

Environmental Bulletin of Kos “Ippokratis” Airport (KGS)

Reference year 2018

Fraport Greece

May 2019



Version Control

Version	Revision	Description of Revision	Date
0	0		27/05/2019



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1. INTRODUCTION

Location

The “Ippocratis” airport of Kos is located in the homonym island of the Dodecanese, near the settlement Antimacheia, at a distance of 27km to the west of the capital of Kos island.

Administration

The airport administratively belongs to the Municipal Unit of Herakleides of the Municipality of Kos, of the homonym Regional Unit that belongs to the Region of South Aegeon.

Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	32649/04.11.1994
E.T. Amendment Decision Reference number	Ref. No οικ. 106859/08.08.2006
	Ref. No οικ. 197968/03.05.2012
	Ref. No οικ. 6126/16.03.2018

1.1. Airport Basic Data

Airport Basic Data					
Airport name IATA / ICAO	KGS / LGKO				
Airport position – Airport Reference Point (ARP)	Latitude: 36° 47' 41" N Longitude: 27° 05' 28" E				
Altitude:	125.66m				
Number of runways	1				
Operation hours (high season)	0:01-24:00				
Runways	Length / Width			Code	
Runway	2,390 x 45m			14/32	
Full length of parallel taxiway	N/A				
Number of taxiways	4				
Apron capacity	A	B	C	D	E
	-	-	6	-	2
Employees	High season			Low season	
Fraport Greece (FG) employees	36			35	
Employees of other companies	109			25	
Terminal					
➤ Total area (m ²)				8,400	
Other buildings and service/storage areas					
➤ RFF (m ²)				1557	
Parking Areas					
Car parking spaces				420	
Bus parking spaces				30	

Taxi parking spaces	30
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1.2. Airport Facilities

1.2.1. Fuel Handlers

Number of fuel handler companies				
Number of fuel handler companies operating at the Airport				2
Installations inside the airport		EKO	GISCO	HAFCO
Environmental Management System (EMS)	(YES/NO)	YES	YES	Not operating at the airport

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)		19	10	136
Environmental Management System (EMS)	(YES/NO)	YES	YES	YES

2. TRAFFIC DATA STATISTICS

2.1. Annual Traffic Data

Annual Traffic Data for the year 2018	
Overall Annual Air Traffic Movements ¹	20,327
Percent of increase or decrease in relation to the previous year	17.3%
Annual passenger traffic	2,666,307
Percent of increase or decrease in relation to the previous year	14.9%
Annual cargo transferred (tn)	291
Percent of increase or decrease in relation to the previous year	42.30%
Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
AT45	1428
A320	829
DH8D	640
AT75	552
AT72	328
A32A	217
AT43	116
AT46	96

¹ Military and training flights not included.

A319	75
C550	33
Other	341
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B73H	4482
A320	2817
B738	2438
A321	974
A32B	890
A319	752
A32A	424
B73W	331
B734	321
B733	286
Other	1957

2.2. High season traffic data

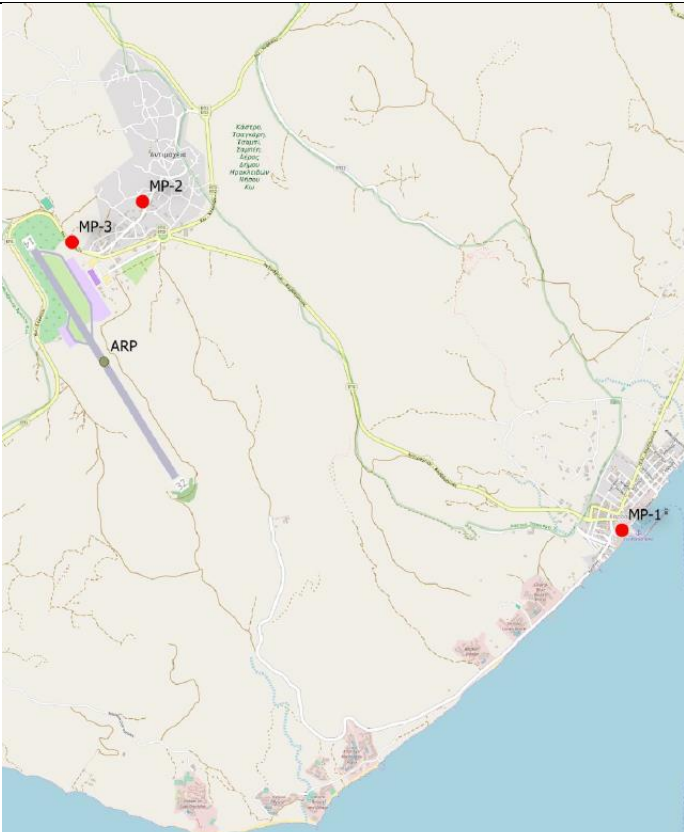
High season traffic data (June-September)	
Highest traffic month	August
Air traffic movements during the month with highest traffic	3,706
Air traffic movements daily average number during the month with highest traffic	120

2.3. Low season traffic data

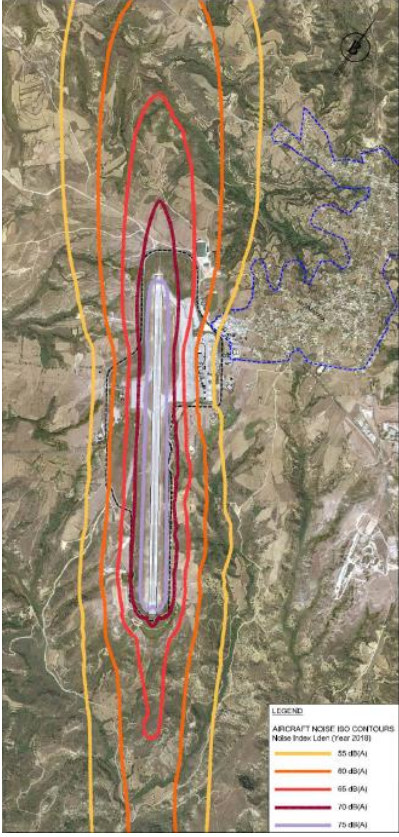
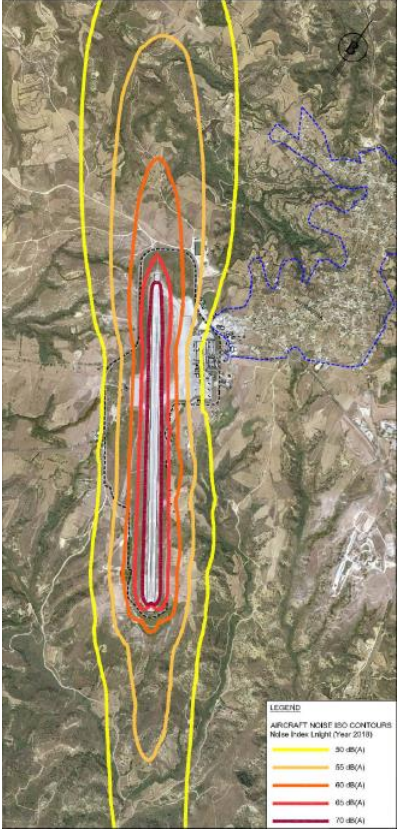
Low season traffic data (October-May)	
Lowest traffic month	March
Air traffic movements during the month with lowest traffic	173
Air traffic movements daily average number during the month with lowest traffic	12

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: 36° 46' 52" N 27° 08' 34" E	Kardamaina area, to the south-east of the runway near a small port and the beach, at the roof of the Town Hall. Affected by arrivals RWY 32 and departures RWY 14	
2) Position: 36° 48' 26" N 27° 05' 42" E	Antimachia area, east of RWY 16/34 on a school roof. Affected by arrivals RWY 14 and departures RWY 32	
3) Position: 36° 48' 15" N 27° 05' 17" E	Antimacheia area, to the east of the runway 16/34 at the balcony of the primary school very close to the fence of the airport (≈20m). Affected by arrivals RWY 14 and departures RWY 32.	
Measurement period	24.07.2018 – 25.07.2018	
Noise indicators	Lden, Nlight	
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		
Noise indicators and respective contours calculation:		Lden, Lnight
 <p>Lden</p>	 <p>Lnight</p>	
Summary of results:		
For the year 2018 no populations or buildings within residential areas were found to be exposed to noise levels higher than the limits Lden = 70 dB(A) and Lnight = 60 dB(A).		

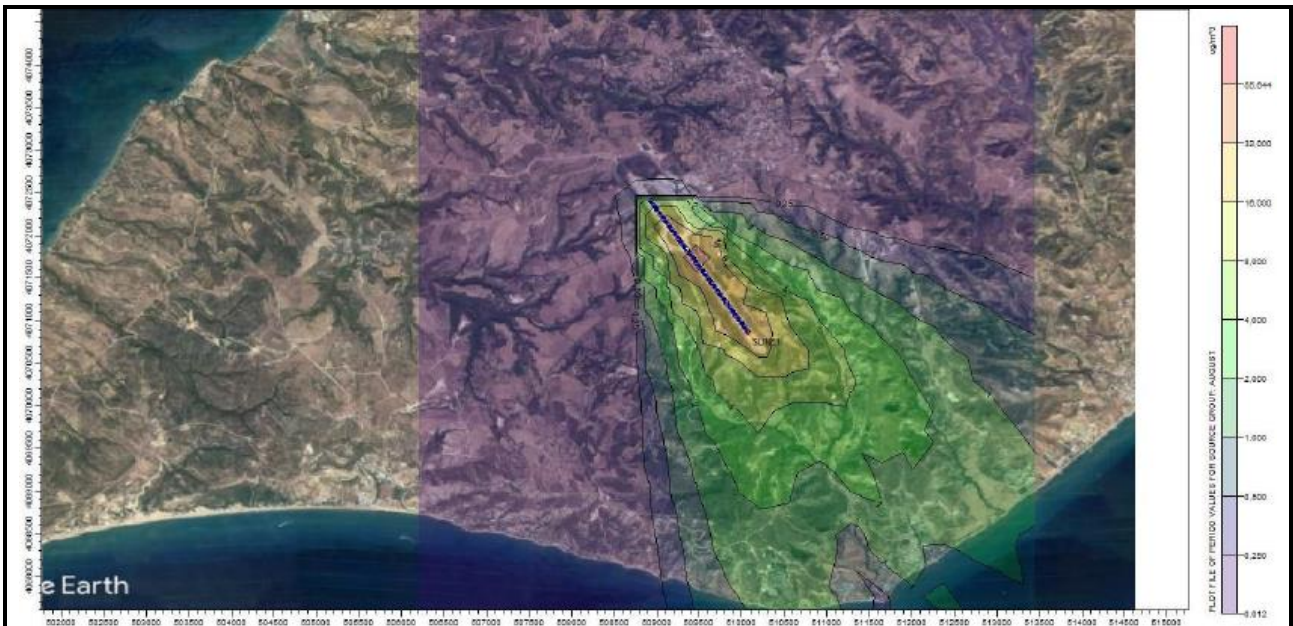
4. AIR QUALITY

4.1. Air quality measurements during the reference year

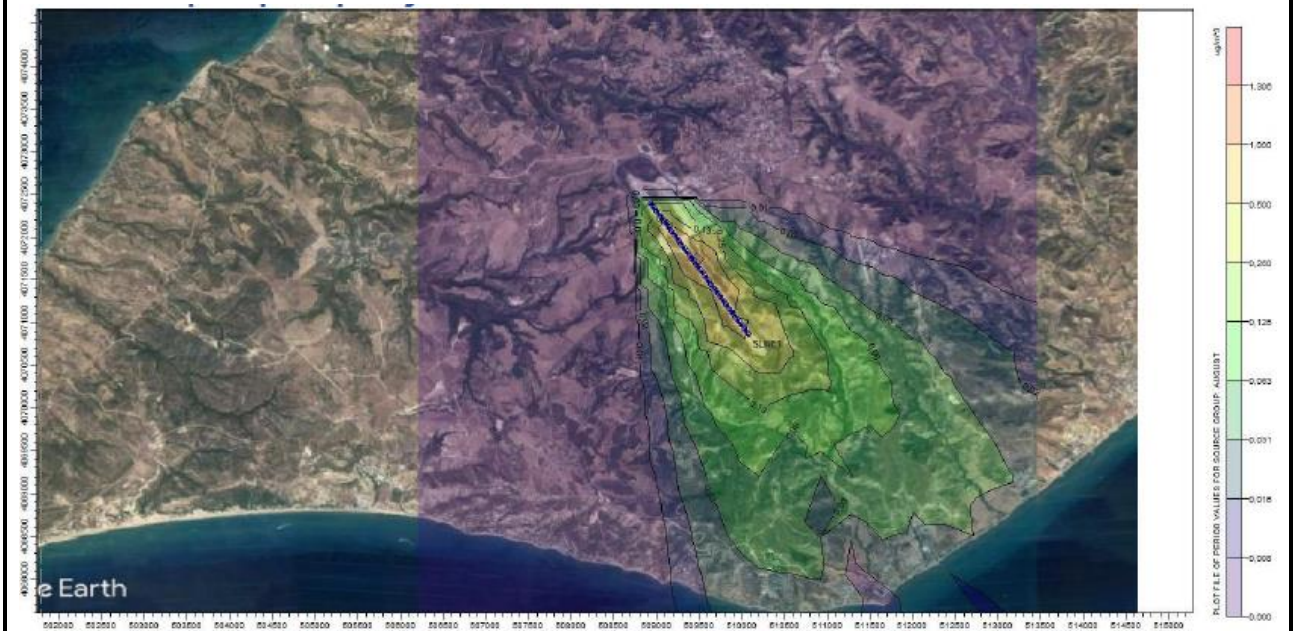
Have air quality measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
Measurement points		
		
Measurement points coordinates	Measurement points description	
1) Position: --° --' --" N --° --' --" E	At a distance of less than 500 meters, in the parking area of the airport	
2) Position: --° --' --" N --° --' --" E	Antimacheia Settlement, at a distance of approximately 1.3 km, to the north-east of the airport.	
Measurement period	19.10.2018 – 26.10.2018.	
Pollutants measured: PM ₁₀ , PM _{2,5} , NO ₂ , SO ₂ , C ₆ H ₆ , O ₃		
Summary of measurement results:		
<p>Air quality is monitored according to the airport's monitoring program.</p> <p>At points 2 & 3, no exceedance of the permissible air quality limits was observed. At point 1 minor excess is observed for suspended particles PM₁₀ which is most probably due to the proximity of construction works. The other pollutants at point 1 were measured to be within limits.</p>		

4.2. Air pollutants emission and dispersion modelling

<p>Calculation of air pollutants concentrations based on an emission and dispersion modelling software [YES/NO]</p>	<p>YES</p>
<p>Software used: Emissions and Dispersion Modeling System (EDMS) - US Federal Aviation Administration & US EPA AERMOD</p>	
<p>Pollutants concentrations and respective contours calculation: PM₁₀, NO_x, SO_x, C₆H₆</p>	
	
<p>PM10</p>	
	
<p>NOx</p>	



SOx



Benzene

Summary of results:

Air quality is monitored according to the airport's monitoring program. No exceedance of the air quality limits was observed. It is noted that the simulation of the ozone cycle is a difficult procedure the results of which are greatly dependent from the meteorological conditions and solar radiation data used in the photochemical model. The simulation of the specific pollutant is not possible.

5. WASTE MANAGEMENT

Waste management		
Waste	Collection	Management/Disposal
Municipal solid waste	Collection and emptying of garbage bins by an FG contractor inside the airport	Collection and management by the Municipality of Kos.
Recyclables	Under development due to lack of local municipal or private infrastructures	Under development due to lack of local municipal or private infrastructures
Used oils	Collection by licensed collector "Cytop S.A."	Collection and management by licensed collector "Cytop S.A."
Electric & electronic waste	Collection by alternative management system "Appliances recycling S.A."	Collection and management by alternative management system "Appliances recycling S.A."
Accumulators	Collection by alternative management system "Re-Battery S.A."	Collection and management by alternative management system "Re-Battery S.A."
Small batteries	Collection in special bins of the company AFIS S.A. inside the airport	Collection and management by alternative management system "AFIS S.A."
Used tires	Collection by alternative management system "ECOELASTIKA S.A."	Collection and management by alternative management system "ECOELASTIKA S.A."
Notes:		
<ol style="list-style-type: none"> 1. Ground handlers and fuel handlers manage all the categories of waste they produce independently 2. The total quantities of the produced waste by category resulting from all activities of the airport are recorded by Fraport Greece B 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]	NO
(If YES) Short description:	
Fauna	
Are there protected zones of fauna/birds in the broader airport area? [YES/NO]	YES
(If YES) Short description:	Streptopelia turtur (Turtle dove)

6.2. Ecologically fragile areas

The airport is located outside the limits of protected areas included in the National Protected Areas Network. Nevertheless reference is made to the direct proximity of the airport area to the Wildlife Sanctuary "Profitis Ilias-Katsoundria-Mesovouno-Ampella" with code K514. Moreover, at a distance of approximately 1km to the

east of the airport is located a Wildlife Sanctuary “Kastro-Tsampi-Sabei-Aeras of the Municipality of Herakleides of Kos island” with code K849.

7. WILDLIFE HAZARD MANAGEMENT

Wildlife hazard management	
Extent of the problem (bird species):	Birdstrikes
<i>Falco tinnunculus</i> (Kestrel)	1
<i>Corvus cornix</i> (Crow)	3
<i>Streptopelia decaocto</i> (Collared dove)	1
<i>Sylviidae spp.</i> (Sylviid)	1
<i>Larus michahellis</i> (Herring Gull)	4
Adopted measures :	
<p>The following reports have been submitted to the Department of Airports Operation (D3/B) of the Hellenic Civil Aviation Authority:</p> <ol style="list-style-type: none"> 1. “Wildlife hazard risk identification and management, Fraport Regional Airports of Greece A S.A., Reference period: 11 April-31 December 2017” 2. “Wildlife hazard risk identification and management, Fraport Regional Airports of Greece B S.A., Reference period: 11 April - 31 December 2017”. These reports provide information about: <ul style="list-style-type: none"> • Bird and other animal species management is done by FG in all airports with the exception of Aktion and Chania airports where wildlife hazard management belongs to the Hellenic Air Force • Birdstrikes or other species strikes on aircrafts data refer to the period between April 11-December 31 2017 • Birdstrikes or other species strikes on aircraft risk evaluation (strikes indicator is taken under account (birdstrikes number to the total ATMs) • Wildlife hazard management measures 	
Reference year summary results:	
<p>The number of strikes of birds or other animals to aircrafts cannot reduce the population of even endangered species, since only a limited number can be involved in a strike event (stochastic events). The loss of a limited number of animals cannot change the population status of the species.</p>	

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
January	140,185.70
February	118,075.25
March	100,024.10
April	110,541.35
May	254,280.75
June	305,492.35
July	363,419.50
August	388,876.75
September	335,508.75
October	230,097.30
November	100,754.30
December	130,158.50
Total annual electric energy consumption (in Kwh)	2,577,414.60

9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	15	
Number of firefighting vehicles at the airport	3	
Total annual fuel consumption	Diesel (lt)	13,452.65
	Unleaded gasoline (lt)	485.29

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)	-

9.4. Water consumption

Water consumption	
Period	Consumption [m ³]
January - April	1,881
May - August	2,192
September - December	6,684
Total annual consumption	10,757 m³

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)
	2018
Direct emissions from heating fuel (scope 1)	0.0
Direct emissions from fuel used for fleet vehicles (scope 1)	19.9
Direct emissions from fuel used for firefighting vehicles (scope 1)	17.1
Direct emissions from fuel used for generators (scope 1)	5.9
Indirect emissions from electricity consumption (scope 2)	1,569.6
Total (t)	1,612.6
Kilos CO₂/ passenger	0.60

Notes:

Fraport Greece B 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 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 Kos
Is sampling of the airport's water network performed? [YES/NO]	YES
(if YES) Sampling frequency:	Quarterly
Summary of results: 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 Γ1 (δ)/ΓΠ οικ. 67322/ GG 3282 B/19-9-2017 regarding the quality of human consumption water.	

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

13. GROUNDWATER MONITORING PROGRAM

Groundwater quality	
Is sampling of the airport's groundwater performed? [YES/NO]	YES
(if YES) Sampling frequency:	According to the frequency specified by the ETs.
Parameters analysed: pH, Conductivity, DO, TPH, BTEX, Heavy metals,	
Summary of results: Groundwater quality is monitored according to the airport's monitoring program. It is noted that the fuel handler companies monitor the quality of groundwater according to the Environmental terms and based on the data provided by them, no exceedances of the legislative limits occurred (Limits defined by the Ministerial Decision 1811 (G.G. 3322/30.12.2011) and the New Dutch List (2009)).	

14. SEWAGE TREATMENT & DISPOSAL

Sewage	
Sewage network to the municipal waste water treatment plant (WWTP)	Connection is expected
Autonomous airport's waste water treatment plant (WWTP)	NO*
Short description: *The airport waste water is temporarily transferred in tank trucks to the WWTP of Kardamaina following the decommissioning of the airport WWTP	
Blue water	
Collection and disposal: Transport to Kardamena WWTP by means of tank trucks.	

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