1 INFORMATION ON WORK PROGRESS

1.1 Summary and aims for the period

Work Package 4: With calibrated models not only on the pilot area but also on a broader scale, it is possible to build and support neural networks (AI) that can predict operating parameters, which enables fast evaluation of varying operating schemes.

Work package 5: To protect resources like energy and water, optimized riverbank filtration well operation is required. Also, to mitigate risks boundaries must set to any optimization software to always ensure supply safety.

1.2 Initially planned Milestones/Deliverables/Budget and the impact on the project

Work package 4: Hereby we should evaluate AI tools (neural networks) that help us improve the decision making during the operation of RBF wells. Due to the calibrated models and tested AI based optimization method we should evaluate the effectiveness of current RBF systems and propose improved operational schemes.

Work Package 5: By using calibrated and optimized methods that utilize neural network (AI) tools to determine an optimal operating scheme, we are able to reduce energy consumption.

1.3 Current status (completed/ongoning/started) of the work packages, as well as status (achieved/on track/delayed) of tasks, deliverables and milestones

Work package 4: To combine the high computational capacity of neural networks (AI), we need to carefully select its training data. We evaluated the modelling results of several areas and ran multiple simulations to get results that we cannot gather during real life operations. Also, we combined these data with the results of the monitoring campaign.

Work package 5: We combined the neural network (AI) algorithms with hydraulics network based on 4 group of riverbank filtration wells. During the software optimization process we were able to achieve energy savings as a result of a more efficient operating schematic.

2   FUTURE EXPECTATIONS OF THE PROJECT

2.1   Information about the intermediate results obtained or any successes

There are no intermediate results as it is the closing report of the project. We successfully built a decision support system to get better operating schemes for Riverbank Filtration wells. To achieve such goals, we evaluated a year monitoring programme and in collaboration with the project partners we finalized multiple groundwater model to have sufficient data and boundary conditions to the forecasting neural networks (AI).

2.2   Indication whether the expectation of the project is still valid or whether there could be any deviation of the project in the medium term which can affect the financing, the planning and expected results

We plan to continue our research using its optimization software, as it needs to be evaluated under more operating conditions (various Danube levels, pollutants etc.), there is not yet data on its real-world usage, which could also improve the accuracy, reliability, and practical applicability of this method.