



## Improving Pump Station Efficiency

### Project Summary SC090025/S

New guidance and a software tool have been created to help engineers find ways of boosting the efficiency of pumping systems that drain land to minimise the risk of flooding. The new tool should help pumping station designers and technical staff to help the Environment Agency meet its energy and carbon reduction targets.

The Environment Agency has a target to reduce its carbon footprint by 33 per cent by 2015. Pumping operations draw around a third of its overall energy use, with flood defence pumping stations representing around half of this total. With roughly 400 flood defence pumping stations across the United Kingdom, small improvements in energy consumption at each site could add up to substantial energy savings.

This report covers an innovative project funded by the joint Environment Agency/Department for Environment, Food and Rural Affairs (Defra) Flood and Coastal Erosion Risk Management programme to provide guidance for local mechanical and electrical managers to increase the efficiency of operations at existing, new and refurbished pumping systems.

Each pumping station is unique in terms of its layout, equipment and operating system and the operators and managers often hold essential local knowledge on the practical experience and history of the site which is vital to make improvements. What they may lack, however, is the depth of technical knowledge to compare the effectiveness of changes on the overall station efficiency in terms of energy savings.

This project has adopted a tiered approach with a guidance document, which outlines key areas to consider in optimising the efficiency of pumping stations. The science report mirrors the layout and format of the guidance document but includes the theoretical knowledge behind the guidance information. The new innovative software tool is spreadsheet-based (in Excel) and offers a method of recording site data and comparing the effectiveness of different possible changes to the pumping system in terms of energy savings.

The software tool enables the user to enter all the existing physical and operational site data into the spreadsheet and even supplies generic data where site details are not available. This information can then be compared with user-defined changes in key areas and the effect on the pumping station performance and efficiency are immediately displayed in terms of energy usage.

This summary relates to information from project SC090025/R1, reported in detail in the following output(s):

**Title:** SC090025/R1 Pumping Station Efficiency - Guidance Document

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