



Urban Permaculture

Co-Created by Josh Gomez & Rosie Stonehill

Urban Permaculture Designs

Both of our parents live in urban settings and have relatively small amounts of space to make gardens. So, as an exercise and example of urban Permaculture, we decided to produce two sets of designs of what could be implemented easily and with a low budget in their specific location.

This was firstly to expand our experience and range of Permaculture design and secondly to give our parents practical examples so that they could better understand Permaculture and how it could be applicable to them.

With 50% of the world's population now living in centralised urban settlements and this number only increasing it is becoming essential for a new form of in-city food and small scale livestock production to be developed.

We hope that these designs will help others as examples of what is possible in a relatively small amount of space. One good thing with urban living is there is no shortage of materials and willing helpers to create these desperately needed gardens. At the moment, 90% of the world's food is produced by 10% of its population. To turn this around to 90% of people involved in food production allowing 10% redundancy for elderly, infant and less able bodied, there needs to be intensive use of all available space in and around all urban densities of population.

Although, currently, most urban environments are largely unproductive we believe that, if people worked together to create multi faceted, bio diverse and stacked eco systems these gardens could be the most highly productive spaces on the planet for providing human needs.

Design 1

Patio Permaculture

This is a design for the garden of Rosie's parents, Anne and Mike. They live in a small town called Penryn, in Cornwall England. When considering elements for this design we spoke with them about elements they would like in their space including new features and aspects they wanted unchanged. In designing this garden we were trying to fulfil as many of their current consumption needs as possible in the space available.

They are both vegetarian and we this felt made it possible to produce most of their needs from this small plot. During the time of creating this design we were living in the house so the process of design was something of a daily dialogue and discussion. Being their daughter and son in law we had a slightly different perspective than the normal client designer dynamic. There were various elements which we suggested, some which they liked and some which they did not.

The following are two design options which met a balance between all of our ideas. This was a good way to work and greatly helped us as designers and gave them a clearer understanding of the workings and objectives of Permaculture Design. We found this experience particularly helpful in learning how to develop a constructive client / designer interaction which led to a harmoniously fulfilling design.

Design 1

Patio Permaculture

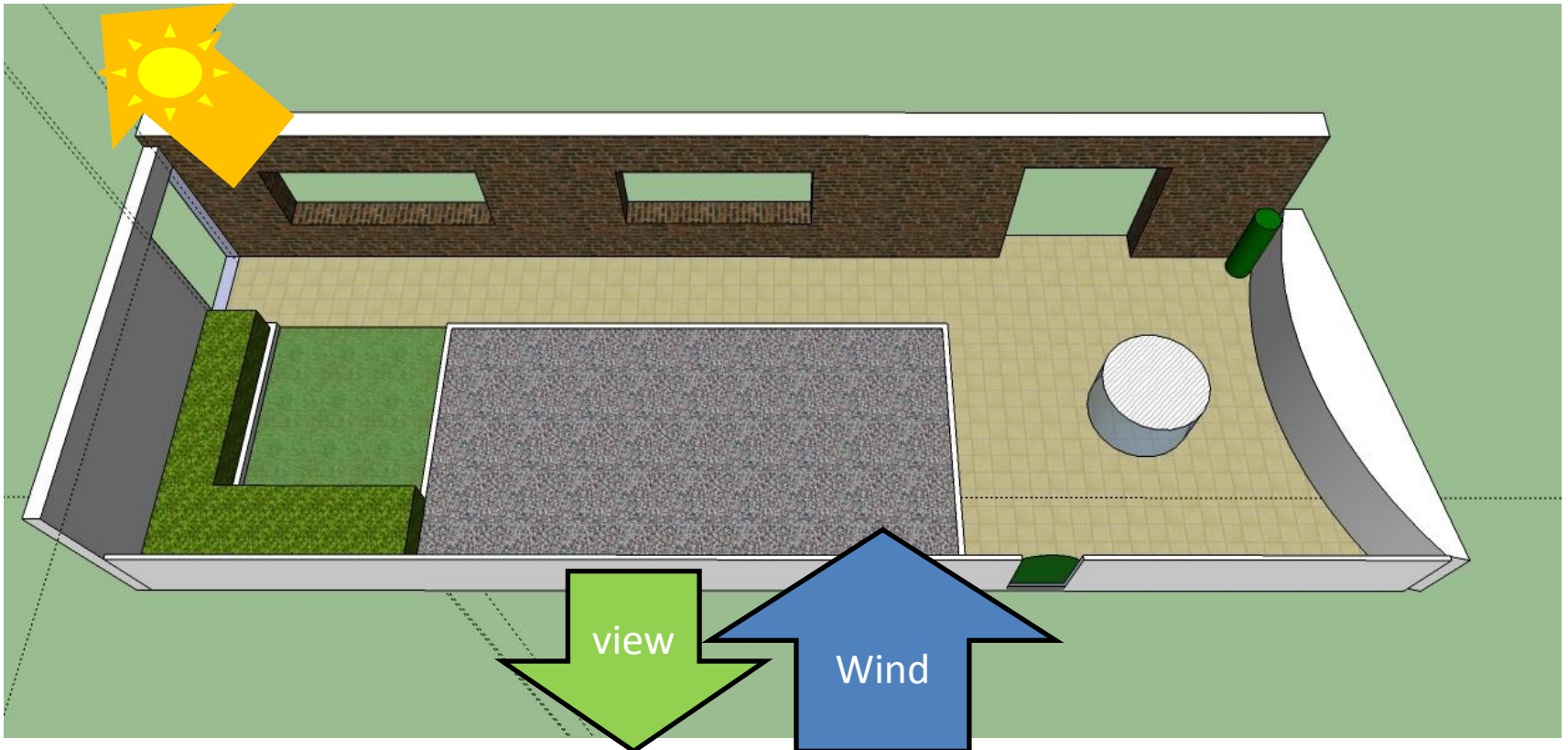
Client Requests

- Don't obstruct the view
- Keep existing planted corner bed – already has a mix of small trees, climbers and flowers
- Leave paved areas as they are
- Interested in whether a chicken could be included
- Fruit
- Veg
- Herbs

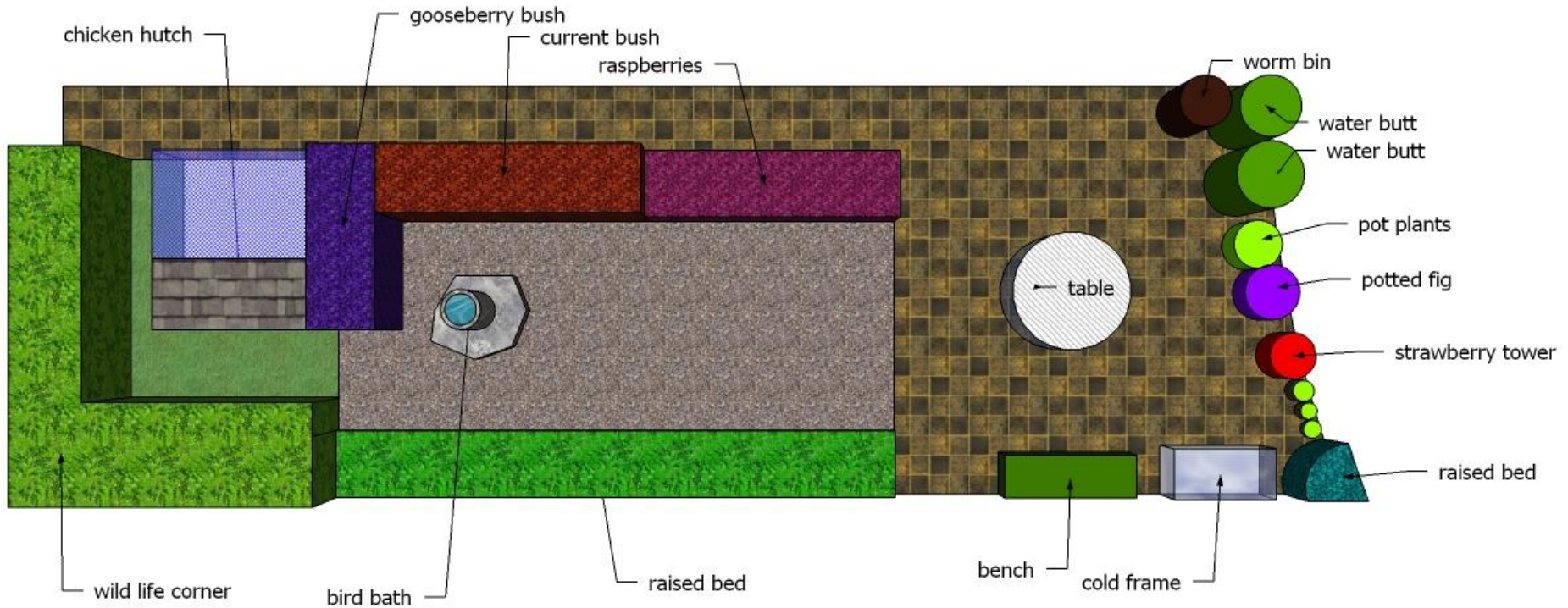
The space

The climate in this area is coastal warm / cool temperate with high rainfall. Before considering any new elements we spent time in the garden observing the space as it already was. Next we surveyed the site, taking all measurements down on a hand drawn rough map. From this data we then used design software Sketch Up to create a 3D model of the existing space.

Below is the finished base map including our sector analysis.



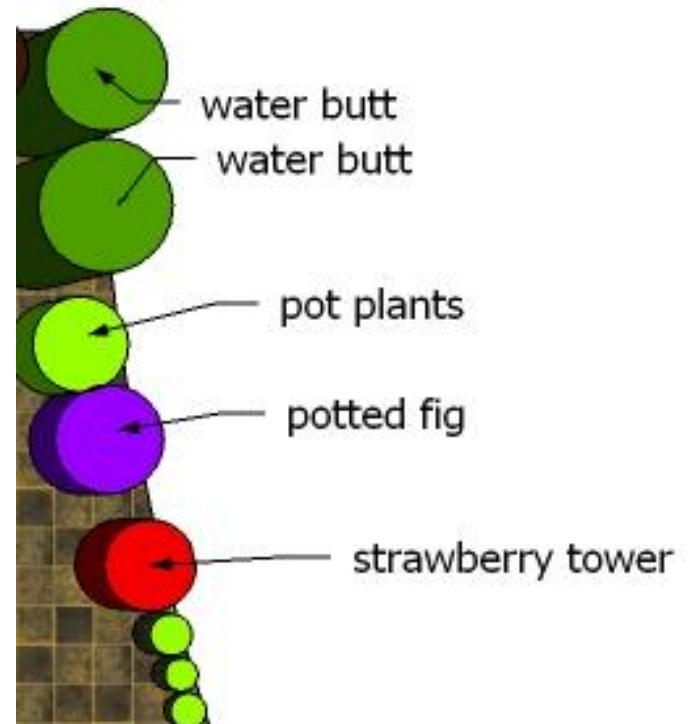
Patio Permaculture - Option 1



Option 1

Garden features

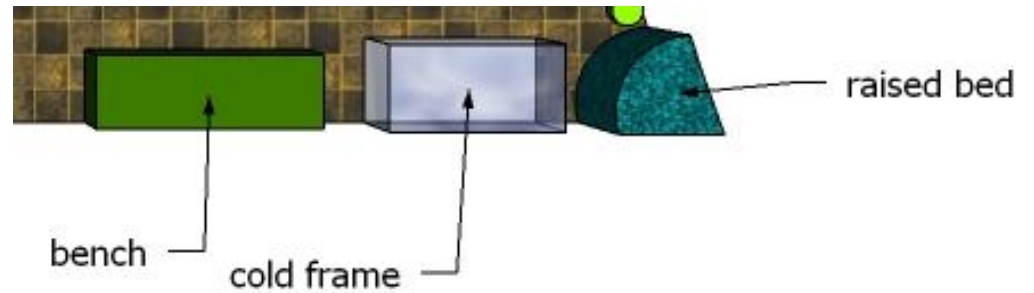
- Additional rainwater storage
- Potted plants and trees
- Strawberry tower



Option 1

Garden features

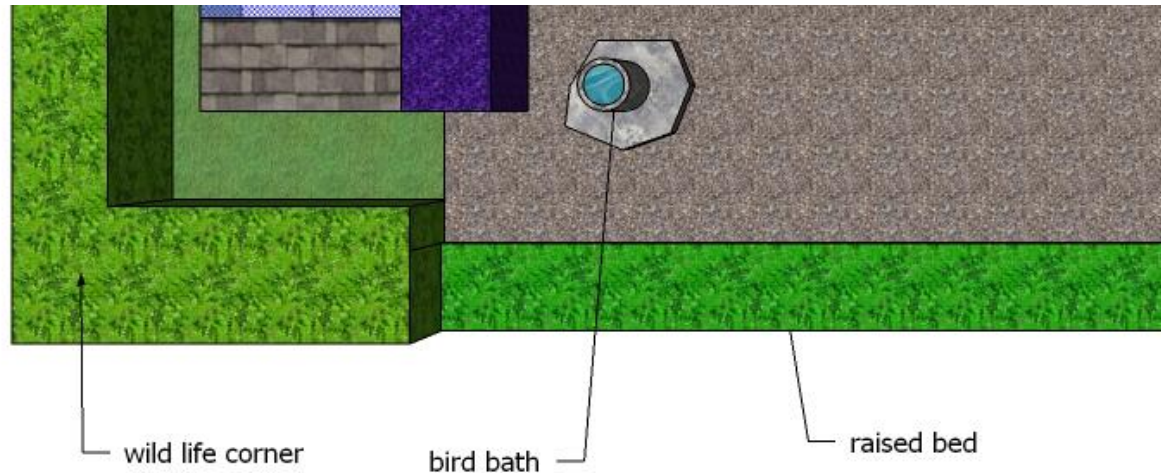
- Additional rainwater storage
- Potted plants and trees
- Strawberry tower
- Deep Corner Raised bed in sunniest position**
- Small Cold frame for starting plants off**
- Sunny Bench**



Option 1

Garden features

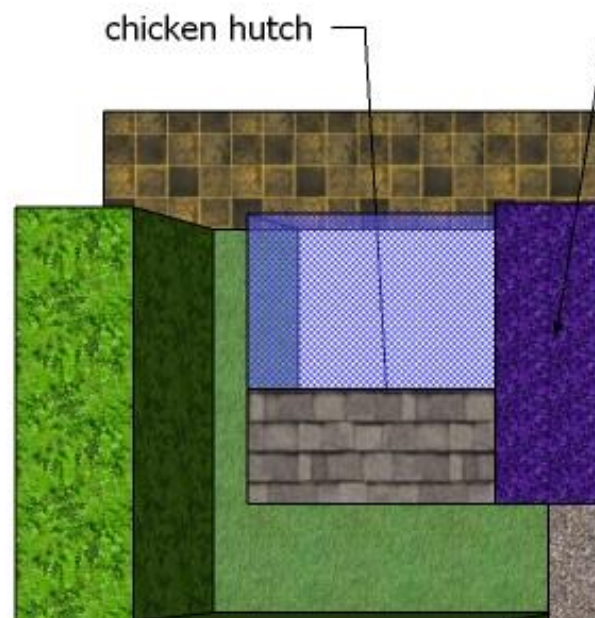
- Additional rainwater storage
- Potted plants and trees
- Strawberry tower
- Deep Corner Raised bed in sunniest position
- Small Cold frame for starting plants off
- Sunny Bench
- Long raised bed for main veg production**
- Bird bath**
- Zone 5 wild life corner**



Option 1

Garden features

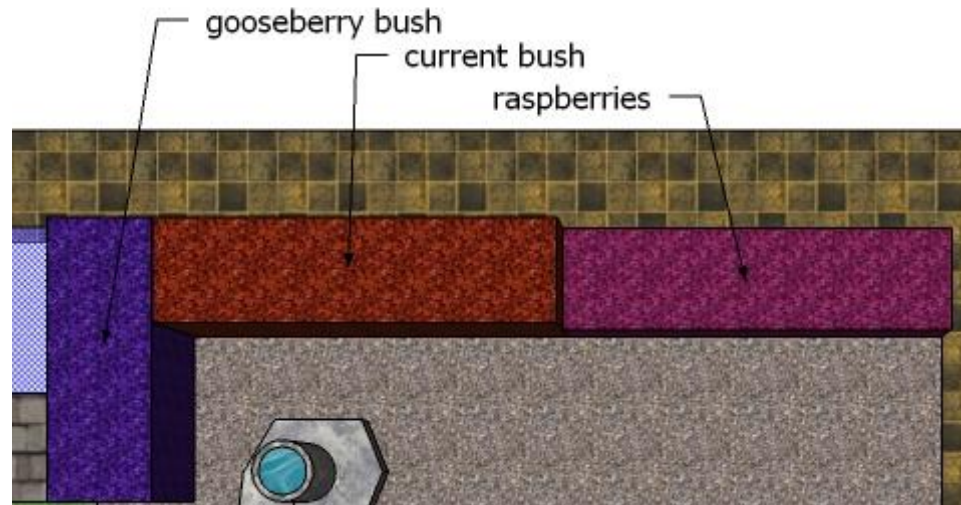
- Additional rainwater storage
- Potted plants and trees
- Strawberry tower
- Deep Corner Raised bed in sunniest position
- Small Cold frame for starting plants off
- Sunny Bench
- Long raised bed for main veg production
- Bird bath
- Zone 5 wild life corner
- Chicken Koop and mini run.**
Consuming some scraps and all cooked leftovers. Producing eggs and all manure needs for the garden



Option 1

Garden features

- Additional rainwater storage
- Potted plants and trees
- Strawberry tower
- Deep Corner Raised bed in sunniest position
- Small Cold frame for starting plants off
- Sunny Bench
- Long raised bed for main veg production
- Bird bath
- Zone 5 wild life corner
- Chicken Koop and mini run.
Consuming some scraps and all cooked leftovers. Producing eggs and all manure needs for the garden
- Soft fruit bushes**



Option 1

Garden features

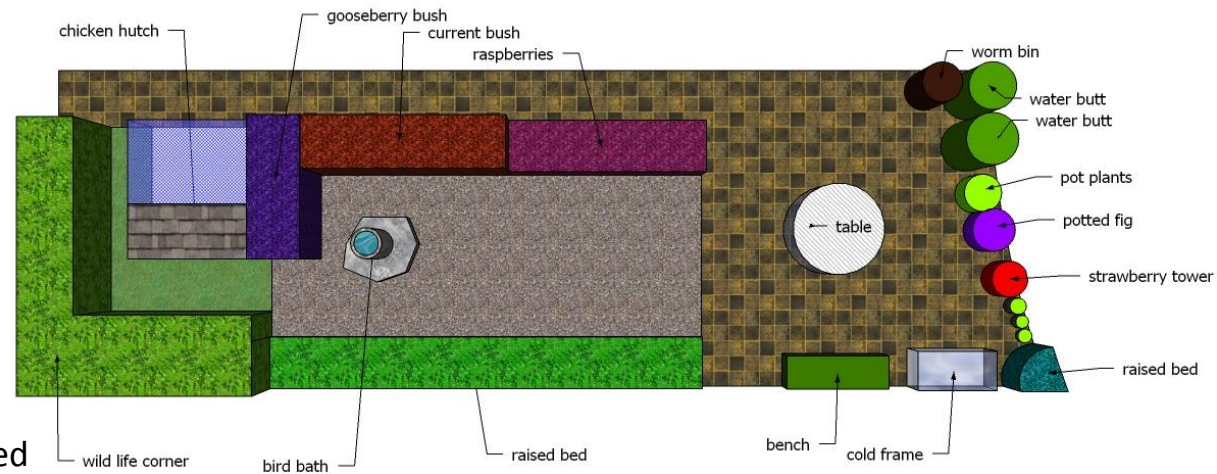
- Additional rainwater storage
- Potted plants and trees
- Strawberry tower
- Deep Corner Raised bed in sunniest position
- Small Cold frame for starting plants off
- Sunny Bench
- Long raised bed for main veg production
- Bird bath
- Zone 5 wild life corner
- Chicken Koop and mini run.
Consuming some scraps and all cooked leftovers. producing eggs and all manure needs for the garden
- Soft fruit bushes
- Worm compost consuming most veg and non woody garden scraps. Producing compost and the occasional high protein snack for the chickens**



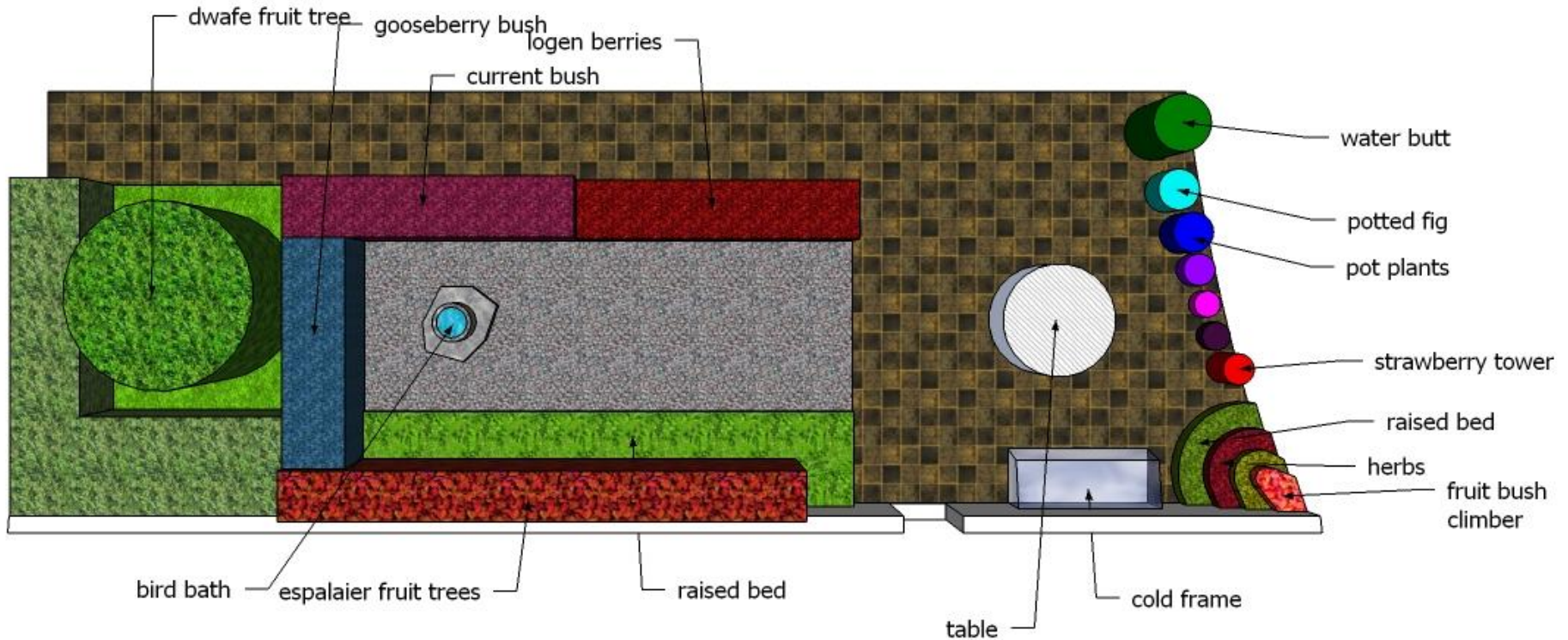
Option 1

Garden features

- Additional rainwater storage
- Potted plants and trees
- Strawberry tower
- Deep Corner Raised bed in sunniest position
- Small Cold frame for starting plants off
- Sunny Bench
- Long raised bed for main veg production
- Zone 5 wild life corner
- Chicken Koop and mini run.
Consuming some scraps and all cooked leftovers. Producing eggs and all manure needs for the garden
- Soft fruit bushes
- Bird bath
- Worm compost consuming most veg and non woody garden scraps.
Producing compost and the occasional high protein snack for the chickens



Patio Permaculture - Option 2

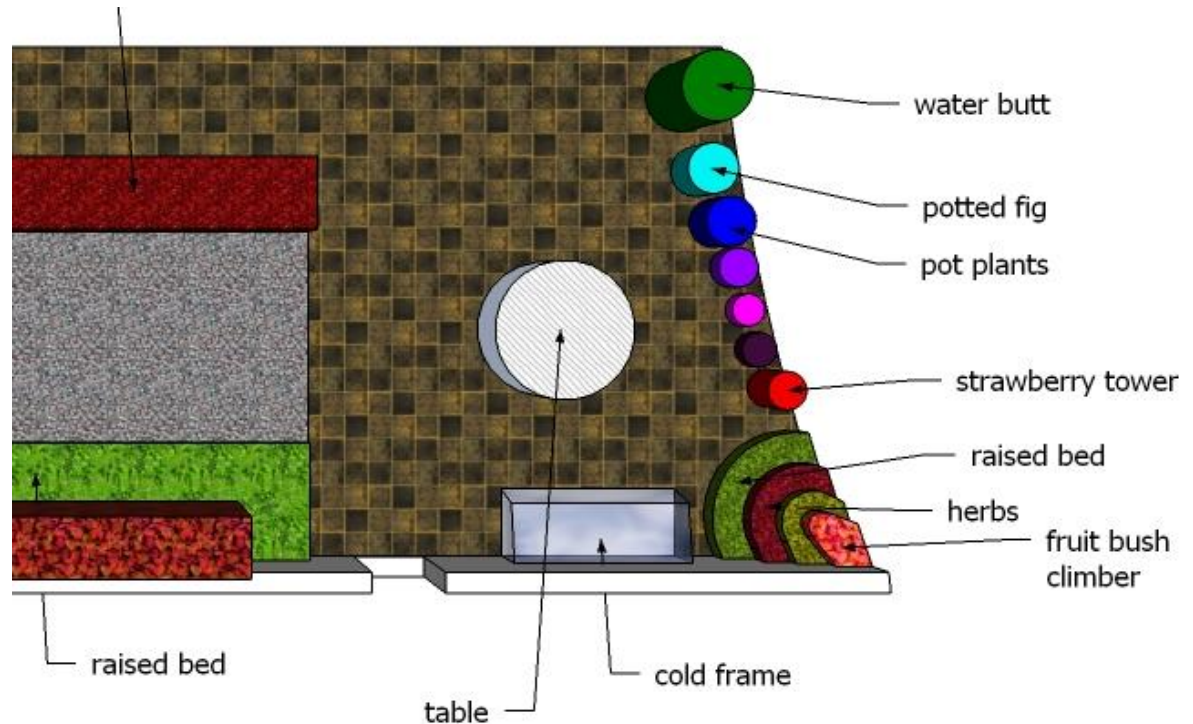


Option 2

Garden Features

•Intensively stacked multi layered raised bed optimizing the warmest corner of the garden. Comprising a sun loving veg layer, Mediterranean herbs and a fruiting climber, eg kiwi, passion fruit, grape.

•Larger cold frame extending the season of the sun lovers, eg tomato, pepper, etc. Also enabling an early start to the growing season with a space to bring seeds on.



Option 2

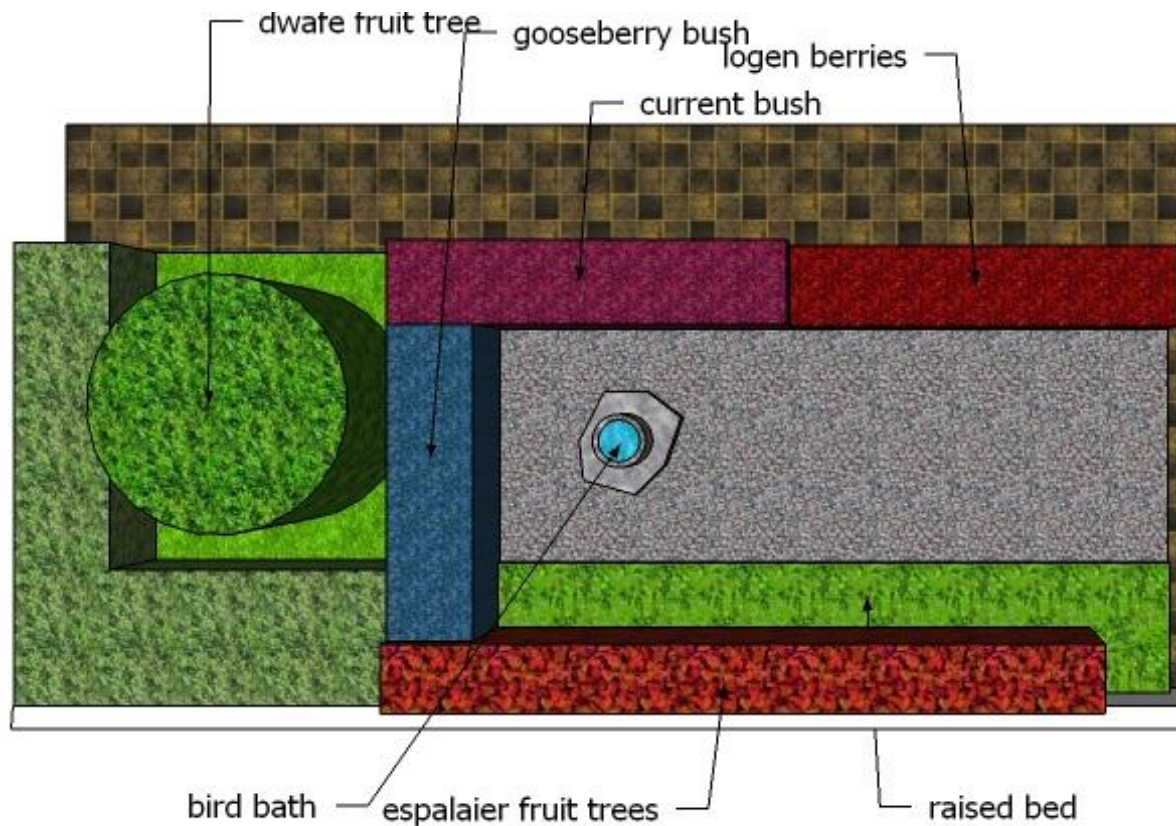
Garden Features

- Intensively stacked multi layered raised bed optimizing the warmest corner of the garden. Comprising a sun loving veg layer, Mediterranean herbs and a fruiting climber, eg kiwi, passion fruit, grape.

- Larger cold frame extending the season of the sun lovers, eg tomato, pepper, etc. Also enabling an early start to the growing season with a space to bring seeds on.

- Espaliered fruit trees along the wall at the back of the raised bed stacking vertical space, examples apple, pear, plum

- Dwarf fruit tree bringing forest garden feeling and a low canopy to the garden. Underneath would be planted with nutrient accumulating mulch providers like comfrey, some pest deterring aromatics such as lavender or mint, flowers for pollinating insect attraction like daffodil and some hardy ground covering herbs to allow some green space to sit such as thyme, yarrow.



Design Summary

Process Review

Examples of Ethics & Principles applied in Design

- By giving two options we made this as **inclusive** as possible and illustrated a large range of elements to choose from and learn about
- This garden is a great example of how **small scale intensive systems** can be made highly productive with **heavily stacked elements**
- **Closing cycles** – Manure – Garden – Food – Worm – Chicken – Manure...
- **Multiple Elements** – Fertiliser – Worm castings, chicken manure, green manure or mulch
- **Optimising Edge** – Raised bed in sunny corner with four steps of circular beds in layer cake design with vertical climber at the pinnacle potentially climbing the adjacent and overhanging magnolia tree
- **Use and Value Biological and Renewable resources and Catch and Store Energy** – Adding another rain water storage tank means greater capacity to gather this renewable resource, providing most of the water needed for the garden and significantly reducing their water bills.
- **Take Responsibility** – This process encouraged Anne and Mike to begin growing their own food again and showed how this could be possible even in the small space they have. Also, in the time we were there we introduced them to various transitional steps which they could easily achieve to reduce their global impact fulfilling the ethic of earth care examples... We ordered a weekly local veg box, attended the weekly local market and got them growing their own herbs (see next slide)



Guerrilla Action

Although neither of the above designs were decided upon and implemented, there was a space on the other side of the wall which, although it doesn't belong to Anne and Mike was a prime site for guerrilla gardening. To show some practical applications of Permaculture and to obtain a yield we helped clear out the non useful junk and built a herb spiral (seen here before and after planting) which we planted out with herbs bought from the local market and a raised bed using the compost they had been gathering and nearby dried out weeds.

They have gone on to make another raised bed and are planning to build another herb spiral inside the garden.



We asked Rosie's parents for an up to date feed back on what was happening in their garden, how they felt about the design we created for them and what they learnt with us. This is their personal statement and some up to date pictures:

Personal feedback from Anne and Mike Stonehill regarding our work and approach to their property and to permaculture in practise

When staying with us for five months in 2009 Rosie and Josh involved us in a design study to apply permaculture principles to our 12 m x 3 m patio. The final proposal was very well presented with a good explanation of how it could be created and how and why it met the principles. At the same time they carried out practical work in an area of 'waste' land adjoining our patio (guerrilla gardening). This created a herb spiral, which is now somewhat wild and prolific, and a sheet mulch bed in which we have grown a variety of vegetables. We learnt from their example and created a further bed.

We have seen at first hand their efforts at a number of locations in Portugal where they have been involved not only in creating productive growing areas but in explaining and encouraging sustainable food production. We were able to help in a small way in creating an additional growing area at Quinta das Aguias and it was interesting and convincing to learn about the reasons for the way of constructing the bed.

Rosie and Josh have a passion for permaculture, an ability to pass on their knowledge and an enthusiasm to inspire others.

Mike & Anne Stonehill



Design 2

Roof top Permaculture

This design is for Josh's mum Sylvie's house in Lagoa, Algarve, Portugal. She bought the house 10 years ago; although there was no garden with the property she had two roof top spaces where she kept some potted plants and at that time it had a ruin next door with a little garden that gave some green view.

About 4 years ago that ruin was knocked down and replaced with a 6 floor apartment block that over shadows her on 2 sides and on the other sides there is mostly only the road to look at, with this and the fact that the other two adjoining high walls are acting as a water catchment the house can be a rather hard place to be especially in the winter.

The top roof terrace subsequently started to let water in, coming all the way down to the kitchen where it drips and puddles. Although this problem has been repeatedly fixed, with such a large volume of water it soon comes again. So in this design we asked ourselves how do we turn this set of problems into a solution. What follows is the resulting outcome and our proposal for a roof top garden.

Design 2

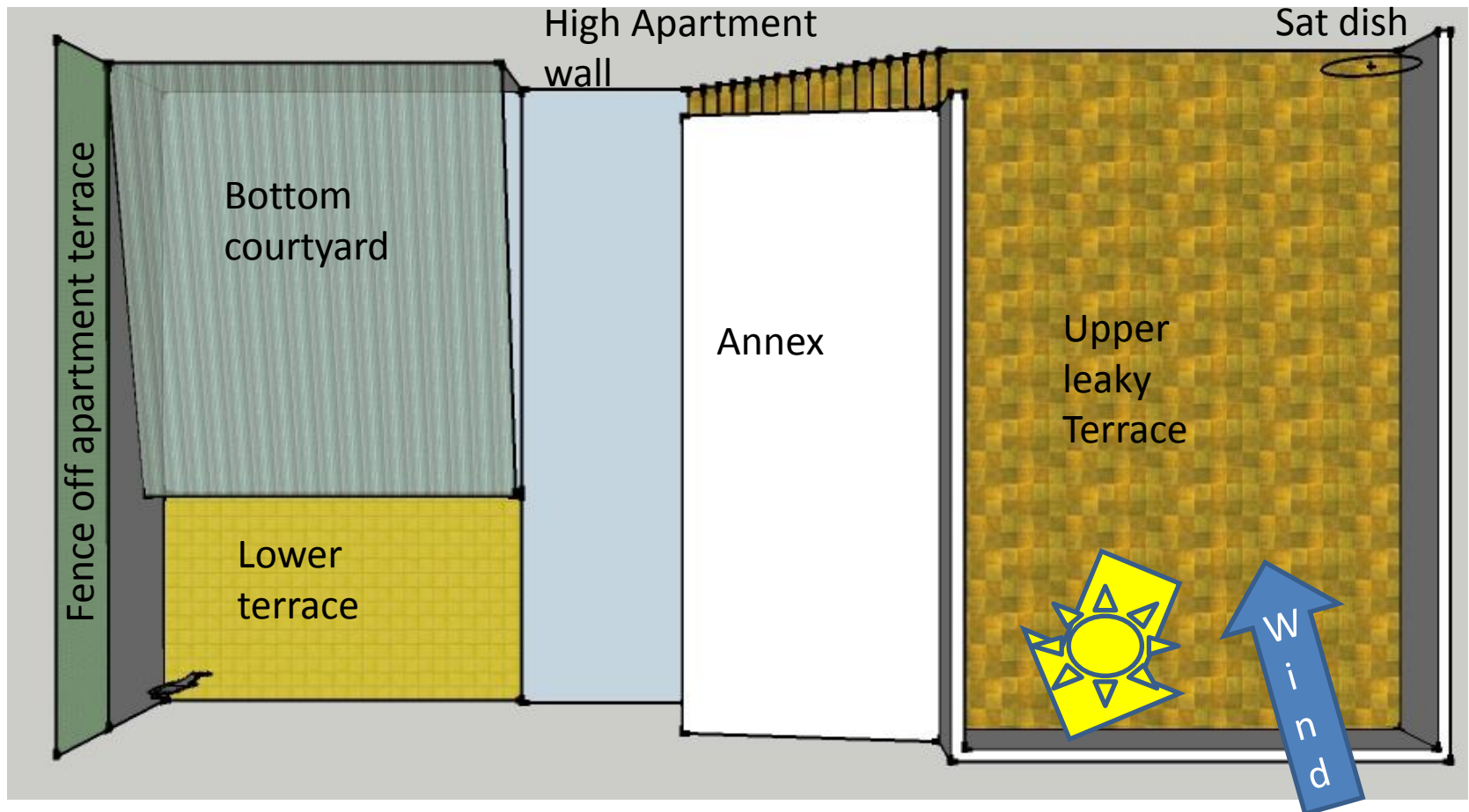
Roof top Permaculture

Client Requests

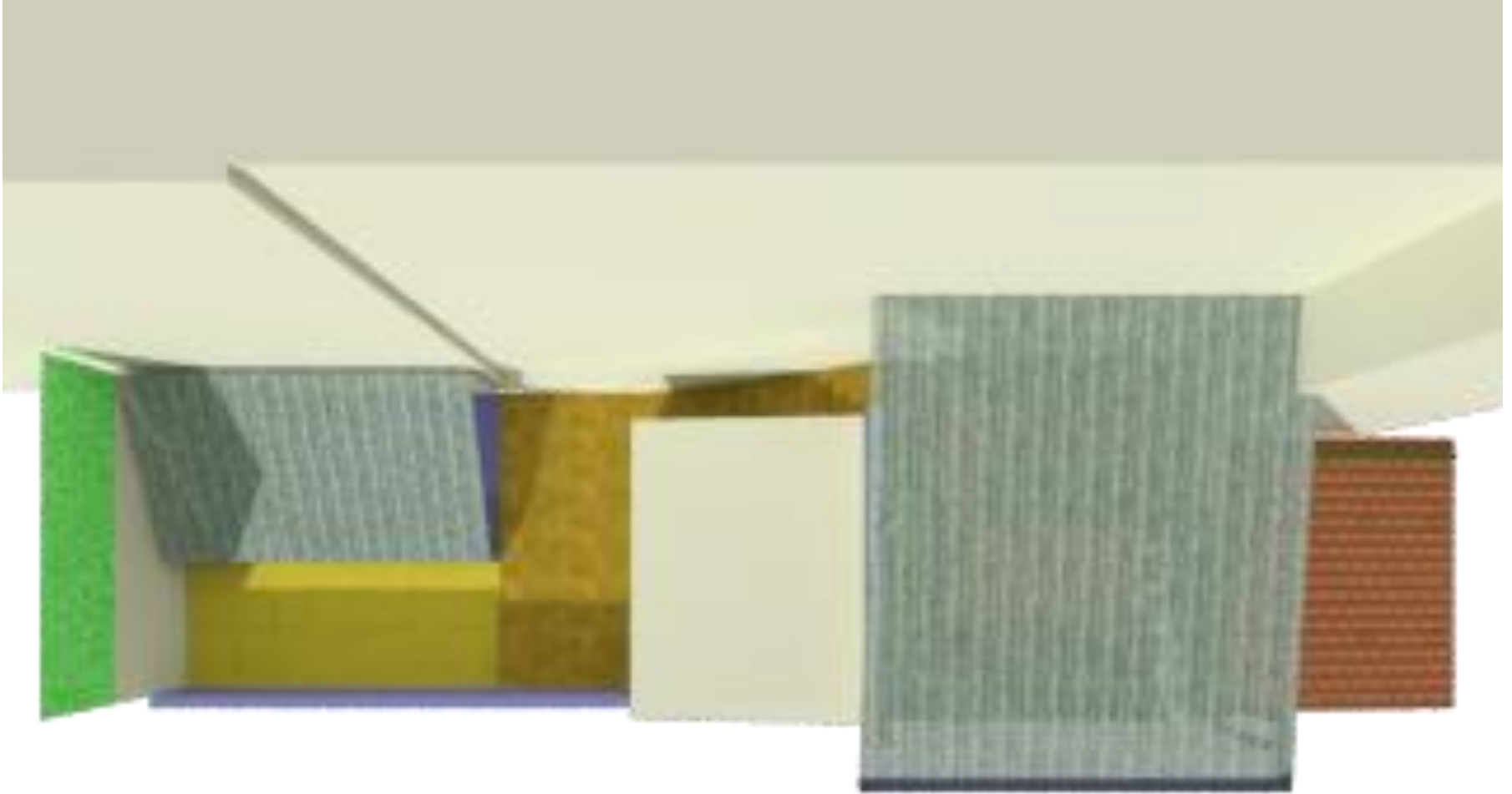
- A solution to recurring and extensive leaks coming from the top terrace
- Lots of space to sit
- Greener view
- A comfortable, warm dry place to be with lots of light as the main living spaces within the house are dark and enclosed
- A place for her potted plants where they need little care and attention
- A better way to get water to the plants without having to carry a watering can up and down the steps
- A bit more space for a small herb and vegetables
- A more efficient way of heating water than a very old gas boiler

The Space

The climate in this region is coastal warm temperate / sub tropical with very heavy rainfall for short periods of the year and very little the rest of the time. We have lived in this house at different times so we have experienced the house during all seasons. When we came to do this design we used the same process as detailed on the first design to create a scale drawing and then used our previous experience and further observations at the time of designing to place elements in the system.

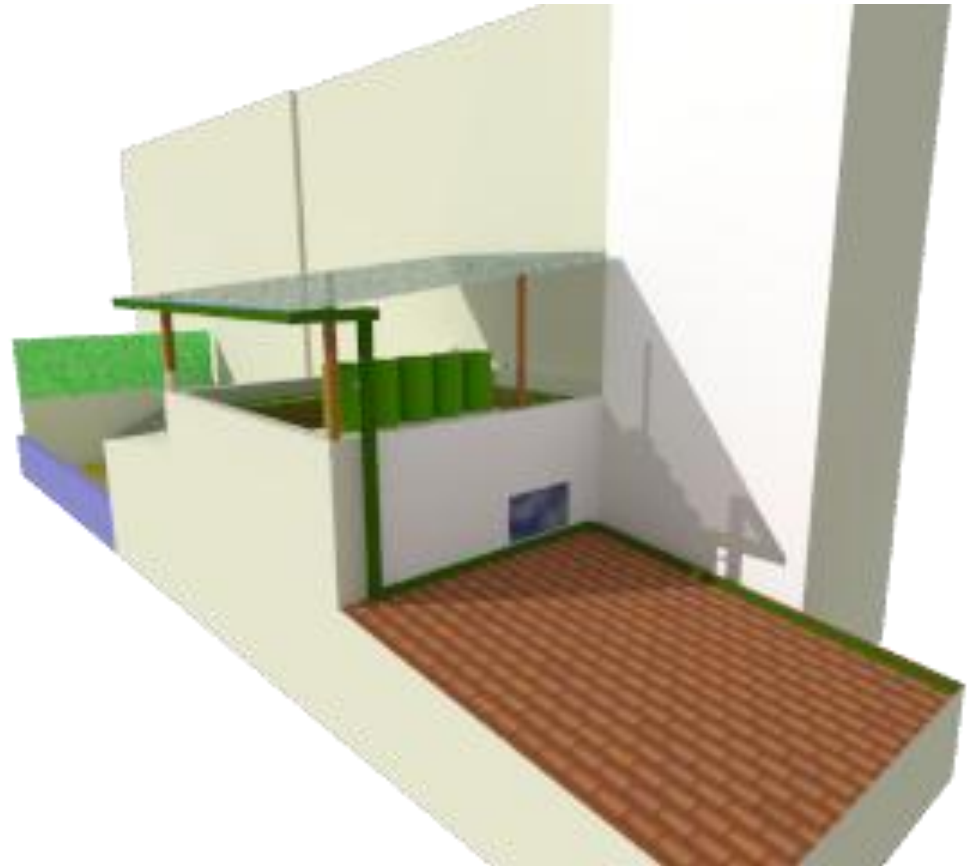


Rooftop Permaculture



Garden Features

•Roof, made from corrugated clear plastic, catches runoff from the wall of the neighbouring apartment block which is then caught by guttering and collected in water butts, any overflow from these is taken down to the roadside in front of the house. This eliminates leaking from the rooftop terrace, supplies an upstairs water source for all irrigation and turns a problem into a solution.



Garden Features

•Roof, made from corrugated clear plastic, catches runoff from the wall of the neighbouring apartment block which is then caught by guttering and collected in water butts, any overflow from these is taken down to the roadside in front of the house. This eliminates leaking from the rooftop terrace, supplies an upstairs water source for all irrigation and turns a problem into a solution.

•**Five water butts storing a total of 1000L mounted on a cement and rebar plinth beneath which is a small tool and seed store.**

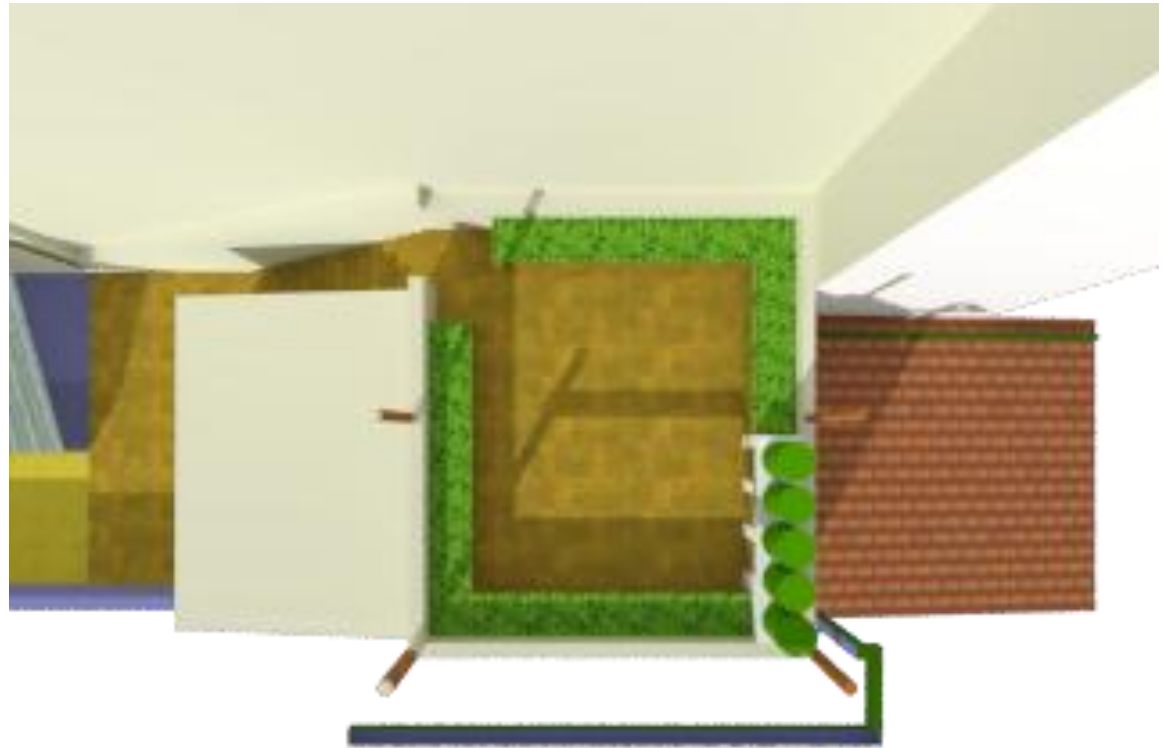


Garden Features

- Roof, made from corrugated clear plastic, catches runoff from the wall of the neighbouring apartment block which is then caught by guttering and collected in water butts, any overflow from these is taken down to the roadside in front of the house. This eliminates leaking from the rooftop terrace, supplies an upstairs water source for all irrigation and turns a problem into a solution.

- Five water butts storing a total of 1000L mounted on its own cement and rebar plinth beneath which is a small tool and seed store.

- All around the outside of the roof terrace is an arms width knee deep raised bed with pallet wood fronts and drip irrigation, allowing easy access and low maintenance.**



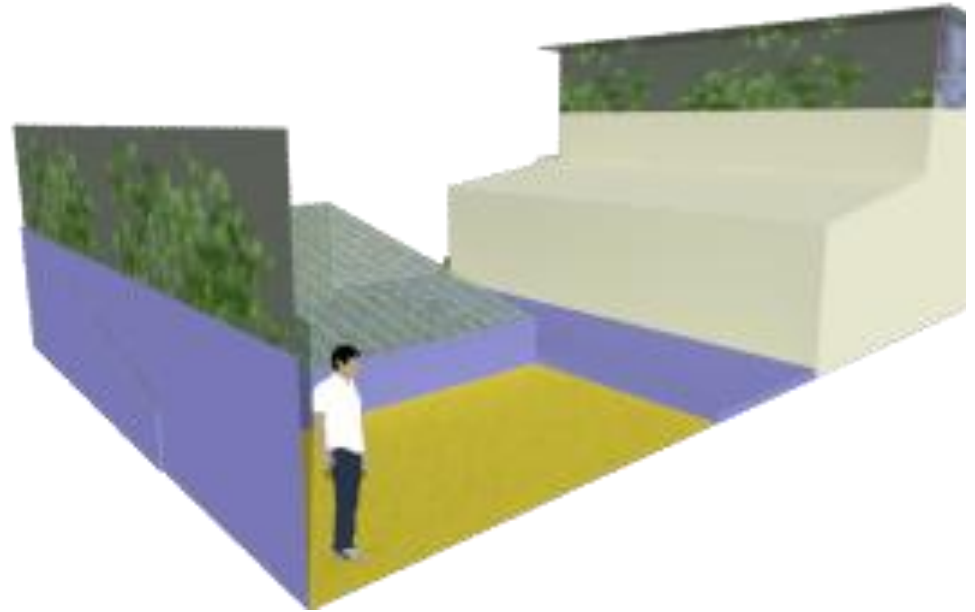
Garden Features

- Roof, made from corrugated clear plastic, catches runoff from the wall of the neighbouring apartment block which is then caught by guttering and collected in water butts, any overflow from these is taken down to the roadside in front of the house. This eliminates leaking from the rooftop terrace, supplies an upstairs water source for all irrigation and turns a problem into a solution.

- Five water butts storing a total of 1000L mounted on its own cement and rebar plinth beneath which is a small tool and seed store.

- All around the outside of the roof terrace is an arms width knee deep raised bed with pallet wood fronts and drip irrigation, allowing easy access and low maintenance.

- Climbing fruit trellises on both the lower fence and the back side of the top terrace obscure the ugly view of adjacent apartment block, create more green spaces and allow for an extra yield of fruit by vertical stacking.**



- Lower roof terrace leaves a space for all the potted plants and can easily be irrigated from the tanks above.**

Garden Features

- Roof, made from corrugated clear plastic, catches runoff from the wall of the neighbouring apartment block which is then caught by guttering and collected in water butts, any overflow from these is taken down to the roadside in front of the house. This eliminates leaking from the rooftop terrace, supplies an upstairs water source for all irrigation and turns a problem into a solution.

- Five water butts storing a total of 1000L mounted on its own cement and reflu bar plinth beneath which is a small tool and seed store.

- All around the outside of the roof terrace is an arms width knee deep raised bed with pallet wood fronts and drip irrigation, allowing easy access and low maintenance.

- Climbing fruit trellises on both the lower fence and the back side of the top terrace obscure the ugly view of adjacent apartment block, create more green spaces and allow for an extra yield of fruit by vertical stacking.



- Lower roof terrace leaves a space for all the potted plants and can easily be irrigated from the tanks above.

- The two non-trellised walls of the roof terrace have fold out transparent plastic windows creating a light, warm space to both extend the season and create another indoor/outdoor space to be in the winter.**

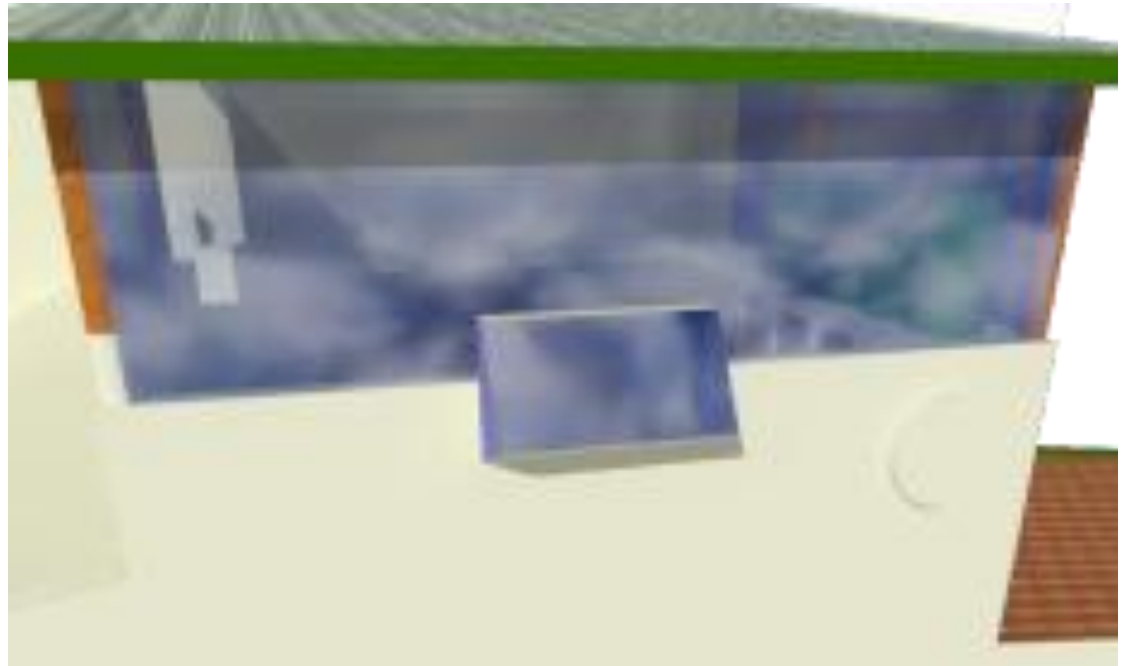
Garden Features

- Roof, made from corrugated clear plastic, catches runoff from the wall of the neighbouring apartment block which is then caught by guttering and collected in water butts, any overflow from these is taken down to the roadside in front of the house. This eliminates leaking from the rooftop terrace, supplies an upstairs water source for all irrigation and turns a problem into a solution.

- Five water butts storing a total of 1000L mounted on its own cement and rebar plinth beneath which is a small tool and seed store.

- All around the outside of the roof terrace is an arms width knee deep raised bed with pallet wood fronts and drip irrigation, allowing easy access and low maintenance.

- Climbing fruit trellises on both the lower fence and the back side of the top terrace obscure the ugly view of adjacent apartment block, create more green spaces and allow for an extra yield of fruit by vertical stacking.



- Lower roof terrace leaves a space for all the potted plants and can easily be irrigated from the tanks above.

- The two non-trellised walls of the roof terrace have fold out transparent plastic windows creating a light, warm space to both extend the season and create another indoor/outdoor space to be in the winter.

- Solar water heater / fruit dryer / oven on the south facing wall of the top terrace. Water is supplied from the butts, run in black coiled pipe inside this glass fronted, internally mirrored vented box, this water then supplies the house with hot water for showers, washing up etc. Also inside the box is a set of shelves upon which fruit could be dried (when vents are open) or a meal cooked (when vents are closed)**

- Also, we propose that the satellite dish be placed on this wall where it is out of the way and out of eye sight.**

Design Summary

Process Review

Examples of Ethics & Principles applied in Design

- **Problem is the solution** – A major element in this design, turning a repeated and degenerating problem into a multi functional space making the whole house more comfortable, functional and self sustaining. Also clearly shows how **Elements can have Multiple Functions**: Roof serves to... Keep terrace (and all inside spaces) dry, catch water, green house function, create a warmer space. Water butts... Irrigation, domestic use & winter heat sink.
- **Catch and store energy** – Making the most use of a huge resource passing through the property. Water can then be used for as many functions as possible and used in the most efficient ways , eg drip irrigation.
- **Value biological and renewable resources** – In this climate, using solar powered technologies is a very logical step. This solar water heater/fruit dryer/cooker could greatly reduce use of non renewable energies.
- Creating a decent area for highly productive, intensive food production takes some of the reliance off large scale extensive destructive agricultural industry and so allowing some land left for natural regeneration, demonstrating the **Ethic of Earth Care**
- **Minimum Effort for Maximum Yield** - The beds are designed to be functional, comfortable to use and easy to maintain, whilst still leaving enough room for sitting space and possibly a table.
- It becomes a good space for drying clothes all year round.
- Deciduous climbers (eg grape, passion fruit, kiwi) on the top trellis could be trained to cover the whole structure to provide shade in the summer.

Urban Permaculture Summary

There are many present day examples of this exciting field of urban permaculture:

- Guerrilla Gardening – groups of people taking over and greening up abandoned spaces which, in many cases were previously concreted building sites, car parks, urban wastelands. These then often become...
- Community Gardens – great spaces to get away from the city within the city, grow some food and share in a growing revival of community in the isolated individualism of the cities.
- Resurgence of interest in allotments in England – farmers close to towns finding it more profitable to divide the fields and rent them for allotments than to farm them in conventional monoculture and the fields have consequently become hugely more productive and intensely diverse than they ever were because of the extended edge and so many hands working one field.
- There are many other examples and surely if you look hard enough, you can find one in your own local area and if you still can't find one, it's up to you to start one.

The one thing there is no shortage of in the city is people and if the people come together they have more strength and taking over unused spaces is not a problem and the governments have to back them due to public pressure. Now is the ideal time to start permaculture groups, communal city gardens and city forests .

“If one could persuade 100, 000 Londoners to plant just ten fruit trees each that would be a million tree – quite a forest.” - Robert Hart

P.A. Yeomans (Australian mining engineer, farmer and landscape designer) “The City Forest”.

Hopefully, through this presentation, we have shown that however small your space, whether a window sill, a veranda, a patio or a roof top there is still space to grow at least some of the food you need and, even in the smallest way, reducing the global impact of the industrial monoculture which, in supplying our needs, devastates so much of the world's resources, leaving only a polluted environment for the local inhabitants and ecosystems. © Copyright 2011 Rosie Stonehill and Josh Gomez