



# GLOBAL GENERATION

The Triangle site  
Our gardens and approach

### Forest garden

An 'edible woodland' with a range of trees, shrubs, perennials and annuals that will provide a healthy system benefitting food production, wildlife and help mitigate water run off, capture carbon and cool the city.

Polytunnel for tender and exotic crops, raising seeds, over-wintering as well as annual plant crops

Woodland hedge / edge - a mix of native and non native species providing shelter, forage and productive plants

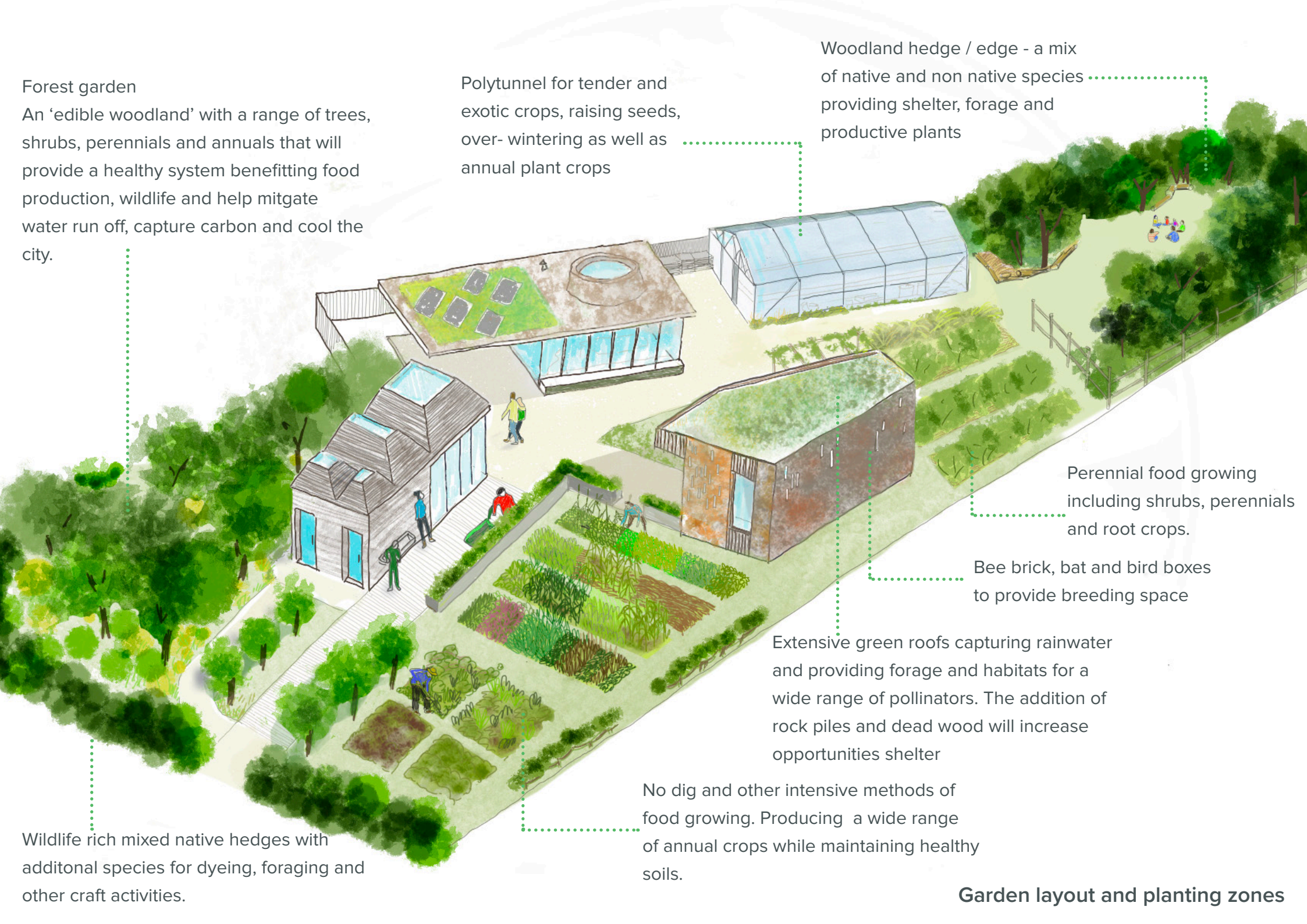
Perennial food growing including shrubs, perennials and root crops.

Bee brick, bat and bird boxes to provide breeding space

Extensive green roofs capturing rainwater and providing forage and habitats for a wide range of pollinators. The addition of rock piles and dead wood will increase opportunities shelter

No dig and other intensive methods of food growing. Producing a wide range of annual crops while maintaining healthy soils.

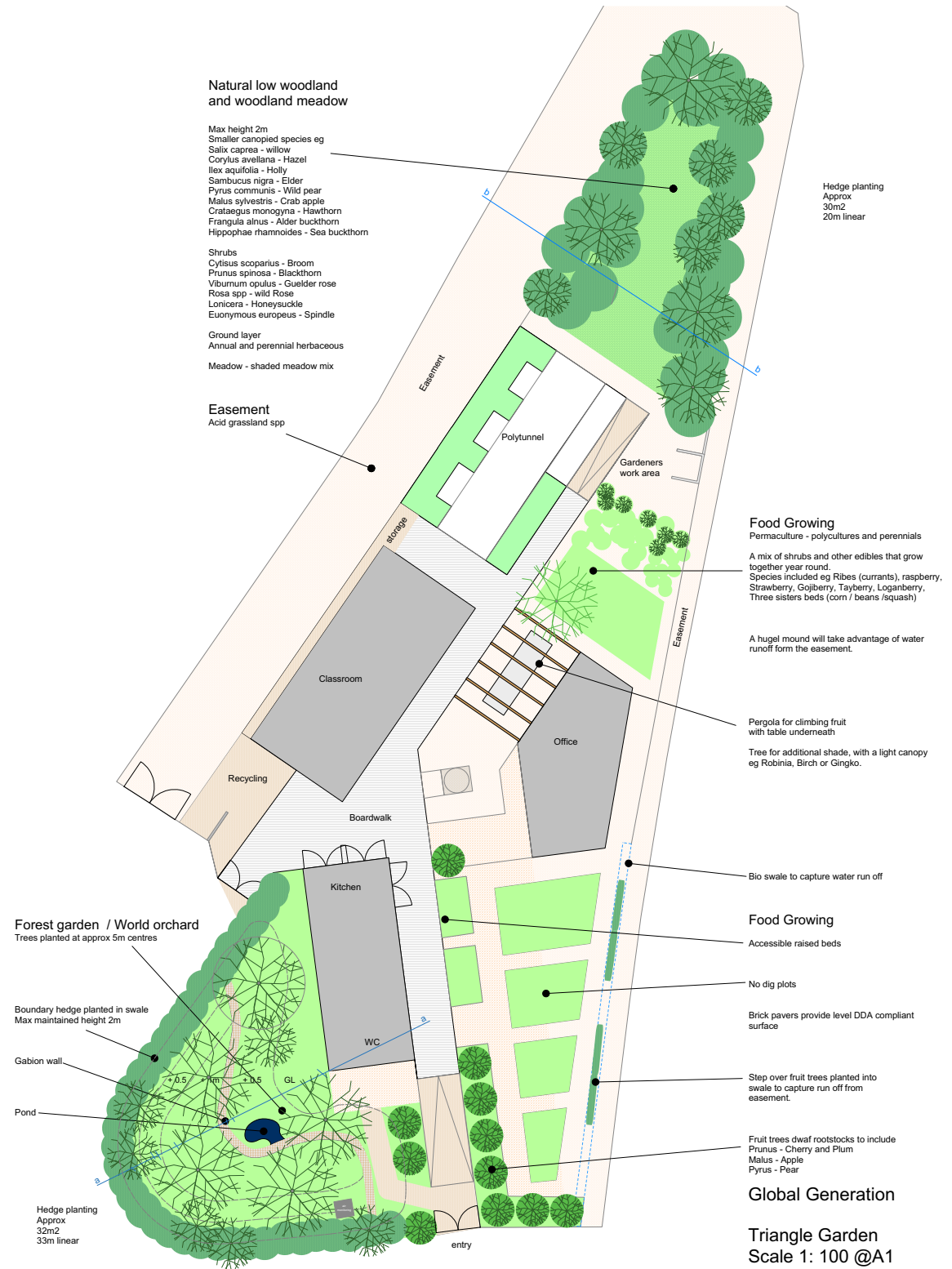
Wildlife rich mixed native hedges with additional species for dyeing, foraging and other craft activities.



**Garden layout and planting zones**

# A snapshot of what the garden will achieve

- Create a permanent biodiverse home for Global Generation, celebrating and supporting diverse people, plants and wildlife
- Improve community cohesion, creating a place where the local community can feel more connected to each other and their area by having a stake in what's going on, with ongoing opportunities for socialising, community activities and volunteering
- Support the local community to be more resilient to climate change and foster greater care and stewardship of the natural world, with the new site acting as an inspirational educational hub for local people to gain new green skills
- Foster the positive health and wellbeing of local residents, particularly encouraging and engaging those who are under-represented to find their voice and be heard
- Leave a positive legacy for the community, where people involved in its creation will have an ongoing connection to the space for generations to come
- Be a showcase and inspiration for others to create biodiverse gardens together, to understand what's possible and explore sustainable ways to enhance and improve our local built environments for the benefit of people and the natural world



# Gardens and horticultural approach

## Vision

We want to create an abundant and diverse urban greenspace that is ecologically rich and filled with opportunities for people of all ages and backgrounds to get closer to nature, to learn about agro ecological, organic and sustainable approaches to land management and food production.

**Permaculture** informs much of our work, creating self sustaining systems that use available resources, harvest and conserve inputs eg rainwater. We'll build soil ecologies, create a rich mix of habitats, grow a wide variety of annual and perennial food crops and compost, recycling where possible and aiming for zero waste.

## Benefits of this type of growing and how this contributes to climate change resilience

Following natural patterns of seasonality and growth and ensuring planting and maintenance techniques are organic and support the whole ecosystem. This means we can minimise waste and damage, creating a self supporting natural environment where water is absorbed and conserved in the soil instead of running off into drains, plants live in companionable and supportive groupings, finding their natural niche thus maximising what we can grow together without competition. Trees provide shade, and [actively cool](#) environments.

## Forest / world garden

An edible woodland filled with perennial and annual plants. Perennials (plants that last many years) create a stable environment, their roots stabilising soils and providing good cover for invertebrates and other fauna. Top fruit trees eg Apples, Pears, Persimmon, Plum will provide a good variety, plus fruiting shrubs eg Blackcurrant, Raspberry, Jostaberry, Gooseberry all underplanted

with Rhubarb, herbs, greens and edible groundcovers. Climbers eg Kiwi and Grape vine can wind up trees, and we can also encourage and grow edible and medicinal fungi eg shitake, oyster and turkey tails.

Leguminous trees, shrubs, annuals and perennials can fix nitrogen in the soil eg Siberian Pea Tree, Baptisia, clovers and beans.

Plants will be grown for edible, medicinal and other uses, including growing dynamic accumulators eg comfrey that can be composted and used to feed plants across the site.

## Woodland / hedges

The woodland at the east end of the site consists of small canopied native trees. Managed as a wild hedgerow to ensure year round access to the easements, and space within for activities and play. Species chosen will include edibles like Rowan, Elder, Hazel, Sea Buckthorn, Wild Pear, Blackthorn, Rose and Hawthorn, but also Willow, Holly, Alder Buckthorn, Viburnum and Spindle.

## Perennial crops

This area will be planted with perennial crops such as Asparagus, Kales eg Daubentons and 9 Star Broccoli, Rhubarb, soft fruits, Jerusalem and Globe artichokes, Also, alliums, and herbs eg Lovage and greens eg Good King Henry,

## Food production

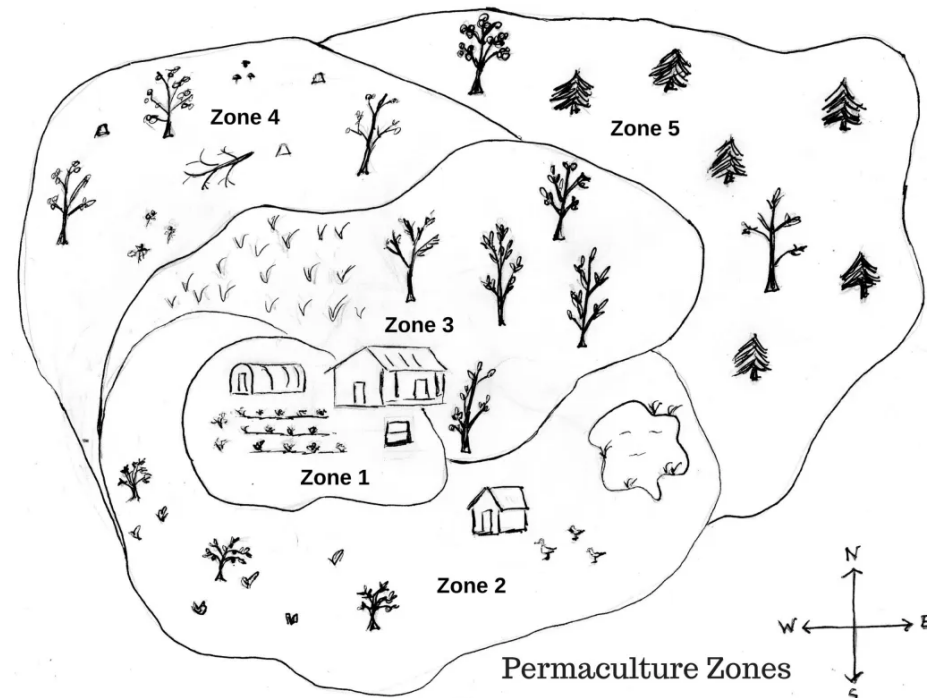
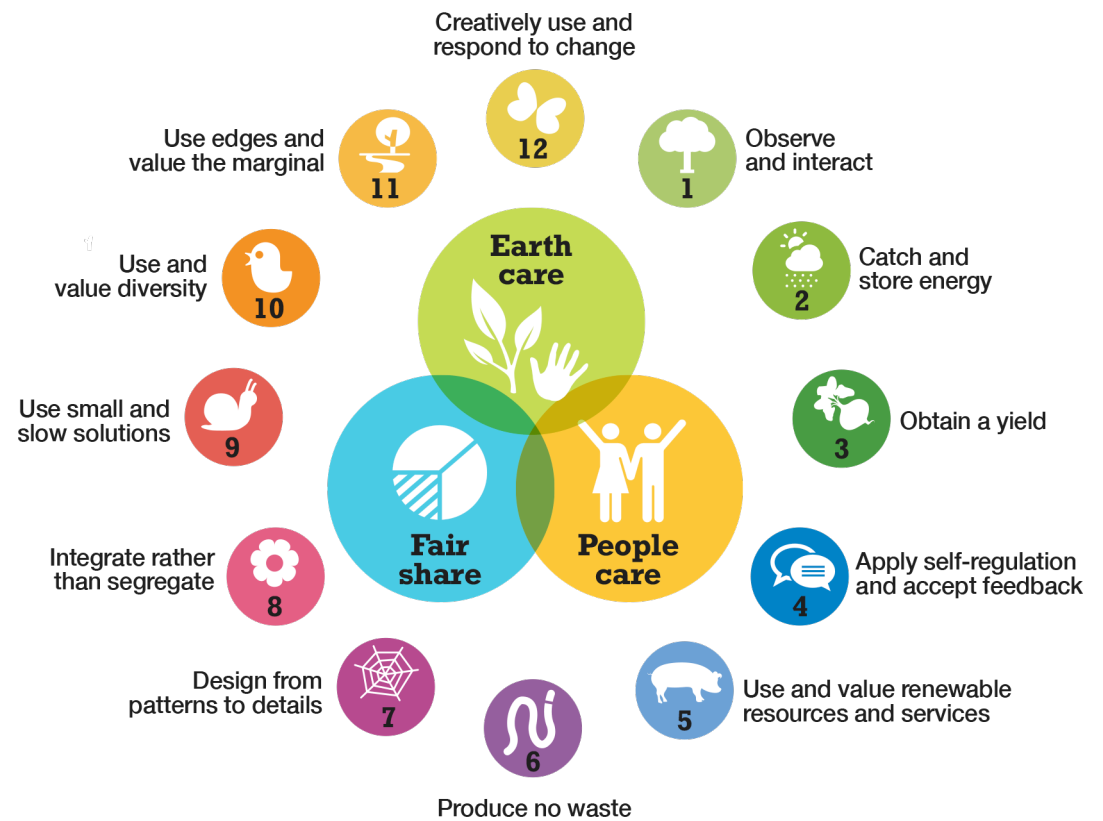
This area will focus on annual growing in no dig beds. Courgette and squash, onion and garlic, brassicas, root vegetables, annual herbs eg coriander and parsley, lettuce and other short lived greens.

## Polytunnel

With a protected environment, less hardy crops can be grown including cucumbers and melons, tomatoes, chillies and aubergines, basil, coriander and exotic eg kodhu and citrus.

# Permaculture

- Permaculture is a holistic methodology to support the development and maintenance of gardens, landscapes and other projects. It encourages an eclectic and practical ecological approach to looking at environments as systems that we exist within.
- Energy use and efficiency - aiming to get more out of less by maximising what we can do with each element.
- Creating resilient landscapes means working with what is available ie location and character of the site, available resources, and any other constraints and limitations eg overshadowing, available sunlight, movement of water across site and surface absorption, wildlife corridors and space.
- As a systems based approach, different elements of the garden form the success of the whole, and this in turn affects the placement of different items.
- People are at the heart of permaculture, and its ethical approach understands the need for resources to be shared, for everyone to access and for all to benefit.
- Permaculture principles are guidelines that help us create successful systems, making the best use of available resources (including people).
- Concepts eg zoning help us understand how we can best use our energy to manage spaces, with the most intensive work eg food growing, nearest to the 'home' where we can check daily and harvest regularly. Wilder areas needing less management are further away.



# Forest Garden

Forest gardens, sometimes known as ‘food forests’ mimic natural patterns of growth. In the UK, as across all temperate zones, the apex of natural succession is mixed evergreen and deciduous woodland. From mosses and lichens colonising bare rock, annual plants seeding in thin soil, and, as plant and animal matter decomposes further soils are formed which enable larger species to take root. Slowly, larger plants grow, acting as a nursery for the trees that take root in deeper soils. This is how the woodland forms, and as large trees die and fall, glades open up, bringing light to the woodland floor and allowing other species to flourish in the sunlight.

The images on the right show this succession, the ‘ecological edge’ that is formed allows maximum sunlight and rain to fall at the edge of the woodland increasing species and habitat diversity in these areas.

By utilising this natural structure or pattern, we create an environment where everything we grow benefits from being planted in a place where it is most likely to thrive, makes best use of all the ecological niches available and as a result increases productivity of our chosen crops.

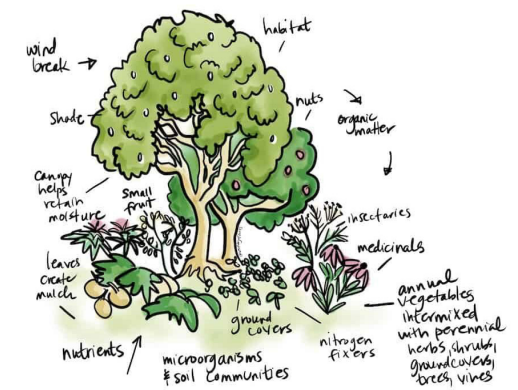
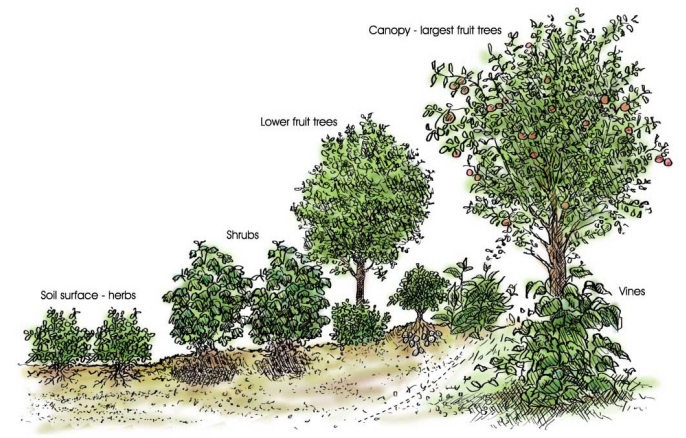
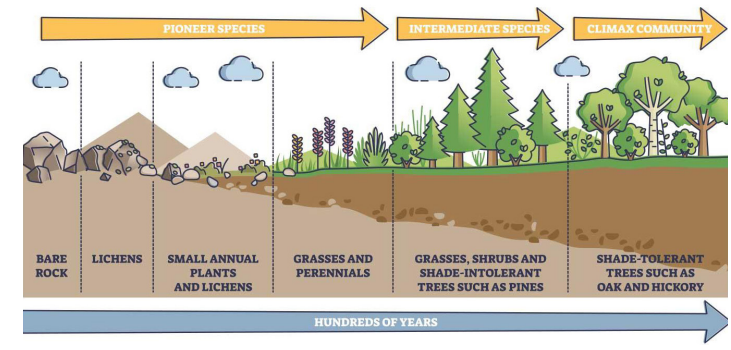
Forest gardens are highly managed to support crop production, holding the woodland in a state where we can maximise the outputs and products v

With minimal interference through cultivation soils are left to become rich ecological environments that provide healthy support for all plants and fungi, soil life and mammals birds and invertebrates.

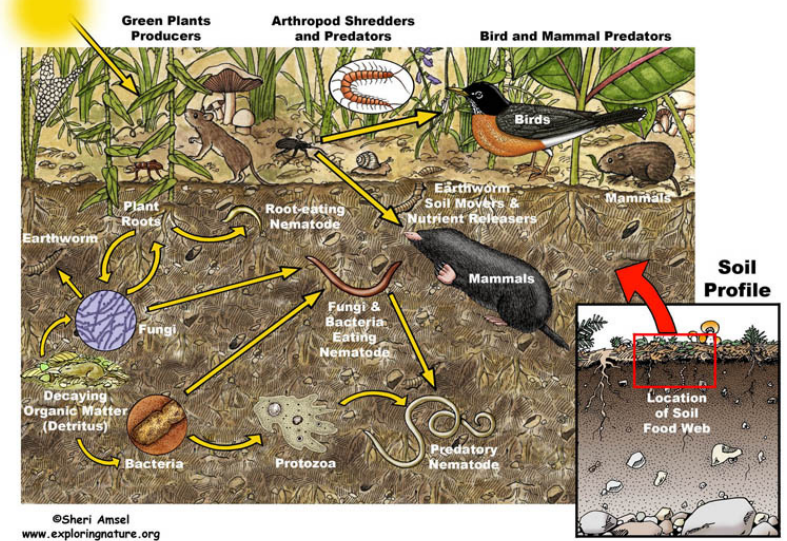
Additional benefits are huge:

- Carbon capture
- Rainwater harvesting
- Valuable wildlife habitat
- Top fruits and other tree crops

## PRIMARY SUCCESSION

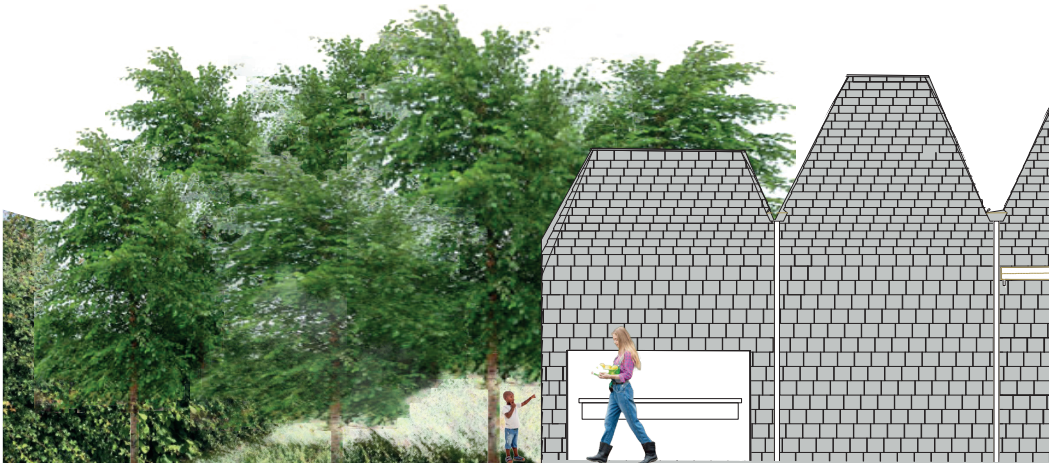


## Soil Food Web



## Installation and Management

- Trees and hedges will be planted winter 2024 once subsoil and topsoil infill of the area is complete. This will allow them to be planted as bare root stock, and planted in the dormant state. This allows for better root development and establishment in situ, minimising the risk of failure.
- An initial matrix sowing of green manures or wildflowers will help minimise damage to soil before planting, as the mat of roots will stabilise and protect the surface from wind and water run off.
- Once we occupy the site, the additional layers of the forest garden can be added to over time. Further sowings of wildflower seeds will continue to protect soil. Shrubs, annuals, perennials and climbers will be planted in guilds around trees forming supportive communities.
- A range of management techniques will keep the forest garden productive over time including annual and biennial pruning of fruit trees, management of more dominant species, seed saving and sowing of annuals, creation and conservation of habitats, mulching and soil improvement, harvesting, planting and path maintenance.
- Hedges around the forest garden will need a regular cut, taking place outside of bird nesting season March - July.
- With a comprehensive management schedule, specific tasks can be allocated to programmes, tying in with seasonal opportunities for foraging and preserving.



## Woodland hedge / edge

At the eastern end of the site, there is a managed hedge of native species including shrubs and small trees. This area will create a rich habitat zone, provide abundant resources for people and wildlife, create shelter from noise and wind, and wrap around this area creating a quiet and secluded space.

- The hedge can be closer clipped on the outer sides to enable free access to the easements, but allowed to grow out within the site, forming a woodland edge feel to a small mown area that will be used for activities.
- Chestnut railing will be used to create a clear boundary to limit the extent of hedge growth over the easements, allowing clear access at all times. Native climbers eg Honeysuckle, Old Man's Beard and Blackberries can grow over this.
- Trees will include Rowan, Hazel, Spindle, Field Maple, Holly, Sea Buckthorn, Oak, Hawthorn and Birch. Shrubs will include Dog Rose, Wayfaring Tree, Blackthorn, Alder Buckthorn. Some smaller canopied tree species can be allowed to grow above hedge height eg Rowan, Elder, Spindle.
- The woodland / hedgerow edge is planted with taller shady meadow species in longer grasses, tapering down to an area of managed grass that can be used for activities, with a circle of log seats.
- Dead wood and rock piles and a minimal maintenance regime will create multiple opportunities for habitat and cover, and the diversity of fruiting species will provide forage throughout the year for birds and mammals.

## Maintenance

- Yearly / biennial hedge cut to maintain clear access to the easements. More relaxed maintenance within consisting of pruning to encourage bushy growth, selective pruning to retain a clear hedgeline by easements.
- Meadow cut annually once plants have seeded, with cutting taking place after seeds have dried and fallen. All arisings will be removed and composted to reduce fertility.
- An area of grass will need a regular cut to ensure it remains accessible for any activities taking place.





# Agro-ecological approaches

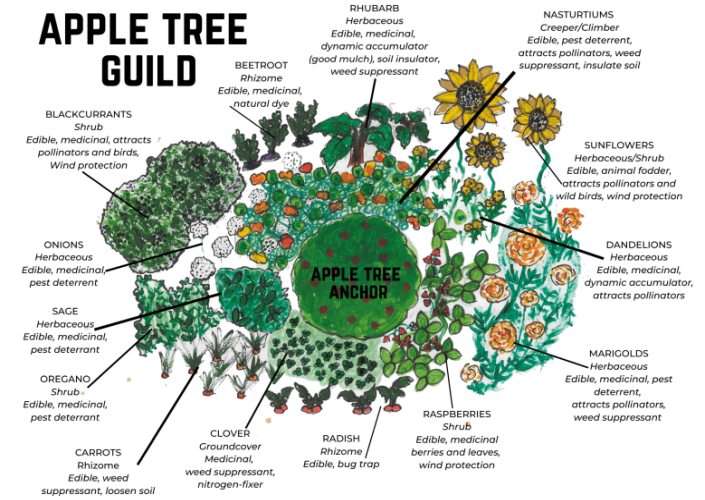
## Perennial crops

We will grow a wide range of perennial crops. These differ to annual food crops as they remain in situ and yield fruits, seeds, leaves etc year after year.

Careful planning means that plants with different characteristics can be **'stacked'** in their location, maximising the use of space, producing multiple crops but also building and conserving the soil.

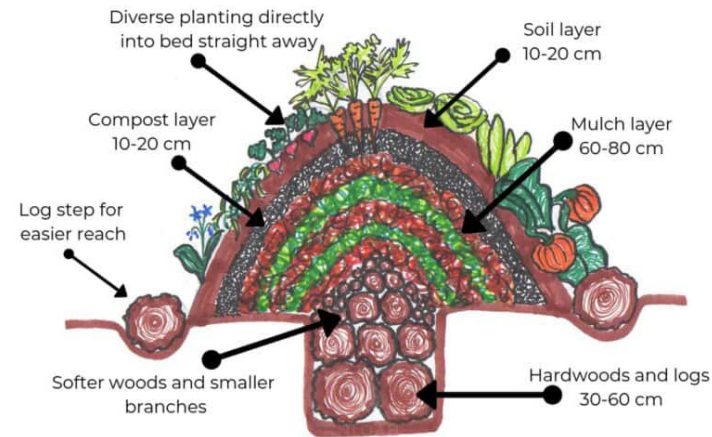
In permaculture, the term **'guilds'** is used to set out the plant communities which are adapted to individual locations.

## APPLE TREE GUILD



## Hugelkulture

'Hugels' or mounds describe a type of growing installation that utilises dead wood to provide a moisture reservoir in a planting area. Decaying wood acts like a sponge, holding moisture at the plant roots. Non resinous timber and brush of varying thicknesses is covered in a thick layer of upturned turf, soil and compost, and then planted.



A matrix planting of green manures or wildflowers can be used to quickly stabilise soils and fill gaps. In particular, leguminous crops eg clovers can fix nitrogen in the soil, providing additional benefits to perennials. The use of mainly perennial species is advised to minimise soil disturbance. As the wood rots, the mound slumps, but continued mulching will create a stable growing environment retaining soil levels in place where needed .

## Companion planting

Understanding how plants support and complement each others growth requires an understanding of seasonality, canopy growth patterns, plant properties ie scent and appearance as well as root patterns and feeding habits - ie some plants fix nitrogen, others are heavy consumers. Plants that attract pollinators, deter or confuse pests are also included.



## Annual food production

### Intercropping

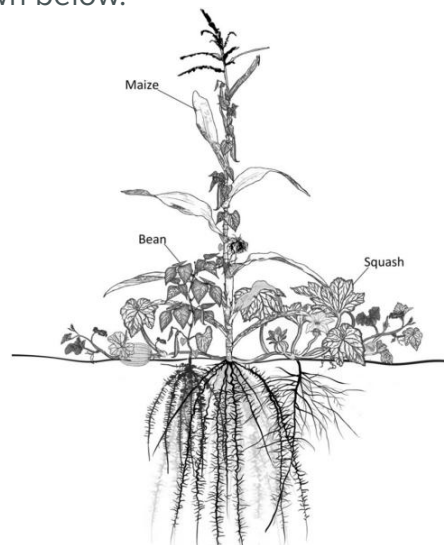
This is a way of growing a range of annual plants together to make the most of space, seasonality, shape and character of plant. Eg growing beans up poles, lettuce to cover the soil and benefit from nitrogen fixed by beans (and to conserve moisture), beetroot to utilise root space plus mexican marigolds to deter nematodes and other pests. It also allows the same crops to be grown over time without the need for crop rotation, as the diversity of species lessens the effects of pests and diseases and reduces their potential to build up in the soil.

### No dig / till

This method focuses on soil conservation, assuming that whenever the soil is turned over, weed seeds are exposed. Keeping a stable soil structure with minimal turning supports weed free gardening and supports the soil ecosystem. Shown lower right.

### Three sisters

A traditional system from the Americas, it is another way of intercropping that includes maize, beans and squash with a fourth plant as a pollinator attractor, often a sunflower or cleome. Shown below.



## Soils and soil care

Supporting soil ecosystems underlies all agro-ecological approaches which aim to create healthy and sustainable soils that will provide maximum nourishment to plant and animal life.

As a mix of organic and inorganic materials, creating a healthy soil structure is vital for sustainability and nutrient / water holding. Mineral particle size, type (eg clay, sandy, loam), the amount of organic matter and diversity of species all contribute to creating a good tilth or soil structure that has space for air, water, root growth and all soil life.

Every effort needs to be taken that soils are not damaged, minimising compaction in growing areas and ensuring paths in the garden are well marked and designed to create access where needed.

### Healthy soils support the following;

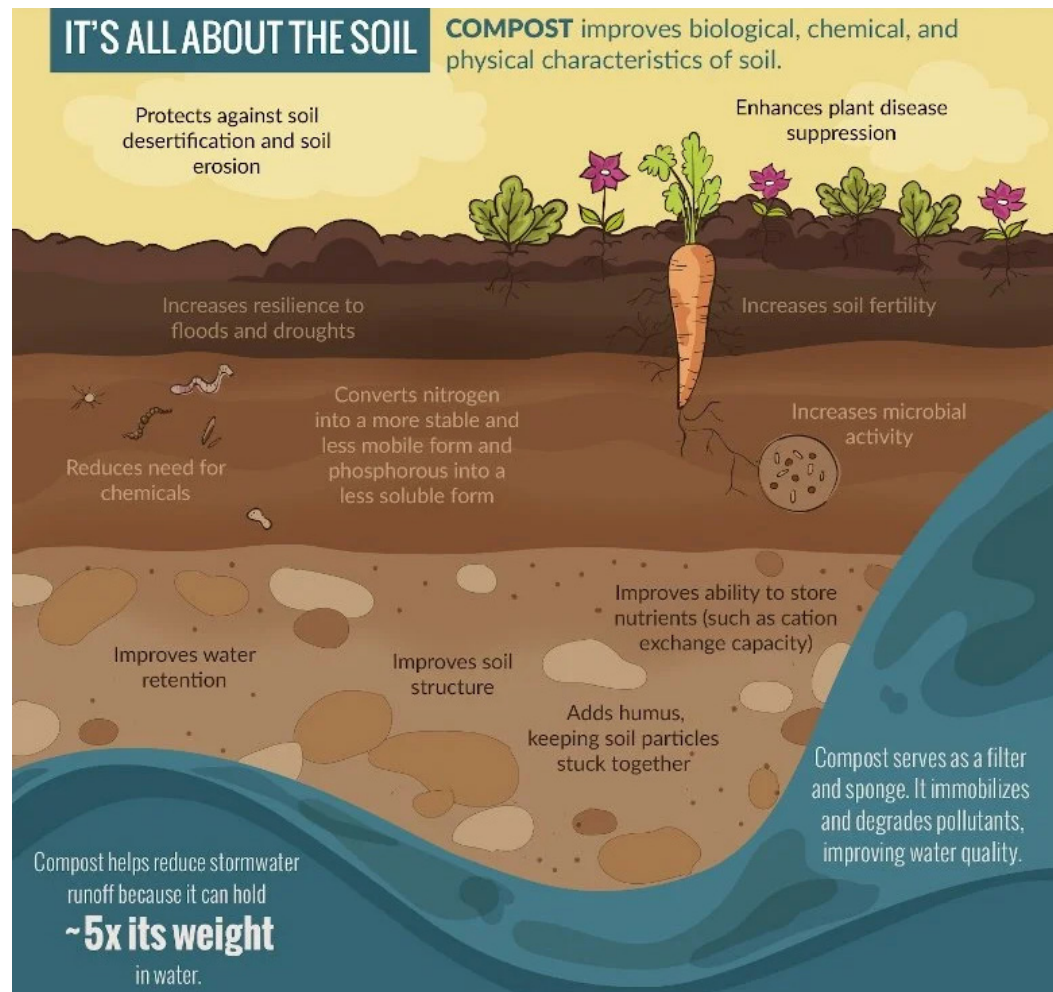
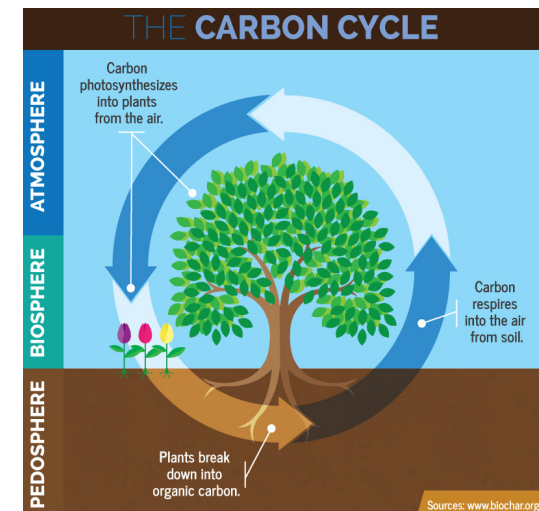
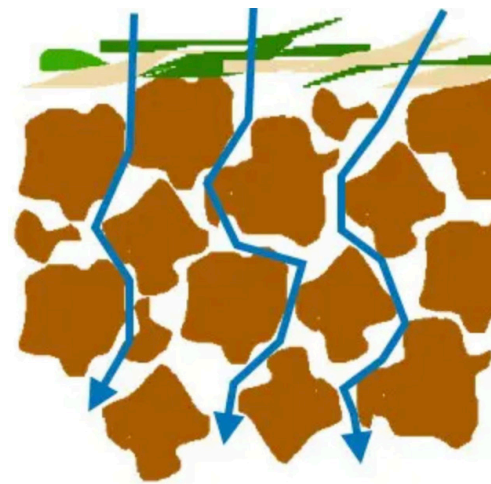
- Water conservation - rich in organic matter, they hold moisture at the plants roots and slow water run off to prevent it running off into sewers
- Hold nutrients, making them accessible to plants as needed
- Support bacterial and mycological life. Nearly all plants depend on bacteria and fungi to access nutrients
- Carbon sink - holding carbon in plants and soils

## Composting

Recycling plant materials and nutrients is part of a zero waste approach, and provides materials to continue building soils across the site over time.

Different methods include cold composting in large bays, hot composting and vermiculture. Using a range of methods ensures everything can be composted with minimal risk.

In situ composting can be carried out in the forest garden through sheet mulching - building layers of material and allowing them to rot down slowly over time.



## The polytunnel

This is a sheltered space where temperature, humidity and moisture can be regulated. It provides the ideal conditions for growing tender seasonal crops, and over-wintering less hardy species eg citrus that would be susceptible to frost and freezing outside.

Polytunnel space is also used for raising seedlings of annual plants, cuttings and propagating perennials and shrubs using heat.



## Ecosystem creation

The site will create numerous new wildlife habitats, forming part of a wider mosaic in the area, transforming a post industrial brownfield site into a living, breathing oasis of calm, greenery and diversity.

## Soils

Creating healthy soil ecologies will capture carbon, slow rainwater run off, provide a home to a wide variety of soil based organisms that fulfill the breakdown and transformation of plant and animal waste into fertile and nutritious medium for all plant life.

## Habitats

- Leaf litter and rotting wood provide vital shelter for fauna, and fungi break down cellulose, support plant fertility by providing nutrients in exchange for sugars provided by plants. Fruiting fungi are also an important food source.
- Log piles, dead hedges and stone piles and hibernaculi create shelter for larger mammals and invertebrates as well as amphibians.
- Bee bricks and posts, sand and mud piles provide space and raw materials for wild bees and other pollinators to breed and pupate.
- Bat and bird boxes to support over-wintering and migrating species.

## Wildflowers

Provide sources of vital nectar for pollinators and seeds for birds and invertebrates. The gardens will create acid grassland on the easements, woodland edge meadow by the hedhge and fringes of the woodland and forest garden, and extensive green roofs on the new classroom and office.

## Pond and scrapes

A pond in the forest garden will have adequate depth for over-wintering species, and small temporary scrapes dotted around the site will provide seasonal breeding ponds.

