

SURFACE-WATER MANAGEMENT



East Midlands Airport covers an area of around 3.49km² (square kilometres). With large areas of hard surfaces (for example, tarmac and concrete), and a wide range of activities, the site presents challenges for dealing with surface water.

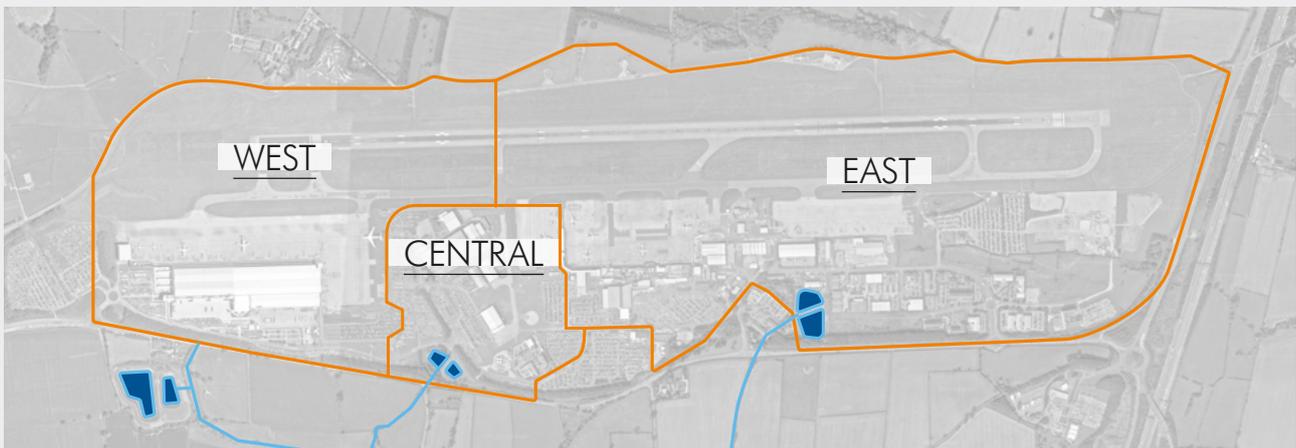
One of the main challenges is controlling ice on these surfaces and the de-icing agents used in the winter. In the year from April 2018 to March 2019 we used 289m³ (cubic metres) for de-icing the ground and aircraft.

We need to use these chemicals for aircraft to be safe, but when they break down they reduce the amount of oxygen in a watercourse such as a river or reservoir. So it is essential that we manage how we deal with surface water. We have a complex drainage system that covers the whole site and can divert water run-off from buildings, roads, runways, aircraft parking stands (aprons) and taxiways (the roads connecting parking stands to the runway) into large 'balancing' reservoirs.

All water discharged from the airport site is continuously monitored and our surface-water system makes sure that de-icing materials are prevented from entering local watercourses.

The East Midlands Airport surface-water system is split into three catchment areas.

- **Eastern:** 102 hectares
- **Central:** 27 hectares
- **Western:** 109 hectares



The airport holds an 'Environmental Permit' from the Environment Agency, who regulate the discharge of water from the airport. The permit sets water-quality restrictions which the airport must meet when discharging water to the local watercourse. An important restriction is on

the biological oxygen demand (BOD) level of the water.

The airport also has a permit for water which doesn't meet the required quality, particularly the BOD level, for it to be discharged to the local watercourse. That permit allows us to discharge up to

a maximum amount of 25 litres per second of water with an acceptable BOD level, known as the BOD load, to be discharged into the River Trent each day so it can be suitably diluted. The Environment Agency tell us the acceptable BOD load each day.

The permit allows this discharge to the River Trent only from November to April, when the flow in the river is higher.

To make sure we meet the requirements of the permits, surface water is managed by an advanced computer system. Within each of the three catchment areas, water is directed to a central point where the water-management system monitors water quality. At this point the system directs water to one of two reservoirs in that catchment area. If de-icer is detected, water is diverted to the 'winter pond' for the catchment, where it is treated. If no de-icer is detected, water is diverted to the 'summer pond' for the catchment.

Pond capacities:

- Eastern winter pond: 28m litres
- Eastern summer pond: 28m litres
- Central winter pond: 9m litres
- Central summer pond: less than 9m litres but the exact volume is unknown
- Western winter pond: 63m litres
- Western summer pond: 18.5m litres

The outlet pipes on the three summer ponds stay open at all times but are designed to restrict discharge rates when there are large volumes of surface water. In an emergency, each outlet can be closed to contain any spillages.

Water in the winter ponds is automatically controlled by the computer-management system to make sure the water-quality limits set by our Environmental Permit are met. The water is aerated, which helps to break down the de-icer, prevents the water from becoming stagnant and reduces the BOD level. If the BOD level of the water in the winter pond is less than 15mg per litre, it is released into the summer pond for the catchment, and water above 15mg per litre stays in the winter pond for the catchment.

Water from the central and eastern winter ponds is pumped across the airport to the western winter pond, which is the largest. Water quality in the western winter pond is monitored to make sure the limits that control how much water can be pumped to the River Trent are met.

As de-icer naturally breaks down, there are occasions when water in the winter ponds may, after a period of time, meet the water quality standards necessary to be discharged into the local watercourse.

We have installed new runway equipment which helps us detect freezing temperatures on the runway and provides us with information that helps us know when we need to de-ice. This investment allows us to operate more effectively.

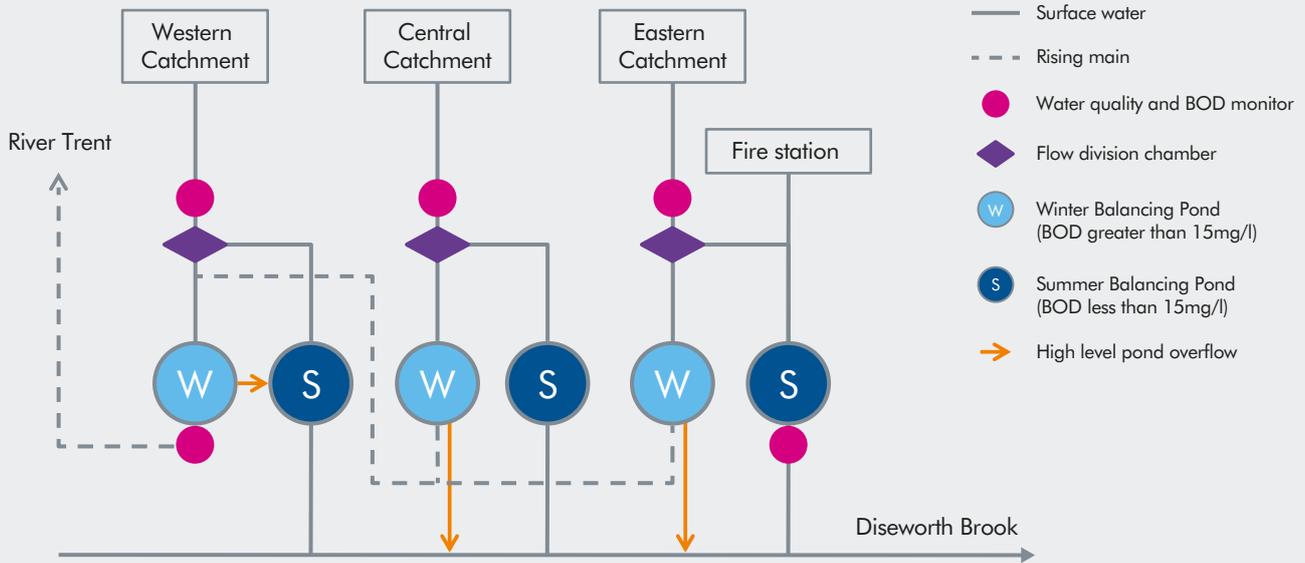
Cleaning activities

The airport needs the correct permits in place to carry out cleaning activities for vehicles and aircraft. These activities take place in specific locations which drain to the sewer, and the water is treated by Severn Trent.

We are constantly reviewing the cleaning and de-icing chemicals we use and in recent years we have reduced the organic content of the major aircraft-cleaning chemicals by 50 to 80%.

We continue to strive to use materials which have the least impact on the environment.

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All the information in this fact sheet was correct in July 2021. This information can change at any time without notice.