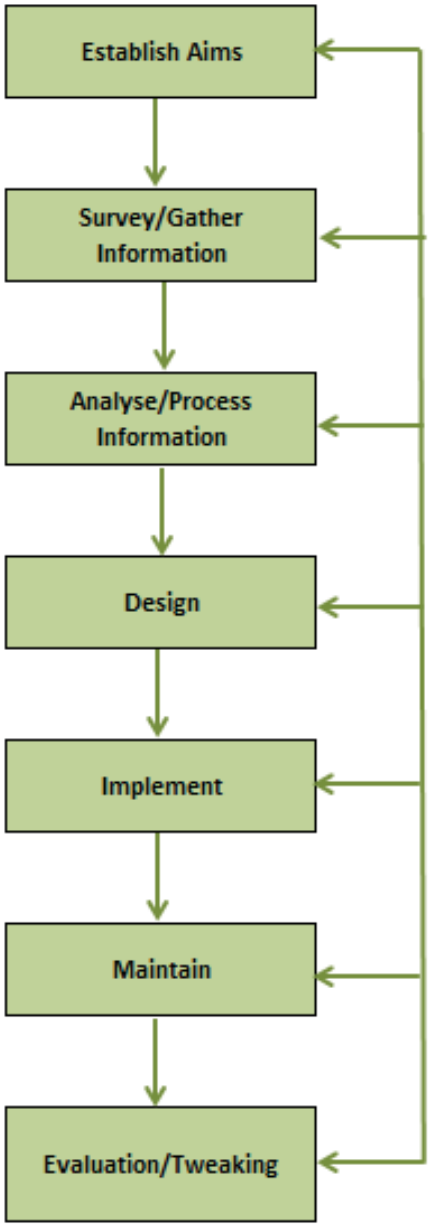
Westbury Arts Centre Design

Kayode Olafimihan

Permaculture Design Process



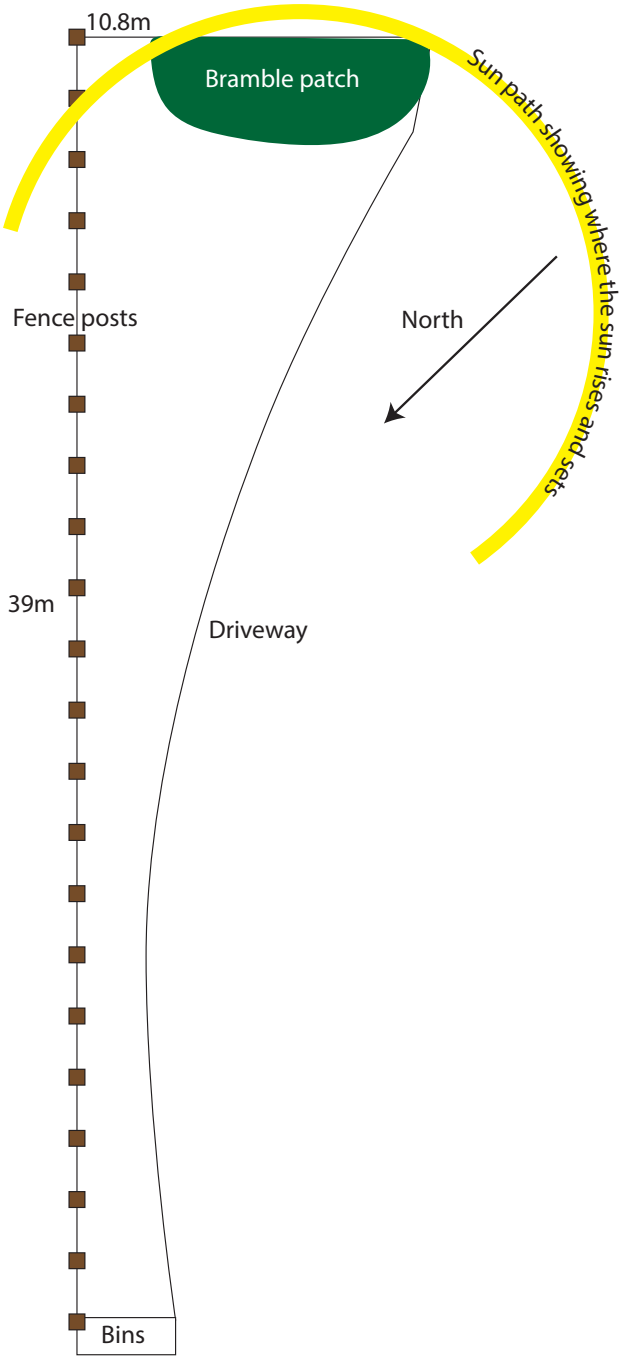
Aims for Westbury Arts Centre

- Interesting and productive area with fruit trees, soft fruit bushes and herbs
- Planting to be wildlife friendly – for pollinators (wild flowers that will blend in with uncultivated areas), newts and other pond life
- Low maintenance
- Recreate original family farm feel – possibly edible hedge
- Educational function that will teach volunteers
- Additional space behind barn for sitting and eating, with planters growing flowers and additional edibles including annual veg

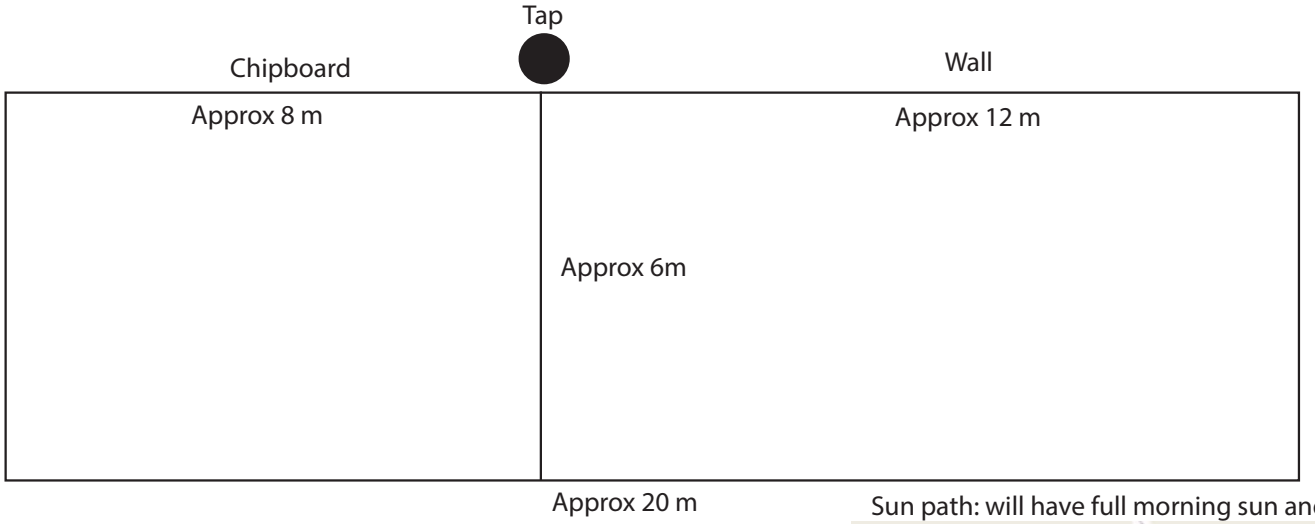
Survey

- There are already some hedging plants growing along the fence
- Sunny, open site
- There is a tap outside the barn so an irrigation system could be established that is connected to the tap with a long hose

Survey of entrance



Survey of area behind barn



Sun path: will have full morning sun and over summer when sun is overhead can consider the area to have full sun. Sun will set behind the barn

Survey

- Amount estimated could raise: £2,000 - £3,000
- Resources:
  - Car/van available
  - Imagining cardboard and manure can be collected locally for free
  - Imagining local tree surgeon would be happy to deliver woodchip

Analysis

- Mix of fruit trees and shrubs
- Grow interesting variety of herbs
- Wild flowers and other flowers for nectar insects
- Edible shrubs along the back
- Plenty of shady log and stone piles for amphibians (including the newts) from the pond
- Plan for annual vegetables in planters behind barn

Analysis

- Earth care:
  - Working with nature: planting according to a forest garden pattern, supporting the soil-food-web and establishing permaculture guild plant alliances
- People care:
  - Will provide food and an attractive area for people arriving at the centre
- Sharing surplus
  - Sharing food, seeds and plants

Permaculture: working with nature

The soil-food-web

Healthy soil is teeming with life. These beneficial microbes, fungi, insects and plants form a community where, as they live, feed and die, they all provide food and energy for each other.

The foundation of this web of life are the decomposers: beneficial bacteria and fungi that act as natural fertilisers for the plants who in return feed them with sugars and proteins from their roots.

Developing a healthy soil-food-web means flourishing plants grown with less need to add pesticides and chemical fertilisers.

Birds: *eat arthropods*

Plants and their roots

Dead organic matter from plants, animals, insects, fungi, bacteria etc...

Bacteria: *important in producing nitrogen for plants*

Arthropods: *predators and shredders. Eat and shred dead organic matter so it becomes edible for microbes. Eat other arthropods and harmful organisms. Improve soil structure*

Nematodes: *eat decaying plant material, bacteria and fungi. Distribute nutrients through the soil for plants. Eat harmful microbes*

Fungi: *live with plant roots and help them absorb water and minerals*

Protozoa: *eat bacteria and produce food for plants*

Permaculture: working with nature

creating plant alliances

The planting in this design will be designed to create plant alliances that mimic natural eco-systems. Their foundation is a community of perennials forming networks of mutual support among species with different niches. They each contribute something the soil, the soil-food-web and the other plants need. Many of these plants provide more than one benefit.

Nitrogen fixers: *take nitrogen from the air and feed it to the soil-food-web and to other plants. eg: birdsfoot trefoil, clover, beans*

Living Mulch/Green Manure: *provide compost-on-the-spot. They also suppress weeds, help the soil retain moisture and build fertility as they decompose. eg strawberry, clover, comfrey, sweet woodruff*

Nutrient Catchers: *these dynamic mineral accumulators most characteristically (though not always) have long tap roots that bring minerals from deep in the soil to the surface where other plants can eat them. eg comfrey, chicory, salad burnet, mint, yarrow, fennel*

Insect Attractors: *attract bees and other pollinating insects. They also provide food or shelter for beneficial insect pest predators. eg birdsfoot trefoil, red valerian, lavender, yarrow, honeysuckle, mint, fennel, sedum*

This plant community builds fertile soil, attracts pollinators and insect pest predators and provides an array of foods, flowers and herbs while creating a wildlife habitat.

Birdsfoot trefoil makes nitrogen available to other plants

photo: Forest & Kim Starr

Clover creates a 'living mulch', adds nitrogen to the soil and the bees love the flowers

Comfrey has a long tap root so its leaves accumulate minerals and can be used to create a plant food

photo: Susannah Hall

Borage attracts lots of insects with its flowers

Analysis

- Dwarf tree layer
  - Apple, Pear, Plum, Cherry
- Shrub layer
  - Black/Redcurrant, Gooseberry, Aronia Chokeberry Honeyberry, Chilean Guava, Autumn olive
- Climber layer
  - Thornless blackberry, Honeysuckle

Analysis

- Herbaceous perennials
  - Red valerian
  - Columbine
  - Lady's mantle
  - Yarrow
  - Sedum
  - Echinacea
  - Monada
  - Catmint Nepeta
  - Good King Henry
  - Chard
  - Chicory
  - Foxgloves
  - Sage
  - Chives
  - Chamomile
  - Rosemary
  - Thyme
  - Mint
  - Oregano
  - Comfrey
  - Fennel
  - Sweet cicely
  - Lovage
  - Red-veined sorrel
  - Salad burnet

Analysis

- Living mulch
  - Strawberry
  - Clover
  - Wild garlic, Ramsons
  - Birdsfoot Trefoil
  - Sweet woodruff

Analysis

- Annual veg
  - Courgette
  - Beans
  - Lettuce

Analysis

- Lasagne mulch:
  - Turn the soil so the existing turf is face down in the forest garden area. Then lay down a lasagne mulch to improve the soil and suppress the pervasive plants such as couch grass etc.
  - The lasagne mulch should make it much easier to dig out remaining pervasive plants in the spring.

Analysis

- Landscaping:
  - Create clear pathways around areas planted up so they are defined and accessible
  - Add shrubs along the fence
  - Create log-piles to support amphibians
  - Arches along the edge to provide entrance to the pathways and offer support for edible, wildlife-friendly climbers

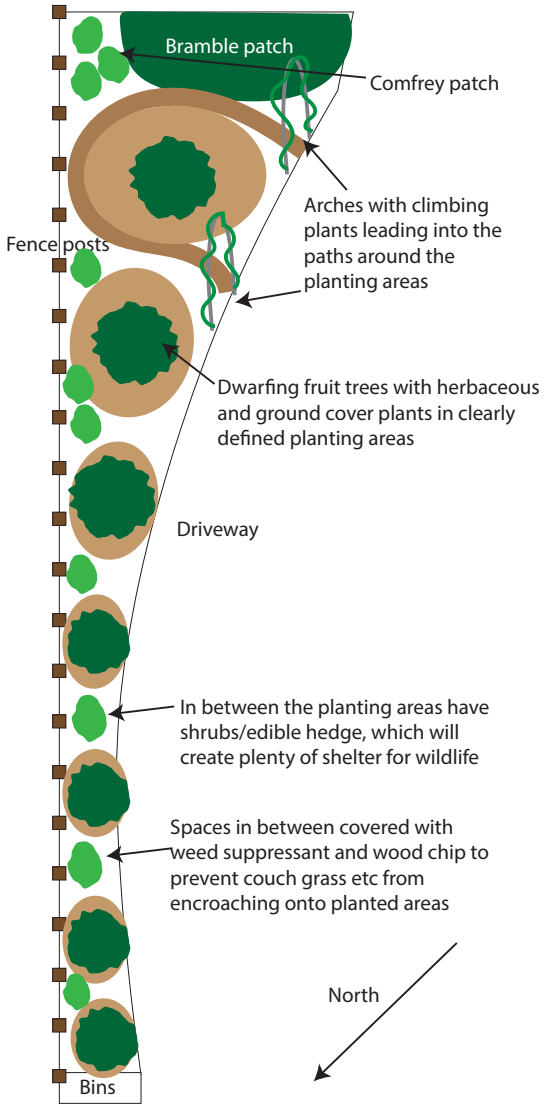
Analysis

- Low maintenance
  - Irrigation
    - add a simple soaker hose system of irrigation that will be needed to ensure new plants become established
  - Have mainly perennial easy-to-maintain plants
  - Use weed suppressant and bark chip/wood chip for the planting areas and pathways to keep them clear of other plants
  - Have clear areas of planting that will be easier to maintain

Analysis

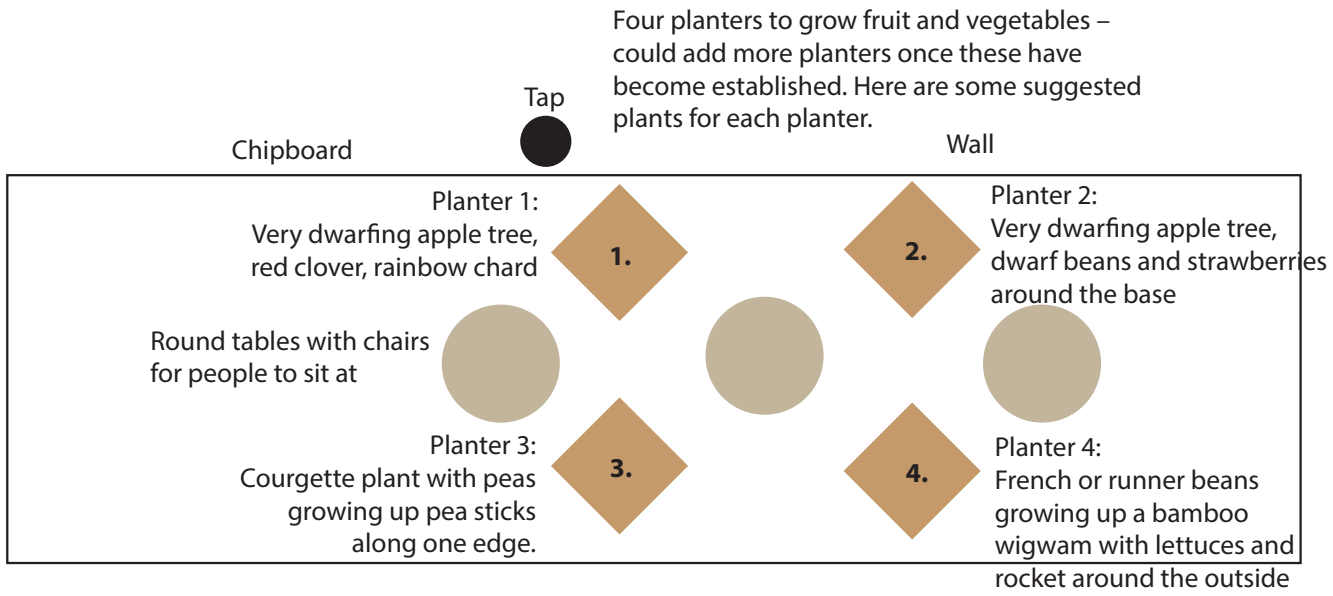
- Supporting the soil-food-web
  - Use inoculant to introduce micorrhizal fungi when planting
  - Use compost teas regularly to encourage the development of a healthy soil-food-web in the soil (particularly in the planters)
  - Use comfrey/nettle teas to feed the plants
  - Add compost mulch each winter/spring

Decide – layout



Decide – layout

Sitting, eating and growing space behind the barn



Decide – fruit trees

Dwarf apple trees that are very small (4ft-6ft) could be used where there is less width along the planting area.

Decide – shrubs

Aronia Chokeberry

Chilean Guava

Gooseberry

Blackcurrant

Honeyberry

Autumn olive

Decide – herbaceous

Chard

Comfrey

Thyme

Chives

Sweet Cicely

Sage

Fennel

Lovage

Rosemary

Salad burnet

Good King Henry

Red-veined sorrel

Mint

Decide – insectary

Bergamot

Catmint, Nepeta

Chamomile

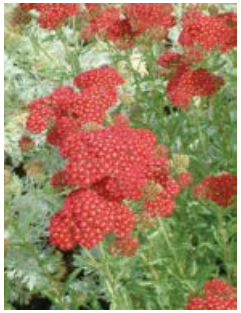
Echinacea

Foxgloves

Red Valerian

Red clover

Columbine



Yarrow

Chicory

Sedum

Lady’s mantle

Decide – living mulch

These plants fulfill the role of covering the soil, providing insulation to protect the ecology of the soil-food-web and creating a habitat for wildlife

Strawberry

Birdsfoot Trefoil

Sweet woodruff

Ramsons Wild garlic

Decide – climbers

Thornless blackberry

Honeysuckle

Budgets

- The following budgets are the estimated amounts to achieve the initial designs.
- Have assumed that recycled materials will be used.
- The costs could be somewhat reduced by scaling down the designs – fewer planting areas in the forest garden and/or fewer planters

Budget for forest garden

Estimated budget for Westbury Arts Centre Forest Garden area		
Item	**Estimated price**	Supplier
Trees	£210.00	Various specialist tree nurseries: Keepers Nursery, OrangePippin, Blackmoor
Stakes and ties for trees	£80.00	Homebase
Plants estimation	£500.00	Various suppliers: herbs from Herbal Haven, Edulis for unusual edibles
Micorrhizal innoculation and compost tea setup	£50.00	Symbio
Arches	£80.00	Primrose
Weed suppressant for pathways (heavy duty)	£150.00	Harrod Horticultural
Weed suppressant for planting areas (brown organic fleece material)	£100.00	Harrod Horticultural
Pegs for weed suppressant	£30.00	Harrod Horticultural
Bark chip for planting areas	£200.00	Bulk bags from Dandys/Homebase/B&Q etc
Wood chip for pathways	£0.00	Could be sourced from local tree surgeon
Irrigation – soaker hose, fittings and stakes	£80.00	WaterIrrigation
Cardboard for lasagne mulch	£0.00	Should be able to collect from shops etc
Manure for lasagne mulch	£0.00	Should be able to collect from local stables
Wood chip for lasagne mulch	£0.00	Should be able to get tree surgeons to deliver for free
Total	**£1,480.00**	

Budget for planters

Estimated budget for Westbury Arts Centre Planter area		
Item	**Estimated price**	**Supplier**
Wood for planters	£0.00	Made out of pallets
Screws for planters	£20.00	Homebase/Screwfix
Sandpaper	£20.00	Homebase/Screwfix
Soil/compost for planters	£300.00	Dandys or other supplier
Liner for planters	£50.00	Screwfix
Gravel	£40.00	Homebase
Plants and seeds	£100.00	Mostly grow plants from seed so budget covers buying a free tree and shrub
Innoculation for plants and compost tea	£0.00	Amount already covered in Forest Garden budget
Bark chip for mulch	£40.00	Homebase/B&Q
Irrigation – soaker hose, components, stakes, timer	£95.00	Waterirrigation
Logs for planters	£0.00	Free from local tree surgeon
Manure for planters	£0.00	Collect from local stables
Total estimated costs	**£665.00**	

Budget for design and facilitation by Permablitz London

- Permablitz London will charge for the project if funding is applied for and achieved

Estimated budget for Westbury Arts Centre Design and Facilitation by Permablitz London		
Item	**Estimated price**	Supplier
Design	£500	Kayode Olafimihan
Facilitation for permablitz(es)	£300	Permablitz London for 2 permablitzes
Total	**£800**	

Preliminary timetable

- Forest garden:
  - The forest garden area will be cleared in preparation for a permablitz in autumn 2017 where a lasagne mulch will be laid down.
    A second permablitz in spring 2018 will establish the landscaping and planting.
- Raised beds:
  - The ground will be cleared in preparation for a permablitz in autumn 2017 where the planters will be built and lined. A second permablitz in spring 2018 will fill the planters with soil add some of the plants and plant some seeds.

Implement

- To implement the design:
  - Prepare for the first permablitz day: clear the ground by turning over the soil (Sept/Oct).
  - First permablitz to lay down a lasagne mulch of cardboard, manure and wood chip and build planters (Oct/Nov)
  - Clearing ground by digging out emerging pervasive plants in preparation for the second permablitz (Mar/ Apr 2018)
  - Second permablitz to create the landscaping and put in the plants and fill the planters and plant up (Apr 2018)

Maintenance

- Permablitz London can provide a timetable of maintenance which will mainly consist of:
  - Pruning and cutting back perennials, shrubs, climbers and trees
  - Feeding with plant teas and compost teas
  - Renewing mulch woodchip on pathways and beds
  - Removing/moving unwanted seedlings
  - Harvesting produce