

# Environmental Bulletin of Santorini Airport (JTR)

Reference year 2018

Fraport Greece

May 2019







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## 1. INTRODUCTION

### 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.

### 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.

### Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	Ref. No οικ. 51227/25.10.2016
E.T. Amendment Decision Reference number	Ref. No οικ. 1758/23.01.2018

### 1.1. Airport Basic Data

Airport Basic Data					
Airport name IATA / ICAO	JTR / LGSR				
Airport position – Airport Reference Point (ARP)	Latitude: 36° 23' 57" N Longitude: 25° 28' 45" E				
Altitude:	37.5m				
Number of runways	1				
Operation hours (high season)	0:01-24:00				
Runways	Length / Width			Code	
Runway	2,125m x 30m			16L/34R	
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			Low season	
Fraport Greece (FG) employees	33			32	
Employees of other companies	66			21	
Terminal					
➤ Total area (m <sup>2</sup> )	4,700				
Other buildings and service/storage areas					
➤ RFF (m <sup>2</sup> )	Temporarily housed in ISOBOX until completion of new RFF				
Parking Areas					
Car parking spaces	260				

Bus parking spaces	20
Taxi parking spaces	20

## 1.2. Airport Facilities

### 1.2.1. Fuel Handlers

Number of fuel handler companies	
Number of fuel handler companies operating at the Airport	2

Installations inside the airport		EKO	GISCO	HAFCO
Environmental Management System (EMS)	(YES/NO)	YES	YES	Not operating at the airport

### 1.2.2. Ground Handlers

Ground Handlers	
Number of ground handler companies operating at the airport	3

Installations inside the airport		SKYSERV	SWISSPORT	GOLDAIR
Vehicles (total number)		10	13	98
Environmental Management System (EMS)	(YES/NO)	YES	YES	YES

## 2. TRAFFIC DATA STATISTICS

### 2.1. Annual Traffic Data

Annual Traffic Data for the year 2018	
Overall Annual Air Traffic Movements <sup>1</sup>	20,360
Percent of increase or decrease in relation to the previous year	19.5%
Annual passenger traffic	2,254,926
Percent of increase or decrease in relation to the previous year	16.8%
Annual cargo transferred (tn)	179
Percent of increase or decrease in relation to the previous year	72.80%
Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
A320	2319
AT75	1653
B73H	1375
AT72	1050

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

A321	980
B712	973
AT45	948
A32A	578
DH8D	488
AS55	321
Other	1516
<b>Prevailing aircraft types for international flights</b>	
<b>Aircraft type</b>	<b>No. of flights</b>
A320	2147
B73H	1109
A32A	1058
A319	805
B712	645
B738	480
A32B	256
B733	180
B737	144
B73W	99
Other	1236

## 2.2. High season traffic data

<b>High season traffic data (June-September)</b>	
Highest traffic month	August
Air traffic movements during the month with highest traffic	3,535
Air traffic movements daily average number during the month with highest traffic	114


## 2.3. Low season traffic data

<b>Low season traffic data (October-May)</b>	
Lowest traffic month	February
Air traffic movements during the month with lowest traffic	270
Air traffic movements daily average number during the month with lowest traffic	10



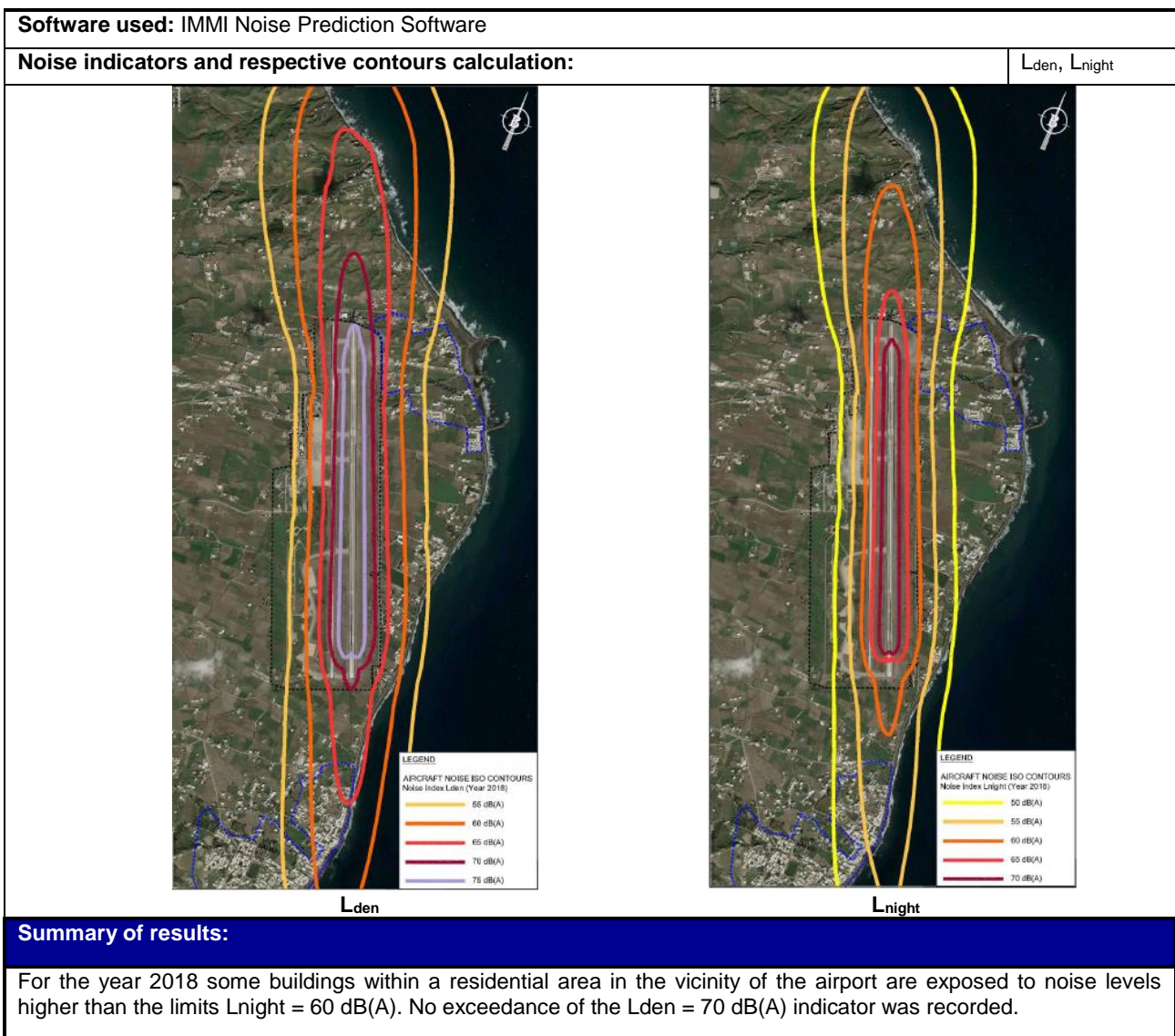
### 3. AIRCRAFT NOISE

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

Have noise measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
<b>Measurement points</b>		
		
<b>Measurement points coordinates</b>	<b>Measurement points description</b>	
1) Position: 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.	
2) Position: 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.	
3) Position: 36° 24' 40" N 25° 28' 55" E	Monolithos area, east of the runway in the garden of a hotel. Affected by all procedures to and from all directions	
<b>Measurement period</b>	28.07.2018 – 29.07.2018	
<b>Noise indicators</b>	Lden, Lnight	
<b>Summary of measurement results:</b>		
Noise levels are monitored according to the airport's monitoring program. At measurement points 1 & 3 no exceedance was recorded in the noise indicators levels Lden = 70 dB(A) & Lnight = 60 dB. At measurement point 2 a slight exceedance of the Lnight indicators was recorded.		


#### 3.2. Noise levels calculation based on noise simulation software

Aircraft noise levels calculation based on simulation software [YES/NO]	YES
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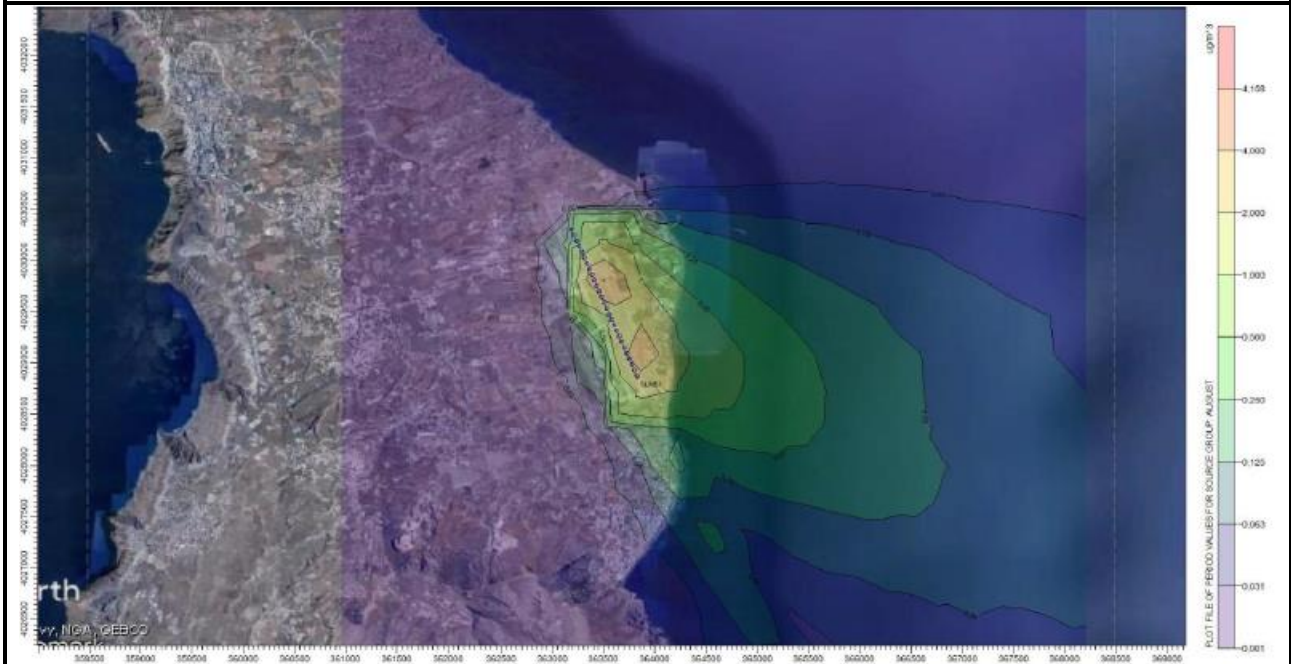
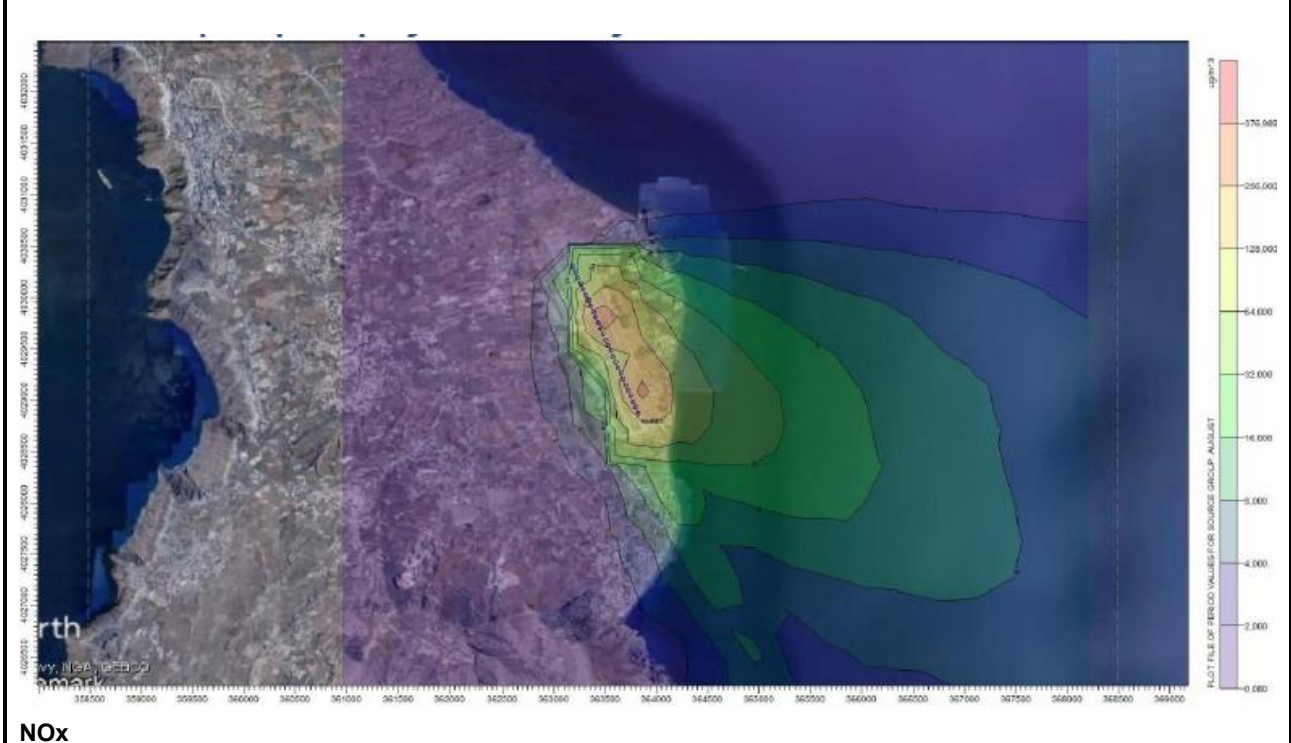


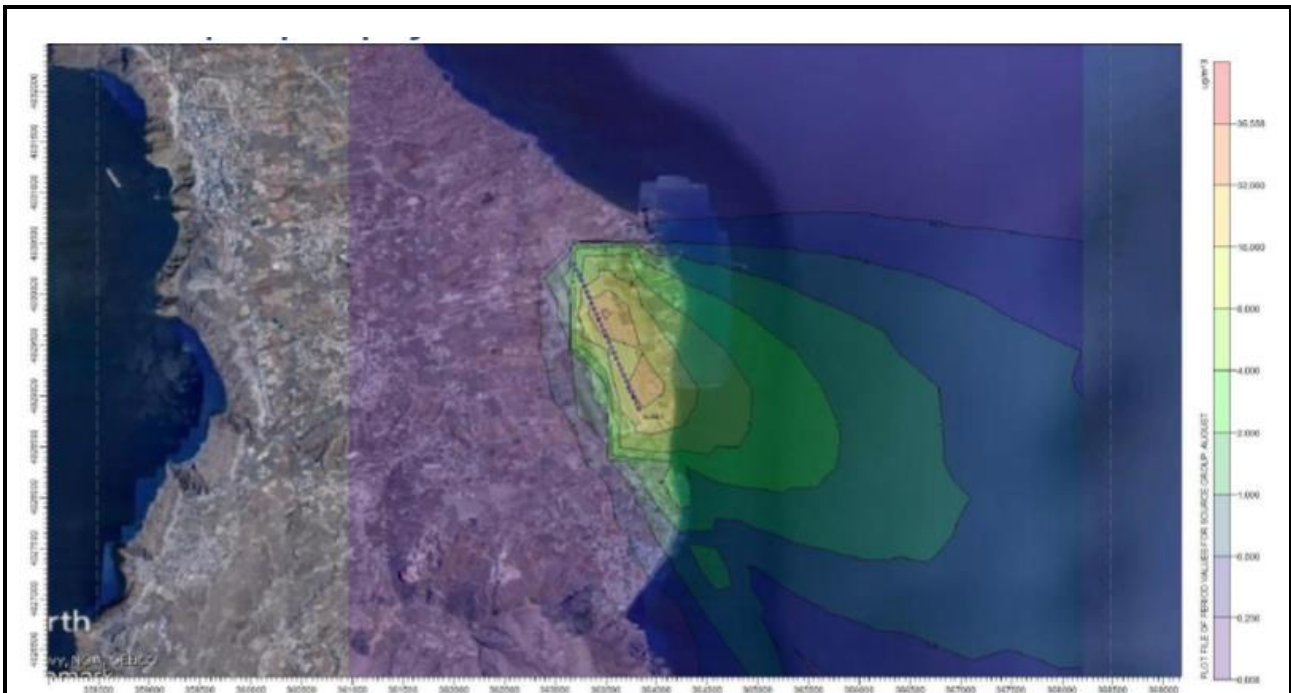
## 4. AIR QUALITY

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

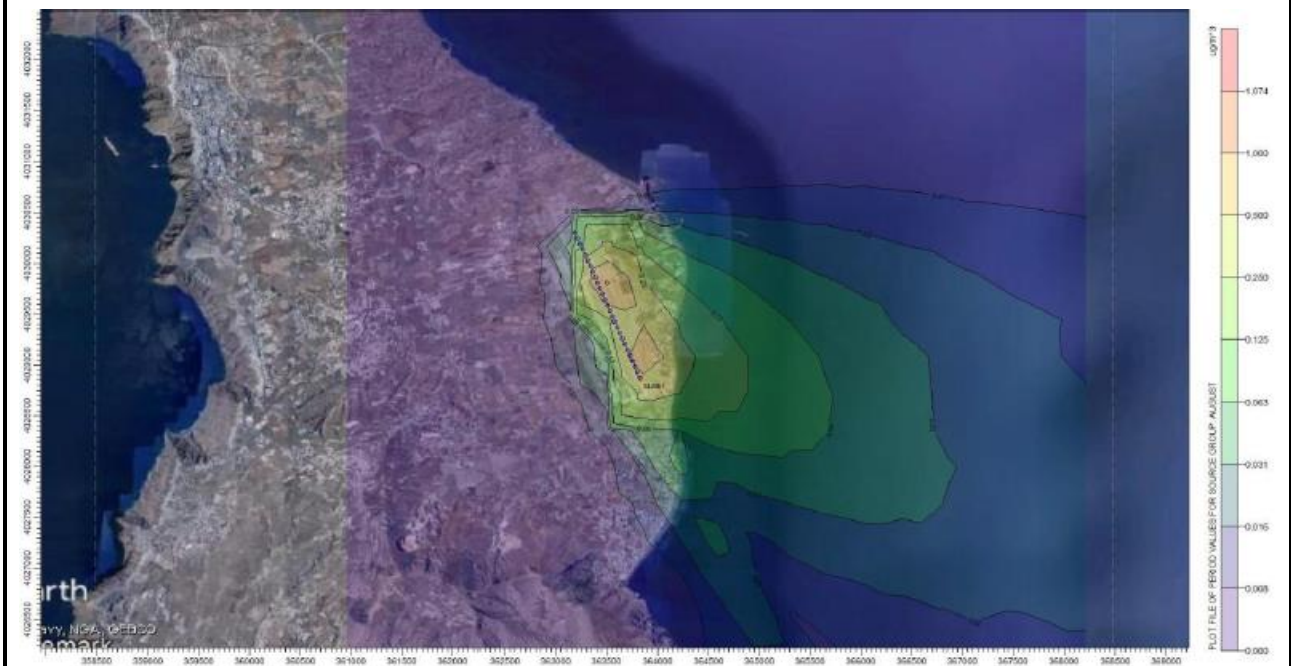
Have air quality measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
<b>Measurement points</b>		
		
<b>Measurement points coordinates</b>	<b>Measurement points description</b>	
1) Position: --° --' --" N --° --' --" E	At a distance of approximately 1.5 km, in the parking area of Artemis Hotel	
2) Position: --° --' --" N --° --' --" E	Approximately 1 km from the end of the runway to the North	
<b>Measurement period</b>	17.08.2018 – 24.08.2018.	
<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>		
<b>Summary of measurement results:</b>		
<p>Air quality is monitored according to the airport's monitoring program.                  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. As a result of its dependency on the solar radiation, ozone does not show a homogenous trend during the year. Increased ozone concentrations are recorded usually at the end of spring and beginning of summer, especially during the days with high sunlight. Therefore, these momentary exceedances are considered to be individual occurrences not related to the airport's operation.</p>		

4.2. Air pollutants emission and dispersion modelling

<p><b>Calculation of air pollutants concentrations based on an emission and dispersion modelling software [YES/NO]</b></p>	<p><b>YES</b></p>
<p><b>Software used:</b> Emissions and Dispersion Modeling System (EDMS) - US Federal Aviation Administration &amp; US EPA AERMOD</p>	
<p><b>Pollutants concentrations and respective contours calculation:</b> PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>x</sub>, C<sub>6</sub>H<sub>6</sub></p>	
	
<p><b>PM10</b></p>	
	
<p><b>NOx</b></p>	



SOx



Benzene

**Summary of results:**

Air quality is monitored according to the airport's monitoring program. No exceedance of the air quality limits was observed. It is noted that the simulation of the ozone cycle is a difficult procedure the results of which are greatly dependent from the meteorological conditions and solar radiation data used in the photochemical model. The simulation of the specific pollutant is not possible.

## 5. WASTE MANAGEMENT

Waste management		
Waste	Collection	Management/Disposal
<b>Municipal solid waste</b>	Collection and emptying of garbage bins by an FG contractor inside the airport	Collection and management by the Company HELESI PERIVALLONTIKI S.A.
<b>Recyclables</b>	Under development due to lack of local municipal or private infrastructures	Under development due to lack of local municipal or private infrastructures
<b>Used oils</b>	Collection by licensed collector "Cytop S.A."	Collection and management by licensed collector "Cytop S.A."
<b>Electric &amp; electronic waste</b>	Collection by alternative management system "Appliances recycling S.A."	Collection and management by alternative management system "Appliances recycling S.A."
<b>Accumulators</b>	Collection by alternative management system "Re-Battery S.A."	Collection and management by alternative management system "Re-Battery S.A."
<b>Small batteries</b>	Collection in special bins of the company AFIS S.A. inside the airport	Collection and management by alternative management system "AFIS S.A."
<b>Used tires</b>	Collection by alternative management system "ECOELASTIKA S.A."	Collection and management by alternative management system "ECOELASTIKA S.A."
<b>Notes:</b>		
<ol style="list-style-type: none"> <li>1. Ground handlers and fuel handlers manage all the categories of waste they produce independently</li> <li>2. The total quantities of the produced waste by category resulting from all activities of the airport are recorded by Fraport Greece B and submitted in the Electronic Waste Registry via the Annual Waste Producer Report as provided for by the applicable legislation.</li> </ol>		

## 6. ECOSYSTEM AROUND THE AIRPORT

### 6.1. Flora-Fauna

ECOSYSTEM AROUND THE AIRPORT	
<b>Flora</b>	
Are there protected zones of vegetation/habitats in the broader airport area? [YES/NO]	NO
(If YES) Short description:	
<b>Fauna</b>	
Are there protected zones of fauna/birds in the broader airport area? [YES/NO]	NO
(If YES) Short description:	

### 6.2. Ecologically fragile areas

The airport is located outside the limits of the protected areas included in the National Protected Areas Network.

The NATURA 2000 network area that is closest to the airport is the area called “Santorini: New and Old Kameni – Profitis Ilias” (GR4220003) at a horizontal distance of approximately 1km to the south of the airport.

## 7. WILDLIFE HAZARD MANAGEMENT

Wildlife hazard management	
<b>Extent of the problem</b> (bird species):	<b>Birdstrikes</b>
<i>Passeridae spp. (Small bird)</i>	1
<i>Buteo buteo (buzzard)</i>	1
<i>Phylloscopus collybita (Chiffchaff)</i>	1
<i>Corvus cornix (Crow)</i>	1
<i>Alaudidae spp.(Lard)</i>	1
<i>Athene noctua (Owl)</i>	1
<i>Columba livia (common pigeon)</i>	1
<i>Passer domesticus (House sparrow)</i>	1
<i>Larus michahellis (Herring gull)</i>	8
<b>Adopted measures :</b>	
<p>The following reports have been submitted to the Department of Airports Operation (D3/B) of the Hellenic Civil Aviation Authority:</p> <ol style="list-style-type: none"> <li>1. “Wildlife hazard risk identification and management, Fraport Regional Airports of Greece A S.A., Reference period: 11 April - 31 December 2017”</li> <li>2. “Wildlife hazard risk identification and management, Fraport Regional Airports of Greece B S.A., Reference period: 11 April - 31 December 2017”. These reports provide information about: <ul style="list-style-type: none"> <li>• Bird and other animal species management is done by FG in all airports with the exception of Aktion and Chania airports where wildlife hazard management belongs to the Hellenic Air Force</li> <li>• Birdstrikes or other species strikes on aircrafts data refer to the period between April 11-December 31 2017</li> <li>• Birdstrikes or other species strikes on aircraft risk evaluation (strikes indicator is taken under account (birdstrikes number to the total ATMs)</li> <li>• Wildlife hazard management measures</li> </ul> </li> </ol>	
<b>Reference year summary results:</b>	
<p>The number of strikes of birds or other animals to aircrafts cannot reduce the population of even endangered species, since only a limited number can be involved in a strike event (stochastic events). The loss of a limited number of animals cannot change the population status of the species.</p>	

## 8. CULTURAL HERITAGE

Have new cultural heritage properties been discovered during the reporting period? [YES/NO]			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)	
MONTH	Kwh
January	110,679.35
February	78,763.87
March	90,870.48
April	129,671.37
May	135,287.10
June	189,369.44
July	262,433.90
August	286,247.89
September	242,109.00
October	168,545.43
November	105,834.87
December	102,039.39
<b>Total annual electric energy consumption (in Kwh)</b>	<b>1,901,852.09</b>

### 9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	10	
Number of firefighting vehicles at the airport	3	
Total annual fuel consumption	Diesel (lt)	11,985.11
	Unleaded gasoline (lt)	15,633.35



### 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> )	-

### 9.4. Water consumption

Water consumption	
Period	Consumption [m <sup>3</sup> ]
<b>Total annual consumption</b>	<b>35,000*</b>

\*Estimation

## 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)
	2018
Direct emissions from heating fuel (scope 1)	0.0
Direct emissions from fuel used for fleet vehicles (scope 1)	63.6
Direct emissions from fuel used for firefighting vehicles (scope 1)	6.4
Direct emissions from fuel used for generators (scope 1)	2.5
Indirect emissions from electricity consumption (scope 2)	1,158.2
<b>Total (t)</b>	<b>1,230.8</b>
<b>Kilos CO<sub>2</sub>/ passenger</b>	<b>0.55</b>

#### Notes:

Fraport Greece B 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 ISO 14064 regarding greenhouse gas emission by an independent certification body

## 11. HUMAN CONSUMPTION 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? <b>[YES/NO]</b>	YES
<b>(if YES)</b> Sampling frequency:	Quarterly
<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). Relevant information signs have been placed for the information of the public. The other 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.	

## 12. RAINWATER

RAINWATER (collection, treatment disposal and recipient)		[YES/NO]
Area	Collection/treatment/disposal	
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		NO

## 13. GROUNDWATER MONITORING PROGRAM

Groundwater quality	
Is sampling of the airport's groundwater performed? <b>[YES/NO]</b>	YES
<b>(if YES)</b> Sampling frequency:	According to the frequency specified by the ETs.
<b>Parameters analysed:</b> pH, Conductivity, DO, TPH, BTEX, Heavy metals,	
<b>Summary of results:</b> Groundwater quality is monitored according to the airport's monitoring program. Due to the low level of the aquifer it was not possible to take underwater samples	

## 14. SEWAGE TREATMENT & DISPOSAL

Sewage	
Sewage network to the municipal waste water treatment plant (WWTP)	YES
Autonomous airport's waste water treatment plant (WWTP)	NO
<b>Short description:</b>	
<b>Blue water</b>	
<b>Collection and disposal:</b> Collection in septic 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>	
<b>Degree of treatment of airport's WWTP</b>	N/A
<b>Treatment method</b>	N/A
<b>Disposal of treated wastewater</b>	N/A
<b>Sludge disposal</b>	N/A
<b>Sampling frequency of WWTP effluent</b>	N/A
<b>Parameters analysed</b>	N/A
<b>Summary of quality of WWTP effluent</b>	N/A