



Geothermal: a pathway to decarbonising the heating sector

Dr Marie Cowan MRIA, Geological Survey of Northern Ireland

Heat Pump X-change, Ulster University,
20th June 2024



Department for the
Economy
www.economy-ni.gov.uk

An Roinn
Geilleagair

GSNI Geological
Survey of
Northern
Ireland
www.bgs.ac.uk/gsni

ENERGY POLICY

WHY GEOTHERMAL IS A POLICY OPTION



- Low carbon



- Cost effective



- Heating and cooling

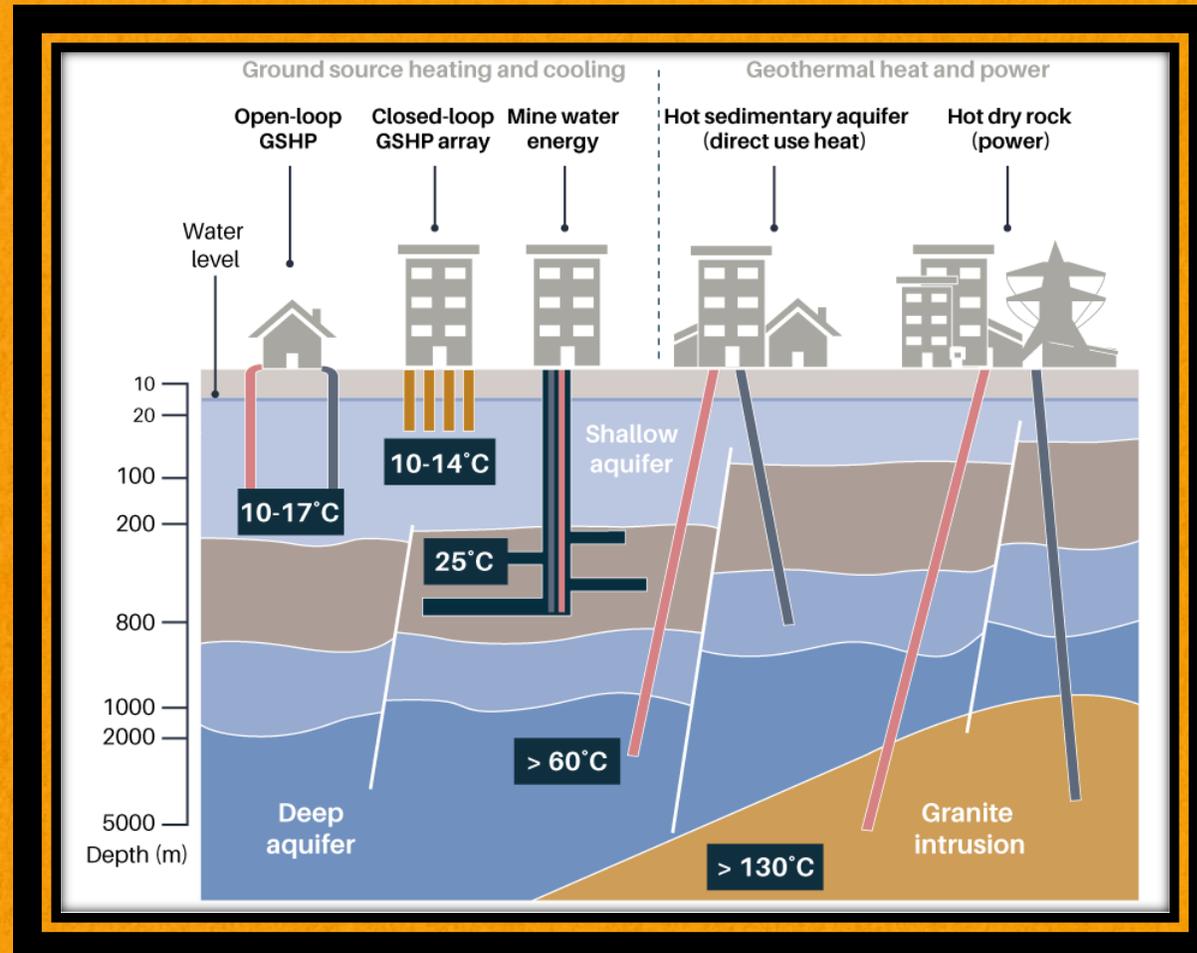


- Locally available



- Does not fluctuate

GEOHERMAL TECHNOLOGIES



GEOTHERMAL APPLICATIONS

- Buildings
- Schools
- Hospitals
- Universities
- Towns
- Greenhouses
- Fish Farms
- Crop drying



BUILDING BACK BETTER

GSNI-QUB CONFERENCE, DECEMBER 2020

The screenshot shows a YouTube video player interface. The video title is "GSNI & SECA Conference: Rob Raine & Joseph Ireland". The video is currently at 0:02 / 10:55. The slide content includes:

- Geothermal Resources and Potential in Northern Ireland**
- Rob Raine**: Geological Survey of Northern Ireland, rob.raine@economy-ni.gov.uk
- Joseph Ireland**: Queen's University Belfast, jireland02@qub.ac.uk
- Logos for: Department for the Economy, GSNI, BGS (British Geological Survey), University of Aberdeen, Queen's University Belfast, and National Endowment Research Centre.

The video player shows a list of related videos on the right, including "Geological Survey of Northern Ireland...", "GSNI & SECA Conference: John Barry", "GSNI & SECA Conference: Rob Raine & Joseph Ireland", "GSNI & SECA Conference: Joe Ireland", and "GSNI & SECA Conference: Alison Monaghan".



QUEEN'S
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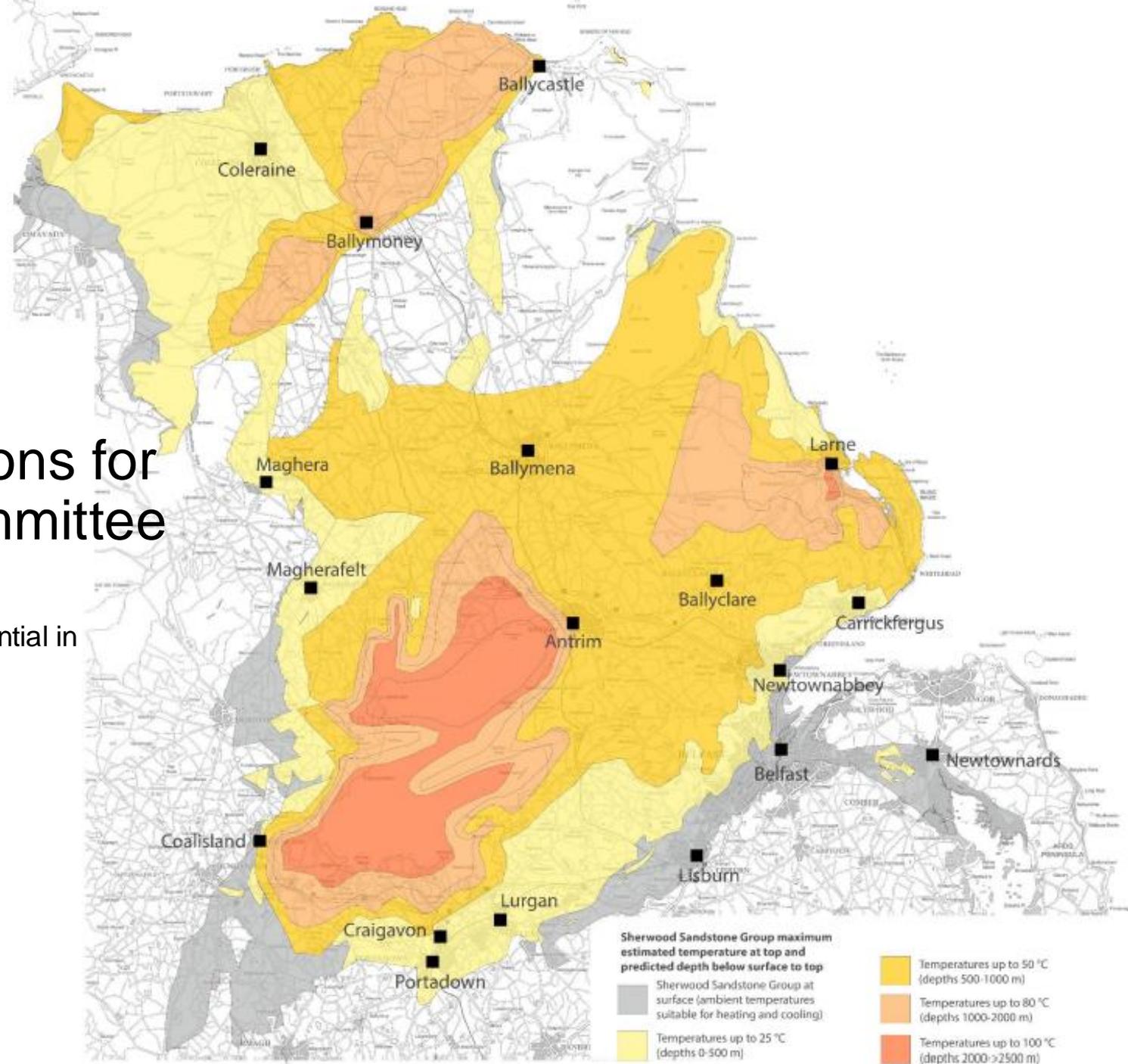
Geological
Survey of
Northern
Ireland

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Geothermal Energy Potential in Northern Ireland:

Summary and recommendations for the Geothermal Advisory Committee

Raine, R.J. and Reay, D.M., 2021. Geothermal energy potential in Northern Ireland: GSNI Technical Report 2021/EM/01.



STAKEHOLDER ENGAGEMENT MONTHLY WEBINAR SERIES, JAN 2021-DATE

Northern Ireland
Geothermal
Webinar Series

Building the Global Geothermal Market: A Sustainable Energy Frontier



Dr Marit Brommer, Chief Executive Officer
Helen Robinson, Regional Manager Africa
International Geothermal Association

This webinar will examine the key factors driving the growth of the global geothermal market, including its renewable nature, environmental benefits, and stability. Challenges such as site-specific limitations and initial investment costs will be addressed. Ongoing technological advancements and research initiatives in Africa and Europe will be discussed.

Thursday 18th April, 2024
16:00-17:00 BST



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**Geothermal
Association
of Ireland**



Geological Survey
Suirbhéireacht Gheolaíochta
Ireland | Éireann

An Roinn Comhshaoil, Aeráide agus Cumarsáide
Department of the Environment, Climate and Communications

Exploration Companies active in Northern Ireland



PRIORITY DRILLING
we probe the globe



ARUP



Geoserv

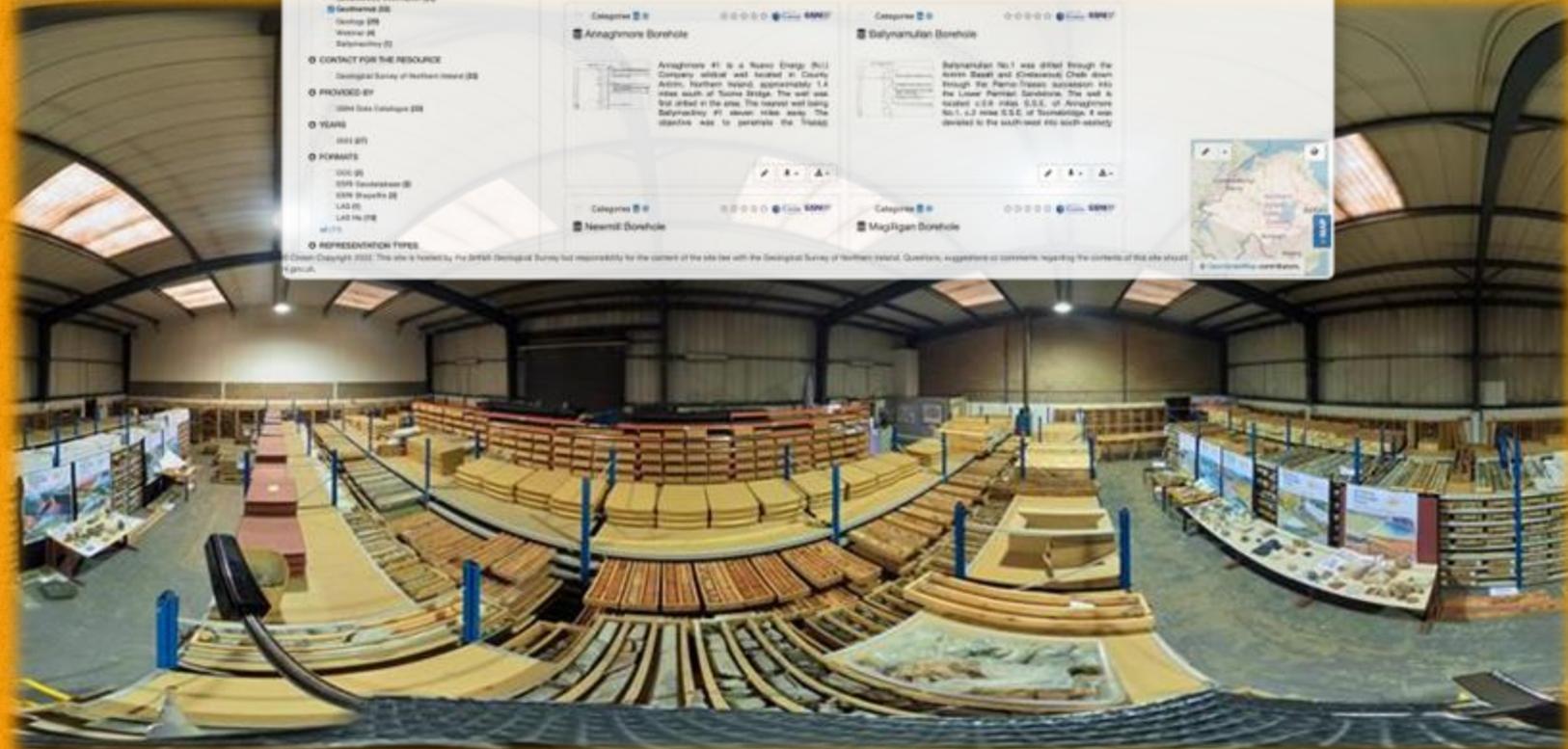
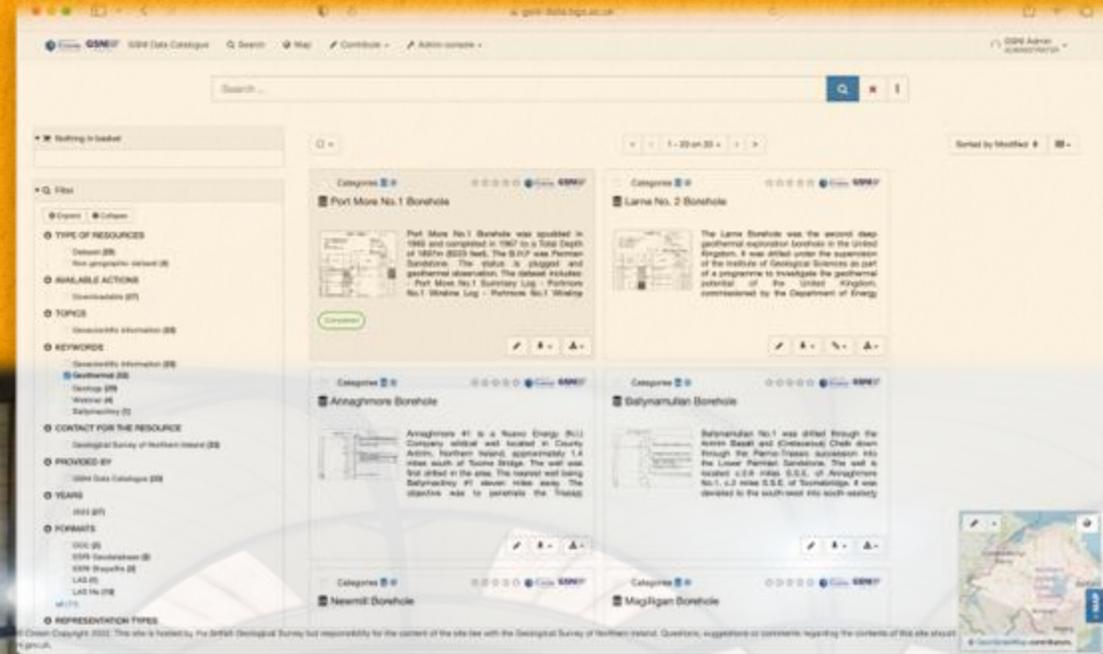
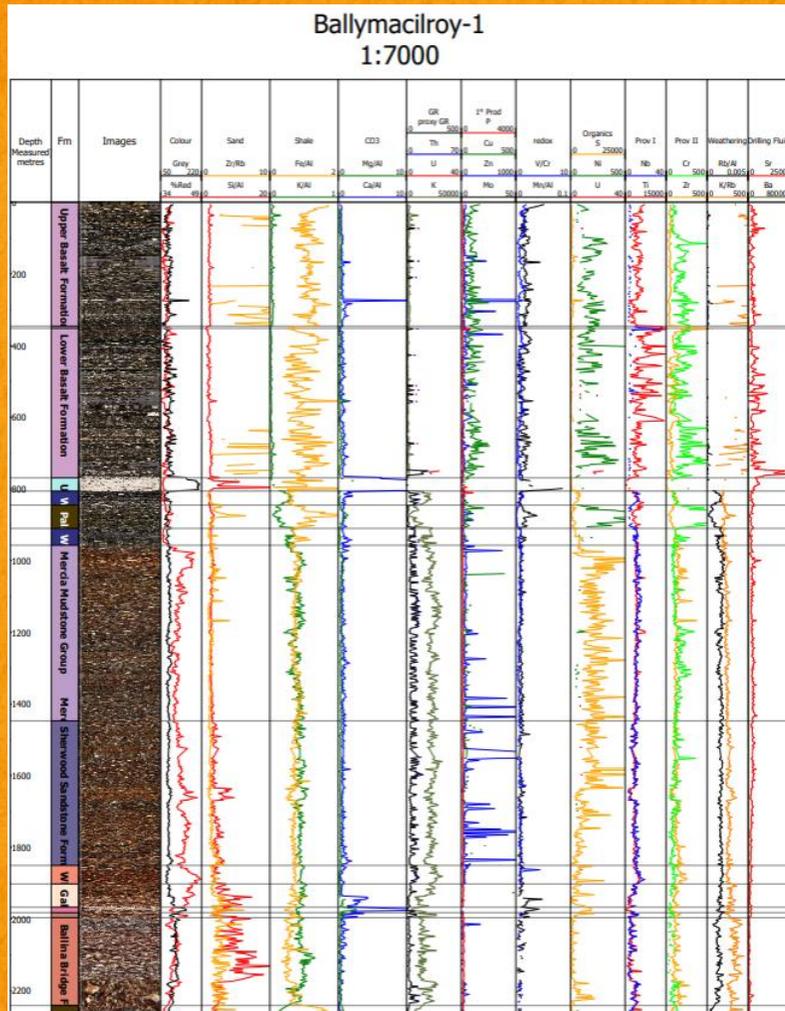


RSK

STRYDE



GSNI DIGITAL AND PHYSICAL RESEARCH ASSETS



Geoenery Research Ecosystem in Northern Ireland



Collaboration on €495k SFI-IRC fund



1 x MSc on CCUS



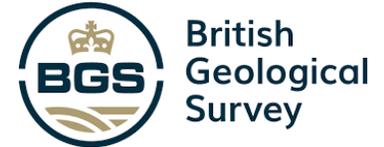
1 x PhD on geothermal and carbon storage
Critical metals research projects



1 x MSc, 3 x PhD on geothermal (thermal model, market, Agri-food)
SEUPB PEACE Plus bid €20M



1 x GeoNetZero PhD on carbon ect.storage



Working on 1 x EPSRC-funded project on ATES £1.5M and 1 x NERC funded project on ATES £965k



1 x advertised PhD on carbon storage



UK GEOENERGY OBSERVATORIES

Links to researchers at these organisations

SCIENCE INTO POLICY

NI GEOTHERMAL ADVISORY COMMITTEE

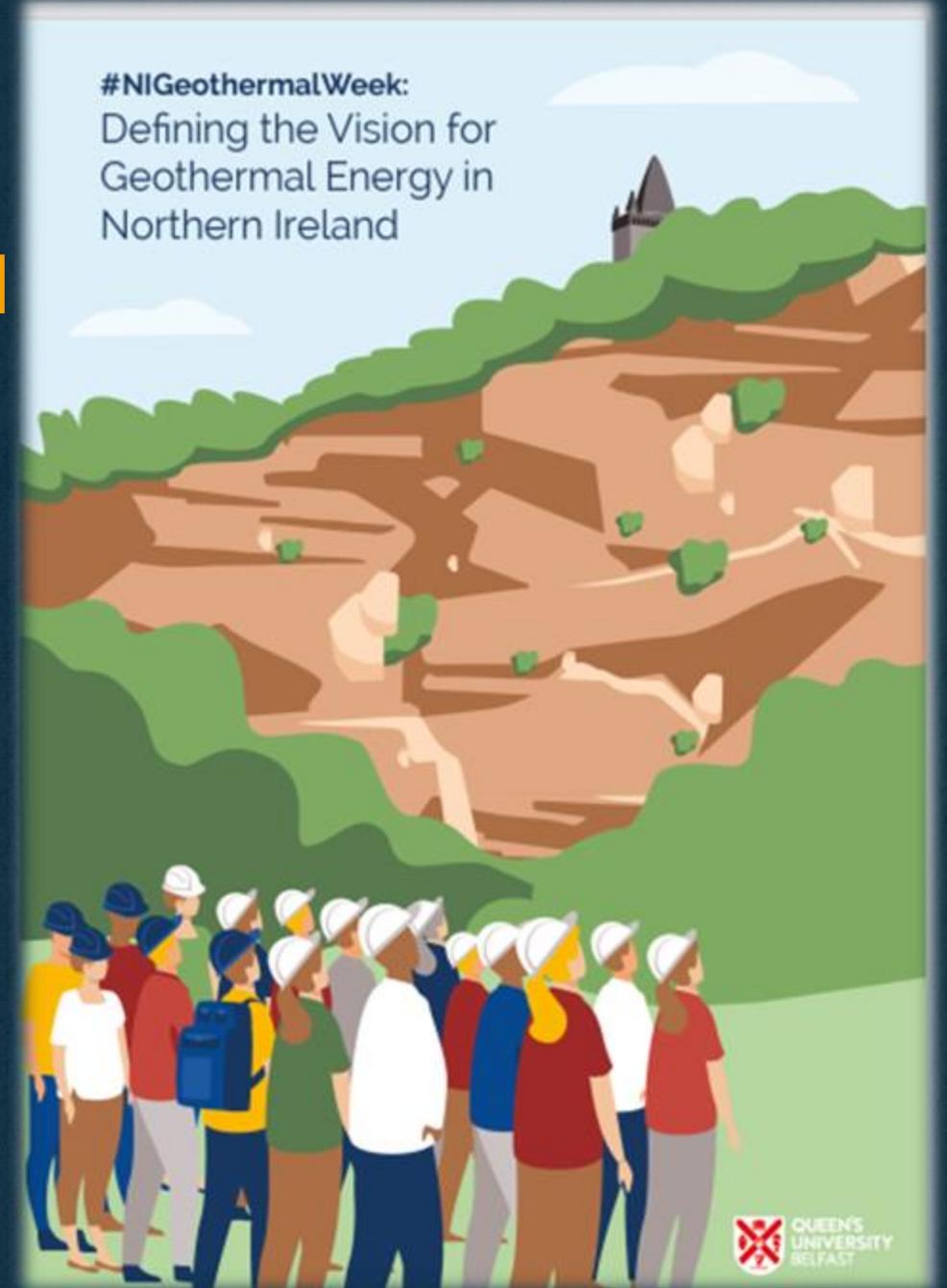
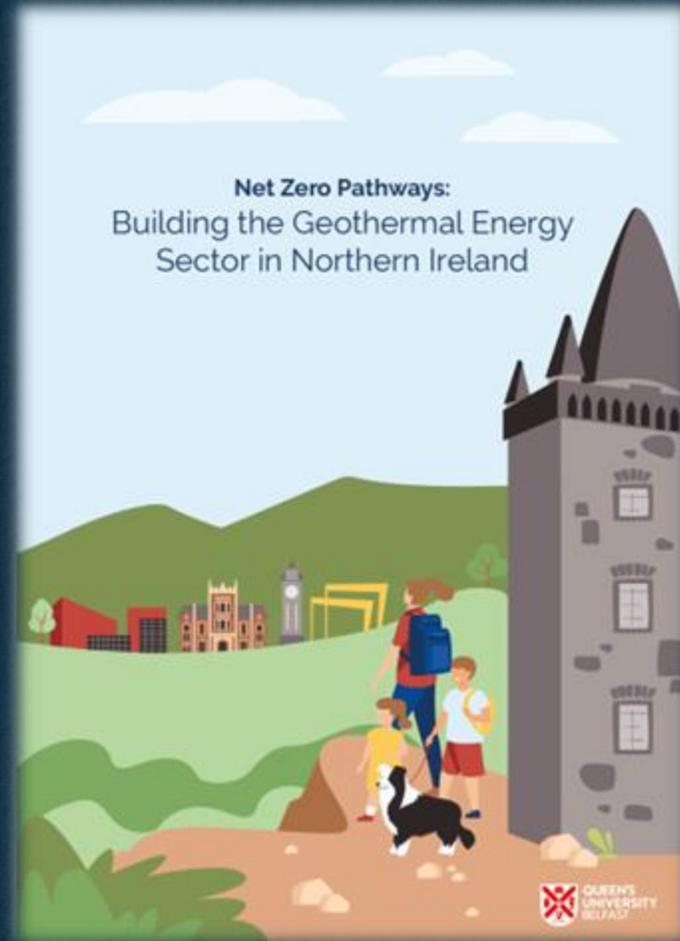


NI GEOTHERMAL ADVISORY COMMITTEE

STRATEGIC ADVICE



QUB MANAGEMENT SCHOOL SOCIAL SCIENCE RESEARCH



SCIENCE INTO POLICY

ENERGY POLICY TIMELINE



DFE ENERGY ACTION PLAN

“Develop and commence delivery of a geothermal demonstrator project”.

GSNI co-delivery partner Action 16



DFE ENERGY ACTION PLAN

GEOTHERMAL DEMONSTRATOR FOCI

Stormont Estate



CAFRE College,
Greenmount Campus



Public Awareness



UNEARTHING THE HEAT BENEATH OUR FEET

Two Feasibility Study Sites:

1. Stormont – Shallow Investigation

- Drilling & Testing of 5x. Boreholes (250m-500m)

2. Greenmount – Deep Feasibility

- Seismic, Gravity & Magnetotelluric Surveys
- 3D model development to help visualise and de-risk the subsurface for future deep geothermal drilling
- Target reservoir is c. 2km depth



PROJECT PARTNERS



COMMUNICATIONS



Research & Surveys



Communications Strategy



GeoEnergy Discovery Centre



Brand Development & Design



Social Media & Website



Video, Photography & Animation



Media & Stakeholder Relations



PLANNING



Stormont & Greenmount Environmental Surveys & Assessments



Stormont Pre-Application Community Consultation Event: 30 May-23



Stormont EIA Scoping Request submitted: 18 Aug-23



Stormont Pre-Application Discussion (PAD): 15 Jun-23



Stormont Submission of Planning Application: 18 Aug-23



Stormont Planning Permission Granted: 19 Mar-24



Stormont Decision Notice: 30 Apr-24



Greenmount ANBC Planning Department Consulted 30 May-23



DRILLING, TESTING, MODELLING



Stormont Drill Site Locations Selected & Surveys Complete



Secured Appropriate Consents & Authorisations: Apr-24



Stormont Drilling & Testing Scheduled to Commence: 15 May-24



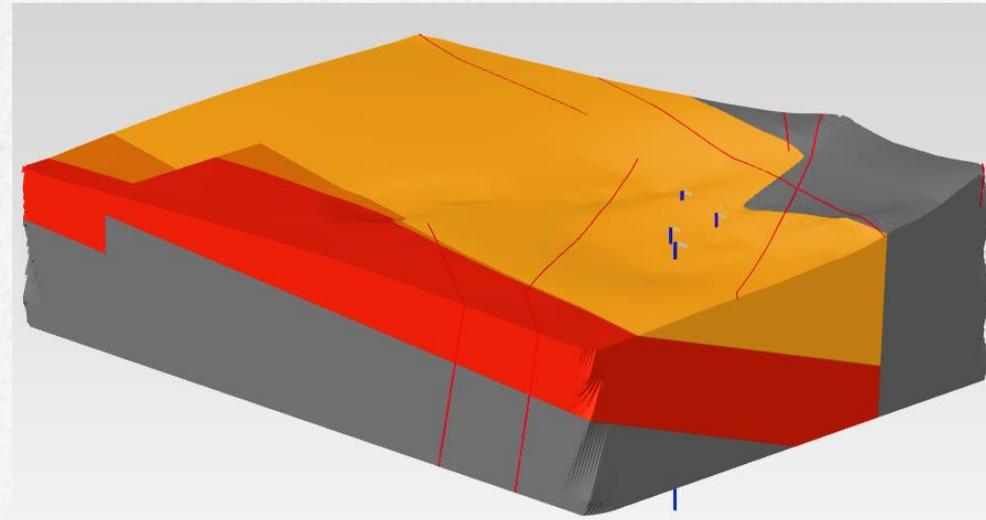
Investigation works to run until September 2024



9km² - 3D Geological Model Complete



Groundwater Model Under Development



GEOPHYSICAL SURVEYS



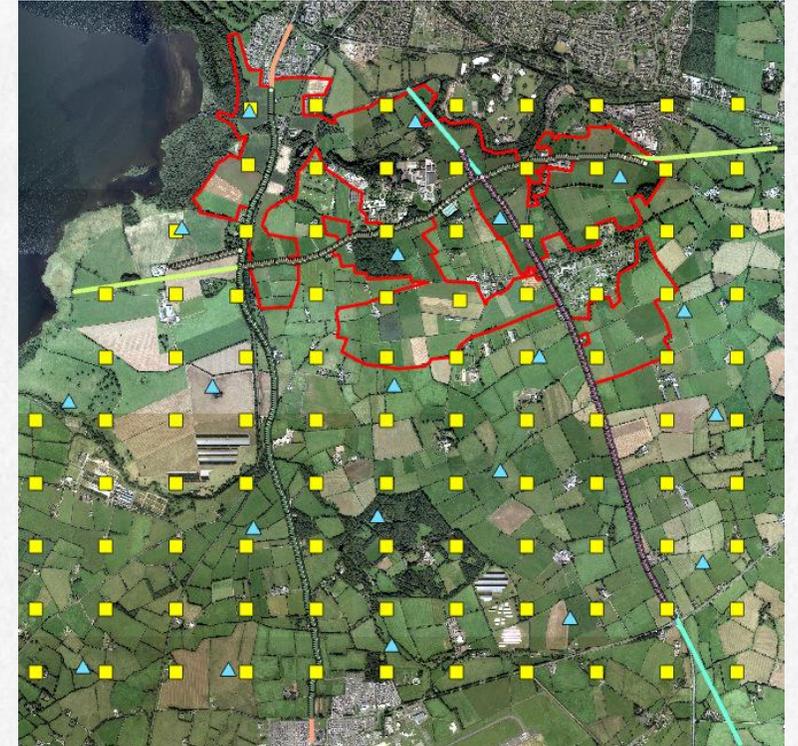
Greenmount Seismic, Gravity & Magnetotelluric Surveys



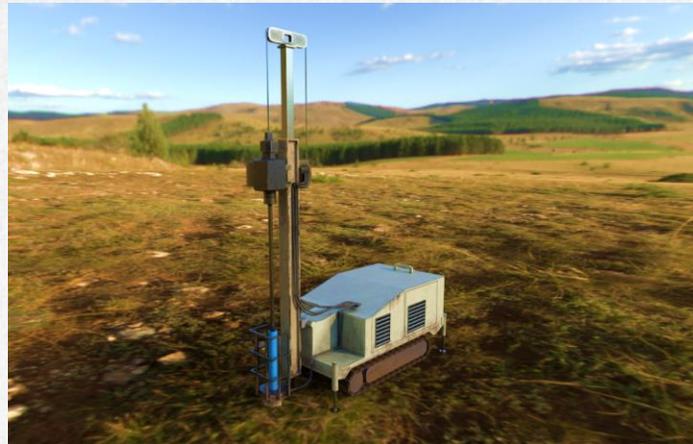
Completed Jul-23

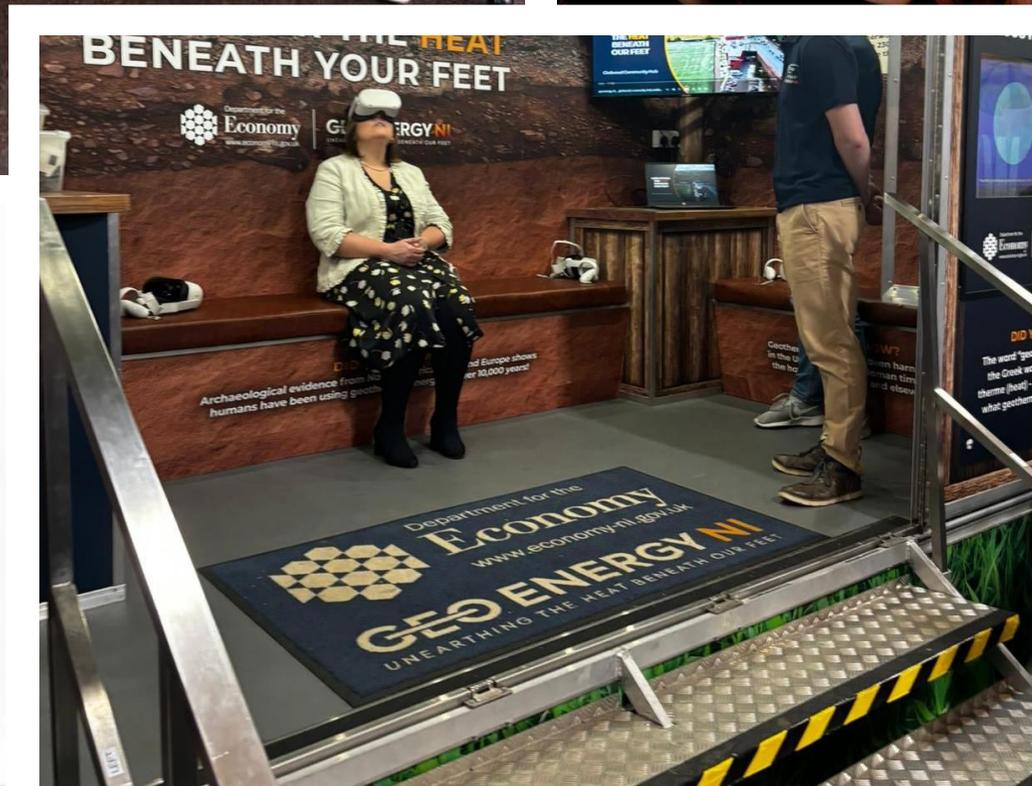


3D Structural Modelling & multi-physics Integration: May-24



VIRTUAL AND AUGMENTED REALITY





SECTORAL EVENT: 20th June 2024, Belfast



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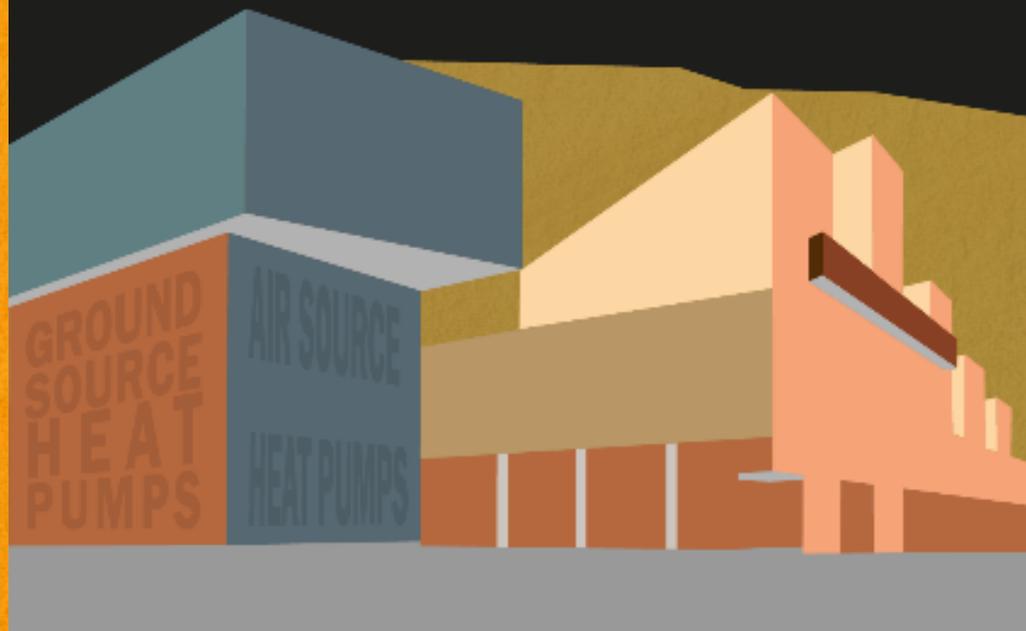
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HEAT PUMPS SME CLUSTER AND KNOWLEDGE NETWORK EVENT



ULSTER UNIVERSITY
YORK STREET, BELFAST
20TH JUNE 2024
SAVE THE DATE

Expressions of interest email: gsni@economy-ni.gov.uk



GEO ENERGY NI
UNEARTHING THE HEAT BENEATH OUR FEET

Thank you for listening

Credits to Conor Lydon @ TetraTech Europe for slides 20-25

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