The Shallow Geothermal Resource Energy Project:

National geothermal mapping & sustainable development

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SLR ARUP

Geoscience Initiative

NDP

National Development Plan 2007 - 2013

GSI

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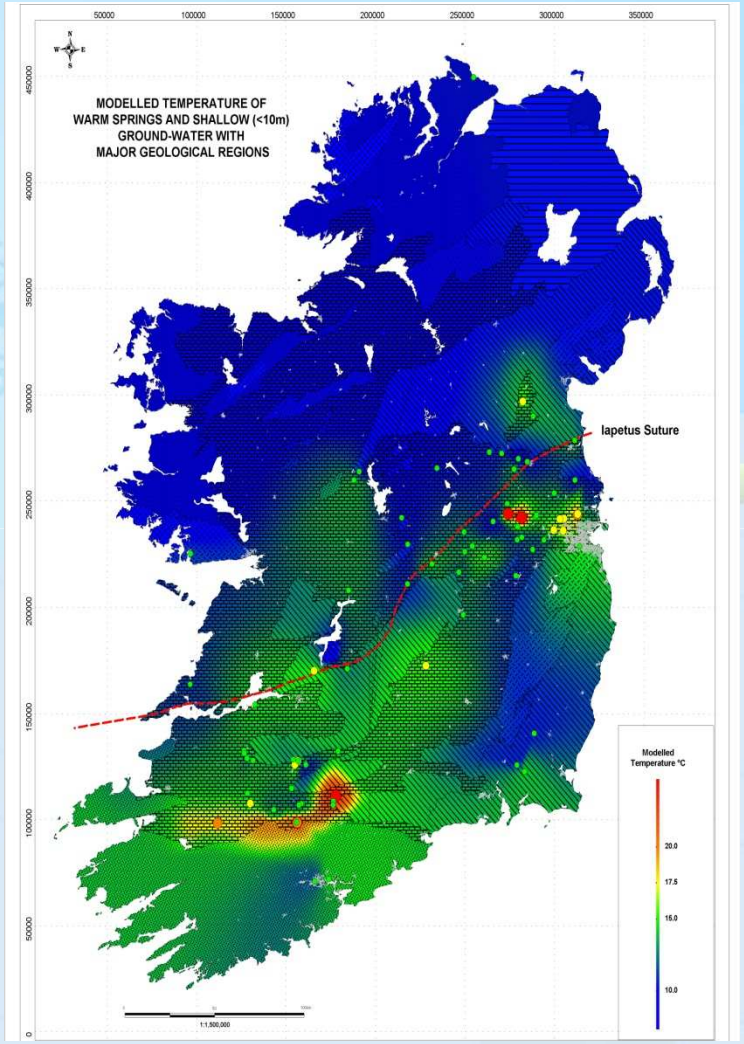
Presentation outline

- Uses of the maps
- Sustainable development
- Existing geothermal mapping/data
- Data collection
- International examples
- Proposed map types
- Map construction
- Request for data

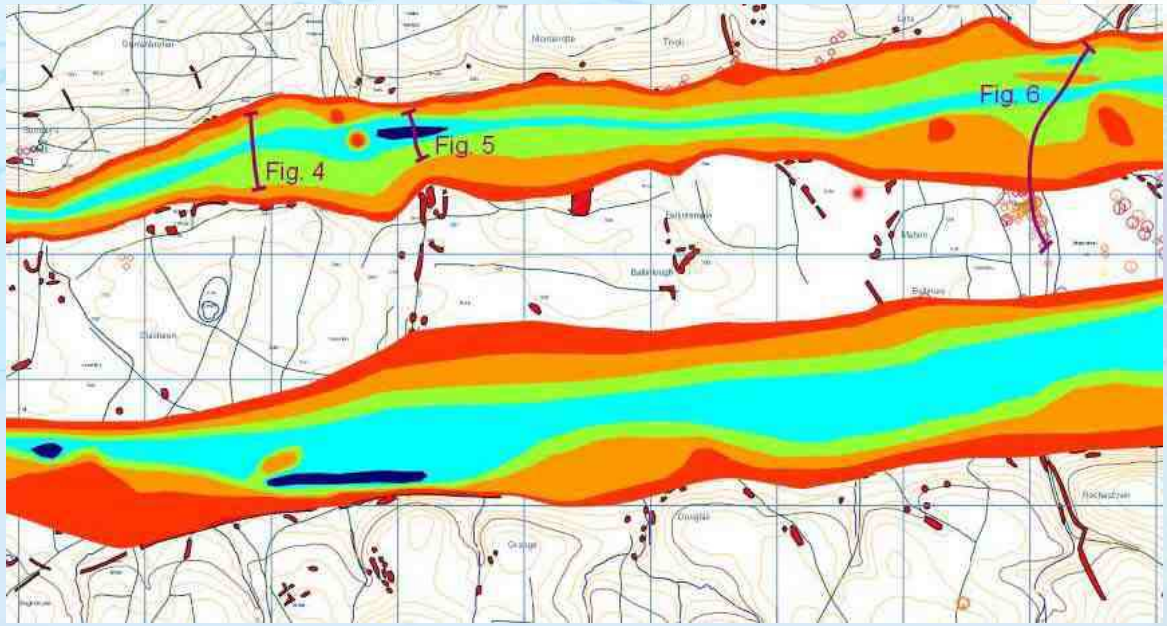
Uses of the maps

- Promotion
- Public awareness
- Informed decisions
- Preliminary site suitability assessment tool
- Educational tool
- Developing research opportunities



Sustainable Development

- Site selection
- Facilitating future planning decision at local authority level
- Appropriate installations in different areas
- Reduce the number of installations in unsuitable conditions



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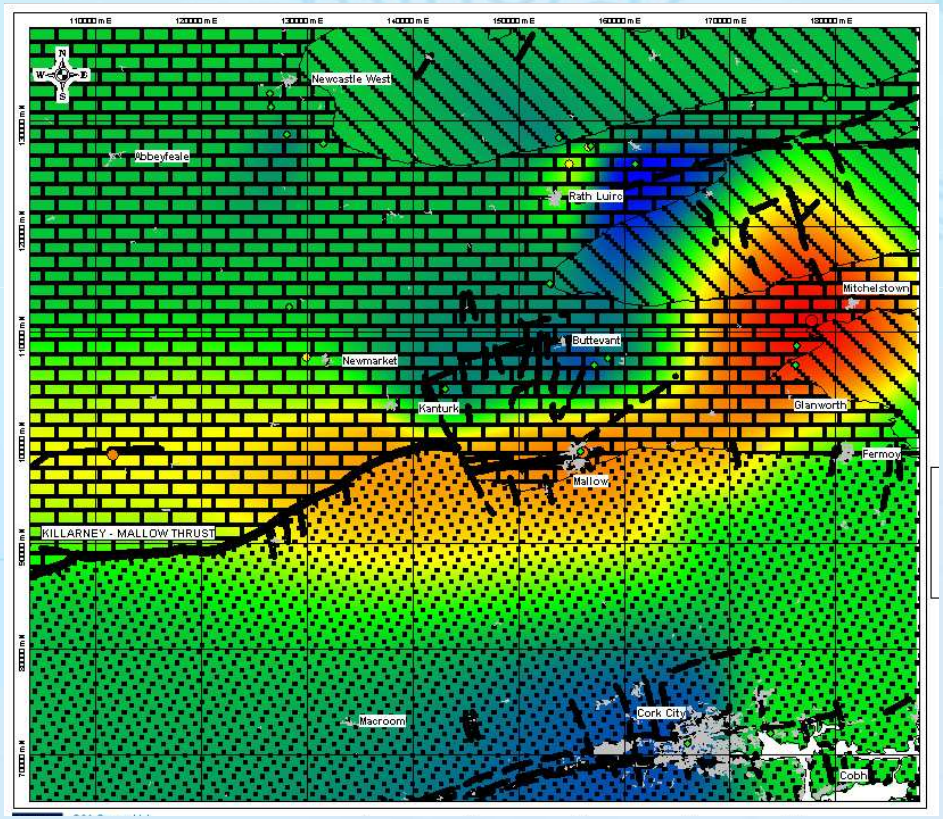
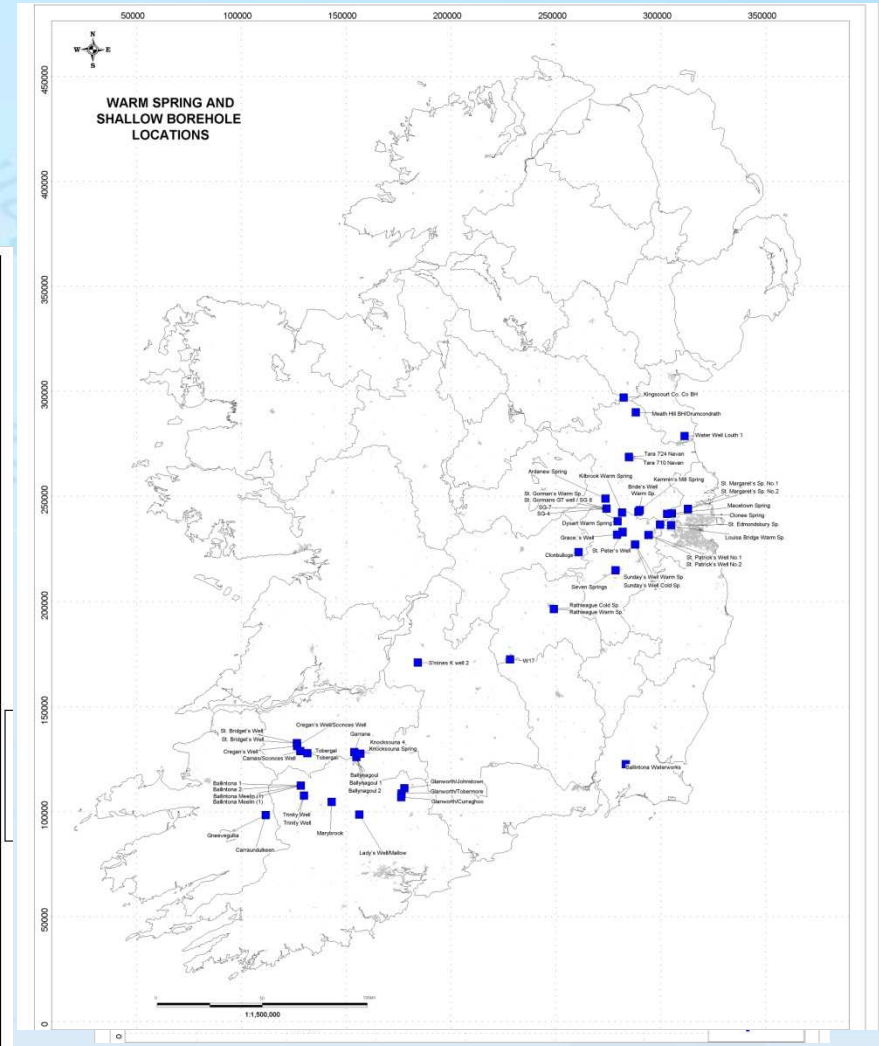
Existing geothermal mapping/data

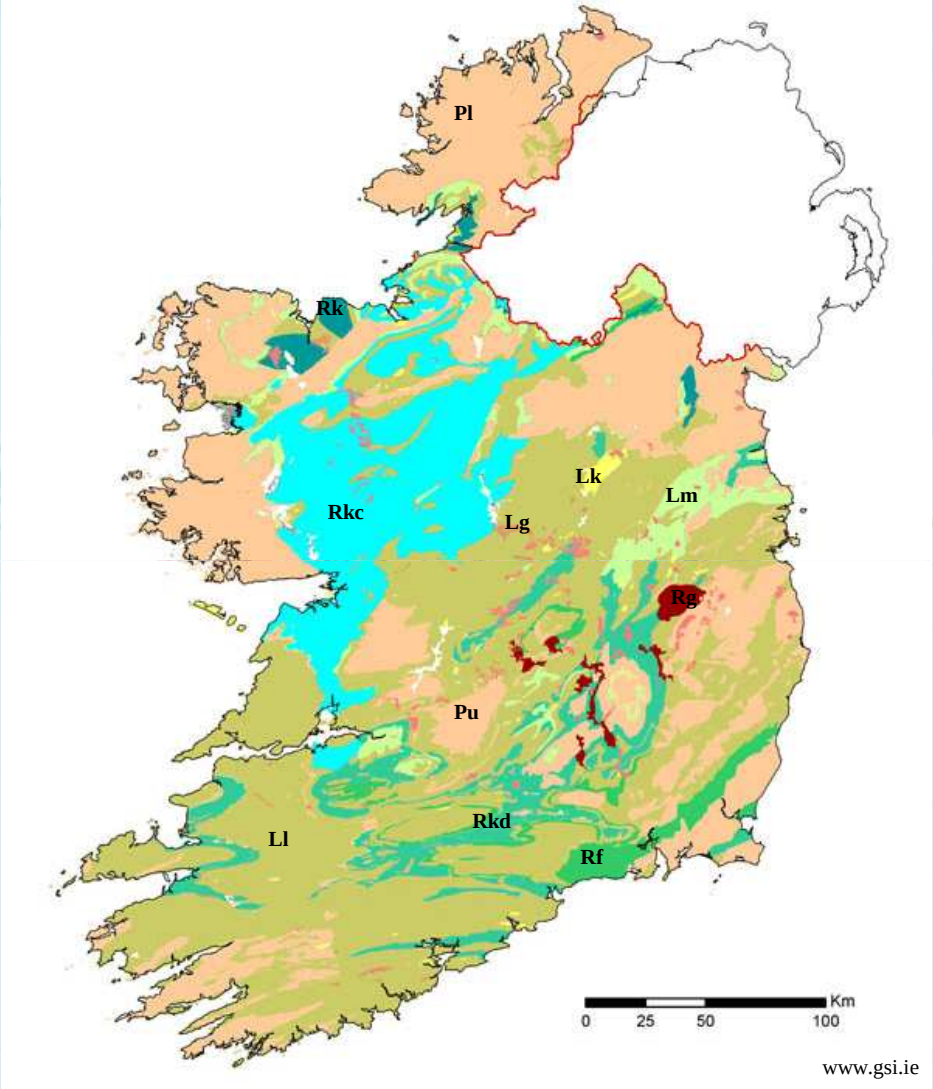
- Warm springs data





Data collection

- Existing geological & hydrogeological data:
  - SEAI Geothermal Atlas Temperature Data
  - Met Éireann mean Soil Temperature
  - EPA/Teagasc – Soil/Subsoil Data
  - GSI Bedrock Geology
  - GSI Groundwater Aquifer Classification
  - GSI Interim Vulnerability Data
  - County Groundwater Well Data
  - Source Protection Areas
  - Karst Data.



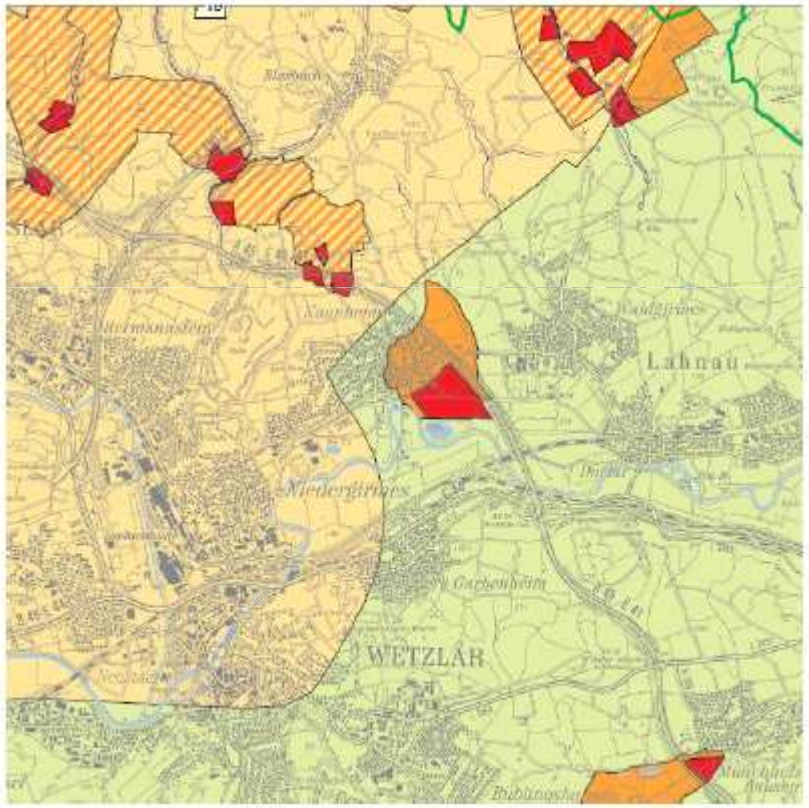
British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

GeoReports

Thermal conductivity-diffusivity (based on 1:250 000 Bedrock Geology map)
The linework and formation names displayed on the following map is based on the BGS Digital Map of Great Britain at the 1:250 000 scale and may differ from those shown in other modules that are based on 1:50 000 scale mapping.

Key to Thermal conductivity-diffusivity:

Map colour	Computer Code	Geological unit	Composition	Thermal conductivity W m^{-1} K^{-1}	Thermal diffusivity m^2 day^{-1}
	BLI-LMST	BLUE LIAS FORMATION	LIMESTONE	2.54	0.1019
	CHAM-ARG	CHARMOUTH MUDSTONE FORMATION	ARGILLACEOUS ROCKS, UNDIFFERENTIATED	1.3	0.0509
	MMG-ARG	MERCIA MUDSTONE GROUP	ARGILLACEOUS ROCKS, UNDIFFERENTIATED	1.87	0.0697
	PNG-LMAR	PENARTH GROUP	LIMESTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED	2.2	0.089



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Proposed map types

- Geothermal Energy Resource and Collector Suitability Maps
- Will be produced in GIS and will include:
  - Shallow Geothermal Energy Resource map
  - Open Loop Collector Suitability map
  - Closed Loop Collector Suitability map set

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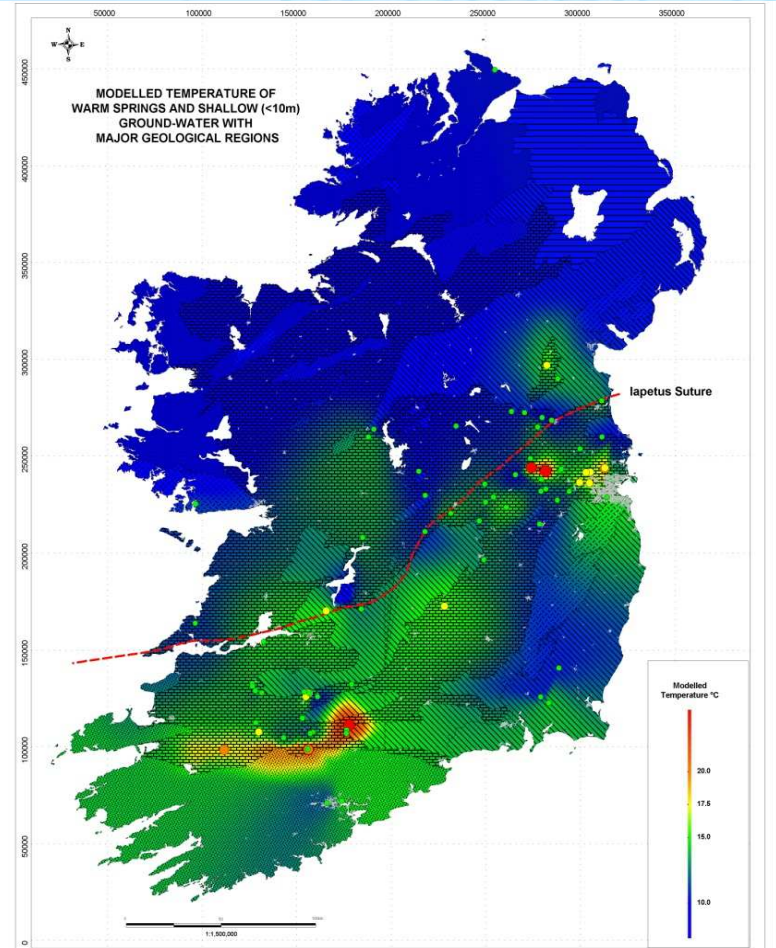
Shallow Geothermal Energy Resource Maps



- Update 100m temp (SEAI 2004 atlas)
- Thermal conductivity / diffusivity map for bedrock geological units?
- Soil thermal conductivity maps
- Existing & any new additional data

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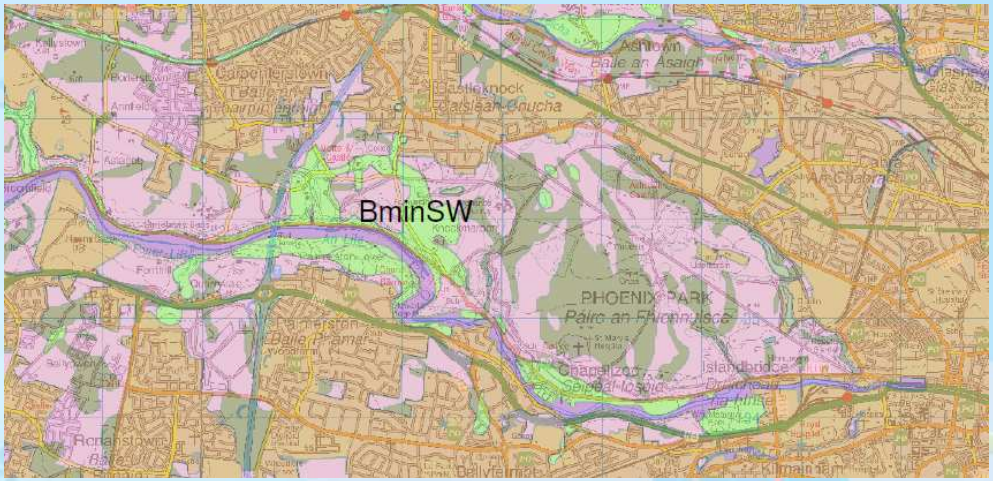
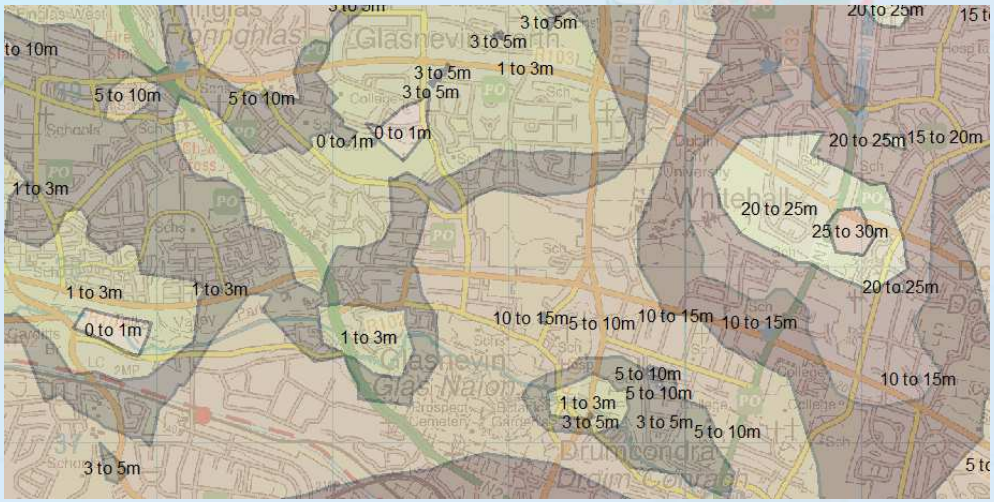
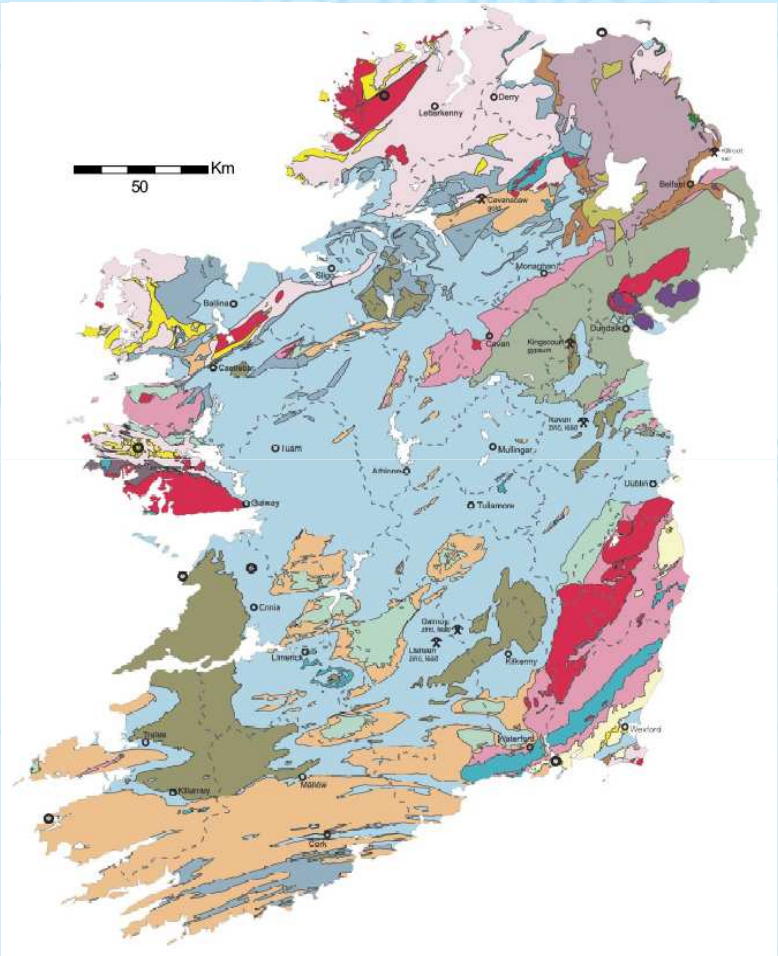
Closed Loop Collectors Suitability - Horizontal

- The datasets that will be considered include:
  - Mean Soil Temperature
  - Depth to Rockhead maps
  - Soil & Subsoil Type
  - Published thermal conductivity values such for soil types





Closed Loop Collector Suitability - Vertical



- The datasets that will be considered include:
  - Bedrock Geological Units
  - Thermal conductivity (new data based on third level research data)
  - Thermal diffusivity (new data based on third level research data and TRT data)
  - Aquifer type – Permeability (existing GSI data)

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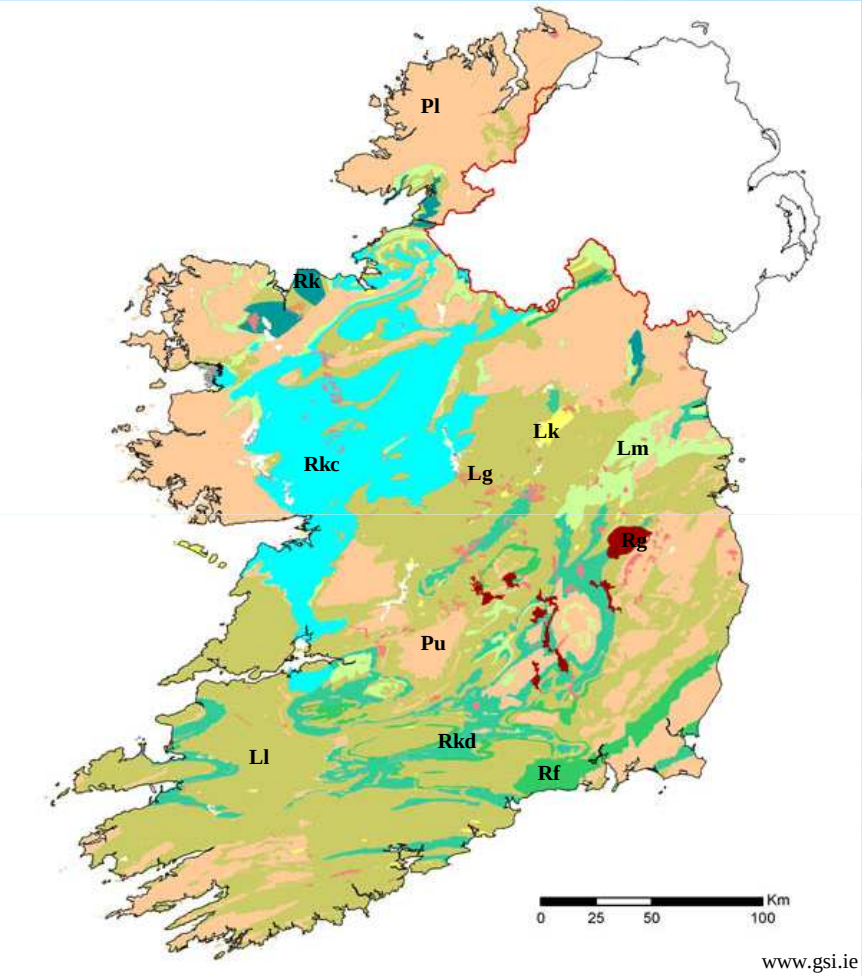
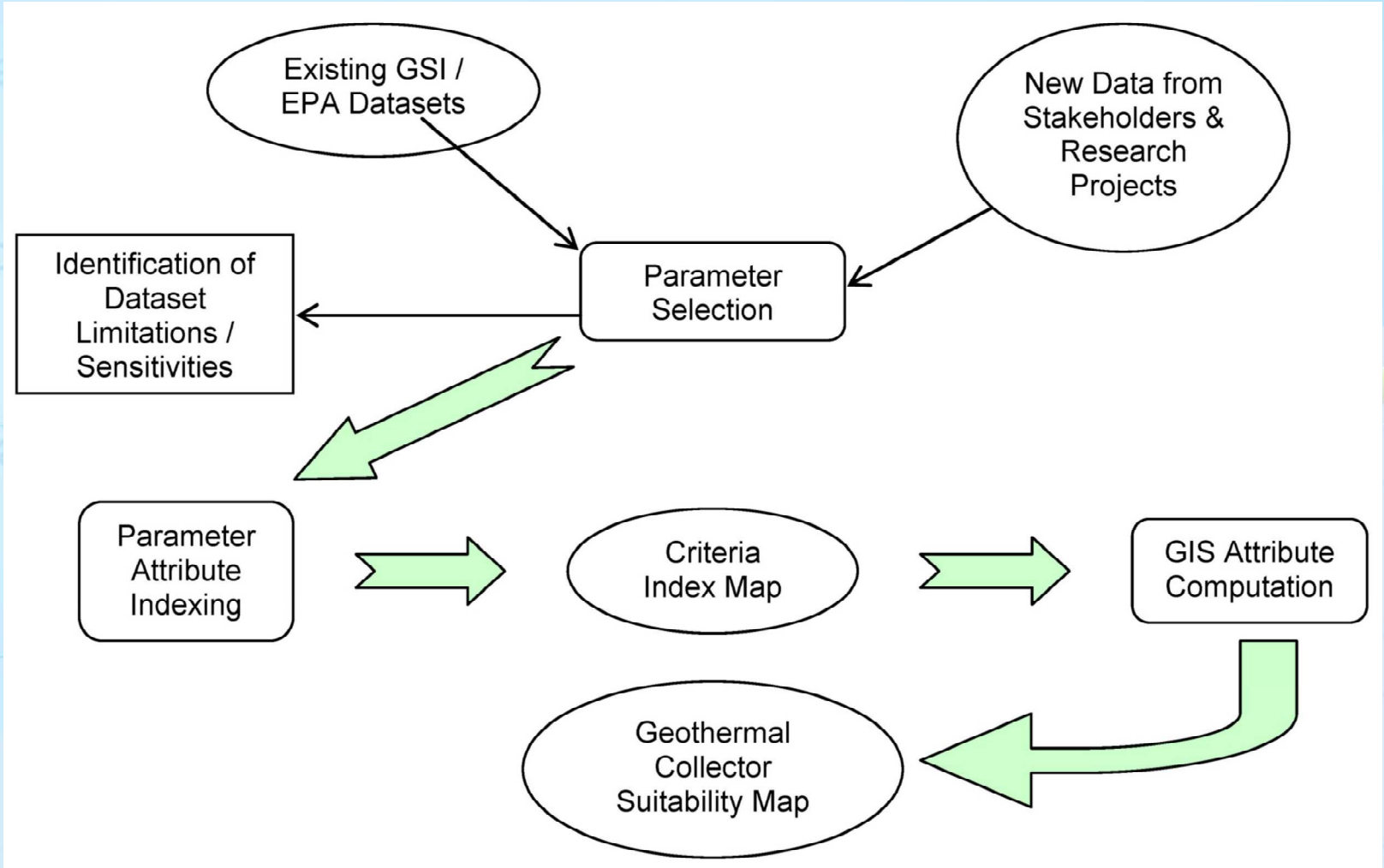
Open Loop Collectors Suitability

- The data will include:
  - Geological Unit
  - Aquifer Classification
  - Aquifer Productivity
  - Interim Vulnerability Data
  - Open loop collector flow rates (new from installers and industry stakeholders)



Map construction



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Request for data

- Key that we receive data for a wide area