



Lockerley Water Farm - intermittent loading algal pond system

Project Staff	Principal investigator: Dr S Heaven Named investigator: Dr AM Salter Named investigator: Prof. CJ Banks
Start year	2005
Finish year	Ongoing



- Lockerley ponds in Year 2

The project concerns the provision of a sustainable and cost-effective wastewater treatment system at Lockerley Water Farm, situated north of Romsey in Hampshire, UK. An area of about 45 ha is owned by the Hampshire Christian Trust and is used as a campsite during the summer months for children from local youth clubs and other charitable and community groups. Between June - September up to 120 people are accommodated on the site, which has a permanent kitchen block and mobile 'pod-style' toilet and shower facilities as well as tents. A number of options were initially considered, including package treatment plants, constructed wetlands and waste stabilisation ponds (WSPs). Because of the intermittent loading on the system WSPs appeared to be the most suitable solution.

New operating protocols

In the first year, trials were run for a system based on containment of the wastewater in a single pond with discharge potentially occurring over a short period once a year. In the second season, continuous discharge over the summer period was trialled using a 2-pond system. Work is in progress to design a system where the treated wastewater is discharged to irrigate coppice woodland, which will provide fuel for on-site hot water and heating.

As well as providing an environmentally-friendly solution for Lockerley, the innovative operating protocols being developed by the University team can potentially be applied at other sites, e.g. in small communities that receive an influx of summer visitors or other temporary / seasonal sites, such as refugee camps.



- Algal bloom in Pond 1

Algal biomass studies

In addition to the wastewater treatment side of the work, the project is providing opportunities for students interested in algal biomass to study productivity and other factors related to potential use as a biofuel or for product generation in biorefineries.



- Bottle roller with algal samples

Publications

Whalley, C.P., Heaven, S., Banks, C.J. and Salter, A.M. (2012) [Seasonally loaded waste stabilisation ponds: a novel application for intermittent discharge](https://doi.org/10.2166/wst.2012.397). *Water Science & Technology*, 66, (9), 1893-1899. (doi:10.2166/wst.2012.397).

Zhang, S., Banks, C.J., Heaven, S., Salter, A.M. (2013) [Operation and recovery of a seasonally-loaded UK waste stabilisation pond system](https://doi.org/10.2166/wst.2013.657). *Water Science & Technology* **Vol 67 No 5 pp 1105-1112** (doi:10.2166/wst.2013.657)

Whalley, Caroline P., Heaven, Sonia, Banks, Charles J. and Salter, Andrew M. (2013) [Treatment of seasonal wastewater flows in a two-pond system](https://doi.org/10.1016/j.biosystemseng.2013.05.005). *Biosystems Engineering*, 115, (4), 408-414. (doi:10.1016/j.biosystemseng.2013.05.005).

