



Case study 5

Irrigating Adelaide's Airport for a heat reduction trial

SA Water

This case study showcases

water businesses delivering more than just water and sewerage provision

Problem

With increased summer and autumn temperatures in Adelaide expected to occur as a result of climate change, investigations are occurring as to how these impacts may be best managed. Impacts of a hot and dry landscape at an international airport can include load restrictions of aircraft (high air temperature reduces the amount of weight a plane can carry), higher energy use in cooling towers in passenger terminals, dust generation from areas of bare earth, increased bird activity related to the bare earth (easy access to seeds and invertebrates), and increased erosion.

Solution

One of the more passive methods for heat reduction is through the irrigation of open space and green infrastructure to enhance the evapotranspiration of the vegetation and hence cool the air in the vicinity of the irrigated zone. A two year trial has been established at the Adelaide Airport to study the possible temperature reductions that can be achieved through irrigation of open space. The overall project site covers around 30 hectares, of which 4 hectares is irrigated with stormwater that has been captured and stored using the adjacent aquifer storage and recovery (ASR) scheme.

The aim of the trial is to quantify the temperature differences from open space irrigation and use this data to model the potential operational energy savings (in adjacent buildings) and aircraft operational fuel efficiency and safety. The project also aims to capture information in other critical areas to airport operations such as improved aesthetics, reduction in soil erosion and resultant dust, reduction in high risk bird populations, reduction in airfield maintenance requirements and the potential for primary production crops.

During the first year of the trial the key finding was that the average temperature difference between the irrigated and unirrigated area was 2.4 degrees. The next stage is to quantify how this temperature difference will benefit airport operations. Expansion to the entire airside area would utilise recycled water. This would enable beneficial reuse of the recycled water which, if not used for irrigation or industrial/commercial use, is discharged to the marine environment.

Business case

The actual business case has not yet been formalised as it is still in the data collection and collation phase. It is assumed that the financial and non-financial benefits that could include energy and fuel savings, reduced bird and dust risk. The production of crops which will provide the same temperature reduction and associated benefits also result in ability to gain income from the irrigated vegetation. This would demonstrate a good example of a circular economy.

Key drivers

To our knowledge this type of trial has never been conducted at a national or international airport for the purpose of temperature reduction. The project also gives SA Water the opportunity to undertake a trial of this nature in a controlled urban setting. The information gained from this trial can also be transferred to other settings where a trial of this nature would be difficult such as urban parks and sportsgrounds.