

# Environmental Bulletin of Santorini Airport (JTR)

Reference year 2023



Issue Year: 2024

Fraport Regional Airports of Greece B.S.A.



## Contents

|   |    |
|---|----|
| 1. INTRODUCTION   | 3  |
| 1.1 Location  | 3  |
| 1.2 Administration  | 3  |
| 1.3 Environmental licensing                                     | 3  |
| 1.4 Airport Basic Data  | 3  |
| 1.5 Airport facilities  | 3  |
| 1.5.1 Fuel Handlers   | 3  |
| 1.5.2 Ground Handlers   | 3  |
| 2. TRAFFIC DATA STATISTICS                                      | 4  |
| 2.1 Annual Traffic Data   | 4  |
| 2.2 High season traffic data                                    | 4  |
| 2.3 Low season traffic data                                     | 4  |
| 3. AIRCRAFT NOISE   | 5  |
| 3.1 Noise measurements during the reference year                | 5  |
| 3.2 Noise levels calculation based on noise simulation software | 6  |
| 4. AIR QUALITY  | 7  |
| 4.1 Air quality measurements during the reference year          | 7  |
| 4.2 Air pollutants emission and dispersion modelling            | 8  |
| 5. WASTE MANAGEMENT   | 10 |
| 6. ECOSYSTEM AROUND THE AIRPORT                                 | 11 |
| 6.1 Flora - Fauna   | 11 |
| 7. WILDLIFE HAZARD MANAGEMENT                                   | 12 |
| 8. CULTURAL HERITAGE  | 13 |
| 9. RESOURCES CONSUMPTION  | 14 |
| 9.1 Energy consumption  | 14 |
| 9.2 Fuel consumption  | 14 |
| 9.3 Heating oil or natural gas consumption                      | 14 |
| 9.4 Fuel consumption for generator                              | 14 |
| 9.5 Water consumption   | 14 |
| 10. GREENHOUSE GAS EMISSIONS & CARBON FOOTPRINT                 | 15 |
| 11. HUMAN COMSUMPTION WATER MONITORING PROGRAM                  | 16 |
| 12. RAINWATER   | 17 |
| 13. GROUNDWATER AND/OR SOIL AND/OR SOIL GAS MONITORING          | 18 |
| 14. SEWAGE TREATMENT AND DISPOSAL                               | 19 |

# 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     |
|  | 1758/23.01.2018      |
| E.T. Amendment Decision Reference Number | 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<br>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     | Code    |   |   |   |
|---------------------------------|------------------|---------|---|---|---|
| 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 <sup>2</sup> ) | 15.412 |



| Other buildings and service/storage areas |       |
|---|-------|
| RFF Station (m <sup>2</sup> )             | 1.144 |



| Employees                     | High season<br>(31.08.2023) | Low season<br>(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

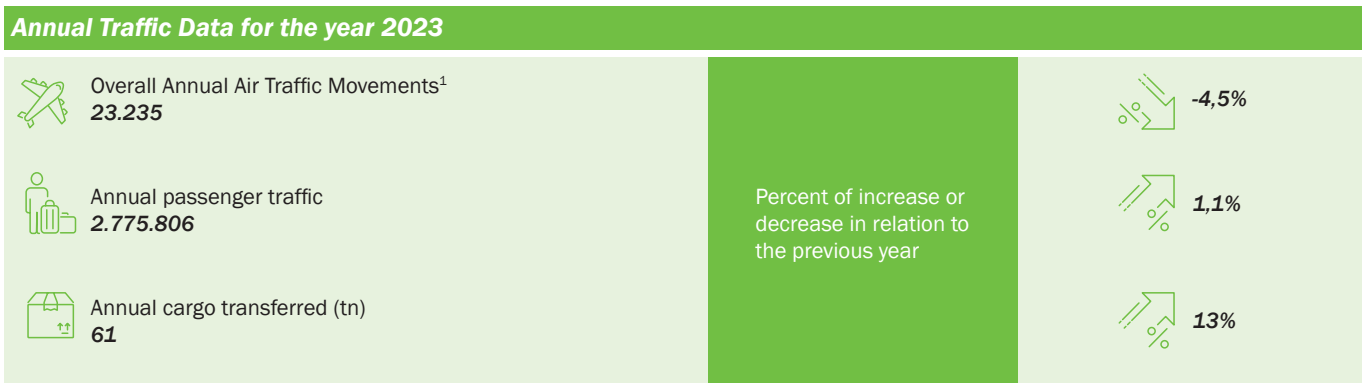
|   |   |
|---|---|
| Number of ground handler companies operating at the Airport | 3 |
|---|---|

#### Installations inside the airport

|                                       | SKYSERV | SWISSPORT | GOLDAIR |
|---------------------------------------|---------|-----------|---------|
| Environmental Management System (EMS) | YES     | YES       | YES     |

## 2. Traffic data statistics

### 2.1 Annual Traffic Data



<sup>1</sup> 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

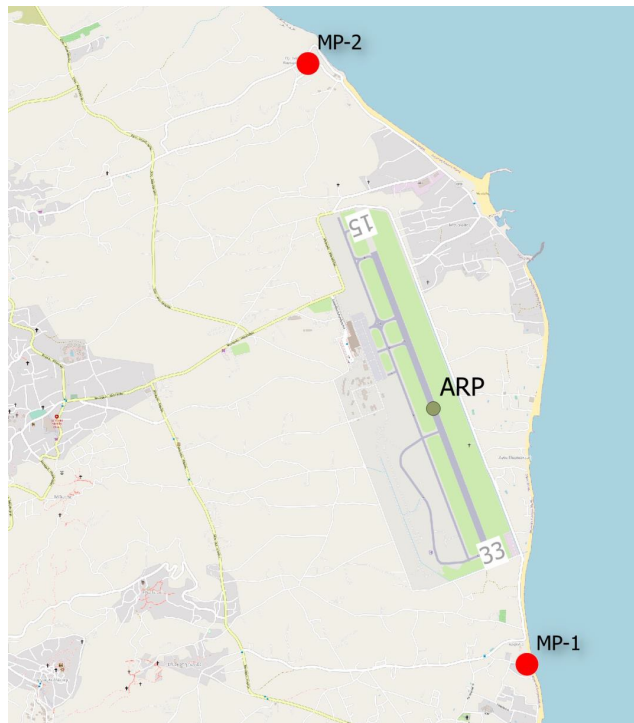
#### Low season traffic data (October-May)

|   |          |
|---|----------|
| 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 approved environmental terms.

Exceedances of noise indicators level ( $L_{den}$  &  $L_{night}$ ) were observed during July and August.

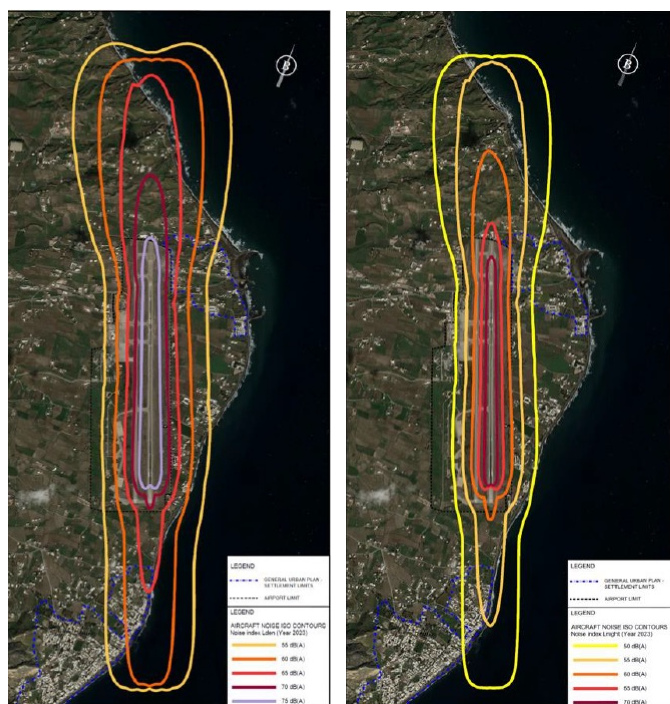
Have noise measurements at the airport's surrounding area been performed during the reference year? **YES**

| Measurement points coordinates                | Measurement points description   |
|---|--|
| Position 1:<br>36° 23' 00" N<br>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:<br>36° 25' 14" N<br>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<br>01.07.2023 - 08.07.2023<br>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  $L_{den}$  &  $L_{night}$

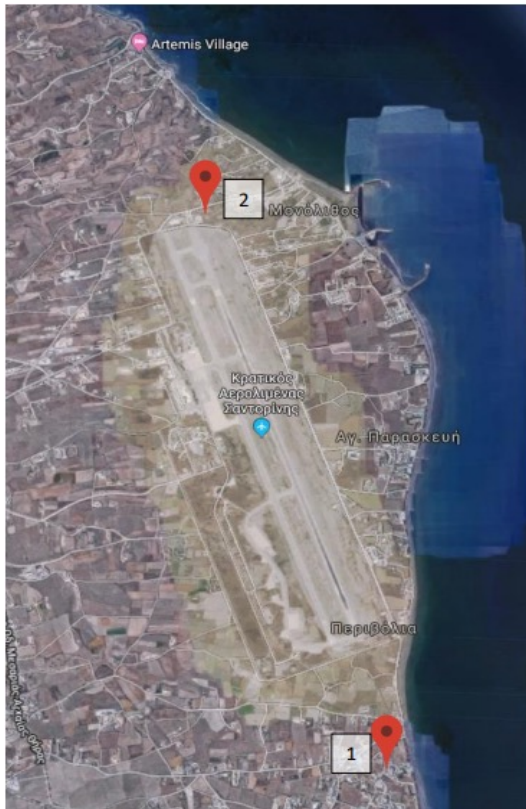
#### Summary of results

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<br>14.06.2023 – 28.06.2023<br>29.06.2023 – 13.07.2023<br>10.08.2023 – 24.08.2023 |
| Pollutants measured: PM <sub>10</sub> , PM <sub>2.5</sub> , NO <sub>2</sub> , SO <sub>2</sub> , C <sub>6</sub> H <sub>6</sub> , O <sub>3</sub> , CO |  |

### Summary of measurement results

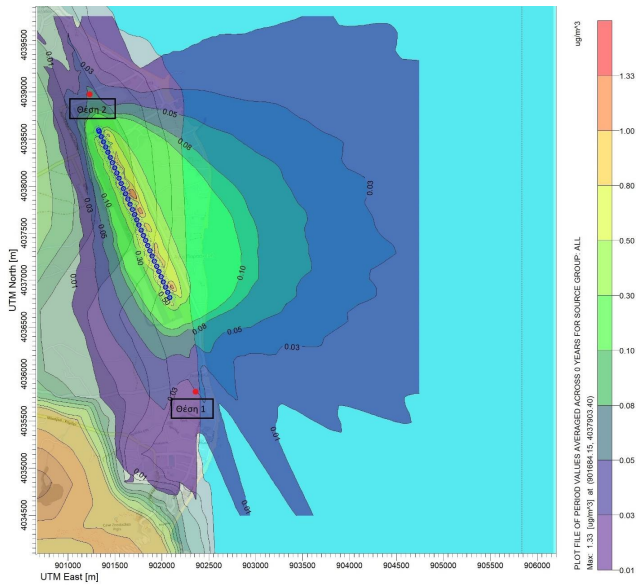
Air quality is monitored according to the airport's monitoring program and new approved environmental terms.  
No exceedance of the air quality limits was observed.

## 4.2 Air pollutants emission and dispersion modelling

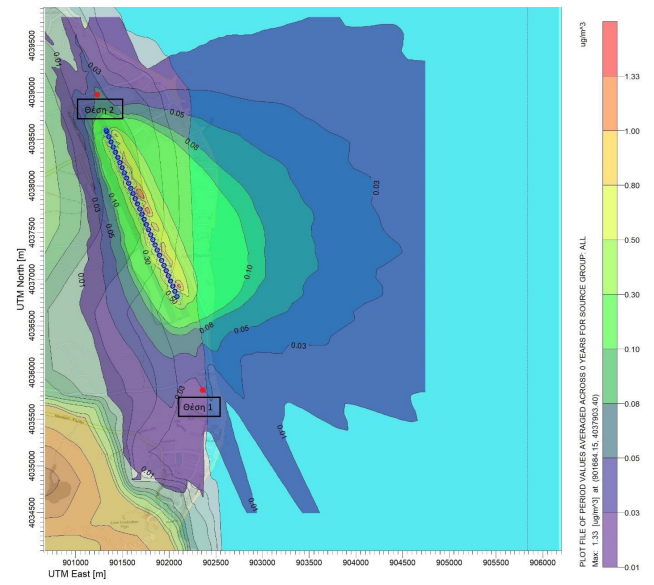
Calculation of air pollutants concentrations based on an emission and dispersion modelling software **YES**

|   |  |
|---|--|
| Software used   | Aviation Environmental Design Tool (AEDT) - US Federal Aviation Administration & US Environmental Protection Agency AERMOD     |
| Pollutants concentrations and respective contours calculation | PM <sub>10</sub> , PM <sub>2.5</sub> , NO <sub>x</sub> , SO <sub>x</sub> , C <sub>6</sub> H <sub>6</sub> , CO, CO <sub>2</sub> |

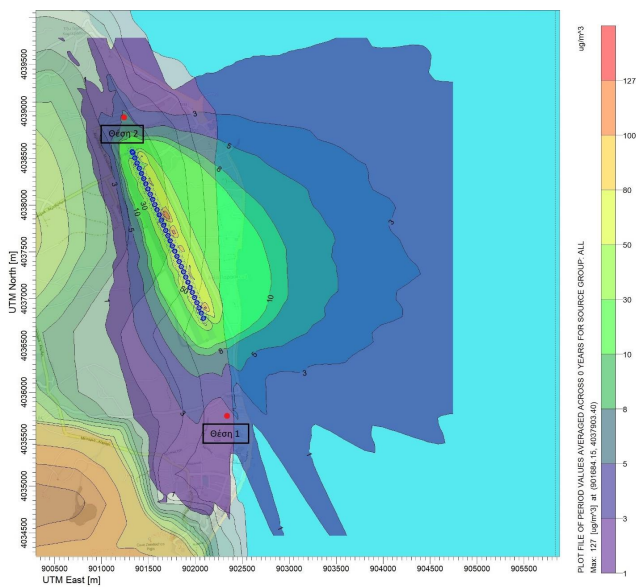
### PM<sub>10</sub>



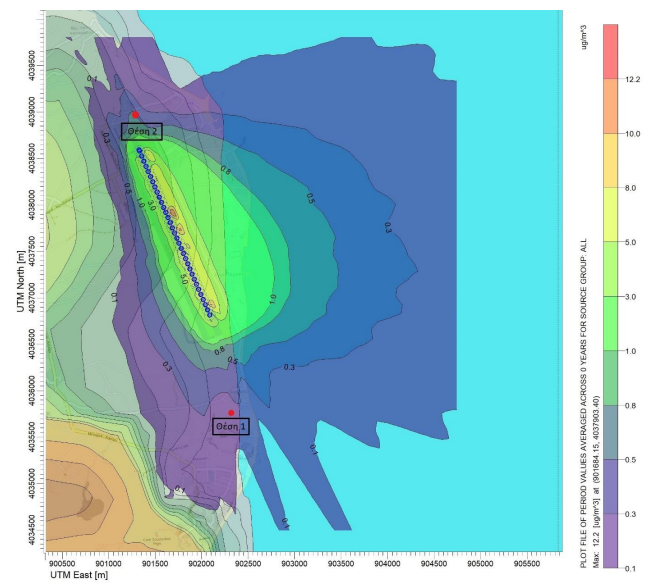
### PM<sub>2.5</sub>



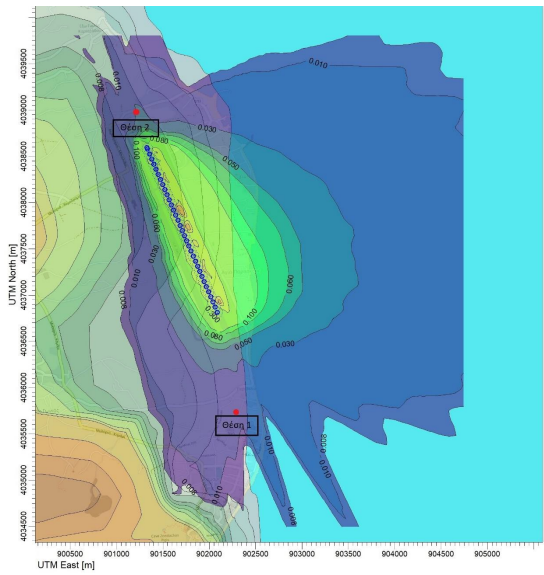
### NO<sub>x</sub>



### SO<sub>x</sub>

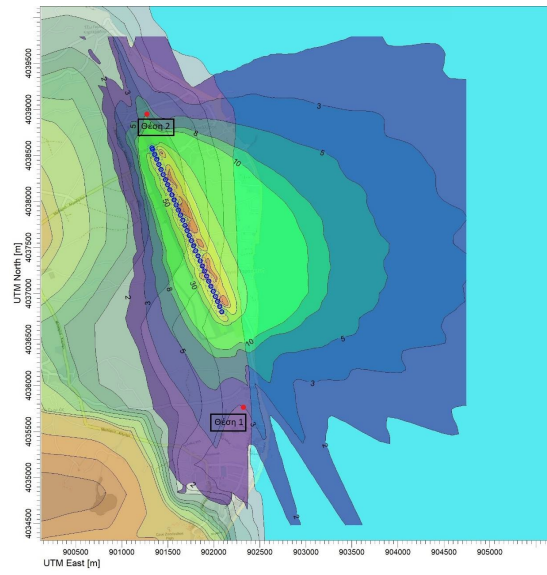


## Benzene (C<sub>6</sub>H<sub>6</sub>)



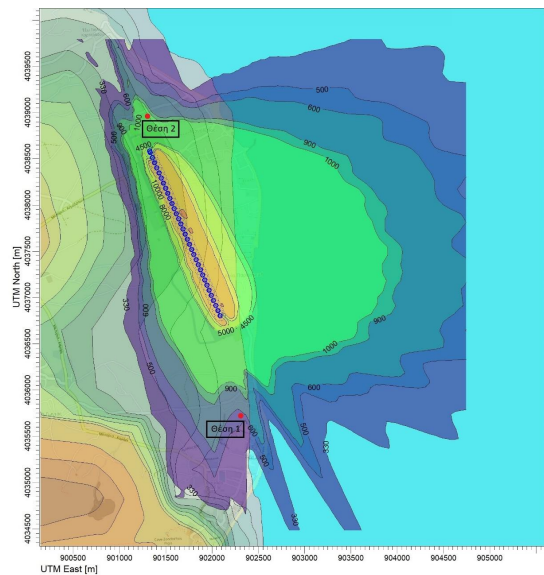
Max: 0.807 [ug/m³] at (901864.15, 4037900.40)

## CO



Max: 166 [ug/m³] at (901864.15, 4037900.40)

## CO<sub>2</sub>



Max: 32854 [ug/m³] at (901864.15, 4037900.40)

### 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

| <b>Waste</b>                                   | <b>Collection</b>                                | <b>Management/Disposal</b>  |
|--|--|---|
| Recyclables<br>(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 |
|---|-----|

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(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)

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### 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 (*Glaucopelia pratincola*), Eurasian spoonbill (*Platalea leucorodia*), Eurasian stone-curlew (*Burhinus oedipnemos*), 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*)

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# 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                              |
|                                      | Diesel (lt) 7.634,43            |
| Total annual fuel consumption        | 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 <sup>3</sup> ) | 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 <sup>3</sup> ) | 17.071,00 |
|--|-----------|

# 10. Greenhouse gas emissions & carbon footprint



Greenhouse gas emissions that were included in the carbon footprint calculation are the CO<sub>2</sub>, CH<sub>4</sub> & N<sub>2</sub>O 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 <sub>2</sub> e (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                                   |
| <b>Total (t)</b>   | <b>1.728,5</b>                            |
| <b>Kg CO<sub>2</sub>e /passenger</b>                         | <b>0,62</b>                               |

## 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 consumption 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 <sub>3</sub> , NO <sub>2</sub> , 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<sub>10</sub>-C<sub>40</sub>) (µg/l) 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

|  |
|--|
| <b>Collection and disposal:</b><br>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 |

