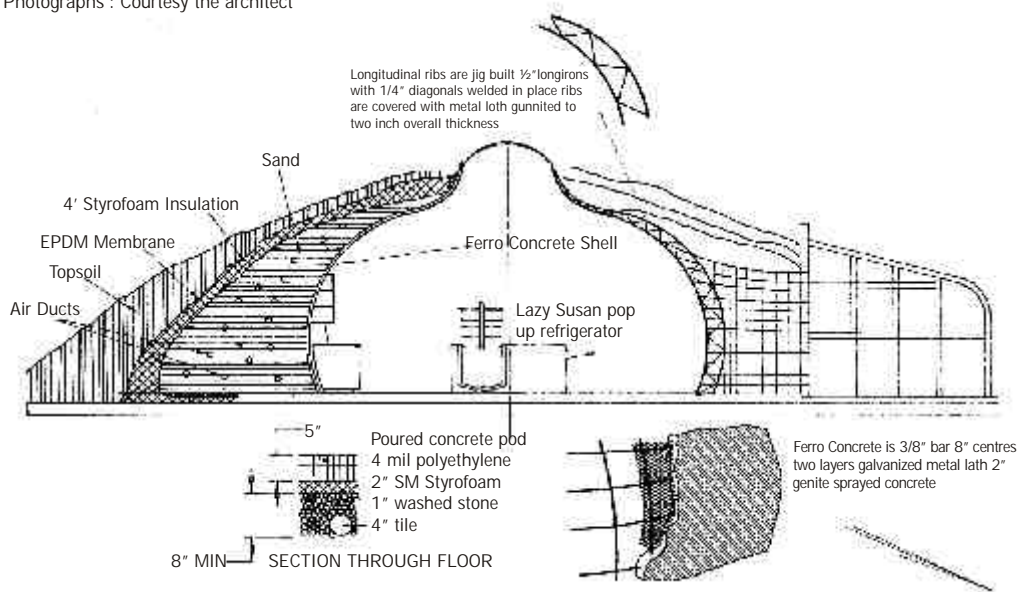




## Ground beneath my feet

Architect William Lishman articulates the use of artistic interventions that worked with structural practicality in realising his home in the netherworlds.

Text : William Lishman  
Photographs : Courtesy the architect



LONGITUDINAL SECTION THROUGH THE SITE

Exploring the finer nuances of underground architecture, sculpturally the residence was driven by two primary concerns; the aesthetics and the practicality of the project. Firstly, I believe that conventional box-like architecture inhibits the growth of the human spirit, and secondly, with the current building technology there should not be a need for constant repairing and building new homes that visually are a travesty within nature. Most conventionally designed and structured homes require constant maintenance with the damage brought about by the daily heating and cooling cycles, ultraviolet degradation and the extremities in wind and precipitation. Within the earth, most of these wearing factors are greatly reduced. Temperature changes are gradual and the variance is one tenth that of surface temperature. Most natural



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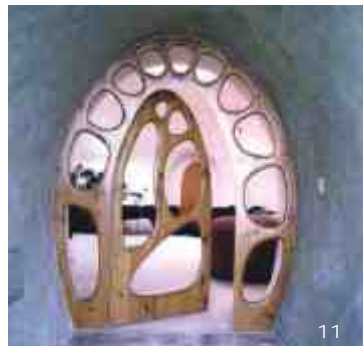
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1. Aerial view of the entire site.
- 2,3&4. Initial structural work of the domes being carried out on site.
5. Sinuous curves dictate the design scheme as is evident in the bathroom.
- 6,8 & 10. Designed like a cluster of interconnected onions with the stems cut at surface level and capped with skylights, the Lishman house allows for natural light from above leaving one to feel that they are outdoors with an open sky above.
- 7&9. The curvy-linear form of the kitchen meant that very little of the pre-fabricated hardware or furniture fit in the curved surroundings. Even the round pop up lazy Susan refrigerator in the kitchen is self designed and customised.
11. Door to the dining room.

growth covers thrive on UV radiation. Subterranean architecture vis-à-vis designing a dwelling within the earth presents different sets of design and construction problems. The heavy overburden of the earth requires a higher engineering standard. Keeping moisture from invading the interiors requires special site selection, accurately designed drainage and proper sealing. Light or the lack of it can also present its own set of problems. The solution to this was essentially the dome shape, though I prefer to call it more an onion shape; as a result, my house is like a cluster of interconnected onions with the stems cut at surface level and capped with skylights.

The domes were constructed from Ferro-concrete with an average shell thickness of 7cm. It was then covered with a layer of sand, which extends to within 40cm of the surface topping that is 10cm layer of polystyrene foam covered by a synthetic rubber roofing membrane. The final layer is a 30cm layer of top soil which supports an array of vegetation. The shape of the rooms and the generous skylights allow for natural light, leaving one to feel that they are outdoors with an open sky above.

The house is wired conventionally with flexible conduit embedded in the concrete, with 1000m of tubing embedded in the floor through which warm water is circulated in winter providing radiant heat. Concentric tubes form an air-heat exchanging system. Air circulation is passive with wind scoops on the surface and exhaust air warming the incoming fresh air.

Constructing the house was a labour of love and cannot be compared to using conventional off-the-shelf materials; for very little production, hardware or furniture, fits in the curved surroundings. Even the round pop up lazy Susan refrigerator in the kitchen is self designed and constructed. We have lived in it for the past fifteen years and still enjoy it immensely. With so many years gone by, it is still an unmatched experience to revisit the joys of discovering the space within...