

# Environmental Bulletin of Kos Airport “Ippokratis” (KGS)

Reference year 2023



Issue Year: 2024

Fraport Regional Airports of Greece B.S.A.



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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 Aegean.

## 1.3 Environmental licensing

### Approved Environmental Terms

E.T. Decision Reference number	32649/04.11.1994
	106859/08.08.2006
	197968/03.05.2012
E.T. Amendment Decision Reference Number	6126/16.03.2018
	81952/5566/05.08.2022
	53077/3700/17.05.2024

## 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)	0:00 – 23:59
Operation hours (winter)	0:00 – 23:59



Runways	Length/Width	Code
Runway	2,390m x 45m	14/32
Full length of parallel taxiway	N/A	
Number of taxiways	4	
Apron capacity	A B C D E	
	- - 6 - 2	



Terminal	
Total area (m <sup>2</sup> )	23.012



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



Employees	High season (31.08.2023)	Low season (30.11.2023)
Fraport Greece (FG) employees	46	37
Employees of other companies	821	316



Parking Areas	
Car parking spaces	239
Bus parking spaces	35
Taxi parking spaces	50

## 1.5 Airport facilities

### 1.5.1 Fuel Handlers

#### Number of fuel handler companies

Number of fuel handler companies operating at the Airport	2
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#### Installations inside the airport

	EKO	GISSCO	HAFCO
Environmental Management System (EMS)	YES	YES	Not operating at the airport

### 1.5.2 Ground Handlers

#### Number of ground handler companies

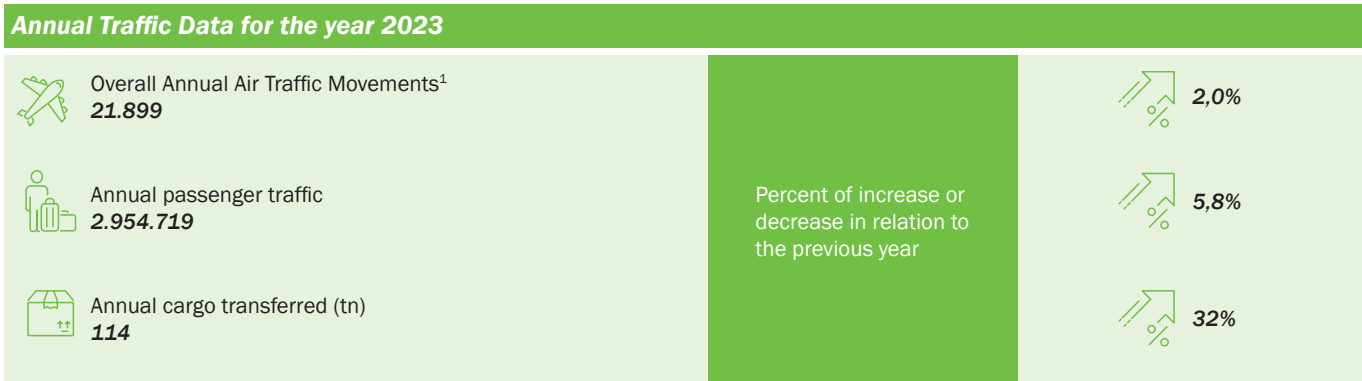
Number of ground handler companies operating at the Airport	3
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#### Installations inside the airport

	SKYSERV	SWISSPORT	GOLDAIR
Environmental Management System (EMS)	YES	YES	YES

## 2. Traffic data statistics

### 2.1 Annual Traffic Data



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

#### Aircraft types

Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
AT76	1.860
A320	1.016
AT45	708
AT72	388
AT75	244
A20N	85
C550	38
PAY2	34
BE9L	22
R66	22
Other	339
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B738	8.991
A320	5.122
A20N	729
A319	596
A321	526
A21N	216
B737	138
B763	130
B752	60
B788	56
Other	602

### 2.2 High season traffic data

#### High season traffic data (June-September)

Highest traffic month	August
Air traffic movements during the month with highest traffic	4.001
Air traffic movements daily average number during the month with highest traffic	127

### 2.3 Low season traffic data

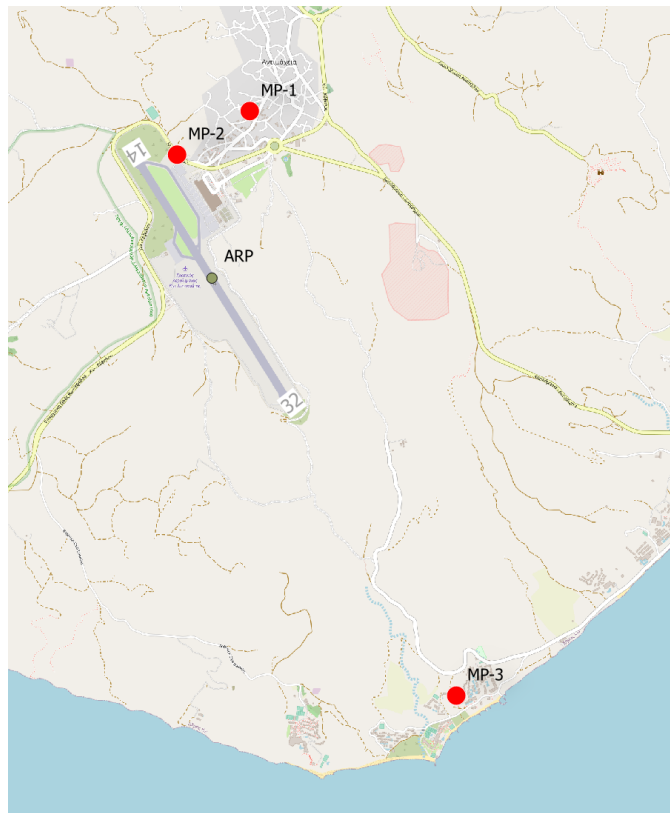
#### Low season traffic data (October-May)

Lowest traffic month	February
Air traffic movements during the month with lowest traffic	278
Air traffic movements daily average number during the month with lowest traffic	10

# 3. Aircraft noise )))

## 3.1 Noise measurements during the reference year

### Noise Monitoring Stations



### Summary of measurement results

Noise levels are monitored according to the airport's monitoring program and new approved environmental terms.

No exceedance of noise indicators levels  $L_{den}=70$  dB(A) and  $L_{night}=60$  dB(A) was observed.

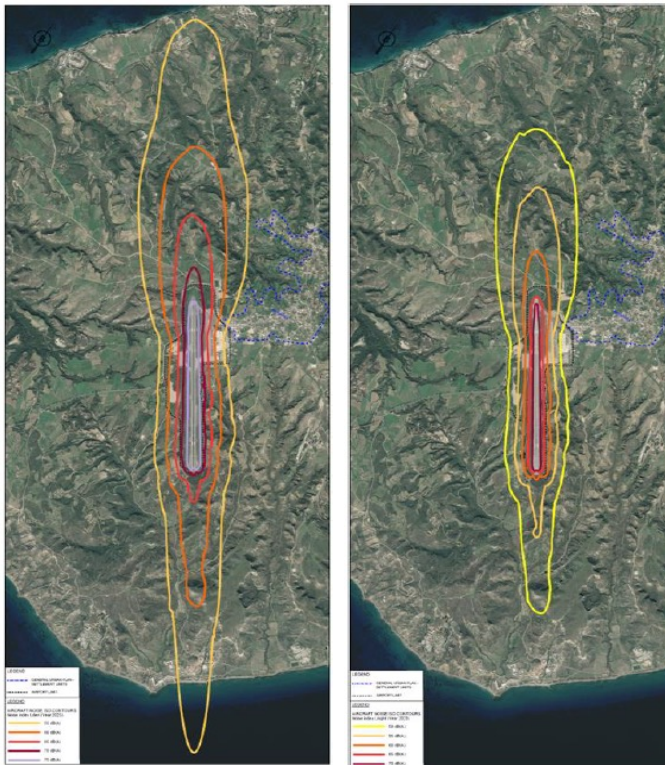
Have noise measurements at the airport's surrounding area been performed during the reference year? **YES**

Measurement points coordinates	Measurement points description
Position 1: 36° 46' 52" N 27° 08' 34" E	Antimacheia area, to the northeast of the runway 16/34 at a sport court. Affected by arrivals RWY 14 and departures RWY 32
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	Kardamaina area, to the south-east of the runway. Affected by arrivals RWY 32 and departures RWY 14
Measurement period	22.08.2023 - 23.08.2023
Noise indicators	$L_{den}$ , $L_{night}$

Noise complaints: 0

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

#### Noise contours



**Aircraft noise levels calculation based on noise simulation software** **YES**

Software used IMMI Premium 2021

Noise indicators and respective contours calculation  $L_{den}$  &  $L_{night}$

#### Summary of results

For the year 2023 no buildings inside official settlement boundaries were found to be exposed to noise levels higher than the limits  $L_{den}=70$  dB(A) και  $L_{night}=60$  dB(A).

# 4. Air quality

## 4.1 Air quality measurements during the reference year

### Air Quality Monitoring Network



Have air quality measurements at the airport's surrounding area been performed during the reference year? **YES**

Measurement points	Measurement points description
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.
Measurement period	30.03.2023 - 15.04.2023 16.04.2023 - 30.04.2023 20.07.2023 - 05.08.2023 11.12.2023 - 27.12.2023
Pollutants measured	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 environmental terms. No exceedance of the air quality limits was observed.

## 4.2 Air pollutants emission and dispersion modelling

Calculation of air pollutants concentrations based on an emission and dispersion modelling software **NO**

### Summary of results

According to environmental terms, there is no obligation for air pollutants emission this year.

## 5. Waste management

<b>Waste</b>	<b>Collection</b>	<b>Management/Disposal</b>
Recyclables (paper, plastic, metals, glass)	Separate collection by the Municipality of Kos	Disposal at material recovery facility for recycling
Residues (Mixed Waste) and Bulky Waste	Collection by the Municipality of Kos	Disposal in 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, after a Tender process according to the provisions of the legislation in force.

4. In the year 2023, Fraport Greece B managed a total of 9.7 tons of Hazardous waste (FG A 3.87 tn, third parties 5.82 tn).

5. 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

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Are there protected zones of vegetation/habitats in the broader airport area?

YES

(if YES) Short description: Kos Airport “Ippokratis” is near to the Natura 2000 sites:

- GR4210008 Kos: Akrotirio Louros - Limni Psalidi - Oros Dikaioi - Alyki - Paraktia Thalassia Zoni (Area: 10,124.10ha)
  - GR4210027 Kos: Limni Psalidi - Alyki (Area: 432.89ha).
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### Fauna

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Are there protected species of fauna/birds in the broader airport area?

YES

(if YES) Short description: Kos Airport “Ippokratis” is near to the

- Important Bird Area GR166 Mount Dikaioi, lake Psalidi and Alyki lagoon, Kos (Area: 9,108.18ha)
- Important Marine Mammal Area Central Aegean (Area: 5826,500ha) where the species *Monachus monachus* is recorded

The protected bird species that have been observed at Kos airport since April 2017 are presented below:

Bonelli's eagle (*Aquila fasciata*), Collared pratincole (*Glaucopelia pratincola*), Eurasian stone-curlew (*Burhinus oedipnemus*), European roller (*Coracias garrulus*), European turtle-dove (*Streptopelia turtur*), Lapwing (*Vanellus vanellus*), Lesser kestrel (*Falco naumanni*), Long-legged buzzard (*Buteo rufinus*), Marsh harrier (*Circus aeruginosus*), Masked shrike (*Lanius nubicus*), Montagu's harrier (*Circus pygargus*), Pallid harrier (*Circus macrourus*), Red-footed falcon (*Falco vespertinus*), Rüppell's warbler (*Curruca ruppelli*), Short-eared owl (*Asio flammeus*), White stork (*Ciconia ciconia*).

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## 7. Wildlife hazard management

### Wildlife strikes and wildlife hazard management measures

Wildlife species that suffered a strike	Strikes (%)
Small passerines	40%
Corvids	20%
Owls	20%
Waders	20%

### Wildlife strike risk mitigation measures

The presence and behavior of wildlife species at Kos airport is monitored in regular intervals, daily, from dawn to dusk. Some of the wildlife control methods applied at Kos 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.

## 8. Cultural heritage

*Have new cultural heritage properties been discovered during the reporting period?*

**NO**

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# 9. Resources consumption

## 9.1 Energy consumption

### **Energy consumption (monthly electric energy consumption, in Kwh)**

Total annual electric energy consumption (in Kwh)	3.150.201,55*
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\*Third parties' consumption is excluded

## 9.2 Fuel consumption

### **Fuel consumption**

Number of FG vehicles at the airport	18
	Diesel (lt) 16.854,8
Total annual fuel consumption	Unleaded gasoline (lt) 1.131,56

## 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)	2.900,29
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## 9.5 Water consumption

### **Water consumption**

Total annual consumption (m <sup>3</sup> )	26.597,39
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# 10. Greenhouse gas emissions & carbon footprint



Greenhouse gas emissions that were included in the carbon footprint calculation are the CO<sub>2</sub>, CH<sub>4</sub> & N<sub>2</sub>O 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> e (t) Emissions (t)
	2023
Direct emissions form heating fuel (scope 1)	0,0
Direct emissions from fuel used for fleet vehicles (scope 1)	47,6
Direct emissions from fuel used for generators (scope 1)	7,6
Indirect emissions from refrigerants (scope 1)	0,0
Indirect emissions from electricity consumption (scope 2)	1.682,5
<b>Total (t)</b>	<b>1.737,7</b>
<b>Kg CO<sub>2</sub>e /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 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
(if YES) Sampling frequency:	Quarterly

### Summary of results

The results of the microbiological and chemical analyses show that the parameters analyzed as regards the airport's water network are within the legislative limits defined by the Ministerial Decision Δ1 (δ)/ ΓΠ οικ. 27829/2023 (GG 3525/B` 25.5.2023) regarding the quality of human consumption water.

# 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		NO

## **Rainwater quality**

Is sampling of the airport's rainwater performed?	YES
(if YES) Sampling frequency:	Annual
Parameters analyzed: pH, conductivity, TSS, DO, NO <sub>3</sub> , NO <sub>2</sub> , Oil & grease, BOD, COD, Total Petroleum Hydrocarbons (TPH), PAHs, BTEX, Heavy metals, Detergents	

## **Summary of results**

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 2023, was performed and the quality of the water is in accordance with the IFC guidelines. However, presence of hydrocarbons (C<sub>10</sub>-C<sub>40</sub>) (µg/l) and pathogens is recorded, which will be further investigated.

# 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
(if YES) Sampling frequency:	Annual (2 times)
Parameters analyzed: TPH, BTEX, MTBE (groundwater) and Volatile hydrocarbons, aliphatic, aromatic and chlorinated (soil gas)	

### Summary of results

#### Groundwater monitoring within airport boundary - Fraport Greece

Groundwater quality is monitored according to the airport's monitoring program from boreholes managed by Fraport Greece. In 2023 two sets of measurement were performed for reference years 2022 and 2023. The results show no exceedances.

#### Groundwater and/or soil and/or soil gas monitoring at fuel farms - Fuel Handlers

According to the approved environmental terms, monitoring of groundwater and underground air from the Fuel Handlers was performed by EKO (20022) and GISSCO (2024). The results are satisfactory with no exceedances.

# 14. Sewage treatment and disposal



## Sewage

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

## Blue water

<b>Collection and disposal:</b> Collection in watertight tank and disposal to the municipal sewage network.
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## Waste water treatment plant description (where applicable)

Description of characteristics and condition of the airport's WWTP including possible problems. Type and frequency of the effluent quality measurements.

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

