Overview of the Design Process (p 3 SNM)

The basic flow of designing is outlined here. The manual goes into the details of each. It is important to think about your site, I encourage you to read the manual and think through the space so that you maximize the use of your resources and results.

Step 1: Mapping the Site

1. **Choose your site:** You should have an area that is 'yours' to improve – it might be through ownership, rental or responsibility, such as a school, office or hospital. You'll want to map the whole site, as a sketch at least.
2. **Observe your site:** Think about what the area is like now. Thinking is free! (Remember the 80:20 rule!) Thinking is the most important part of designing and can be creative and enjoyable. It will help you make the right choices and decisions so that your plan for Sustainable Nutrition works.
3. **Look at the whole idea,** the big picture, then look at the small details, then the big picture again, and then again at the details. This is an important part of the design process; changing focus will help you include everything that is important, big or small.
4. **Sketch a map of the area,** as it looks now, noting any key issues.
5. **Make lists** of resources, issues, problems and solutions.

Step 2: Creating your Design

1. **Start small, then get bigger.** Your design can be any size, but it is best to start small (about 20 x 20 m area) then grow bigger and stronger at your own pace. Learn from your successes and failures and gain confidence as time goes on.
2. **Decide the zones**. Make decisions about what will go where and why.
3. **Draw your design.** This will be a second map, which shows what you plan to do with the site, based on the map of what it currently is.
4. **Start collecting useful tools** needed to make your plan become a reality.

Step 3: Implementing your Design

1. **Make an action plan** so you know what needs to be done, who needs to do it, what resources will be needed and when it should be done.
2. **Mark out permanent structures** such as pathways, roads, buildings and other infrastructure. Minimize compacting the earth and making it hard.
3. **Clear areas very carefully**, if they need to be cleared. Put your design into action, step by step, monitoring each step along the way.

Step 4: Maintaining your design

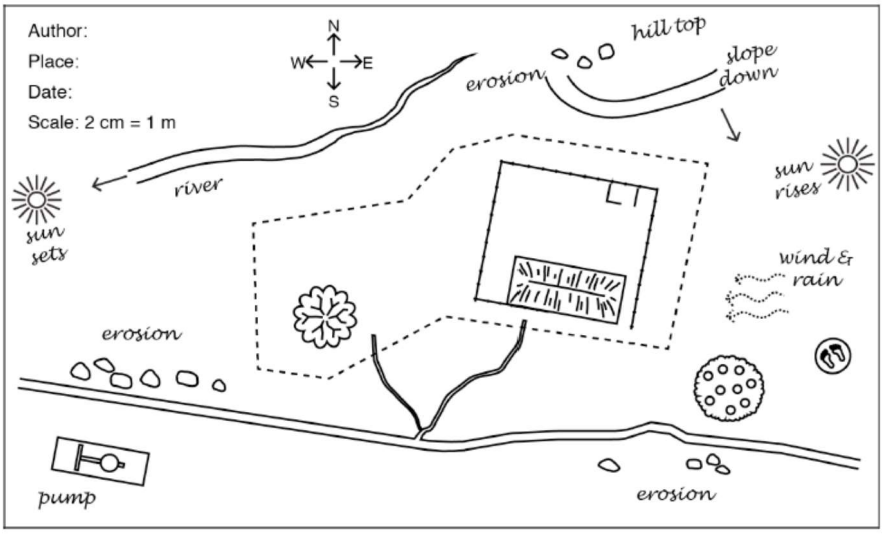
1. **Make a calendar of activities,** such as: when to transplant seedlings, water, weed, harvest, manage animals, maintain buildings, roads, energy systems, community meetings, etc.
2. **Identify possible solutions** for problems that might arise: pests and diseases, theft, low or high rainfall, etc.

Step 5: Assessing your Design

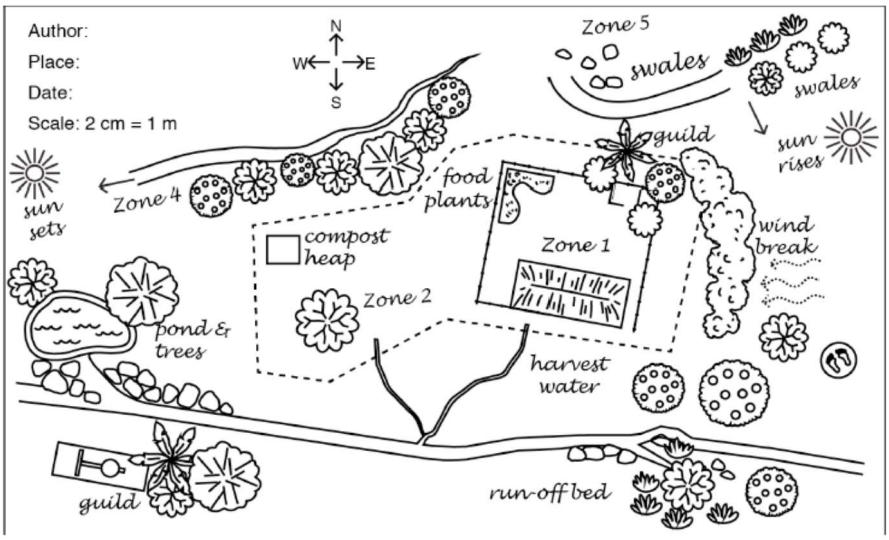
1. **Monitor how things are working** and adapt your design and action plan as needed. There is a blank form in the appendix to fill in, which will last for 18 months of assessments. There is also one real example to guide you, filled in by the author, based on her own experience.

Step 1: Mapping the Site (from Part 1: Food Security)

Sketched map as it is now



Designed map showing the plan



As you are reflecting, discussing and note taking, take some time to also focus on an area that you can apply your new ideas to. It could be your home, school, office, or preferably, a portion of one of these, something you can actually change. It can be, and should be, small to start with to build your skills, knowledge and confidence.

Aim for an area less than 20m x 20m – it doesn't have to be square, nothing in nature is. At the end of each topic you'll reconsider your map and notes and by the time we reach Part 3 of the manual you'll be ready to create your design.

Topic 37: Creating your Design (Step 2, p 9-10)

I've pulled out the areas that are considered 'Integrated Homestead Farming' by the Ministry of Agriculture (Zone 0, 1, 2). See the manual for other zones: Fields, Forests and Natural areas.

Zone 0 Buildings

This area is needed the most and is used, and looked after, every day. These topics have been considered in some detail already (in Part 1) and perhaps you have started making some changes. A few reminders of things that tend to be designed into zone 0:

- Food processing (e.g. solar drying, cooling, pickling, etc.)
- Food preservation and storage
- Food preparation (e.g. solar cooking, fuel-efficient stoves)
- Water, sanitation and hygiene
- Water Harvesting
- Water filtering
- Seed saving
- Worm farms
- Composting toilets

Zone 1 The Garden

This is often the area closest to your zone 0. Things placed in this zone should be things that need you every day and that you can care for every day. So this includes growing annual food plants and animals that need lots of watering, somewhere to recycle kitchen scraps and somewhere to do the washing. If your site is a school, or somewhere without much water, consider designing some of the area around zone 0 Buildings with more perennials, as zone 2 Orchards or even zone 4 Managed Forest. Perhaps you can find an area near some water source (kitchen, well or borehole) to establish a zone 1, and perhaps you could harvest water from a roof to make more of your zone 1. Here are some ideas that are often designed into zone 1:

- Annuals: greens, garlic, beans, etc.
- Plants that need daily watering
- Perennial vines on fences and buildings
- Chickens / rabbits in raised / mobile pens
- Drip irrigation
- Plant nursery for seedlings
- Bath and kitchen water into beds
- Worm farm
- Compost piles
- Compost toilet
- Hand-washing station
- Living fences
- Permanent paths
- Reduced or no sweeping

Zone 2 The Orchard

These are areas for guilds of perennial trees, shrubs, vines and small animals, which do not need too much attention. You can put things here that need watering or irrigation a few times a month rather than every day.

- Small perennials that provide fruits, nuts, fats (like avocado and coconut)
- Low maintenance annuals
- Small animals to work with orchards (ducks, goats, bees, etc.)
- Fish and ponds
- Mobile animal pens
- A bench in the shade
- Compost
- Heavy mulch
- Fewer paths
- Swales along contour lines

Things to Consider to be Efficient (p11-12)

A simple way to save yourself work every day is to think about how people behave (including you!) and arrange your design with peoples' habits in mind. Here are some examples but you will think up many more.

- **Think hard about where you want your paths** before you draw them on your map. Pathways should be designed to get around an area easily and take up as little space as possible. Sometimes a stepping-stone is enough to get into a bed, without adding a path. Paths should also be helpful to other people entering the area. There will be more information about designing pathways when we talk about converting your fields to sustainable, Permaculture methods.
- **Chores and daily tasks:** Make it easy to recycle used cleaning water by growing a guild where someone is currently throwing away used water every day. Put the woodpile somewhere that you pass every day on the way to the kitchen so you can easily bring a few sticks every time you walk by.
- **Access:** Do not put a guild in a popular pathway and expect people to walk round. Put the paths in the places where people want to go and work your planting around them. People are more likely to learn from your efforts if your efforts do not get in their way! If you really do not want people to pass through an area use something big, heavy and strong like thorns, bees, large stones, etc. along with conversation and / or signs and notices.
- **Space around the house can grow lots of food.** The plants do not have to be in square little beds behind the house. They can be dotted around the home and the community. This way they are easy to get to and easy to look after. Kitchen and food scraps are easy to collect and use on zone 1 beds, or feeding to zone 1 animals. Water in this area is easily re-used on plants in a guild.
- **Sweepings and 'trash' piles are full of organic matter.** If they are mixed with plastics, glass and metals that will not decompose sort the piles so you can use the organic matter. Recycle as much as you can from the rest. Metals that rust can be collected together to put at the bottom of a compost heap. They will break down eventually and return valuable materials to the soil.
- **Water run-off is wasted if it does not flow towards something useful**. Harvest the water round wells, boreholes and any source of run-off water. Water is also wasted when washing clothes or dishes. Direct the water somewhere it will be useful to grow plants.

Be creative to save time, effort and energy

While you are designing, be as clever as you can with your space, your time and all your resources. Think about this for today and into the future. Often the best ideas and solutions are very simple. Go ahead, do a little less work and be a little 'lazy' but think more creatively!

- Grow seedlings under the drying rack, so they benefit from the shade and water.
- Save and protect the trees that are there now, as well as planting for tomorrow.
- Use live fencing, for a permanent fence that doesn't have to be remade annually.
- Plant some surplus crops so you can sell some on.

Weather

Wind and rain can damage zones 0, 1, 2 and 3 because of the human structures and the more delicate, higher maintenance species in them.

- **Protection:** You need to know where the winds come from to put in windbreaks to protect your crops and soil. Bush fires spread with wind, so you plan firebreaks where there is risk. Use trees and vines to protect and shelter your house.
- **The sun always comes up in the East and sets in the West.** Take advantage of catching the sun's rays, heat or shade for species that need it. Knowing where the sun goes is important for all parts of the design, whether they are buildings, plants, trees, animal pens or compost piles. Think about the effects of shade on other species, like yourself, when you are sitting in a cool, shady place relaxing!

Fencing

Is fencing really needed as part of your design? It is hard work building fences and takes time, energy and other resources like money and materials. If your community manages domestic animals well you probably do not need many fences. It could be easier to build a moveable animal pen to control where the animals are eating and dropping their manure on the soil than putting in a fence. Some ideas for better fencing are:

- **Live hedges designed with trees and perennial plants of different heights,** growing closely together make a very good live hedge, especially with a few thorny vines or spiky plants like sisal, inter-planted. If well designed, you can stop most intruders from getting through. The live fence can take a few years to become well established and, while you are waiting, you can create something temporary.
- **Live fence poles with dry grasses or reeds tied tightly across.** Live poles include bloodwood (*mlombwa*), *kobo*, tree cassava (*mpira*), moringa (*chamwamba*), cassava (*chinangwa*), jatropha (*msatimanga*). Other trees or buildings can be used as poles if you design your guilds around them.

Get Started in Gardens & Orchards (zones 1 & 2) (p 21)

When you design an area, you must decide the shape of your guilds and the paths between them. These decisions are important to get right because, once you have made the beds and paths, you do not want to change them ever again.

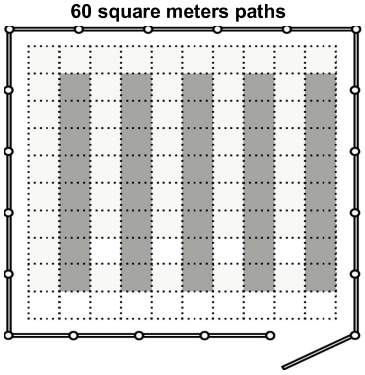
As you make your plans, talk to others who will use the area, about what may work. They might have useful things to contribute if you ask them what they think. There are three things to consider when planning the pathways in your fields:

- **Reach all the foods without stepping on the planting area.** Reduce the number of pathways and put stepping-stones in useful places.
- **Plant taller plants towards the back of the beds,** like legume bushes (pigeon pea) or small trees, so you reach the food higher up. Live fences in the garden, buildings and other structures can be used as supporters for climbing plants.
- **Work around existing plants and trees.** Even the smallest sprouting plant or tree may be useful in your design and the paths and beds can wind around existing trees, plants, termite mounds, buildings etc. giving the area a very interesting feel and look.

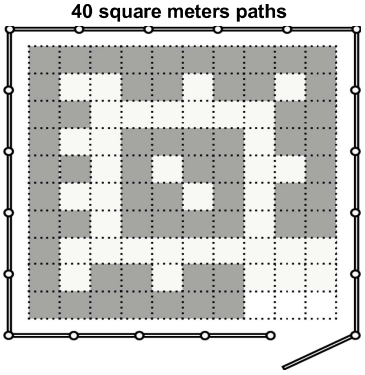
Increase productive land by changing your paths!

The diagrams below show how to adjust the layout to get more land for planting. In this example the whole plot is 10 x 10 metres (100 square metres). Each square on the diagram represents 1 x 1 m. Planted areas are shaded in grey and the paths are white. The first diagram shows the usual layout: 40 square metres used for planting. 60 square metres are used for paths. That's less than half of the area being productive! The second shows another layout that makes better use of the space: 60 square metres used for planting 40 being used for pathways. That's an extra 20 square metres for growing food! That's 50% more productive land at no cost (except for thinking differently)! Plus, most of the fence can now be used as a supporter.

Plot 1: 40 square meters planted
60 square meters paths



Plot 2: 60 square metres planted
40 square meters paths



Crop given to PCV:	Area/Time	Space/Layer
1. Onion	Sun, Monthly	Root – 100 cm
2. Chinese	Sun - Light Shade Near paths Plant monthly	25 cm Herb – 250 cm
3. Mustard		
4. Rape		
5. Swiss Chard		
6. Jews Mallow / Jute		
7. Cat's Whiskers	Sun - Light Shade Centre of square Plant 4x/year	50 cm Herb – 500 cm
8. Eggplant		
9. Hibiscus/ Roselle		50 cm Herb – 1 m
10. Amaranth		
11. Blackjack		
12. Okra		

Crop given to PCV:	Area/Time	Space/Layer
13. Beans	Sun put on edges up supporters Monthly	Herb – 1 m Vine – 2-5m
14. Tomato		Vine – 1 m
15. Cowpea		Vine – 5 m
16. Pigeon Pea	Consider placement for shade use as -Border -Poles -Supporter	Shrub – 1-2 m
17. Tephrosia vogelii		Shrub – 2 m
18. Moringa olifera		1 m Tree – 3-10 m
19. Gliricidia sepium		
20. Acacia galpinii		
21. Faidherbia albida		
22. Senna siamea		
16-22: assuming these are trimmed frequently		

Stagger planting. Squares could be shifted according to the notes above. There are lots of options.
A 2x2 meter corner could be a compost pile and/or raised animal pen so the droppings contribute to fertility.

metres	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	18 – 14 11 – 12	19 – 15 7 – 8	20 – 13 9 – 10	21 – 14 11 – 12	22 – 13 7 – 8	18 – 14 9 – 10	19 – 15 11 – 12	20 – 13 7 – 8	21 – 14 9 – 10	15 – 22 11 - 12
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