Supporting Low Carbon Farming Innovation

envireau WATER

Our client, Oasthouse Ventures, invest and develop in businesses that have a positive impact on the world. Envireau Water was approached by Oasthouse following their investment in a £120m world-first glasshouse development that aimed to begin the decarbonisation of agriculture. With the development located in a catchment closed to new groundwater abstraction and the use of new innovative technology, our expertise was vital in providing a sustainable, optimised water supply.

The hydroponic growing method, while totally dependent on a continuous water supply, incorporates state of the art recycling resulting in reducing the water usage by 10x in comparison to field farming.

A 75% reduction in carbon emissions

Oasthouse Ventures ambitions extended outside of a sustainable water supply to utilising captured waste heat and CO_2 from a nearby wastewater treatment works via heat pumps to optimise and perfectly regulate the temperature and atmosphere in the glasshouses. Overall, this results in the crops being produced with a 75% reduction in carbon emissions.

A Sustainable Closed Catchment Supply

Our specialists, renowned for their regulatory expertise, were presented with a unique challenge to supply an elaborate irrigation system with a sustainable water supply, despite its location within a closed groundwater catchment. Without the supply, the development and Oasthouse Ventures' sustainable ambitions would fail.

The water supply concept was based on rainwater harvesting, but it was critical that there was no risk of failure. So, the problem was broken down to how much storage was needed and was a top-up supply required.

With the reservoir surface area already set by the planning permission, volume was constrained by depth; therefore, how much water could be stored, how would stored water meet demand, how much top-up water was required and when and where would it come from? To answer these questions, our technical experts developed a numerical model, which allows supply and demand to be balanced through a reservoir so that the different interacting components could be optimised.

Optimising the reservoir size, allowed existing licences to be modified to provide essential winter abstraction, thus utilising abstraction when resources are available in a sustainable way. Our regulatory experts negotiated with the Environment Agency to ensure that the abstraction was designed in the right way to mitigate against periods of extended dry weather.

Innovation

The modelling showed that the optimisation was sensitive to the magnitude and timing of peak irrigation demand and the supply of water from rainfall. By linking Envireau Water's expertise in water resources assessment with Oasthouse Ventures history and experience in solar farm development, long term daily solar radiation data was used to predict irrigation demand, and this was linked to a 30-year rainfall record to assess rainfall availability as well as drought frequency and duration.

We are proud to have collaborated with Oasthouse Ventures through delivering innovative techniques that benefit the environment. With the first 1 million tomato plants planted in January 2021, we are delighted to see our client's progression to producing 12% of the UK's tomato supply.

"Envireau Water are a vital part of the team, their understanding of the sector, technical skills, innovative approach and rapid grasp of the project meant that we had the confidence that our vision would be delivered".

Ben Alexander, Senior Development Manager, Oasthouse

Need our help?

Can we support your innovation?

Envireau Water is committed to do what we can to help tackle climate change and collaborate with clients old and new to implement novel techniques that have a positive impact on the environment.

Get in touch with our water resource specialist **JamesDodds@envireauwater.co.uk** to discuss your project possibilities.