

ENVIRONMENTAL BULLETIN OF RODOS “DIAGORAS” AIRPORT (RHO)

Reference year 2021

Fraport Regional Airports of Greece B S.A.

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1. INTRODUCTION

1.1. Location

Rodos “Diagoras” Airport is located on the island complex of the Dodecanese, on the north-west part of Rhodes island.

1.2. Administration

The airport administratively belongs to the Municipal Unit (MU) of Petaloudes of the Municipality of Rhodes of the Region of South Aegean, at a distance of approximately 14km to the south-west of the town of Rhodes. The airport is extended to two Local Communities (LC) of the MU of Petaloudes: LC Kremasti and LC Paradeisio.

1.3. Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	32648/04.11.1994
E.T. Amendment Decision Reference Number	100425/ 17.01.2006
	23983/11.05.2016
	37974/07.12.2017
	6304/20.03.2018
	72087/2629/09.01.2019

1.4. Airport Basic Data

Airport name IATA / ICAO	RHO / LGRP
Airport location – Airport Reference Point (ARP)	Latitude: 36° 24' 19" N Longitude: 28° 05' 10" E
Altitude	5,73 m
Number of runways	1
Operation hours (summer & winter)	00:01-24:00

Runways	Length/Width					Code
Runway	3,305 x 45.0					07/25
Full length of parallel taxiway	A: 1,000m, F: 1,700m					
Number of taxiways	4 (B,C,D,E)					
Apron capacity	A	B	C	D	E	
	-	-	13	-	2 (MARS)	
Employees	High season (31.08.2021)					Low season (30.11.2021)
Fraport Greece (FG) employees	56					49
Employees of other companies	1.479					1.229

Terminal	
➤ Total area (m ²)	49.478

Other buildings and service/storage areas	
➤ RFF Station (m ²)	1.470

Parking Areas	
Car parking spaces	286
Bus parking spaces	49
Taxi parking spaces	25

1.5. Airport facilities

1.5.1. Fuel Handlers

Number of fuel handler companies	
Number of fuel handler companies operating at the Airport	2

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

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

2. TRAFFIC DATA STATISTICS

2.1. Annual Traffic Data

Annual Traffic Data for the year 2021	
Overall Annual Air Traffic Movements ¹	28.817
Percent of increase or decrease in relation to the previous year	94,7 %
Annual passenger traffic	3.366.614
Percent of increase or decrease in relation to the previous year	117%
Annual cargo transferred (tn)	302
Percent of increase or decrease in relation to the previous year	-19,9 %

Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
A320	1.902
AT45	1.630
A20N	1.420
DH8A	566
A32A	440
A321	249
DH8D	212
B73H	159
A319	62
A21N	46
Other	425
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B73H	6.439
A320	4.295
B738	2.791
A321	1.027
A319	880
7M8	843
A32A	808
A32B	533
A20N	466
A21N	366
Other	3.258

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	6.385
Air traffic movements daily average number during the month with highest traffic	206

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	306
Air traffic movements daily average number during the month with lowest traffic	11

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
Noise Monitoring Stations		
		
Measurement points coordinates		Measurement points description
MP01: 36° 24' 00.91" N 28° 05' 02.80" E		Paradisi area, south of the runway on the balcony of a house. Affected by all flights o and from both directions
MP02: 36° 24' 50.85" N 28° 06' 45.72" E		Kremasti area, east of RWY 16/34 on a hotel rooftop. Affected by arrivals RWY 25 and departures RWY 07
Measurement period		01.03.2021 – 31.12.2021
Noise indicators		L _{den} , L _{night}

Summary of measurement results:

Noise levels are monitored according to the airport’s monitoring program.
 No exceedance of the noise indicators levels L_{den} =70 dB(A) and L_{night}=60 dB(A) was observed.
 MP01: L_{den}=58,2 dB(A) & L_{night}=49,0 dB(A)
 MP02: L_{den}=61,3 dB(A) & L_{night}=51,0 dB(A)

3.2. Noise levels calculation based on noise simulation software


Aircraft noise levels calculation based on noise simulation software	YES
Software used: IMMI Noise Prediction Software (CNOSSOS-EU assessment method based on Directive 2015/996/EU)	
Noise indicators and respective contours calculation: L_{den} , L_{night}	
Noise contours:	
 <p style="text-align: center;">L_{den}</p>	 <p style="text-align: center;">L_{night}</p>

Summary of results:

For the year 2021 no population or any residential buildings inside official settlement boundaries, in the vicinity of the airport, are exposed to noise levels higher than the limit $L_{night}=60$ dB(A) and $L_{den}=70$ 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
Measurement points		
		
Measurement points	Measurement points description	
Position: 36° 24' 44.8" N 28° 07' 01.6" E	Kremasti area, east of RWY 16/34 on a hotel rooftop. Affected by arrivals RWY 25 and departures RWY 07.	
Measurement period:	01.03.2021-12.31.2021	
Pollutants measured:	PM ₁₀ , PM _{2.5} , NO ₂ , SO ₂ , C ₆ H ₆ , O ₃	

Summary of measurement results:

Air quality is monitored according to the airport's monitoring program.
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		
PM₁₀		N/A
NO_x		N/A
SO_x		N/A
Benzene (C₆H₆)		N/A

Summary of results:

*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.

At the end of the two year period of the program in April 2020, in implementation of the Environmental Terms, 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 (ref. number 39833/833/29.4.2020).

According to the program, which is also an appendix in approved Environmental Impact Study, in 2021 the air pollution simulation was not foreseen.

5. ELECTROMAGNETIC RADIATION

A phone base station is installed inside Rodos "Diagoras" Airport. As part of relevant controls, measurements were carried out on 22.11.2021, at 9 selective measurements points.

Measurement Point	Electric Strength E	Power Density P
	(V/m)	(W/m ²)
1	2,2456861	0,0133773
2	2,3000572	0,0140329
3	1,5221158	0,0061456
4	1,2070940	0,0038650
5	0,7856075	0,0016371
6	1,6465026	0,0071911
7	1,8533712	0,0091116
8	1,8139158	0,0087278
9	1,4080360	0,0052589

Σημειώσεις:

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
Recyclables (paper, plastic, metals, glass)	Separate collection by licensed private company.	Disposal at material recovery facility for recycling
Residues (Mixed Waste) and Bulky Waste	Collection by licensed private company.	Disposal in the municipal sanitary landfill of Northern Rodos

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, 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 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
<i>(if YES)</i> Short description:	
Fauna	
Are there protected species of fauna/birds in the broader airport area?	YES
<i>(if YES)</i> Short description: The protected bird species that have been observed at Rodos airport since April 2017 are presented below:	
<p><i>Black-crowned night heron (Nycticorax nycticorax), Collared pratincole (Glareola pratincola), Cretzschmar's bunting (Emberiza caesia), Eurasian curlew (Numenius arquata), Eurasian stone-curlew (Burhinus oedicephalus), Eurasian skylark (Alauda arvensis), European kingfisher (Alcedo atthis), European roller (Coracias garrulous), European turtle-dove (Streptopelia turtur), Garganey (Anas querquedula), Glossy ibis (Plegadis falcinellus), Isabelline wheatear (Oenanthe isabellina), Lapwing (Vanellus vanellus), Lesser grey shrike (Lanius minor), Lesser kestrel (Falco naumanni), Long-legged buzzard (Buteo rufinus), Marsh harrier (Circus aeruginosus), Masked shrike (Lanius nubicus), Mediterranean gull (Larus melanocephalus), Montagu's harrier (Circus pygargus), Pallid harrier (Circus macrourus), Purple heron (Ardea purpurea), Red-footed falcon (Falco vespertinus), Short-eared owl (Asio flammeus), Short-toed snake eagle (Circaetus gallicus), Spur-winged lapwing (Vanellus spinosus), White stork (Ciconia ciconia)</i></p>	

7.2. Ecologically fragile areas

The nearest area is the Wildlife Sanctuary “Kremasti (Paradeisiou)” with code K700 that is adjacent to the airport. The nearest area of the Natura 2000 network is SAC “Rhodes: Profitis Ilias – Epta Piges – Petaloudes – Remata” (GR4210006), located at a distance of approximately 7km from the airport.

8. WILDLIFE HAZARD MANAGEMENT

Wildlife strikes and wildlife hazard management measures	
Wildlife species that suffered a strike	Strikes (%)
Barn swallow (<i>Hirundo rustica</i>)	41%
Yellow-legged gull (<i>Larus michahellis</i>)	15%
Common kestrel (<i>Falco tinnunculus</i>)	11%
Hooded crow (<i>Corvus cornix</i>)	7%
Eurasian stone-curlew (<i>Burhinus oedicnemus</i>)	7%
Small passerines (<i>Passeriformes spp.</i>)	7%
Collared dove (<i>Streptopelia decaocto</i>)	4%
Crested lark (<i>Galerida cristata</i>)	4%
House sparrow (<i>Passer domesticus</i>)	4%
Pigeon (<i>Columba livia</i>)	4%
Wildlife strike risk mitigation measures:	
<ul style="list-style-type: none"> • Inspections of the manoeuvring area for wildlife monitoring and control at regular intervals • 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 • Regular grass cutting at the airside. Rodos airport is equipped with tractor • Fence maintenance • Systematic monitoring of bird species populations and their habitat on and off-airport (at a distance of 13km from the airport) • 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 	
Reference year summary results:	
<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 & 6.3.4.</p>	

9. 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

10. RESOURCES CONSUMPTION

10.1. Energy consumption

Energy consumption (monthly electric energy consumption, in Kwh)	
Total annual electric energy consumption (in Kwh)	9.020.900

10.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	15	
Number of firefighting vehicles at the airport	4	
Total annual fuel consumption	Diesel (lt)	21.856,09
	Unleaded gasoline (lt)	647,85

10.3. Heating oil or natural gas consumption

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

10.4. Fuel consumption for generator

Water consumption	
Total annual consumption (lt)	5.256

10.5. Water consumption

Water consumption	
Total annual consumption (m ³)	44.238

11. 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)
	2021
Direct emissions form heating fuel (scope 1)	0,0
Direct emissions from fuel used for fleet vehicles (scope 1)	41,5
Direct emissions from fuel used for firefighting vehicles (scope 1)	18,4
Direct emissions from fuel used for generators (scope 1)	14,1
Indirect emissions from electricity consumption (scope 2)	5.436,9
Total (t)	5.510,9
Kg CO₂ /passenger	1,64

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 year 2020 according to ACA (Airport Carbon Accreditation)

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 Rodos
Is sampling of the airport's water network performed?	YES
<i>(if YES)</i> Sampling frequency:	Quarterly
<p>Summary of results: The results of the microbiological and chemical analyses show that the water of the airport's network is non potable due to high concentrations of chlorides. The rest of the parameters analyzed 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>	

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
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 technical difficulties, it was not possible to sample the rainwater during the reference year.	

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:	According to the Environmental Terms
Parameters analyzed: TPH, BTEX, MTBE (groundwater) and Volatile hydrocarbons, aliphatic, aromatic and chlorinated (soil gas)	
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 the environmental monitoring reports of the fuel handlers, and based on the New Dutch List (20013) which is adopted in the absence of relevant national specifications/limits, the environmental condition of the ground water & soil gas is found adequate and no decontamination measures are necessary, except from the area of former EXXON Mobil identified from the 2017 Environmental Baseline Study, which was under remediation during the reference year. 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.	

15. SEWAGE TREATMENT AND DISPOSAL

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

Blue water
Collection and disposal: Collection in a tank on the site of the WWTP and disposal within the WWTP of the airport for further treatment.

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	Secondary treatment & chlorination
Treatment method	Prolonged ventilation
Disposal of treated wastewater	WWTP of Municipal Water & Sewage Company (DEYA) of Rodos
Sludge disposal	Sanitary Landfill
Sampling frequency of WWTP effluent	Monthly
Parameters analyzed	BOD, COD, SS, TN, TP, T. Coliforms, E.Coli, pH, Residual Cl ₂
Summary of quality of WWTP effluent	The WWTP effluent quality is within the limits set out in JMD 5673/400/1997

**Airport sewage is collected through a sewage network and treated at the airport’s WWTP. The airport’s WWTP effluent is directed to the municipal WWTP of Rodos.*