



# DEEP GEOTHERMAL ENERGY GT ENERGY PROJECTS

**GEOELEC Workshop – Monday 26<sup>th</sup> September, 2011 - London**

# ABOUT GT ENERGY

GT Energy project development in Ireland, N. Ireland & the UK.

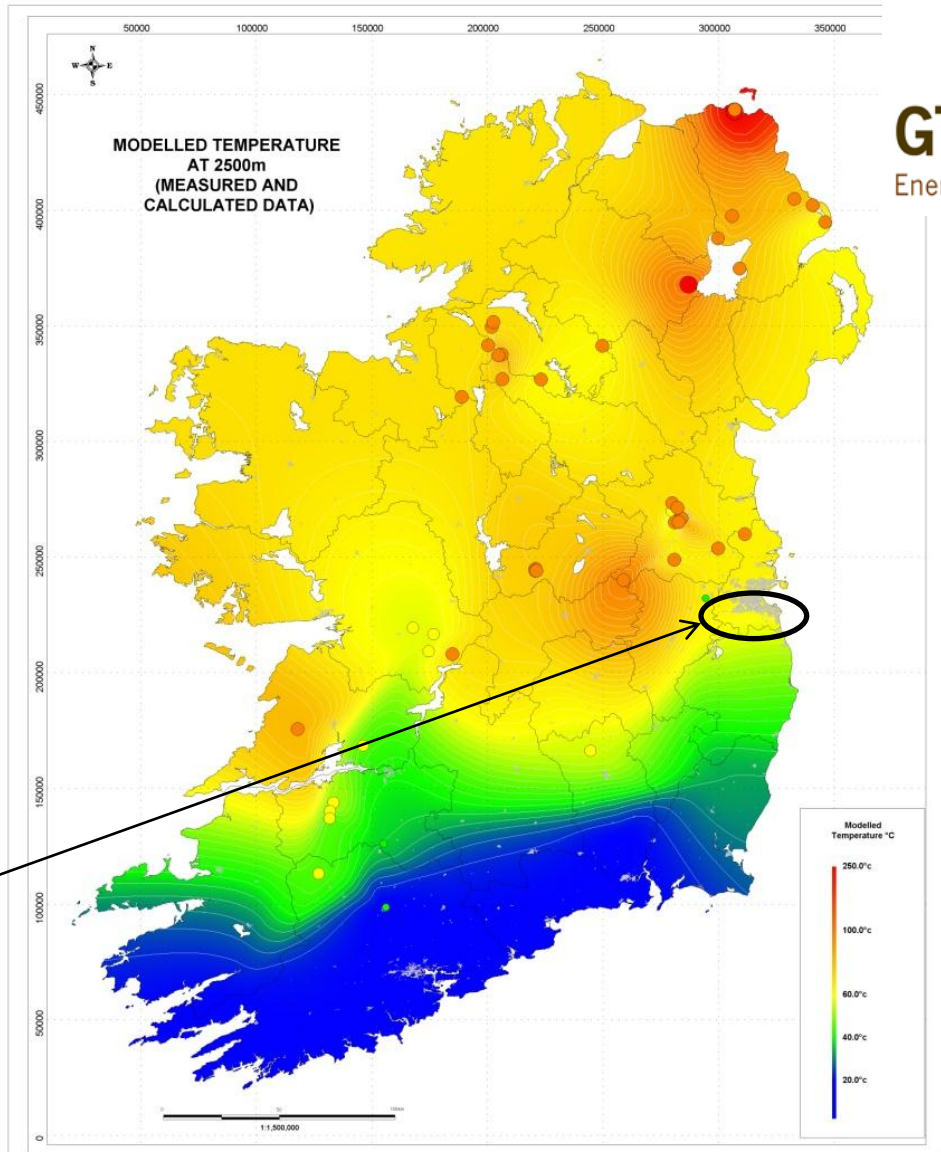
## Milestones

2007	2008	2009	2010	2011
<ul style="list-style-type: none"> <li>GT Energy was established to investigate and develop deep geothermal energy projects</li> </ul>	<ul style="list-style-type: none"> <li>€1.5m programme to prove the existence of a geothermal resource in Dublin commenced</li> </ul>	<ul style="list-style-type: none"> <li>Two 1,400m boreholes confirming a temperature of 46.2°C</li> <li>Strategic Alliance signed with Ballymena Borough Council to develop geothermal heat in N. Ireland</li> </ul>	<ul style="list-style-type: none"> <li>Signed Technology Partnership Agreement with ESBI to feasibly study geothermal power generation at Newcastle site</li> <li>Seismic Acquisition survey undertaken proving basin depth of &gt;4km</li> <li>Pipeline of projects to including heat supply in the UK</li> <li>Collaboration Agreement signed with Manchester City Council</li> </ul>	<ul style="list-style-type: none"> <li>Business model expanded to include Biomass Combined Heat and Power supply to district heating schemes</li> <li>UK pipeline progression since implementation of the RHI by the UK government</li> <li>GT Energy joins the IRE THERM consortium in Ireland to help profile geothermal resources</li> </ul>



# IRELAND

- In 2004 SLR (formerly CSA) undertook a resource assessment of all of Ireland.
- Funded by SEAI
- Identified the Blackrock to Newcastle fault on the edge of the Dublin Basin as potential area of Interest



Geothermal gradient and temperature data modelled using Natural Neighbour Interpolation. Dataset includes preliminary data from Northern Ireland. Contour line interval at 2°C

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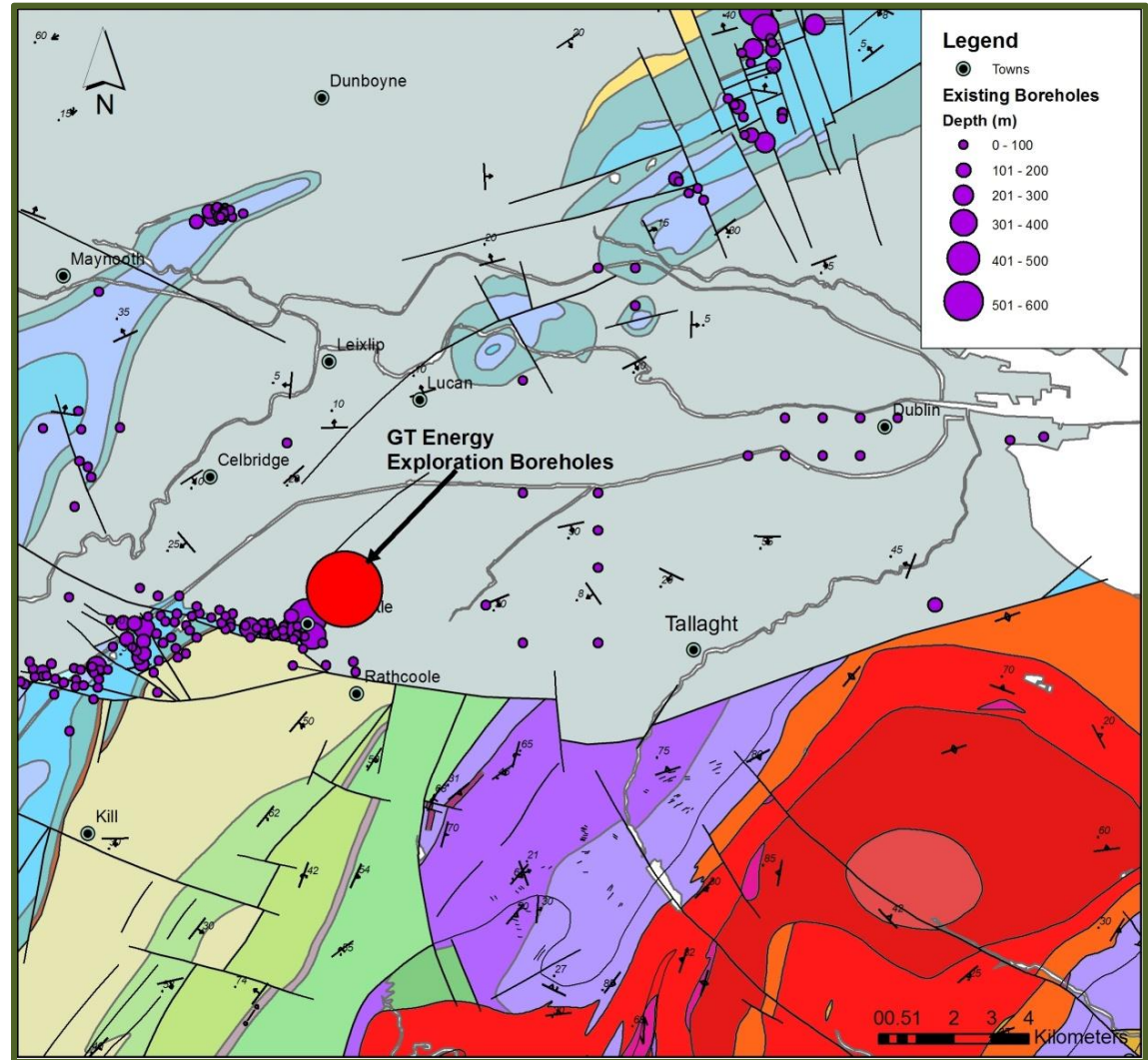
Borehole Temperature YC

● 100 to 250 (2)
● 80 to 100 (34)
● 40 to 60 (10)
● 20 to 40 (3)
● 10 to 20 (0)
● 1 to 10 (0)

PROJECT: GEOTHERMAL ENERGY REVIEW OF IRELAND - Final Report			
TITLE: Modelled Temperature at 2500m (Measured and Calculated Data)			
Scale: 1:1,500,000	Job No. 3085		
Date: 09-06-2004	Dwg. No.		
Author: RG/ES/GLL/JJK	MAP: 12A		
Drawn by: JJK			

# DUBLIN BASIN

- Carboniferous Limestone Basin – est basin depth 2-3km
- Flanked by the Leinster Granite to the North of the BNF
- Newcastle area as the focus of Mineral exploration drilling in the 1970s & 1980s along the BNF
- No reliable temperature data
- Subsurface information limited to 550 m.b.G.L.



# EARLY EXPLORATION

- Two Shallow Boreholes to and 300m on the Basin Margin (2007);
- Two deeper boreholes to 1,400m (2008-2009);

## MAIN CONCLUSIONS:

- High Water yields from shallow boreholes in fractures Carboniferous Limestones;
- Productive Deep Fractures Intersected below 1,000m;
- Water with temperatures of 46.2°C at 1,337 m.



# 2010 EXPLORATION PROGRAMME

- Seismic Reflection Survey
- VSP Survey using 1,400m boreholes to calibrate seismic acquisition
- Microgravity Survey

## MAIN CONCLUSIONS:

- Basin depth 4km at Newcastle
- Estimated T at 4,000m of 130<sup>0</sup> C
- More Data Acquisition required!

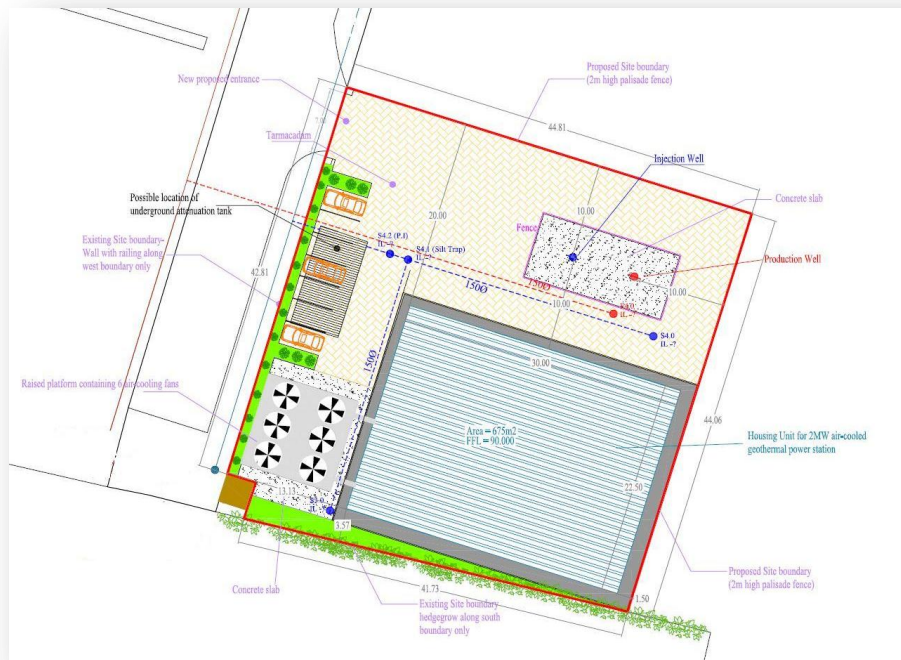


# PLANNING APPLICATION

Newcastle geothermal power plant	
Plant Size	3.5MWe
Plant cost	€32m

Oct 2010

Planning Application Submission



Jan 2011

Planning Permission Granted

# 2011 EXPLORATION PROGRAMME

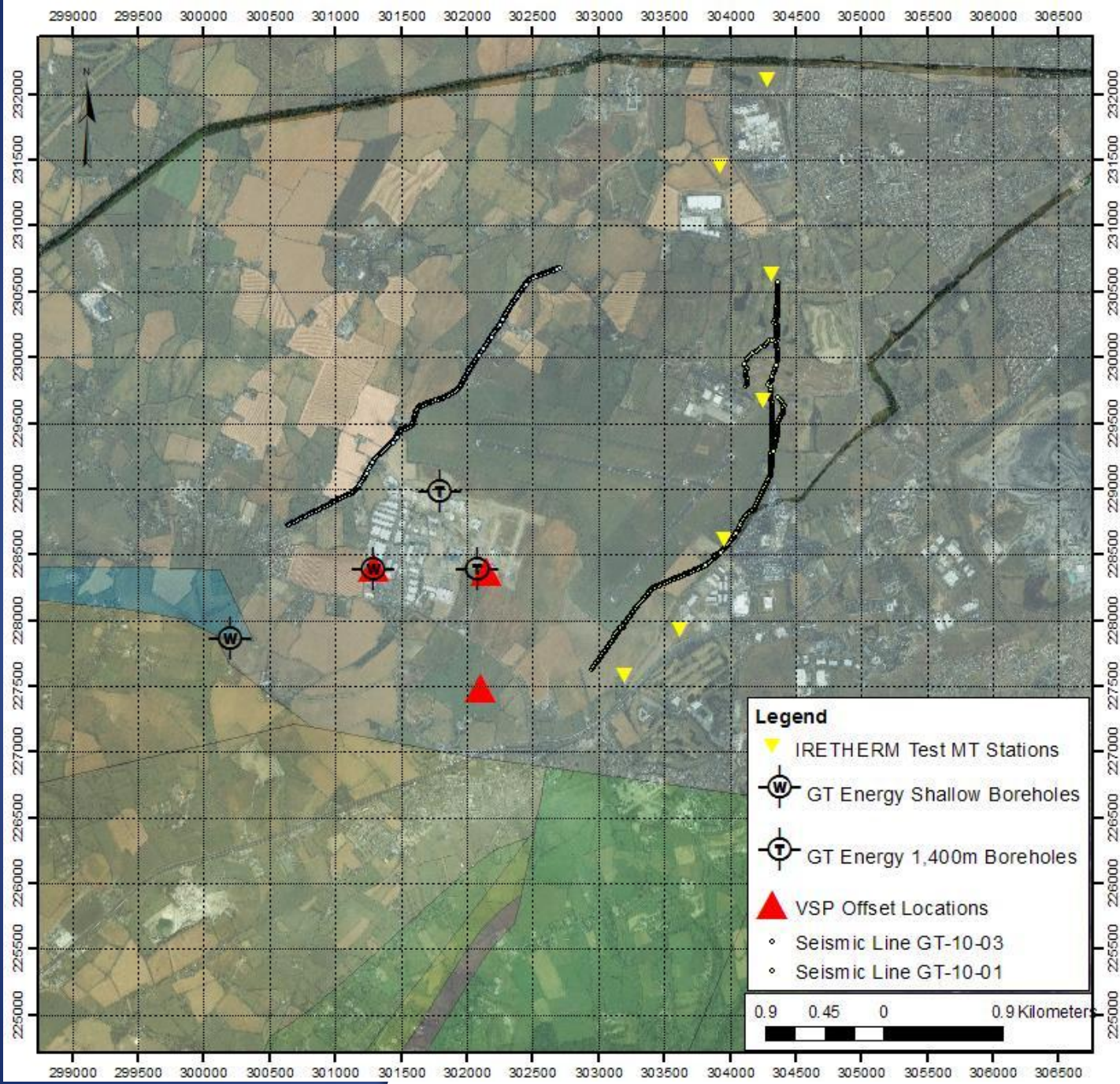
- Test MT Survey as part of the IRETherm project (spacing
- MT Over profile of Seismic Survey line GT-10-01

## MAIN CONCLUSIONS:







- Data currently being processed
- CSAMT required and acquisition parameters being defined
- More Data Acquisition required:
  - AMT/CSAMT at spacing of 500m
  - Seismic Reflection
  - Microgravity



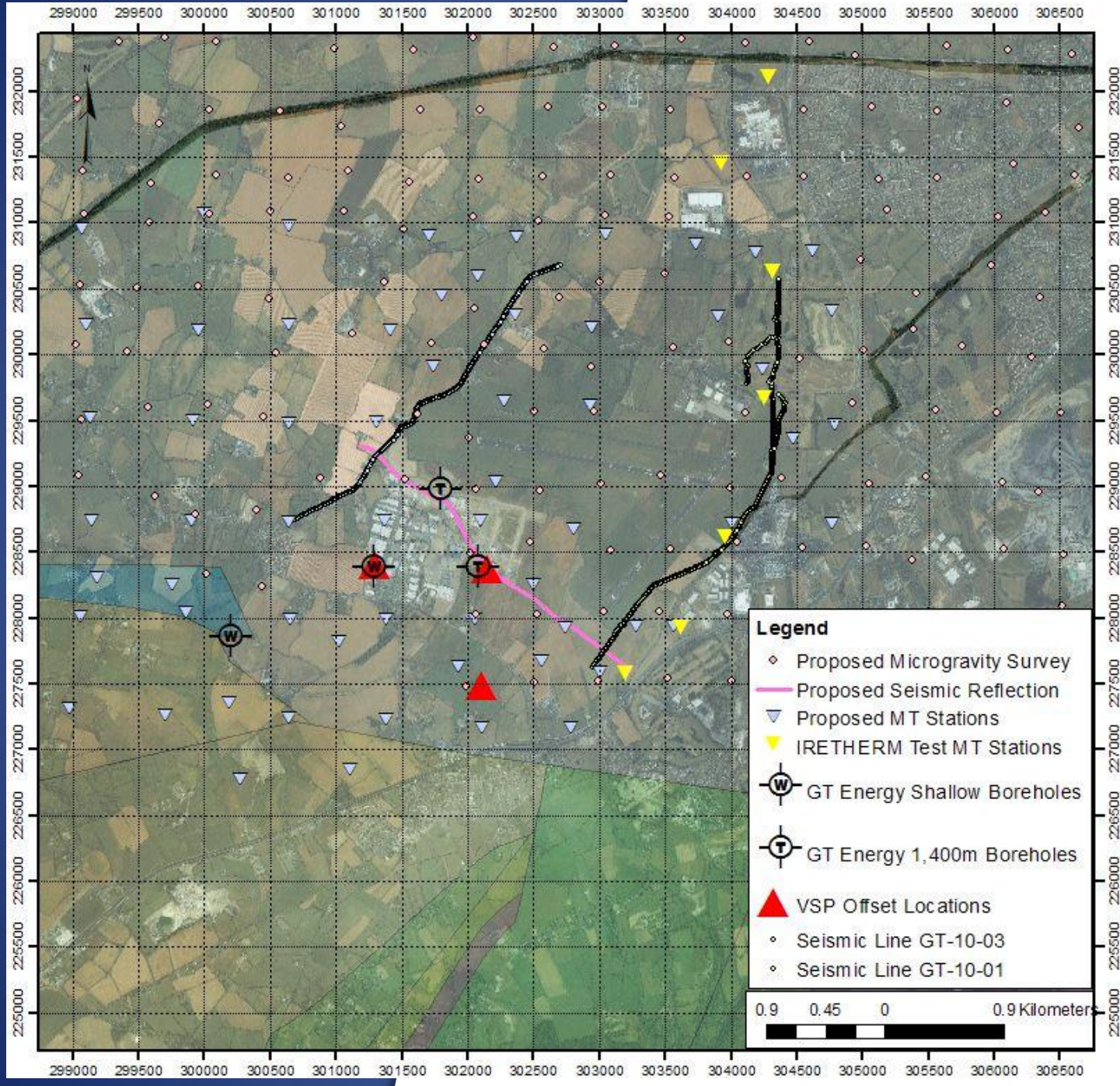




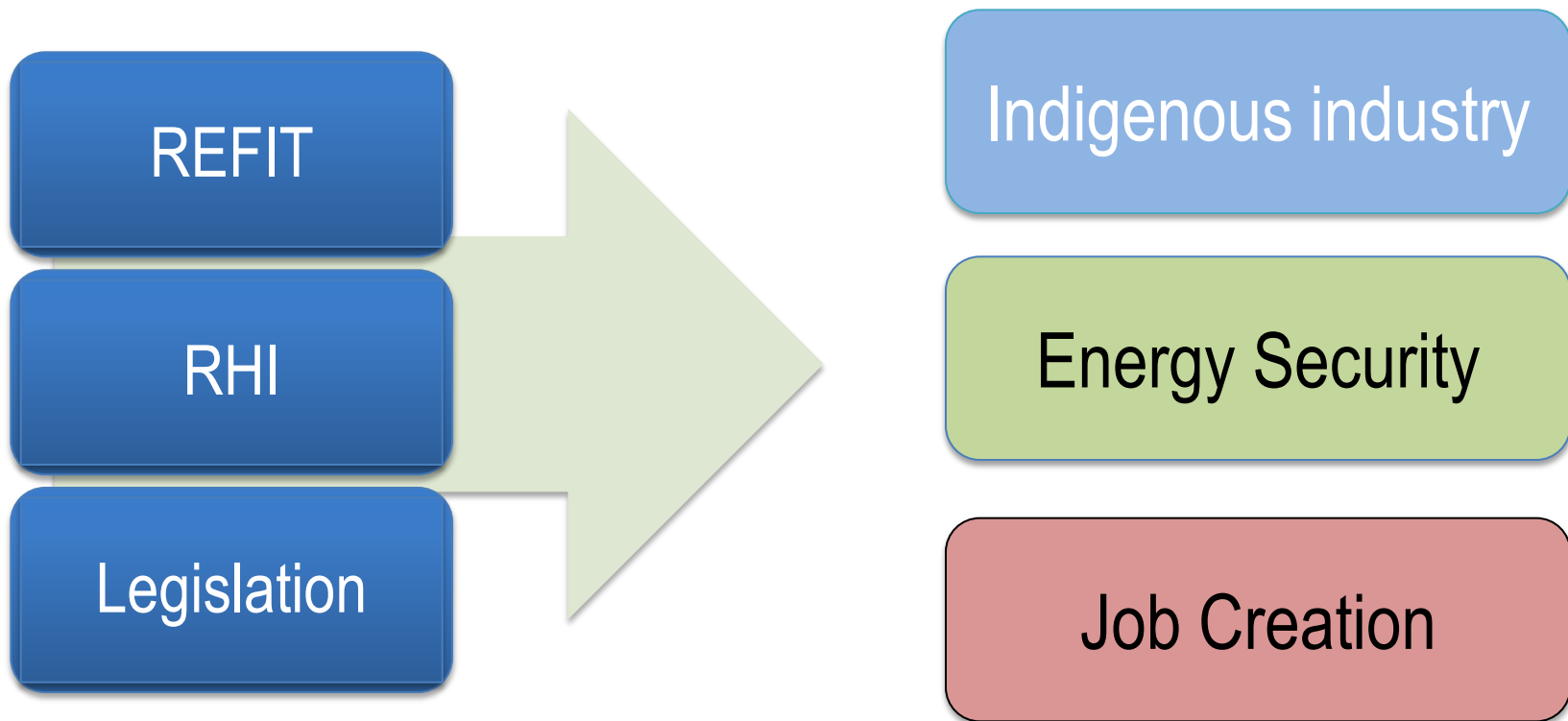
**Legend**

-  IRETherm Test MT Stations
-  GT Energy Shallow Boreholes
-  GT Energy 1,400m Boreholes
-  VSP Offset Locations
  -  Seismic Line GT-10-03
  -  Seismic Line GT-10-01

0.9 0.45 0 0.9 Kilometers



## WHAT IS REQUIRED

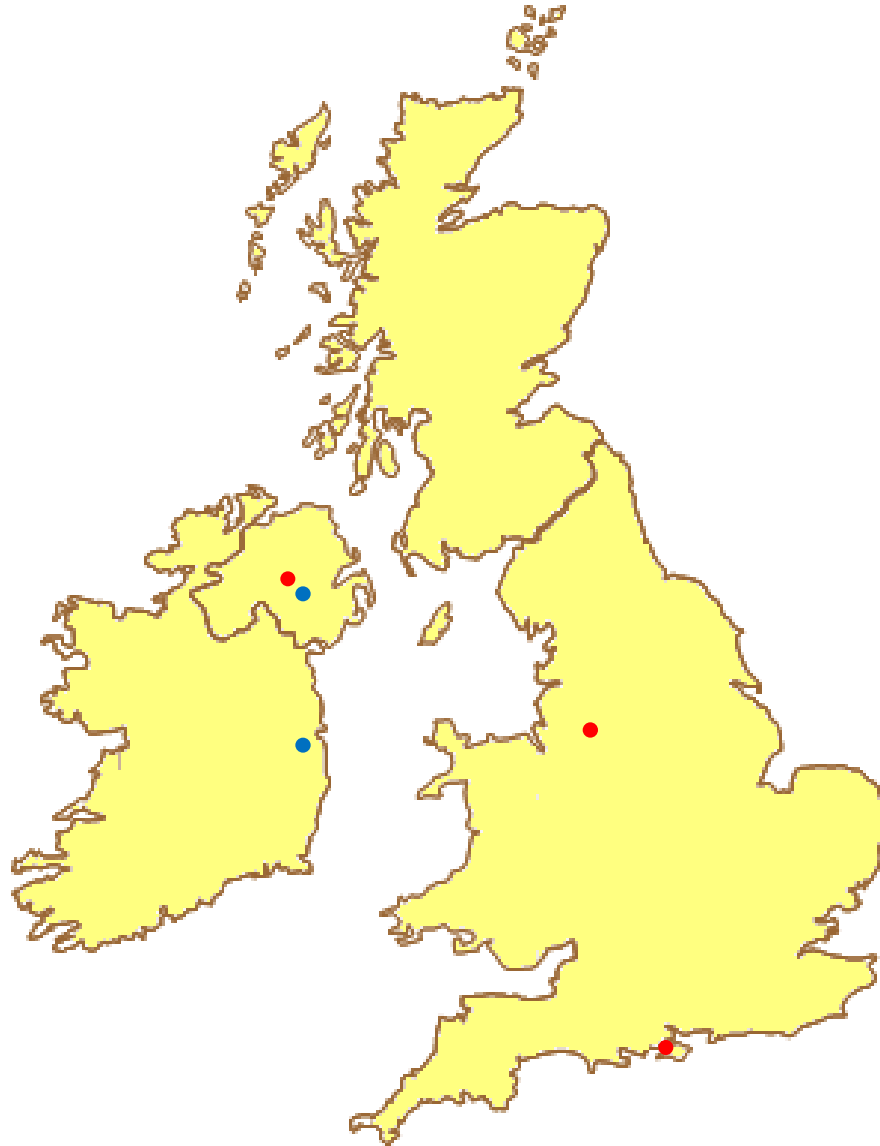


## **CURRENT SECTOR PROGRESS - IRELAND**

- ➔ Legislation to be published in March 2012
- ➔ Support of geothermal energy outlined in the programme for government
- ➔ Need policy makers to deliver on their promises

# GT ENERGY PROJECTS

Projects in  
Ireland, N. Ireland  
& the UK.



# CONTACT DETAILS

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