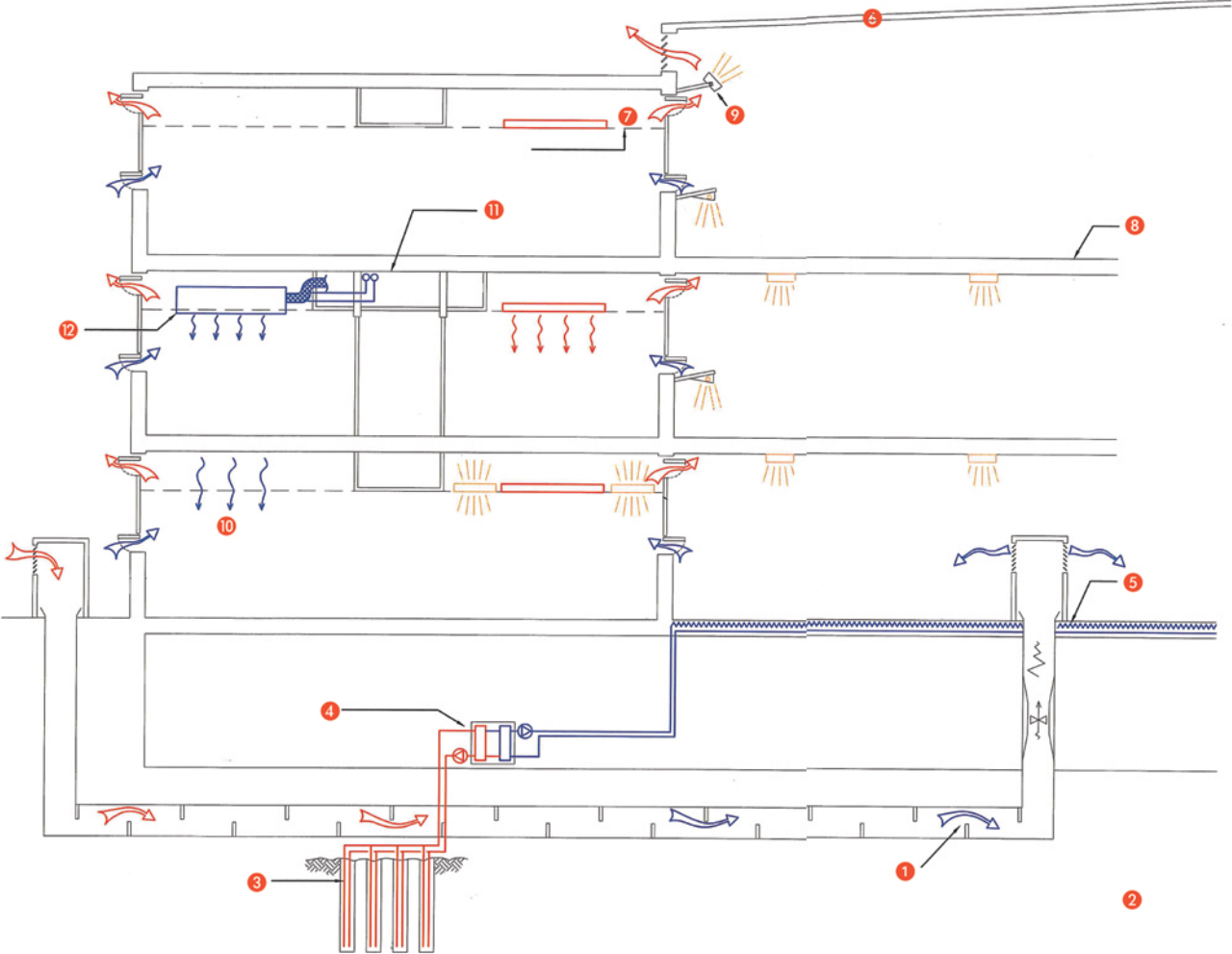


Schematic illustrating environmental strategy of Portadown Community Treatment and Care Centre



Key to environmental strategy schematic

- 1 Fresh air**
The atrium fresh air supply will be kept cool in summer, warm in winter using an underground thermal labyrinth to temper incoming fresh air.
- 2 Heating**
A biomass boiler will provide 50% of the peak-heating load.
- 3 Geothermal system**
The engineers are still to decide whether to use an open or closed loop borehole system. If an open loop system is used, the scheme will require just two boreholes: one to extract water for the heat-pump and one to discharge it back to the ground. If a closed loop is used, a series of boreholes will be drilled to provide geothermal energy to the heat pump.
- 4 Heat-pump**
The ground source heat-pump feeds coils embedded in the atrium floor to provide heating or cooling to the space. In cooling mode, the heat-pump will ensure summertime temperatures in the atrium are kept below 26°C for the majority of occupied hours. The system will have sufficient capacity to provide chilled water to chilled beams/ceilings to cool some of the critical areas.
- 5 Ventilation**
The atrium is naturally ventilated. Through a combination of ground sourced cooling and use of a thermal labyrinth on the fresh air supply, the designers expect the atrium temperature of to be maintained to within 0.5°C of ambient. Air is exhausted at high level from the atrium through automated louvres. Controlling the atrium air temperature allows the rooms facing the atrium to use atrium air for ventilation. The target performance in the summer is for rooms not to exceed 26°C for more than 130 hours/year. The engineers predict the scheme should perform considerably better than this.
- 6 Roof**
Because the GP's surgeries facing onto the atrium borrow daylight from it, the designers modelled the solution extensively. ETFE was found to allow highest daylight levels and the best winter heat gain to the atrium. The design means the rooms facing onto the atrium will have a daylight factor of 2%, while those on the outside of the building will have a value of 4%. The roof will have a translucent finish so that at night light from the atrium will bounce off of it, rather than it appear as a black void.
- 7 Windows**
The building's primary healthcare status means the window openings are restricted to a maximum of 100 mm. To allow naturally ventilation, the design team developed a window solution that opened top and bottom. A light-shelf incorporating perimeter downlighting helps reflect daylight into atrium facing offices
- 8 Walkway bridges incorporating lighting to the underside**
The walkways can be moved if necessary to reappportion the space on each floor should the need arise.
- 9 Atrium roof lighting**
- 10 Exposed concrete slab**
- 11 Services distribution**
The services are distributed via corridor and ceiling space, then into room via a bulkhead which incorporates lighting and a radiant panel for winter heating
- 12 Capacity for future adaptation**
Active chilled beams can be installed in services bulkhead if necessary at a later date.