Environmental Bulletin of Rodos Airport "Diagoras" (RHO)

Reference year 2023

Issue Year: 2024

Fraport Regional Airports of Greece B S.A.

Rhodes Airport

Contents

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
	116015/7663/07.11.2022
	53078/3701/17.05.2024

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

Runways	***Length/Width***	***Code***
Runway	3,305m x 45.0m	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)

Terminal	
Total area (m^2)	49.478

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

Employees	***High season (31.08.2023)***	***Low season (30.11.2023)***
Fraport Greece (FG) employees	69	65
Employees of other companies	1.877	1.391

Parking Areas	
Car parking spaces	286
Bus parking spaces	49
Taxi parking spaces	45

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)	YES	YES	YES

2. Traffic data statistics

2.1 Annual Traffic Data

Annual Traffic Data for the year 2023

Overall Annual Air Traffic Movements[1] ***43.077***	Percent of increase or decrease in relation to the previous year	***2,5%***
Annual passenger traffic ***6.142.998***		***4,9%***
Annual cargo transferred (tn) ***283***		***18%***

[1] Military and training flights not included.

Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
A320	2.142
AT45	1.594
A20N	1.436
A321	1.259
DH8A	552
A21N	441
P28A	98
AT46	52
C550	52
A109	29
Other	413
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B738	16.677
A320	8.870
A321	2.689
A20N	1.902
A319	1.143
A21N	965
B737	225
BCS3	224
C56X	210
B734	166
Other	1.938

2.2 High season traffic data

High season traffic data (June-September)	
Highest traffic month	July
Air traffic movements during the month with highest traffic	7.590
Air traffic movements daily average number during the month with highest traffic	244

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	526
Air traffic movements daily average number during the month with lowest traffic	18

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.
No exceedance of the noise indicators levels L_{den}=70dB(A) and L_{night}=60 dB(A) was observed.
MP01: L_{den}=61,3dB(A) & L_{night}=53,2dB(A)
MP02: L_{den}=62,6dB(A) & L_{night}=53,5dB(A)

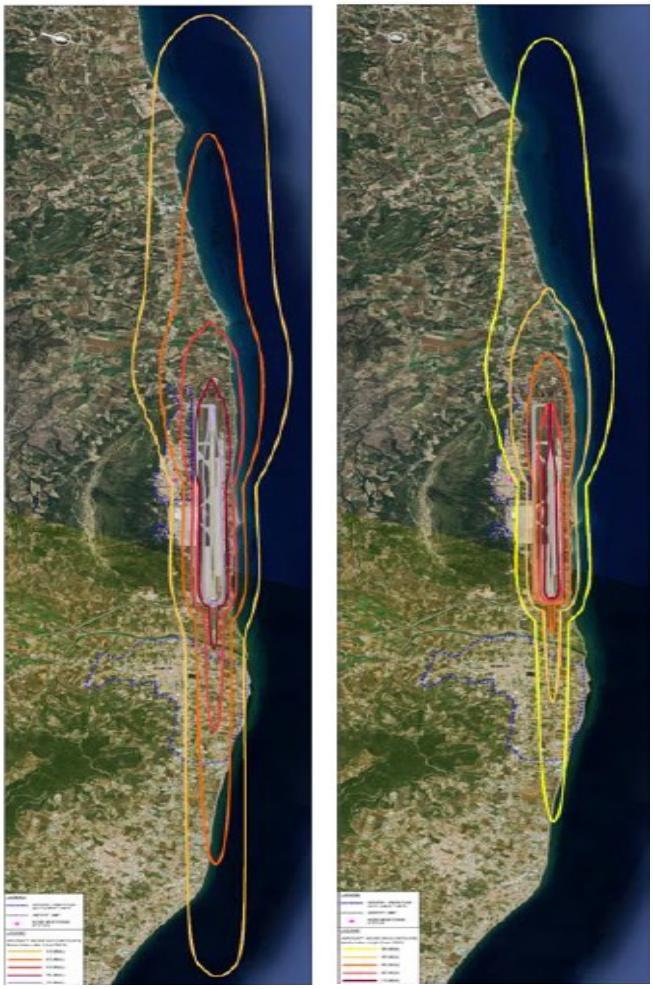
Have noise measurements at the airport's surrounding area been performed during the reference year?	***YES***

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	13.01.2023 – 31.12.2023
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: 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	01.01.2023 - 31.12.2023
Pollutants measured	PM_{10}, $PM_{2,5}$, NO_2, SO_2, C_6H_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***

Summary of results

According to environmental terms, for year 2023, no air simulation model was performed.

5. 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, after tender process according to the provisions of the legislation in force.
4. In the year 2023, Fraport Greece B managed a total of 12.35 tons of Hazardous waste (FG A 10.23 tn, third parties 2.12 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

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

(if YES) Short description: Rodos Airport "Diagoras" is near to the Natura 2000 site:
- GR4210006 Rodos: Profitis Ilias - Epta Piges B– Petaloudes – Remata (Area:11,312.41ha)

Fauna

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

(if YES) Short description: Rodos Airport "Diagoras" is close to the Important Bird Areas:
- GR171:Western, eastern and southern Rhodes (Area: 29,468.26ha)
- GR170: Chalki island and surrounding islets (Area: 35,292.42 ha)

The protected bird species that have been observed at Rodos airport since April 2017 are presented below:Black-crowned night heron (Nycticorax nycticorax), Black kite (Milvus migrans), Collared pratincole (Glareola pratincola), Eurasian curlew (Numenius arquata), Eurasian stone-curlew (Burhinus oedicnemus), Eurasian skylark (Alauda arvensis), 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 (Vanellis spinosus), 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 (%)
Small passerines	58%
Waders	16%
Gulls	11%
Birds of prey, Owls	10%
Corvids	5%

Wildlife strike risk mitigation measures

The presence and behavior of wildlife species at Rodos airport is monitored in regular intervals, daily, from dawn to dusk. Some of the wildlife control methods applied at Rodos 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)	8.408.012,72*

*Third parties' consumption is excluded

9.2 Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	23	
Total annual fuel consumption	Diesel (lt)	24.663,48
	Unleaded gasoline (lt)	6.150,96

9.3 Heating oil or natural gas consumption

Heating oil or natural gas consumption	
Total annual heating oil consumption (lt)	14.880,00
Total annual heating natural gas consumption (m^3)	N/A

9.4 Fuel consumption for generator

Fuel consumption	
Total annual consumption (lt)	4.589,23

9.5 Water consumption

Water consumption	
Total annual consumption (m^3)	62.805,50

10. Greenhouse gas emissions & carbon footprint

Greenhouse gas emissions that were included in the carbon footprint calculation are the CO_2, CH_4 & N_2O 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_2e (t) Emissions (t)*
	2023
Direct emissions form heating fuel (scope 1)	39,2
Direct emissions from fuel used for fleet vehicles (scope 1)	80,3
Direct emissions from fuel used for generators (scope 1)	12,1
Indirect emissions from electricity consumption (scope 2)	4.490,7
Total (t)	4.634,6
Kg CO_2e /passenger	0,75

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. Electromagnetic radiation

The measurements were carried out at 27 different points around the antenna array located at the airport on 03.12.2023.

Measurement point	*Amperage E (V/m)*	*Power Density (W/m^2)*
1	5,13E-01	6,98E-04
2	5,12E-01	6,95E-04
3	7,60E-01	1,53E-03
4	1,05E+00	2,94E-03
5	1,72E+00	7,83E-03
6	2,02E+00	1,08E-02
7	1,81E-01	8,72E-05
8	2,53E-01	1,69E-04
9	4,23E-01	4,75E-04
10	4,67E-01	5,79E-04
11	3,51E-01	3,27E-04
12	7,04E-01	1,31E-03
13	3,49E-01	3,24E-04
14	4,17E-01	4,61E-04
15	7,30E-01	1,41E-03
16	1,02E+00	2,74E-03
17	2,92E-01	2,27E-04
18	1,60E-01	6,82E-05
19	1,87E-01	9,26E-05
20	2,42E-01	1,55E-04
21	1,41E-01	5,30E-05
22	1,47E-01	5,69E-05
23	1,89E-01	9,46E-05
24	3,39E-01	3,04E-04
25	1,68E-01	7,50E-05
26	1,41E-01	5,24E-05
27	2,47E-01	1,62E-04

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 Rodos
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 water of the airport's network is occasionally 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 Δ1 (δ)/ΓΠ οικ. 27829/2023 (ΦΕΚ 3525/Β` 25.5.2023) regarding the quality of human consumption water.

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:	Annual
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 not performed.

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:	Annual
Parameters analyzed: Groundwater: 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. 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, underground air and soil from the Fuel Handlers was performed by EKO (2022) and GISSCO (2023).

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*

*Airport sewage is collected through a sewage network and treated at the airport's WWTP. The airport's WWTP treated effluent is directed to the municipal WWTP of DEYA Rodos.
In the context of monitoring the quality parameters of the installation's effluent before its distribution to the DEVAR network, the following 2 exceedances were observed:
• 2 BOD5 exceedances of 26-27 mg/l (BOD5 limit = 25 mg/l).
During June-July period. These exceedances were due to equipment failure which was replaced and operation returned within limits.
All other quality parameters of the treated wastewater are within the quality limits.

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)
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	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

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