

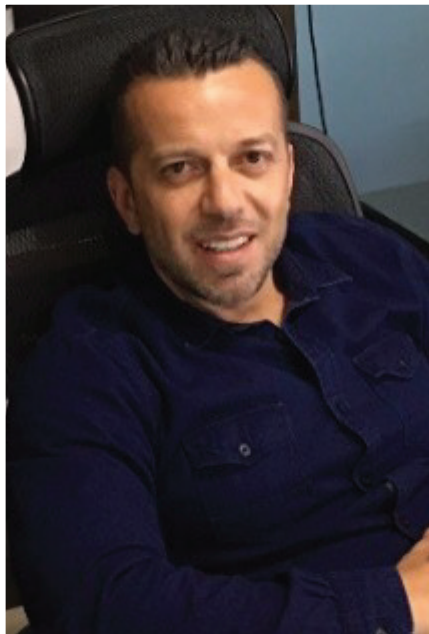


**DARNASUS**

# ENGINEERING INNOVATIONS

**AIRCRAFT WWTP**





## **Dr. Michael Psaltas**

Darnasus is an innovative company in the field of wastewater treatment that has developed a proprietary technology for the treatment of aircraft sewage effluent.



Darnasus is an engineering company specialized in water treatment technology solutions and equipment supply. We are based in Cyprus and servicing local and overseas market.

Our area of expertise is the water treatment, and more specifically, waste water biological treatment, water desalination, water filtration and storage. We supply and install turnkey plants and/or individual equipment.

Darnasus has designed, constructed and is successfully operating the aircraft sewage treatment plants at Larnaca & Paphos Airports in Cyprus since 2011

### **AIRCRAFT SEWAGE TREATMENT**

Design, Finance, Build & Operate of innovated compact facilities for the treatment of aircraft sewage effluent.

### **WATER TREATMENT**

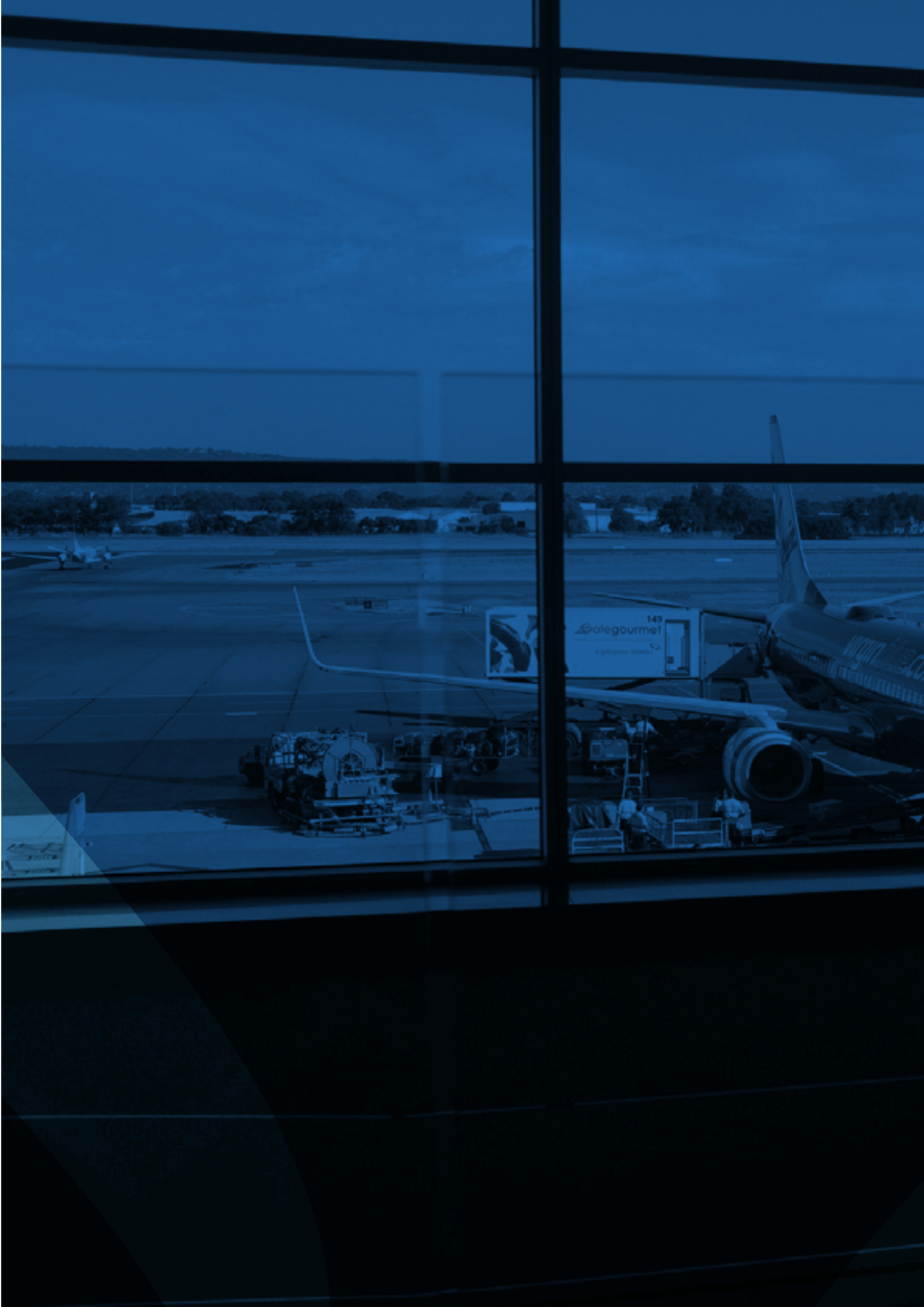
Micro & Ultra Filtration,  
Cartridge Filters, Sand Filters  
Softeners, Water Chemicals,  
UV Sterilization  
Pumps, Control Panels  
Pumping Stations  
Water Storage in  
Flexitanks

### **DESALINATION**

Brackish & Sea Water Desalination  
Onshore & Offshore Applications  
Drinking or Process Water  
Hotels, Resorts, Golf Courses  
Compact Units  
Small to Large Units

### **WASTE WATER TREATMENT**

Membrane Bio Reactor  
Treatment Units  
Aircraft Sewage Waste  
Water Treatment  
Municipal Waste Water  
Treatment Compact Units





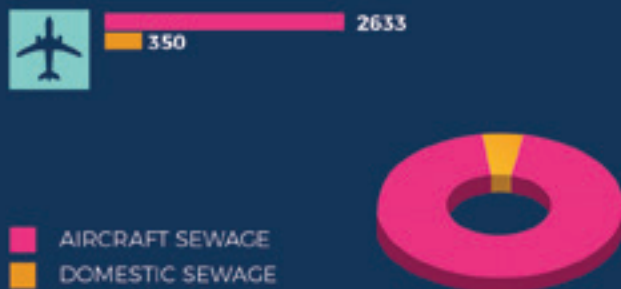


# AIRPORTS

AIRCRAFT SEWAGE TREATMENT  
PLANT INNOVATIVE TECHNOLOGY

# THE PROBLEM

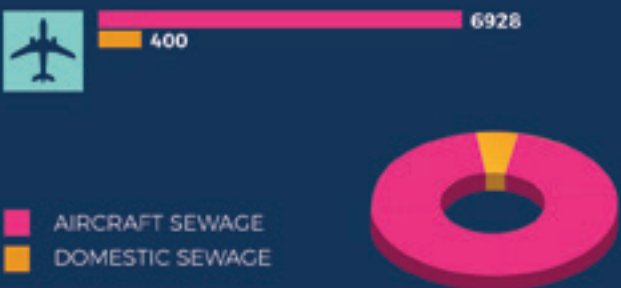
AIRCRAFT SEWAGE VS DOMESTIC WASTEWATER CHARACTERISTICS



**BOD 5**



**COD**



**TSS**



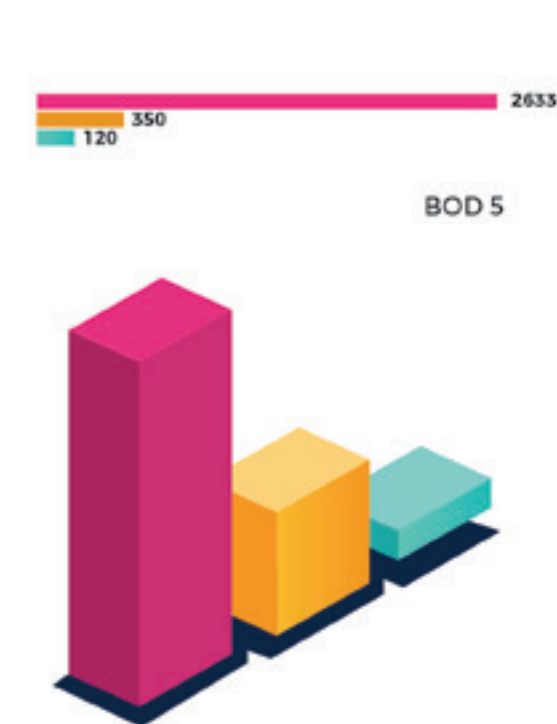
**TOTAL - N**

- Aircraft Sewage Effluent (ASE) is very concentrated in Pollutants
- ASE contains toxic chemicals (blue liquid)
- ASE requires special treatment before disposal
- ASE far exceeds sewerage acceptance limits of Local Municipality

- On site treatment with conventional biological plants is unsuccessful
- Aircraft Sewage is nothing like Domestic Sewage
- Total Nitrogen concentration is 50 times more compared to domestic sewage
- 15m<sup>3</sup>/d-20m<sup>3</sup>/d of aircraft sewage equals 1.000m<sup>3</sup>/d of domestic sewage in terms of Total-N

# THE SOLUTION

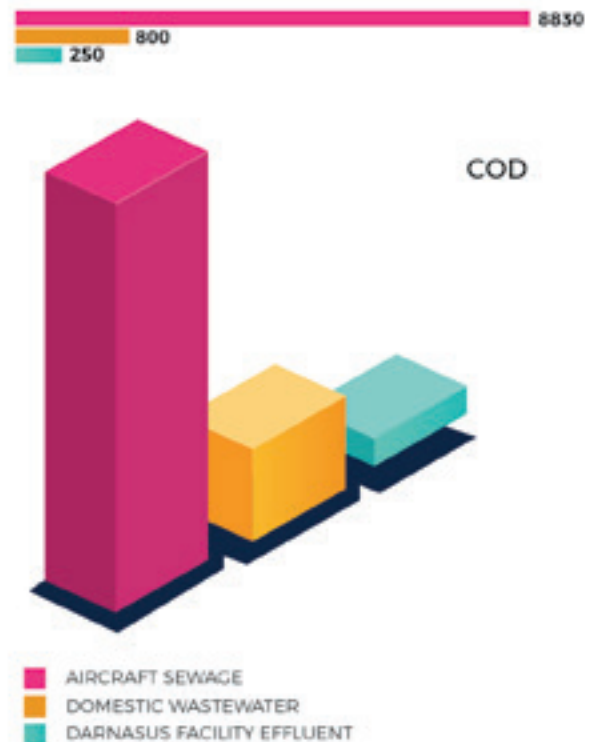
AIRCRAFT SEWAGE VS DOMESTIC WASTEWATER VS DARNASUS FACILITY EFFLUENT



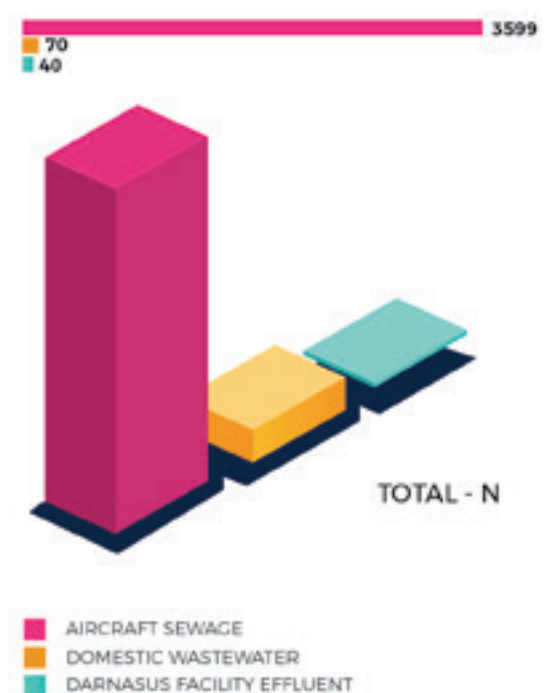
AIRCRAFT SEWAGE  
DOMESTIC WASTEWATER  
DARNASUS FACILITY EFFLUENT



AIRCRAFT SEWAGE  
DOMESTIC WASTEWATER  
DARNASUS FACILITY EFFLUENT

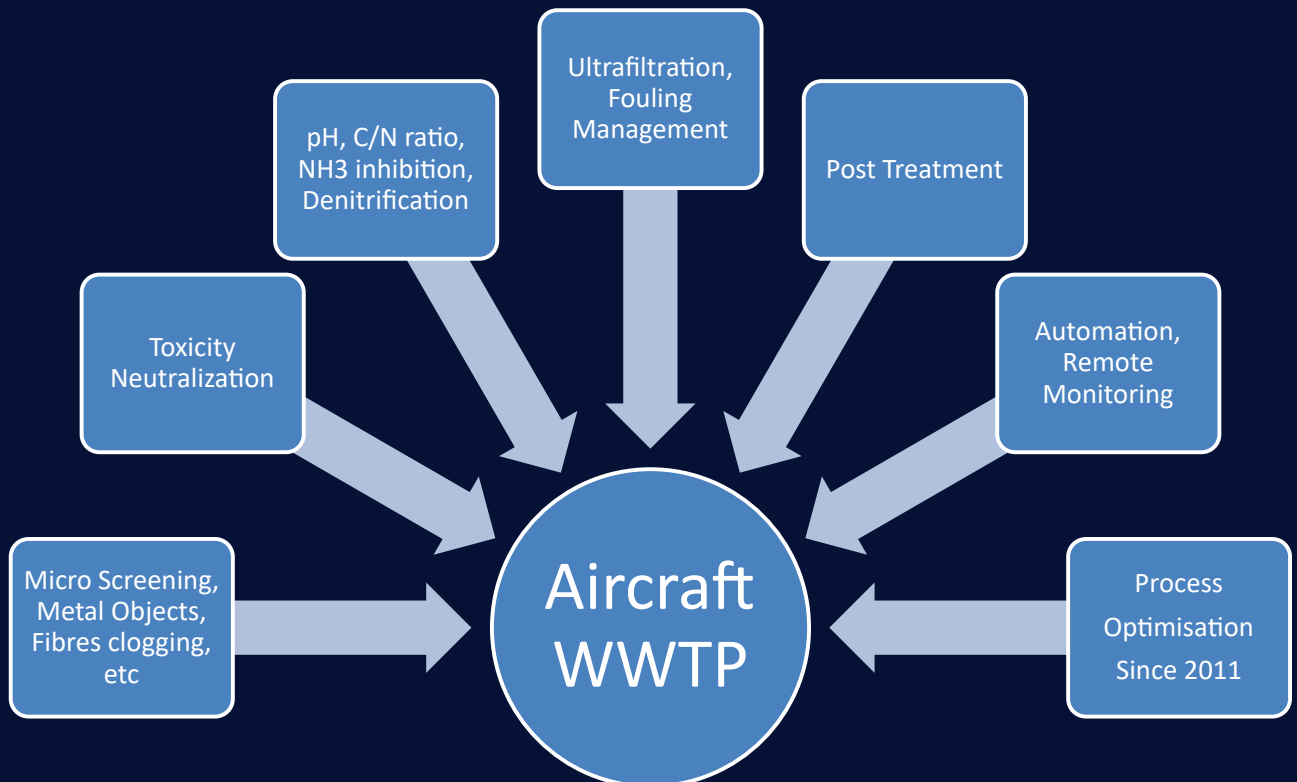


AIRCRAFT SEWAGE  
DOMESTIC WASTEWATER  
DARNASUS FACILITY EFFLUENT



AIRCRAFT SEWAGE  
DOMESTIC WASTEWATER  
DARNASUS FACILITY EFFLUENT

- Darnasus has developed and deployed 2 successful pre-treatment plants since 2011
- Darnasus provides a ZERO cost solution to airports
- A fixed tariff per aircraft accommodated
- Airports can impose additional fees
- ASE treatment is obligatory
- ASE treatment is environmental friendly
- Darnasus effluent can be safely disposed





# **PROPOSAL**



**DESIGN - BUILDING  
FINANCING - OPERATING  
REMOVE (DBFOR)**



**LONG TERM CONTRACT  
20 YEARS**



**FIXED  
TARIFF**  
PER AIRCRAFT  
ACCOMMODATED



DELIVERY  
TIME  
**10-12  
MONTHS**

**LAND  
LEASING**  
WITHIN THE  
AIRPORT AREA  
BY AIRPORT  
AUTHORITY



COVERING ANY FUTURE  
**EXTENSIONS**  
DUE TO AIRCRAFT  
TRAFFICKING



MODULAR UNITS  
FLEXIBLE FOR  
**UPGRADES**



**RELIABLE  
OPERATION**  
OF THE AIRCRAFT  
SEWAGE TREATMENT  
PLANT TO MEET  
THE DESIRED  
**STANDARDS**



**TECHNICAL EFFICIENCY  
AND FUNCTIONALITY**

**HERMES AIRPORTS LTD**

Pafos International Airport

P.O. Box 62320

8063 Pafos

Republic of Cyprus

Tel: +357 26 007000

Fax: +357 26 007100

E-mail: [info@hermesairports.com](mailto:info@hermesairports.com)

Date: 18<sup>th</sup> July 2017

Ref: GMP/14180/1.0/18072017/YH/vg

**Subject: Construction and Operation of Aircraft Sewerage Pre- Treatment Plants at  
Larnaka and Pafos International Airports**

This is to certify that DARNASUS ENGINEERING LTD has designed, constructed and as from the beginning of year 2011 is operating the Aircraft Sewerage Pre-Treatment plants at Larnaka and Pafos International Airports in a professional and efficient manner.

The work currently conducted by DARNASUS ENGINEERING LTD is in line with the Airports' relevant Standard Operating Procedures and has been proved to be satisfactory.

Throughout our experience, DARNASUS ENGINEERING LTD is cooperative and reliable with optimal response times.

Yours sincerely,



Yiannis Harpas

Senior Manager Operations Pafos Airport



