



## Water resource regulations

There is a growing shortage of water to satisfy the UK's increasing demands, particularly in the sports and leisure sectors. Tony Hanson explains why effective water management is essential

**BY TONY HANSON, ENVIRONMENTAL SOLUTIONS INTERNATIONAL LTD**

**T**he opportunity to discuss the UK's changing water resource availability with SALTEX Learning LIVE delegates – together with Dr Robin Price, director of quality and environment at Anglian Water, and Dr Owen Turpin, water resource regulation manager at the

Environment Agency – was an important milestone in sharing our joined-up approach to effective water management across the sports and leisure sectors.

Within this session, we worked together to highlight the concerning fact that there is simply not enough water

to satisfy the UK's competing and growing demands. We also shared information about Environmental Solutions International's two-year project, funded by the water companies of England and Wales, which was set up to help the sportsturf and leisure sector transition towards the use of sustainable water sources in the face of climate change, population growth and high consumption (per capita).

**RUNNING SHORT**

Our combined session covered concerning findings from the Environment Agency's recent National Framework for Water Resource (NFWR) research project, which reviewed water use and the impacts of longer drier weather patterns, more intense rainfall events and the increasing needs of growing populations in areas already experiencing 'water stress'.

Indeed, planning applications for housing developments around Horsham in Sussex, for example, have already been halted at the request of Natural England due to the development's potential impact on river basins regarding the need for increased abstraction. This example is proof that new housing developments in some areas are now required to achieve 'water neutrality', highlighting the importance of water availability as a limiting factor for many

**WE COULD EXPERIENCE A WATER AVAILABILITY SHORTFALL OF UP TO FOUR BILLION LITRES PER DAY BY 2050 IF WE DO NOT TAKE ACTION NOW**

ALAMY



**Above: Pitch irrigation improves playing conditions**



**Left: Grounds staff attempt to ameliorate the effects of waterlogging**

lifestyle activities. Horsham was the first area to restrict planning in this way, but this could be the shape of things to come as we have to satisfy the demands of population increase, record consumption and climate change.

The Environment Agency's NFWR research findings also highlight the fact that we could experience a water availability shortfall of up to four billion litres per day by 2050 if we do not take action now.

**CHANGE OF FLOW**

In his address to Learning LIVE delegates, Dr Turpin highlighted the UK's changing weather patterns, which are causing more frequent droughts and floods. These

are leading to challenges in supply, which are having an impact on river flows, reduced groundwater levels and water quality – particularly during heatwaves. Heavier rainfall events are leading to increased surface water flooding.

To help solve this issue, in 2021 the Environment Agency consulted on changes to the Abstraction Licensing System, which moved away from open-ended or common-end dates and incorporated abstraction into the permitting system. This will also allow the granting of permits to link to river basin management plans and help to achieve the requirement needed to

improve water quality. Both these targets – outlined in the Environment Act 2021 and the Government's 25-year Environment Plan – will be challenging ambitions for the agency.

The outcome of this NFWR research led five regional water resource groups, covering England and Wales, and gave them responsibility to create regional water resource plans that fitted within the NFWR projected water availability and demands.

The groups' remit was broad, allowing consideration to demand a reduction in usage; water reuse; increased storage; the creation of water networks (taking water from areas where there is surplus as source for areas with excess demand); aquifer recharge (water that moves from the land surface or unsaturated zone into the saturated zone); and reverse-osmosis plants (the conversion of seawater to

**THE SPORTSTURF SECTOR COULD USE RAINWATER FROM HARD STANDING OR FRENCH DRAINS, OR FILTERED GREY WATER IN PLACE OF STANDARD MAINS SUPPLY OR ABSTRACTION**



Climate change is wreaking havoc on our sports surfaces, ranging from extreme drought (main image) to more frequent flooding events (left)



drinking water), which are very energy intense and expensive.

Dr Price also shared the water companies' perspective, which includes the collaboration between each water company and regional water resource groups during various consultations within the development of regional water resource plans.

**SOURCING SOLUTIONS**

Many of the water companies have traditionally sourced their water from abstraction – either surface or ground water – resulting in the need to work within the emerging supply plans, so consequently the water companies have developed their water resource management plans to align with the emerging regional water resource plans.

ALAMY

As the need for changes to water use becomes more important, water companies are also seeking opportunities to find alternative water sources for certain usage needs, including regular irrigation of sports playing surfaces. The water companies refer to this water use as 'discretionary', which means the supply doesn't require mains drinking water, so less-treated alternatives could be used instead.

The Water Resilience Project has highlighted the multiple water supply

options to suit the needs of the sportsturf industry. For example, this sector, and indeed many areas of the leisure sector, could use rainwater from hard standing or French drains, or filtered grey water in place of standard mains supply or abstraction.

**WHAT'S NEXT?**

Environmental Solutions International is working on water-company-funded projects that will help to highlight the use of alternative sources of

irrigation water – including motorway runoff and surface water runoff, which create problems with combined sewer overflows and sewage discharge; and naturalised onsite water storage and filtration. These integrated water management measures reduce demand conflict, flooding, mains water and unsustainable abstraction – and, importantly, improve water quality, biodiversity and ecology.

From a sports facility's point of view, having full control of your water usage will become essential in the coming years to reduce the impact of Temporary Use Bans, Non-essential Use Bans and section 57 notices that will increasingly be used as demand increases and the climate continues to change.

**■ For more information, the water companies have provided a solution for the leisure sector via the Leisure Operator Water Charter. Visit: [forms.office.com/r/tZV2Duks16](https://forms.office.com/r/tZV2Duks16) to get access to the Water Resilience Plan template, which will guide you through the process of finding alternative water sources in your area to help protect your sports facility's future.**

# Water management solutions

How water and its management could impact the design, construction and operation of sports facilities now and into the future

DR CHRISTIAN SPRING, STRI GROUP PRINCIPAL SCIENTIST



Often our focus when we are designing, building and managing sports surfaces is on their form, function and performance. However, resilience of the playing surface to usage and environmental conditions have also always been important considerations – and recently they have become increasingly critical.

With the significant challenges of tightening legislation, climate change and financial pressures, the need for sports facilities to meet these changes to ensure their continued operation is vital. We should therefore see them as opportunities and perhaps remove the shackles of convention to enable us to look at novel and innovative solutions.

## INTEGRATED APPROACH

Water and its management will impact the design, construction and operation of sports facilities now and into the future, as water is vital for plant life and is essential for producing safe and effective playing surfaces.

How sports facilities source and use water is coming under increasing pressure, and our industry needs to act now to prevent long-term and systemic issues. The good

news is that this is happening, but the pace of roll-out needs to be increased.

When developing sports facilities, drainage has often been seen as the priority, the aim being to shift water as quickly as possible away from playing surfaces and into the existing drainage network. Over the years, there have been greater restrictions on the volume of water and how it is discharged from sites. This has meant that, as an industry, we have had to look at a more integrated way to manage water on our sites. Drainage is important, as is irrigation supply.

Our sports facilities not only involve pitches, they often have to integrate playing surfaces, buildings and car parks into a wider urban environment. How we deal with the water on our facilities is a cornerstone of flood prevention. This is because the surfaces at these facilities offer the opportunity to attenuate water and maximise natural infiltration into groundwater. They can also be used to store rainwater, as well as take other wastewater, such as pitch drainage and grey water, for reuse in, for example, irrigation water. Some treatment may be

needed, but in periods where there is prolonged dry weather and water scarcity is increasing, water use efficiency is essential.

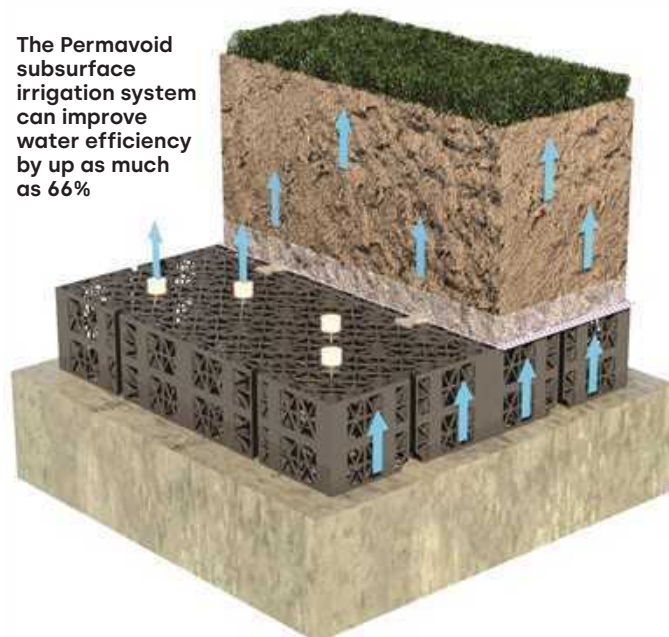
## IMPROVING EFFICIENCY

There are various solutions that are already in existence and used in other industries that can help with integrated water management. Over the past eight years, research at STRI Group on a subsurface passive irrigation system using a geocellular crate called Permavoid has demonstrated that it can be effectively integrated into pitches.

Research has shown that this closed-loop, passive irrigation system under drought-prone, warm-season turf can improve water efficiency by on average 33 per cent and up to 66 per cent in dry spells. When linked with water capture and reuse, it has to be part of the future.

When managing our turf surfaces, how water is applied and getting the maximum value out of every drop is critical. Making sure irrigation systems are working effectively is a big part of this, as is ensuring that we are applying water in a way that allows plants to get maximum benefit. The use of wetting agents well

The Permavoid subsurface irrigation system can improve water efficiency by up as much as 66%





Managing water on our pitches must be on our sustainability radar

## HOW WATER IS APPLIED AND GETTING THE MAXIMUM VALUE OUT OF EVERY DROP IS CRITICAL

in advance of dry periods to help maximise water storage can be highly beneficial.

Making sure the soil/rootzone is ready to accept water and that it won't run off when rain does come is just as important.

Solutions don't have to cost the Earth, but they do have to be effective and scientifically proven. Yes, it is sometimes easier to integrate solutions into a site during

design and construction, but retrofit renovation work can also be highly effective. Relatively small changes can make big impacts.

### FINDING SOLUTIONS

No solution is going to be cheaper in the first instance than doing nothing. However, doing nothing is not a sustainable option. If grass does not have the correct level of water supply,

it will not survive – and consequently the sports surface will not be viable.

Climate change and its impact on not only water supply and rainfall patterns, but also on the length of the growing season and plant demand, are real and are already being felt.

It is essential that we plan now and implement solutions to ensure that our facilities can continue to operate and be financially viable, while safeguarding the ability to allow everyone to play sports now and into the future.

■ If you want to understand the impact of climate change in your location and water management solutions that may be relevant for your facility, take a look at: [golfcourse2030water.com](http://golfcourse2030water.com). This has been produced as part of the R&A's Golf Course 2030 programme and while the focus is on golf courses, the implications of climate change and the solutions available are relevant for all sports facilities.