

Case Study

Plymouth Argyle Football Club

Home Park stadium repurposes SDS attenuation system for pitch irrigation



SDS Systems

SDS Intellistorm® Smart Rainwater Recovery System.

Client

Pennon Water Services.

End Customer

Plymouth Argyle Football Club.

Project

Home Park Stadium, Plymouth.

Purpose

To make a positive impact on the environment and help reduce the cost of the Club's water utility bill.

Brief to SDS

To design and implement a rainwater recycling system that will reduce the Club's reliance on mains-supplied potable water for pitch irrigation.

Timing

The recycling system was installed in October and November 2023, with operations starting in January 2024.

Project Background Information

Home Park Stadium, home to Plymouth Argyle FC, serves as a key part of the Club's ambitious sustainability plan, which aims to achieve net zero greenhouse gas emissions by 2050 and halve emissions by 2030.

The rainwater recycling system is part of a wider initiative to evaluate the retrofitting of water-saving technologies to existing infrastructure at commercial sites. This project is one of eight trial sites and the only "boots-on-ground" initiative funded through Ofwat's Market Improvement Fund and administered by MOSL, with Pennon Water Services leading the effort in collaboration with SDS.

Project Objectives

To prioritise rainwater over tap water with which to irrigate the football pitch and to evaluate the effectiveness of rainwater recovery in a commercial sports environment and its contribution to a more sustainable operational model for stadia in general.

Project Requirements

To repurpose surface water attenuation tanks by redirecting rainwater, which would otherwise have been disposed of into the local watercourse, to the pitch sprinkler system. Additionally, the recycling system had to be capable of adapting to seasonal variations in rainfall, with the ability to supply as much water as possible to meet the Club's irrigation needs throughout the year.

Issues Overcome

The installation process faced several challenges, including the optimisation of filtration systems and the selection of a pump that would be compatible with the filtration requirements. Adjustments are still ongoing to ensure the system operates at its peak efficiency, particularly in maximising water savings and streamlining operational processes.

Water use can fluctuate widely depending on the need for pitch watering, which accounts for over half of Home Park's water consumption. Investing in better measurement and control facilities has allowed the Club to identify further opportunities to reduce its overall water consumption.

One of the biggest challenges in delivering the Club's Environmental Plan is the creation of a culture in which all stakeholders, particularly staff, understand and are committed to creating sustainable improvements in Home Park's environmental footprint. The pitch sprinkler system provides highly visible evidence of a practical example of environmental custodianship and serves to encourage staff and spectators alike to consider their own environmental footprint.

Results

It was essential that the rainwater recycling system integrated seamlessly with existing infrastructure, allowing for easy installation with minimal disruption, and was designed to be user-friendly, requiring minimal ongoing maintenance.

The system comprises four 10,000-litre tanks used in parallel (totalling 40,000 litres' max storage capacity) and located at the Mayflower Grandstand, where they collect rainwater from a 3,000m² roof area. A transfer pump moves the harvested water through a pipe in excess of 200 metres long to a holding tank primed to supply the ground's sprinklers. Rather than relying on rainwater collected in the main attenuation tank, which is designed to drain down after each event, the system intercepts runoff earlier in the drainage process. A small pump and riser installed in the upper manhole of the attenuation tank allow for efficient capture of rainwater during storms, before it can enter the tank. The recovered water is stored in the four dedicated storage tanks and only pumped into the primed irrigation tank when needed. As this irrigation tank was formerly mains-fed, the system ensures rainwater is used first, significantly reducing demand on potable supplies. Since installation, it has saved approximately 320,000 litres of mains-supplied water.

Early in 2025 Plymouth Argyle FC was recognised as one of the first two EFL Green Clubs* to receive the highest category 'Gold' award, and gain full GreenCode accreditation.

The scheme has also helped the Club secure a top-five ranking in the Sports Positive EFL Sustainability Rankings and has garnered commendations in the Stadium Business Awards for its contributions to sustainability and community engagement.

* Note: EFL Green Clubs is a league-wide voluntary scheme that supports EFL Clubs to improve their environmental practices and operations. It first launched in 2021 and was updated for the 2024/25 season to introduce a new assessment cycle that awards participating clubs with a status of "Participant", "Bronze", "Silver" or "Gold". The programme currently has 36 EFL Clubs signed up to it and is delivered in partnership with GreenCode, the environmental accreditation organisation run by the Green Britain Group.

Andrew Bradford, Facilities & Contracts Manager, Plymouth Argyle FC, said: *"The installation of the rainwater recycling system has been a game-changer for us. It aligns perfectly with our sustainability goals and has significantly reduced our reliance on mains water for pitch irrigation. The collaboration with SDS has been fantastic, and the system's ease of use and low maintenance requirements make it a long-term solution for the Club. We are proud to be at the forefront of this initiative, setting a positive example for other sports facilities looking to improve their environmental impact."*



Images: Stand (left); Rainwater harvesting tanks (centre); Rainwater distribution pipe (right).