

GENERAL INFORMATION	
Parameter name	Groundwater body suitable for open-loop systems
Name of layer	PP16_GEUS_GW_body
Category	Resources for open-loop systems
Definition	Distinct volume of groundwater within an aquifer or system of aquifers, which is hydraulically isolated from nearby groundwater bodies and provides enough yield with suitable temperatures for open-loop systems (groundwater heat exchangers) with and/or without thermal storage.
Harmonized unit	none
Relevance for shallow geothermal energy	Extent of groundwater bodies suitable for the installation of open loop systems.
Data type	Discrete labels
Data format	vector: polygon
Projection	EPSG: 3034
Color	Preferred color for each class: 1 – blue 2 – dark red 3 – magenta
Dataset selected for pilot area	Bratislava, Vienna, Girona, Ljubljana, Cardiff, Brussels, Cork Zaragoza, Aarhus

ATTRIBUTES	
class	Discrete data classes based on a joint legend:
1.	groundwater body suitable for open-loop systems without storage
2.	groundwater body suitable for aquifer thermal energy storage
3.	groundwater body suitable for open-loop systems with and without storage
class_URI	Definitions of the attributes, e.g., INSPIRE, project vocabulary, etc.
linkdataurl	Link to data or additional information about the data, e.g., link to national databases (text)
remark	Free text for additional information (text)
repositoryurl	Link to this factsheet (text)

DATA SOURCE	
Pilot area	Aarhus PP16
Data source	Common Public hydrological model FOHM National borehole database JUPITER National geophysical database GERDA
Contact data owner	cdi@geus.dk

Explanatory text English

The groundwater bodies have been designated based on model layers of Quaternary Sand more than 10 m thick in the 3D FOHM model. The outline of the areas received from the model grid have been smoothed manually based on borehole information.

Since both public and private extraction of drinking water is widespread, heat storage at higher temperatures is found not to be not realistic in the greater part of the municipality. Only in the coastal section of two buried valleys this could potentially been an option following an Environmental Impact Assessment (EIA) and as well as an assessment of potential heat loss.

Originally the FOHM model was setup based on borehole data and fairly dense grids of electromagnetic sounding (TEM). Thus, the degree of documentation of the groundwater bodies is related to the density of boreholes and geophysical soundings. Buffer zones with less than 500 m to sounding and boreholes respectively were generated.

Outside both buffer zones documentation was assessed as poor (3).
In areas with only one buffer zone, the documentation was assessed as moderate (2).
In areas containing both buffer zones, documentation was assessed as good (1).

Note that no permit is granted unless an environmental impact screening is carried out and the requirements of the current legislation are met.

Explanatory text national language

Language

Danish

Forekomster af vandførende lag egnet til åbne grundvandsbaserede energianlæg er blevet udpeget på baggrund af modellag af kvartært sand, der er mere end 10 m tykke i 3D [FOHM-modellen](#). Afgrænsning af områderne, er optegnet og glattet manuelt på baggrund af kantede tykkelse grids fra modellen suppleret med oplysninger fra borerer dybere end 25 m.

Oprindeligt blev FOHM-modellen opstillet på baggrund af boringsoplysninger og relativt tætliggende geofysiske målinger (TEM og PACES). Graden af dokumentation af forekomsterne er således relateret til tætheden af borerer og geofysiske målinger. For at vurdere dokumentationsgraden er der genereret bufferzoner med mindre end 500 m til henholdsvis geofysiske sonderinger og borerer.

Uden for begge bufferzoner er dokumentationen vurderet som dårlig (3)
I områder med kun en bufferzone er dokumentationen vurderet som moderat (2)
I områder med begge bufferzoner er dokumentationen vurderet som god (1)

Der er således alene tale om en geologisk udpegning, hvor hensyn til eksisterende grundvandsindvinding eller andre arealinteresser er ikke inddraget i nærværende tema. Der er i henhold til det benyttede koncept i stedet udarbejdet specifikke konflikt temaer og et "trafiklys tema" der samlet viser mulighederne for etablering af grundvandsbaserede energianlæg.

Da både offentlig og privat udvinding af drikkevand er udbredt, synes varmelagring ved højere temperaturer dog som udgangspunkt ikke at være realistisk i størstedelen af kommunen. Kun i den

kystnære del af to begravede dale kan dette potentielt være en mulighed, hvilket dog først skal undersøges nærmere og i givet fald vil kræve en dispensation fra gældende lovgivning.