WRA Bulletin 77

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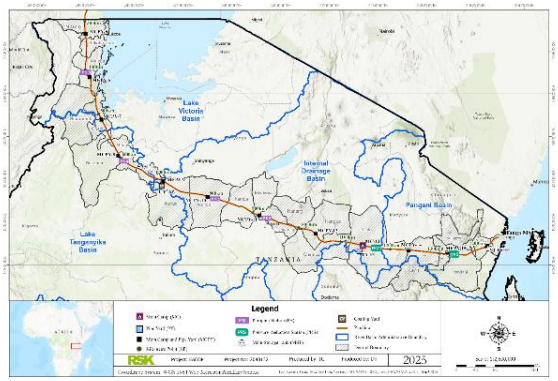
INTERNATIONAL WORK

Sustainable Water Use Assessments, Tanzania

WRA collaborated with RSK Environmental (East Africa) Ltd to undertake desk-based assessments of the sustainability, environmental and social risks, and water stress associated with water abstractions for the construction and operation of five project facilities along the Tanzanian section of the East African Crude Oil Pipeline. Currently under construction, the pipeline will transport crude oil from Uganda to an export terminal at Tanga on the Tanzanian coast.



Route of the EACOP pipeline in Tanzania

WRA reviewed available information for each water source, created a Data Register and a Proforma Report Template which was used to report the sustainability assessment for each facility. WRA also drafted questionnaires for use by RSK during site visits to obtain additional information. An outline scope of work was developed to assess in detail the impact of abstraction on hydropower generators, the riparian and aquatic ecology and environmental resources and livelihoods of users of one of the sources of water, and to complete the desk-based assessment of another source.

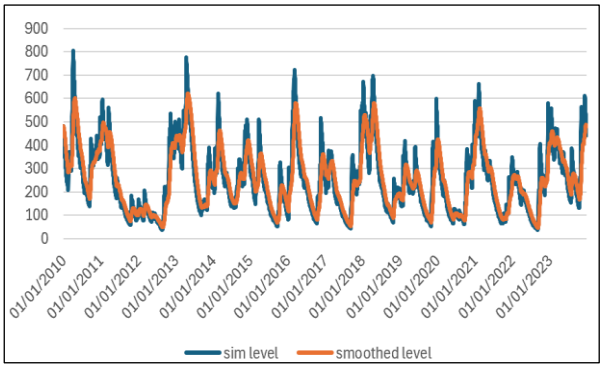
SLOVENIA

WRA has been working with Paul Edmunds and the Aquascope team on a study of the Notranjski Regional Park (NRP) in Slovenia. The park includes the globally significant intermittent karst lake *Cerkniško Jezero*, which faces growing ecological pressures due to hydrological alterations, land-use intensification, invasive species, and climate-driven extremes. Wetlands, meadows, and forests are increasingly fragmented and degraded, contributing to the release of carbon from soils and biomass, biodiversity decline, and reduced climate resilience. The study, funded by the European Space Agency, aims to simulate the hydrology and water quality of the park rivers and lakes in order to evaluate restoration studies that aim to:

- Restore wetlands, riparian corridors, grasslands, and forests across NRP
- Enhance natural carbon sinks through soil and vegetation conservation
- Improve hydrological functioning, particularly seasonal water retention
- Increase biodiversity and ecological connectivity
- Strengthen long-term climate resilience and sustainable land management

Notranjski Regional Park (NRP) in Slovenia

This is an ongoing study with the park authority but early modelling results show a good fit between simulated and observed lake levels. This model can be used to evaluate different restoration strategies.



Simulated and observed lake levels in *Cerkniško Jezero*

UK WORK

Walled Garden Equine, Cookham

WRA carried out a detailed flood risk assessment and outline design of compensation storage for new stables at The Walled Garden Equine located in the Thames valley, south of Cookham. The stables form an integral part of a historical barn, used for hay storage, farming and horse-handling equipment, and up to 10 horses, located inside a 5.7 ha area surrounded by a 2.3 m high historical wall.

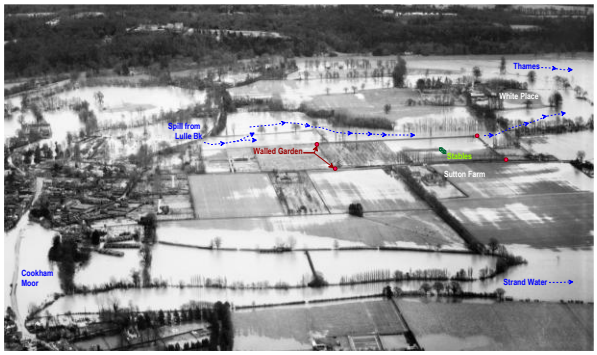
New stables at The Walled Garden Equine. ©MIC Surveys

The estimated flood levels for various model channel nodes and floodplain grid-cells were extracted from the 2019 hydraulic model for the area south of Cookham.

The south-west corner of the Walled Garden is part of the Sutton Farm dry refuge which remains above the predicted 1,000-year flood extents, and has gated access on to Sutton Road, linking with Cookham village.

The property was partially flooded in 1947 when flood arches were open. The wall foundations were excavated during the fieldwork to confirm presence of the arches.

Excavation in the North Wall to expose old flood arch.



Extent of flooding in 1947. ©Historic England. Image, provided by Historic Environment, Scotland.

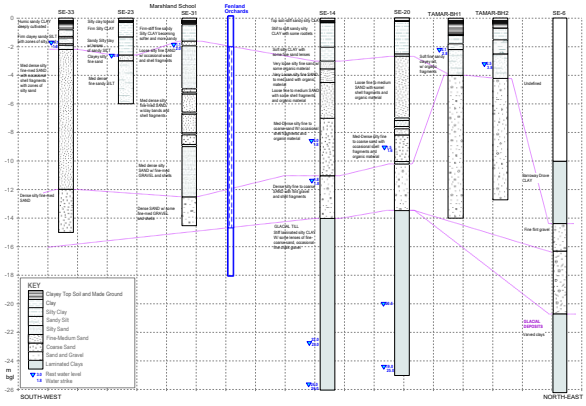
Fenland Orchards Project, Wisbech

WRA carries out hydrogeological appraisals of private groundwater supplies for a wide range of landowners, farmers, and agents. One such appraisal was carried out for the CP Learning Trust and Wisbech Community Farm. The report assessed the potential for providing a new groundwater source on the site for the purpose of orchard watering

Newly tilled field for orchard planting adjacent to Wisbech Community Farm

The 4.8 ha site has a superficial clay layer which is underlain by 13 m of Flandrian Sands, becoming coarser and more gravelly with depth. The sands are in turn underlain by glacial deposits followed by Ampthill Clay. The sands provide the best target aquifer for the farm and orchard water supply, requiring an 18 m deep borehole drilled at a diameter of 250 mm for installation of 150 mm diameter screen and casing.

In the low-lying area between Ely and Spalding there are over 37 Flandrian Sand abstraction licences, with yields of 1 to 2 l/s which confirms the feasibility of using groundwater. Salinity and boron concentrations are critical for irrigation of fruit trees: while boron is within acceptable limits, salinity is likely close to the desirable limit of 0.5 ppt in this aquifer.



Borehole lithology in the vicinity of the orchards site, focusing on water-bearing strata

Next WRA Board Meeting

13th February 2026, Blewbury.

The WRA Bulletin is a quarterly publication, and relies on contributions submitted by Partners, Associates and Consultants. The document is circulated by email, and published on the WRA web-site, aiming to keep the WRA network up-to-date with respect to current activities. Please email contributions for future issues to Paul Whitehead: paul.whitehead@watres.com

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