

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

Reference year 2019

Fraport Greece

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Version Control

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1. INTRODUCTION

Location

“Dionysios 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.).

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.

Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	43392/96/17.02.1997
E.T. Amendment Decision Reference number	175512/15.10.2014
	36893/24.11.2017

1.1. Airport Basic Data

Airport Basic Data					
Airport name IATA / ICAO	ZTH / LGZA				
Airport position – 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: 10:30 - 20:30 Tuesday/Wednesday: 09:30 - 15:30 Thursday/Saturday: 08:30-19:00 Friday: 10:30 - 21:00 Sunday: 13:00-21:00				
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 (31.8.2019)			Low season (30.11.2019)	
Fraport Greece (FG) employees	23			22	
Employees of other companies	582			293	
Terminal					
➤ Total area (m ²)					12,659
Other buildings and service/storage areas					
➤ RFF (m ²)					1,276
Parking Areas					

Car parking spaces	220
Bus parking spaces	20
Taxi parking spaces	30

1.2. Airport Facilities

1.2.1. Fuel Handlers

Number of fuel handler companies				
Number of fuel handler companies operating at the Airport			3	
Installations inside the airport		EKO	GISCO	HAFCO
Environmental Management System (EMS)	(YES/NO)	YES	YES	YES

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)		17	25	79
Environmental Management System (EMS)	(YES/NO)	YES	YES	YES

2. TRAFFIC DATA STATISTICS

2.1. Annual Traffic Data

Annual Traffic Data for the year 2019	
Overall Annual Air Traffic Movements ¹	13,196
Percent of increase or decrease in relation to the previous year	0.3%
Annual passenger traffic	1,810,427
Percent of increase or decrease in relation to the previous year	0.5%
Annual cargo transferred (tn)	4
Percent of increase or decrease in relation to the previous year	-49%
Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
AT45	646
AT72	464
AT75	314
DH8D	228
AT46	164
A320	129

¹ Military and training flights not included.

A32A	46
AT43	26
B463	25
PA3	16
Other	192
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B73H	3,656
B738	1,465
A320	1,335
A321	948
A32A	370
A32B	368
A319	363
B75W	334
B733	322
B712	304
Other	1,481

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	2,840
Air traffic movements daily average number during the month with highest traffic	92

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	90
Air traffic movements daily average number during the month with lowest traffic	3

3. AIRCRAFT NOISE

3.1. Noise measurements during the reference year

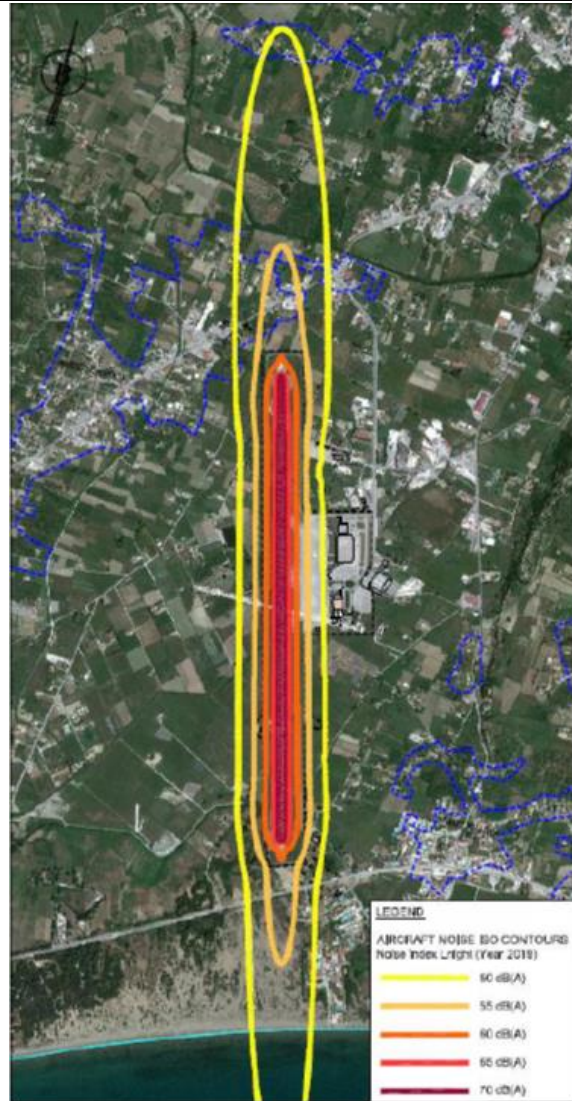
Have noise measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
Measurement points		
		
Measurement points coordinates	Measurement points description	
1) Position: 37° 45' 20" N 20° 52' 20" E	Ampelokipoi area, to the west of the runway in the yard of a gas station. Affected by all flights to both directions	
2) Position: 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.	
3) Position: 37° 44' 13" N 20° 53' 32" 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	23.07.2019 -24.07.2019	
Noise indicators	Lden, Night	
Summary of measurement results:		
Noise levels are monitored according to the airport's monitoring program. No exceedance of noise indicators levels Lden = 70 dB (A) and Nlight = 60 dB (A) was observed.		

3.2. Noise levels calculation based on noise simulation software

Aircraft noise levels calculation based on simulation software [YES/NO]	YES
Software used: IMMI Noise Prediction Software (CNOSSOS EU assessment method based on Directive 2015/996/EU)	
Noise indicators and respective contours calculation:	Lden, Lnight



Lden



Lnight

Summary of results:

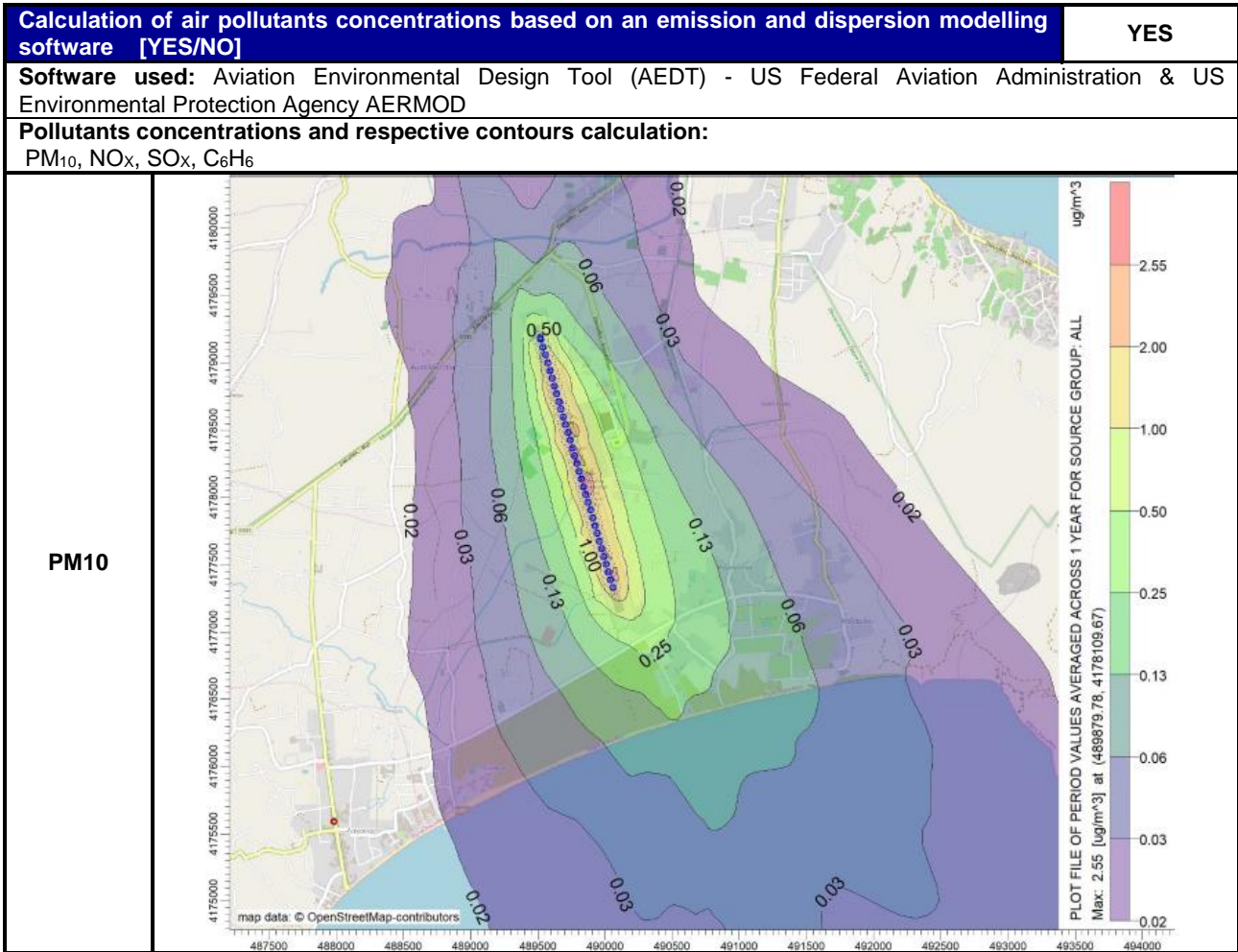
For the year 2019 no populations or buildings inside official settlement boundaries were found to be exposed to noise levels higher than the limits Lden = 70 dB(A) and Lnight = 60 dB(A).

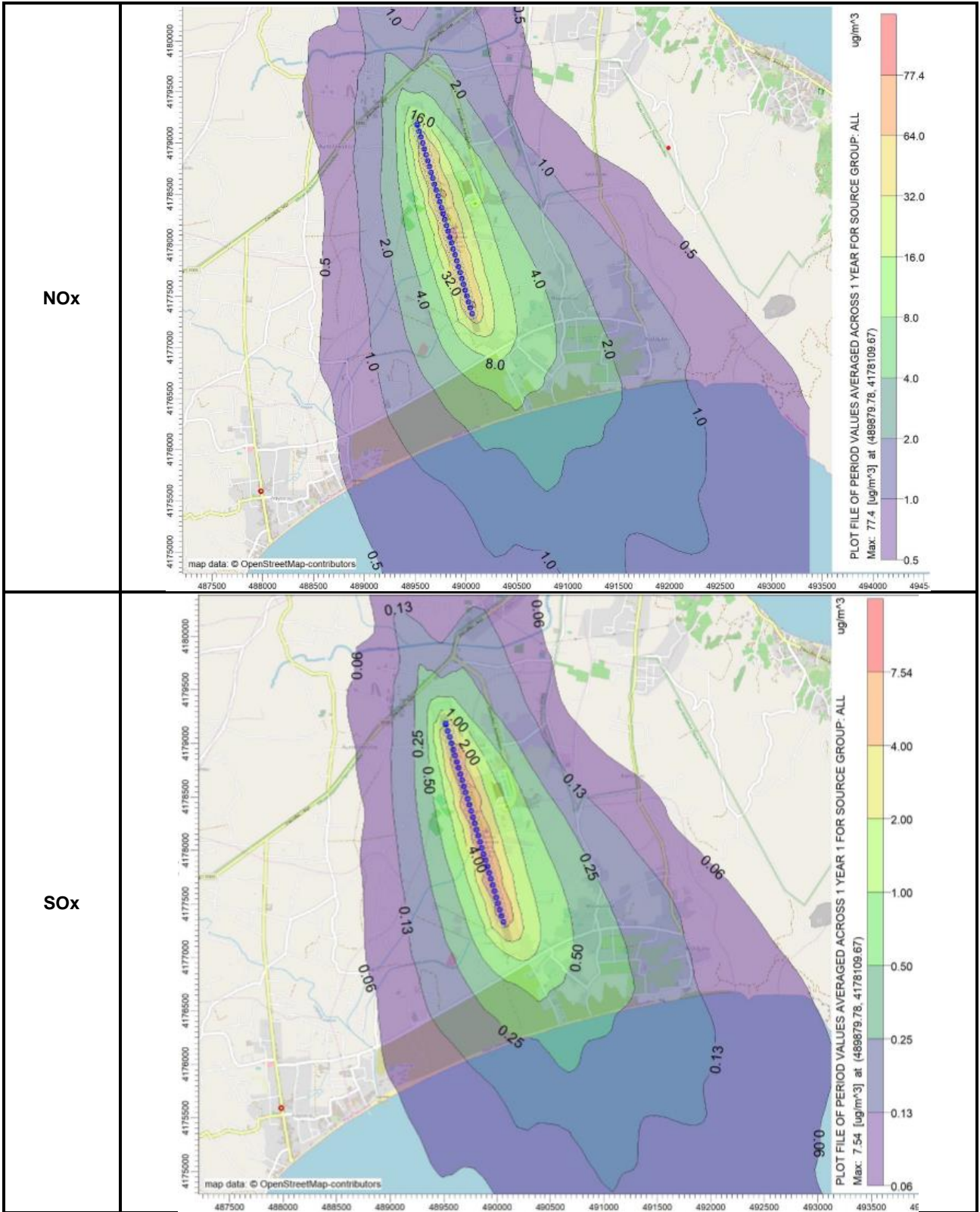
4. AIR QUALITY

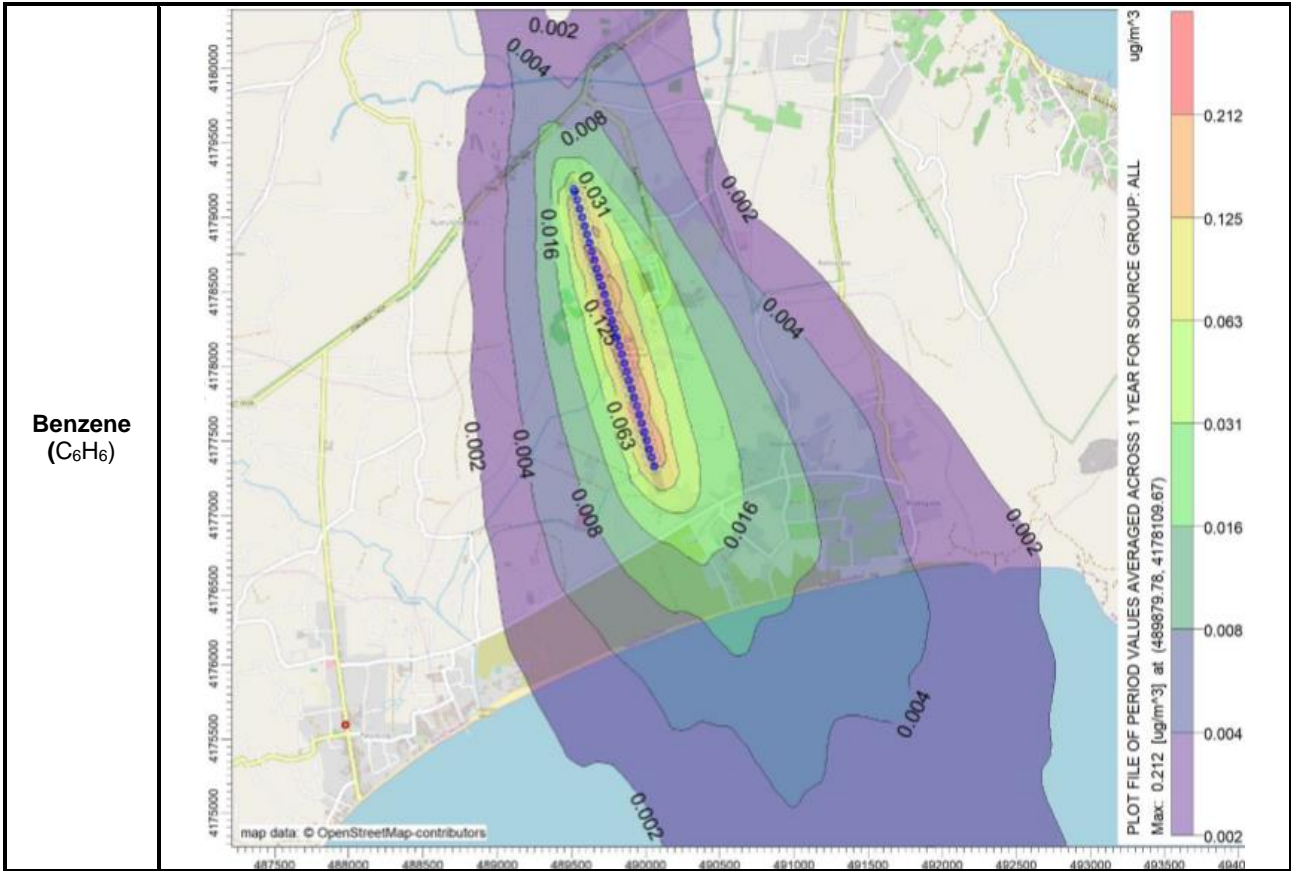
4.1. Air quality measurements during the reference year

Have air quality measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		NO*
Measurement points		
N/A		
Measurement points coordinates	Measurement points description	
1) Position: --° --' --" N --° --' --" E	N/A	
2) Position: --° --' --" N --° --' --" E	N/A	
Measurement period	N/A	
Pollutants measured: N/A		
Summary of measurement results:		
<p>*Fraport Greece, during the years 2018-2019, has implemented a noise & air pollution monitoring program, according to the Approved Environmental Terms of the airport. The monitoring program included the implementation of special simulation tools in combination with confirmation measurements, of air pollution and noise, in representative positions around the airport.</p> <p>According to the abovementioned monitoring program, which is an annex of the approved Environmental Impact Assessment Study, and based on the results of the measurements for 2018, no air pollution measurements were programmed for the year 2019 at the airport. Instead, a computational approach with the use of air pollution simulation software was planned, the results of which are presented in paragraph 4.2. The results of the 2018 air pollution measurement are available at the respective environmental bulletin, which is published at the company's website.</p> <p>At the end of the two year period of the program, in May 2020, a Technical Evaluation Report was submitted to the Directorate for Climate Change and Air Pollution of the Ministry for Environment & Energy, with proposals for the most suitable in terms of effectiveness, air pollution & noise monitoring program for the years ahead.</p>		

4.2. Air pollutants emission and dispersion modelling







Summary of results:

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

5. WASTE MANAGEMENT

Waste management		
Waste	Collection	Management/Disposal
Recyclables (paper, plastic, metals, glass)	Separate collection by Zakynthos solid waste management body	Disposal at material recovery facility for recycling
Residues (Mixed Waste) and Bulky Waste	collection by Zakynthos solid waste management body	Disposal in landfill

- Σημειώσεις:**
- Regarding the different categories of the MSW (recyclables, mixed waste), Airport Users handle their waste autonomously. The implementation of a central system by Fraport Greece is expected.
 - 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."

Waste management		
Waste	Collection	Management/Disposal
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 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.		

6. ECOSYSTEM AROUND THE AIRPORT

6.1. Flora-Fauna

ECOSYSTEM AROUND THE AIRPORT	
Flora	
Are there protected zones of vegetation/habitats in the broader airport area? [YES/NO]	YES
(If YES) Short description: Zakinthos airport is located within the limits of the National Marine Park of Zakinthos (NMPZ). Part of the airport is located within the protected area “Lagana Gulf of Zakinthos and Islands Marathonisi and Pelouzo” with code GR2210002.	
Fauna	
Are there protected zones of fauna/birds in the broader airport area? [YES/NO]	YES
(If YES) Short description: The airport of Zakinthos is located within the National Marine Park of Zakinthos (NMPZ). The Marine Park includes the marine area and the islands of Laganas Gulf, the sea turtles egg-laying beaches and a land zone surrounding the latter, the Keri Lake wetland and Strofades Islands. The islands are of high ecological value, mainly due to the migratory avifauna observed. Due to their location, they are a migratory station or passage of migratory passeriformes, whereas massive presence of migratory <i>Streptopelia turtur</i> quails is observed in spring.	

6.2. Ecologically fragile areas

The airport of Zakinthos is located within the National Marine Park of Zakinthos (NMPZ). Part of the airport is located within the protected area “Lagana Gulf of Zakinthos and Islands Marathonisi and Pelouzo” with code GR2210002.

7. WILDLIFE HAZARD MANAGEMENT

Wildlife hazard management	
Extent of the problem (animal species):	Strikes (%)
Not identified*	20%
<i>Hirundo rustica</i> (Barn swallow)	15%
<i>Delichon urbicum</i> (Common house martin)	10%
<i>Larus michahellis</i> (Yellow-legged gull)	5%
<i>Pluvialis apricaria</i> (Golden plover)	5%
<i>Falco naumanni</i> (Lesser kestrel)	5%
<i>Athene noctua</i> (Little owl)	5%
<i>Egretta garzetta</i> (Little egret)	5%

<i>Calandrella brachydactyla</i> (Greater short-toed lark)	5%
<i>Passer domesticus</i> (House sparrow)	5%
<i>Chloris chloris</i> (Greenfinch)	5%
<i>Circus pygargus</i> (Montagu's harrier), <i>Galerida cristata</i> (Crested lark)	5%
Hedgehog	5%
Turtle	5%
Adopted measures :	
<ul style="list-style-type: none"> • 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 • Systematic grass cutting at the airside • Fence maintenance • 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 & Energy “Monitoring and trapping birds and mammals population at the 14 regional airports operated by Fraport Greece” (Permit: 165654/142, 12/2/2018) • Confirmation by the Zakynthos Forest Commission for the ban of hunting and the prohibition of training the dogs used at the hunting, all year round, at the airport surroundings (up to a distance of 400m) • 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 • Seminar awareness video on the identification and safe removal of reptiles and information about the snake species at Zakynthos, under the collaboration with the Lalitsa Non-Profit Association • Awareness video on the safe handling of stray dogs 	
Reference year summary results:	
<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 & 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*

8. CULTURAL HERITAGE

Have new cultural heritage properties been discovered during the reporting period? [YES/NO]			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)	
MONTH	Kwh
Total annual electric energy consumption (in Kwh)	1,946,206

9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	10	
Number of firefighting vehicles at the airport	Management by H.A.F.	
Total annual fuel consumption	Diesel (lt)	2,661
	Unleaded gasoline (lt)	65

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 ³)	N/A

*Heating and cooling is achieved via heat pumps

9.4. Water consumption

Water consumption	
Period	Consumption [m ³]
Total annual consumption	5,000*

*Estimation

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)
	2019
Direct emissions from heating fuel (scope 1)	40.0
Direct emissions from fuel used for fleet vehicles (scope 1)	27.9
Direct emissions from fuel used for firefighting vehicles (scope 1)	11.2
Direct emissions from fuel used for generators (scope 1)	11.0
Indirect emissions from electricity consumption (scope 2)	2,536.7
Total (t)	2,626.8
Kg CO₂ /passenger	1.45

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 was certified during the reference year according to ISO 14064 regarding greenhouse gas emission by an independent certification body

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/NO]	YES
(if YES) Sampling frequency:	Monthly
<p>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 Decision Γ1 (δ)/ΓΠ οικ. 67322/ GG 3282 B/19-9-2017 regarding the quality of human consumption water.</p>	

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
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. 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.		

* According to the approved environmental terms of Zakinthos airport four properly dimensioned sand collectors have been constructed in order for the rainwater to be discharged to the natural recipient free of pollutants.

13. GROUNDWATER MONITORING PROGRAM

Groundwater quality	
Is sampling of the airport's groundwater performed? [YES/NO]	YES
(if YES) Sampling frequency::	Yearly
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: 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.	

14. SEWAGE TREATMENT & DISPOSAL

Sewage	
Sewage network to the municipal waste water treatment plant (WWTP)	YES
Autonomous airport's waste water treatment plant (WWTP)	NO
Short description:	
Blue water	
Collection and disposal:	
Collection in septic 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 analysed	N/A
Summary of quality of WWTP effluent	N/A