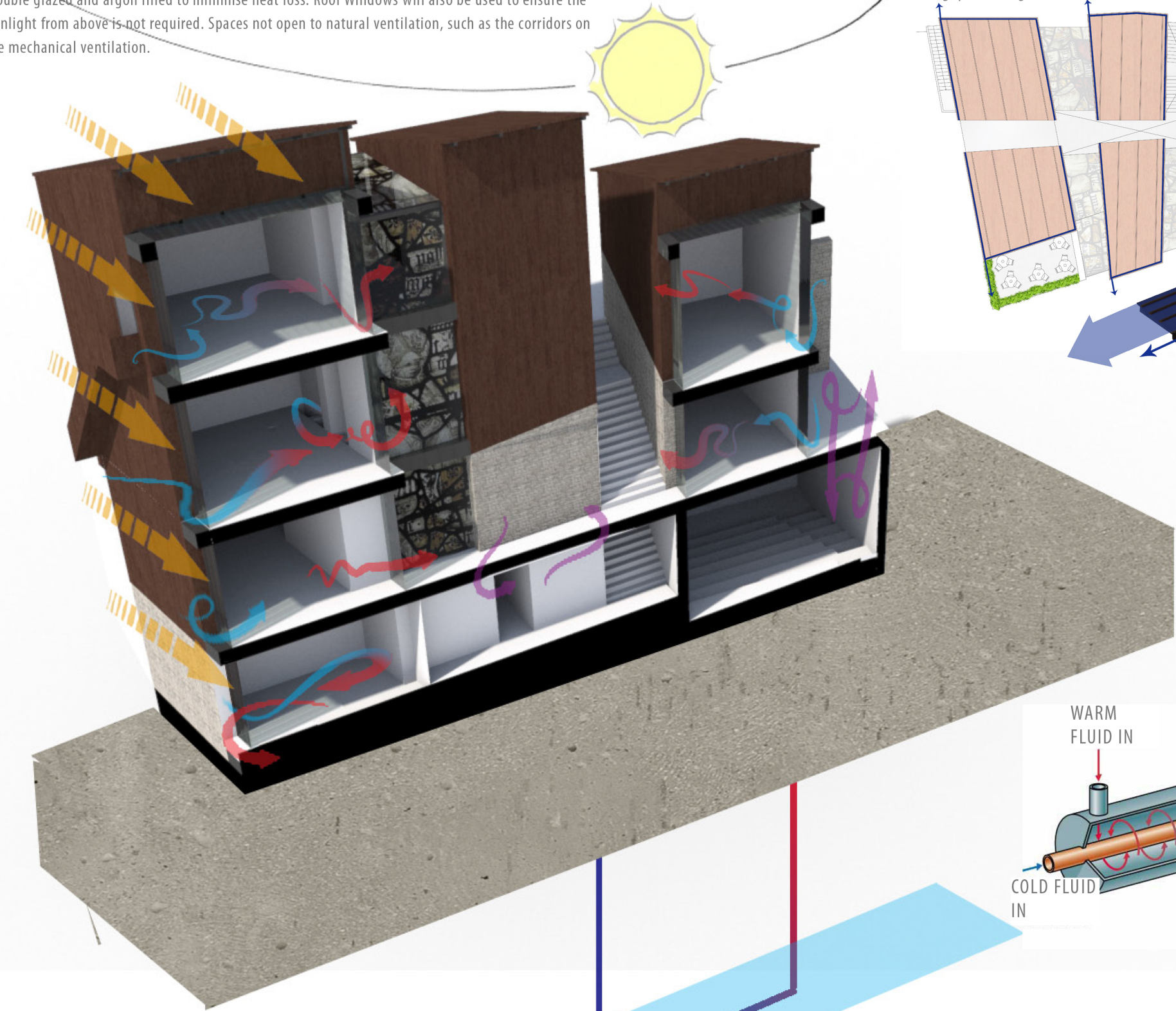
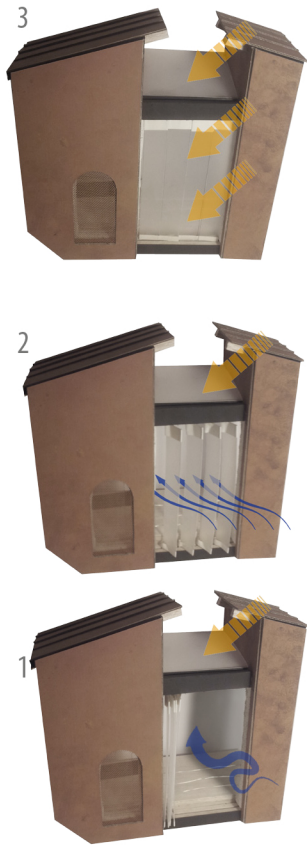


ARCH 3036 ENVIRONMENTAL STRATEGY

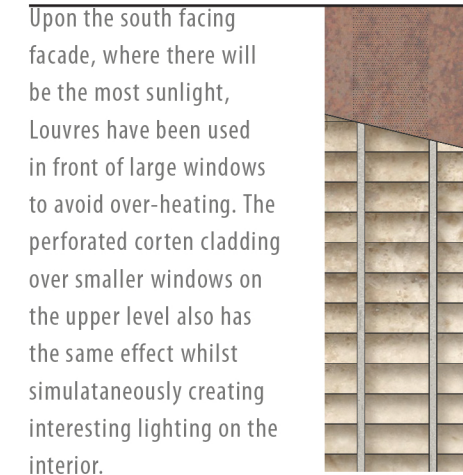
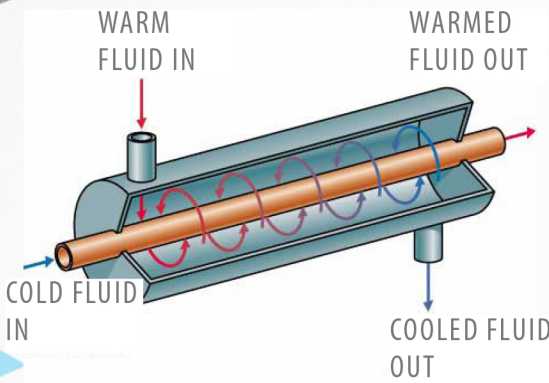
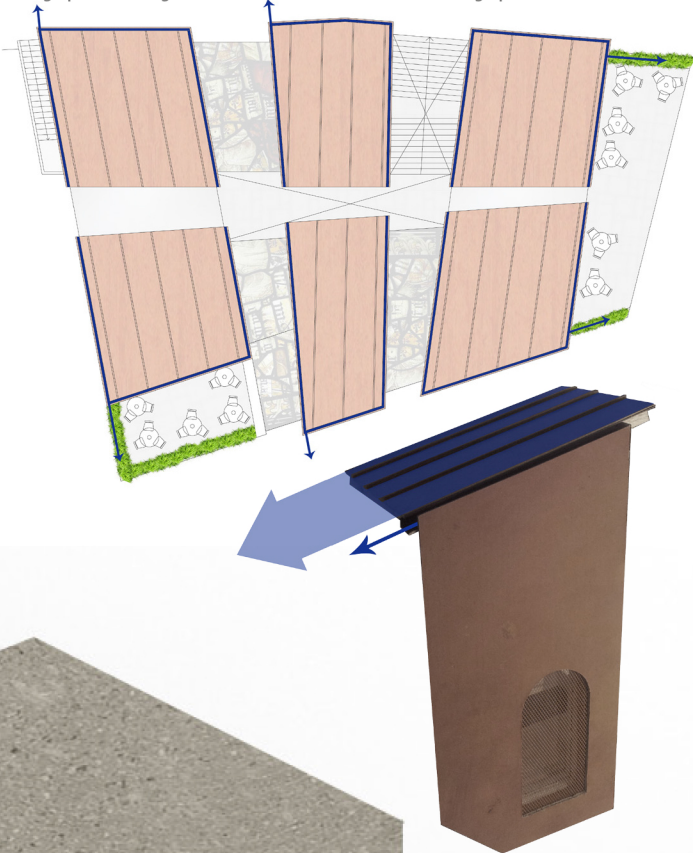
Ventilation Strategy

Utilising the central courtyard, the building shall use cross ventilation. The two structure either side of the courtyard, East and West, will have full height, seem-less windows facing the direction of the prevailing wind from the East. These windows can be completely opened up to have the space totally open to the external environment (1). Alternatively, if only a small amount of ventilation is required, they can be opened partially (2), or if heat is to be concealed, then closed fully (3) - They are double glazed and argon filled to minimise heat loss. Roof Windows will also be used to ensure the building is well heated, with blinds to pull over if sunlight from above is not required. Spaces not open to natural ventilation, such as the corridors on the ground floor and the lecture theatre, shall utilise mechanical ventilation.



Rain Water Collection

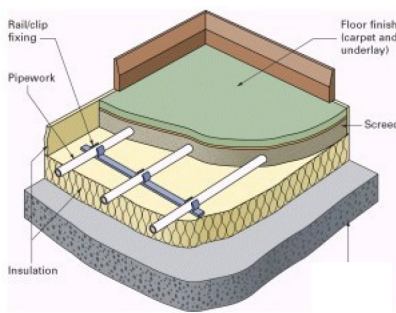
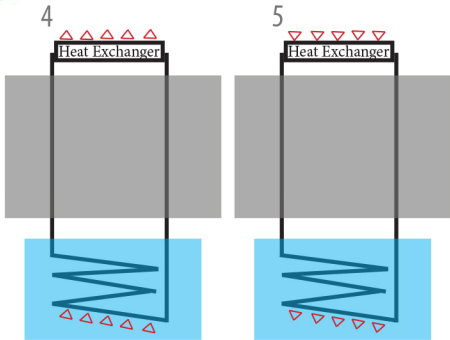
In the building, concealed guttering shall be used to guide most of any rain water run off to three points around the building where there are plants kept in purposeful voids in the tops of concrete walls. From here, the water can seep through the soil to designated drainage points that guide the flow of water to main drainage points in the street.



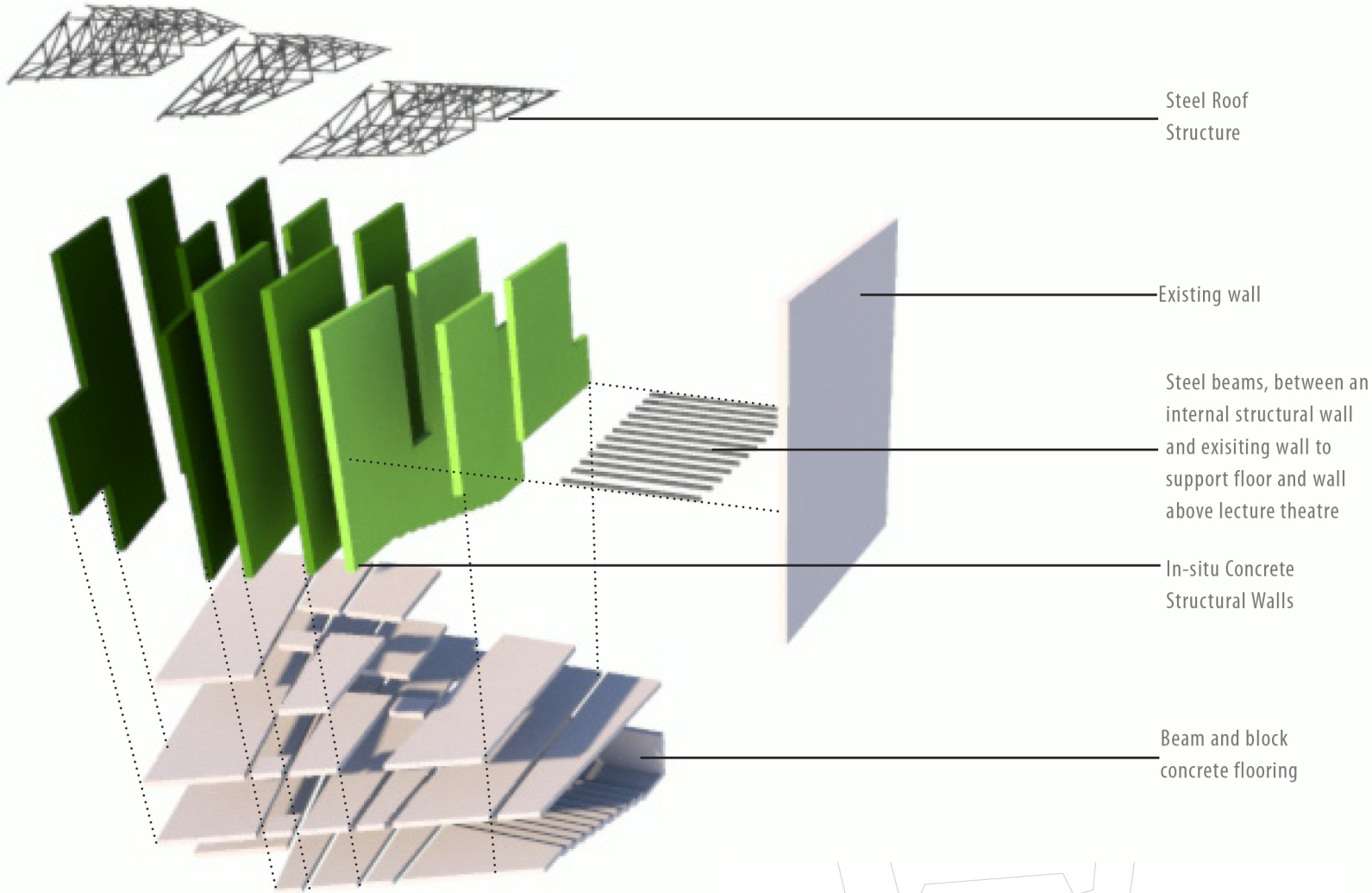
Upon the south facing facade, where there will be the most sunlight, Louvres have been used in front of large windows to avoid over-heating. The perforated corten cladding over smaller windows on the upper level also has the same effect whilst simulataneously creating interesting lighting on the interior.

Heating and cooling strategy

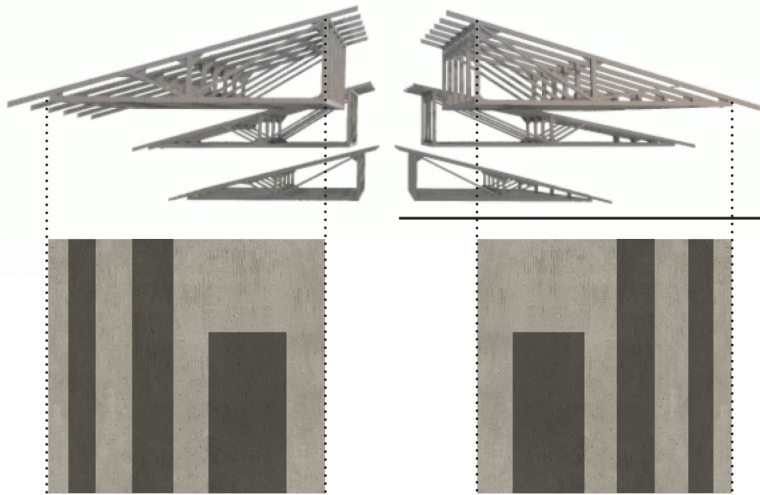
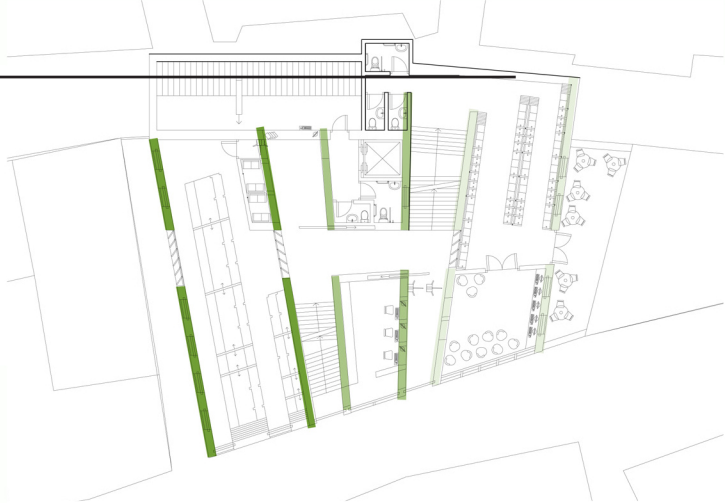
As there is a wealth of underground water sources beneath the tuff butte of Orvieto, utilising ground water source heat pumps would be a logical way of heating and cooling the building in a sustainable manner. The type of system used shall be a surface heat pump system, in which an enclosed circulation of liquid through coiled boreholes submerged in the underground water source shall absorb the heat from the water, which at a depth of around 75m maintains a steady temperature of about 7-12°C. When pumped back up into the building this thermal energy is transferred to the inside of the building using under floor heating (4) connected to a heat exchanger. In summer, this process can be reversed (5). There is a well, which accesses water reservoirs beneath the city, only 50m from site, thus this should be a suitable strategy to utilise.



ARCH 3036 STRUCTURAL STRATEGY



The structure shall consist of twelve main in situ concrete walls that divide up the sepa-  
ration of the building in in to six separe parts.  
Between these walls shall be other concrete  
supporting walls but will not be fundamentally  
structural.



Steel T-beam roof structuring will be bolted to the concrete structure, will shall be cast with voids inbetween for doors and windows. The main struc-  
tural concrete walls will have a large division down  
the centre, to be filled with glass windows, as part of  
the concept and for ventilation & lighting strategies.