Environmental Bulletin of Santorini Airport (JTR)

Reference year 2023

Issue Year: 2024

Fraport Regional Airports of Greece B S.A.

Santorini Airport

Contents

1. Introduction

1.1 Location

The airport of Santorini is located at the east part of the Cycladic island of Santorini, near the settlement Monolithos, at a distance of approximately 6km to the south-east of the town of Thira (Fira), the capital of the island.

1.2 Administration

The airport administratively belongs to the Municipal Unit of Thira of the Municipality of Thira of the homonym Regional Unit that belongs to the Region of South Aegean. The airport is within the limits of the Local Communities of Vothonas and Exo Gonia and of the Municipal Communities of Messaria, of the Municipal Unit of Thira.

1.3 Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	51227/25.10.2016
E.T. Amendment Decision Reference Number	1758/23.01.2018
	12710/861/03.02.2023

1.4 Airport Basic Data

Airport name IATA / ICAO	JTR/LGSR
Airport location – Airport Reference Point (ARP)	Latitude: 36° 23' 57" N Longitude: 25° 28' 45" E
Altitude	37.5m
Number of runways	1
Operation hours (summer)	00:00 – 23:59
Operation hours (winter)	06:15 – 22:15

Runways	***Length/Width***				
Runway	2,125m x 30m				15L/33R
Full length of parallel taxiway	16R/34L - 2,122m				
Number of taxiways	5				
Apron capacity	A	B	C	D	E
	-	-	4	1	-

Terminal	
Total area (m^2)	15.412

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	44	34
Employees of other companies	581	297

Parking Areas	
Car parking spaces	146
Bus parking spaces	12
Taxi parking spaces	22

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] ***23.235***	Percent of increase or decrease in relation to the previous year	***-4,5%***
Annual passenger traffic ***2.775.806***		***1,1%***
Annual cargo transferred (tn) ***61***		***13%***

[1] Military and training flights not included.

Aircraft types

Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
AT76	4.276
A320	2.311
A319	1.265
A21N	982
B738	727
A20N	698
AT75	476
AT72	420
AT46	262
A321	256
Other	1.111
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
A320	3.737
B738	3.061
A20N	952
A319	695
A21N	634
A321	346
C56X	130
B737	92
BCS3	86
CL35	44
Other	674

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	4.069
Air traffic movements daily average number during the month with highest traffic	131

2.3 Low season traffic data

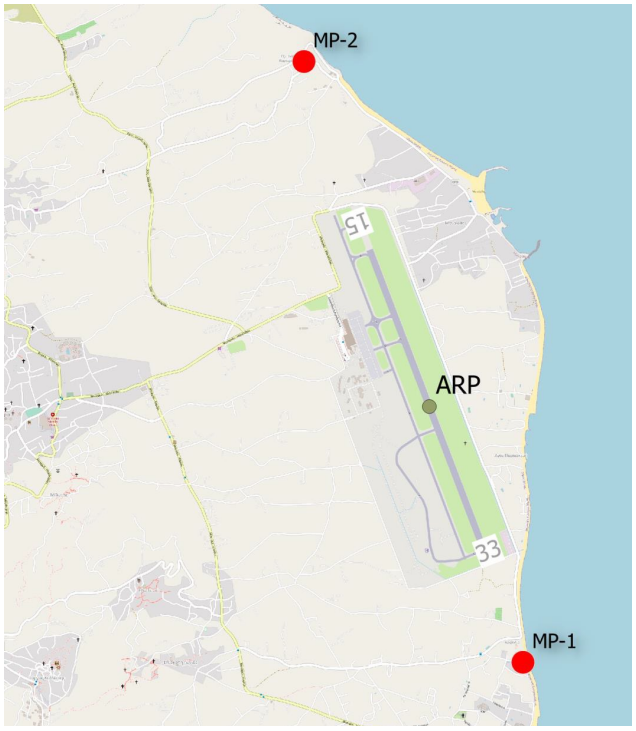
Low season traffic data (October-May)

Lowest traffic month	February
Air traffic movements during the month with lowest traffic	437
Air traffic movements daily average number during the month with lowest traffic	15

3. Aircraft noise

3.1 Noise measurements during the reference year

Measurement points



Summary of measurement results

Noise levels are monitored according to airport's monitoring program and new approves environmental terms.
Exceedances of noise indicators level (L_{den} & L_{night}) were observed during July and August.

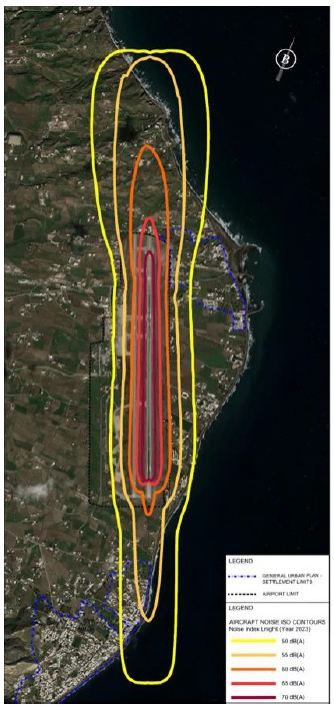
Have noise measurements at the airport's surrounding area been performed during the reference year?	***YES***

Measurement points coordinates	***Measurement points description***
Position 1: 36° 23' 00" N 25° 29' 07" E	Kamari area, south of the runway on a hotel roof. Affected by arrivals RWY 34R and departures RWY 16L.
Position 2: 36° 25' 14" N 25° 28' 11" E	North of the runway on a hotel roof. Affected by arrivals RWY 16L and departures RWY 34R.
Measurement period	22.06.2023 - 30.06.2023 01.07.2023 - 08.07.2023 09.08.2023 - 16.08.2023
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) 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*
Position 1	Near the airport boundary at the parking area
Position 2	Approximately 1 km from the runway end at the parking area of hotel.
Measurement period	14.02.2023 – 02.03.2023 14.06.2023 – 28.06.2023 29.06.2023 – 13.07.2023 10.08.2023 – 24.08.2023
Pollutants measured: PM_{10}, $PM_{2,5}$, NO_2, SO_2, C_6H_6, O_3, CO	

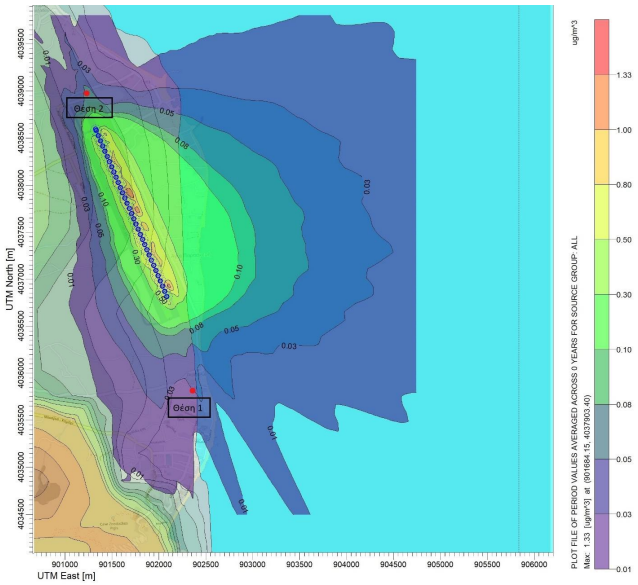
Summary of measurement results

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.

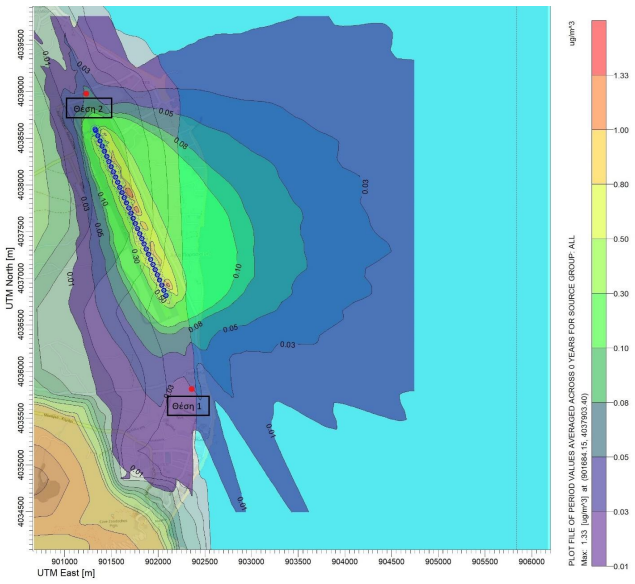
4.2 Air pollutants emission and dispersion modelling

Calculation of air pollutants concentrations based on an emission and dispersion modelling software	***YES***
Software used	Aviation Environmental Design Tool (AEDT) - US Federal Aviation Administration & US Environmental Protection Agency AERMOD
Pollutants concentrations and respective contours calculation	PM_{10}, $PM_{2.5}$, NO_x, SO_x, C_6H_6, CO, CO_2

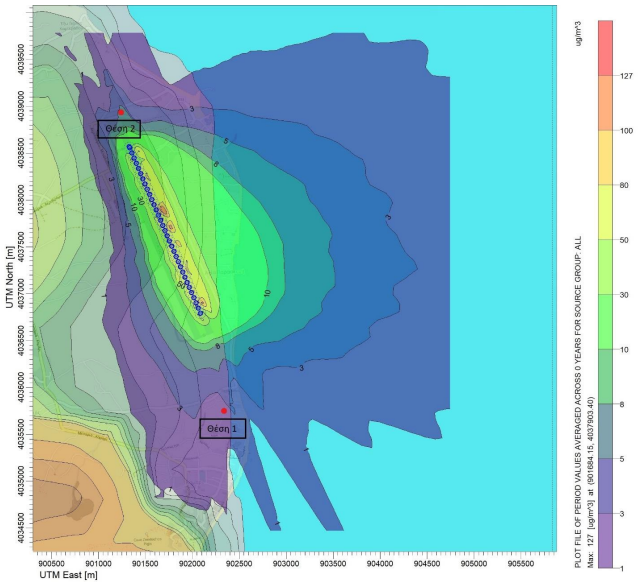
PM_{10}



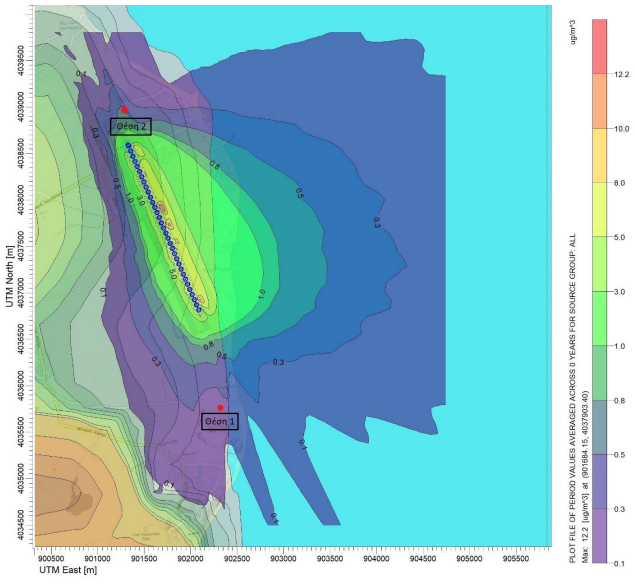
$PM_{2.5}$



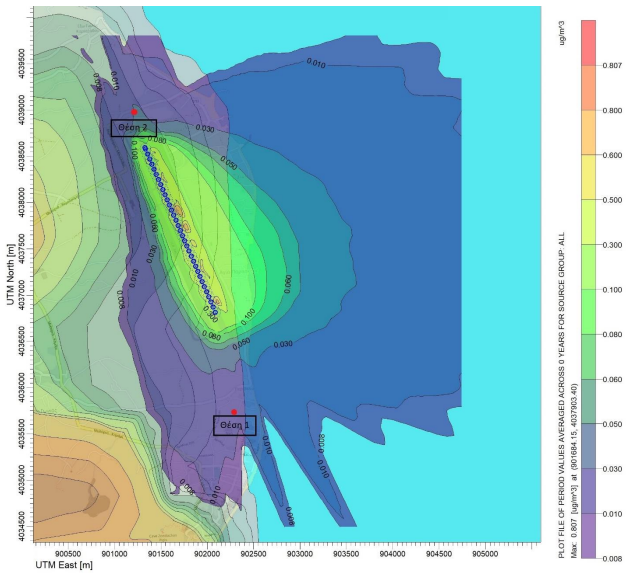
NO_x



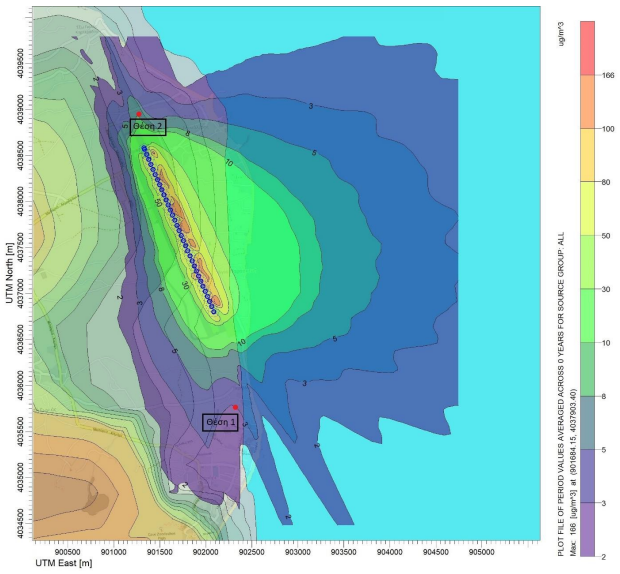
SO_x



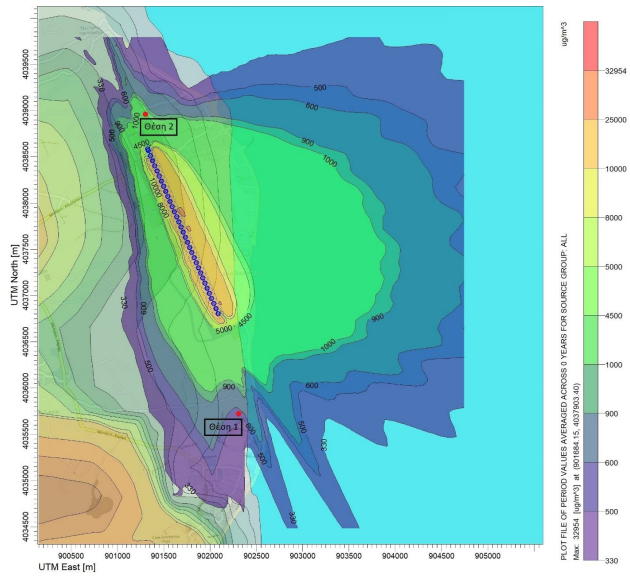
Benzene (C_6H_6)



CO



CO_2



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	*Collection*	*Management/Disposal*
Recyclables (paper, plastic, metals, glass)	Separate collection by licensed private company.	Disposal at material recovery facility or transshipment for recycling
Residues (Mixed Waste) and Bulky Waste	Collection by licensed private company	Disposal in Santorini 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 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 a Tender process according to the provisions of the legislation in force.
4. In the year 2023 Fraport Greece A managed a total of 49.0 tons of Hazardous waste (FG A 9.82 tn, third parties 39.2 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: Santorini airport is near to the Natura 2000 site:
- GR4220003 Santorini: Nea and Palia Kameni-Profitis Ilias (Area: 1,219.44ha)

Fauna

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

(if YES) Short description: Santorini Airport is close to the:
- The Important Bird Area GR158 Christiana and Aspronisi islets, Thira is close to Santorini airport (Area: 157.82ha)
- Important Marine Mammal Area Central Aegean (Area: 5826,500ha) where the species Monachus monachus is recorded

The protected bird species that have been observed at Santorini airport since April 2017 are presented below:
Collared pratincole (Glareola pratincola), Eurasian spoonbill (Platalea leucorodia), Eurasian stone-curlew (Burhinus oedicnemus), Eurasian skylark (Alauda arvensis), European turtle-dove (Streptopelia turtur), Great egret (Casmerodius albus), Isabelline wheatear (Oenanthe isabellina), Long-legged buzzard (Buteo rufinus), Marsh harrier (Circus aeruginosus), Montagu's harrier (Circus pygargus), Pallid harrier (Circus macrourus), 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	43%
Gulls	29%
Small passerines	14%
Pigeons	14%

Wildlife strike prevention measures

The presence and behavior of wildlife species at Santorini airport is monitored in regular intervals, daily, from dawn to dusk. Some of the wildlife control methods applied at Santorini 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)	3.131.432,11*

*Third parties' consumption is excluded

9.2 Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	10	
Total annual fuel consumption	Diesel (lt)	7.634,43
	Unleaded gasoline (lt)	4.310,43

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 air conditioning is performed via heat pumps

9.4 Fuel consumption for generator

Fuel consumption	
Total annual consumption (lt)	3.503.42

9.5 Water consumption

Water consumption	
Total annual consumption (m^3)	17.071,00

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)	0,0
Direct emissions from fuel used for fleet vehicles (scope 1)	30,6
Direct emissions from fuel used for generators (scope 1)	9,2
Indirect emissions from refrigerants (scope 1)	16,2
Indirect emissions from electricity consumption (scope 2)	1.672,5
Total (t)	1.728,5
Kg CO_2e /passenger	0,62

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. Human comsumption water monitoring program

Human consumption water quality	
Water supply (public water network or airport's boreholes)	Public network and airport boreholes (when required)
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 boreholes of the airport is not potable due to the existence of high concentrations of Sodium and Chlorine (brackish water) and Arsenic (due to volcanic rocks). The rest of the 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 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		YES

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 performed and the quality of the water is in accordance with the IFC guidelines. However, presence of hydrocarbons (C_{10}-C_{40}) (μg/lt) is recorded, 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: 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. The results of the analyses from the airport's water boreholes indicate that no pollution is present.

Groundwater and/or soil and/or soil gas monitoring at fuel farms– Fuel Handlers
According to the approved environmental terms, monitoring of underground air and soil from the Fuel Handlers for reference year 2023 was performed by EKO (2022) and GISSCO (2023).

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.

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

Contact

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