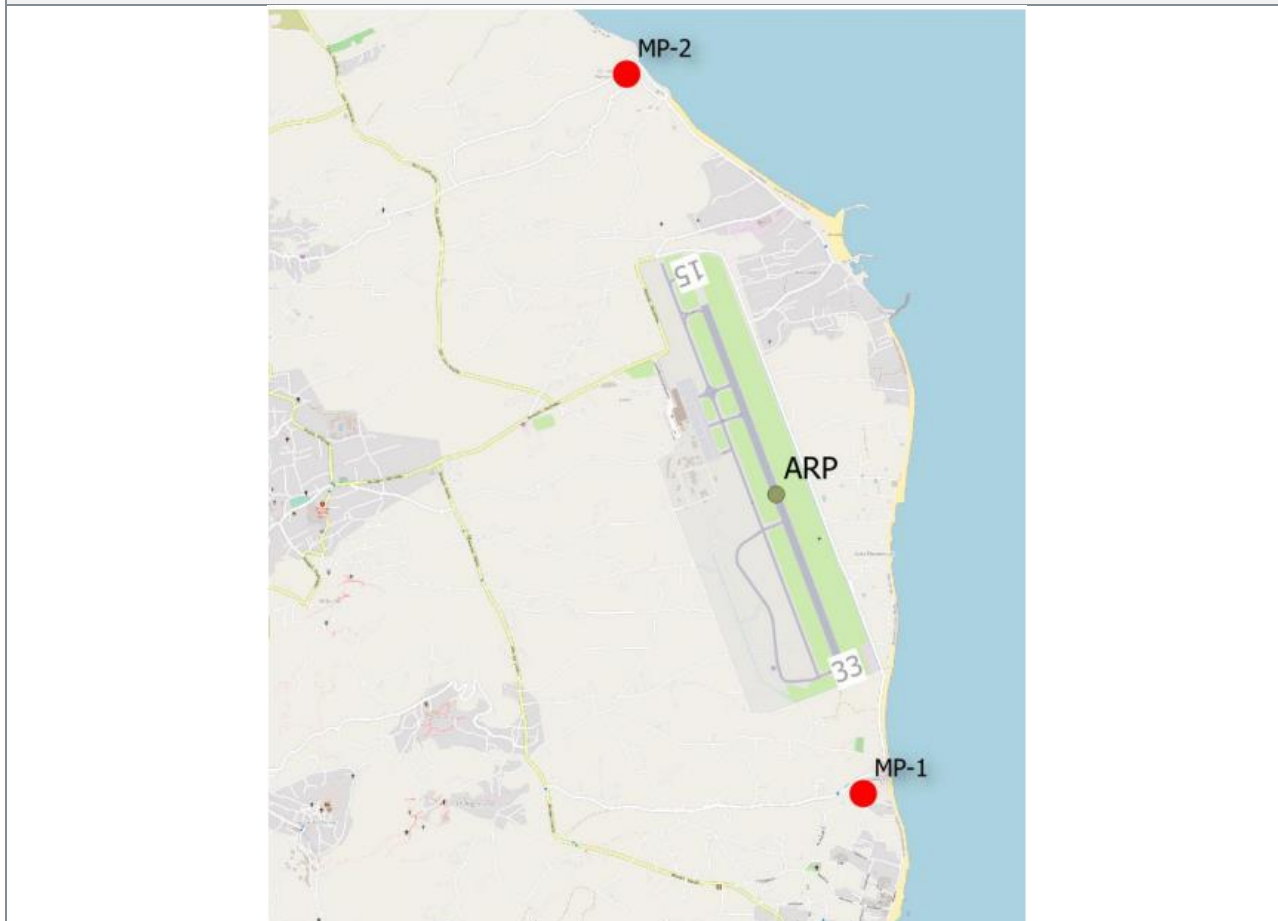
<b>Low season traffic data (October-May)</b>	
Lowest traffic month	January
Air traffic movements during the month with lowest traffic	298
Air traffic movements daily average number during the month with lowest traffic	10

### 3. AIRCRAFT NOISE

#### 3.1. Noise measurements during the reference year

<b>Have noise measurements at the airport's surrounding area been performed during the reference year?</b>	<b>YES</b>
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**Measurement points**




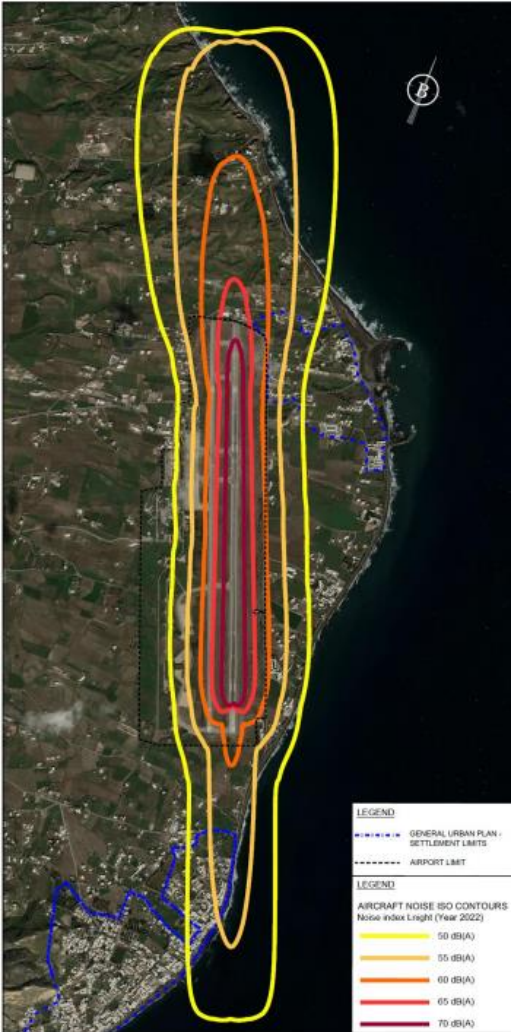
Measurement points coordinates	Measurement points description
Θέση 1: 36° 23' 00" N 25° 29' 07" E	Kamari area, south of the runway on a hotel roof. Affected by arrivals RWY 34R and departures RWY 16L.
Θέση 2: 36° 25' 14" N 25° 28' 11" E	North of the runway on a hotel roof. Affected by arrivals RWY 16L and departures RWY 34R.
<b>Measurement period</b>	05.06.2022-13.06.2022 05.07.2022-12.07.2022 23.08.2022-30.08.2022
<b>Noise indicators</b>	L <sub>den</sub> , L <sub>night</sub>

**Summary of measurement results:**

Noise levels are monitored according to the airport's monitoring program and new approved environmental terms. Exceedances of noise indicators levels L<sub>den</sub>=70 dB(A) and L<sub>night</sub>=60 dB(A) were observed in July & August.



3.2. Noise levels calculation based on noise simulation software

<p><b>Aircraft noise levels calculation based on noise simulation software</b></p>	<p>YES</p>
<p><b>Software used:</b> IMMI Noise Prediction Software (evaluation method CNOSSOS-EU according to JMD ΥΠΕΝ/ΔΚΑΠΑ/13757/255/Β/16.02.2022)</p>	
<p><b>Noise indicators and respective contours calculation:</b> <math>L_{den}</math>, <math>L_{night}</math></p>	
<p><b>Noise contours:</b></p>	
 <p style="text-align: center;"><math>L_{den}</math></p>	 <p style="text-align: center;"><math>L_{night}</math></p>

**Summary of results:**

According to the results, there are 6 buildings in noise contour  $L_{night}=60-65$  dB(A). For the year 2022, no other buildings inside official settlement boundaries were found to be exposed to noise levels higher than the limits  $L_{den}=70$  dB(A) and  $L_{night}=60$  dB(A).

## 4. AIR QUALITY

### 4.1. Air quality measurements during the reference year

<b>Have air quality measurements at the airport's surrounding area been performed during the reference year?</b>	<b>YES</b>
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**Measurement points**

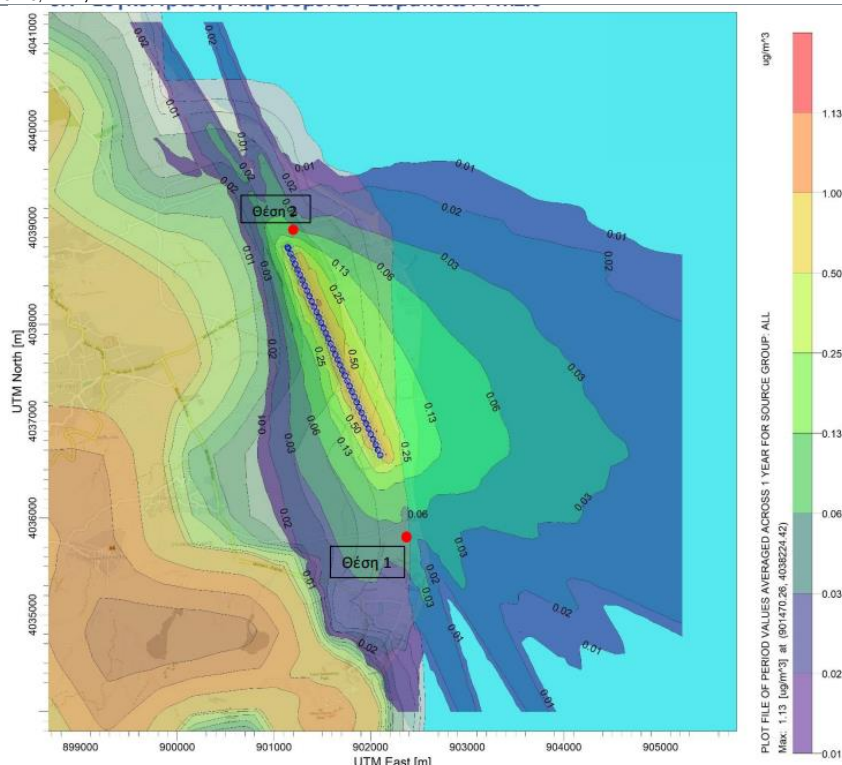


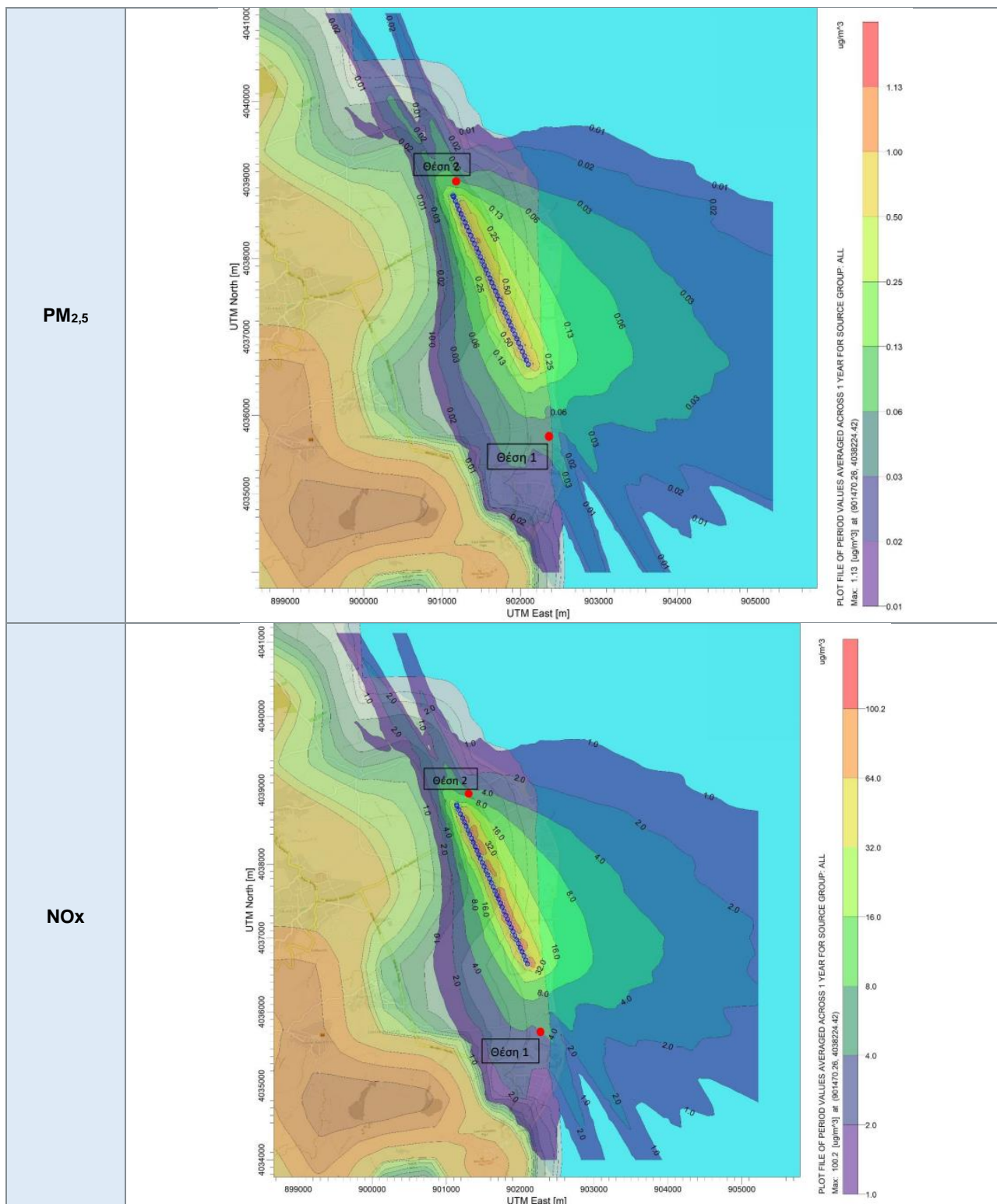
Measurement points	Measurement points description
Position 1	Near the airport boundary at the parking area
Position 2	Approximately 1 km from the runway end at the parking area of hotel.
<b>Measurement period:</b>	10.01.2022 – 27.01.2022 30.05.2022 – 14.06.2022 19.07.2022 – 04.08.2022 05.08.2022 – 22.08.2022
<b>Pollutants measured:</b>	PM <sub>10</sub> , PM <sub>2.5</sub> , NO <sub>2</sub> , SO <sub>2</sub> , C <sub>6</sub> H <sub>6</sub> , O <sub>3</sub> , CO

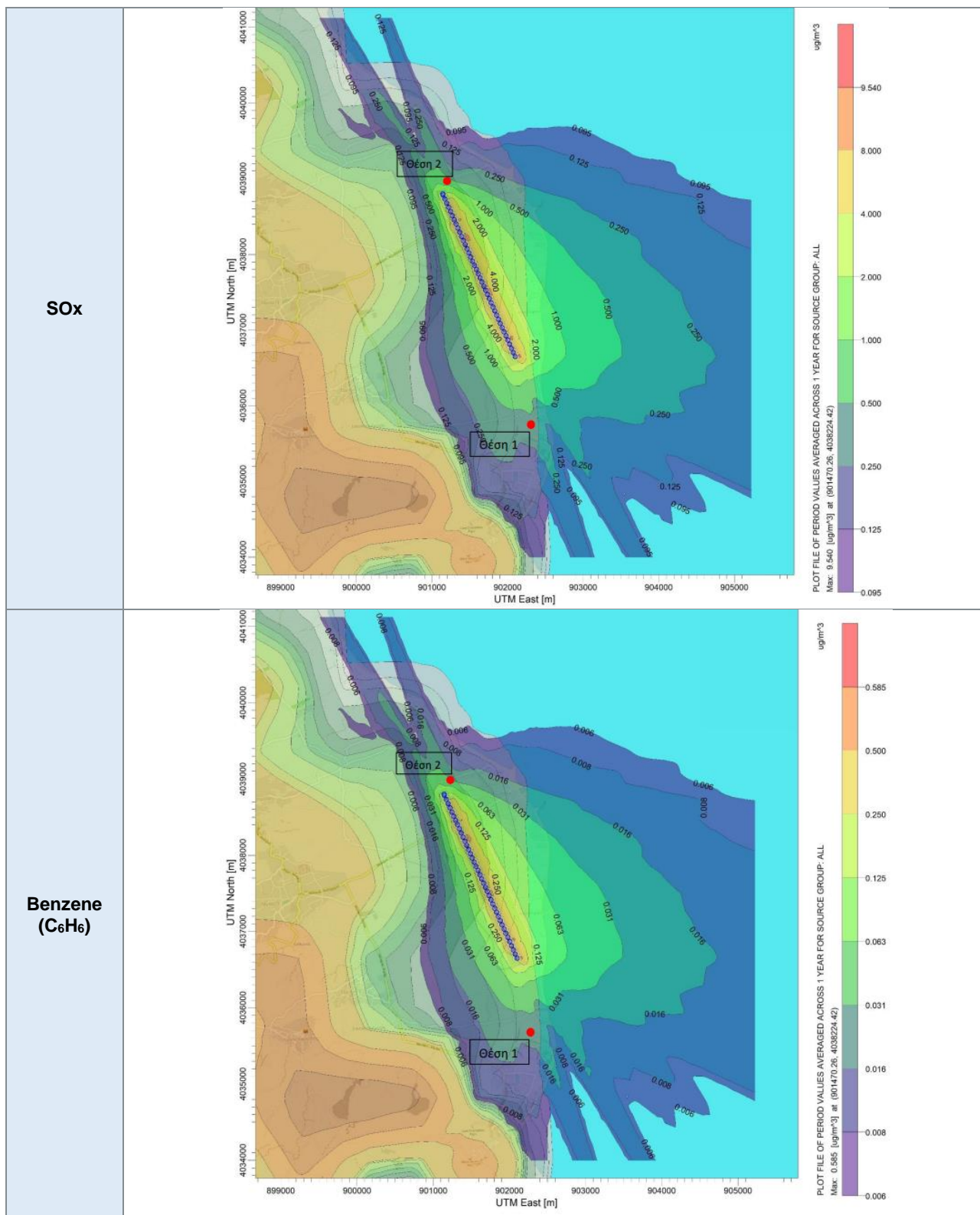
**Summary of measurement results:**

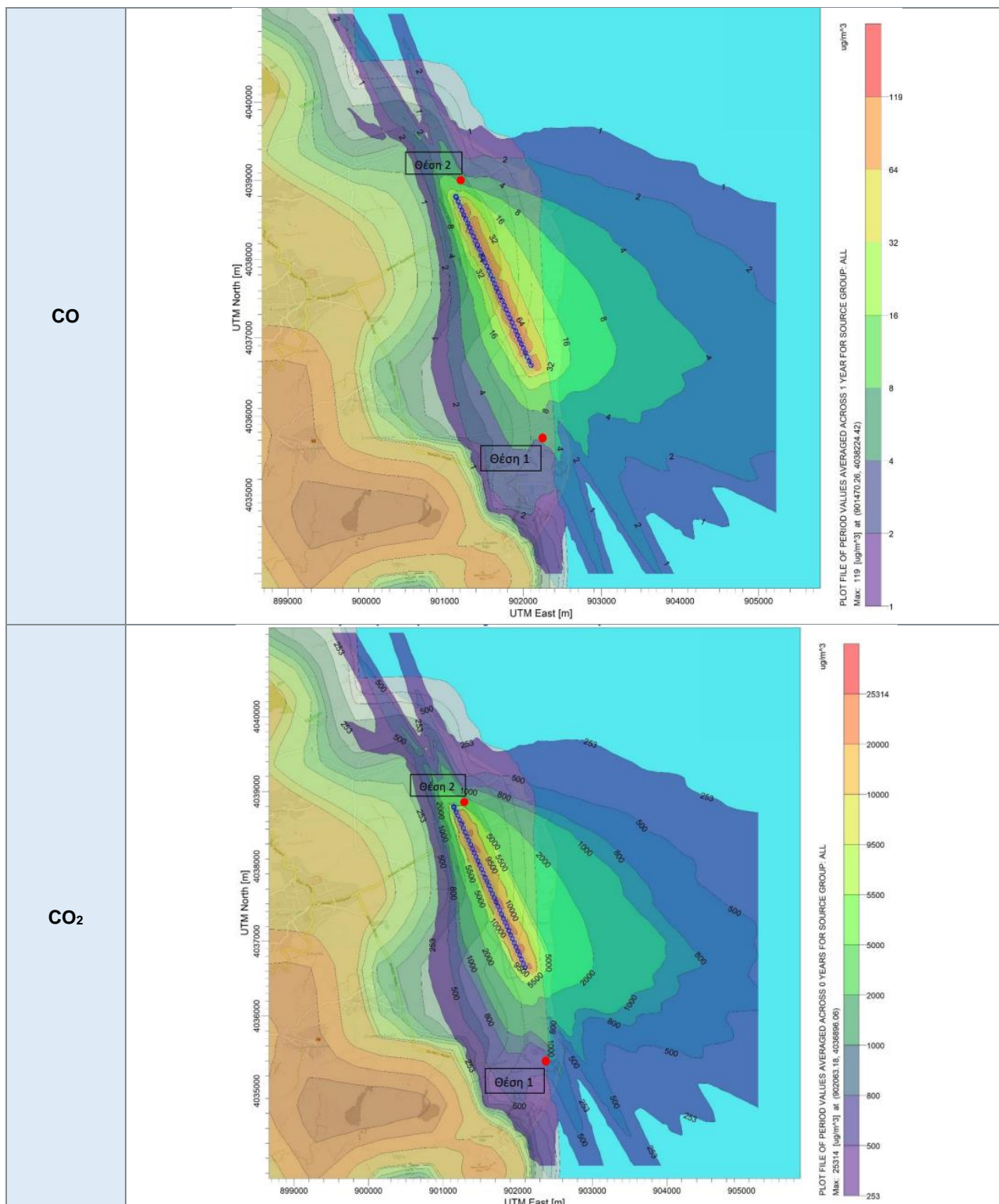
Air quality is monitored according to the airport's monitoring program and new approved environmental terms. No exceedance of the air quality limits was observed. It is noted that some individual exceedances for the O<sub>3</sub> pollutant mean values were recorded.

4.2. Air pollutants emission and dispersion modelling

<p><b>Calculation of air pollutants concentrations based on an emission and dispersion modelling software</b></p>		<p>YES</p>
<p><b>Software used:</b> Aviation Environmental Design Tool (AEDT) - US Federal Aviation Administration &amp; US Environmental Protection Agency AERMOD</p>		
<p><b>Pollutants concentrations and respective contours calculation:</b>                  PM<sub>10</sub>, PM<sub>2,5</sub>, NO<sub>x</sub>, SO<sub>x</sub>, C<sub>6</sub>H<sub>6</sub>, CO, CO<sub>2</sub></p>		
<p>PM<sub>10</sub></p>	 <p>UTM North [m]</p> <p>UTM East [m]</p> <p>µg/m<sup>3</sup></p> <p>PLOT FILE OF PERIOD VALUES AVERAGED ACROSS 1 YEAR FOR SOURCE GROUP ALL                  Max: 1.13 [µg/m<sup>3</sup>] at (901470.26, 4038224.42)</p>	







**Summary of results:**

Air quality is monitored according to the airport's monitoring program.  
No exceedance of the air quality limits was observed.

## 5. WASTE MANAGEMENT

Waste	Collection	Management/Disposal
<b>Recyclables (paper, plastic, metals, glass)</b>	Separate collection by licensed private company.	Disposal at material recovery facility or transshipment for recycling
<b>Residues (Mixed Waste) and Bulky Waste</b>	Collection by licensed private company	Disposal in Santorini landfill

### Notes:

1. Regarding the different categories of the MSW (recyclables, mixed waste, bulky waste), the Airport Users handle their waste together with Fraport Greece B (central management).
2. Regarding the 'alternative management' waste categories (Waste lubricant oil WLO, WEEE, etc.):
  - i. Waste Lubricant Oil (WLO): Collection and management by authorized collector "CYTOP S.A."
  - ii. Waste Electrical & Electronic Equipment (WEEE): Collection and management by alternative management system "Appliances Recycling S.A."
  - iii. Accumulators: Collection and management by alternative management system "Re-Battery S.A."
  - iv. Small batteries: Collection and management by alternative management system "AFIS S.A."
  - v. Used tires: Collection and management by alternative management system "ECOELASTIKA S.A."
3. The total quantities of the hazardous waste further to the above-mentioned and produced at the airport, are managed by licensed private companies which have a contract with Fraport Greece B, according to the provisions of the legislation in force.
4. The total quantities of the produced waste by category resulting from all activities of the airport, the collectors and final recipients, are recorded by Fraport Greece B and submitted in the Electronic Waste Registry of the Ministry for Environment and Energy via the Annual Waste Producer Report according to the provisions of the legislation in force.

## 6. ECOSYSTEM AROUND THE AIRPORT

### 6.1. Flora-Fauna

Flora	
Are there protected zones of vegetation/habitats in the broader airport area?	YES
<p><b>(if YES)</b> Short description: Santorini airport is near to the Natura 2000 site:</p> <ul style="list-style-type: none"> <li>• GR4220003 Santorini: Nea and Palia Kameni-Profitis Ilias (Area: 1,219.44ha)</li> </ul>	
Fauna	
Are there protected species of fauna/birds in the broader airport area?	YES
<p><b>(if YES)</b> Short description:</p> <p>The Important Bird Area GR158: Christiana and Aspronisi islets, Thira is close to Santorini airport (Area: 157.82ha). The protected bird species that have been observed at Santorini airport since April 2017 are presented below: Collared pratincole (<i>Glareola pratincola</i>), Eurasian spoonbill (<i>Platalea leucorodia</i>), Eurasian stone-curlew (<i>Burhinus oedicnemus</i>), Eurasian skylark (<i>Alauda arvensis</i>), European turtle-dove (<i>Streptopelia turtur</i>), Great egret (<i>Casmerodius albus</i>), Isabelline wheatear (<i>Oenanthe isabellina</i>), Long-legged buzzard (<i>Buteo rufinus</i>), Marsh harrier (<i>Circus aeruginosus</i>), Montagu's harrier (<i>Circus pygargus</i>), Pallid harrier (<i>Circus macrourus</i>), White stork (<i>Ciconia ciconia</i>)</p>	



## 7. WILDLIFE HAZARD MANAGEMENT

<b>Wildlife strikes and wildlife hazard management measures</b>	
<b>Wildlife species that suffered a strike</b>	<b>Strikes (%)</b>
Gulls	67%
Birds of prey	13%
Small passerines	7%
Pigeons	7%
Waders	6%
<b>Wildlife strike risk mitigation measures:</b>	
<p>The presence and behavior of wildlife species at Santorini airport is monitored in regular intervals, daily, from dawn to dusk. Some of the wildlife control methods applied at Santorini airport are: distress calls (bioacoustics), digital sounds, anti-bird laser, etc. Preventive long-term actions that are mainly related to habitat management measures (e.g. grass cutting, water body management) are also taken to further reduce the presence of species constituting a risk to flight safety. In addition, a NOTAM is published and regularly updated.</p>	

## 8. CULTURAL HERITAGE

<b>Have new cultural heritage properties been discovered during the reporting period?</b>	NO
<i>(if YES)</i> Details provided in the table below:	

Location	Date of discovery	Type of discovery	Additional protection measures taken

## 9. RESOURCES CONSUMPTION

### 9.1. Energy consumption

Energy consumption (monthly electric energy consumption, in Kwh)	
Total annual electric energy consumption (in Kwh)	3.618.560,70

### 9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	10	
Total annual fuel consumption	Diesel (lt)	19.080,77
	Unleaded gasoline (lt)	17.617,93

### 9.3. Heating oil or natural gas consumption

Heating oil or natural gas consumption	
Total annual heating oil consumption (lt)	-*
Total annual heating natural gas consumption (m <sup>3</sup> )	N/A

\*Heating and air conditioning is performed via heat pumps

### 9.4. Fuel consumption for generator

Fuel consumption	
Total annual consumption (lt)	2.468,24

### 9.5. Water consumption

Water consumption	
Total annual consumption (m <sup>3</sup> )	20.633,00

## 10. GREENHOUSE GAS EMISSIONS & CARBON FOOTPRINT

Greenhouse gas emissions that were included in the carbon footprint calculation are the CO<sub>2</sub> emissions included in scope 1 & 2 of the GHG protocol:

- Scope 1: Direct GHG emissions that occur from sources that are owned and/or controlled by the airport,
- Scope 2: Indirect GHG emissions from the generation of purchased electricity, steam, heat or cooling consumed by the airport.

Source Flows	Total CO <sub>2</sub> Emissions (t)
	2022
Direct emissions form heating fuel (scope 1)	0,0
Direct emissions from fuel used for fleet vehicles (scope 1)	94,50
Direct emissions from fuel used for generators (scope 1)	6,59
Indirect emissions from refrigerants (scope 1)	0,0
Indirect emissions from electricity consumption (scope 2)	1.519,87
<b>Total (t)</b>	<b>1.620,9</b>
<b>Kg CO<sub>2</sub> /passenger</b>	<b>0,59</b>

### Notes:

Fraport Greece B is committed to the monitoring, management and reduction of its airports carbon footprint. In order for this target to be achieved:

- Direct and indirect carbon emissions from all the emission sources in the airports' boundaries are calculated and reported, based on the GHG Protocol (scope 1 & 2)
- The airport is certified according to ACA (Airport Carbon Accreditation), Level-1

## 11. HUMAN COMSUMPTION WATER MONITORING PROGRAM

Human consumption water quality	
Water supply (public water network or airport's boreholes)	Airport boreholes
Is sampling of the airport's water network performed?	YES
(if YES) Sampling frequency:	Quarterly
<p><b>Summary of results:</b> The results of the chemical analyses show that the water supplied from the boreholes of the airport <b>is not potable</b> due to the existence of high concentrations of Sodium and Chlorine (brackish water) and Arsenic (due to volcanic rocks). The rest of the results of the microbiological and chemical analyses show that the parameters analysed as regards the airport's water network are <b>within the legislative limits</b> defined by the Ministerial Decision Γ1 (δ)/ΓΠ οικ. 67322/ GG 3282 B/19-9-2017 regarding the quality of human consumption water.</p>	

## 12. RAINWATER

RAINWATER (collection, treatment disposal and recipient)		
Area	Collection/treatment/disposal	[YES/NO]
Apron and manoeuvring area	Collected in drainage ditches leading to the sea	YES
Other runoffs (runway etc.)	Collected in drainage ditches leading to the sea	YES
Treatment of rainwater by oil-separator		YES

Rainwater quality	
Is sampling of the airport's rainwater performed?	YES
(if YES) Sampling frequency:	Yearly
<b>Parameters analyzed:</b> pH, conductivity, TSS, DO, NO <sub>3</sub> , NO <sub>2</sub> , Oil & grease, BOD, COD, Total Petroleum Hydrocarbons (TPH), PAHs, BTEX, Heavy metals, PCBs, Detergents	
<b>Summary of results:</b>	
Surface rainwater quality is monitored according to the airport's monitoring program. Due to the absence of designated recipients and relevant national quality limits for surface rainwater, the Environmental Health & Safety Guidelines of the International Finance Corporation (IFC) are adopted. Surface rainwater monitoring for 2022, was not performed.	

### 13. GROUNDWATER AND/OR SOIL AND/OR SOIL GAS MONITORING

Groundwater and/or soil and/or soil gas quality	
Is sampling of the airport's groundwater and/or soil and/or soil gas performed?	YES
<b>(if YES)</b> Sampling frequency:	Yearly
<b>Parameters analyzed:</b> Volatile hydrocarbons, aliphatic, aromatic and chlorinated (soil gas)	
<b>Summary of results:</b>	
Groundwater quality is monitored according to the airport's monitoring program. The results of the analyses from the airport's boreholes indicate that no pollution is present. According to the approved environmental terms, monitoring of groundwater and air from the Fuel Handlers is not foreseen for the year 2022.	

## 14. SEWAGE TREATMENT AND DISPOSAL

<b>Sewage</b>	
Sewage network to the municipal waste water treatment plant (WWTP)	YES
Autonomous airport's waste water treatment plant (WWTP)	NO

<b>Blue water</b>
<b>Collection and disposal:</b> Collection in watertight tank and disposal to the municipal sewage network.

<b>Waste water treatment plant description (where applicable)</b> <i>Description of characteristics and condition of the airport's WWTP including possible problems. Type and frequency of the effluent quality measurements.</i>	
Degree of treatment of airport's WWTP	N/A
Treatment method	N/A
Disposal of treated wastewater	N/A
Sludge disposal	N/A
Sampling frequency of WWTP effluent	N/A
Parameters analyzed	N/A
Summary of quality of WWTP effluent	N/A