Ruth A.J. Robinson[1], Phil Townsend[2], Paul Steen[3], Hugh Muschamp[4], Hugh Barron[5], Ian McGrath[6], Iain Todd[7] and Barbara Whiting[8]

1. *Department of Earth & Environmental Sciences, University of St Andrews, St Andrews, Fife KY16 9AL*
2. *Town Rock Energy Ltd, Edinburgh Centre for Carbon Innovation, Edinburgh EH1 1LZ*
3. *Ramboll UK, 39 Hanover Street, Edinburgh EH2 2PJ*
4. *Resource Efficient Solutions, Bankhead Park, Glenrothes, Fife KY7 6GH*
5. *British Geological Survey, Murchison House, Edinburgh, EH9 3LA*
6. *Guardbridge Energy Centre, University of St Andrews, St Andrews, Fife KY16 9SL*
7. *Iain Todd Consulting, Fife Renewable Innovation Centre, Fife KY8 3RS*
8. *Fife Council, Fife House, North Street, Glenrothes, Fife KY7 5LT*

Abstract

The Scottish Government's Geothermal Energy Challenge Fund (GECF) supported five feasibility projects from June 2015 to March 2016. The Guardbridge (Fife) project involved a team from the University of St Andrews, Town Rock Energy, Ramboll UK, the British Geological Survey, and Fife Council (Resource Efficient Solutions). Guardbridge is the only GECF project investigating the potential for heat extraction from a hot saline aquifer but the project and site are an ideal demonstrator for hot saline aquifer potential across the Central Belt of Scotland. Phase 1 of the project involved demonstrating the economic feasibility of a 1 km borehole extracting heat for the Guardbridge site and the potential for a district heating network supplying surrounding villages. This involved a desk study of the resource based on existing geological and hydrogeological datasets, an investigation of the drilling requirements and costs for three potential sites within the Guardbridge Energy Centre, and developing a heat network model and costs for on-site provision and an extended network to nearby villages. There are remaining uncertainties about the geothermal resource which require new data if hot saline aquifer geothermal heat is to progress from a perceived risk-dominated resource to one that has economic potential and an acceptable level of risk and uncertainty. Phase 2 of the project received LCITP funding to conduct a moderately deep seismic reflection survey of the surrounding area in order to refine the geological model and position of the target aquifer horizons. The survey was completed on October 17th, 2016. This presentation will provide an overview of the Guardbridge project and introduce some initial data collected as part of the recent seismic survey.

Biography

Dr Ruth Robinson is a Senior Lecturer in Earth Science at St Andrews University. She received a PhD from the Department of Geosciences at Pennsylvania State University in 1997, and joined the University of St Andrews in 1997. Ruth is also the Director of *GeoBus* at the University of St Andrews, a mobile Earth Science outreach project to secondary schools.

Her research over the last 20 years has focused on understanding the behaviour of ancient and modern sedimentary systems, particularly rivers, and the short and long term feedbacks between tectonics, erosion, and climate. More recently, she has been conducting research into geothermal heat potential of hot saline aquifers and abandoned coal mines in central Scotland. She is a founder member of Fife Geothermal and Lead Investigator on the Guardbridge Geothermal Project funded by the Scottish Government through the LCITP.