

# ENVIRONMENTAL BULLETIN OF KOS “IPPOKRATIS” AIRPORT (KGS)

## Reference year 2021

Fraport Regional Airports of Greece B S.A.

Issue year: 2022

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## 1. INTRODUCTION

### 1.1. Location

“Ippokratis” airport of Kos is located in the homonym island of the Dodecanese, near the settlement Antimacheia, at a distance of 27km to the west of the capital of Kos island.

### 1.2. Administration

The airport administratively belongs to the Municipal Unit of Herakleides of the Municipality of Kos, of the homonym Regional Unit that belongs to the Region of South Aegeon.

### 1.3. Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	68597/24.06.1999
E.T. Amendment Decision Reference Number	106859/08.08.2006
	197968/03.05.2012
	6126/16.03.2018

### 1.4. Airport Basic Data

Airport name IATA / ICAO	KGS / LGKO
Airport location – Airport Reference Point (ARP)	Latitude: 36° 47' 41" N Longitude: 27° 05' 28" E
Altitude	125.66m
Number of runways	1
Operation hours (summer & winter)	00:01 – 24:00

Runways	Length/Width					Code
Runway	2,390 x 45m					14/32
Full length of parallel taxiway	N/A					
Number of taxiways	4					
Apron capacity	A	B	C	D	E	
	-	-	6	-	2	
Employees	High season (31.08.2021)			Low season (30.11.2021)		
Fraport Greece (FG) employees	41			35		
Employees of other companies	645			337		

Terminal	
➤ Total area (m <sup>2</sup> )	22.997

<b>Other buildings and service/storage areas</b>	
➤ RFF Station (m <sup>2</sup> )	1.470

<b>Parking Areas</b>	
Car parking spaces	232
Bus parking spaces	36
Taxi parking spaces	60

## 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

<b>Annual Traffic Data for the year 2021</b>	
Overall Annual Air Traffic Movements <sup>1</sup>	14.207
Percent of increase or decrease in relation to the previous year	77,7%
Annual passenger traffic	1.574.518
Percent of increase or decrease in relation to the previous year	96,7 %
Annual cargo transferred (tn)	114
Percent of increase or decrease in relation to the previous year	-29,6 %

<b>Aircraft types</b>	
<b>Prevailing aircraft types for domestic flights</b>	
Aircraft type	No. of flights
AT45	846
DH8D	750
A320	519
AT75	358
AT76	238
A32A	222
AT72	202
A20N	83
A319	74
Ψ56X	36
Other	453
<b>Prevailing aircraft types for international flights</b>	
Aircraft type	No. of flights
B73H	3.199
A320	2.055
B738	1.661
A32A	636
7M8	572
A321	432
A319	368
A20N	193
A32B	177
7S8	100
Other	1.033

<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	August
Air traffic movements during the month with highest traffic	3.283
Air traffic movements daily average number during the month with highest traffic	106


## 2.3. Low season traffic data

<b>Low season traffic data (October-May)</b>	
Lowest traffic month	February & March
Air traffic movements during the month with lowest traffic	172
Air traffic movements daily average number during the month with lowest traffic	6



### 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
<b>Measurement points</b>		
		
Measurement points coordinates	Measurement points description	
Position 1: 36° 46' 52" N 27° 08' 34" E	Kardamaina area, to the south-east of the runway near a small port and the beach, at the roof of the Town Hall. Affected by arrivals RWY 32 and departures RWY 14	
Position 2: 36° 48' 26" N 27° 05' 42" E	Antimachia area, east of RWY 16/34 on a school roof. Affected by arrivals RWY 14 and departures RWY 32	
Position 3: 36° 48' 15" N 27° 05' 17" E	Antimacheia area, to the northeast of the runway 16/34 at a sport court. Affected by arrivals RWY 14 and departures RWY 32.	
<b>Measurement period</b>	03.08.2021 – 04.08.2021	
<b>Noise indicators</b>	L <sub>den</sub> , L <sub>night</sub>	

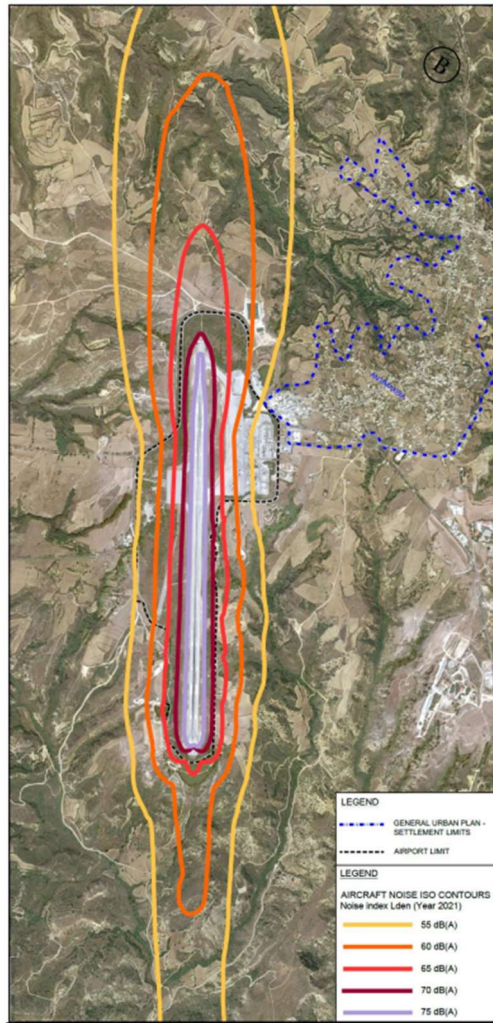
#### Summary of measurement results:

Noise levels are monitored according to the airport’s monitoring program.  
No exceedance of noise indicators levels L<sub>den</sub>=70 dB(A) and L<sub>night</sub>=60 dB(A) was observed.

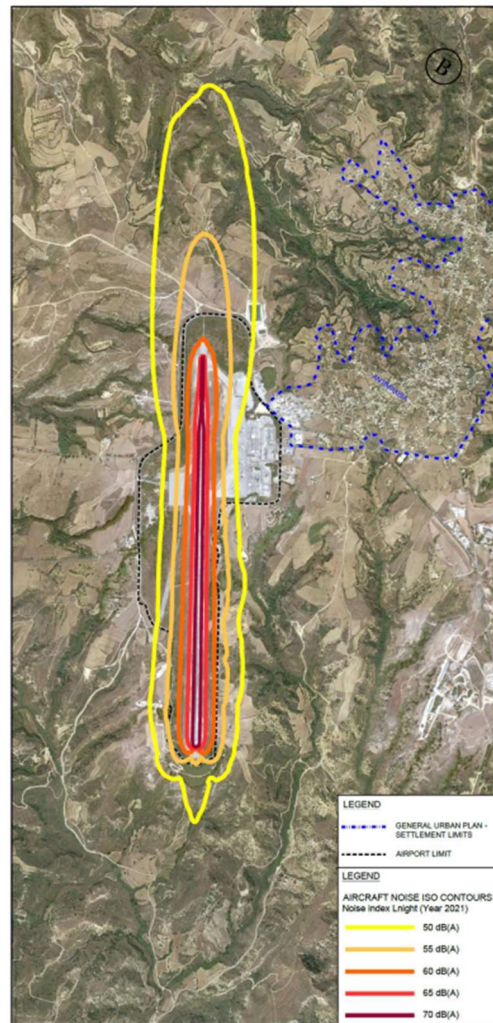
**3.2. Noise levels calculation based on noise simulation software**

<b>Aircraft noise levels calculation based on noise simulation software</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> $L_{den}$ , $L_{night}$	

**Noise contours:**



$L_{den}$



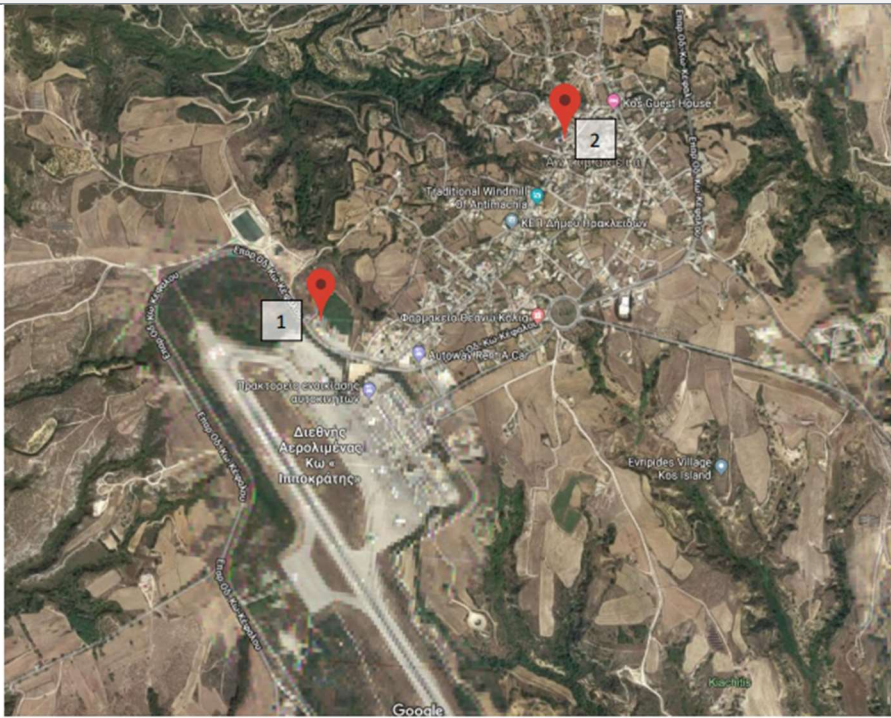
$L_{night}$

**Summary of results:**

For the year 2021 no populations or 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

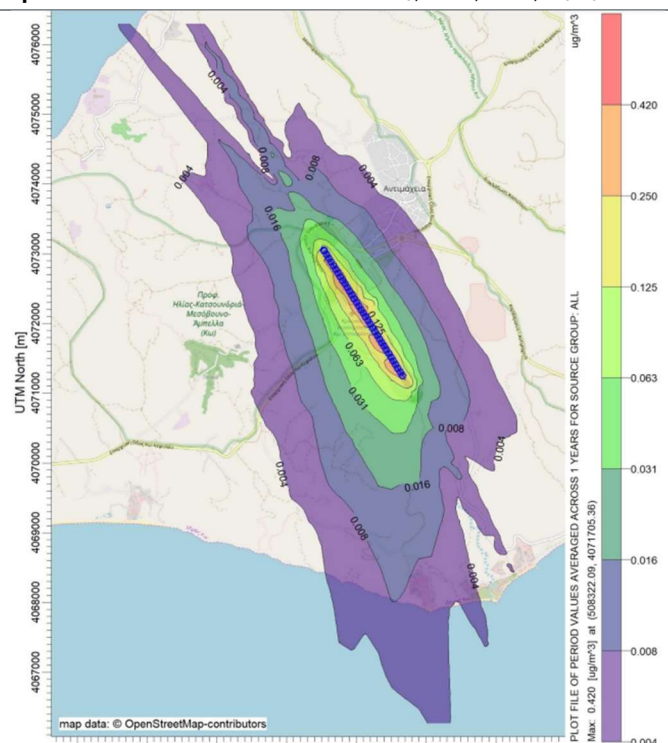
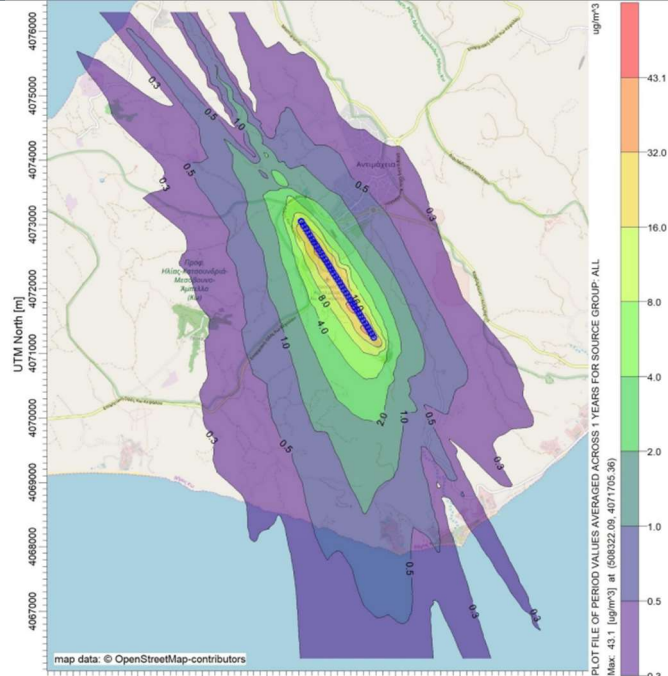
<b>Have air quality measurements at the airport’s surrounding area been performed during the reference year?</b>		<b>YES</b>
<b>Measurement points</b>		
		
<b>Measurement points</b>	<b>Measurement points description</b>	
Position 1	At a distance of less than 500 meters, in the school yard	
Position 2	Antimacheia Settlement, at a distance of approximately 1.3 km, to the north-east of the airport.	
<b>Measurement period:</b>	02.03.2021 – 17.03.2021 27.08.2021 – 12.09.2021	
<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>	

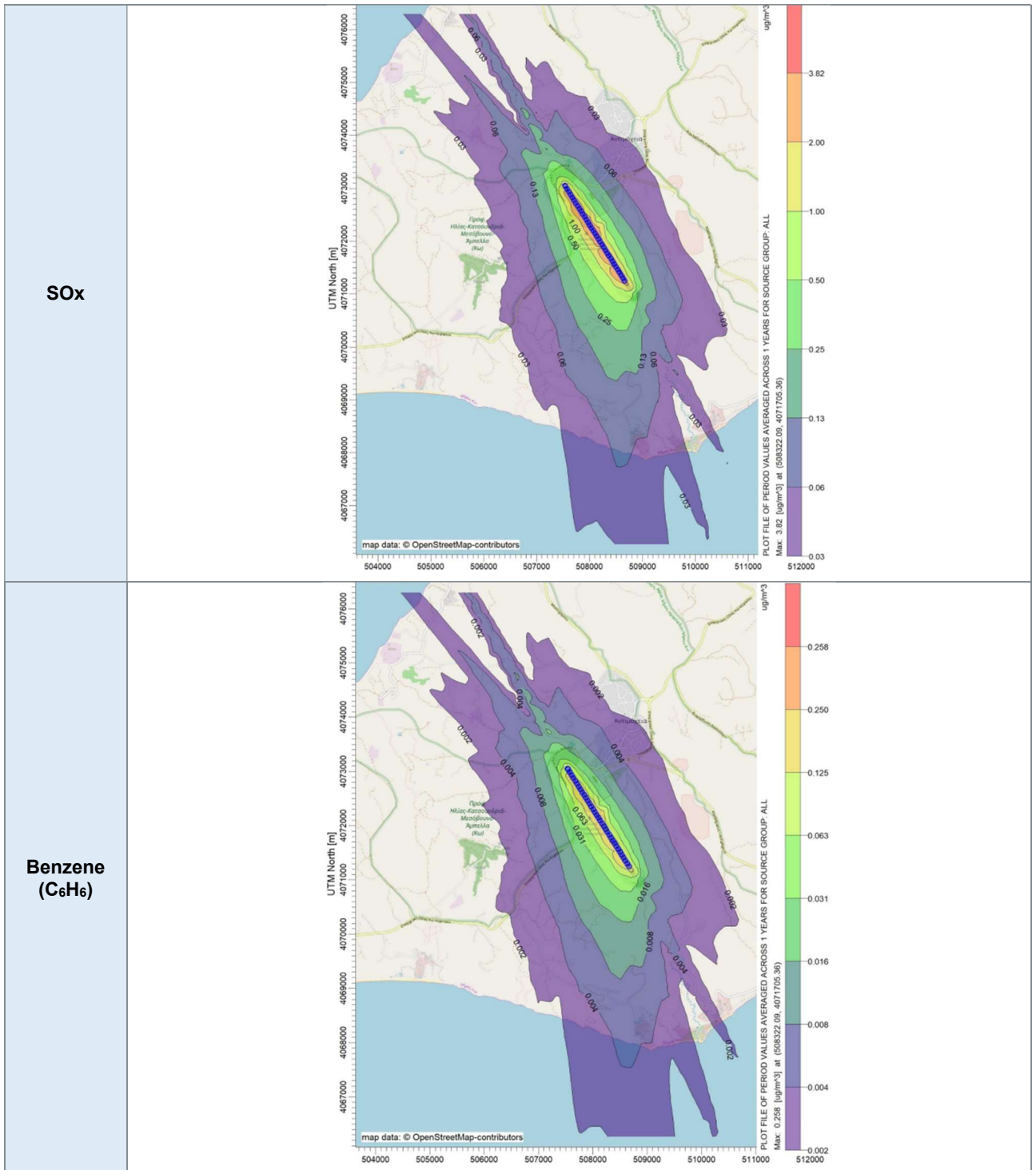
#### Summary of measurement results:

Air quality is monitored according to the airport’s monitoring program.  
No exceedance of the air quality limits was observed, only PM<sub>10</sub> for 1 day in position 2 probably due to construction works.



**4.2. Air pollutants emission and dispersion modelling**

<b>Calculation of air pollutants concentrations based on an emission and dispersion modelling software</b>		<b>YES</b>
<b>Software used:</b> Aviation Environmental Design Tool (AEDT) - US Federal Aviation Administration & US Environmental Protection Agency AERMOD		
<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>		
<b>PM<sub>10</sub></b>		
<b>NO<sub>x</sub></b>		



**Summary of results:**

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

## 5. ELECTROMAGNETIC RADIATION

A phone base station is installed inside Kos Airport "Ippokratis". As part of relevant controls, measurements were carried out on 02.03.2021 at 14.00-16.00. Measurements were executed with a pedimeter for the 75 MHz-3 GHz band at 8 selective measurements points.

Measurement Point	Electric Strength E	Power Density P
	(V/m)	(W/m <sup>2</sup> )
1	1,30200	0,00450
2	0,87380	0,00203
8	0,13390	0,00005
9	0,16780	0,00007
10	0,26700	0,00019
11	0,14590	0,00006
12	0,17830	0,00008
13	0,27280	0,00020
14	0,18030	0,00009

### Notes:

At this measurement campaign, no exceedances were found. The defined limits of exposure to electromagnetic radiation, are respected, as they are determined by the relevant legislation.

## 6. WASTE MANAGEMENT

Waste	Collection	Management/Disposal
<b>Recyclables (paper, plastic, metals, glass)</b>	Separate collection by the Municipality of Kos	Disposal at material recovery facility for recycling
<b>Residues (Mixed Waste) and Bulky Waste</b>	Collection by the Municipality of Kos.	Disposal in landfill

### Notes:

- 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).
- Regarding the ‘alternative management’ waste categories (Waste lubricant oil WLO, WEEE, etc.):
  - Waste Lubricant Oil (WLO): Collection and management by authorized collector “CYTOP S.A.”
  - Waste Electrical & Electronic Equipment (WEEE): Collection and management by alternative management system “Appliances Recycling S.A.”
  - Accumulators: Collection and management by alternative management system “Re-Battery S.A.”
  - Small batteries: Collection and management by alternative management system “AFIS S.A.”
  - Used tires: Collection and management by alternative management system “ECOELASTIKA S.A.”
- 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.
- 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.

## 7. ECOSYSTEM AROUND THE AIRPORT

### 7.1. Flora-Fauna

Flora	
Are there protected zones of vegetation/habitats in the broader airport area?	NO
<b>(if YES)</b> Short description:	
Fauna	
Are there protected species of fauna/birds in the broader airport area?	YES
<b>(if YES)</b> Short description: The protected bird species that have been observed at Kos airport since April 2017 are presented below: <i>Collared pratincole (Glareola pratincola)</i> , <i>Eurasian stone-curlew (Burhinus oedicnemus)</i> , <i>European roller (Coracias garrulous)</i> , <i>European turtle-dove (Streptopelia turtur)</i> , <i>Lesser kestrel (Falco naumanni)</i> , <i>Long-legged buzzard (Buteo rufinus)</i> , <i>Marsh harrier (Circus aeruginosus)</i> , <i>Masked shrike (Lanius nubicus)</i> , <i>Montagu's harrier (Circus pygargus)</i> , <i>Pallid harrier (Circus macrourus)</i> , <i>Red-footed falcon (Falco vespertinus)</i> , <i>Rüppell's warbler (Curruca ruppeli)</i> , <i>Short-eared owl (Asio flammeus)</i> , <i>White stork (Ciconia ciconia)</i>	

### 7.2. Ecologically fragile areas

The airport is located outside the limits of protected areas included in the National Protected Areas Network. Nevertheless reference is made to the direct proximity of the airport area to the Wildlife Sanctuary “Profitis Ilias-Katsoundria-Mesovouno-Ampella” with code K514. Moreover, at a distance of approximately 1km to the east of the airport is located a Wildlife Sanctuary “Kastro-Tsampi-Sabei-Aeras of the Municipality of Herakleides of Kos island” with code K849.



## 8. WILDLIFE HAZARD MANAGEMENT

<b>Wildlife strikes and wildlife hazard management measures</b>	
<b>Wildlife species that suffered a strike</b>	<b>Strikes (%)</b>
European bee-eater ( <i>Merops apiaster</i> )	38%
Hooded crow ( <i>Corvus cornix</i> )	38%
Jackdaw ( <i>Corvus monedula</i> )	13%
Little owl ( <i>Athene noctua</i> )	13%
<b>Wildlife strike risk mitigation measures:</b>	
<ul style="list-style-type: none"> <li>• Inspections of the manoeuvring area for wildlife monitoring and control at regular intervals</li> <li>• Drainage ditches are regularly monitored and when necessary cleaned, to ensure efficient water run-off and, thus, reducing the attractiveness of the airside to the wildlife</li> <li>• Regular grass cutting at the airside. Kos airport is equipped with tractor</li> <li>• Fence maintenance</li> <li>• Systematic monitoring of bird species populations and their habitat on and off-airport (at a distance of 13km from the airport)</li> <li>• Holding of the wildlife strike committee meeting, to raise awareness across the airport users and local authorities about the risk of the wildlife strikes on aircraft and the measures applied to mitigate such a risk</li> </ul>	
<b>Reference year summary results:</b>	
<p>Hellenic Civil Aviation Authority (Safety and occurrence management division) 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>	

## 9. CULTURAL HERITAGE

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

Location	Date of discovery	Type of discovery	Additional protection measures taken

## 10. RESOURCES CONSUMPTION

### 10.1. Energy consumption

Energy consumption (monthly electric energy consumption, in Kwh)	
Total annual electric energy consumption (in Kwh)	3.427.200

### 10.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	10	
Number of firefighting vehicles at the airport	4	
Total annual fuel consumption	Diesel (lt)	14.104,57
	Unleaded gasoline (lt)	475,62

### 10.3. 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*

### 10.4. Fuel consumption for generator

Water consumption	
Total annual consumption (lt)	4.015

### 10.5. Water consumption

Water consumption	
Total annual consumption (m <sup>3</sup> )	9.785

## 11. 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)
	2021
Direct emissions form heating fuel (scope 1)	0,0
Direct emissions from fuel used for fleet vehicles (scope 1)	24,0
Direct emissions from fuel used for firefighting vehicles (scope 1)	14,8
Direct emissions from fuel used for generators (scope 1)	10,7
Indirect emissions from refrigerants (scope 1)	-
Indirect emissions from electricity consumption (scope 2)	2.065,6
<b>Total (t)</b>	<b>2.115,0</b>
<b>Kg CO<sub>2</sub> /passenger</b>	<b>1,34</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 was certified during the reference year according to ISO 14064 regarding greenhouse gas emission by an independent certification body.

## 12. HUMAN CONSUMPTION WATER MONITORING PROGRAM

Human consumption water quality	
Water supply (public water network or airport's boreholes)	Municipal Water & Sewage Company (DEYA) of Kos
Is sampling of the airport's water network performed?	YES
<i>(if YES)</i> Sampling frequency:	Quarterly
<b>Summary of results:</b> The results of the microbiological and chemical analyses show that the parameters analyzed as regards the airport's water network are <b><u>within the legislative limits</u></b> defined by the Ministerial Decision Γ1 (δ)/ΓΠ οικ. 67322/ GG 3282 B/19-9-2017 regarding the quality of human consumption water.	

### 13. RAINWATER

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

<b>Rainwater quality</b>	
Is sampling of the airport's rainwater performed?	YES
<b>(if YES)</b> 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.	

## 14. 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:	According to the Environmental Terms
<b>Parameters analyzed:</b> TPH, BTEX, MTBE (groundwater) and Volatile hydrocarbons, aliphatic, aromatic and chlorinated (soil gas)	
<b>Summary of results:</b>	
<p>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 the environmental monitoring reports of the fuel handlers, and based on the New Dutch List (2013) which is adopted in the absence of relevant national specifications/limits, the environmental condition of the ground water &amp; soil gas is found adequate and no decontamination measures are necessary. Regarding soil gas the Directive of the Munich Environmental Protection Department in force by 10.02.1998, which is the most widely accepted, is adopted as a basis for comparison.</p>	

## 15. 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