

# Environmental Bulletin of Zakynthos “Dionisios Solomos” Airport (ZTH)

## Reference year 2018

Fraport Greece

May 2019







Version Control

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## **Table of Contents**

<b>1. INTRODUCTION .....</b>	<b>6</b>
<b>1.1. Airport Basic Data .....</b>	<b>6</b>
<b>1.2. Airport Facilities .....</b>	<b>7</b>
<b>1.2.1. Fuel Handlers.....</b>	<b>7</b>
<b>1.2.2. Ground Handlers.....</b>	<b>7</b>
<b>2. TRAFFIC DATA STATISTICS.....</b>	<b>7</b>
<b>2.1. Annual Traffic Data .....</b>	<b>7</b>
<b>2.2. High season traffic data .....</b>	<b>8</b>
<b>2.3. Low season traffic data.....</b>	<b>8</b>
<b>3. AIRCRAFT NOISE.....</b>	<b>9</b>
<b>3.1. Noise measurements during the reference year .....</b>	<b>9</b>
<b>3.2. Noise levels calculation based on noise simulation software .....</b>	<b>10</b>
<b>4. AIR QUALITY.....</b>	<b>11</b>
<b>4.1. Air quality measurements during the reference year .....</b>	<b>11</b>
<b>4.2. Air pollutants emission and dispersion modelling.....</b>	<b>12</b>
<b>5. WASTE MANAGEMENT .....</b>	<b>14</b>
<b>6. ECOSYSTEM AROUND THE AIRPORT.....</b>	<b>14</b>
<b>6.1. Flora-Fauna.....</b>	<b>14</b>
<b>6.2. Ecologically fragile areas.....</b>	<b>15</b>
<b>7. WILDLIFE HAZARD MANAGEMENT.....</b>	<b>15</b>
<b>8. CULTURAL HERITAGE .....</b>	<b>16</b>
<b>9. RESOURCES CONSUMPTION .....</b>	<b>16</b>
<b>9.1. Energy consumption.....</b>	<b>16</b>
<b>9.2. Fuel consumption.....</b>	<b>16</b>
<b>9.3. Heating oil or natural gas consumption .....</b>	<b>17</b>
<b>9.4. Water consumption.....</b>	<b>17</b>
<b>10. GREENHOUSE GAS EMISSIONS &amp; CARBON FOOTPRINT .....</b>	<b>17</b>
<b>11. HUMAN CONSUMPTION WATER MONITORING PROGRAM .....</b>	<b>18</b>
<b>12. RAINWATER .....</b>	<b>18</b>
<b>13. GROUNDWATER MONITORING PROGRAM .....</b>	<b>18</b>
<b>14. SEWAGE TREATMENT &amp; DISPOSAL.....</b>	<b>19</b>

## 1. INTRODUCTION

### Location

“Dionysios Solomos” airport of Zakynthos (ZTH) is located at the area Ampelokipoi, at 6 km from the capital of Zakynthos and at 1 km from Laganas area. The airport occupies an area of approximately 210 acres (850,000 s.m.).

### Administration

The airport administratively belongs to the Municipality of Zakynthos that consists of Zakynthos Island and the small remote islands Strofades that are to the south of the island, in the Region of Ionian Islands.

### Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	43392/96/17.02.1997
E.T. Amendment Decision Reference number	175512/15.10.2014
	36893/24.11.2017

#### 1.1. Airport Basic Data

Airport Basic Data					
Airport name IATA / ICAO	ZTH / LGZA				
Airport position – Airport Reference Point (ARP)	Latitude: 37° 45' 03" N Longitude: 20° 53' 03" E				
Altitude:	5m				
Number of runways	1				
Operation hours (high season)	05:00-22:00				
Operation hours (low season)	Monday: 07:30-20:30 Tuesday: 09:00-15:00 Wednesday: 07:30-14:30 Thursday/Saturday: 08:30-19:30 Friday: 11:00-20:00 Sunday: 13:00-20:00				
Runways	Length/Width			Code	
Runway	2,228 m x 45 m			16/34	
Full length of parallel taxiway	N/A				
Number of taxiways	3				
Apron capacity	A	B	C	D	E
	-	-	4	3	-
Employees	High season			Low season	
Fraport Greece (FG) employees	26			26	
Employees of other companies	142			24	
Terminal					
➤ Total area (m <sup>2</sup> )					12,659
Other buildings and service/storage areas					
➤ RFF (m <sup>2</sup> )					1,276
Parking Areas					

Car parking spaces	220
Bus parking spaces	20
Taxi parking spaces	30

## 1.2. Airport Facilities

### 1.2.1. Fuel Handlers

Number of fuel handler companies				
Number of fuel handler companies operating at the Airport			3	
Installations inside the airport		EKO	GISCO	HAFCO
Environmental Management System (EMS)	(YES/NO)	YES	YES	YES

### 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)		11	25	79
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>	13.170
Percent of increase or decrease in relation to the previous year	6.4%
Annual passenger traffic	1,800,457
Percent of increase or decrease in relation to the previous year	8.5%
Annual cargo transferred (tn)	7
Percent of increase or decrease in relation to the previous year	-
Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
AT45	962
DH8D	336
JS41	250
AT46	184
A320	127
AT43	86

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

A32A	47
AT75	38
AT72	20
C550	18
Other	222
<b>Prevailing aircraft types for international flights</b>	
<b>Aircraft type</b>	<b>No. of flights</b>
B73H	3207
A320	1435
A321	1356
B738	879
B733	576
A32B	398
A32A	393
B75W	392
A319	322
B712	268
Other	1654

**2.2. High season traffic data**

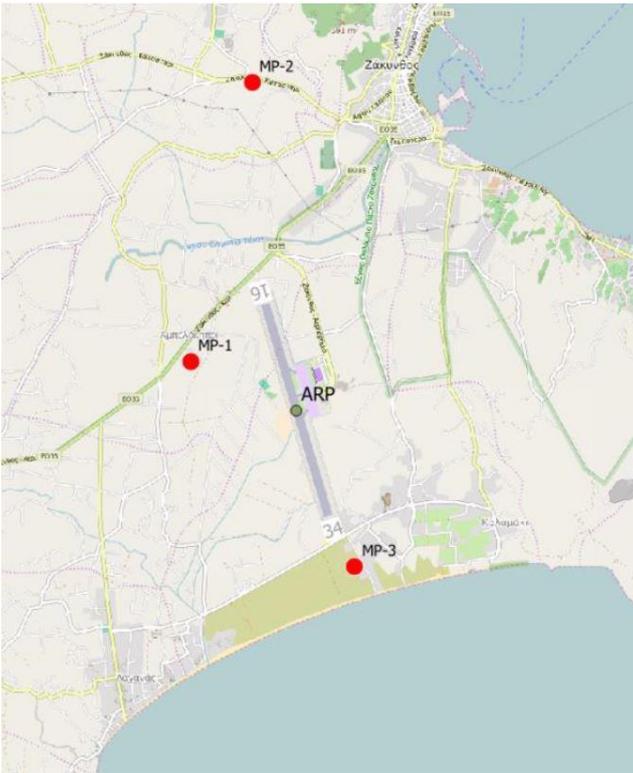
<b>High season traffic data (June-September)</b>	
Highest traffic month	August
Air traffic movements during the month with highest traffic	2,827
Air traffic movements daily average number during the month with highest traffic	91

**2.3. Low season traffic data**

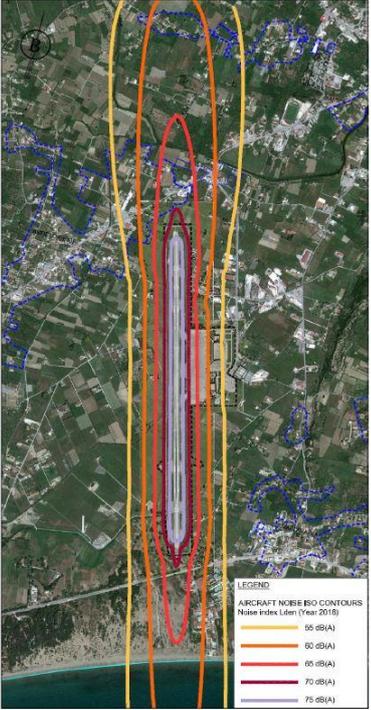
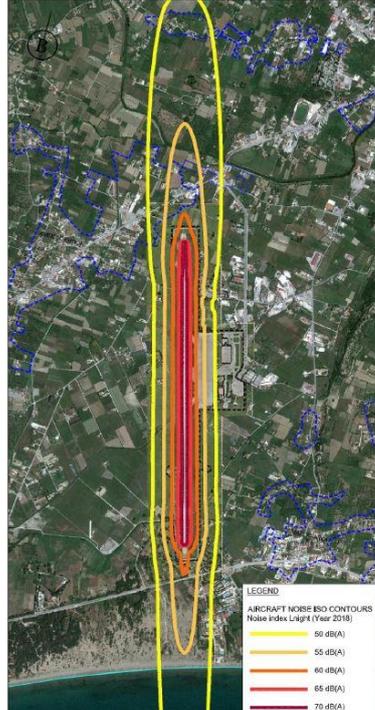
<b>Low season traffic data (October-May)</b>	
Lowest traffic month	November
Air traffic movements during the month with lowest traffic	100
Air traffic movements daily average number during the month with lowest traffic	4

### 3. AIRCRAFT NOISE

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

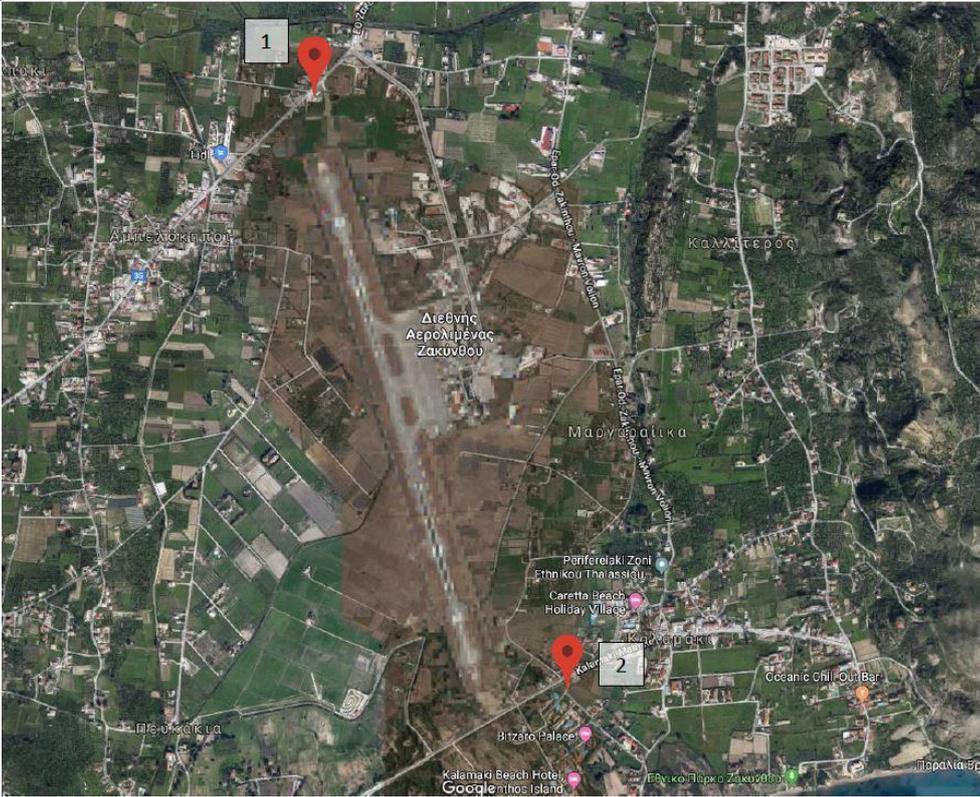
Have noise measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
<b>Measurement points</b>		
		
<b>Measurement points coordinates</b>	<b>Measurement points description</b>	
1) Position: 37° 45' 20" N 20° 52' 20" E	Ampelokipoi area, to the west of the runway in the yard of a gas station	
2) Position: 37° 46' 51" N 20° 52' 45" E	Gaitani area, to the north of the runway in the garden of a private house	
3) Position: 37° 44' 13" N 20° 53' 27" E	To the south of the runway, in the yard of a hotel.	
<b>Measurement period</b>	03.09.2018 -04 09.2018	
<b>Noise indicators</b>	Lden, Lnight	
<b>Summary of measurement results:</b>		
Noise levels are monitored according to the airport's monitoring program. No exceedance of noise indicators levels Lden = 70 dB (A) and Lnight = 60 dB (A) was observed.		

3.2. Noise levels calculation based on noise simulation software

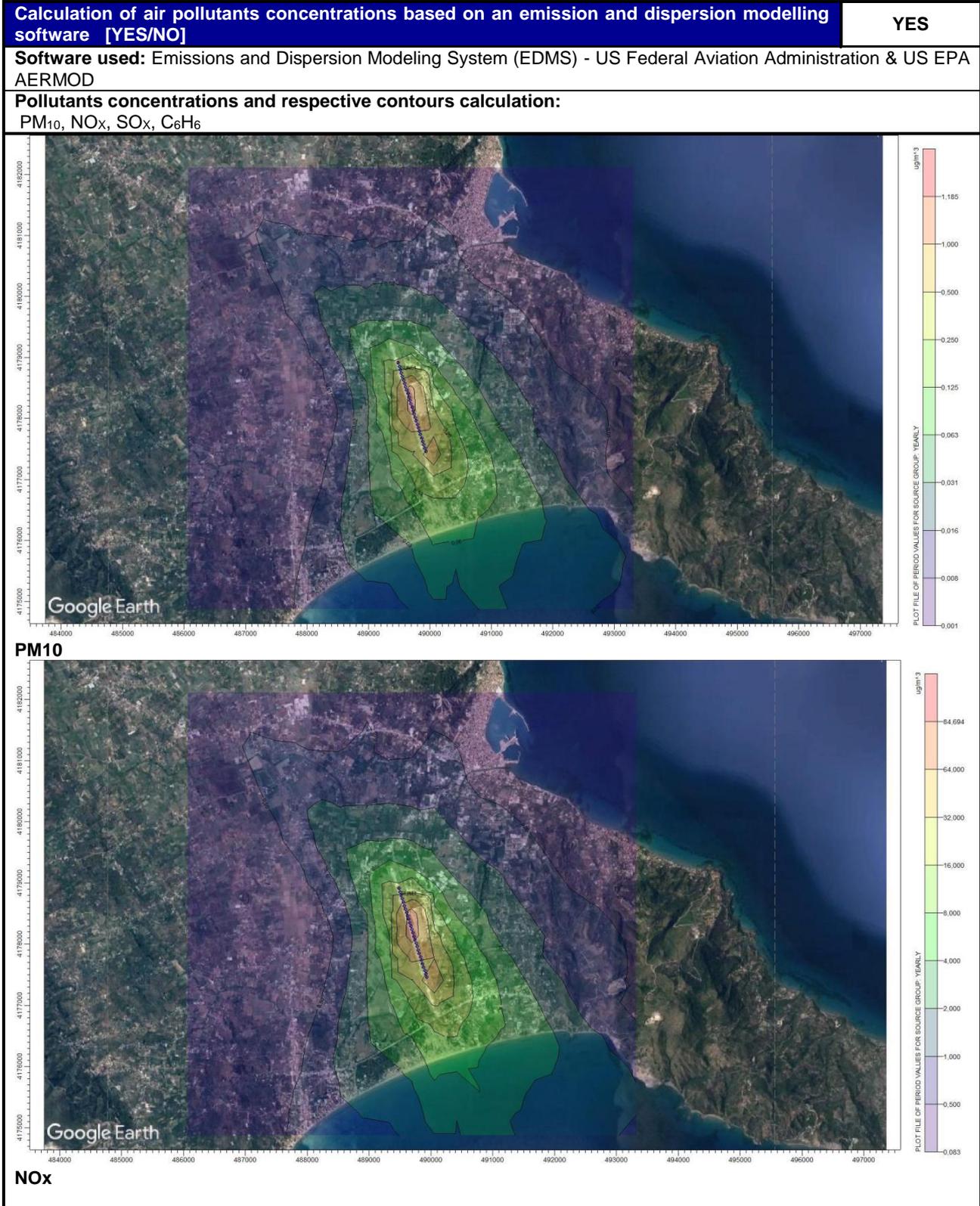
<b>Aircraft noise levels calculation based on simulation software [YES/NO]</b>	YES
<b>Software used:</b> IMMI Noise Prediction Software	
<b>Noise indicators and respective contours calculation:</b>	L <sub>den</sub> , L <sub>night</sub>
 <p style="text-align: center;"><b>L<sub>den</sub></b></p>	 <p style="text-align: center;"><b>L<sub>night</sub></b></p>
<b>Summary of results:</b>	
For the year 2018 no populations or buildings within residential areas were found to be exposed to noise levels higher than the limits L <sub>den</sub> = 70 dB(A) and L <sub>night</sub> = 60 dB(A).	

## 4. AIR QUALITY

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

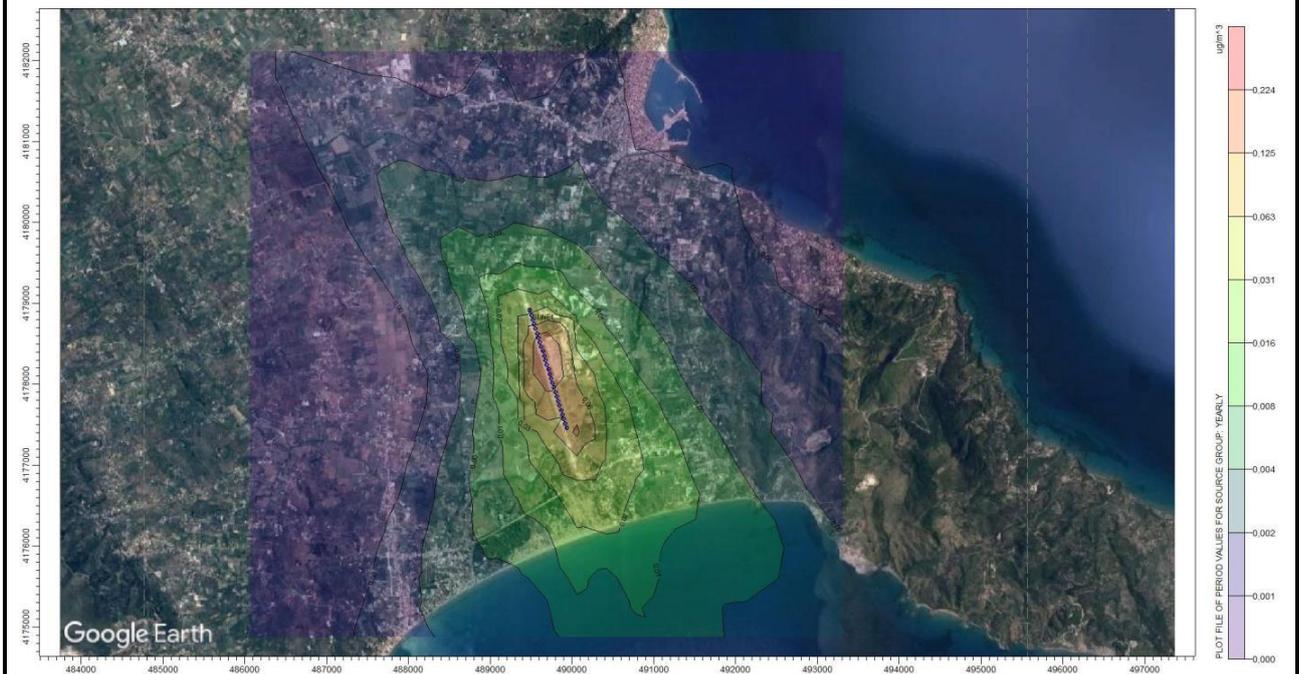
Have air quality measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
<b>Measurement points</b>		
		
<b>Measurement points coordinates</b>	<b>Measurement points description</b>	
1) Position: --° --' --" N --° --' --" E	At a distance of approximately 650 meters from the north part of the runway, in Ampelokipoi area	
2) Position: --° --' --" N --° --' --" E	Kalamaki area, at a distance of approximately 1 km from the south part of the runway	
<b>Measurement period</b>	23.09.2018 - 30 09.2018	
<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>		
Air quality is monitored according to the airport's monitoring program. No exceedance of the air quality limits was observed.		

4.2. Air pollutants emission and dispersion modelling





**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 FOSDA (Solid Waste Management Body) of Zakinthos
<b>Recyclables</b>	Collection and emptying of garbage bins by an FG contractor inside the airport	Collection and management by FOSDA (Solid Waste Management Body) of Zakinthos
<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."

Notes:
<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 A 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? <b>[YES/NO]</b>	YES
<b>(If YES)</b> Short description: Zakinthos airport is located within the limits of the National Marine Park of Zakinthos (NMPZ). Part of the airport is located within the protected area "Lagana Gulf of Zakinthos and Islands Marathonisi and Pelouzo" with code GR2210002.	
<b>Fauna</b>	
Are there protected zones of fauna/birds in the broader airport area? <b>[YES/NO]</b>	YES
<b>(If YES)</b> Short description: The airport of Zakinthos is located within the National Marine Park of Zakinthos (NMPZ). The Marine Park includes the marine area and the islands of Laganas Gulf, the sea turtles egg-laying beaches and a land zone surrounding the latter, the Keri Lake wetland and Strofades Islands. The islands are of high ecological value, mainly due to the migratory avifauna observed. Due to their location, they are a migratory station or passage of migratory passeriformes, whereas massive presence of migratory <i>Streptopelia turtur</i> quails is observed in spring.	

**6.2. Ecologically fragile areas**

The airport of Zakinthos is located within the National Marine Park of Zakinthos (NMPZ). Part of the airport is located within the protected area “Lagana Gulf of Zakinthos and Islands Marathonisi and Pelouzo” with code GR2210002.

**7. WILDLIFE HAZARD MANAGEMENT**

<b>Wildlife hazard management</b>	
<b>Extent of the problem</b> (bird species):	<b>Birdstrikes</b>
Passeridae spp. (Passeroidea)	2
Buteo buteo (Buzzard)	1
Falco spp.	2
Hirundinidae spp. (swallow)	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>“Wildlife hazard risk identification and management, Fraport Regional Airports of Greece A S.A., Reference period: 11 April-31 December 2017”</li> <li>“Wildlife hazard risk identification and management, Fraport Regional Airports of Greece B S.A., Reference period: 11 April-31 December 2017”</li> </ol> <p>In these reports, information is included for the following:</p> <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>	
<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	140,239.00
February	123,751.00
March	120,134.00
April	131,591.00
May	301,692.00
June	426,969.00
July	509,535.00
August	550,778.00
September	470,717.00
October	348,453.00
November	183,729.00
December	185,121.00
<b>Total annual electric energy consumption (in Kwh)</b>	<b>3,492,709.00</b>

### 9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	8	
Number of firefighting vehicles at the airport	3	
Total annual fuel consumption	Diesel (lt)	11,279.94
	Unleaded gasoline (lt)	30.75

### 9.3. Heating oil or natural gas consumption

Heating oil or natural gas consumption	
Total annual heating oil consumption (lt)	19,998
Total annual heating natural gas consumption (m <sup>3</sup> )	N/A

### 9.4. Water consumption

Water consumption	
Period	Consumption [m <sup>3</sup> ]
January – March	9,274
April - June	6,072
July - September	6,585
October - December	6,845
<b>Total annual consumption</b>	<b>28,776 m<sup>3</sup></b>

## 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)	53.4
Direct emissions from fuel used for fleet vehicles (scope 1)	20.2
Direct emissions from fuel used for firefighting vehicles (scope 1)	10.0
Direct emissions from fuel used for generators (scope 1)	3.3
Indirect emissions from electricity consumption (scope 2)	2,127.1
<b>Total (t)</b>	<b>2,127.1</b>
<b>Kg CO<sub>2</sub> /passenger</b>	<b>1.23</b>

#### Notes:

Fraport Greece A 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 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)	Municipal Water & Sewage Company (DEYA) of Zakynthos
Is sampling of the airport's water network performed? <b>[YES/NO]</b>	YES
<b>(if YES)</b> Sampling frequency:	Monthly
<b>Summary of results:</b> The results of the chemical analyses show that the water supplied from the DEYA of Zakynthos is <b>not potable</b> due to the existence of high concentrations of Sodium and Chlorine (brackish water). 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. It is noted that the fuel handler companies monitor the quality of groundwater according to the Environmental terms and based on the data provided by them, no exceedances of the legislative limits occurred (Limits defined by the Ministerial Decision 1811 (G.G. 3322/30.12.2011) and the New Dutch List (2009)).	

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

Waste water treatment plant description (where applicable)	
<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 analysed	N/A
Summary of quality of WWTP effluent	N/A