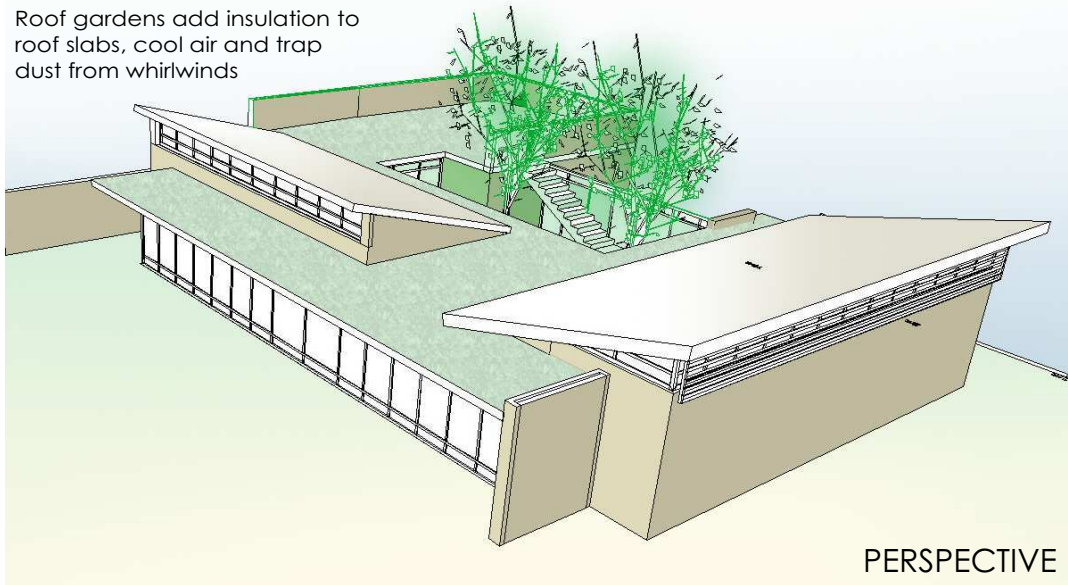
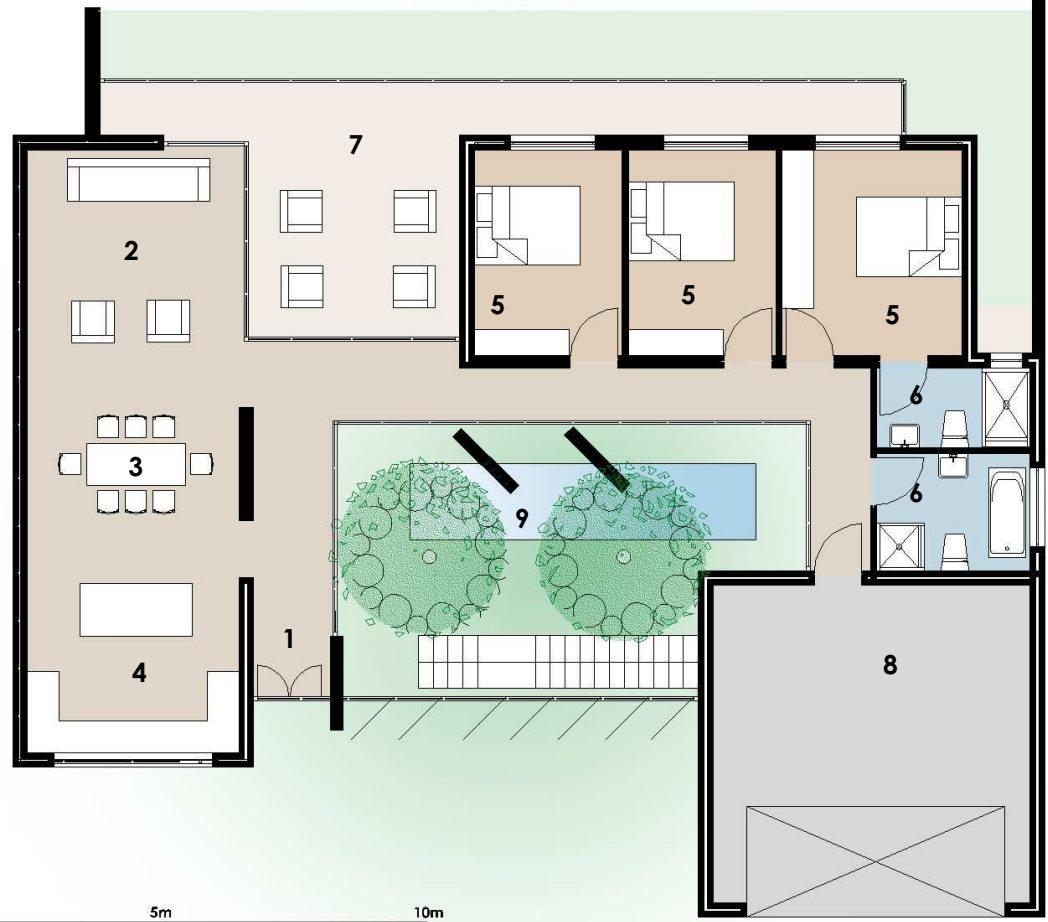


Roof gardens add insulation to roof slabs, cool air and trap dust from whirlwinds

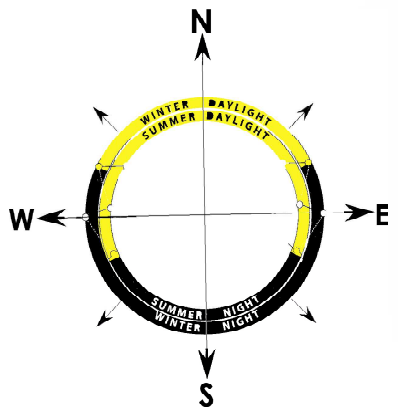


PERSPECTIVE

- LEGEND:**
- 1-ENTRANCE
 - 2-LIVING ROOM
 - 3-DINING ROOM
 - 4-KITCHEN
 - 5-BEDROOM
 - 6-BATHROOM
 - 7-COVERED VERANDAH
 - 8-GARAGE
 - 9-COURTYARD / POND



SKETCH PLAN



CLIMATIC ZONE 6: ARID INTERIOR

Upington; Kimberley

Data referenced
 HOLM Desert Steppe
 NAPIER Desert; Semi Arid Plateau
 VAN LENGEN Dry Tropics

CLIMATE = DESIGN PRINCIPLES

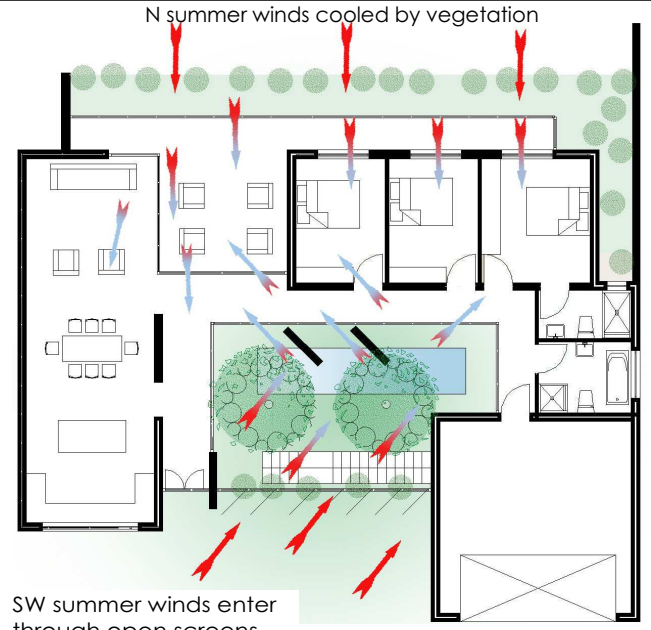
- HUMIDITY** : Low
- RAIN**: Low to minimum rainfall = rain water collection advisable
- EQ window** = 22% of floor area but shading imperative in summer
- TEMPERATURES**: Daily difference in temperature from day to night is high = thermal mass i.e. thick walls to be exploited to absorb heat during day and release it at night
- High solar radiation and glare = shade all windows, walls and external social spaces
- WIND**: Summer = SW & N and Winter= N to W predominantly; Dust carried by winds = protection from winds required and water to trap dust; Night ventilation removes stored heat from day in summer
- LANDSCAPING**: Existing sparse vegetation exacerbates dust whirlwinds so planting of shrubs required to create low wind buffer zones. Large deciduous shade trees to be planted to shade external walls to minimise heat gain in summer. Note that ONLY indigenous plants to be used in order not to further stress the minimum water reserves.

DESIGN APPLICATION

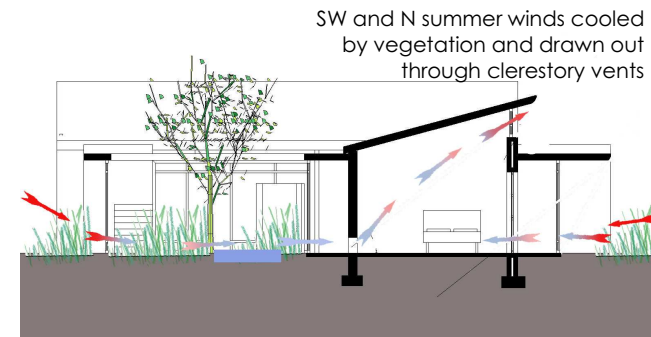
Two courtyards deal with the large temperature fluctuations in this region. The entrance courtyard has operable screens on the south that can be opened in summer to allow the summer winds from the SW to ventilate the house. The air is cooled down and humidified by passing over vegetation and a pond and redirected into the house by a number of wind break walls. The pond doubles up as the rain water collection reservoir for all water from the roofs. This courtyard also provides much needed external social space which can be closed off from dust whirlwinds in summer.

On the north side a conservatory with glazed stacking doors acts as a thermal heat collector during winter days. At night blinds or curtains need to be closed and heat collected in the concrete floor during the day is radiated into the living areas and bedrooms at night. During summer the doors need to remain open to aid cross ventilation through the house.

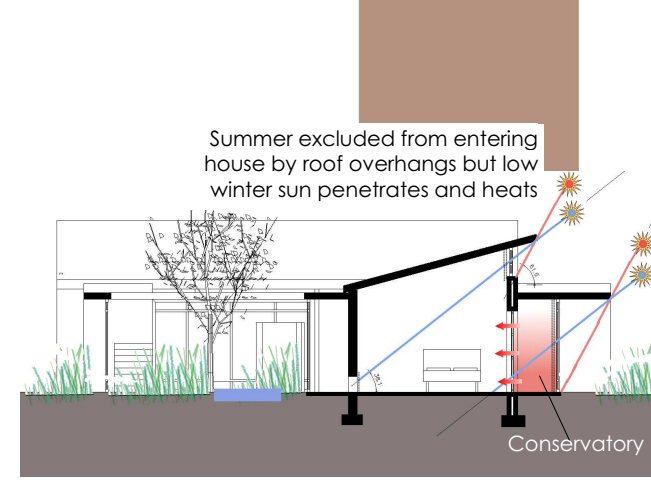
Once again all rooms have EQ windows or glazed doors or clerestory windows adequately sized as per % requirement to provide heat during winter.



VENTILATION PLAN



VENTILATION SECTION



SOLAR SECTION

architects and garden designers

GROWING BUILDINGS BUILDING GARDENS

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CLIMATE ZONE 6: ARID INTERIOR

