Future Opportunity Notice – Contracts Finder – published 06/07/2021

**Yazor Groundwater Model Update 2021**

This future opportunity notice is published in order to highlight the project to the market and allow potential bidders time to allocate resources for tendering purposes. This notice does not commit the Agency to proceeding beyond this point and the Agency reserves the right to amend and adapt the requirements outlined below.

**Introduction**

The Yazor Brook arises near Yazor village and flows south-eastwards towards Hereford where it splits into two channels, the Lower Yazor Brook and the Widemarsh Brook (also known as the Eign Brook further downstream). Much of the Yazor Brook catchment is underlain by the Yazor Gravels aquifer, a highly transmissive Fluvioglacial sand and gravel drift deposit. The central area of the catchment is overlain by Glacial Till (boulder clay). The bedrock at depth comprises the Old Red Sandstone (mudstones and sandstones). The brook has a small but complex catchment, with a number of artificial factors that have influenced surface water flows and groundwater levels. These include a number of groundwater abstractions, mainly for horticulture, and the food and drink industry. There is also the Northern Area Sewer (NAS) operated by Welsh Water which intercepts groundwater. From the 1950’s until 2002 the discharge from large scale dewatering operations for a gravel pit at Stretton Sugwas (mid-catchment) provided significant augmentation of low flows in the Yazor Brook. Since the quarry closed the middle and lower stretch of the Yazor Brook has been prone to drying up more frequently in the summer months.

**Objective**

The general objective of this project is to update the existing groundwater model that will significantly improve the Environment Agency’s ability to make abstraction licensing decisions on a sound scientific basis and, in doing so, protect and/or enhance sensitive surface water features on the outcrop of the Yazor Gravel aquifer. It is anticipated that the groundwater model will inform the groundwater resources assessment for the Yazor Gravel Aquifer and support the catchment abstraction management strategy (CAMS) process, in the Upper Wye catchment. It is also expected that the groundwater model will be integral to the investigations and assessments undertaken for the Water Framework Directive.

In addition, it is expected that the groundwater model will provide a tool to aid decision making concerning location-specific water resources issues of the Yazor Brook Catchment Area.

The project has six main tasks:

1. To update the times-series of the existing Yazor model from April 2017 to March 2021;
2. Convert the model construction from one layer to two or more layers to distinguish between the drift and bedrock. This will enable abstractions that are only taken from the Old Red Sandstone but where it is overlain by drift, to be modelled in the correct horizon and allow for better estimation of vertical flows between the different types of strata;
3. To update and recalibrate the Runoff-Recharge Model and Historical groundwater model using new available data, and answer a number of queries following up on output from the previous version of the model, new information relating to urban drainage, new development at Three Elms, new scenarios for NA abstractions, abstraction patterns for three principle abstractors, and some additional items detailed below.

1. To run the updated Runoff-Recharge Model and Groundwater Model for the Baseline Scenario (Recent Actual) and run both Naturalised and Fully Licensed Scenarios, and a number of predictive scenarios to assess the impact of the abstractions on low flows issues and provide possible solutions;
2. Recalculate Water Balance and NSO for the GWMU and daily low flow statistics for the WFD assessment points for WRGIS input. The GWMU will be formalised for use in water resources management and writing a new ALS specific to the Yazor Brook catchment;
3. Model and produce new SPZ’s for 5 licences (25 boreholes) and review existing SPZ for one licence (6 boreholes) with documentation.

**Specialist Skills**

Tenders will be assessed to ensure the chosen supplier has all the appropriate skills and expertise to successfully carry-out the project. In particular, bidders should be competent in developing regional-scale groundwater resources modelling using 4R, MODFLOW-96 code and MODFLOW6 code, Experience - in the Sherwood Sandstone of Midlands, England in particular of Yazor gravel aquifer and should be familiar of EA relevant guidance, in particular - source protection zones, water framework directive assessment procedures, CAMS and WRGIS.

**Timescales**

It is anticipated that this project will begin at the start of September 2021 and must be completed by March 2022.

The Agency intends to publish the full ITT in July 2021.

If you have any questions regarding the opportunity, please contact Léonie Cormac at [leonie.cormac@defra.gov.uk](mailto:leonie.cormac@defra.gov.uk)