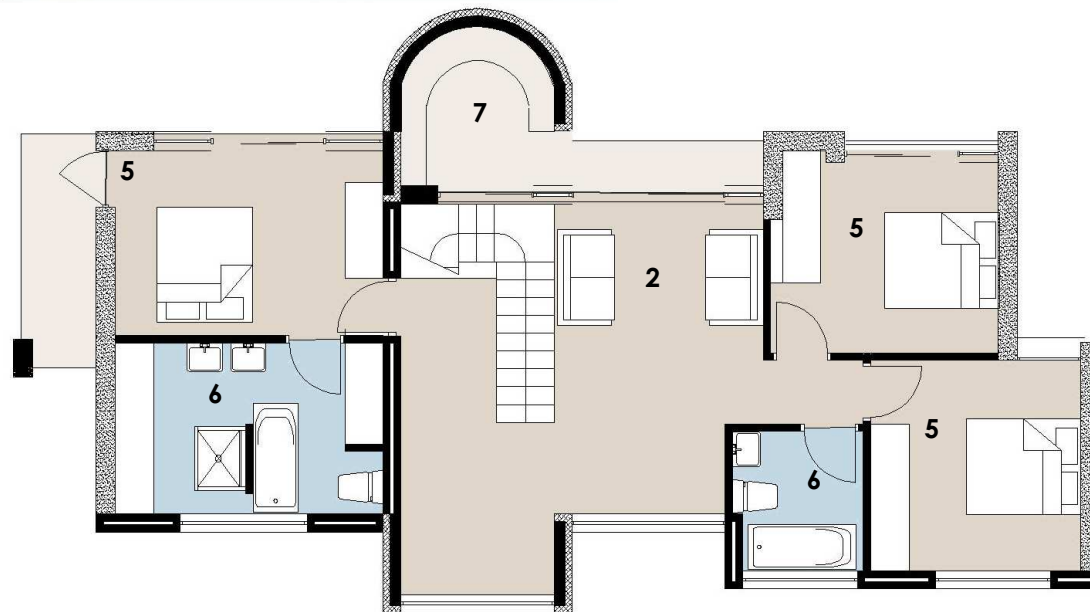
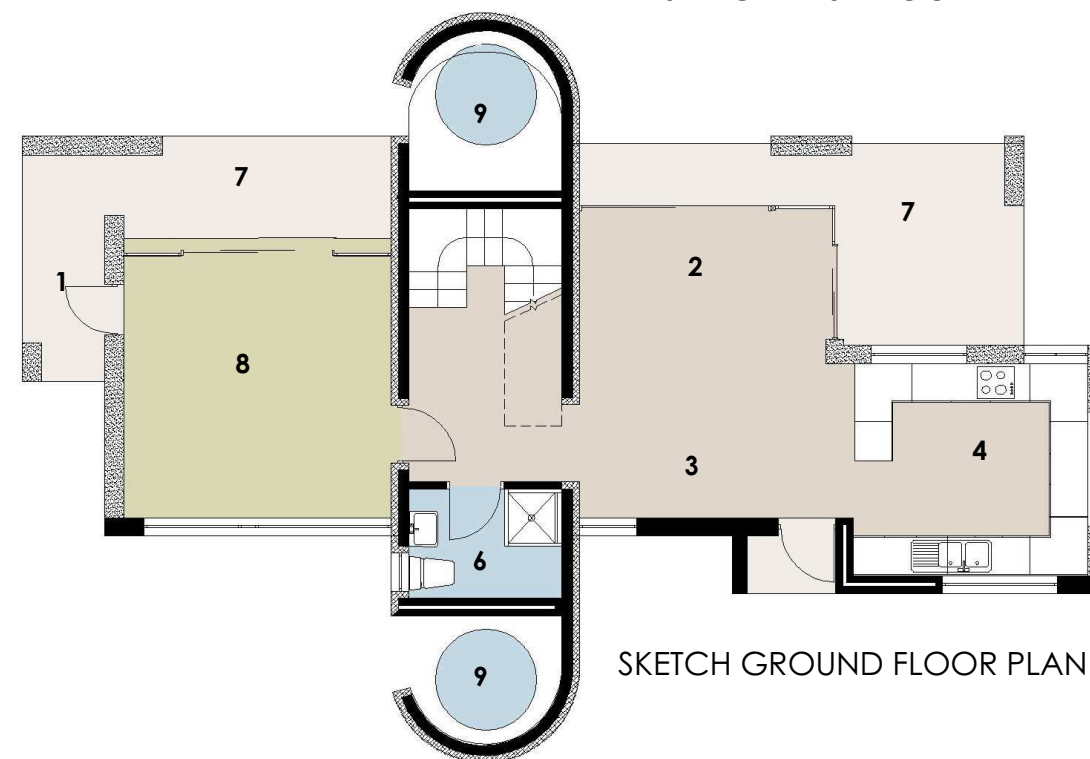




PERSPECTIVE

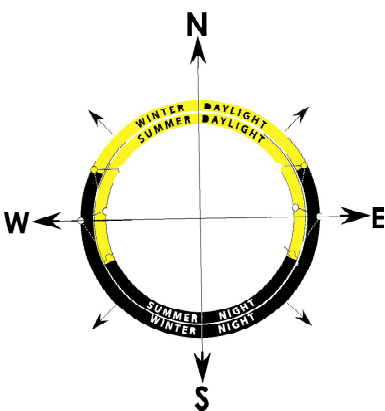


SKETCH FIRST FLOOR PLAN



SKETCH GROUND FLOOR PLAN

- LEGEND:**  
 1-ENTRANCE  
 2-LIVING ROOM  
 3-DINING ROOM  
 4-KITCHEN  
 5-BEDROOM  
 6-BATHROOM  
 7-COVERED VERANDAH  
 8-STUDY/ OFFICE  
 9-RAINWATER TANKS



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**CLIMATIC ZONE 2: TEMPERATE INTERIOR**

Pretoria; Polokwane

Data referenced  
 HOLM Northern Transvaal  
 NAPIER Temperate Eastern Plateau  
 VAN LENGEN Temperate

**CLIMATE = DESIGN PRINCIPLES**

- HUMIDITY** : Moderate with dry air in winter
- RAIN**: Summer rainfall - thunderstorms = entrances require rain protection
- EQ window** = 21.2% of floor area
- TEMPERATURES**: Summers warm to hot temperatures and warm winters with low daily temperature variation = thermal mass effective for cooling and heating
- High solar radiation in summer = shade external spaces and buffer zones to west and south
- WIND**: Summer= E & NE and Winter = SW & NE predominantly; ventilation effective for summer especially night ventilation
- LANDSCAPING**: Shading of western facades imperative. Shady deciduous trees effective in preventing overheating in summer and allowing sun radiation in winter

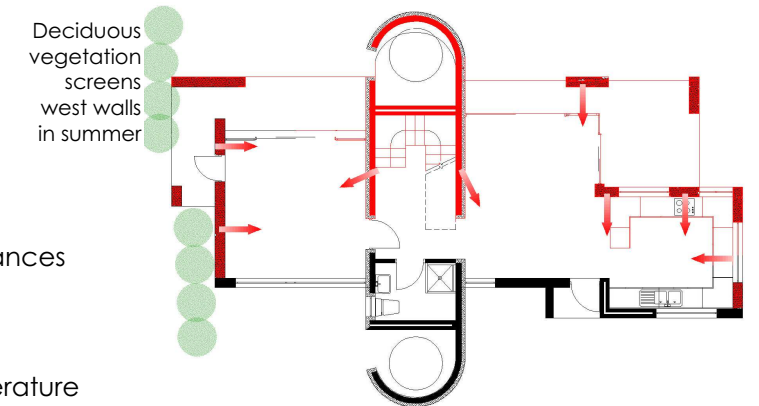
**DESIGN APPLICATION**

This house was designed in relation to specific site conditions. The availability of large amounts of suitable soil led to the design of rammed earth walls which would save on cost and materials. Rammed earth walls are also very effective thermal collectors and thus collect heat during sunny winter days (from north), and radiate this heat into the house at night.

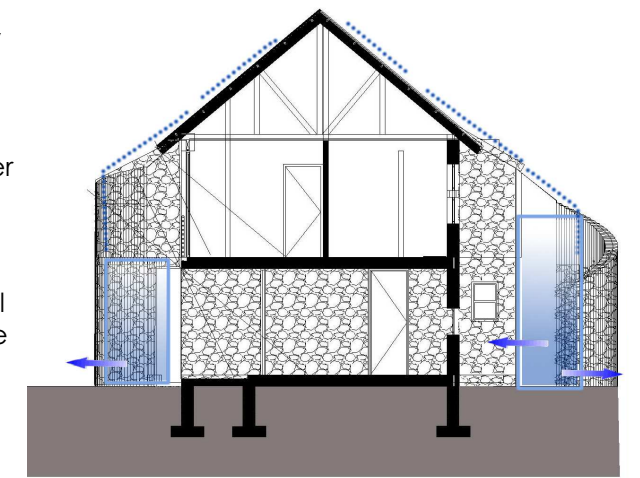
However, the south side of the house gets little to no solar radiation in winter, and thus the houses south walls which effectively need to insulate the house and prevent heat loss require the addition of straw in the mix of materials used to build the walls. Straw has excellent insulation properties.

The house is designed so that all habitable rooms face north, with suitably sized EQ windows in all rooms. Covered verandas and terraces on the north side screen the summer sun and prevent excessive heat gain in summer whilst allowing winter sun to penetrate. Shutters and balustrades also screen glazing from excessive heat gain.

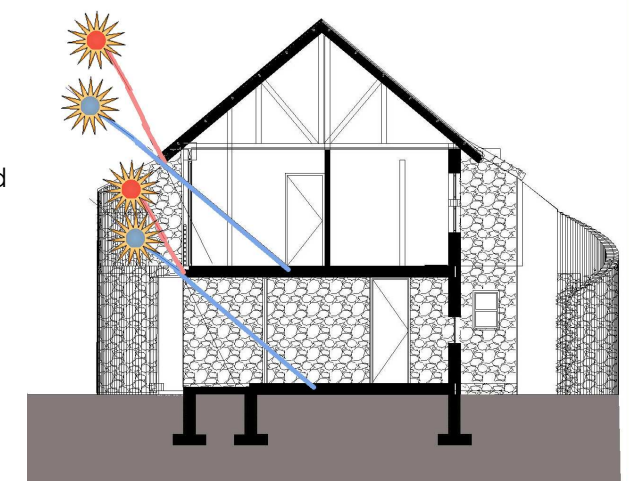
Rain water collection tanks on both sides of the house collect water from the roof, as well as creating a privacy screen between the study/ office and the rest of the house.



THERMAL STORAGE PLAN



WATER COLLECTION SECTION



SOLAR SECTION

CLIMATE ZONE 2: TEMPERATE INTERIOR



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