



Carla Jooste



CARLA JOOSTE

Timber Competition 2019

# Nature within a Home

*"Incorporating Biophilic Design into the very fabric of the building"*

John and Amy are married for 15 years with three kids named Olivia (12) Johanthan (10) and Elizabeth (6) and their Border collie named Max.

They are a typical South African family that appreciate outdoors, nature and spending quality time together.

The design concept is to incorporate nature within a home by using the concept of **Biophilic Design**.

The most frequently question that arose during the design of the house was 'What does a typical South African family need?' By considering this simplistic, yet extravagant question through the design of the house, led to many innovative and experiential opportunities.

A typical South African family want comfort, sustainability and a place that connects with nature.

This Timber house is designed to enhance John and Amy's family though various strategies. Strategies are incorporated such as **Biophilic Design, Sustainable Living and CLT Construction** further more explained in more depth.

This home provides the ability to **work, play and sleep in a comfortable environment**.

By create a very subtle and simplistic design, but still inspires and create an atmosphere of peacefulness and a place that resonate with its surroundings.

The intention is to emphasize the true qualities of CLT Construction within a home.

The house has the ability to inspire nature within the build form.

The house illustrates richness in the use of materials, comfort, closeness to nature, form and proportion.

## WHY SHOULD JOHN AND AMY BUILD A TIMBER HOUSE?

We as designers has the responsibility to make a home sustainable and adding positivity to the environment, by doing so we can make use of CLT Construction

Besides that, CLT Construction is the most effective way of designing a building and it also provides numerous other benefits, including; quicker installation, reduced waste, improved thermal performance and design versatility.

Therefore, it is the best possible solution for John and Amy to build a timber house.

Lao-tze, the Chinese sage, wrote: 'Clay makes the pot, but the essence of the pot is the space within; walls make the house, but the essence of the house are the spaces within.

This quote radiates the true assence of CLT Constrcution. Not only does CLT construction provide a beautiful shell of the building, but it alos celebrates the spaces within and radiates the true quality of timber and the many advanatages of it.

## DESIGN CONCEPT

Biophilia is a concept use to describe the connection that human beings subconsciously seek with the rest of life

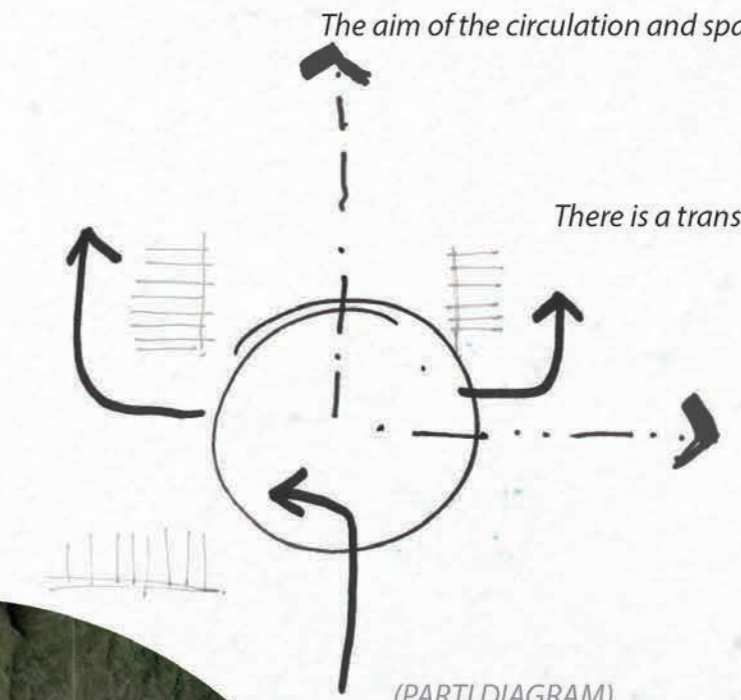
People thrive best in environments that have other forms of life around and flourish in spaces that are more like habitats and therefore theirs is an instinctive, biophilic bond between humans and other living system's.

The Biopihlic design consider every component of its surrounding environment.

Buildings and nature should work as one for the benefit of both humankind and the wider environment\_ Oliver Heath

## CIRCUALTION

The aim of the circulation and spaces where design in such a way to motivate the experience through the circulation and to embrace the Biophilic elements in various locations throughout the house.



There is a transition of spaces to create a sense of anticipation. The design celebrates various possibilities for private and simultaneously and allow of social gathering.

All the windows and doors are positioned in such as wat to ensure t hat all spaces extend through the structure into the landscape. The presence of the landscape and context are optimised from every point within the house.

(PARTI DIAGRAM)

## SITE LOCATION

Located on a beautiful sloped site in Noordhoek the House looks out on the mountains and trees. The house faces north overlooking nature with an ocean horizon to the west

Set on a beautiful site in Cape Town it marries and connects beautifully with its landscape.

The building is design in such a way that it blends well with its surroundings, merging into the landscape by being sensitive to the environment. The building celebrates the existing landscaping by incorporating levels to enhance the slope of the site.

The building is orientated to enhance natural ventilation, natural daylighting and protection against heavy winds.

The house is designed for possibility of future expansion. The future expansions can be incorporated by adding a loft area above western wing of the building. The loft can be used for extra children play area or office space. The proposed future structure on top of the flat roof area can be added for an extra bedroom & bathroom in the future.



LOCALITY MAP



BIOPHILIC DESIGN

Biophilic Design points the way toward creating healthy and productive habitats for modern humans.

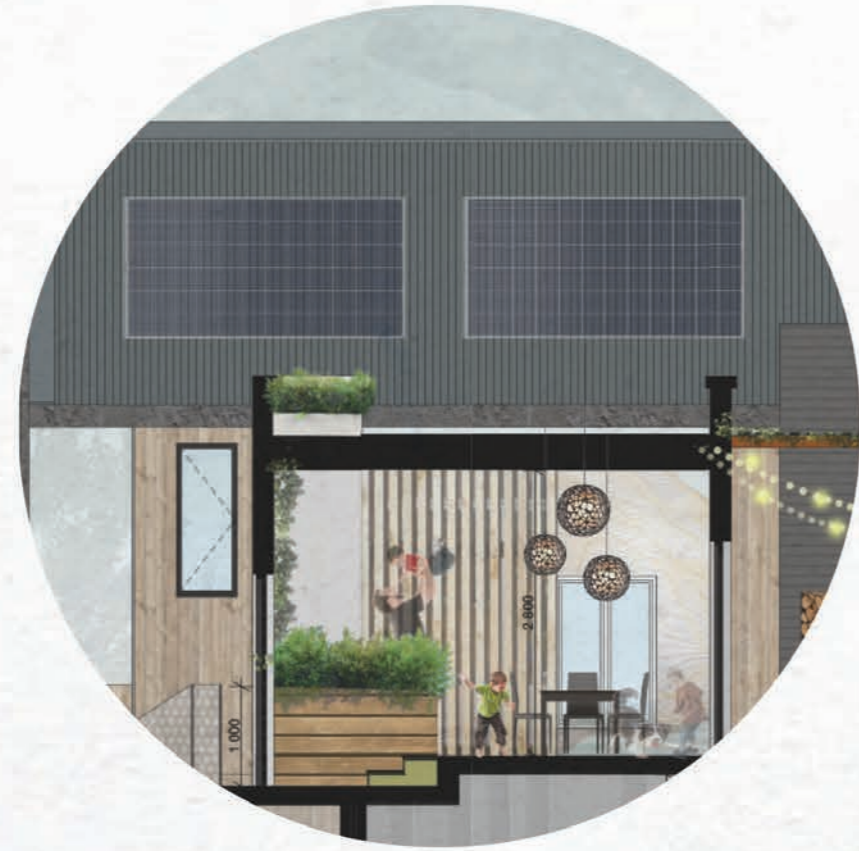
Biophilic Elements:

- Green Wall in Living Room offers aesthetic charm while still contributing to a healthy and natural ventilation system
- Indoor Garden
- View towards the Exterior
- Strategies to improve the possibility of connecting with nature such as: Reading Hook with views towards outdoor, corner window at Study Corner

- Natural Cross Ventilation
- Harvesting Daylighting
- Visual Connection with Nature
- Thermal & Airflow Variability
- Material Connection with Nature

Biophilia Advantages:

- Reduce stress/Aids recuperation
- Boost productivity and creativity
- Use of nature to improve the buildings living condition



SUSTAINABILITY

SUSTAINABLE ASPECTS INCORPORATED SUCH AS:

- Off Grid Photovoltaic PV System mounted on Roof
- Thermal Insulated Geyser
- Water Sustainability:
  - Rainwater harvesting, storage and recycling. 30,000l of storage tanks.
  - Harvested & waste water treated using ozone and filters
  - Fibreglass water tanks located in Basement
- Batteries and inverter for PV system located in Basement
- Heat pump
- Double glazing stacking and sliding doors
- UPVC double glazing windows
- L.E.D Lighting
- Energy saving shower head
- Turnkey Irrigation System
- Natural Ventilation
- Cross ventilation
- Driveway:
  - Proposed porous concrete product Hydromedia
  - For all rainwater drains immediately and is collected underneath before flowing into the water recycling process.
- Recycled Materials:
  - Proposed including the decking, natural rock features and with cupboards & counters made from shutterboard.
  - Garden veggie boxes proposed to be made out of recycled plastic.



CLT CONSTRUCTION

Some main advantages:

- Design Flexibility
- FAST installation
- Thermal performance and energy efficiency
- cost effectiveness
- fire protection
- environmental advantages
- less waste and
- acoustic performances.

With many different positive advantages of CLT construction, one advantage speaks the most towards this home. The main reason for using CLT Construction is to breathe new life into the proposed building

Cross Laminated Timber contributes to a healthy indoor environment providing the house with enhanced insulation properties.

WALLS

- 84mm Novatop solid wood CLT panels.
- Insulation – 80mm wood fibre
- 100mm air gap
- Cladding of choice during the first year.

ROOFS

- Novatop prefabricated multilayer panel
- Pavatex wood fibre insulation



NORTH ELEVATION  
scale 1:100



SOUTH ELEVATION  
scale 1:100



EAST ELEVATION  
scale 1:100



SECTION B  
scale 1:75



Living Wall



Crafting Elements



View towards Nature



CLT Construction

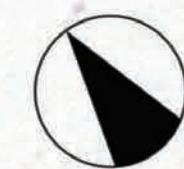
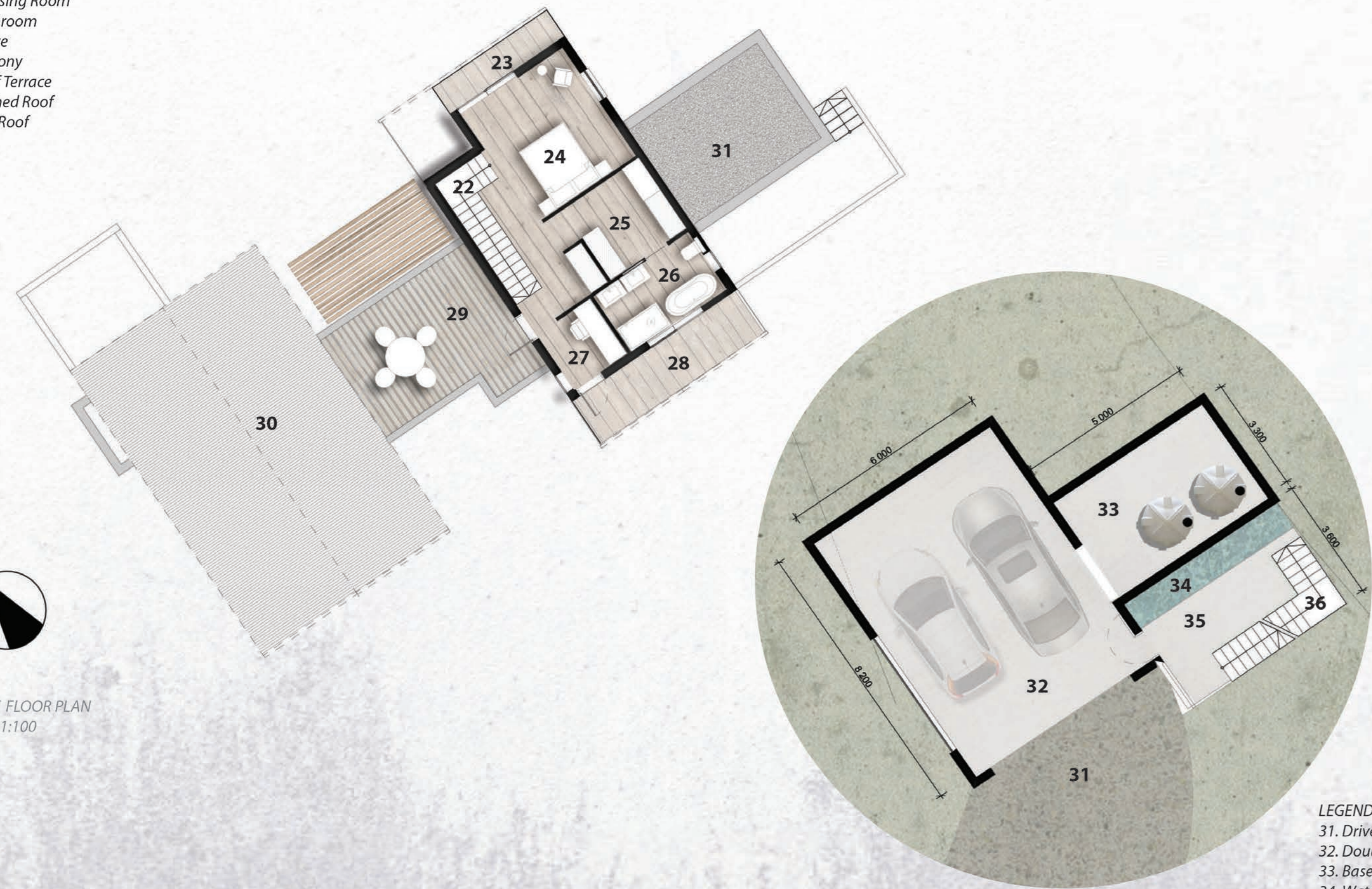


GROUND FLOOR PLAN  
scale 1:100

- LEGEND:
1. Entrance
  2. Living Wall
  3. Dining Area
  4. Family Room/Lounge
  5. Bookshelf
  6. Reading Hook
  7. Bedroom 2
  8. En-suite Bathroom
  9. Balcony
  10. Indoor Garden
  11. Kitchen
  12. Scullery
  13. Drying Yard
  14. Bedroom 3
  15. Bathroom
  16. Study Corner
  17. Patio
  18. Timber Decking
  19. Swimming Pool
  20. Herb Garden
  21. Lawn

LEGEND:

- 22. Staircase
- 23. Balcony
- 24. Main Bedroom
- 25. Dressing Room
- 26. Bathroom
- 27. Office
- 28. Balcony
- 29. Roof Terrace
- 30. Pitched Roof
- 31. Flat Roof



FIRST FLOOR PLAN  
scale 1:100

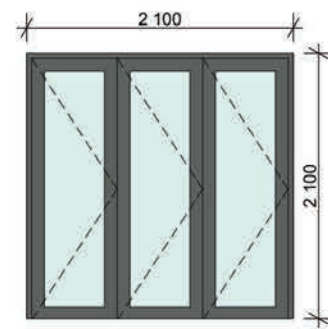
BASEMENT  
scale 1:100

LEGEND:

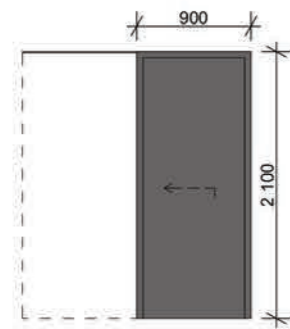
- 31. Driveway
- 32. Double Garage
- 33. Basement Storage
- 34. Water Pond
- 35. Entrance Courtyard
- 36. Staircase to Entrance



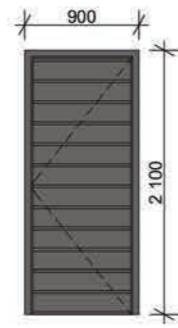
SECTION A  
scale 1:50



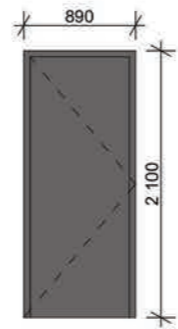
BI-FOLD DOOR 3 PANES  
(Ground Floor Plan)  
2100X2100mm



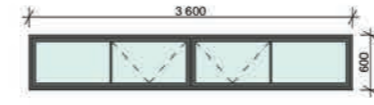
TIMBER INTERNAL SLIDING DOORS  
(Ground Floor Plan/First Floor Plan)  
900x2100mm



TIMBER ENTRANCE DOOR  
(Ground Floor Plan)  
900x2100mm



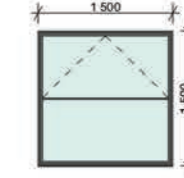
TIMBER EXTERIOR DOORS  
(Ground Floor Plan/First Floor Plan)  
880x2100mm



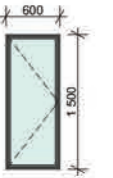
GARAGE  
Quantity:1  
(Basement)  
West Facing



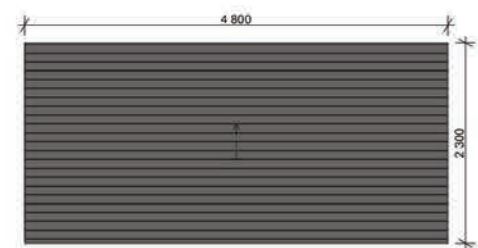
BATHROOM  
Quantity:1  
(Ground Floor Plan)  
South Facing



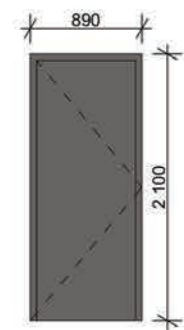
BEDROOM 3  
Quantity:1  
(Ground Floor Plan)  
North Facing



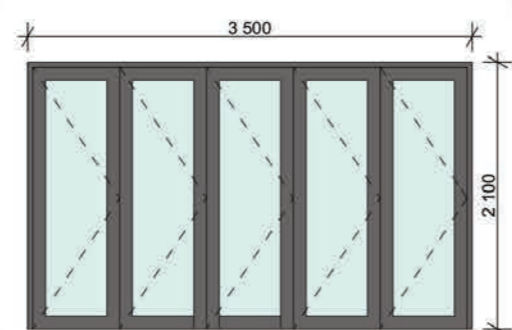
MAIN BATHROOM/BATH2/OFFICE  
Quantity:3  
(First Floor Plan)  
West & East Facing



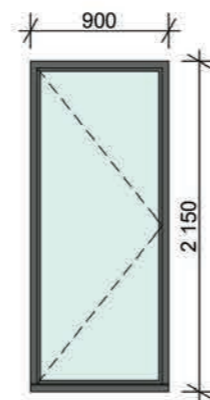
DOUBLE GARAGE DOOR  
(Basement)  
4800X2300mm



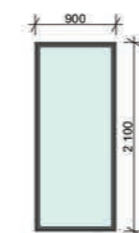
TIMBER INTERNAL DOORS  
(Ground Floor Plan)  
880x2100mm



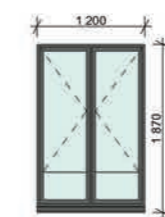
BI-FOLD DOOR 6 PANES  
(Ground Floor Plan)  
3500x2100mm



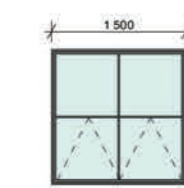
GLAZING EXTERNAL DOOR  
(First Floor Plan)  
900x2150mm



STAIRCASE  
Corner Window (x2)  
(Ground Floor Plan)  
North & West Facing



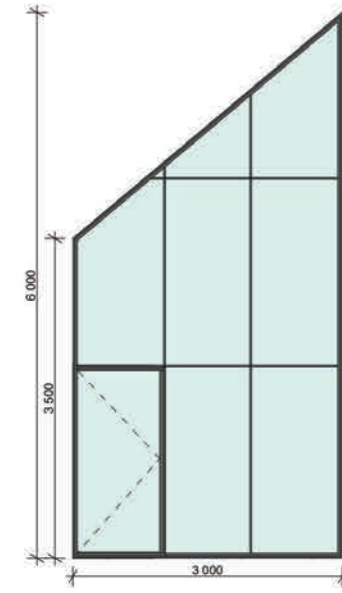
LIVING ROOM/MAIN BED  
Quantity:2  
(Ground Floor Plan)  
West & East Facing



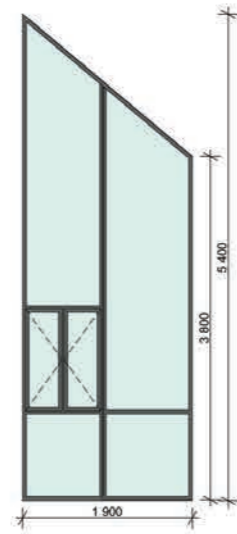
STUDY CORNER  
Corner Window (x2)  
(Ground Floor Plan)  
North & East Facing



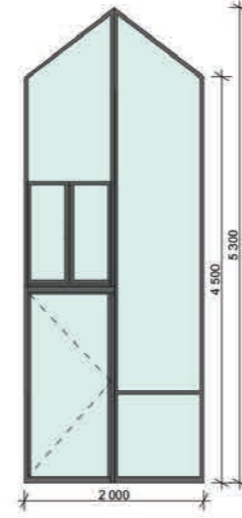
SCULLERY  
Quantity:1  
(Ground Floor Plan)  
South Facing



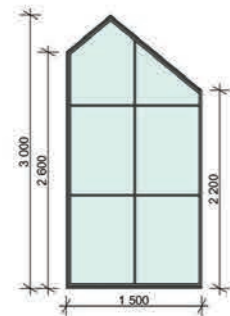
BEDROOM 2  
Quantity:1  
(Ground Floor Plan)  
South Facing



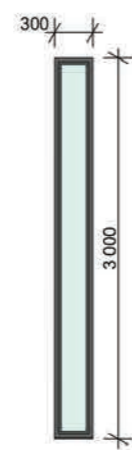
En-suite Bathroom  
Quantity:1  
(First Floor Plan)  
South Facing



MAIN BEDROOM  
Quantity:1  
(First Floor Plan)  
North Facing



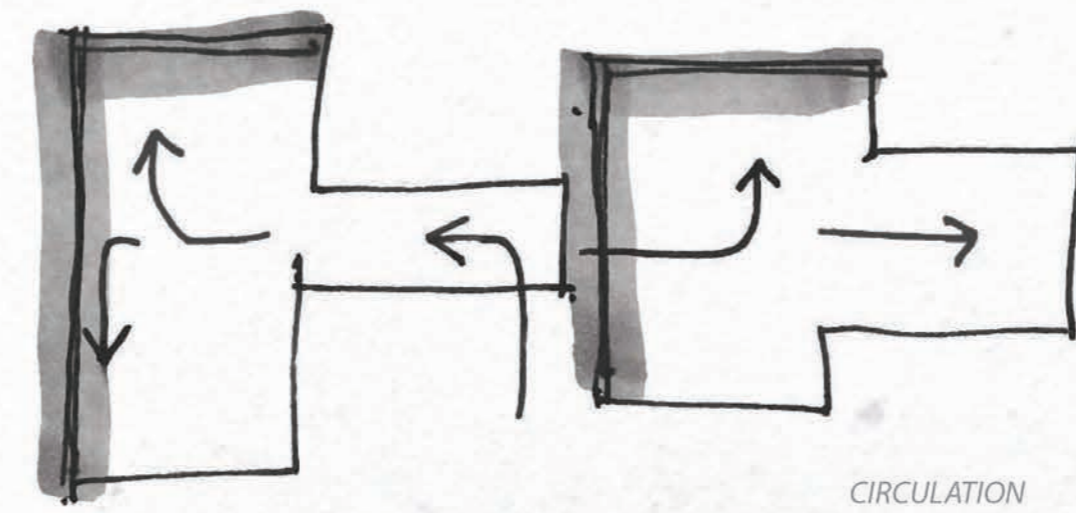
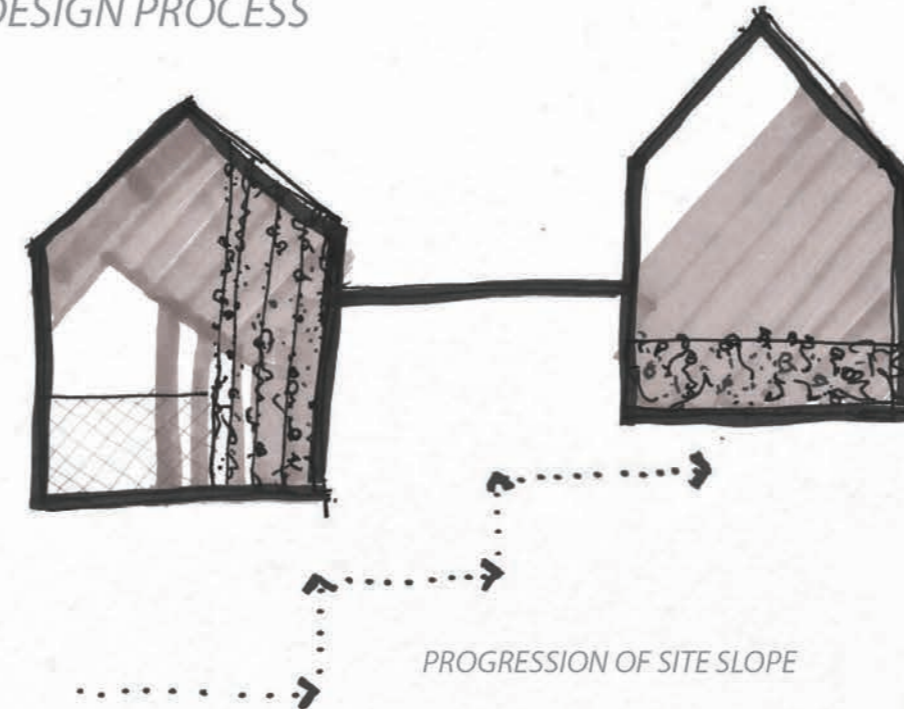
LIVING ROOM  
Quantity:1  
(Ground Floor Plan)  
North Facing



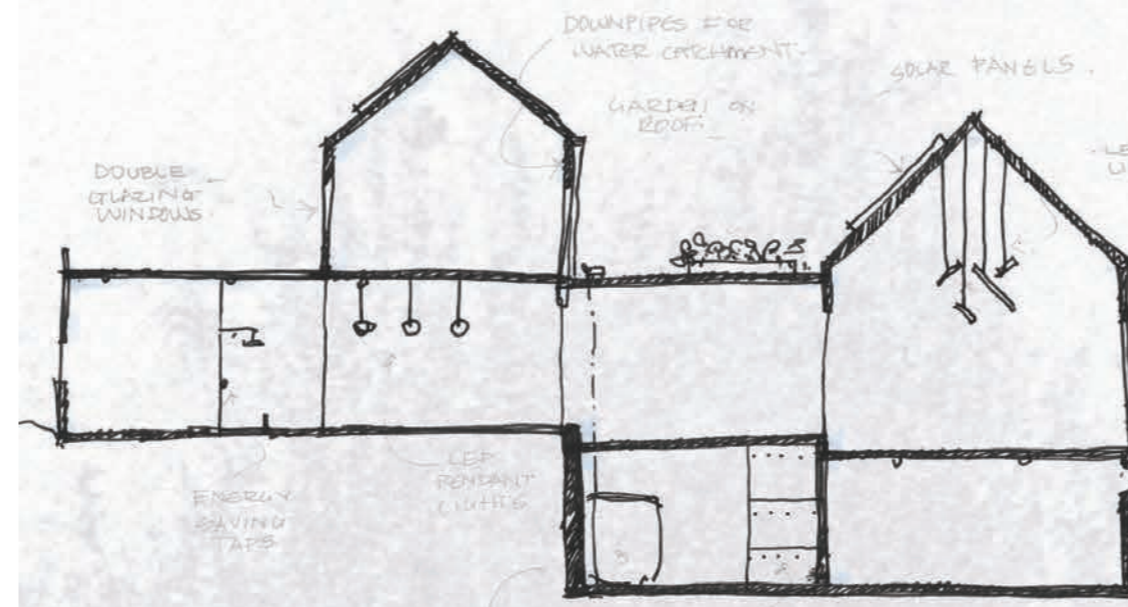
READING HOOK  
Quantity:2  
(Ground Floor Plan)  
North & South Facing

CUSTOM WINDOW SCHEDULE  
nts

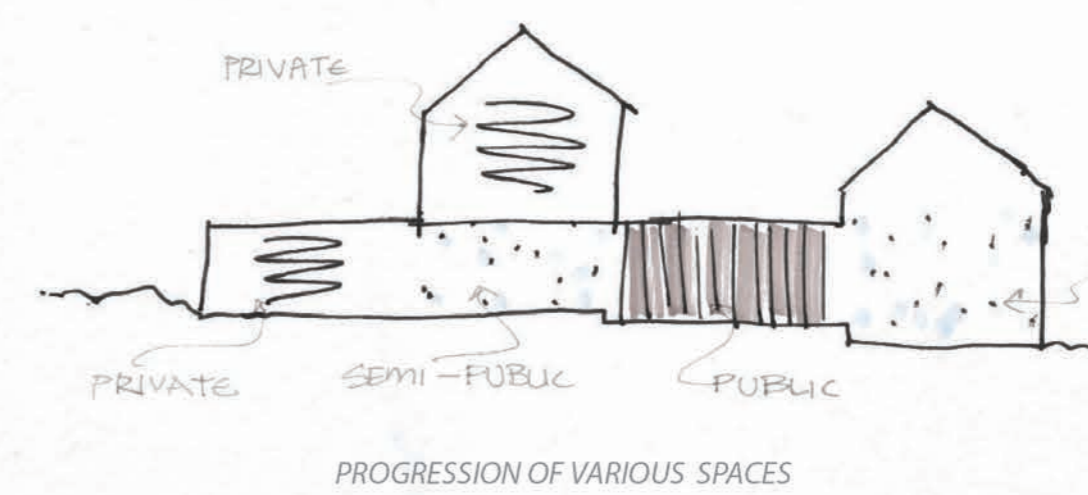
DESIGN PROCESS



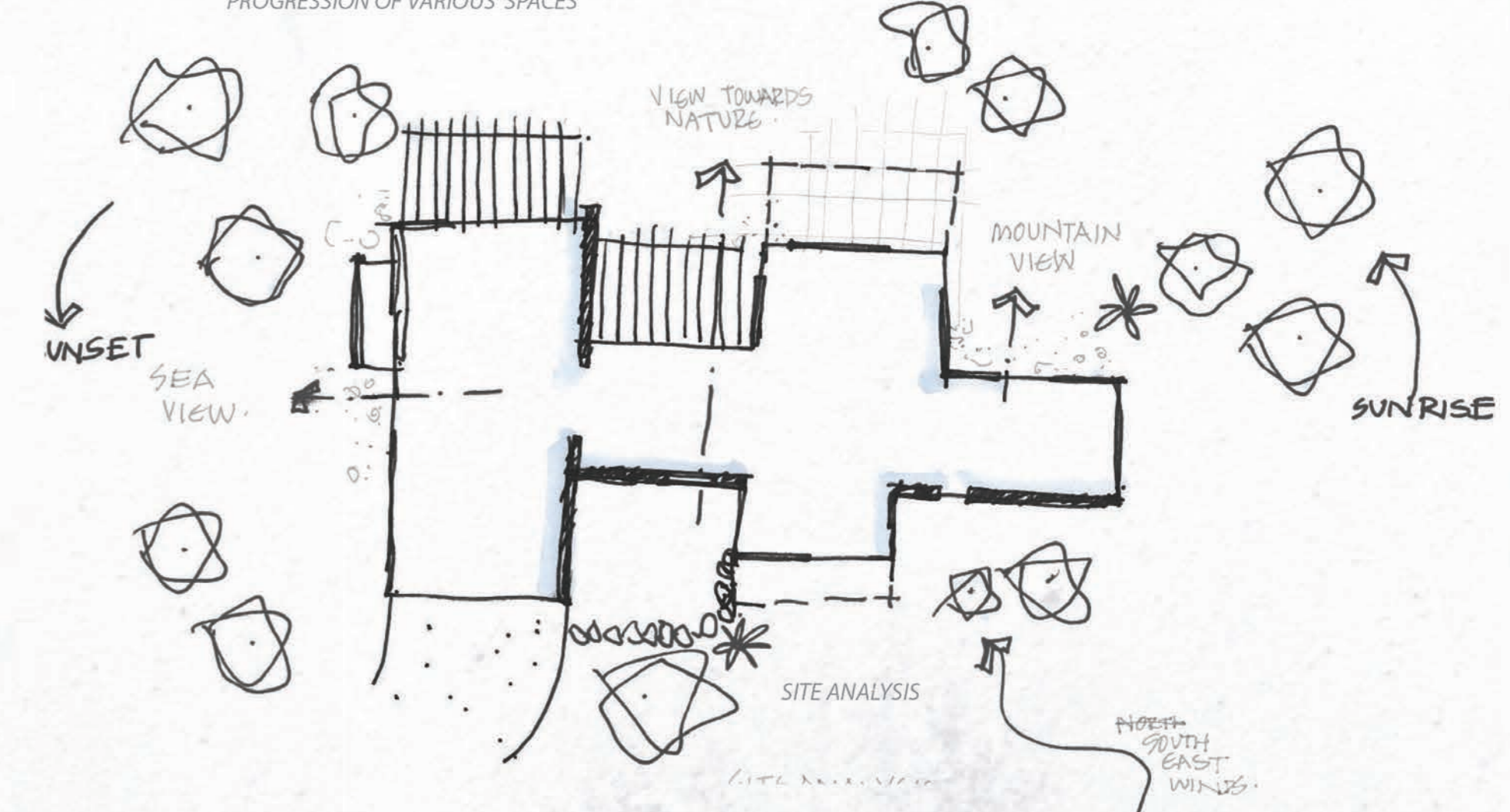
CIRCULATION



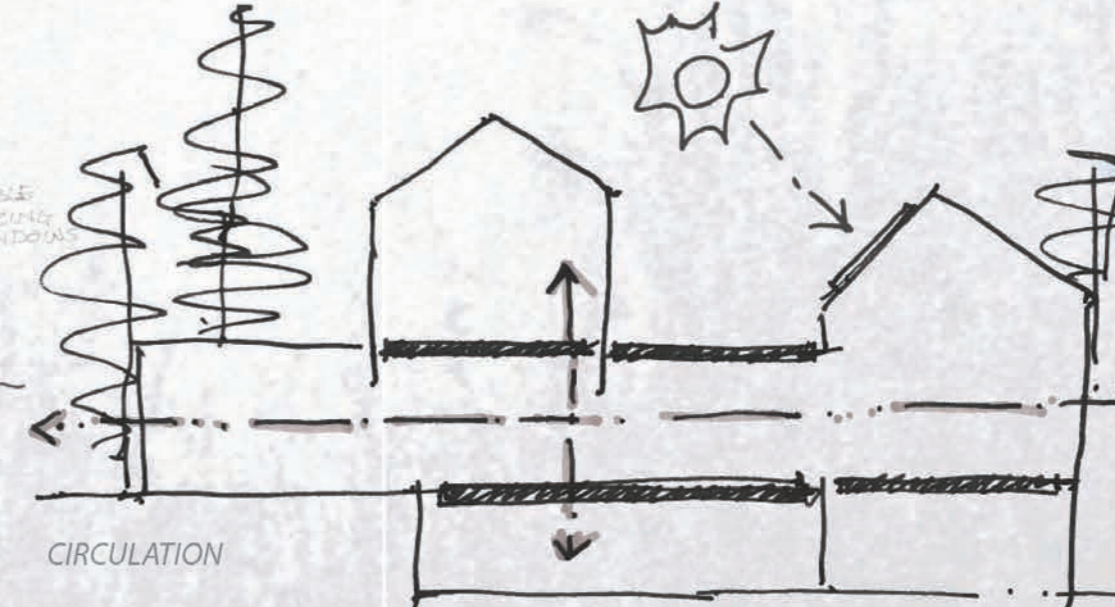
SUSTAINABLE DESIGN PRINCIPLES



PROGRESSION OF VARIOUS SPACES



SITE ANALYSIS



CIRCULATION

BIOPHILIC DESIGN



DINING AREA



KITCHEN & STUDY CORNER



FAMILY ROOM & READING HOOK

- DESIGN A SUSTAINABLE TIMBER CONSTRUCTION FOR A SOUTH AFRICAN FAMILY -



Patio & Outdoor