

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

Reference year 2023



Issue Year: 2024

Fraport Regional Airports of Greece A.S.A.



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1. Introduction

1.1 Location

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

1.2 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.

1.3 Environmental licensing

Approved Environmental Terms

E.T. Decision Reference number	43392/96/17.02.1997
	127597/02.07.2010
	175512/15.10.2014
E.T. Amendment Decision Reference Number	36893/24.11.2017
	77331/5227/25.07.2022
	34978/2444/02.04.2024

1.4 Airport Basic Data

Airport name IATA / ICAO	ZTH / LGZA
Airport location – Airport Reference Point (ARP)	Latitude: 37° 45' 03" N Longitude: 20° 53' 03" E
Altitude	5m
Number of runways	1
Operation hours (summer)	05:00 – 22:00
Operation hours (winter)	Monday 08:30 – 18:30 Wednesday/10:00 – 16:30 Tuesday/Thursday/Saturday 9:00 – 15:00 Friday 10:00 – 20:30 Sunday 15:30 – 20:30



Runways	Length/Width	Code			
Runway	2,228m x 45m	16/34			
Full length of parallel taxiway	N/A				
Number of taxiways	3				
Apron capacity	A	B	C	D	E
	-	-	4	3	-



Terminal	
Total area (m ²)	25,348



Other buildings and service/storage areas	
RFF Station (m ²)	1.144



Employees	High season (31.08.2023)	Low season (30.11.2023)
Fraport Greece (FG) employees	32	24
Employees of other companies	598	346

Parking Areas	
Car parking spaces	194
Bus parking spaces	26
Taxi parking spaces	42



1.5 Airport facilities

1.5.1 Fuel Handlers

Number of fuel handler companies

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

	EKO	GISSCO	HAFCO
Environmental Management System (EMS)	YES	YES	YES

1.5.2 Ground Handlers

Number of ground handler companies

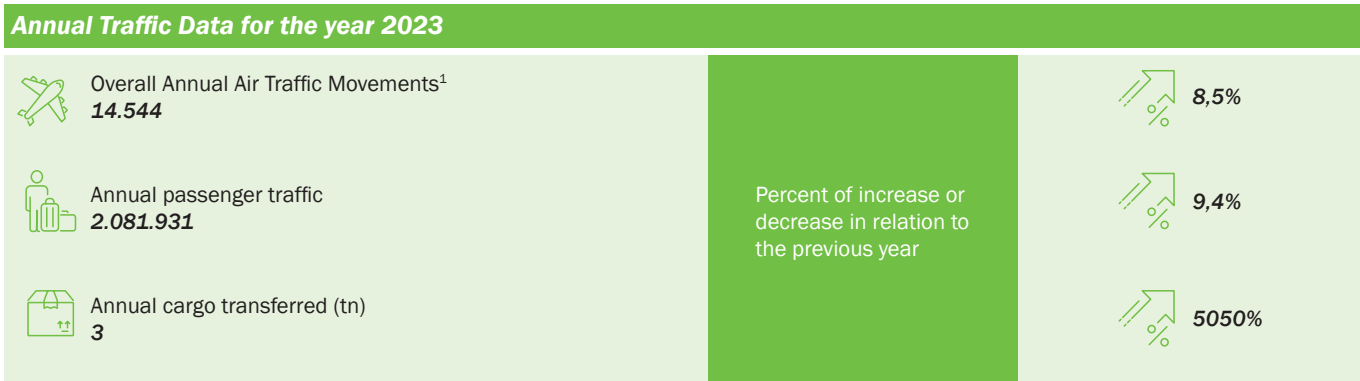
Number of ground handler companies operating at the Airport	3
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Installations inside the airport

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

2. Traffic data statistics

2.1 Annual Traffic Data



¹ Military and training flights not included.

Aircraft types

Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
AT76	746
AT45	474
AT46	182
A20N	154
AT72	148
AT75	88
B320	25
C650	15
C550	14
BE20	12
Other	142
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B738	5.934
A320	3.035
A21N	828
A321	728
A20N	680
A319	387
B752	160
B737	120
B734	118
B733	46
Other	460

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	3.129
Air traffic movements daily average number during the month with highest traffic	100

2.3 Low season traffic data

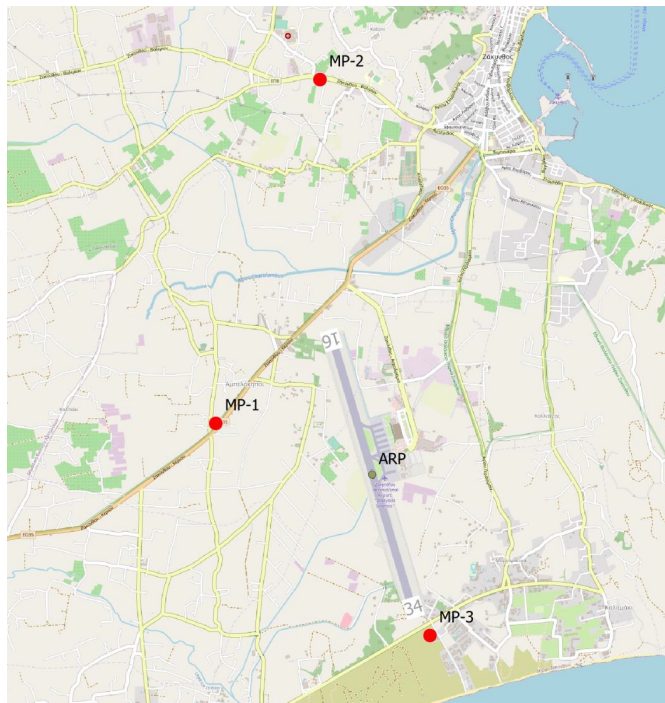
Low season traffic data (October-May)

Lowest traffic month	February
Air traffic movements during the month with lowest traffic	100
Air traffic movements daily average number during the month with lowest traffic	3

3. Aircraft noise)))

3.1 Noise measurements during the reference year

Measurement points



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**

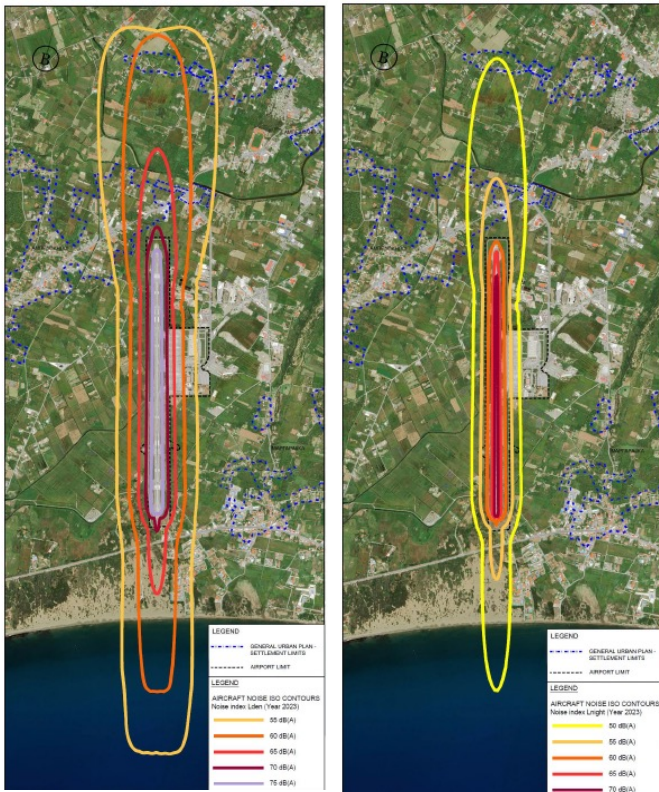
Measurement points coordinates	Measurement points description
Position 1: 37° 45' 18" N 20° 52' 09" E	Ampelokipoi area, to the west of the runway in the yard of a gas station. Affected by all flights to both directions.
Position 2: 37° 46' 51" N 20° 52' 45" E	Gaitani area, to the north of the runway in the garden of a private house. Affected by departures from runway 34 and arrivals on runway 16.
Position 3: 37° 44' 20" N 20° 53' 23" E	To the south of the runway, in the yard of a hotel. Affected by arrivals on runway 34 and departures from runway 16.
Measurement period	21.07.2023 – 22.07.2023
Noise indicators	L_{den} , L_{night}

Noise complaints: 1

A complaint was registered from a resident in relation to aircraft noise, as well as disturbance due to necessary maintenance work. It was agreed to carry out a measurement in the next noise measurement campaign at this house.

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}

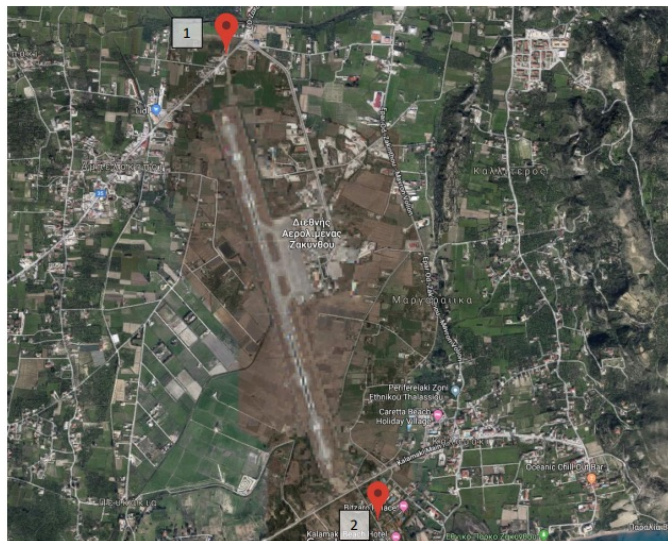
Summary of results

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) and $L_{night} = 60$ dB(A).

4. Air quality

4.1 Air quality measurements during the reference year

Measurement points



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

Measurement points	Measurement points description
Point 1	At a distance of approximately 650m from the north part of the runway, at Ampelokipoi area
Point 2	Kalamaki area, at a distance of approximately 1 km from the south part of the runway
Measurement period	30.03.2023 – 13.04.2023 14.04.2023 – 29.04.2023 02.08.2023 – 17.08.2023 28.11.2023 – 13.12.2023
Pollutants measured: NO _x , SO ₂ , CO, O ₃ , C ₆ H ₆ , PM ₁₀ & PM _{2.5}	

Summary of measurement results

Air quality is monitored according to the airport's monitoring program and new approved 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 approved Environmental Terms, in 2023 the air quality simulation was not foreseen.

5. Waste management

Waste	Collection	Management/Disposal
Recyclables (paper, plastic, metals, glass)	Separate collection by appropriately licensed private company	Disposal at material recovery facility for recycling
Residues (Mixed Waste) and Bulky Waste	Collection by appropriately licensed private company	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 A (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 A, after a Tender process according to the provisions of the legislation in force.

4. In the year 2023 Fraport Greece A managed a total of 9.98 tons of Hazardous waste (FG A 7.81 tn, third parties 2.17 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 A 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

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

YES

(if YES) Short description: Zakynthos Airport "Dionisios Solomos" is close to the Natura 2000 site: GR2210002 Kolpos Lagana Zakynthou (Akr. Geraki - Keri) Kai Nisides Marathonis Kai Pelouzo (Area: 6,977.66ha), an important shore for the reproduction of the logger-head turtle *Caretta caretta*



Fauna

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

YES

(if YES) Short description: Zakynthos Airport "Dionisios Solomos" is near to the:

- Important Bird Area GR086 Zakynthos island (Area: 33927.83ha)
- Important Marine Mammal Area Ionian Archipelago (Area: 960,600ha) where the species *Delphinus delphis* and *Monachus monachus* are recorded
- Important Marine Mammals Area Hellenic Trench (Area: 5660000ha) where the species *Physeter microcephalus* and *Ziphius cavirostris* are recorded

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

Eurasian skylark (*Alauda arvensis*), European turtle-dove (*Streptopelia turtur*), Garganey (*Anas querquedula*), Great egret (*Casmerodius albus*), Lapwing (*Vanellus vanellus*), Lesser kestrel (*Falco naumanni*), Marsh harrier (*Circus aeruginosus*), Masked shrike (*Lanius nubicus*), Montagu's harrier (*Circus pygargus*), Pallid harrier (*Circus macrourus*) Purple heron (*Ardea purpurea*), Red-footed falcon (*Falco vespertinus*), Short-toed snake eagle (*Circaetus gallicus*), Squacco heron (*Ardeola ralloides*), White stork (*Ciconia ciconia*)

7. Wildlife hazard management

Wildlife strikes and wildlife hazard management measures

Wildlife species that suffered a strike	Strikes (%)
Birds of prey, Owls	57%
Small passerines	43%

Wildlife strike prevention measures

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

9. Resources consumption

9.1 Energy consumption

Energy consumption (monthly electric energy consumption, in Kwh)

Total annual electric energy consumption (in Kwh)	2.465.127,82*
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*Third parties' consumption is excluded

9.2 Fuel consumption

Fuel consumption

Number of FG vehicles at the airport	11
	Diesel (lt) 15.821.15
Total annual fuel consumption	Unleaded gasoline (lt) 3.939.52

9.3 Heating oil or natural gas consumption

Heating oil or natural gas consumption

Total annual heating oil consumption (lt)	15.622
Total annual heating natural gas consumption (m ³)	N/A

9.4 Fuel consumption for generator

Fuel consumption

Total annual consumption (lt)	4.834,49
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9.5 Water consumption

Water consumption

Total annual consumption (m ³)	26.001,75
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10. Greenhouse gas emissions & carbon footprint



Greenhouse gas emissions that were included in the carbon footprint calculation are the CO₂, CH₄ & N₂O 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 ₂ e (t) Emissions (t)
	2023
Direct emissions form heating fuel (scope 1)	41,2
Direct emissions from fuel used for fleet vehicles (scope 1)	51,5
Direct emissions from refrigerants (scope 1)	0,00
Direct emissions from fuel used for generators (scope 1)	12,8
Indirect emissions from electricity consumption (scope 2)	1.316,6
Total (t)	1.422,0
Kg CO₂e /passenger	0,69

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 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 Zakynthos
Is sampling of the airport's water network performed?	YES
(if YES) Sampling frequency:	Quarterly

Summary of results

The results of the chemical analyses show that the water supplied from the DEYA of Zakynthos is not potable due to the existence of high concentrations of Sodium and Chlorine (brackish water). The other results of the microbiological and chemical analyses show that the parameters analysed as regards the airport's water network are within the legislative limits defined by the Ministerial 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*

*According to the approved environmental terms of Zakinthos Airport six designed sand collectors were constructed in order for rainwater to be discharged to the natural recipient free of sediment pollutants.

Rainwater quality

Is sampling of the airport's rainwater performed?	YES
(if YES) Sampling frequency:	Annual and Half year
Parameters analyzed: pH, conductivity, TSS, DO, NO ₃ , NO ₂ , 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 quality of the water is in accordance with the IFC guidelines. However, presence of hydrocarbons (C10-C40) (µg/l) and detergents is recorded, in one sampling point, 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

Parameters analyzed: TPH, BTEX, MTBE (groundwater) & 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. Groundwater monitoring for 2023 was performed. 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 air from the Fuel Handlers was performed by EKO (2022), GISSCO (2023) and HAFCO (2023). Results are satisfactory with no recorded 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

Collection and disposal: 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

