

CHAPTER 10

Developing your design methods

Zones and sectors are names given to the principal design methods of permaculture used for applying information and understanding to a design. You can apply them to new 'bare' land or to land that is already in use but which you want to make more sustainable, perhaps by using organic methods or modifying existing enterprises. This is called retrofitting the land, or rolling permaculture.



Our ethical task is to:

- approach nature as a friend and ally whose ways must be understood and whose counsel is needed
- apply design methods that do no harm and respect the natural inherent qualities of the land.
- it will cost a lot of money, contribute to environmental degradation and diminish Earth's scarce resources
- we will be much less effectual in living a sustainable life.



Our design aims for our site are to:

- produce high yields
- require low maintenance
- produce a non-polluting lifestyle and enterprises
- approach a closed system that meets its own needs
- be diverse and resilient enough to endure adverse conditions.



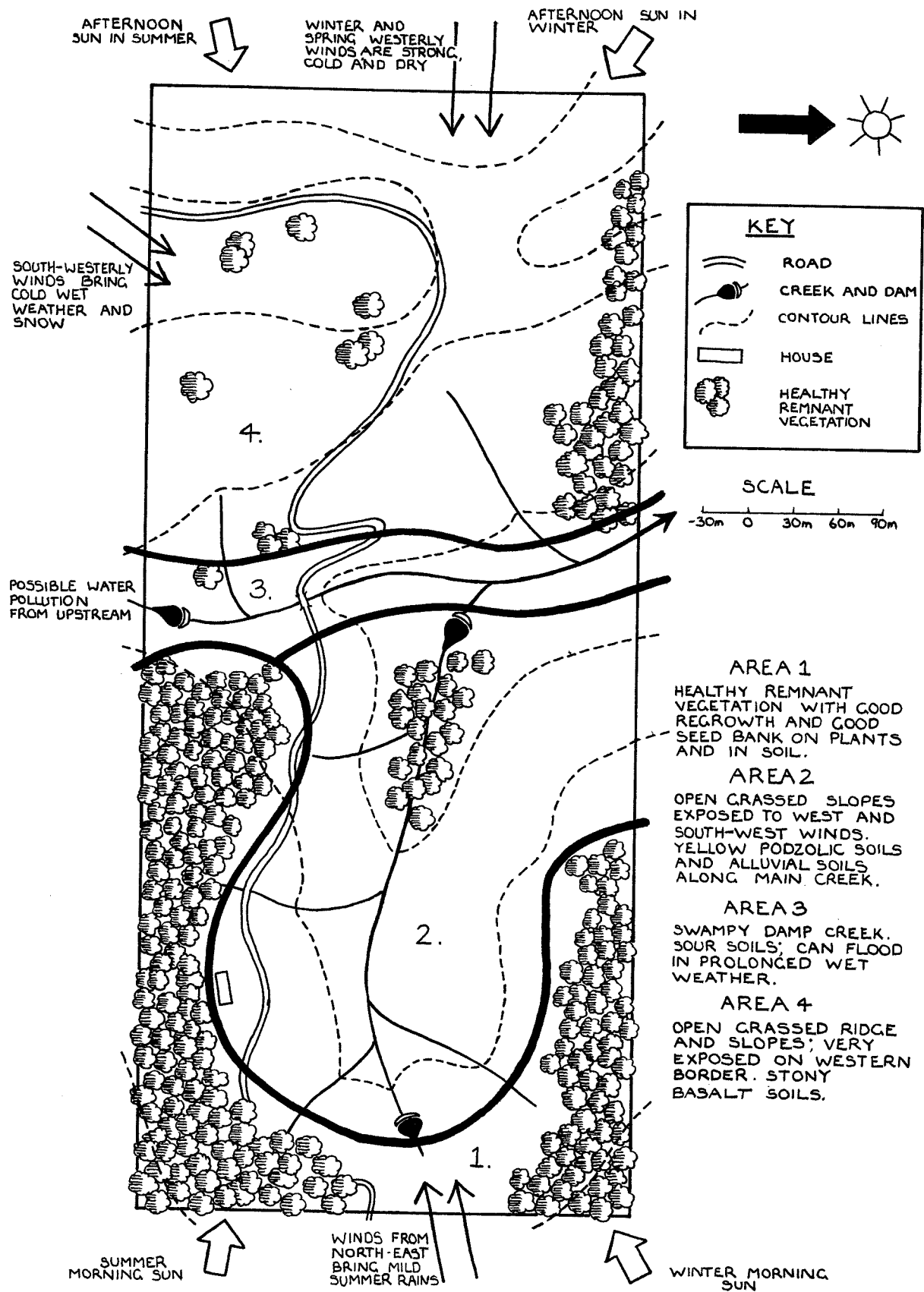
If we don't have design aims:

- we may live in a toxic, vulnerable and low productivity landscape

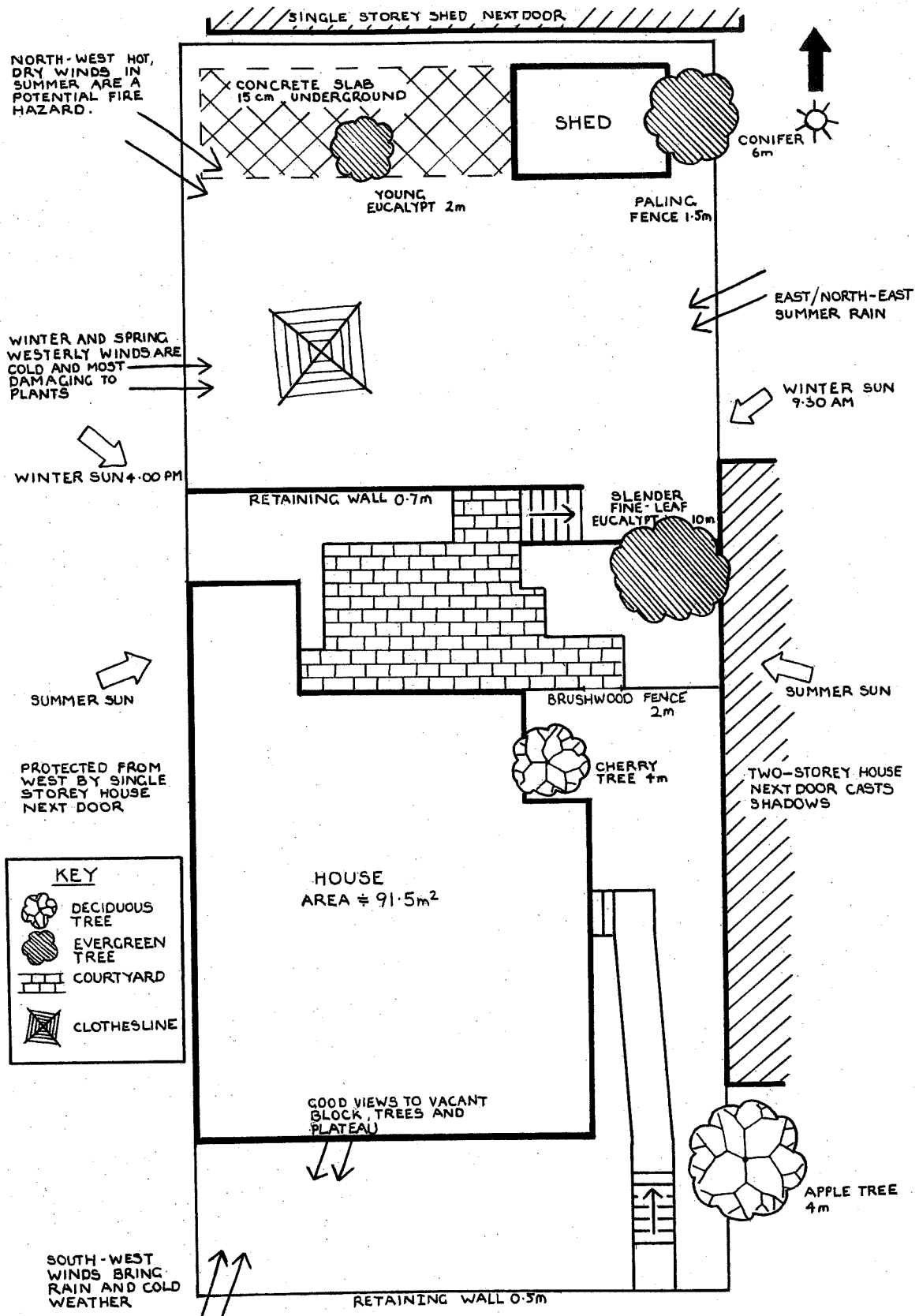
Sector analysis

In this design method the four points of the globe—north, south, east and west—are observed and related to the movement of wind, sun and water, and microclimate factors. This analysis begins by observing the factors originating outside the boundaries and, taking each aspect in turn, noting how renewable energies affect the entire property. Figure 10.1 shows a sector analysis for Rosie's farm, Figure 10.2 is Rob's sector analysis, and Figure 10.3 shows the sector analysis for my place. All sector analyses show:

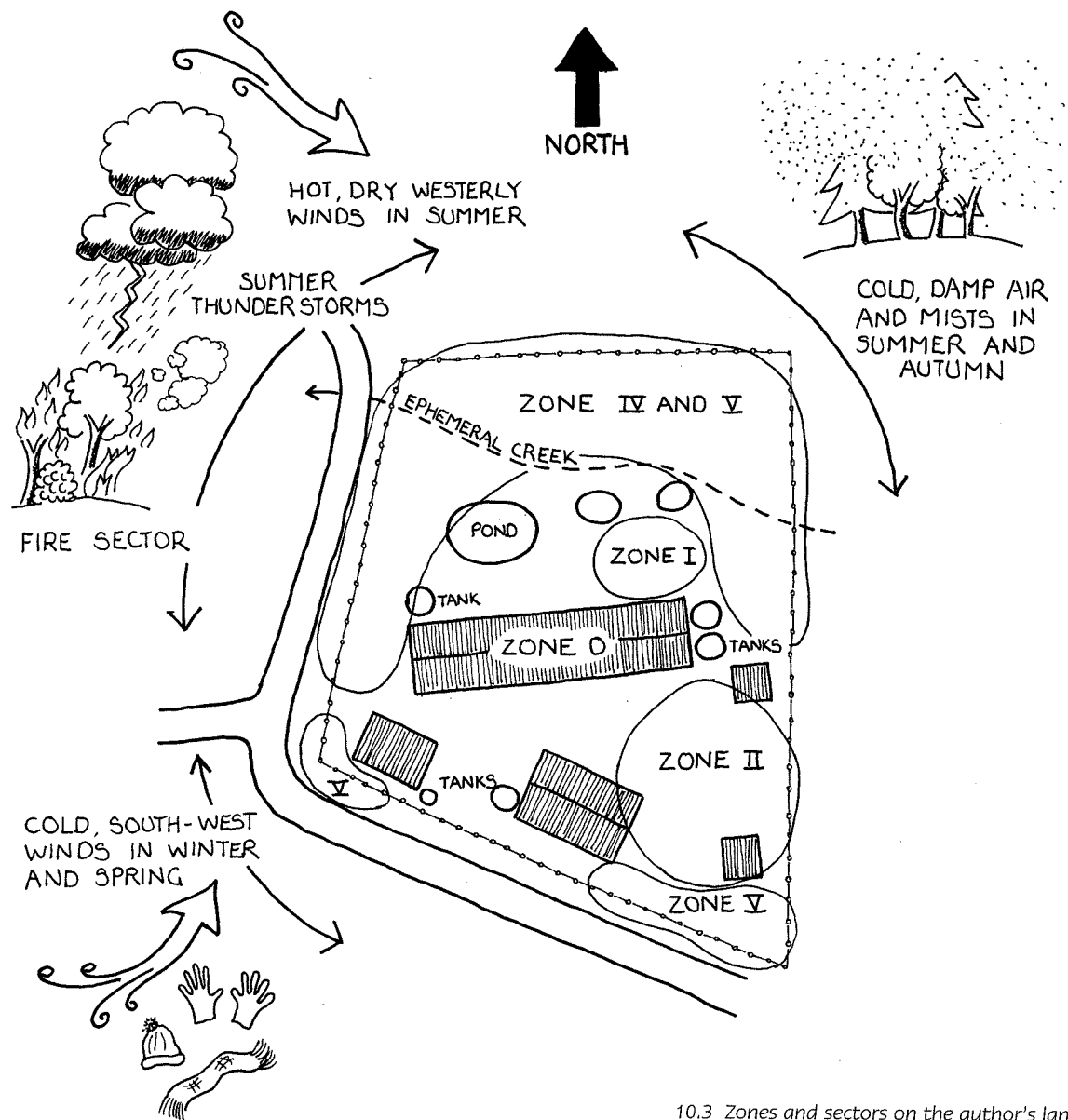
- summer and winter sunrise and sunset
- warm gentle summer winds and harsh summer storms
- cold, gusty wind direction



10.1 Site analysis and sector analysis of Rosie's farm.



10.2 Sector analysis of Rob's place. The sector analysis shows the type and direction of wild energies (rain, wind, floods, fires, sun) which affect your property.



10.3 Zones and sectors on the author's land.

- likely direction of danger of fire, pollution, flood and cyclones
- quality of rain—heavy, mist, damaging—and frosts
- neighbouring vegetation and buildings and other threats and advantages.

By identifying the type, intensity and direction of external effects you can include them in your later design considerations so their impact can be minimised or maximised. For example, you may need to choose fine-leaved shrub species to filter out dust pollution. If you live in an area where fire, cyclone, nuclear hazard, floods or pollution are

problems, then these must be included.

Use coloured pencils or crayons when drawing your design as it makes your work easier to read. I use blue for water, brown for roads and buildings, black for fences and green for vegetation.

Zones

Zones assist designers to place enterprises on land to achieve minimum inputs, resource recycling, high yields, low maintenance and resilience. The number of useful connections made among the elements is critical to the sustainability of each

zone. Zones can be thought of as a series of concentric rings, starting with the home centre as Zone 0 and working outwards. Your placement of plants, animals and structures in each zone depends on its yields, functions and maintenance requirements. For example, chickens are placed quite close to the house since they give eggs most days and require a constant supply of clean water, whereas an apricot tree, which yields all its crop in a few days of the year and needs less frequent watering and feeding, is further from the house. Zoning, the main design strategy of permaculture, yields a huge amount of diversity and biomass compared with a similar area of monoculture.

There are six zones, starting with Zone 0, your home, and moving out to Zone V, which is natural forest. Each zone has appropriate functions and enterprises. To decide the size and type of enterprise for each zone ask yourself the following questions:

- How productive is this zone?
- How much energy, water and nutrient resources will it require?

- How frequently will it need maintenance and attention?

Table 10.1 is a summary of the zones to help you think about landscape design in this way.

Most suburban blocks can contain Zones I and II, either separately or integrated. These two zones use your grey water from sinks and washing machines and provide most of your food (except grains) while recycling all your organic waste into quality humus. They are also fundamental to increasing your self-reliance while providing security from toxic chemical sprays, unprincipled agricultural businesses and inflated food miles.

Zones are initially imagined as concentric circles, with Zone I as the most productive and resource hungry, and Zone V as long-term, lower maintenance and lower resource use. It is important to remember these zones are simply concepts and are not fixed land boundaries. Zones flow in and out of each other and are flexible, changing over time if necessary. Zones fit land according to its inherent potential and qualities. They reflect slope, orientation of the sun and the land's natural

TABLE 10.1: SUMMARY OF ZONES

Zone	Summary of function and placement
Zone 0	The home, office, factory or shop is a voracious consumer of materials, water and energy and usually generates waste into the environment. Sustainable design of Zone 0 is a priority.
Zone I	The home kitchen, or vegetable, garden is close to the house, high yielding, intensively cultivated, and produces mostly herbs and vegetables.
Zone II	This is an intensively cultivated, heavily mulched and closely planted orchard with grafted and selected fruit trees. You might visit it once a day and probably run smaller animals such as ducks and geese. (This isn't essential.)
Zone III	This is the farming zone and requires less maintenance than Zones I and II. Commercial crops are grown, the plant species are hardier, and animal forage systems are used. It may be an organic orchard, nut forest, or extensive organic poultry system. You may grow cereal and industrial crops, or intensively farm beef, dairy or sheep, or raise deer and goats. It is protected by multifunctional windbreaks and alley crops. It is usually further from Zones I and II and before Zone IV.
Zone IV	These are harvest forests, well timbered and for long-term development. Tree species are harvested sustainably for building, mulching, firewood and precious timbers and this zone can carry complementary grazing animals such as cattle, deer and pigs or indigenous animals at low stocking rates.
Zone V	This is the indigenous conservation zone providing protection for soils, water, air and species richness of indigenous plants of the region. It functions as a reserve, a regrowth area and a bank to stock wildlife in the future. If possible, it is connected to a national park or reserves through wildlife corridors.

features. For example, you do not remove indigenous forests to plant an exotic orchard. The natural bushland is incorporated into wildlife corridors or Zone V. In addition, as you know, steep slopes, natural ecosystems, rivers and springs are more resistant to damage and degradation if left under natural vegetation. So the five concentric circles quickly get teased into patterns that do not readily align themselves with this model. Figure 10.4 shows how zones appear when you allow for such factors. The house and Zones I and II sit in a protected clearing bathed in sunlight.

Every site is different, so when you are designing your site apply conscious, thoughtful and protracted observation to discover how zones and sectors can be applied to increase yields, decrease work and move along the line of increasing sustainability.

Relative location

This is another design method often used in permaculture that works together with zones and sectors to maximise your land's potential. Relative location enables you to place elements such as plants, structures and animals in relation to each other so they enhance each other's functions. You will require this skill to achieve high yields and reduce energy and water use. For example, tank water is stored close to bathrooms and kitchens and the grey water is cleaned close to gardens where it is used. To reduce work, the garden shed is placed halfway along the block because tools are used uphill and downhill from it. The chickens are on one of the highest points so that carrying their manure downhill is easy, and the nutrient moves downhill to fertilise the fruit trees when it rains.

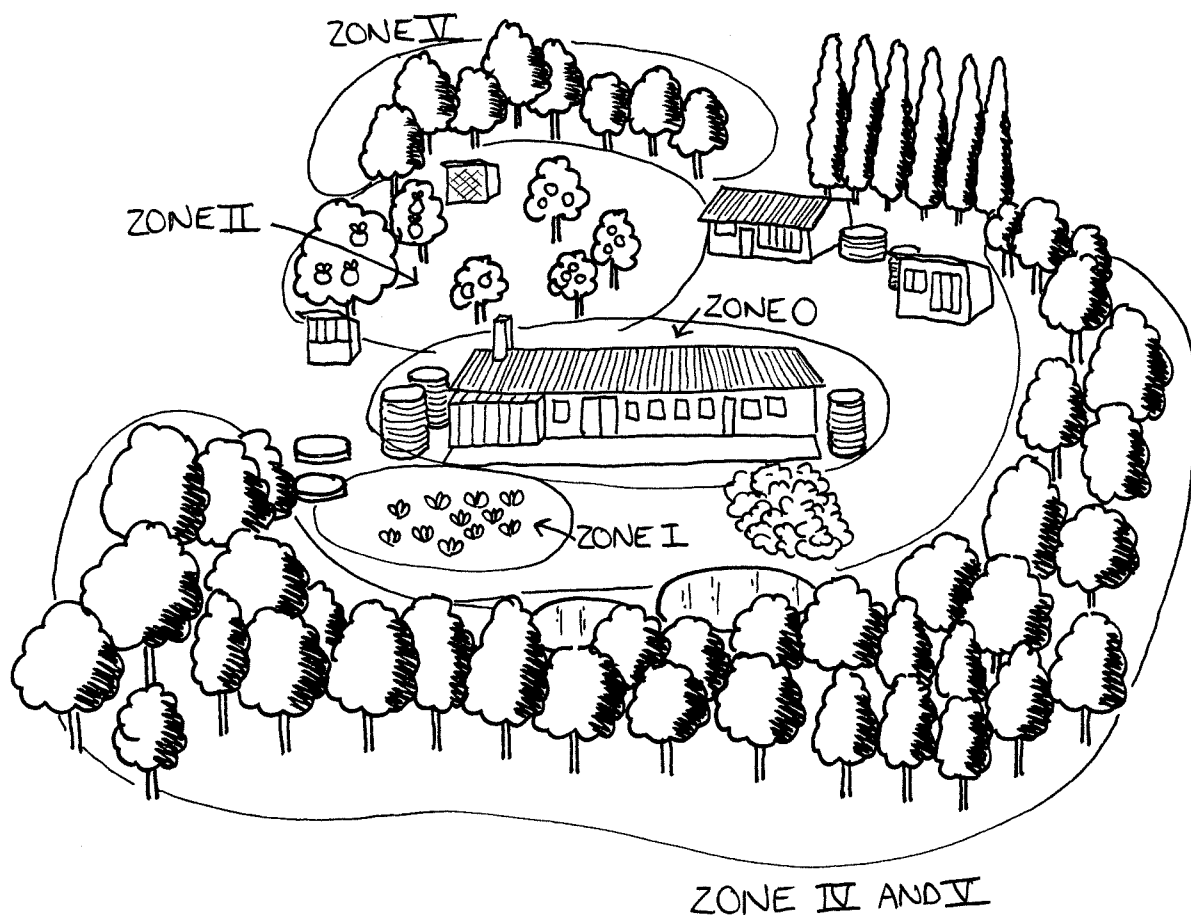


Figure 10.4 Zone planning at the author's land.

You have now been introduced to the main permaculture design methods. You have also drawn whole site water and soil plans. Now refer back to the Whole Site Water Plan in Chapter 4 (see page 36) and see how it looks placed beside the zones in Figure 10.3 in this chapter. Look again at how the site analysis and sector analysis have been combined for Rosie's place in Figure 10.1.

Remember these guidelines to help you monitor your design:

- Start small and get it right.
- Make incremental changes to an existing system.
- Keep measuring your ecological footprint.
- Move to greater and greater sustainability.
- Work to a time, budget and plan.
- Set measurable objectives and monitor them.
- Change your objectives if you think of something better or unexpected with favourable outcomes.



Try these:

1. Check and finalise your site analysis. Look at the site analysis of Rob's place in Figure 10.2. You can see how it interprets the land for him. Then you can look at Rosie's farm (Figure 10.1) for an analysis of a larger site. Have you included climates, microclimates, aspects, views, soils, limiting factors and even history? Has your site been mined for soil minerals, for example? Stick your site analysis up where you can see it and keep working on it as you make new observations. (It can never be perfect or complete because this would take a lifetime. There's a lifetime's study in every piece of land.) What was surprising to you when you looked at your land very closely? Do you consider your observational skills have improved?
2. Prepare for your final design. Get a new large sheet of paper and draw the main permanent features on it. Do a sector analysis of your land on this sheet, writing your observations outside the boundaries. Look again at Rob's place and Rosie's farm.