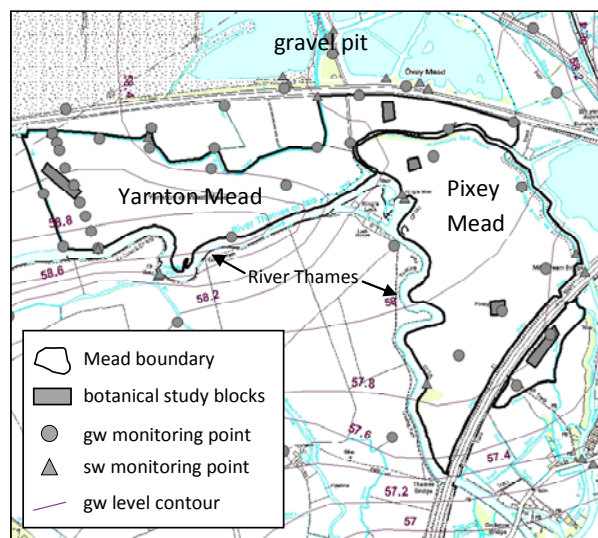


# The FUSE Project

**Floodplain Underground Sensors** - a high-density, wireless, underground sensor network to quantify floodplain hydro-ecological interactions.

Natural Environment Research Council (NERC) has recognized that although there have been major developments in the technology that allows for the networking of environmental sensors, there remain very few sites where high density network sensors have been installed for research purposes. In 2010 NERC called for proposals to develop such sensor networks and a proposal, FUSE, led by Dr Anne Verhoef of the University of Reading, based on a site within the floodplain of the River Thames in Oxford, was successful. The site includes Yarnton and Pixey Meads, part of the Oxford Meadows Special Area of Conservation (SAC), and will build on a monitoring infrastructure and knowledge developed at the site over recent decades. Through the high density sensor network to be installed at the site, and associated manual measurements, the FUSE project aims to improve the understanding of the functioning of hydrological systems and dependent ecology for optimal environmental management.

For the purposes of land management, aesthetics and security it is not possible to install sensors above ground level. A key aspect of the project, and one that makes it novel and ground-breaking, is the wireless networking of sensors below ground. The network of sensors will measure key variables that control plant health and composition, including soil moisture and temperature and groundwater level and temperature. These data will be complemented by manual surveys, including botany, groundwater and soil chemistry and plant functioning. Computer models will be developed on the project which will allow these data to be used to improve our understanding of the intricate interactions between all floodplain ecosystem components.



FUSE is an interdisciplinary research project funded by NERC within their 'Networks of Sensors' Programme. It involves environmental and computer scientists from the University of Reading (who are leading the research), sensor network engineers from Imperial College, botanists from the Open University, groundwater scientists from the British Geological Survey, geostatisticians from Rothamsted Research, sensor developers from University of Southampton and environmental modellers from the University of Twente (ITC - The Netherlands). Natural England and the Environment Agency are project partners providing a link between the project outputs and environment managers.

For more information on the project please contact:

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