

Future Cities

urban networks to face climate change

Making city regions fit to cope with the predicted impacts of climate change



RESULTS ON ENERGY RESEARCH ON LUCILINE PROJECT

The method followed to define the environmental objectives to advance on the project is the “Approche Environnementale de l’urbanisme” (Environmental approach for the town planning) developed by the French environmental Agency (ADEME). In order to follow this method and to integrate environmental issues at the beginning of the conception of the urban project Rouen Seine Aménagement made the choice to work with an urban planner agence DEVILLERS accompanied by an environmental assistant, PENICAUD ARCHITECTURE ENVIRONNEMENT. Thanks to that method and the specific expertise of the PAE agency, the environmental reflection is now implemented at two levels in the project, the district level and the building level.

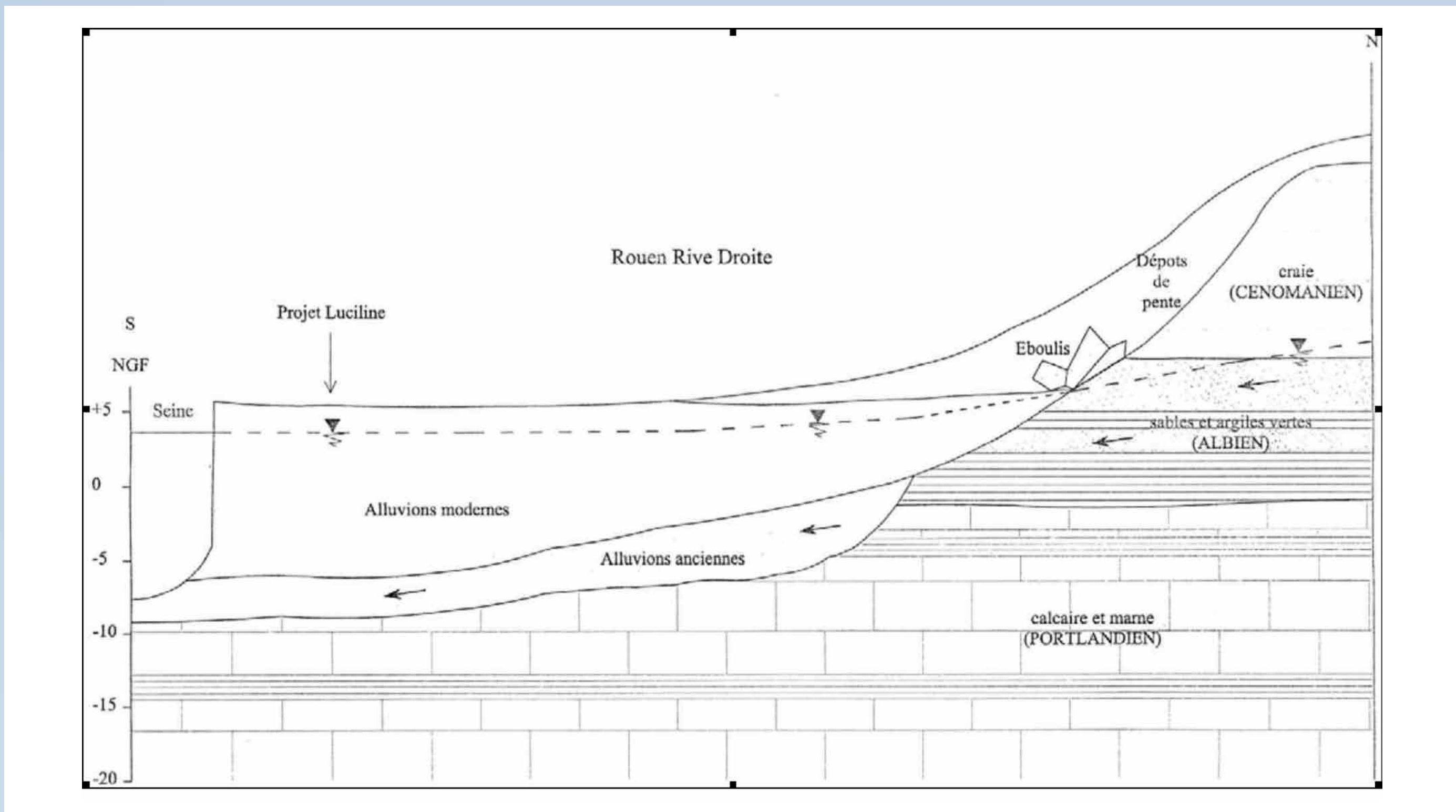
THE DISTRICT LEVEL: THE ENERGY POINT OF VIEW - STUDY OF RENEWABLE ENERGY POTENTIAL OF THE SITE

Wind power: The site is little favorable to the using of the energy wind turbine.

Solar power: The distant masks are relatively moderated. The worn shadows by the neighboring hill-sides confines at the first half an hour of the morning, and the last half hour of the evening. The annual solar potential is of the order of 1.000 kWh / m² / year.

Biomass / the potential use of wood: The advantage of this resource is that it is a local production. However there are plenty of implementations constraints. An important building surface, lot of vehicle movements, creation of a chimney and gas emissions which are not compatible with the image which the city wishes to give to the project.

Geothermal energy: Two groundwater sources exist under the project Luciline, one in 20 m depth the alluviums groundwater, and the other one in 70 m depth the limestones of Portlandien groundwater. Their use, if their debit is sufficient, could answer the energy needs of the project. An historical and documentary study confirmed the existence of 2 potentially exploitable groundwater sources.



THE BUILDING LEVEL: DEFINITION OF ENERGY NEEDS

The energy needs of the future district are calculated considering that low consumption buildings will be planned.

Building housing:

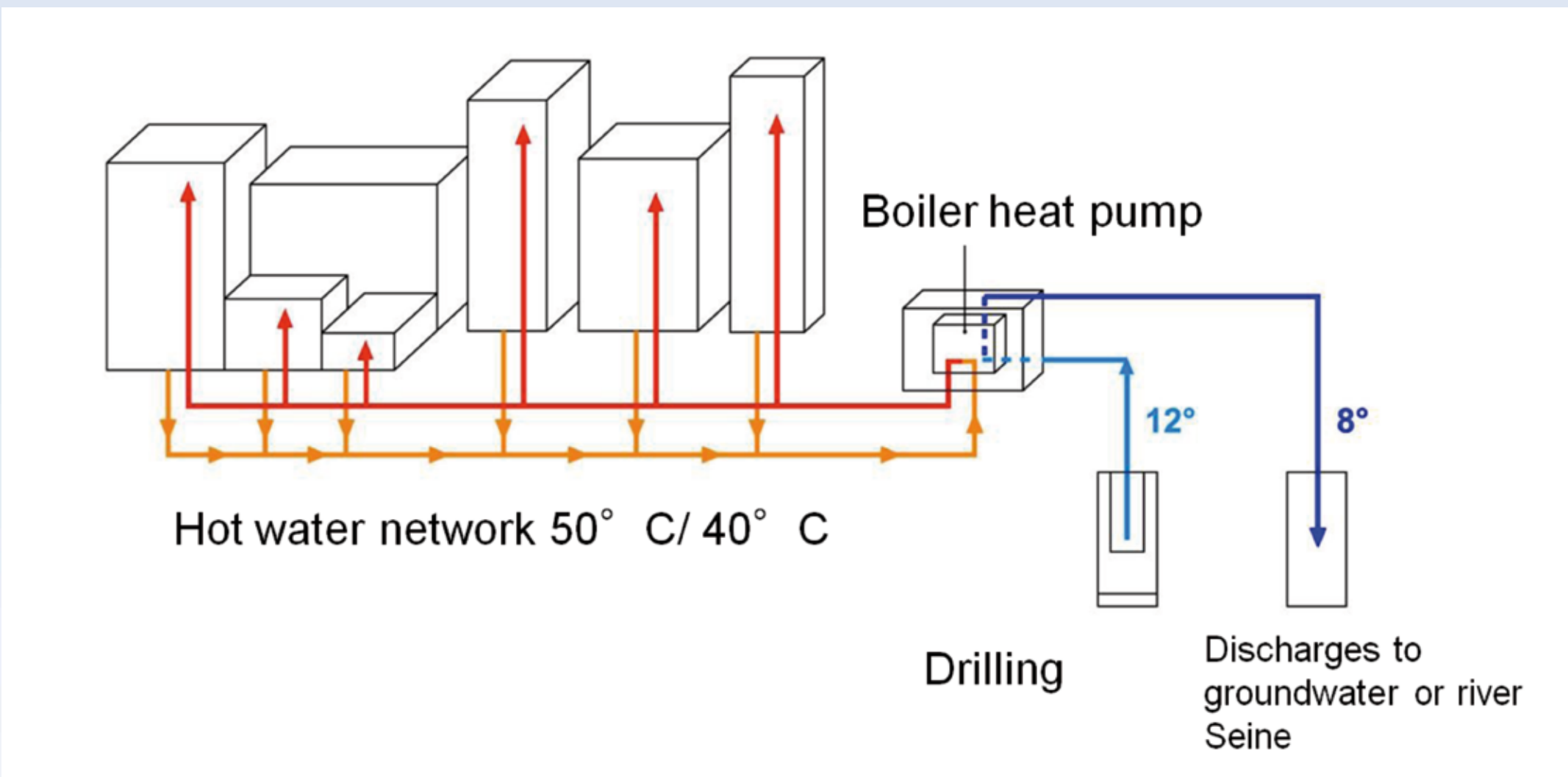
The consumption of housing will be less than 65 kWh primary energy / m² / year, roughly estimated as:

- heating: 15 kWhpe / m² / year
- ventilation: 15 kWhpe / m² / year
- hot water: 20 kWhpe / m² / year
- lighting: 15 kWhpe / m² / year

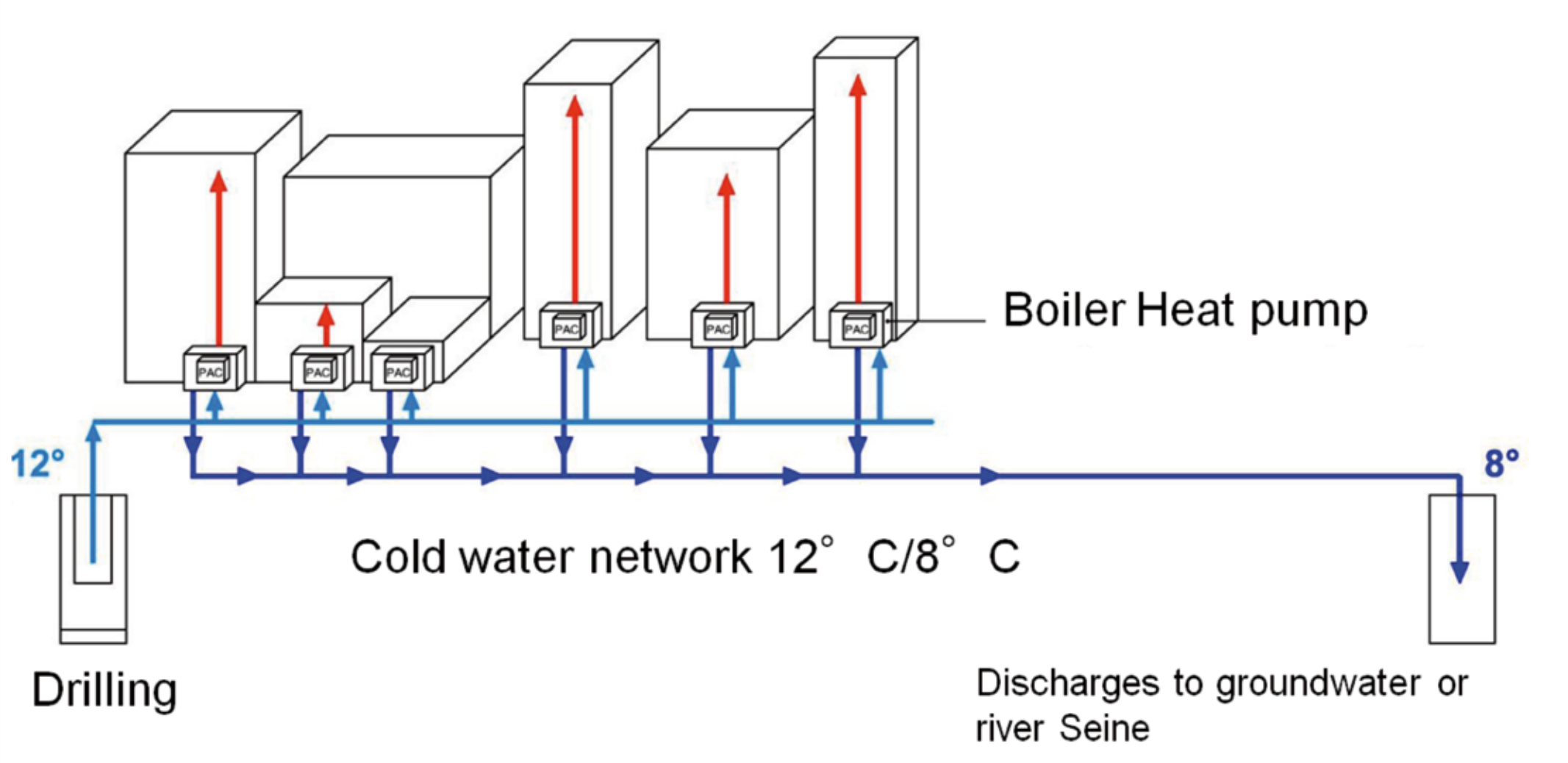
Office building:

The consumption of office will be less than 50% of the reference primary energy (65 kWhpe / m² / year). Results of test drilling confirm the pumping potential of the groundwater to answer the future district needs. Between 5 and 8 drillings should be necessary. Currently two solutions are studied. The first one, consist in delivering the buildings with groundwater heated up using one general heat pump for the district. Another solution is to directly deliver the water pumped up from the aquifer to each building, equipped with its own boiling heating pump.

A heating network



A groundwater network



PROJECT PARTNERS

