

ENVIRONMENTAL BULLETIN OF ZAKINTHOS “DIONISIOS SOLOMOS” AIRPORT (ZTH)

Reference year 2022

Fraport Regional Airports of Greece A S.A.

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**Environmental Bulletin of Zakynthos Airport
“Dionisios Solomos” (ZTH) - 2022**



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1. INTRODUCTION

1.1. Location

“Dionisios Solomos” airport of Zakinthos (ZTH) is located at the area Ampelokipoi, at 6 km from the capital of Zakinthos and at 1 km 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 Zakinthos that consists of Zakinthos 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
E.T. Amendment Decision Reference Number	127597/02.07.2010
	175512/15.10.2014
	36893/24.11.2017
	77331/5227/25.07.2022

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 08:00 – 19:00 Tuesday CLOSED Wednesday / 10:00 – 16:30 Thursday /Saturday 10:30 – 15:00 Friday 08:00 – 20:30 Sunday 15:30 – 20:30

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 (31.08.2022)	Low season (30.11.2022)
Fraport Greece (FG) employees	26	23
Employees of other companies	643	216

Terminal	
➤ Total area (m ²)	25.348

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

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

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

Installations inside the airport	SKYSERV	SWISSPORT	GOLDAIR
Environmental Management System (EMS)	YES	YES	YES

2. TRAFFIC DATA STATISTICS

2.1. Annual Traffic Data

Annual Traffic Data for the year 2022	
Overall Annual Air Traffic Movements ¹	13.400
Percent of increase or decrease in relation to the previous year	42,2%
Annual passenger traffic	1.903.409
Percent of increase or decrease in relation to the previous year	87,9%
Annual cargo transferred (tn)	0
Percent of increase or decrease in relation to the previous year	-

Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
AT76	574
AT45	334
AT46	242
A20N	160
AT72	116
A320	79
DH8D	46
AT75	42
BE20	20
A109	16
Other	201
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B73H	3.525
A320	2.241
B738	1.312
7M8	917
A321	720
A32A	397
A20N	374
A319	314
A21N	282
A32B	256
Other	1.232

¹ Military and training flights not included.

2.2. High season traffic data

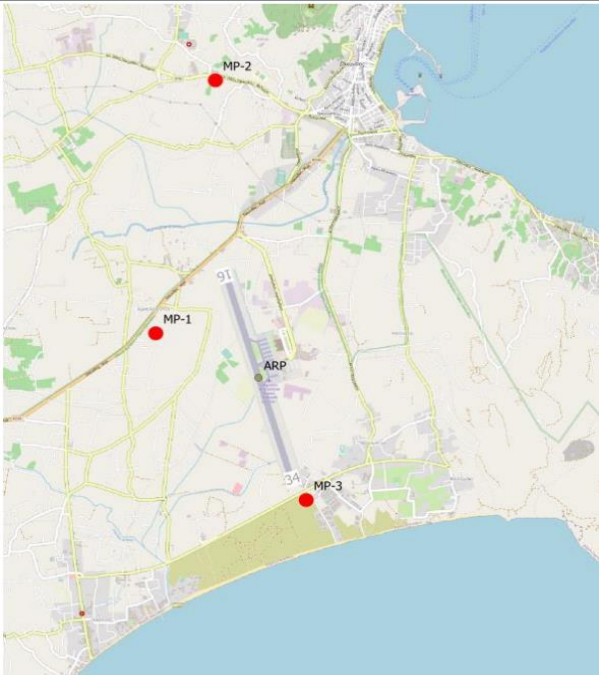
High season traffic data (June-September)	
Highest traffic month	August
Air traffic movements during the month with highest traffic	2.936
Air traffic movements daily average number during the month with highest traffic	94

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	78
Air traffic movements daily average number during the month with lowest traffic	2

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
Measurement points		
		
Measurement points coordinates	Measurement points description	
Position 1: 37° 45' 20" N 20° 52' 20" 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	24.06.2022 -25.06.2022	
Noise indicators	L _{den} , L _{night}	

Summary of measurement results:

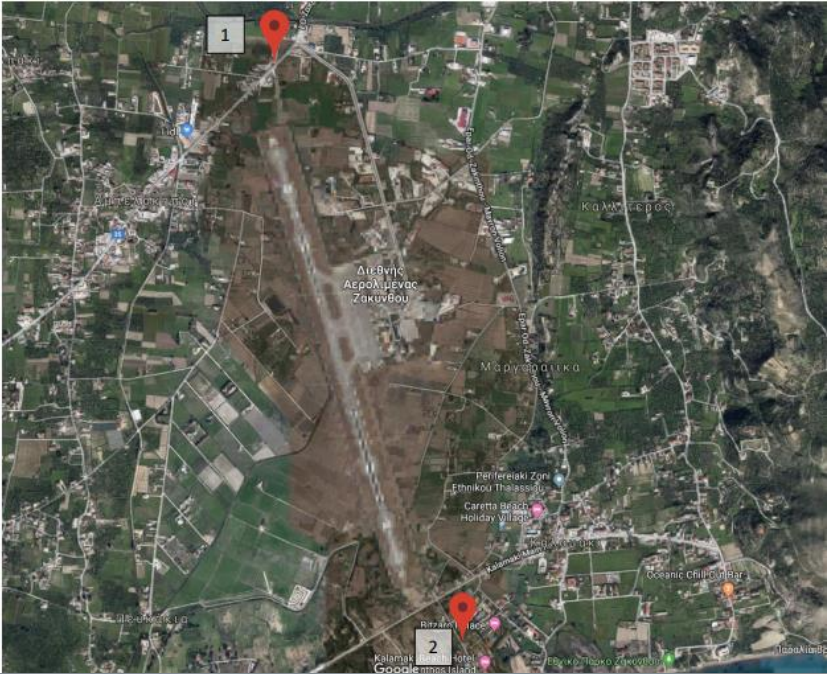
Noise levels are monitored according to the airport's monitoring program and new approved environmental terms. No exceedance of noise indicators levels L_{den}=70 dB(A) and L_{night}=60 dB(A) was observed.

3.2. Noise levels calculation based on noise simulation software

Aircraft noise levels calculation based on noise simulation software	NO
Software used: N/A	
Noise indicators and respective contours calculation: N/A	
Summary of results:	
According Approved Environmental Terms, in 2022 the aircraft noise simulation was not foreseen.	

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
Measurement points		
		
Measurement points	Measurement points description	
Point 1	Kalamaki area, at a distance of approximately 1 km from the south part of the runway	
Point 2	At a distance of approximately 650m from the north part of the runway, at Ampelokipoi area	
Measurement period:	15.09.2022 – 30.09.2022 21.11.2022 – 06.12.2022	
Pollutants measured:	NO ₂ , 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
Software used: N/A	
Pollutants concentrations and respective contours calculation: N/A	

Summary of results:

According to approved Environmental Terms, in 2022 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 in most cases (central management), while in a few other cases they handled them autonomously. The implementation of a fully central system by Fraport Greece A is expected.
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, according to the provisions of the legislation in force.
4. 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
<p>(if YES) Short description:</p> <p>Zakynthos Airport “Dionisios Solomos” is close to the Natura 2000 site:</p> <ul style="list-style-type: none"> • GR2210002 Kolpos Lagana Zakynthou (Akr. Geraki - Keri) Kai Nisides Marathonisi Kai Pelouzo (Area: 6,977.66ha), an important shore for the reproduction of the loggerhead turtle <i>Caretta caretta</i> <p>Zakynthos airport is located within the limits of the National Marine Park of Zakynthos (NMPZ). Part of the airport is located within the protected area “Lagana Gulf of Zakynthos and Islands Marathonisi and Pelouzo” with code GR2210002.</p>	
Fauna	
Are there protected species of fauna/birds in the broader airport area?	YES
<p>(if YES) Short description:</p> <p>Zakynthos Airport “Dionisios Solomos” is near to the:</p> <ul style="list-style-type: none"> • Important Bird Area GR086: Zakynthos island (Area: 33927.83ha) • Ionian Archipelago Important Marine Mammal Area (Area: 960,600ha) where the species <i>Delphinus delphis</i> and <i>Monachus monachus</i> are recorded • Hellenic Trench Important Marine Mammals Area (Area: 5660000ha) where the species <i>Physeter microcephalus</i> and <i>Ziphius cavirostris</i> are recorded <p>The protected bird species that have been observed at Zakynthos airport since April 2017 are presented below:</p> <p>Eurasian skylark (<i>Alauda arvensis</i>), European turtle-dove (<i>Streptopelia turtur</i>), Garganey (<i>Anas querquedula</i>), Great egret (<i>Casmerodius albus</i>), Lapwing (<i>Vanellus vanellus</i>), Lesser kestrel (<i>Falco naumanni</i>), Marsh harrier (<i>Circus aeruginosus</i>), Masked shrike (<i>Lanius nubicus</i>), Montagu’s harrier (<i>Circus pygargus</i>), Pallid harrier (<i>Circus marcourus</i>) Purple heron (<i>Ardea purpurea</i>), Red-footed falcon (<i>Falco vespertinus</i>), Short-toed snake eagle (<i>Circaetus gallicus</i>), Squacco heron (<i>Ardeola ralloides</i>), White stork (<i>Ciconia ciconia</i>)</p>	

7. WILDLIFE HAZARD MANAGEMENT

Wildlife strikes and wildlife hazard management measures	
Wildlife species that suffered a strike	Strikes (%)
Small passerines	82%
Birds of prey	9%
Gulls	9%
Wildlife strike risk mitigation measures:	
The presence and behavior of wildlife species at Zakinthos airport is monitored in regular intervals, daily, from dawn to dusk. Some of the wildlife control methods applied at Zakinthos 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
<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)	
Total annual electric energy consumption (in Kwh)	2.999.476,00

9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	11	
Total annual fuel consumption	Diesel (lt)	15.941,56
	Unleaded gasoline (lt)	133,82

9.3. Heating oil or natural gas consumption

Heating oil or natural gas consumption	
Total annual heating oil consumption (lt)	0,00
Total annual heating natural gas consumption (m ³)	N/A

9.4. Fuel consumption for generator

Fuel consumption	
Total annual consumption (lt)	1.226,07

9.5. Water consumption

Water consumption	
Total annual consumption (m ³)	15.892,36

10. GREENHOUSE GAS EMISSIONS & CARBON FOOTPRINT

Greenhouse gas emissions that were included in the carbon footprint calculation are the CO₂ 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 Emissions (t)
	2022
Direct emissions form heating fuel (scope 1)	0,00
Direct emissions from fuel used for fleet vehicles (scope 1)	42,86
Direct emissions from refrigerants (scope 1)	0,00
Direct emissions from fuel used for generators (scope 1)	3,27
Indirect emissions from electricity consumption (scope 2)	1.619,1
Total (t)	1.259,84
Kg CO₂ /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. ELECTROMAGNETIC RADIATION

The measurements were carried out at 6 different points around the antenna array located at the airport on 13/12/2022 (measurement start time 09:00, measurement end time 13:30).

1) Zone 27 MHz – 3 GHz

Measurement point	Amperage E	Power Density
	(V/m)	(W/m ²)
1	0.8906495	0.0021042
2	0.9028494	0.0021622
3	1.7614979	0.0082306
4	1.2377974	0.0040641
5	0.7692776	0.0015698
6	2.0149267	0.0107693

2) Zone 420 MHz – 6 GHz

Measurement point	Amperage E	Power Density
	(V/m)	(W/m ²)
1	0.9461976	0.0023748
2	0.9179095	0.0022350
3	1.7559054	0.0081785
4	1.3597469	0.0049044
5	1.0498424	0.0029236
6	2.5117672	0.0167351

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.

12. HUMAN COMSUMPTION WATER MONITORING PROGRAM

Human consumption water quality	
Water supply (public water network or airport's boreholes)	Municipal Water & Sewage Company (DEYA) of Zakinthos
Is sampling of the airport's water network performed?	YES
(if YES) Sampling frequency:	Quarterly
<p>Summary of results: The results of the chemical analyses show that the water supplied from the DEYA of Zakinthos 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 Decision Γ1 (δ)/ΓΠ οικ. 67322/ GG 3282 Β/19-9-2017 regarding the quality of human consumption water.</p>	

13. 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:	Yearly 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, PCBs, 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 2022, was not performed.	

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

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
(if YES) Sampling frequency:	Yearly
Parameters analyzed: TPH, BTEX, MTBE (groundwater) & volatile hydrocarbons, aliphatic, aromatic and chlorinated (soil gas)	
Summary of results:	
Groundwater quality is monitored according to the airport's monitoring program from boreholes managed by Fraport Greece. Groundwater monitoring for 2022 was not performed. According to the approved environmental terms, monitoring of groundwater and air from the Fuel Handlers is not foreseen for the year 2022.	

15. 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.

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 analyzed	N/A
Summary of quality of WWTP effluent	N/A