

# **Environmental Bulletin of Rodos “Diagoras” Airport (KGS)**

## **Reference year 2019**

Fraport Greece

May 2020



## Version Control

Version	Revision	Description of Revision	Date
0	0		27/05/2020



**Table of Contents**

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

“Diagoras” Rhodes airport is located on the island complex of the Dodecanese, on the north-west part of Rhodes island.

### Administration

The airport administratively belongs to the Municipal Unit (MU) of Petaloudes of the Municipality of Rhodes of the Region of South Aegean, at a distance of approximately 14km to the south-west of the town of Rhodes. The airport is extended to two Local Communities (LC) of the MU of Petaloudes: LC Kremasti and LC Paradeisio.

### Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	32648/04.11.1994
E.T. Amendment Decision Reference number	100425/ 17.01.2006
	23983/11.05.2016
	37974/07.12.2017
	6304/20.03.2018
	72087/2629/09.01.2019

### 1.1. Airport Basic Data

Airport Basic Data					
Airport name IATA / ICAO	RHO / LGRP				
Airport position – Airport Reference Point (ARP)	Latitude: 36° 24' 19" N Longitude: 28° 05' 10" E				
Altitude:	5.73 m				
Number of runways	1				
Operation hours (winter & summer)	0:01-24:00				
Runways	Length / Width			Code	
Runway	3,305 x 45.0			07/25	
Full length of parallel taxiway	A 1,000m, F: 1,700m				
Number of taxiways	4 (B,C,D,E)				
Apron capacity	A	B	C	D	E
	-	-	13	-	2 (MARS)
Employees	High season (31.8.2019)			Low season (30.11.2019)	
Fraport Greece (FG) employees	61			52	
Employees of other companies	1948			1361	
Terminal					
➤ Total area (m <sup>2</sup> )				23,160	

Other buildings and service/storage areas	
➤ RFF (m <sup>2</sup> )	1,557
Parking Areas	
Car parking spaces	500
Bus parking spaces	50
Taxi parking spaces	60

## 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)		43	59	231
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>	37,468
Percent of increase or decrease in relation to the previous year	-3.1%
Annual passenger traffic	5,542,567
Percent of increase or decrease in relation to the previous year	-0.5%
Annual cargo transferred (tn)	626
Percent of increase or decrease in relation to the previous year	-19.11%
Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
A320	3,878
AT45	1,612
DH8A	553

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

A321	387
A32A	356
B712	275
A319	274
B733	49
C550	38
DH8D	36
Other	423
<b>Prevailing aircraft types for international flights</b>	
<b>Aircraft type</b>	<b>No. of flights</b>
B73H	9,637
A320	6,360
B738	3,102
A321	1,681
A32B	1,246
A319	842
A32A	804
A21N	532
B73W	498
B733	469
Other	4,416

## 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	6,778
Air traffic movements daily average number during the month with highest traffic	219

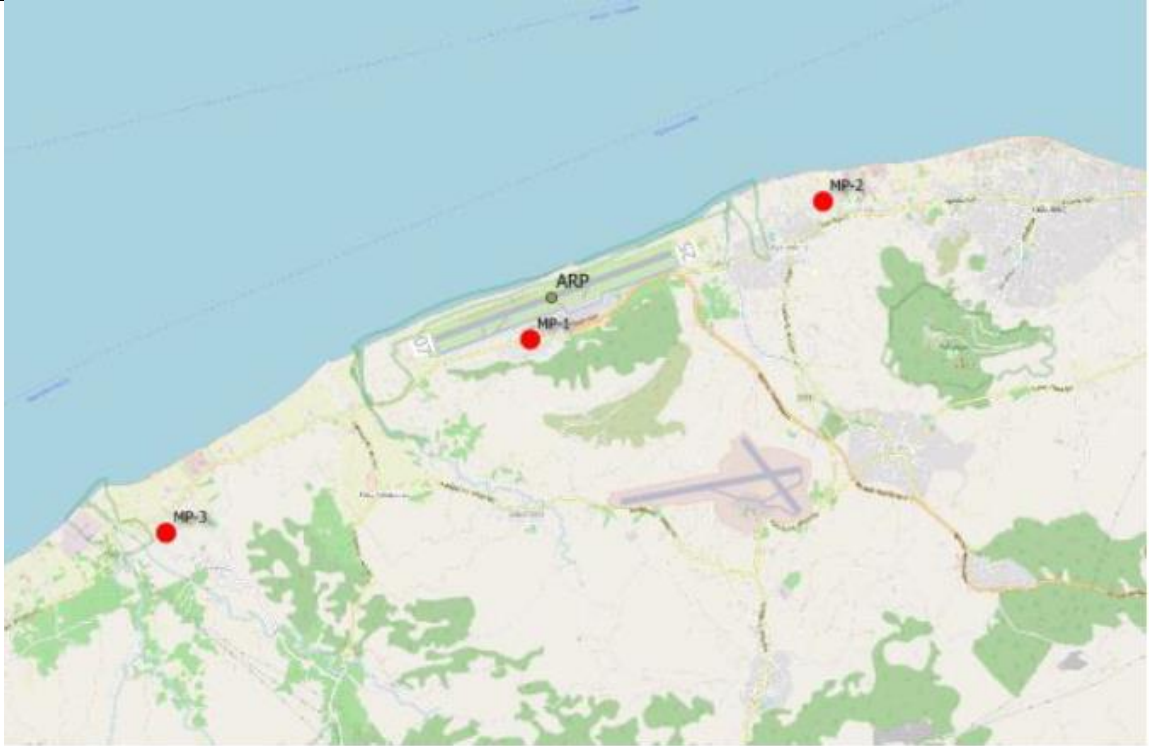
## 2.3. Low season traffic data

<b>Low season traffic data (October-May)</b>	
Lowest traffic month	February
Air traffic movements during the month with lowest traffic	446
Air traffic movements daily average number during the month with lowest traffic	16



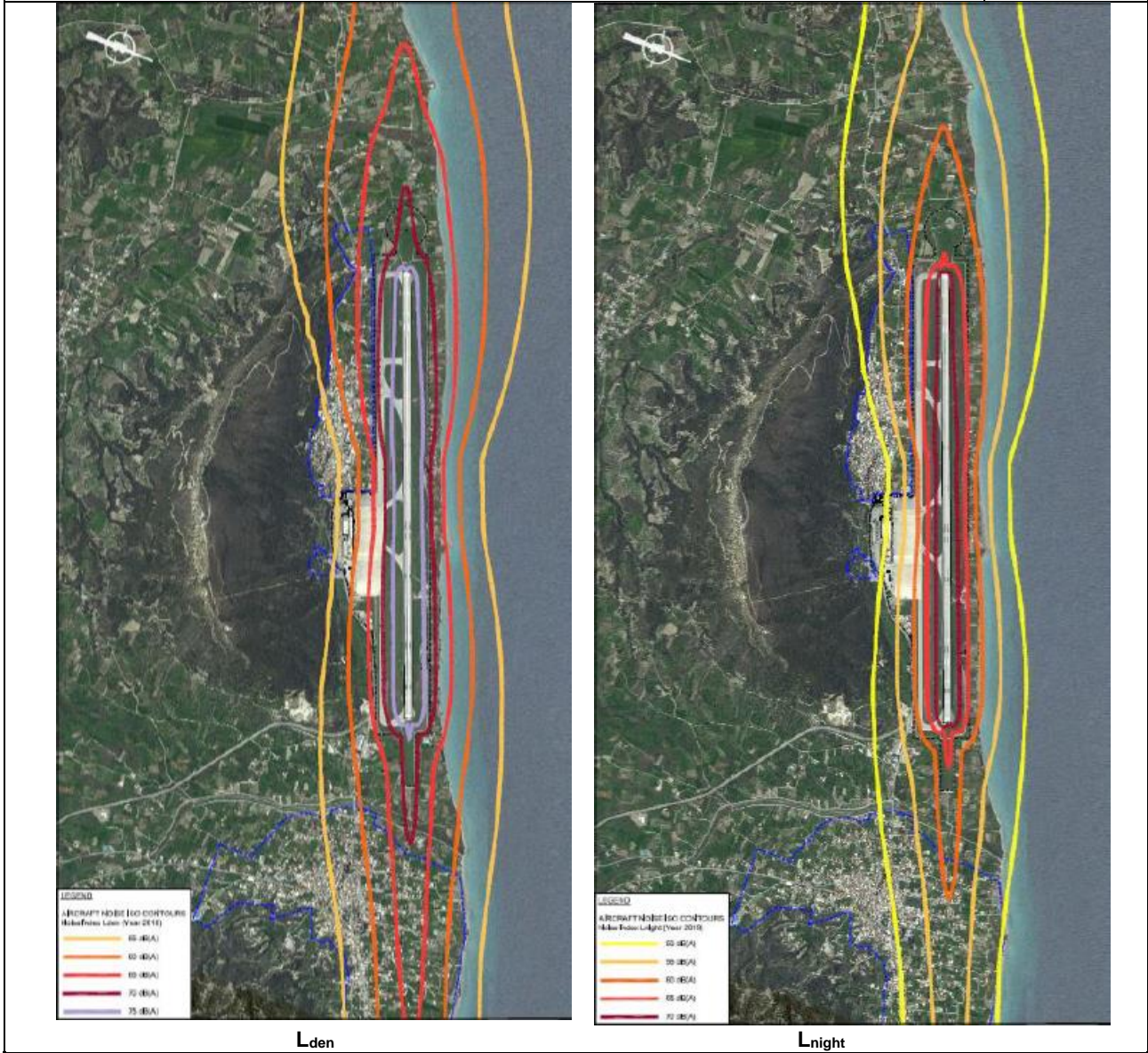
### 3. AIRCRAFT NOISE

#### 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° 24' 01" N 28° 04' 59" E	Paradisi area, south of the runway on the balcony of a house. Affected by all flights o and from both directions	
2) Position: 36° 24' 59" N 28° 07' 32" E	Kremasti area, east of RWY 16/34 on a hotel rooftop. Affected by arrivals RWY 25 and departures RWY 07	
3) Position: 36° 22' 40" N 28° 01' 48" E	Theologos area, south-west of RWY 16/34 on a hotel rooftop. Affected by arrivals RWY 07 and departures RWY 25	
<b>Measurement period</b>	03.07.2019 – 04.07.2019	
<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>	<b>YES</b>
<b>Software used:</b> IMMI Noise Prediction Software (CNOSSOS EU assessment method based on Directive 2015/996/EU)	
<b>Noise indicators and respective contours calculation:</b>	Lden, Lnight




**Summary of results:**

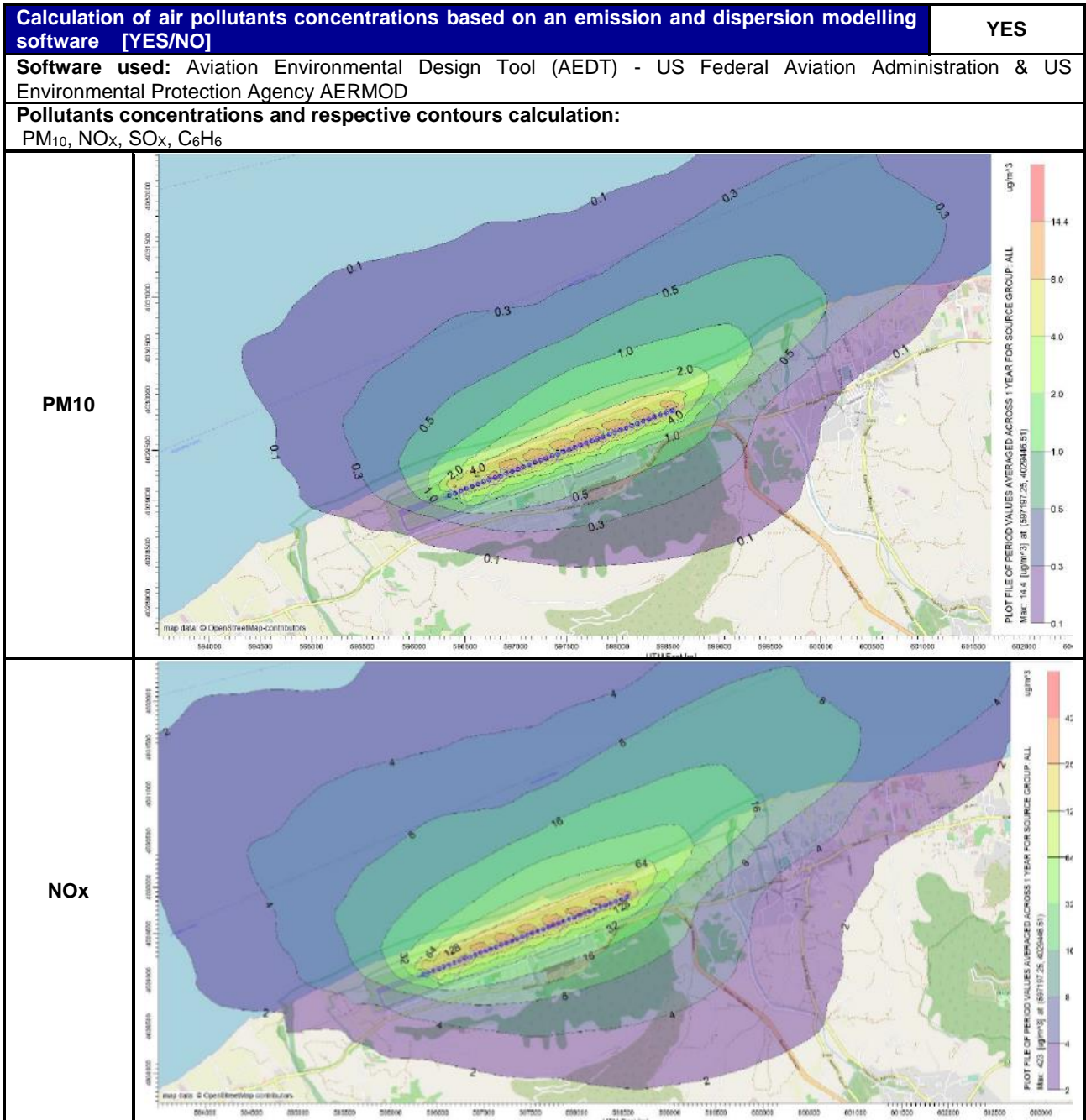
For the year 2019 some residential buildings inside official settlement boundaries in the vicinity of the airport are exposed to noise levels higher than the limit  $L_{night} = 60 \text{ dB(A)}$ . No exceedance of the  $L_{den} = 70 \text{ dB(A)}$  indicator was recorded.

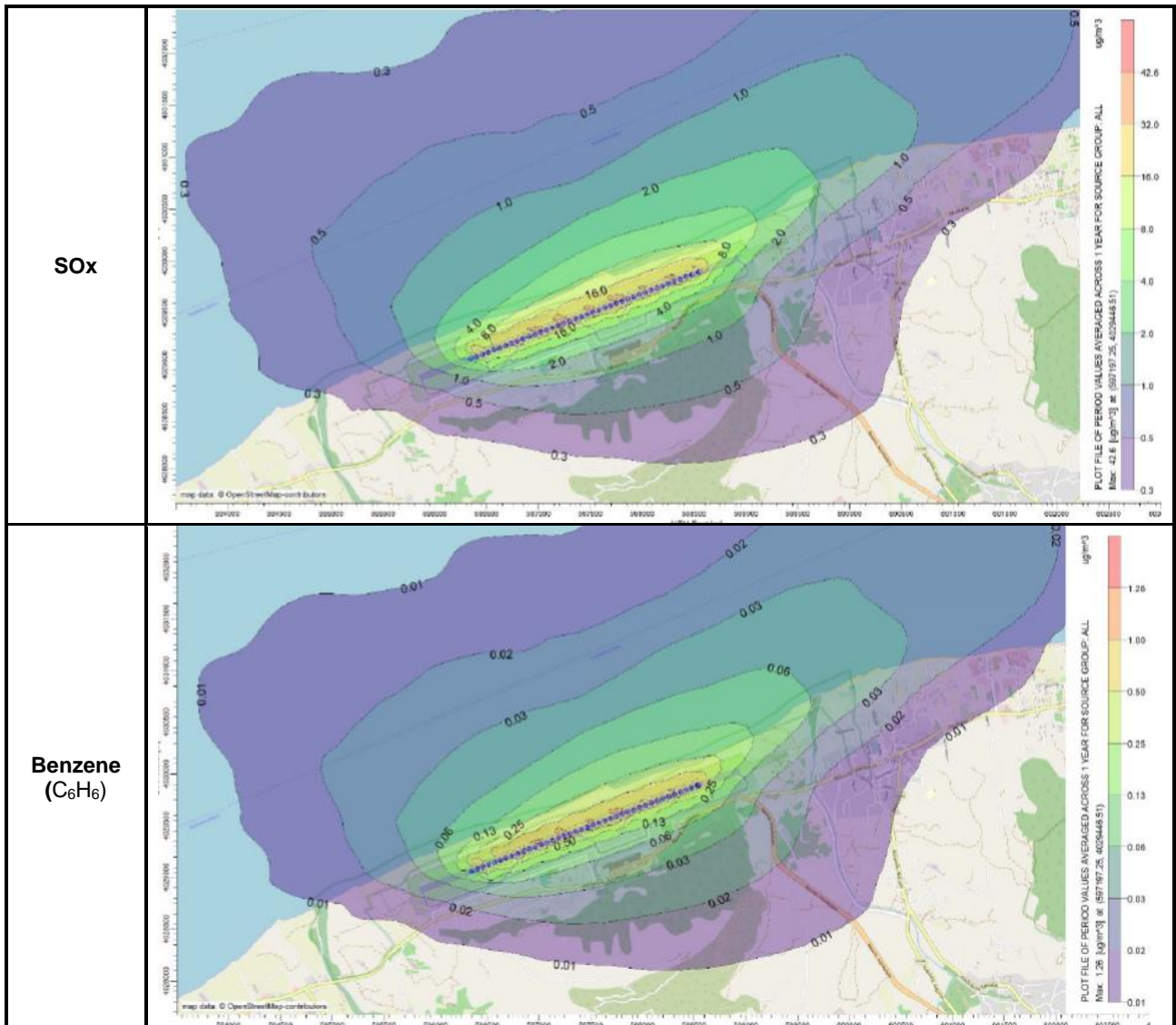
## 4. AIR QUALITY

### 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 1km approximately, east of the airport.	
2) Position: --° --' --" N --° --' --" E	At a distance of 2km approximately, west of the airport.	
3) Position: --° --' --" N --° --' --" E	At a distance of approximately 500 meters from the runway to the south	
<b>Measurement period</b>	28.06.2019 – 05.07.2019	
<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.</p> <p>At points 1 &amp; 2, no exceedance of the permissible air quality limits was observed for PM<sub>10</sub>, PM<sub>2,5</sub>, NO<sub>2</sub>, SO<sub>2</sub> &amp; C<sub>6</sub>H<sub>6</sub>. At point 3 minor excess is observed for suspended particles PM<sub>10</sub> which is most probably due to the proximity of construction works (e.g earthworks) to the measurement point. The rest of the pollutants at point 3 were measured to be within limits.</p> <p>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





## 5. WASTE MANAGEMENT

Waste management		
Waste	Collection	Management/Disposal
Mixed Waste and Bulky Waste	Collection by the licensed private company	Disposal in landfill of N. Rodos

Σημειώσεις:
<ol style="list-style-type: none"> <li>Regarding the different mixed MSW, Airport Users are served by the central management system of Fraport Greece.</li> <li>Regarding the “alternative management” waste categories (Waste lubricant oil WLO, WEEE, etc.):                         <ol style="list-style-type: none"> <li>Waste Lubricant Oil (WLO): Collection and management by authorized collector “CYTOP S.A.”</li> <li>Waste Electrical &amp; Electronic Equipment (WEEE): Collection and management by alternative management system “Appliances Recycling S.A.”</li> <li>Accumulators: Collection and management by alternative management system “Re-Battery S.A.”</li> <li>Small batteries: Collection and management by alternative management system “AFIS S.A.”</li> <li>Used tires: Collection and management by alternative management system “ECOELASTIKA S.A.”</li> </ol> </li> <li>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? [YES/NO]	NO
(If YES) Short description:	
<b>Fauna</b>	
Are there protected zones of fauna/birds in the broader airport area? [YES/NO]	YES
(If YES) Short description:	Numenius arquata (Curlew) Burhinus oedicephalus (Stone curlew)

### 6.2. Ecologically fragile areas

The nearest area is the Wildlife Sanctuary “Kremasti (Paradeisiou)” with code K700 that is adjacent to the airport. The nearest area of the Natura 2000 network is SAC “Rhodes: Profitis Ilias – Epta Piges – Petaloudes – Remata” (GR4210006), located at a distance of approximately 7km from the airport.

## 7. WILDLIFE HAZARD MANAGEMENT

Wildlife hazard management	
Extent of the problem (animal species):	Strikes (%)
<i>Hirundo rustica</i> (Barn swallow)	49%
Not identified*	17%
<i>Hedgehog</i>	8%
<i>Larus michahellis</i> (Yellow-legged gull)	3%
<i>Galerida cristata</i> (Crested lark)	3%
<i>Motacilla flava</i> (Yellow-wagtail)	3%
<i>Falco tinnunculus</i> (Common kestrel)	2%
<i>Buteo buteo</i> (Common buzzard)	2%
<i>Streptopelia decaocto</i> (Collared dove)	2%
<i>Delichon urbicum</i> (Common house martin)	2%
<i>Larus melanocephalus</i> (Mediterranean gull)	2%
<i>Falco vespertinus</i> (Red-footed falcon)	2%
<i>Columba livia</i> (Pigeon)	2%
<i>Burhinus oedichnemus</i> (Eurasian stone-curlew)	2%
<i>Tyto alba</i> (Barn owl)	2%
DNA analysis results pending**	2%
<b>Adopted measures :</b>	
<ul style="list-style-type: none"> <li>• Drainage ditches are periodically checked and if necessary cleaned, to ensure efficient water run-off and, thus, reducing the attractiveness of the airside to the wildlife</li> <li>• Systematic grass cutting at the airside</li> <li>• Fence maintenance</li> <li>• Trapping of mammals (mainly stray cats and dogs) that may be found at the manoeuvring area by the use of trap and under the permit received by the ministry of Environment &amp; Energy “Monitoring and trapping birds and mammals population at the 14 regional airports operated by Fraport Greece” (Permit: 165654/142, 12/2/2018)</li> <li>• Systematic monitoring and census of bird species populations on and off-airport (in a distance of 13km from the airport) and mapping of their habitat and the areas that are attractive to birds</li> <li>• Seminar awareness video on the identification and safe removal of reptiles and information about the snake species at Rodos, under the collaboration with the Lalitsa Non-Profit Association</li> <li>• Awareness video on the safe handling of stray dogs</li> <li>• Holding of the wildlife strike committee, to raise awareness across the airport users and local authorities about the risk of the wildlife strikes on aircraft and the measures obtained to eliminate such a risk</li> </ul>	
<b>Reference year summary results:</b>	
<p>Hellenic Civil Aviation Authority receives annual reports referring to the risk assessment of the wildlife hazard as well as to the wildlife hazard management at the 12 regional airports operating by Fraport Greece. Aktion Airport and Chania Airport “Ioannis Daskalogiannis” are excluded, in accordance with the Concession Agreement, Annex 20, paragraph 6.3.3 &amp; 6.3.4.</p>	

\* “Not identified” refers to birdstrikes evidence (e.g. blood or part of feathers) that does not allow the bird species identification

\*\*“DNA analysis results pending” refers to birdstrikes evidence (e.g. blood or part of feathers) that are laboratory analysed for bird species identification, since an effect on flight was caused

## 8. CULTURAL HERITAGE

<b>Have new cultural heritage properties been discovered during the reporting period? [YES/NO]</b>			<b>NO</b>
<i>(if YES)</i> Details provided in the table below:			
<b>Location</b>	<b>Date of discovery</b>	<b>Type of discovery</b>	<b>Additional protection measures taken</b>

## 9. RESOURCES CONSUMPTION

### 9.1. Energy consumption

<b>Energy consumption (monthly electric energy consumption, in Kwh)</b>	
<b>MONTH</b>	<b>Kwh</b>
<b>Total annual electric energy consumption (in Kwh)</b>	10,714,511

### 9.2. Fuel consumption

<b>Fuel consumption</b>		
<b>Number of FG vehicles at the airport</b>	18	
<b>Number of firefighting vehicles at the airport</b>	6	
<b>Total annual fuel consumption</b>	Diesel (lt)	23,453
	Unleaded gasoline (lt)	653

### 9.3. Heating oil or natural gas consumption

<b>Heating oil or natural gas consumption</b>	
Total annual heating oil consumption (lt)	60,007
Total annual heating natural gas consumption (m <sup>3</sup> )	N/A

### 9.4. Water consumption

<b>Water consumption</b>	
<b>Period</b>	<b>Consumption [m<sup>3</sup>]</b>
Total annual consumption	120,724



## 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 & scope 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)
Direct emissions from heating fuel (scope 1)	160.1
Direct emissions from fuel used for fleet vehicles (scope 1)	37.3
Direct emissions from fuel used for firefighting vehicles (scope 1)	26.9
Direct emissions from fuel used for generators (scope 1)	28.2
Indirect emissions from electricity consumption (scope 2)	6,835.9
<b>Total (t)</b>	<b>7,088.3</b>
<b>Kilos CO<sub>2</sub>/ passenger</b>	<b>1.28</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 was certified during the reference year according to ACA (Airport Carbon Accreditation)

## 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 Rodos
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 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*
Rainwater quality		
Is sampling of the airport's rainwater performed? [YES/NO]		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. According to FG's analyses results and based on the abovementioned specifications, the airport's rainwater environmental condition is adequate and no further treatment measure is necessary.		

## 13. GROUNDWATER MONITORING PROGRAM

Groundwater quality	
Is sampling of the airport's groundwater performed? [YES/NO]	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> Groundwater quality is monitored according to the airport's monitoring program. In addition, the fuel handling companies monitor the quality of groundwater according to the environmental terms. According to FG's analyses results,, the environmental monitoring reports of the fuel handlers, and based on the New Dutch List (2009) which is adopted in the absence of relevant national specifications/limits, the environmental condition of the ground water is found adequate and no decontamination measures are necessary, except from the area of Exxon Mobil installation and two areas identified from the 2017 Environmental Baseline Study, which were under remediation during the reference year.	

## 14. SEWAGE TREATMENT & DISPOSAL

Sewage	
Sewage network to the municipal waste water treatment plant (WWTP)	NO
Autonomous airport's waste water treatment plant (WWTP)	YES
<b>Short description:</b> The airport waste water is collected via an integrated sewerage network and taken to the WWTP within the airport.	
<b>Blue water</b>	
<b>Collection and disposal:</b> Collection in a tank on the site of the WWTP and disposal within the WWTP of the airport for further treatment.	
<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>	Secondary treatment
<b>Treatment method</b>	Prolonged ventilation
<b>Disposal of treated wastewater</b>	WWTP of Municipal Water & Sewage Company (DEYA) of Rodos
<b>Sludge disposal</b>	Landfill
<b>Sampling frequency of WWTP effluent</b>	Monthly
<b>Parameters analysed</b>	BOD, COD, SS, TN,TP, T. Coliforms, E.Coli, pH, Residual Cl <sub>2</sub>
<b>Summary of quality of WWTP effluent</b>	The WWTP effluent observes the limits set out in JMD 5673/400/1997