

# GEOEXCHANGE ON PARLIAMENT HILL EXPLAINED

A network of thermal-exchange pipes sunk deep into the bedrock will transform the ground under the parliamentary complex into a giant air conditioning and heating unit.

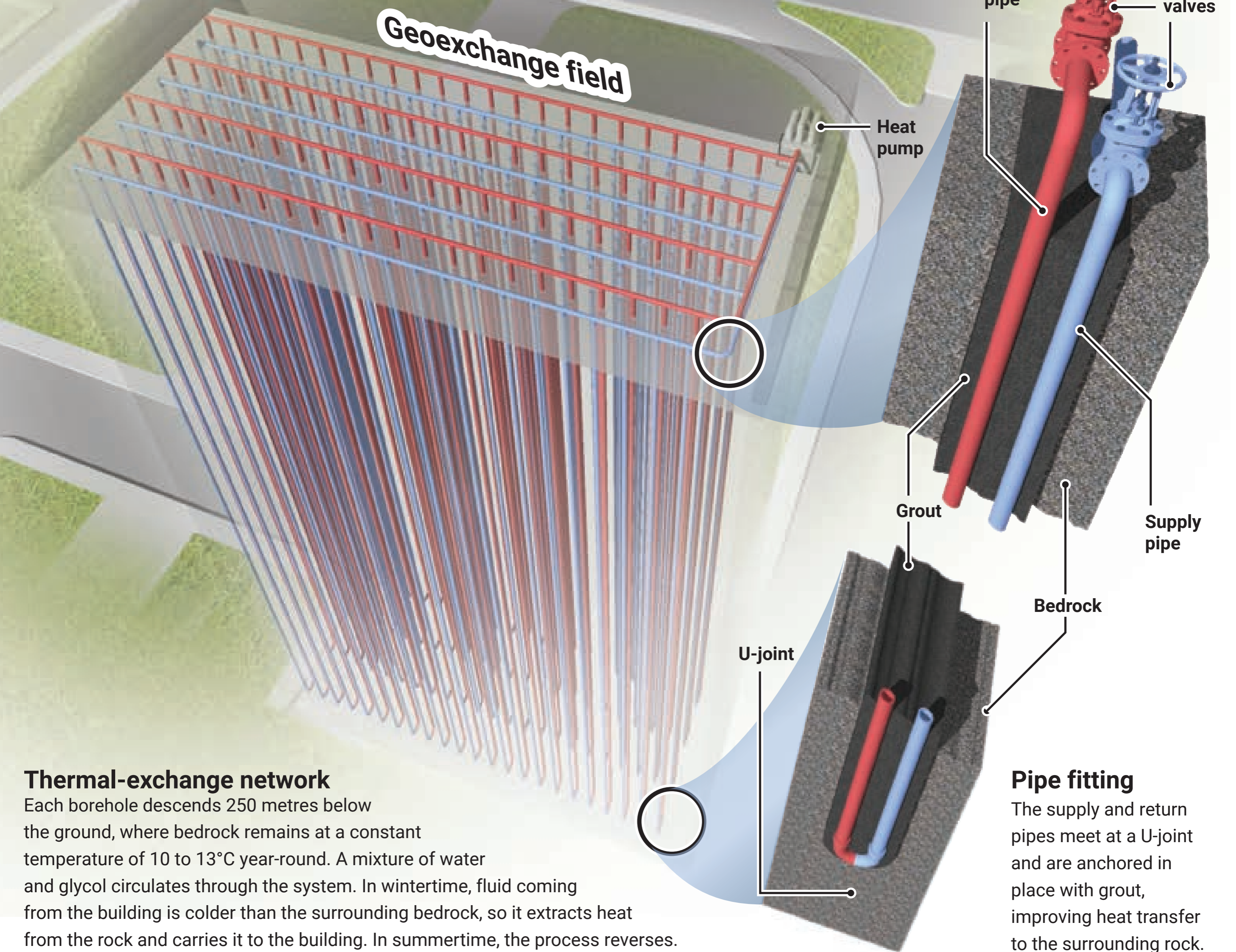


## Centre Block

Heat generated as a byproduct of cooling Centre Block in summertime will be redirected to the geexchange field and stored underground. During wintertime, that heat can be withdrawn to warm the building.

## Geexchange borehole

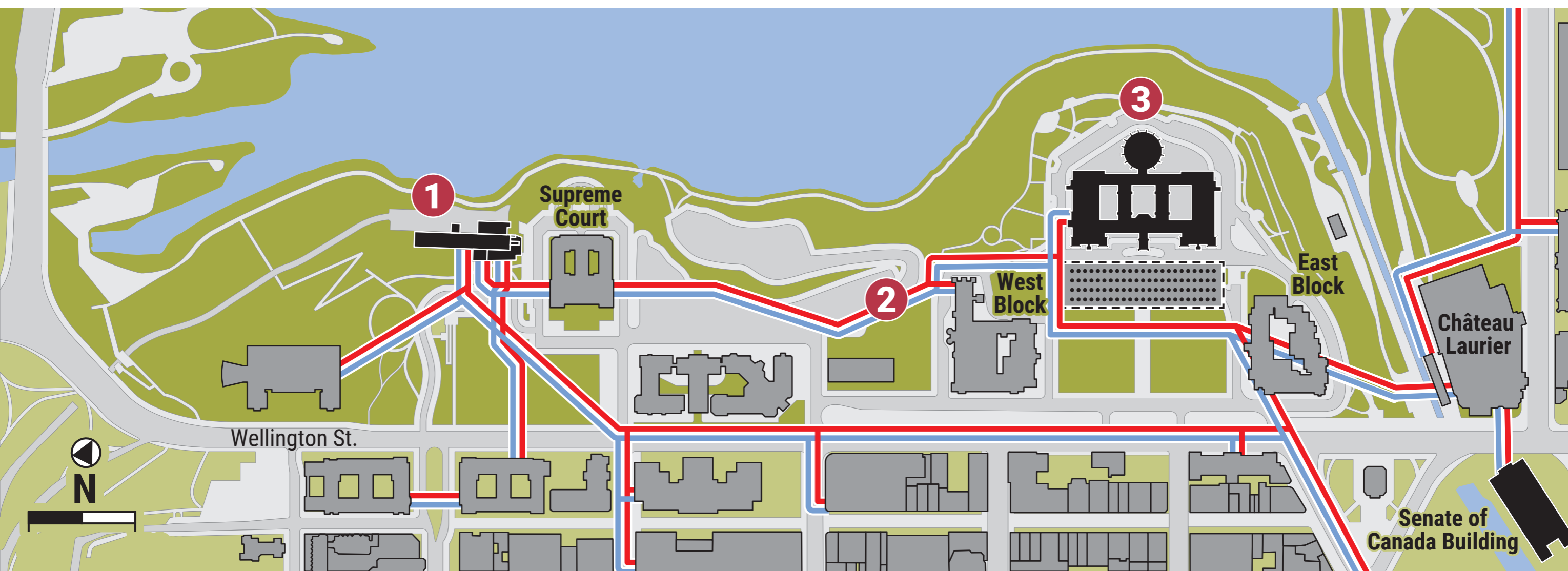
Each of the field's 92 boreholes contains a polyethylene supply pipe and a return pipe. The entire network converges at a heat pump that directs hot and cold fluid to the building as needed.



## Thermal-exchange network

Each borehole descends 250 metres below the ground, where bedrock remains at a constant temperature of 10 to 13°C year-round. A mixture of water and glycol circulates through the system. In wintertime, fluid coming from the building is colder than the surrounding bedrock, so it extracts heat from the rock and carries it to the building. In summertime, the process reverses.

## HEATING AND COOLING THE PARLIAMENTARY PRECINCT



### 1 Cliff Plant

The central heating plant for the Parliamentary Precinct provided all of Centre Block's heat and air conditioning until 2018. Once the rehabilitation project is complete, the plant will service about 40% of the cooling demand for Centre Block and the Parliament Welcome Centre and act as an emergency back-up system.

### 2 District heating

A network of underground pipes connects the Cliff Plant to more than 50 buildings in the Parliamentary Precinct.

### 3 Centre Block

Eventually, geexchange will produce all of the heating demand for Centre Block and the Parliament Welcome Centre and about 60% of the cooling demand.