Case Study

London Luton Airport

SDS installs groundbreaking new stormwater treatment system

SDS Systems
SDS GEOlight® Attenuation Tanks, Aqua-Swirl® Separator and Flow Controls.

SDS Customer
Whitemountain.

Client
London Luton Airport Operations Limited.

Project
£110 million redevelopment and extension of Luton Airport's facilities and services over the next 5 years.

Purpose
To provide the infrastructure required to meet the Airport's recent and planned growth.

Brief to SDS
To provide flood risk free car parking facilities to users of the Airport.

Timing
Phase 1 of the Airport's new development programme commenced in 2016 and has included the resurfacing and expansion of car parking areas, extensions to buildings and the construction of a new dual carriageway.

Project Background Information
London Luton Airport Operations Limited (LLAOL) commissioned Veolia Water Projects Ltd, supported by Mott MacDonald, to develop a surface water management strategy which would address the prerequisites to achieve planning consent for the airport's further expansion.

Project Objectives
To effect the fast and efficient removal of surface water from medium term car parking facilities and ensure its safe dispersal to natural water receptors.

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Project Requirements

To ensure that the Airport complies with all current and anticipated future environmental regulations, through the prevention of surface water and groundwater pollution in accordance with the objectives of the Luton Local Plan and the National Planning Policy Framework.

Surface Water System Requirements

In addition to a known flooding problem that already existed on the main access road to and from the airport, the main impact of this first phase of development has been the increased risk of flooding caused by multiple new impermeable areas. The removal of pre-existing soakaways, installation of additional piping and the diversion of manholes required that a new SuDS system should not only prevent flooding but also protect habitat and amenity by improving water quality.

SDS Product Features

Water is first cleansed by each of two SDS Aqua-Swirl® hydro dynamic vortex separators. The devices are largely of high strength HDPE construction, providing a light weight and low cost alternative to the concrete devices which until now have been the only option available, and enabling them to be lifted and manoeuvred easily into position by excavation plant already in use on site without the need for heavy machinery.

In the UK, SDS Aqua-Swirl® separator is unique in achieving recognised certification (in the form of US NJDEP/NJCAT) having been proven to achieve reliable and sustainable performance in both field and laboratory based testing programmes.

Capacity

Two SDS Aqua-Swirl® separators are designed to remove approximately 90 to 95% of the total pollutants in the surface water runoff volume. Five SDS GEOlight® geo-cellular attenuation tanks have the combined capacity to store up to 4,277m^3 of treated water.

Issues Overcome

Latest SuDS guidance requires planners to incorporate the management of water quality into their designs, through specifying proprietary devices that enable proactive scheduled maintenance to be carried out. SDS Aqua-Swirl® has the capacity to limit the amount of silts and attached pollutants from building up in the upper layers of a SuDS system and to mitigate against the ability of pollutant bioaccumulations to remobilise in the event of a surge of water, such as after a torrential downpour.

As well as providing storage and flow balancing to deal with contaminated surface water runoff, the Airport's drainage scheme was also required to include methods to manage acute and chronic pollution events. The measures that have been adopted are based on sustainable mitigation, which balances environmental, social and economic factors; hazardous substances are prevented from entering controlled waters, whilst non-hazardous substances may enter but should not cause pollution.

Brian Fegan, Site Engineer, Whitemountain, said: *"The installation of a system comprising a device of concrete construction, until now our only option, would have required the use of a 350 tonne crane and most likely, due to the massive inconvenience not just to us but to the airport and local road network, would not have been feasible at all. The Aqua-Swirl's® versatility meant that we could design the devices for the specific requirements of this site, without the need for any bends in piping, whilst their inherent strength allowed us to save on time and cost through not requiring a concrete surround. Their compact size and small footprint, together with the lifting supports and straps provided, meant installation was very quick and simple and final placement could be done manually; we needed only a single day in which to dig, position, connect up and back fill."*