



LONDON ASHFORD AIRPORT

**PROPOSED FOUL WATER SEWERAGE
SOLUTIONS**

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QUALITY ASSURANCE

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Sewerage Solutions

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1.0 FOUL WATER SEWAGE SOLUTIONS OVERVIEW

1.1 Introduction

The foul water drainage system at London Ashford Airport (LAA) comprises a septic tank sewage treatment system for the main buildings and a separate cesspool system relating to the air traffic control building on the airfield.

The discharge from the septic tank runs via soakaway distribution pipework into the Dengemarsh sewer, an open surface water dyke containing free-flowing surface water via a reed bed. This discharge is pursuant to a discharge consent from the Environment Agency.

The air traffic control building on the airfield utilises a separate cesspool drainage system that requires tanker-emptying on a monthly basis.

LAA has confirmed that the current on site septic tank system has the capacity to cater for 300,000 passengers per annum (ppa). The Environment Agency discharge consent that LAA holds for the effluent discharging from this system covers this capacity (as confirmed later in this report).

LAA instructed a Senior Public Health Engineer from Parsons Brinckerhoff to carry out options overview for the disposal or treatment of any additional foul water produced from an occupancy in excess of the current sewage treatment plant capacity, being the additional foul water produced from a further 200,000ppa in the event that LAA increases its throughput from the existing septic tank capacity of 300,000ppa to 500,000ppa.

This Report should be read in conjunction with Chapter 7 of the 2006 Environmental Statement for the Terminal Building Application and supersedes Volume 6, Appendix 7 of the 2008 Supplementary Information.

2.0 FOUL WATER SEWAGE VOLUMES

2.1 Estimated current site foul outflow calculations

CIRIA PR72 has been used as a guide to quantify foul flow per person per day. CIRIA PR72 figures can be related back to the Royal Commission on Sewage Disposal figure of 40 gallons (180 litres) per occupant per 24 hours dry weather flow. CIRIA PR72 is used as a guideline by local authorities when quantifying the foul water discharge per person per day when assessing the size and storage requirements for foul water packaged sewage treatment plant and pumping stations. Building Regulations require that all foul water packaged pumpsets without a backup power supply require 24 hours storage.

As airports are not expressly included within CIRIA PR72, we have adopted the daily figure for "offices and / or factories with canteen" which is 90 litres/day per person and divided it by 50% to reflect an average time on site per passenger of 4 hrs. This is considered a generous figure considering domestic UK passengers may only need to spend as little as one hour on site before and after taking a flight.

This reduced figure of 45 litres per person per day equates to 0.315m³ (315 litres) foul water per passenger per week which compares closely to the current average figures of 0.35m³ foul water per person per week highlighted in the original Environmental Assessment:

Current estimated foul water Volumes 300,000 ppa

Passengers per day (300,000 pa / 12 / 30)	<u>834</u>
Staff per day 180	180
Approximate average total daily staff population	<u>180</u>
Volume of foul water discharge per day (passengers) $834 \times 45 = 37,530$ litres (37.5m ³)	
Volume of foul water discharge per day (staff) $180 \times 90 = 16,200$ litres (16.2m ³)	
Total maximum estimated volume of foul water discharge per day = 53,730 litres (53.7m ³)	

With this figure we can approximate a foul water quantity (albeit averaged out over the year) of 53,730 litres per day (53.7m³) for assumed average airport population with 300,000 passengers per annum, which is within the existing parameters of the airport's discharge consent from the Environment Agency and within the capacity of the existing septic tank treatment facility.

2.2 Calculation of foul sewerage produced by additional 200,000 ppa

Increasing the site occupancy from 300,000 ppa to 500,000 ppa would give rise to the following additional foul water:-

Estimated additional foul water volumes for additional 200,000 ppa

Additional passengers per day (200,000 pa / 12 / 30)	<u>556</u>
Additional staff per day 120	120
Approximate average total daily staff population	<u>120</u>
Volume of foul water discharge per day (passengers) $556 \times 45 = 25,020$ litres (25m ³)	
Volume of foul water discharge per day (staff) $120 \times 90 = 10,800$ litres (10.8m ³)	
Total volume of foul water discharge per day = 35,820 litres (35.8m ³)	

3.0 ADDITIONAL FOUL WATER EFFLUENT DISPOSAL OPTIONS

In order for the airport to increase its passenger capacity from 300,000ppa to 500,000ppa, there are a number of options, including two options which have been evaluated as summarised below:-

Foul Effluent disposal method	Notes
Option 1 - Connection to Southern Water Foul Sewer.	<p>Due to distances and levels, foul water from LAA to a Southern Water sewer will most likely need to be pumped. This would be carried out by the incorporation of a self contained packaged pump chamber</p> <p>Subject to discharge flowrates, consideration could be given to removing all site foul water via pump chamber.</p>
Option 2 - Installation of dedicated Cesspools	Regular emptying will need to take place with monitoring and inspection regimes similar to current on site arrangements with the cesspool serving the control tower

Either of these options presents realistic ways of ensuring a satisfactory addition to the existing foul water treatment system, in conjunction with discussions with the Water Authorities, to cater for the development increase proposals from 300,000 to 500,000 ppa.

3.1 Option 1 Pumping of Additional foul effluent to Southern Water Sewer

Parsons Brinckerhoff applied for a level 1 capacity check from Southern Water to establish a suitable foul water sewer within proximity of LAA. The results of the capacity check identify that the nearest foul sewer, manhole 7401, is located in Poplar Lane, Lydd. Southern Water have identified sewer connection (manhole 3002) as having sufficient capacity to accommodate foul water flows of up to 5 l/s. This has been estimated to be sufficient to serve the entire airport site if required. The new pumped sewer will connect into the public sewer under the Water Industry Act 1991.

3.2 Option 2 Dedicated Cesspools

Given that an additional 35.8m³ of foul water would be generated per day by an increase in throughput from 300,000ppa to 500,000ppa, we can establish that the use of cesspools to accommodate the increase in passengers is viable. This option would require 10 x 25m³ tankers per week for the additional 200,000 passengers per annum.

It is proposed that the airport invests in weekly emptying of the cesspools, which would require the cesspools to be sized for 10 days storage.

Additional volume of foul effluent per day litres	35,820
Storage required for proposed 7 days (35,820 x 7) litres	250,740
Storage required for proposed 10 days (35,820 x 10) litres	358,200
Estimated cesspool volume	360m ³

3.3 Tankering

Following discussions with the current sewage removals contractors (Sucklifts) it was confirmed that an increase in effluent removal was viable in line with anticipated figures for an airport increase in passenger traffic of 200,000 ppa.

Subject to any requirements from the local authority, foul effluent would be taken to either Ashford, New Romney or Lydd treatment works.

4.0 CONCLUSION

The calculations within this report supersede those within Appendix 7 of Volume 6 of the August 2008 Supplementary Information. Both solutions presented for the additional foul sewage created from increasing passengers per year from the existing capacity of 300,000 to 500,000 are workable. It is recommended that should planning permission be granted for the terminal building planning application, an appropriate planning mechanism be attached to the permission requiring the submission of details to be approved by the planning authority (in consultation with the Environment Agency) in respect of the foul water generated by the additional 200,000ppa from the existing capacity of 300,000ppa.