DESIGN ONE: AN EDIBLE WINDOW BOX

Date Started:	December 2022
Date Completed:	March 2023
Design Process:	SADIMET
Key Tools Used:	Functions/ Systems/ Elements Positives/ Negatives/ Interesting Client Q & A
Key Principles Used:	Mollison Each element carries out many functions. Minimum effort for maximum effect. Observe & use the edge of a system. Holmgren Observe & interact Obtain a yield Creatively use and respond to change.

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Introduction

The original idea came from reading about people container and window box gardening during the pandemic. We are very fortunate in that we have a good amount of outdoor space to grow in, but part of my interest in permaculture lies within the ability to apply it to a wide range of spaces, places and people. I have a neighbour who is not as physically active as she used to be, but who would still like to grow something edible. A wiindow box would meet this need without overwhelming someone with a lot of upkeep.

The Three Ethics

A permaculture window box would meet the three ethics in the following way:
Earth Care: Turning an unused space into a greener environment. Providing cover and food for pollinators.
Fair Share: Sharing a small green space with wildlife, and only taking what is needed.
People Care: Not only providing a source of food, but a source of mental wellbeing also.

Permaculture Principles

(Mollison)
Each element carries out many functions. Space is tight. The need to make sure each plant included in the design to carry out more than one function is important.
Minimum effort for maximum effect. One of the important features of this design is accessibility and simplicity. There is little point in cultivating plants that require specialist care and maintenance in this setting.
Observe & use the edge of a system. The placement of a window box is on the very edge of the house, between zone 0 and zone 1.

(Holmgren)
Observe & interact. What already exists in the location? Who uses the space? Where does the prevailing wind come from?
Obtain a yield. To be able to provide some food for the household.
Creatively use and respond to change. This is an overlooked growing space. The larger areas demand more attention, but this smaller space will enable me to be more creative within the set spatial limitations

The Design Brief

To create an edible window box that will provide ongoing yields in the form of salads, small root vegetables and herbs.

Survey

The Details

The window box measures 50 cms by 20 cms and is on a South facing wall. It is 15 cms deep. The prevailing wind is South Westerly, so the location of the window box will provide some shelter from the wind, but will be in the direct Summer Sun.

Observation: “There has in the past been issues with a cat laying in the window box on hot days. This will need to be addressed in some way. Perhaps placing some mesh over the plants until established? There is also already some soil in the boxes and the remnants of a succulent that has been left behind. The soil is old and in poor condition. There are drainage holes in the base of the window box. There are small spiders living along the window frame, so there is some existing pest control.”

Soil and Compost

Before even thinking about what to grow in the window box, I want to focus on the soil composition within it. The existing compost has been in there since the installation of the window box in 2018.
I have been researching best soil composition for window boxes and most suggest a peat free potting compost mixed with perlite. I need to keep the window box contents as light as possible, but without removing too much in the way of nutrients. I currently have existing pots that have done well on a mix of home made potting compost, leaf mulch and bought in coir. This mix creates a light medium that will provide enough initial nutrients to give the plants a good start, with additional feeding required later on in the growing season.
I am not keen to use Perlite as this is a product of open mining, and whilst there may be no chemicals involved in the processing of perlite, I am concerned about the sustainability of anything that is mined, and then shipped. I think my own home made leaf mulch will be a good substitute.
I have also done some research into the origins of Coir. This also comes with its own carbon footprint, but as a by-product of the coconut industry. A study into the sustainability of Coir was conducted by DEFRA in 2012. The study considers the following areas:

- Key materials in the supply chain
- Economy
- Biodiversity
- Water, air & soil pollution
- Water consumption
- Energy consumption
- Culture & working conditions

The overall conclusion using the above research areas it is clear that there are some questions around the sustainability of Coir due to the processing that is needed to produce a usable product, but that it is more sustainable than a peat based product. If I decide to use either coir or perlite, the window box would not really be in keeping with the ethic of earth care. It would also go against the principle of minimum effort for maximum effect, as the energy that goes into obtaining these products is the opposite of this.

Coconuts are not grown in the UK, so there is also the issue of transportation. The product is dehydrated for transportation, so a large amount can be transported quite easily, and the product is light. However, it still needs to come a long distance, which is reliant on fossil fuels and so not sustainable.

I have also researched the working conditions of people in the coir industry, and it does not seem that there is much in the way of people care, with workers having inadequate protective gear, resulting in multiple health issues, in particular respiratory problems. This places the use of coir firmly out of the question in terms of a permaculture solution.

With this in mind, I think I will do a mix of home made potting compost, some small pebbles, leaf mould and a small amount of rotted manure. If the plants are not thriving on this mix, then I will assess the soil composition at a later date.

Client Interview Questions and Answers

Questions:

What does the client like to eat? What would fit into the space?
Would perennials or annuals be a better fit?
Do they want to grow enough for a couple of meals or would it be better to have something to harvest little and often?
Does any one else in the family have a preference on what is grown?
Do they want a fast harvest? How much time can be devoted to one window box?

Answers:
Ideally nothing too complicated, so limiting the variety to perhaps five or six different plants. Colour and variation would be nice, and something for the pollinators as well. Salad is eaten most days in the summer so lettuce leaves that can be picked a few at a time. Nothing too tall as the window opens outwards. Minimal maintenance, nothing more than a few minutes a day to maybe water or weed. Something spikey to deter the cat!

Water

There is a small overhang on the house roof which will inhibit rain making contact with the windowbox. There will not be enough rainfall to maintain the plants.

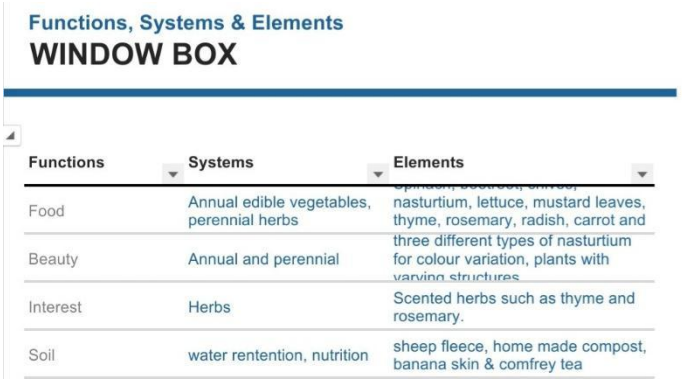
Grey water is also not an option as the client is not keen to switch from their brand of detergent which is not suitable for plants.

The client water supply is a private well that hasn't run dry and goes through minimal treatment so will be suitable for watering plants.

Analyse

Functions/ System/ Element

The Function of the window box is to provide food and beauty to the area. The elements contained within the design are the window box itself, the soil, the plants, the insects who may visit and the humans who may harvest...and the possible cat.



Functions, Systems & Elements

WINDOW BOX

Functions	Systems	Elements
Food	Annual edible vegetables, perennial herbs	nasturtium, lettuce, mustard leaves, thyme, rosemary, radish, carrot and
Beauty	Annual and perennial	three different types of nasturtium for colour variation, plants with varying structures
Interest	Herbs	Scented herbs such as thyme and rosemary.
Soil	water rentention, nutrition	sheep fleece, home made compost, banana skin & comfrey tea

Input/ Output

Inputs:
New Soil/ Compos
Time
Seeds/ Plants
Growing space for seeds
Money for seeds and materialsWater

Outputs:
Small scale harvest of food
Soil Coverage
Nature Habitat
Enhanced Wellbeing

Design

A rough visual to give an idea of what the window box would look like once planted up:

The window box in its current state:

Agreed plant selection:

Rainbow Mix Beetroot
Sparkler Radish
Baby Leaf Lettuce
Red Salad Lettuce
Rocket
Nasturtium x2 varieties

The Issue of the Cat/ Possible Solutions:
The aim is to deter the cat in the nicest way possible. Suggestions so far:

Solution	Positives	Negatives	Interesting
Small bits of gorse	Spikey so cat won't lay on them. Free and organic solution.	Could also spike humans!	
Foil on edges of box	Low cost and quick	Ugly and not good for the environment	
Submerged water bottle	Low cost and quick	Not very attractive	Could be hidden by foliage, and easy to remove.
Mesh	Quite expensive	Not very attractive	

The client would like to try the submerged water bottle and will also put a couple of pieces of gorse on the narrow edges where the cat enters from most often.

Implement

Having discussed budget, it is agreed that starting plants from seed is the best financial option. Those that can be will be started under cover towards the end of March, with a view to planting up end of April.

Seed Name	**Date Started**	**Date Planted Out**
Rainbow Mix Beetroot	**25th March**	
Sparkler Radish	**25th March**	
Baby Leaf Lettuce	**3rd March**	
Red Salad Lettuce	**3rd March**	
Rocket	**3rd March**	
Nasturtium	**25th March**	

Materials Used: To be as economical and environmentally positive as possible, I will be removing the old soil and composting this. New soil will come from existing compost heap, and the box will be lined with sheep fleece that we have on hand.

It has also been agreed to place two small plastic bottles at each end of the window box to deter the cat. If this doesn't work, then the gorse idea will be implemented pre-planting of the box.

Maintain

The owner of the box is able to give the time required for maintenance. As it is situated by her back door she will pass this on her way out every day (Zone 0) and so will be able to closely monitor the growth of weeds/ any watering required. At the end of the growing season all the plants can be removed and the soil mulched ready for the following growing season. The owner will be required to water the plants on a daily basis throughout the growing season, regardless of the amount of rainfall. This is because the window box is sheltered and therefore doesn't get a lot of rainfall. The window box is only a few steps from the kitchen tap, so watering should only take a few minutes each day.

Evaluate

Evaluation will be carried out by regular visits to client as asking questions such whether the clients requirements been met? Are they happy with the plant selection? Is the box being visited by insects? Has the harvest been sufficient? Did the cat get deterred enough for the plants to thrive?

The Key Functions will be:

Food:How much food did the window box grow?
Beauty: Did the client feel that the window box was attractive?
Interest: Was the range of plants interesting?
Soil: How healthy are the plants?

Tweak

After the first growing season we will look at the answers to the evaluation questions and apply the results. I expect we will need to review the planting plan and possibly amend the soil to ensure plant health.

Reflection

I enjoyed this design process and feel that it was a good choice for my first one. Using SADIMET provided a useful framework for the design. I also found thinking about key functions and functions, systems and elements really useful. I feel that starting small has meant that I haven't felt overwhelmed, and the natural limiting factors of a window box and the client's ability actually made it easier to design.