

Red Sand Cottage Site Analysis

The analysis considers:

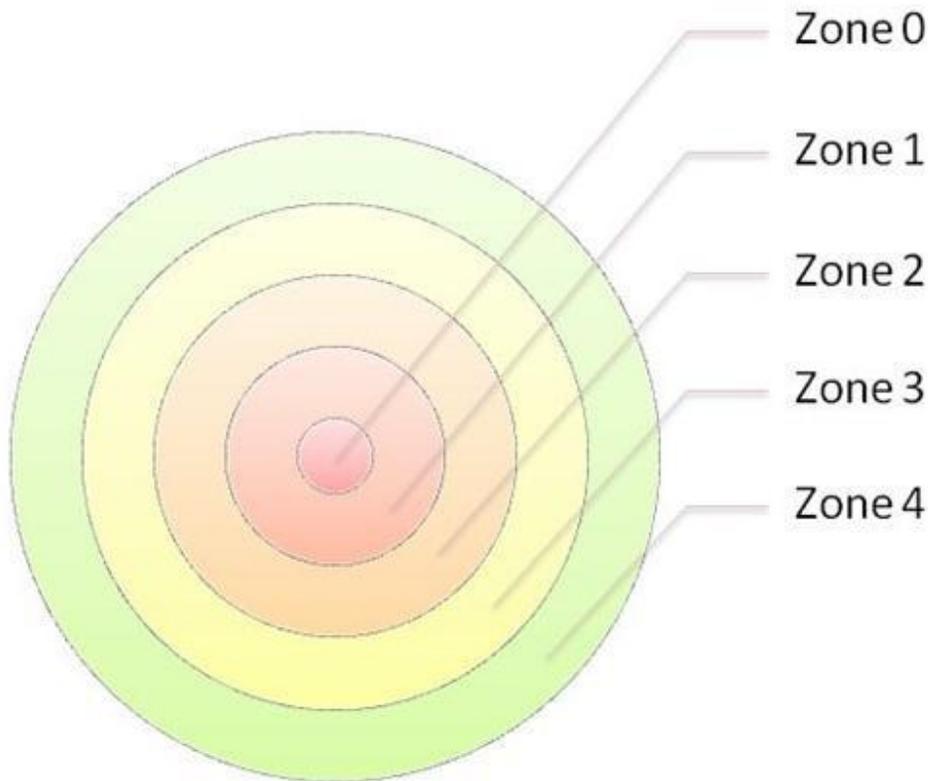
Zone & Sector Analysis
Elemental Analysis
Functional Analysis

Zone and Sector Analysis.

For a system to be sustainable it needs to be efficient. To achieve this, we need to put things in the right place. It makes sense to put the things we have to do or visit most often the shortest distance away.

1. Zones

In permaculture design, the zones (usually 0-5) are often conveniently shown on a schematic diagram of concentric rings. This is a schematic, the reality is we don't live in perfect concentric circles, but it's such a useful tool to help to locate our elements as long as we don't take it too prescriptively.



Zone 0 is the house, and is where most of the activity takes place. Zone 1 is where things that are visited often are placed and where we place things to help to control the climate in zone 0. When we get to zone 5 this is usually a wild, untouched, natural area with little or no human intervention, visited only for learning, relaxation, etc.

First we decided upon the zones at Red Sand Cottage:

Red Sand Cottage Site Analysis

Zone Description

0	The house and centre, a hotspot of activity (hence red on the diagram!)
1	Area nearest to the house for elements that need regular attention or harvesting, mainly annual plants and herbs surrounding the house, the Mandala Garden, trips to the compost bin, feeding the hens, the shed and storage.
2	A little further away, requiring less regular attention, like the forest garden, larger compost heaps, less frequently harvested crops like pumpkins and potatoes, pasture (could also be zone 3) here close enough to look out for predators of our livestock
3	Crops and areas that require little attention like perennial beds, items that only get harvested infrequently
4	Semi-wild for coppicing, timber production, wild edibles collection, hedgerows and tree plantation.
5	Completely wild, untouched area with no human input except to observe and learn from nature.

2. Sectors

In a sector analysis we consider the different types of energies which might come onto the property and decide which ones can benefit us and which ones to try to eliminate which may be harmful.

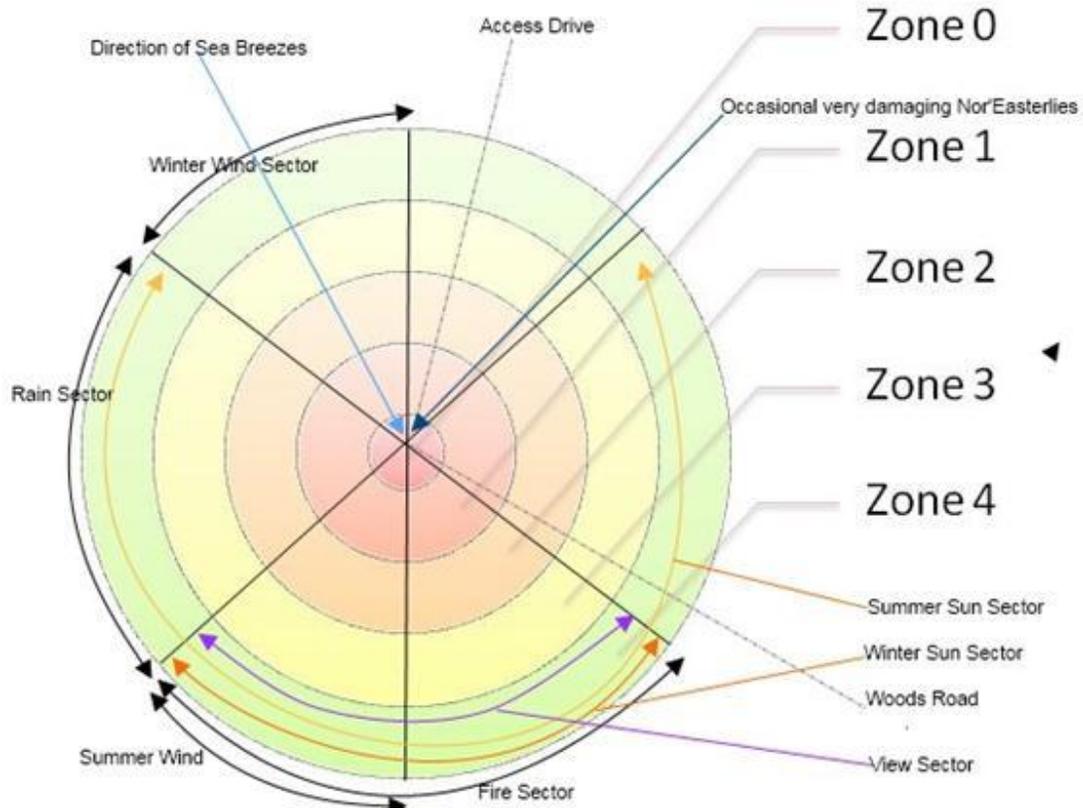
Energies	Considerations	Decisions
Wind	Entry point	Harvest
Sun	Exit point	Capture
Water	Intensity	Store
Animals	Direction	Deflect
Fire		

The energies can be marked onto the zone plan with an arrow showing the direction they come onto the property. The sector analysis for Red Sand Cottage shows:

- Winter Wind Sector
- Summer Wind Sector
- Summer Sun Sector
- Winter Sun Sector
- Potential Fire Sector
- View Sector

Red Sand Cottage Site Analysis

Zone & Sector Diagram for Red Sand Cottage



Elemental analysis of our Permaculture System

An element may be a building, an animal, a garden, people or animals.

Each Element needs certain inputs and has multiple functions (products).

It also has intrinsic factors, e.g. certain characteristics. We select those characteristics to ensure the success of the element under the conditions here. E.g. cold hardy plants.

The aim is for everything to be inter-connected, so that the products of one element become the inputs to another.

Each Function (e.g. food, warmth, shelter, storage) is supported by a number of the elements.

The Elements are numbered so that they can be easily identified on maps and plans (to follow)

Red Sand Cottage Site Analysis

1. Buildings & Structures

Element Number	Element	Inputs	Outputs	Intrinsic Factors
1	House	Heating, Water, Power, Sewage, Cleaning, Maintenance	Shelter, Warmth, Living Space, Business Premises (craft store)	Bungalow, 40 years approx, south-facing, Insulated, Basement
2	Animal Shed	Straw, Nesting, Water	Shelter for hens, ducks, sheep, chicks	Secure, Insulated
3	Pasture	Rain, Sunshine	Pasture, Food, Shade	Fenced, Shaded Areas, Ample Grass
4	Shed	Maintenance	Storage	Metal Quansat building
5	Indoor Cookstove	Wood, Cleaning	Heat, Wood Ash, Emissions (small), Cooking, Hot Water, Boiling Water, Humidity, cheese and yoghurt making, bread rising, clothes drying, comfort	Heat spreads throughout, fan takes heat into other rooms, Ecofan, pans of hot water for thermal mass
6	Hedges	Seedlings, Sunlight, Rain, Natural Mulch, Fertiliser	Wind Barrier, Protection, Animal Barrier, Wildlife Habitat, Some Food, Some Firewood, Craft materials, Privacy	Not yet well established
7	Well	Adequate supply of water from water table, occasional disinfection	Water to House, Animals and Yard	No chlorine or other treatments
8	Septic Tank	Emptying (rare)	Nutrients and water to surrounding area, Sewage disposal	Tank and Septic Field
9	Solar Heating	Sunshine	Heats entire house during sunny periods	Fan is solar pv
10	Solar Hot Water	Sunshine and Pump	Approx 66% house & B&B hot water	Pump is Solar pv

Red Sand Cottage Site Analysis

2. Growing Areas

Element Number	Element	Inputs	Outputs	Intrinsic Factors
15	Coppice Areas	Seedlings, Sun, Rainwater	Small amounts of wood, craft materials, plant supports, outdoor seats	Within woodlands, mainly poplar at present
16	Forest Garden	Sun, Rain, Mulch, Manure, Pest Control, Pruning, weeding	Fruit, vegetables, flowers, herbs, reduces lawn, some wood from prunings	Companion planting guilds, layers
17	Vegetable Plot	Water, Sun, Mulch, Pest Control, Weeding	Vegetables, seeds, beans, reduces lawn, green manure	Fertiliser and pest control by hens and ducks
18	Perennial Beds	Weeding, mulching, rainwater, sun	Flowers, reduces lawn, bee/butterfly/hummingbird forage	Xeric Landscaping
19	Herbs	Rainwater, sun, mulch	Medicines, Herbs, Bee forage	Wrapped around front of house, Xeric
20	Mandala Garden	Rainwater, sun, mulch, weeding	Vegetables, Fruit, Medicines, Herbs, Bee forage, green manure	48' dia
21	Woodland	Sunlight, Rainwater	Fuel, Berries, Craft materials, Shade, Raises Water Table, Habitat, Mulch, Seedlings, Medicines, Herbs, Bee forage, could be used for shingles, glues and cordage	Deciduous & Evergreens, shrubs, berries

3. People

Element Number	Element	Inputs	Outputs	Intrinsic Factors
22	2 Adults	Air, Water, Food, Medicine, Companions, Shelter, Warmth, Clothing, Hygienic needs, e.g. soap	Work, Excrement, knowledge, crafts, skills, preserved foods, social contact	2 adults and a dog
23	Neighbours	Help & Support, share surplus	Help and Support, share surplus, social interaction	Garden clippings, etc

Red Sand Cottage Site Analysis

4. Animals

Element Number	Element	Inputs	Outputs	Intrinsic Factors
11	Hens	Food, water, shelter, protection, dust, grit, air, companions	Manure, eggs, heat, meat, gas, feathers, pest control, scratching, reducing vegetation, attraction, fertilized mulch from straw bedding	Rhode Island Reds, Bantams, Plymouth Barred Rocks, Rooster
12	Ducks	Food, drinking water, bathing water, shelter, protection, air, companions	Manure, eggs, heat, meat, gas, feathers, pest control, reducing vegetation, attraction, fertilized mulch from straw bedding	2 Ducks and 2 Drakes
13	Sheep	Food, water, shelter, protection, companions, Health Care (worming, foot clipping)	Manure, wool, meat, milk, guest attraction, grazing, fertilized mulch from bedding	Breeds
14	Ferrel Bees, Butterflies, Hummingbirds	Flowers	Pollination	Meadow and Companion Planting attracts more of them

Placement of the Elements

- Everything is connected to everything else (web of life)
- Connected by the most efficient route possible
- Each element has products which become the inputs to other elements
- The layout minimizes work and maximises productivity
- There is little or no waste from any element

One design constraint is that we are on quite a flat site, which means that we can't take advantage of gravity to help with transportation of heavy object like logs. Being 25+ acres, it is inevitable that there will be movement of materials from A to B, but the design keeps this to a minimum.

Red Sand Cottage Site Analysis

Placement	Benefits of Placing it there
Chickens	Close to the house for ease in all seasons but not too close to avoid smells and noise (rooster!). Shelter during rain or hot sun. Near to the compost bins so kitchen scraps can be split between chicken food and composting. Also near to their pasture land and the vegetable plot so that they can do vegetable gardening pest control from time to time and eat up vegetable garden scraps.
Pasture	Next to the chickens and lambs
Fences Hedges	These are all placed to provide protection, habitat and windbreaks.
Well	Situated in the basement. Would love to have another well with a hand pump. Another one in out building.
Solar Water Heater	Positioned for maximum solar gain, does not require anything but very occasional maintenance. It either heats or pre-heats the water on sunny days. It is circulated using a pump driven by solar pv.
Forest Garden	This is far enough away from the house and watering system to make irrigation impossible and we find we don't usually need it because we usually have it fairly well mulched. In theory, as the forest garden develops over the years it should provide its own mulch from fallen leaves and living mulch groundcovers like strawberries. Again, the worst time is early in the season when the berries are just making an appearance and it's all too easy for them to get choked out by weeds.
Perennial Bed	These are right at the front of the property so we couldn't easily water them. We eliminate the need for water and reduce weeding by heavy mulching & Xeric landscaping. The worst time is early in the growing season when plants are popping up from the soil and shouldn't be mulched at that time (also to allow the soil to warm after the winter).
Herbs	Herb Spiral
Mandala	Close to the house, doesn't require watering as it is mulched. Manure, compost, etc. needs to be transported to it, produce from it is brought into the house or fed to the animals.
Woodland	Zone 5, furthest away from the house. Doesn't require any attention, just mow paths through it, a place to study and meditate.
Mulch	Grass clippings, wood chips, seaweed, etc.
Straw Bales	These are purchased from a local farmer who delivers them for us. I am looking into the possibility of growing, cutting and baling our own straw. The first two should be easy but not sure about making bales. Having the straw in bales makes it a really useful material to work with, i.e. building structures for shade for the animals, etc.
Cooking	In the winter we use a wood cookstove and wherever possible we use solar cooking in the Summer (on clear days), biogas, woodgas, charcoal.

Red Sand Cottage Site Analysis

Functional Analysis of the Site

The permaculture site is designed so as to perform many FUNCTIONS. Each Function (e.g. food, warmth, shelter, storage) is supported by a number of the elements. The more elements support each function the better, because then if one should fail we can fall back on the others.

Function	Elements which support the Function
Food	Forest Garden, Mandala Garden, Vegetable Plot, Hedgerows, Wild Areas, Herbs, (Polytunnel), Animals
Forage	Pasture, forest Garden, Mandala, Vegetable Plot, Wild Areas, Herbs
Windbreak	Trees, fences, perennial shrubs, vines, House, straw bales
Protection	House, Animal Shed, Fencing, Tree windbreaks.
Fire Control	Grassed areas, road, drive, paths, reduced fuel forest area, concrete apron around house, willow coppice, lush vegetation.
Mulch	Paper, Cardboard, Carpets, Wood chips, grass clippings, seaweed, Forest Garden, Vegetable plot, Mandala
Manure	Green from gardens, other from animals
Fuel	Hedgrows, Neighbours, Fallen Trees, Coppicing, Woodland management, Biogas, Charcoal
Erosion Control	Trees, Wild Meadow, Fences, Ditch, Perennial Planting, Mulch, Lawn
Wildlife Habitat	Trees, Plantings, Mulch, Hedgerows
Water Table	Tree Planting, Old Trees, Forest Garden, Hedgerows, Ditch
Warmth	Cookstove, Woodstove, Passive Solar, Solar Hot Water, Solar Heating
Social	TBA
Business Premises	Office in House
Propagation	House, gardens
Storage	House, Basement, Shed
Income	Crafts, jewellery, workshops
Cooking	House & outdoors. Solar cookers, Woodstove, Biogas, Woodgas, Charcoal
Water	Well, (rainwater collection), (pond)

Red Sand Cottage Site Analysis

Teaching	Workshops and Community School
Grazing	Sheep, ducks, hens
Pollination	Gardens & Trees
Crafts	Coppice, Forest Garden, Old Trees, Recycling, Sea Glass, Driftwood
Social Contact	Neighbours, Friends, Visitors, Customers
Learning	Everywhere, especially wild areas, internet, Community School
Recreation	Meadow, gardening, beach, internet
Medicines	Woodlands, Gardens, Herbs, wild areas

To follow: Function Flow Charts