



Vernacular  
Architecture  
of the  
Eastern Cape

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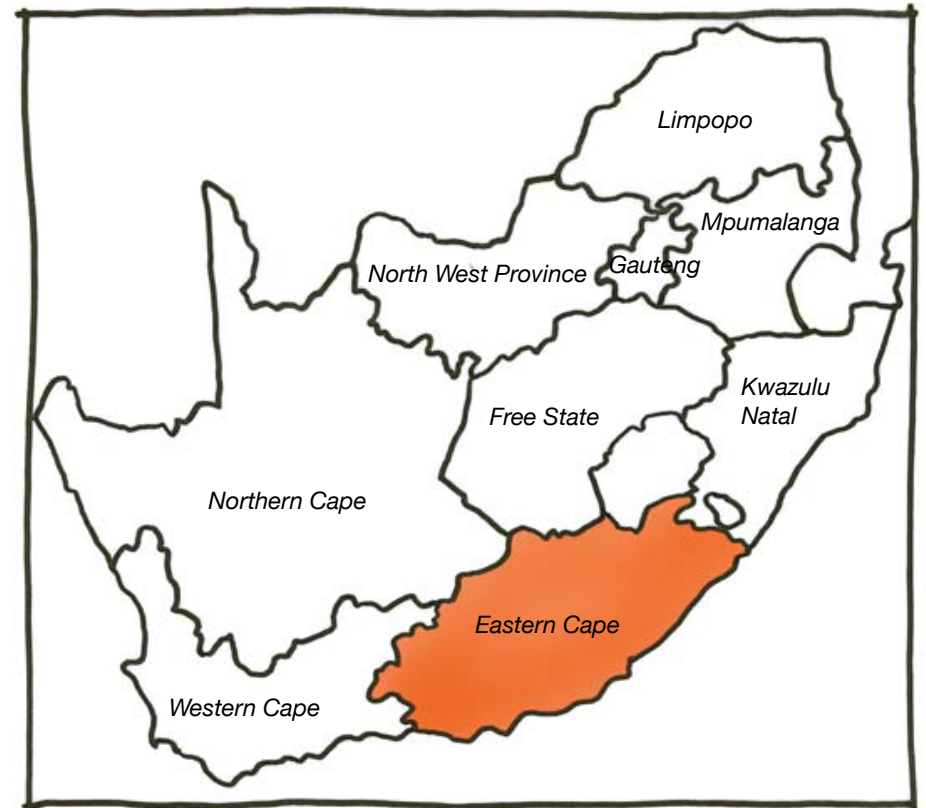
# Introduction

Vernacular Architecture forms part of a region's culture and living heritage. It is an architecture that reflects local needs and uses local materials. Buildings are primarily constructed by community tradesmen, whose methods are well attuned to the locally sourced materials and have been passed down from generation to generation.

As a result, vernacular architecture can be considered highly relevant to today's concerns regarding sustainable and greener materials and methods for all architecture. We will be exploring these characteristics within the

vernacular architecture of the Eastern Cape. We will look at how the structures are made, what they are made of and place special emphasis on their use of 'green building techniques'.

We will also explore how and why this architecture has adapted to modern times.



Above: Map of South Africa by Provinces, indicating the general study area

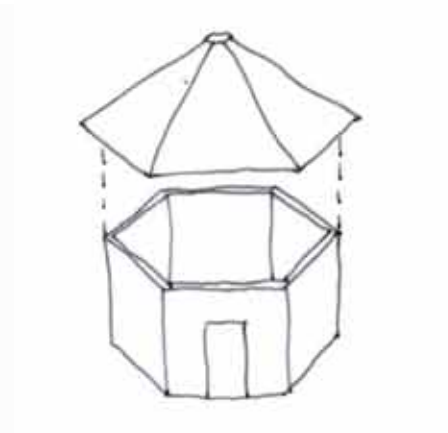
# Typical Dwellings

Structures are mainly arranged within a homestead format in which one family has more than one building. These spaces vary in shape and (as of recently) in construction materials. Functions include :

- Gathering
- Sleeping
- Cooking
- Animal shelters
- Combinations of 2 of the above



Typical round shaped dwelling



Typical hexagonal (6-sided) layout



Typical octagonal (8-sided) layout

Above: a typical 'homestead' layout



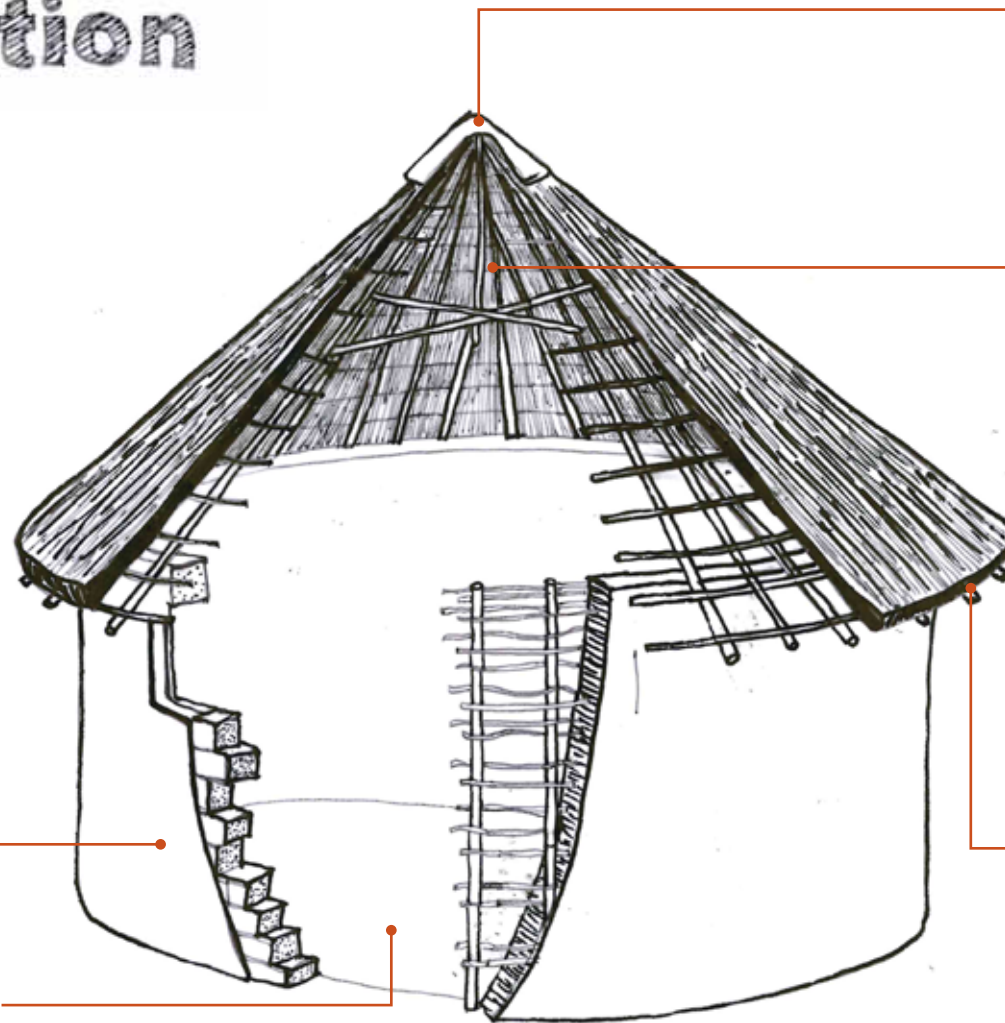
# Construction

Traditional:

**Foundations:** Foundations are generally constructed from stone which is locally sourced

**Walls:** Walls are comprised either of wattle and daub or sun-baked mud bricks. These are then plastered with *Daga* and painted with either *Kalike*, water paint or PVA paint

**Floors:** Traditionally, *Daga* is used for flooring. This is a mud and manure mixture that is trowelled to create a smooth surface.



**Apex:** Often a clay cap or as of recently, a tyre is placed on the top of the thatch to prevent rain from seeping into the rondavel, and to seal off the edges of the thatch.

**Roof Structure:** A timber frame is constructed in order to create the framework for the thatch. This framework is constructed from gum poles which rest on the walls and meet at the centre. *lintungu* (smaller branches) are then woven through these poles. During construction, a central vertical pole is put in place to provide stability. Once the structure is secure, the bottom and top of this securing pole is sawed off.

**Thatch:** Bundles of thatch are placed onto the roof structure and are tied down with twine or rope. This is done using a large metal needle, allowing the thatcher to weave the rope or twine over the thatch bundle and back through and under the roof structure.

# Construction

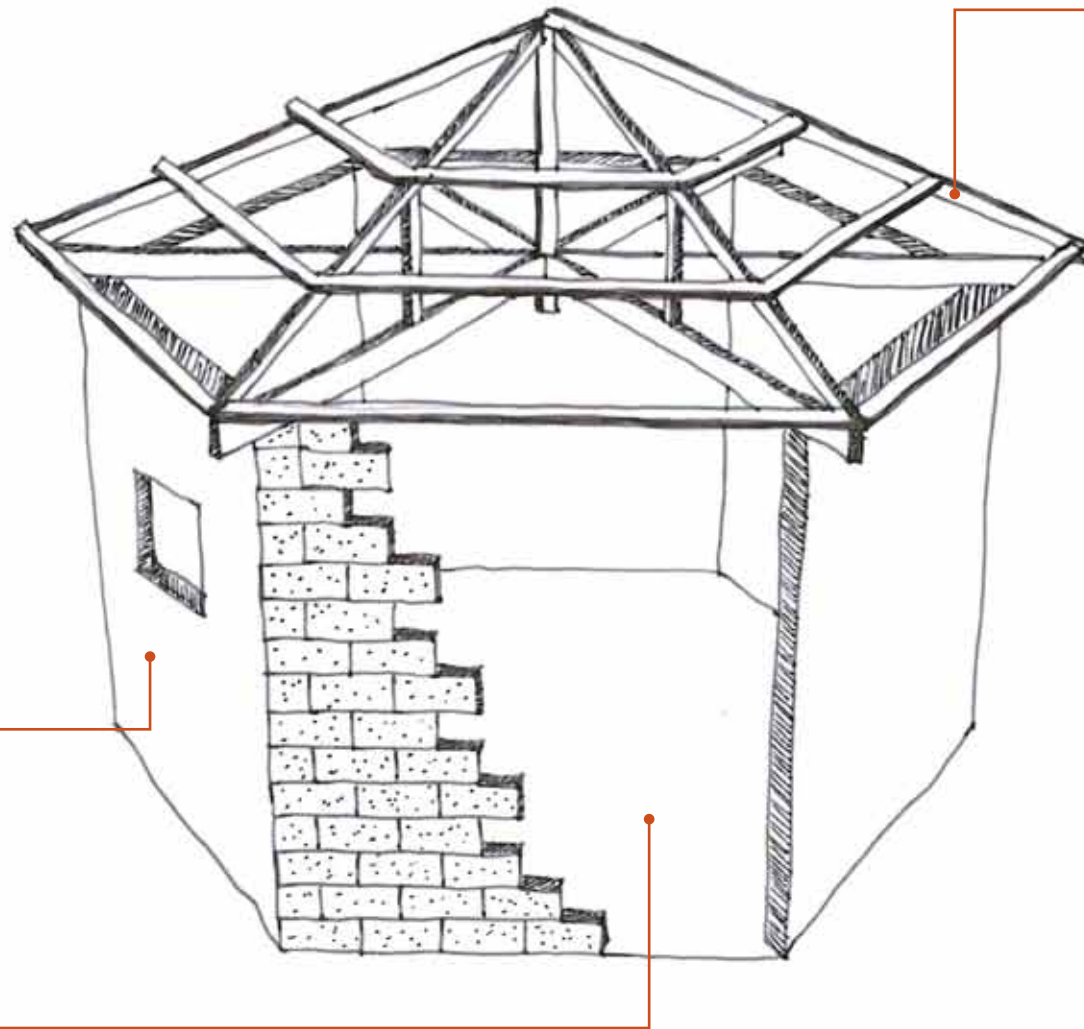
Modern Interpretations:

**Foundations:** Foundations provide a stable and level surface for the construction of the rondavel



**Walls:** Walls are comprised of concrete blocks or standard bricks.

**Floors:** A number of modern materials are used for flooring. This includes linoleum, ceramic tiling and cement screed.



**Roof Structure:** A timber frame is constructed from straight, standard sized sawn timber. This frame rests on the walls.



**Roof Sheeting:** Commercially available roof sheeting is nailed to the roof structure. This is generally aluminium.







# Materials



**Mud Brick:** These bricks are made from mud that is found on site . It is often mixed with grass or dung as a binding agent and sometimes sand, pebbles or cement. These bricks are left out to dry in the sun or placed in a wood-fired kiln.



**Thatch:** thatch is made from dried grasses. These grasses are typically gathered from a home garden or a nearby farm.



**Kalike:** a traditional, water based Chalk paint is used to decorate the walls of the rondavel. It also allows the walls to breathe and prevents damp from setting in.



**Wattle and Daub and Timber Poles:** Made from local timber, generally Gum Trees.



**Brick:** Standard or concrete bricks are frequently used with mortar imbetween for modern interpretations of the architecture.



**Roof Sheeting:** Standard roof sheeting is applied. This can be made from a variety of metals such as Zinc.



**Sawn Timber :** Commercially available, treated timber. Constructed with nails and metal fixing plates.



**Daga:** Mud mixed with cow dung or concrete. This material is used for floors as well as filling in spaces within the wattle and daub framework.



# Ornamentation

Ornamentation (decoration) is generally simple and more often than not, serves a practical function too. This 'ornamentation' is to be found within elements that already provide some sort of practical purpose. These items include

- decorative wallpaint to external walls
- doors - receiving either a different colour or interesting frame
- Windows - vary in shape and size
- Front step -vary in shape and size



Colourful wall paint provides an opportunity to introduce personalisation and character to the dwelling, however, it is applied in a pattern where it is raised to one side to allow animals to rub their back against it. This paint therefore hides the grime that builds as a result of animal rubbing.

# Typical Details

Doors:



Frequently, the 'stable door' is used where the top part of the door can remain open when the bottom half remains shut. This allows for light and fresh air to enter the dwelling whilst simultaneously keeping out animals and preventing dust from entering.

Windows:



Windows vary hugely in size and shape; from large, openable glass windows, to small post-box shaped openings which are large enough to allow for ventilation but small enough to keep intruders out.

# Green Building Principles

“Green Building” is a term used to define materials or systems that aim to minimise their impact on the natural environment. The Vernacular Architecture of the Eastern Cape most certainly displays these qualities.



Above: Hanging the clothes out to dry, and so too the bricks!

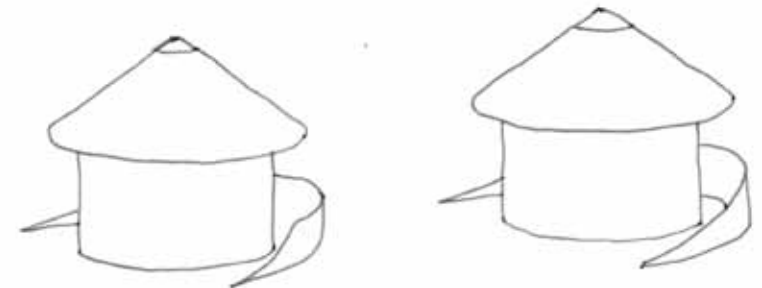
<i>Material/Method</i>	<i>Properties</i>	<i>Benefits</i>
Mud brick, Thatch and timber poles	locally sourced	Little/no transport required for materials to get to site. Fewer greenhouse emissions
	high density material	These ‘thicker’ materials keep out the heat when its hot and hold the warmth when its cool. No mechanical intervention required
	sun-baked/dried	Little/no fossil fuel energy required to produce these materials
	Biodegradable	No filling of landfill
	Breathable materials	Provides thermal comfort/humidity control without mechanical intervention
Intelligent building systems	Site location and implementation of drainage channels	Natural methods don’t require additional drainage channels and materials
Longevity	Durable and easily renewable materials	Fewer resources required to maintain buildings

# Green Building Principles

Drainage:



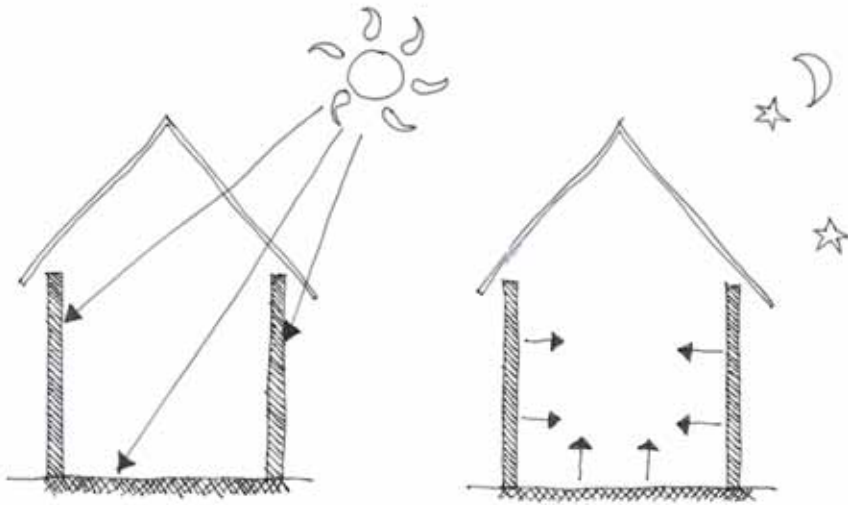
**Natural Drainage:** Houses are frequently placed along hillsides where dug-outs are formed. Buildings are then positioned within these dug outs. When rainfall occurs, this allows the water to run off around the houses. Various versions of these external drainage systems exist.



# Green Building Principles

## Thermodynamics:

The rondavel design with mud brick walls and thatch roof allows for heat retention during the cold winter months and heat dissipation through the permeable thatch during the hot summer months.

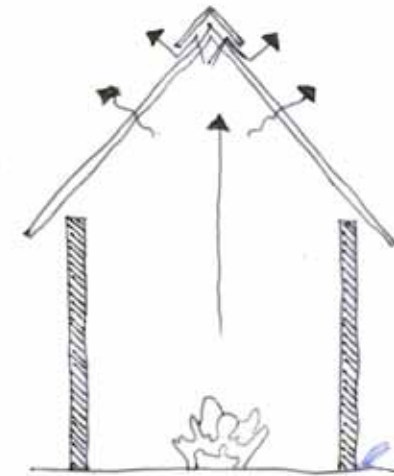


*Day: Thick mud walls and floors slowly absorb the sun's heat during the day*

*Night: The absorbed heat is then emitted at night, when the outside temperature is cooler.*

## Pest Control:

Often, fires are built inside the rondavels for warmth or for cooking. The smoke from these fires serves as an innovative pest control mechanism by clearing out the insects and small mammals that often reside in thatch and mud brick walls.



# Resources

The aim of the project is to record and digitise vernacular architecture throughout the Eastern Cape and by doing so, play an active role in preserving South Africa's living heritage, encouraging unity and cultural growth throughout our nation. Similar projects have been previously undertaken in Malawi, Zambia and Swaziland through which publicly available databases have been established where visual and textual information about the architecture of each country can be viewed.

Through recording, digitisation and the creation of a database, the impact of non-vernacular building technologies can be assessed through time and space to determine whether or not South African Vernacular Architecture is disappearing and if so, what it is being replaced with and why. In addition, this research provides the basis for determining if South African vernacular architecture should be actively conserved to prevent its disappearance altogether.

This project was conducted in August 2016 by the team at OpenHeritage, with funding generously provided by the National Heritage Council of South Africa.

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*OpenHeritage is a non-profit organisation that aims to preserve our world's history through offering free public access to digitised heritage sites and objects.*



Resources:

<http://www.southafricavernaculararchitecture.com/>

<http://www.africanvernaculararchitecture.com/>

<http://www.openheritage.org.za/>

<http://www.sahra.org.za/sahris>

