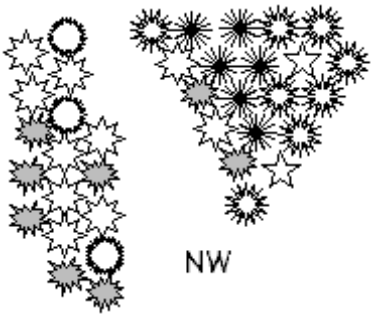
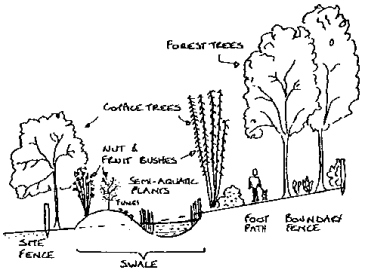
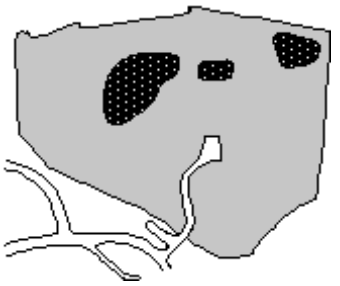
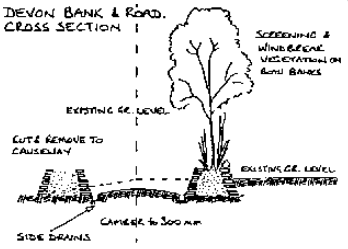
DESIGNED VISIONS









SPRINGFIELD

PEOPLE GROWING TOGETHER

A TECHNICAL DESCRIPTION AND MAINTENANCE SCHEDULE, AND POSSIBLE FUTURE USES OF LAND

SPRINGFIELD COMMUNITY GARDEN

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Written for
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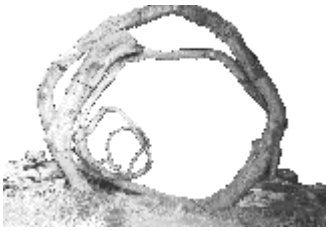


CONTENTS

A TECHNICAL DESCRIPTION, MAINTENANCE SCHEDULE AND POSSIBLE FUTURE USES OF THE LAND ELEMENT OF

SPRINGFIELD COMMUNITY GARDEN

Mark Fisher, August 2001

INTRODUCTION

Since its birth, Springfield Community Garden has relied on a variety of means to carry out site development and maintenance, each phase contributing to the whole, but without necessarily putting in place procedures or resources that would safeguard those developments in perpetuity. Thus each new user of the site sets their own priorities based on their need of the land resources of the site and confines their activities and development to that area. The consequence is that some features will disappear if left untended (intentionally or otherwise) as nature may reclaim them. This may be a perfectly acceptable strategy if it arises by conscious decision. On the other hand, some of the elements that are not in daily use need only a little specialist attention each year to continue to perform or develop, but these need to be recognised and some commitment to upkeep made.

The long-term future use of the land at Springfield Community Garden will be enhanced by a technical understanding of the features, assets and resources on site and on a schedule of maintenance to which to refer to. Current users of the site should each need to identify what commitment they can make to the general maintenance of the site over and above their areas of use. New long-term use and users may be found for areas that may not be central to day to day users. And some areas may need a landscaping solution that has longevity and minimal needs for maintenance. These combined could add up to an overall safeguard for the future for land use at Springfield Community Garden.

This document brings up to date the identification of site assets and developments, and provides a site plan along with technical descriptions of the landscape elements with their outline maintenance schedules. The maintenance schedules are not definitive; rather they point users in the right direction. Users of Springfield should then equip themselves with the necessary skills to make sustainable use of the elements.

Throughout, there is an assessment of the commitment by current users in both interest and resources to the potential maintenance of the assets in the broader land area. The particular management of the open space area to the south frontage of Springfield (known as the wildflower meadow) is addressed by a recommendation that this informal style of soft landscaping is continued, but with the approach of a more deliberate design of the landscape. A review of the soft landscaping options is provided. Information is given on potential new co-users of the site and the options for where this activity may take place, shown on a schematic of the site. An updated version of the colour site plan is given.

ACKNOWLEDGEMENTS

This document draws on the knowledge of the many people who have made a significant contribution to the development of Springfield over the years. The original design by Andy Langford, Designed Visions, guided much of that development, and due recognition is given by referring to the design, and in using fragments from its plans for figures throughout this document. Jeremy Cunningham and the results of his community arts projects on Springfield are also commemorated within these pages.

Chris Mackenzie Davey was the manager during most of the development and has kindly let me use his colour plan from 1996 for an updated version. I invited the originators of elements on Springfield to write their own piece and thanks go to Sue Whitmore (Yin Yang garden) Micah Duckworth (Living Willow Sculpture – the Serpent) and Rob Dark (Pagan Temple Garden). Many others gave their energy and creativity in the developing days of Springfield, and include among that many: Connie, Keith, Ray, Irvine, Rob, Terry, Chris, Janet, Sarah, Nicki, Jayne, Jackie, Ruth, Gary, Paul, Geoff, Nina and John.

What is SPRINGFIELD COMMUNITY GARDEN?

Springfield came about because of the horticultural and social needs of a ***local community***. The Holmewood estate in SE Bradford underwent a wholesale ***regeneration*** during the early '90s, raising the standard of insulation and heating of homes and, also, providing fencing around gardens to allow a greater level of responsibility. The residents of Holmewood realised that as part of the regeneration, a ***community horticultural centre*** on their doorstep would cater for a number of needs. Not only would it be able to provide them with plants for their gardens, but also provide the opportunity to learn about how to garden. In addition, it was unthinkable, for an estate of 10,000 people, that there were no allotment sites where anyone could grow some food. Finally, the community understood that horticulture could be a ***beneficial therapy*** for those with learning difficulties. How do you meet all these needs, but also give the community some sense of ***ownership*** of the centre? The solution, back then in 1993, was to try out Permaculture Design as it seemed to be a system that could mix together all the plants, people, buildings and maybe animals that would make up the centre - and come out with something that all worked together. More than that, ***local people*** could be involved in the design and building as the methods used in Permaculture Design actively encourage their ***participation***.

PERMACULTURE

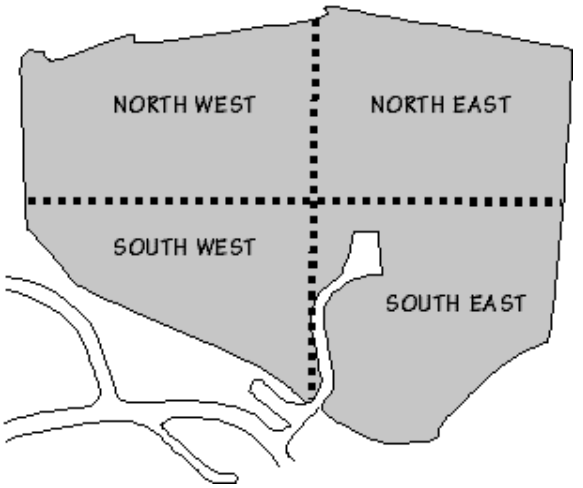
For those of us interested in Permaculture, the development of Springfield Community Gardens was an opportunity to test out its approach towards ***land use*** and ***social design***. Permaculture has often been explained as having two meanings: **perma**nent agri**culture** or **perma**nent **culture**. It is easier to understand the first explanation, as it could be understood to be a ***sustainable*** system of producing food. However, Permaculture is more than just a system of chemical-free farming since it stresses the importance of the whole ***farmscape*** in contributing to the ***natural balance*** and sustainable use of resources, and it integrates social endeavour and social organisation into the design. In Permaculture systems, there is a preference for the use of perennial planting schemes to achieve those aims of sustainability because this is the lesson learnt from ***natural systems,*** the inspiration for Permaculture (i.e. nitrogen fixation, mycorrhizal fungi, dynamic accumulation, and mineral recycling). Thus it is a ***permanent*** agriculture because it seeks to be as perennial as it can (but not excluding the use of annuals) and it is designed to sustain its function into the distant future.

While we are happy to ***design*** for our use of land, we rarely give thought to designing for our ***social structures*** and may not see the need for it. However, as is so often seen in well-functioning communities, there are benefits that come from ***co-operation*** such as the simple thing of combining together to put in a big seed order and reap a discount, or to the joining together to apply for funds and then build a new community centre. Working together gives us a powerful force, but as a start there is much we can do as individuals in that community – and the first is to take more ***personal responsibility*** for as much as we can, so that we become more self-reliant. We make choices for our use of resources and what we buy, and we can attempt to reduce waste, reuse as much as we can and recycle what is left. From this confidence from personal responsibility, we can then start to take responsibility within the community, contributing to its knowledge and leadership, and in joint effort for its overall wellbeing. This is evidence of what could be called a ***mature behaviour*** that is often seen in stable and secure communities. Examples of these are forest and fishing communities around the world. They have a sense of permanence about them, which is because of the long-term nature of forests and their use, and the need to be careful about conserving fish stocks rather than overfishing. Thus the forests and the fish stocks need ***generations*** of care and knowledge, with the knowledge being passed on to next generations down through the years. This constancy and mature behaviour is our other explanation of Permaculture, a ***permanent*** culture.

THE DESIGN AND DEVELOPMENT OF SPRINGFIELD

Springfield was developed on a 3 hectare (7.5 acre) field of rough pasture that used to be part of a tenant farm owned by the local council. To begin with, a ***Permaculture Designer*** was employed to carry out a site survey and then work out a detailed design plan in consultation with the community. The Designer lived on the estate for weeks at a time, and used simple but highly visual surveying

methods around the field to engage the interest and involvement of onlookers from the estate across the road. Part of the survey was to locate contour lines across the top of the site where ***swales*** (drainage ditches) would be dug to improve water infiltration (see SWALES in the technical session). In addition, similarly high profile community ***art projects*** were carried out using simply available materials such as wood and stone. These projects drew in children and adult volunteers, and left structures around Springfield that are a constant reminder of those early days (a spiral arch where a time capsule was buried, various carved wooden seats around the site and a watercress bed located on the spring – see technical section).



A survey of the quality of the land making up Springfield revealed four distinct areas on site that roughly corresponds to the field being divided into four quarters (see figure). This division of the site is used throughout this document as a means of providing a reference location for the various elements that go to make up Springfield.

A ***wildfood woodland walk*** was first to be planted in a wide band following up the E boundary, and turning to run along most of the N boundary. This consists of hundreds of native trees and shrubs into which fruiting trees and shrubs were also planted, so that the whole will mature into an ***edible landscape*** where the community can pick and eat fruit as they walk.

The ***best soil*** with a good depth of silt was found in the NE quarter. This area gently slopes southward, providing a warm and fertile area for food growing. The cash crop vegetable beds, allotments for the community and a couple of forest gardens are located there. Because of a prevailing ***westerly wind*** over the field, this quarter is protected by shelterbelt tree plantings

The NW quarter had the second best soils and is used for a very large ***forest garden*** and for tree nurseries. It has a large shelterbelt planting that affords protection for much of the NE quarter. The SW quarter has both wet and dry areas. The section to the E of the quarter is very ***boggy*** because of the permanent spring waters that flow there **(Spring**field!). The water is heavy with ***iron***, which is typical of coalfield areas. The water from the spring passes through a number of ***lagoons*** where various ***plants*** are used to ***clean*** out some of the iron before the water passes into the beck. The second part to the W is drier and forms a low mounded plateau of poor land, which is currently unused. In late spring, this area glows pale pink from the mass of cuckooflowers, a edible wildflower of the cress family.

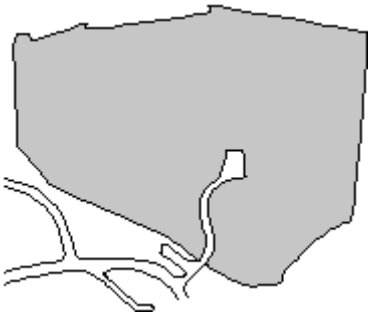
The SE quarter has the poorest land with shale overlying thin clay soils. The shale is spoil from mine workings and is evidence of the ***coal mining*** activity of this area of Bradford in previous centuries. Two mine openings were found in this quarter and were permanently capped for safety. The shale provided firmer ground for the access road that runs into the hardstanding, the latter used as the salvage area and recycling yard. The firmer ground also proved suitable for the footings of the two buildings. This whole quarter has much drier, poorer soil as is shown by the presence of the wildflowers yarrow and the hearts ease pansy.

The buildings at Springfield are contained inside a compound that is the a focus for much activity. The buildings were made from wooden beam and panelling, constructed from Scottish grown pine and brought to the site in partially assembled sections. ***Reciprocal beams*** provide support for the roof panels and allow the octagonal space inside the building to be free from loadbearing posts. The central apex opening in the roof, formed by the beams, is capped by a ***skylight,*** which provides good internal daylight and good ***solar gain.*** The building to the E is the ***farmhouse kitchen*** and is finished to a higher standard with insulation covering the inside of the wall and roof panelling. The second building contains tanks and boilers for the heating system and has equipment for its use as a ***potting shed/craft shop.*** A toilet block links the two buildings and contains ***composting toilets***. Springfield is not connected to sewers and so water from the roofs is collected and used for ***irrigation*** and all grey water (from sinks) is piped to a ***willow absorption area.*** The compound also contains polytunnels and a greenhouse for salad crop production, and a ***wind turbine*** provides electrical power. There is a ***model demonstration garden*** that is used by daytime groups in their ***field to table*** program for lifeskills (they grow the food, prepare and cook it and eat it together on site).

TECHNICAL DESCRIPTION AND MAINTENANCE SCHEDULE

HOW TO USE THIS SECTION

This section contains an entry in alphabetical order for each of the elements in the wider landscape of Springfield Community Garden. It does not cover any landscape elements inside the inner compound, nor any of the buildings or structures in that compound.



Each entry has a site map schematic (see figure) showing the relative location of the element, and below that is a short set of directions to it. These combined will get you walking in the right direction, but please refer to the overall site plan in the Appendix if there is any confusion.

The right hand panel contains maybe some history and the context of the element, and a description of its construction and function. This is followed by an outline maintenance schedule. Key words from this maintenance schedule are highlighted in the left-hand column.

There are two tables within this alphabetical section. One contains a listing of the types and properties of the fruiting trees planted in the forest gardens. While the precise location at planting of some of the individual varieties is known, some of these fruit trees have subsequently been lost. Many other fruit trees have been planted elsewhere, particularly in the Wildfood Woodland Walk, where the varieties were not recorded. This could be a project for identification by future generations of Springfield users. The second table lists some of the perennial plants used in creating the linear and island guilds.

TREES ON SPRINGFIELD

Many trees, mostly native species, were planted at Springfield. To my knowledge, no record has been made of species used or of planting locations. Some areas, however, are obvious with a hawthorn hedge planted along the E boundary. In most other areas, whips (young, bare-root trees) were planted by species in groups of three, gradually moving across and filling the landscape to form habitats and shelterbelts, planted as parts of swales and for the wildfood woodland walk. The most common trees planted would be alder, birch, blackthorn, elder, field maple, hazel, wild cherry, horse chestnut, guelder rose, hawthorn, holly, oak, ash, rowan, mountain pine and, later on, sycamore. Some Scottish broom are planted along the boundary in the NE.

The trees have been a principle tool in reshaping the ecology and soil economy of Springfield, which was just poor pasture before. This approach was key in returning the land at Springfield to a highly productive and endurable landscape based on traditional knowledge and craft. Some history of woodland in Britain will provide the context, but we must be wary since our history of trees is littered with false trails and romantic notions. What can be said is that the retreat of the last ***Ice Age*** was followed by the almost complete coverage of ***lowland*** and ***semi-upland*** Britain with natural forests – ***wildwood***. How we lost these forests to wholesale change due to the coming of agriculture is arguably a tragedy from which we have learnt little, even though it started over 5000 years ago.

From the ***Iron Age*** onwards, woodland was managed for ***timber*** (building materials) and ***wood*** (firewood, charcoal, poles, fencing etc.). But more and more wildwood was cleared to make way for crops and animals, such that it is probable that there is none of the original natural woodland left today in Britain. ***Ancient woodland*** is wildwood that has been historically managed with replacement of original trees by humankind rather than nature. For a period, trees at a less dense cover than woodland were an important part of animal husbandry. Livestock are fond of young tree leaves and so a system of ***wood-pasture*** developed whereby ***trees*** were planted through ***grassland*** (the great deer parks are examples of this). Some were ***pollarded*** (coppiced on a leg) to give fresh ***edible growth*** every year, but also to give products such as poles. Woodland cover, however, continued to be lost to agriculture, with an acceleration during the 19th century as the need for wood products fell with the increasing use of ***fossil fuels*** and a decline in the need for ***oak bark*** in ***tanning*** leather. Now we have a woodland coverage of about 15%, lagging behind many European countries.

APPLES, PEARS AND STONE FRUIT – Known varieties planted on Springfield						
VARIETY	Use	Rootstock	Flowering period	Pollen	Harvest period	Fruiting
APPLES						
KESWICK CODLING	D	M25	MID		Sept-Oct	B
COCKPIT IMPROVED	C	M25	MID		Dec-Apr	
CRISPIN	D/C	M25	MID-T	SS	Oct-Apr	spur - B
BRAMLEY	C	M25	MID-T	SS	Nov-May	tip - B
WORCESTER PEARMAIN	D	M25	MID	SF	Sept-Oct	tip
JAMES GRIEVE	D	M25	MID	SF	Sept-Oct	spur
DISCOVERY	D	M25	Early	SS	Aug-Sept	spur & tip
CRAB APPLES						
JOHN DOWNIE		M25				
GOLDEN HORNET		M25				
PEARS						
CONFERENCE	D	Seedling pear	MID	SS	Oct-Nov	
WILLIAM	D	Seedling pear	MID	SS	Sept	spur
HESSLE	D	Seedling pear	Late	PSF	Oct	
LOUISE BONNE OF JERSEY	D	Seedling pear	Early	SS	Oct	
BUERRE HARDY	D	Seedling pear	Late	SF	Oct	
JARGONELLE	D	Seedling pear	MID-T	SS	Aug	tip
STONE FRUIT						
MERRYWEATHER (damson)	C	Myrobalan B	MID	SF	Sept	
CZAR	C	Myrobalan B	MID	SF	Aug	
CAMBRIDGE GAGE	D/C	Myrobalan B	Late	PSF	Sept	
CHERRY PLUM	C	Myrobalan B		SF	July	
STELLA	D	Malling F12/1	MID/Late	SF	July	
NUT						
WEBBS PRIZE COB					Sept	
D - Dessert, C – Cooker, T - Triploid, SS - Self Sterile, SF - Self Fertile, PSF - Partially Self fertile, B - Biennial fruiting						

BOILER HOUSE

This is a block building on the S side of Stirling Crescent.

MAINTENANCE KEYWORDS
Empty and relinquish

This block building was once a boiler house for a distributed estate heating system. By the time of taking possession of Springfield in 1993, the heating system had been decommissioned, with the boilers and associated equipment removed. Thus its location over the road from Springfield, and its availability for use, meant that it provided an early lockup for materials and tools, and desk and workshop space.

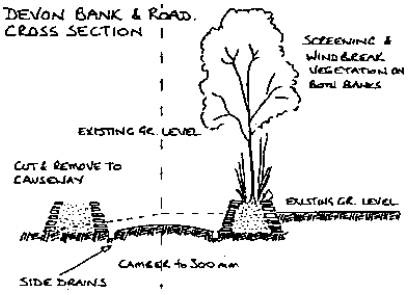
The windowless building has a problematic toilet system and is far from secure, suffering repeated break-ins. Consequently, its role diminished quickly after the buildings on Springfield were completed, with most materials and activities transferring. It retains some storage use for equipment and for compost bins owned by the Royds regeneration company.

MAINTENANCE

The boiler house is regarded as a security nuisance. There are plans to develop further buildings in the compound on Springfield and so there is no commitment to retaining the use of the boiler house. The Royds have agreed to look for alternative storage space for their compost bins.

BRADFORD BANKS (DEVON BANKS)

A Bradford Bank runs NS, separating the central shelterbelt from the compost bins and salvage area.



MAINTENANCE KEYWORDS
Weed control
Replacement planting

A Devon Bank is a wall, often signifying a historical boundary, which is constructed from two inward sloping dry stone walls, with the space between the walls filled with soil (see figure). Thus substantial walls can be constructed that reduce the amount of stone a solid wall would use as it is replaced with soil. Another advantage of the Devon bank is that the soil infil can be planted up with shrubs and trees, which markedly raises the overall height of the bank, making them effective as visual screens and also wide-area windbreaks.

The original design plan for Springfield specified three stretches of Devon Bank, although the apocryphal story is that their name had to be changed to Bradford Banks to placate the sensibilities of Bradford's Planning Department. Two of the banks would have lined either side of the entrance track into Springfield, starting just before it opens out into the salvage area. This would have made for an impressive, gated entranceway, just after the causeway section of the track. Another short section would have lined the E side of the salvage area and provided windbreaking protection for seedling polytunnels.

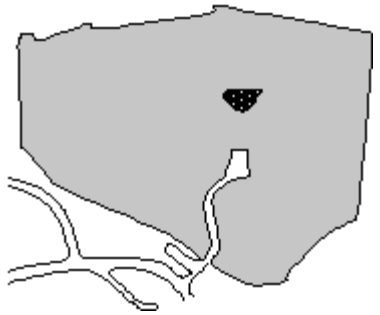
As with many developments at Springfield, the eventual building of a new feature awaited the combination of someone identifying and bringing in with them the necessary resources of people and materials. Graham Parker, from the Economic Initiatives Division, and his band of New Deal trainees, located a supply of wasted York stone paving and set themselves to building the bank that stretches up the W side of the salvage area. Waste soil was also brought in to fill the wall after it was mixed with organic matter. The tops of the banks are planted with trees (hawthorn, blackthorn and guelder rose)

MAINTENANCE

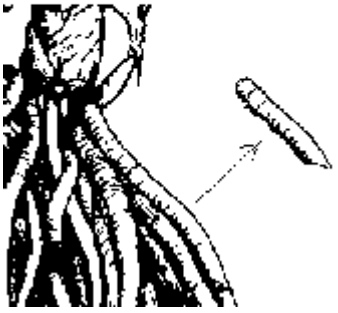
The wall is stable and shouldn't need much care other than to weed the soil surface and to replant tree failures where necessary.

There is an original hawthorn tree that has been incorporated into the wall. It is important to ensure that the space around this tree is not filled with earth, as burying the tree from above ground level will kill it.

COMFREY BED



The comfrey bed is in the centre, just below the small forest garden.



MAINTENANCE KEYWORDS
Weed control
Propagation: offsets, root cuttings
Comfrey rust

Many plants have the ability to actively accumulate minerals from the soil - hence they are called dynamic accumulators. They appear to do this selectively as there may not be a high soil content of the mineral, nor does there seem to be any clear advantage gained. The well-recognised dynamic accumulators are mostly common weeds such as comfrey and yarrow. They can be used like animal manure to add fertility to soil.

Comfrey is a deep-rooting perennial that is capable of accumulating minerals from subsoil (upto 6% dry weight for potassium). The minerals are then released into the topsoil as the plant dies back at the end of the season. Thus it has tapped a rich vein of minerals that are rarely used by the majority of plants. Comfrey is probably the most important dynamic accumulator that natural gardeners can make use of. The leaves can be cut 3-4 times a year and used in mulches or liquid feeds, used on potassium-hungry crops like tomatoes.

The common wild comfrey is found growing in damp habitats such as riverbanks, but it can also be seen in road verges. The comfrey used by natural gardeners is similar to the native species but it is a hybrid between that and the prickly comfrey from Russia. The hybrid is semi-sterile so that it does not produce much seed. This is useful as it means the plant puts most of its energy into producing leaves.

The hybrid comfrey is a robust herbaceous perennial that grows to a height and spread of 90cm. The very deep taproot can reach as far as 3m underground. The large, oval hairy leaves grow in a clump through which flowering stems and purple tubular flowers appear between May and August. The leaves are harvested before the flower stem appears and steeped in water to make a straw-coloured liquid feed.

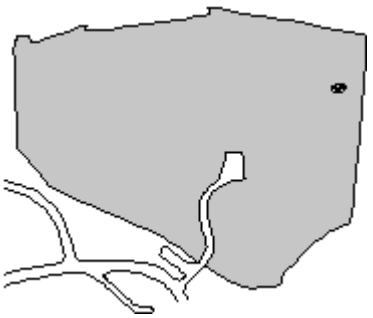
MAINTENANCE

The comfrey bed is full of perennial weeds such as willow herb and thistles. Light excluding mulch has failed to control them in the past. However, comfrey itself is sufficiently vigorous in growth and it should eventually crowd out the weeds. Before it can do that though, there has to be a greater density of comfrey plants growing in the bed.

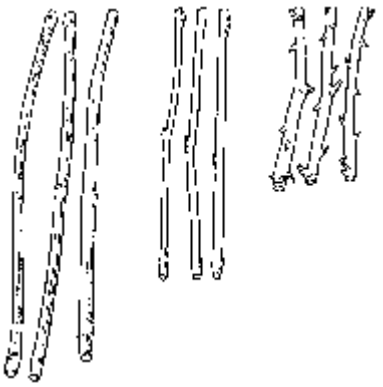
Comfrey can be propagated from offsets early in the year when they first appear, or from root cuttings taken between March and August (see figures). Although rooting can be carried out in open ground, using pots will build up stock of comfrey that can then be planted out in bulk.

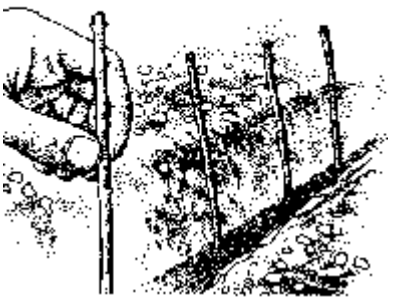
Orange-coloured comfrey rust can appear on leaves in high summer. This not a serious disease as the plant will grow through it. Regular cutting of the comfrey before it sends up flower spikes may keep it at bay.

CUTTINGS BEDS - NOW A WILLOW COPPICE



The cuttings beds are to the E and just above the top mini-swale in the NE.





MAINTENANCE KEYWORDS
Coppicing
Pruning
Hardwood propagation

As the growing season comes to an end, the leaves fall from deciduous shrubs and trees. Their shoots become firm, hardened by the woody tissues within them; and their cells fill with starch, and other storage reserves, set aside to enable them to survive the winter and grow away strongly the following spring. These tough sticks are the material to use for hardwood cuttings. Their tissues contain the regenerative cells that will divide to get growth going again when it comes. Dormant during the winter, they are extremely tolerant of poor conditions, and are very well able to support themselves from the reserves packed away inside them, a self-sufficiency that enables them to survive and prosper.

Hardwood cuttings provide one of the easiest means of propagation. Many are able to produce roots successfully in the open ground providing that the space is not too exposed to extremes of wind and sun. Cuttings of this kind are normally taken throughout the winter from leafless shoots -a convenient job to occupy the months of December and January. However, in the N, rooting is least likely to occur from cuttings made in the dead of winter, and should instead be done as the leaves fall during late October or within a month. If the cuttings are not taken then it is better to delay their removal until early March, only a short while before they come into growth again.

Cuttings are prepared from fully mature, firm wood, sliced into pegs, each with about four buds, and measuring something like 10-20 cm (4-8 in) long (see figure). The cuttings are stuck in a vee-shaped slit in the ground. It is not necessary to bury them deeply, nor for them to project far out of the ground. Ideally their uppermost buds should be just above ground level, with the bud below only a short distance beneath the surface (see figure). Roots will form in early summer as leaves appear, and the rooted cutting can either be moved into its final place or potted up in late Autumn, or in late March the following year.

The cuttings beds were an early element at Springfield since it was hoped that hardwood propagation would replace bought in stock. Beds were formed by clearing turf and then pegs of willow, blackcurrant, redcurrant, dog rose and dogwood were plunged. Most of the rooted shrub cuttings have been removed and used over the years, but the willows stayed put with a few of the currants and rose. Subsequently, the willows have been used as a source of willow withies for crafts such as basket making and living willow sculpture.

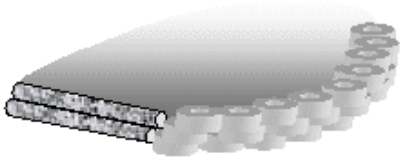
MAINTENANCE

The willows need coppicing every three years or so to keep the withy growth relatively young (see WILLOW ABSORPTION AREA).

The black and red currants are too large to move successively and thus should be regarded as productive fruit bearing shrubs and harvested accordingly. Their productivity will be maintained by appropriate pruning (see WILDFOOD WOODLAND WALK). Pruning often produces useful material for hardwood propagation as described above.

ENTRANCE GARDEN

The remnants of a garden are just inside the entrance gate on the right of the track.



MAINTENANCE KEYWORDS
Decommission

First impressions can be lasting and in the early days of development at Springfield, there wasn't a great deal to see other than a flat, windswept field. It would be nearly two years from that beginning before the buildings were up and another three to four years before the many hundreds of trees that were planted would make any substantial marking of their presence. Thus a decision was taken to build a garden at the entrance to the site, which not only would keep the mix of work placements and volunteers interestingly busy, but would also be a high profile shopfront for the site. It would not be entirely wrong to reflect that it was also a strategy to satisfy the funding body whose representatives could monitor some work on Springfield from over the gate, thus avoiding the tedium of having to put on rubber boots and walk the site.

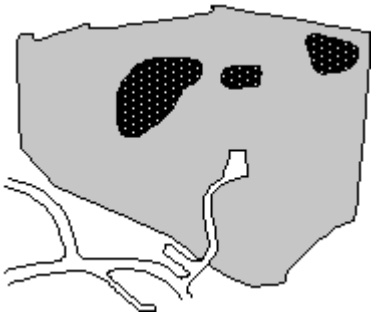
The first garden was made by mulching: sheets of newspaper were laid thickly on the ground and then covered with partially rotted stable litter. Plants would have been established by cutting through the mulch into the soil. However, before any significant planting was carried out, the mulch was set alight and mostly burnt. Subsequently, part of the mulch area was re-instated and this was supplemented by a range of raised beds constructed with log surrounds. Two of the beds were German mounds where the height in the bed is created by laying brash and twigs on the surface, covering this with turf taken from the surroundings of the bed, and finishing with a mulch layer. Another bed was backed into the slope to the rear, with a small curved tyre wall and logs creating the downslope edging (see figure). A pond, rockery, herb spiral, raspberry canes, shrub windbreak and wooden compost bin were added to these and the garden became one of the centres for annual crop production on site.

As larger areas of crop production were opened up on the site, the entrance garden received less attention, and this was mirrored by the increase in vandalism that it suffered. Most of the structure has gone and the whole is being reclaimed by nature, which is better suited to the difficult soils of this part of Springfield.

MAINTENANCE

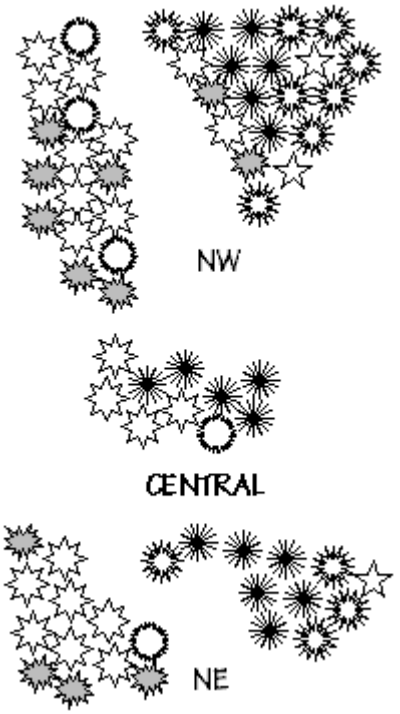
Remove any obvious or visible structures and allow nature to continue its reclamation.

FOREST GARDENS



There are three forest gardens. The largest is in the NW, nether in the NE, and smallest is in the centre,

The schematics below are the plans of the original plantings of top fruit. The NW and NE gardens have been added to since.



MAINTENANCE KEYWORDS
Pruning
Tree ties and stakes
Weeding and mulching

A forest garden is a spatial combination of the tall fruit trees of an orchard with the bushy growth of soft fruit and the low growth of herbs and perennial vegetables. The design of a forest garden mimics a woodland edge (see figure) with the fruit trees providing the top storey or canopy, the shrub fruit making the middle storey and the herbs being the groundcover. To achieve best possible growth, this sloping edge is orientated towards the sun. Thus a forest garden is a woodland edge designed with the purpose of producing food, and achieving economy of space through successive layers and economy of labour through perennial plants.

The top storeys of the three forest gardens on Springfield were established early on by planting a variety of different tree fruits. All fruit were on non-dwarfing rootstock (M25 for apples) to obtain the greatest cropping potential. The design of the forest garden in the NW and the larger in the NE allowed for clustering each side of a central open space (see schematics). Apple varieties were planted on the W side - the direction of prevailing wind - as they are the more robust of the fruit types and could afford some wind protection to the pears and stone fruit planted downwind to the E of the central space. In addition, the forest gardens were planted with alder windbreaks to the W and also take advantage of the general windbreak plantings on site.

The spacing at planting of the fruit trees within the clusters was such that the canopies would only just touch at maturity. The height that these trees should reach creates sufficient scope for extensive underplanting with the middle storey and groundlayer. The central areas of the two larger forest gardens was designed to be available for a kitchen garden of annual vegetables to supplement the perennial crops of the forest.

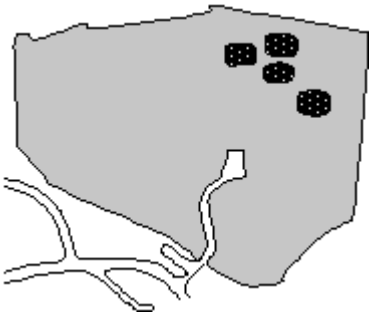
The development of the lower storeys was planned to be carried out in the later years with plant stock propagated on site. Two guilds were planted as example: one in the NW and one in the central small forest garden (see GUILDS) but the greater development of these storeys remains to be carried out. A small kitchen garden consisting of raised vegetable beds, herb spiral and companion flowerbeds were built in the centre of the NW forest garden, but nature has mostly reclaimed it.

MAINTENANCE

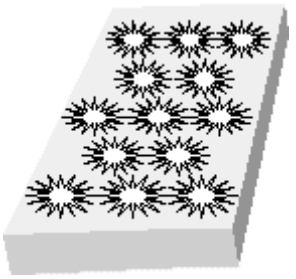
The fruit trees were planted in 1995 as maidens and have been pruned over their early years to create open, bush-shaped canopies that should fruit profusely from ’01 onwards. Pruning in late winter in subsequent years should concentrate on laterals to stimulate spur production, leaving the leaders alone (get a good book!). Cut out crossing or dead wood. (A table giving the known varieties planted in these forest gardens is shown in APPLES, PEARS AND STONE FRUIT)

Check the tree ties when pruning and loosen if they are constricting. Remove the stake and tie when the tree is firmly established in the ground. Replace tree guards if there is rabbit damage during winter (bark knawing). Weed around the base of the tree and feed with a mulch of well rotted organic matter.

GROWING AREAS



There are four growing areas, all in the NE and bounded to their N and S by swales.



MAINTENANCE KEYWORDS
Rabbit fencing
Weed control
Hoeing
Soil feeding
Mulching

The invention of the horse-drawn seed drill for use in broadscale farming has meant over the last few hundred years that people have thought that vegetables had to be grown in straight rows. Before the seed drill, farmers used instead to broadcast their seed in random fashion, throwing over one shoulder and then the next to create blocks, almost as if the plant was dispersing the seed and getting help from the wind in doing so.

Some cultures continue today to grow their vegetables in this block system, but make it easily manageable by using rectangular beds that give easy access to the growing area from paths either side of the bed. The major advantage of beds is that they avoid the soil becoming compacted, as there is no need to ever walk on the soil – all the work can be done from the paths. Thus the beds do not need routine digging and can be cultivated simply by using hoes. Here is how beds are made and used:

? MAKING BEDS Beds at 120-150 cm (4-5 ft) wide and any convenient length, are made by mulching the ground with partially rotted organic matter and then covering with a light excluding layer. The sides of the bed can be shuttered with wood and the paths mulched with newspaper to suppress weeds
? RAISING THE BEDS Digging the bed can loosen and raise the soil level, which is further raised by soil taken from paths between the beds. On heavy soils this raising-up gives better drainage and aeration, quicker warming in spring and a deeper rooting zone. The soil height in beds should not be raised on free-draining soil as it will make the bed dry out too easily
? FEEDING AND USING BEDS Composts, manure and mulches can be added just to growing areas. Plants are laid out in blocks of staggered rows with much closer spacing (see figure)
? WARMING BEDS Soil can be warmed-up before planting by covering closely with clear polythene to act as a greenhouse
? CROP ROTATION is more easily organised with beds.

Two growing areas on Springfield have shuttering around the beds: the top-left and the middle area. The latter also has linear guilds interspersed through the beds to provide pest control (see GUILDS). The top-right and bottom growing areas are relatively undeveloped and the pasture is beginning to reclaim them. The top-right growing area is to be retained for future expansion of growing. The bottom growing area is to be given another use.

MAINTENANCE

The rabbit fencing must be maintained. Weed control is carried out using Dutch or draw hoes early in the year when the weeds are still small. Deep rooting weeds such as thistle and couch grass will need occasional digging out. The wooden shuttering is pressure-treated and will not need maintenance.

Soil in the beds should have its fertility maintained by hoeing in applications of well-rotted organic matter as part of a program of treatment for crop rotation. Water conservation is aided by using mulches after planting up well-growing vegetable transplants with a hand trowel.

GUILDS

There are two types of guild: LINEAR and ISLAND. Three linear guilds are interspersed in the bottom-left growing area. There are three island guilds: a small one in the top-right corner of the NW forest garden; a large one in the top-right of the central forest garden; and the last is below-right of the middle growing area.

MAINTENANCE KEYWORDS
Weed control
Coppicing
Pruning

The horticultural techniques used in Permaculture rely heavily on combinations of plants (see FOREST GARDENS). The guild is a harmonious assembly of plant species (but it could be plants and animals). The essential quality is a diverse mixture, each element having a purpose and working well together.

Plant guilds make use of the advantages that the natural world provides. Below ground there is nitrogen fixation where plants deliver nitrogen into the soil over and above their own use. Also, harvesting of the leaves provides mulch to feed the soil with nitrogen. Another symbiotic association is between fungi and perennials plants in mycorrhiza. This partnership helps find phosphorus and aids water uptake. We can also use plants that are dynamic accumulators of soil minerals (see COMFREY BEDS). Above ground there are plant qualities such as flowers and berries that attract insects and birds, and these are our natural allies in pest predation and control.

LINEAR GUILD: Rectangular beds are used for vegetable growing (see GROWING AREAS). A narrower bed is interspersed between each pair of these such that there are three narrow beds to eight vegetable beds. The narrow beds are planted up with perennials that attract pest predator insects. Thus the beds become bug banks or refuges. Next, it makes sense to grow green mulch material in them, right next to the vegetable beds since this is where it is to be used (i.e. perennial nitrogen-fixers such as clover and lucerne, and the comfries). Lastly, these beds are a chance to grow some herbs (both culinary and medicinal) and the few perennial vegetables available (see WILDFLOWERS, HERBS AND ORNAMENTALS FOR USE IN PLANT GUILDS).

ISLAND GUILDS: These guilds include woody plants and either stand-alone or are part of a forest garden. They have a characteristic triangular planting, with one point of the triangle being a top-fruiting tree (crab apple, june berry) and the other two points being fruit bushes (currants, gooseberry, etc.). The space around and within the triangle is then planted with many of the same perennials that are used in the linear guild. There may also be other woody plantings included - such as flowering currant and willow as early flowering insect attractants – and these are placed to the N in the guild to avoid blocking light. Woody guilds are oases of mixed plantings that are similar to woodland edges. Top fruit is the canopy; the fruit bushes, willow and flowering currant are a middle storey; and groundcover is made up from herbs, perennial flowers for pest predator attraction, some perennial food and fertility for free from nitrogen fixers, micorrhizal associations and dynamic accumulators.

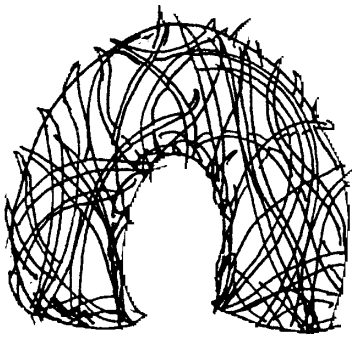
MAINTENANCE

Carry out early-year weed control until the perennials have become established enough to suppress the weeds. The perennials themselves may need controlling. They can be lifted and divided to provide material for building more guilds.

The willows will need coppicing every third year and the flowering current will need pruning to keep it in its space. The top fruit and shrub fruit will need pruning to maintain production.

LIVING WILLOW SCULPTURE – THE SERPENT

The living willow serpent snakes around the spring and two interlinked ponds in the NW.



MAINTENANCE KEYWORDS
Coppicing
Cutting back
Weaving-in
Strimming

The Serpent – a living willow sculpture, was created in 1996 with the help of younger children from the Edwards Rainbow Centre on the Holmewood estate. The idea was to enhance the area around the spring, which had already been developed into a series of three inter-linked ponds. The design for the sculpture was chosen as it enclosed the pond areas whilst following a sympathetic course around them.

The coppiced willow that was used for the project is *Salix viminalis,* a fast growing commercial variety bought from a supplier that grows it for chipping and then use in a biomass power station. The willow was planted by staking it into the ground in two rows and then weaving it over to form a tunnel shape but with closed ends (see figure). This serpent's body then curves around the pond areas giving the effect of diving in and out of the ground. The new growth from the willow has been woven back into itself in subsequent years to strengthen the structure. The new growth may also be coppiced for a variety of purposes including hurdle making, hedging and heating fuel (see also WILLOW ABSORTPTION AREA).

Children have always been drawn to the sculpture to play in and around it. Some initial vandalism had to be coped with, but the willow showed itself to be resilient enough once well established. The initial design for the sculpture has been modified as children have created access holes and hideaways, but the overall shape of the sculpture remains effective. The boggy nature of the ground around the springs is an ideal habitat for willow which may itself draw excess water from the surrounding land.

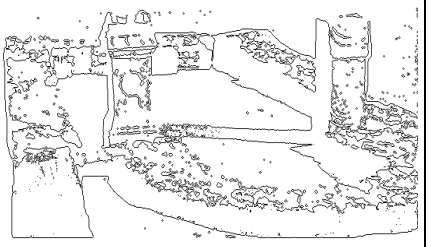
MAINTENANCE

Each year, during the dormant period between December and March, the new growth will need to be either woven into the sculpture or cut back. When weaving in, work with the tension of the willow to hold the structure together in a free weave.

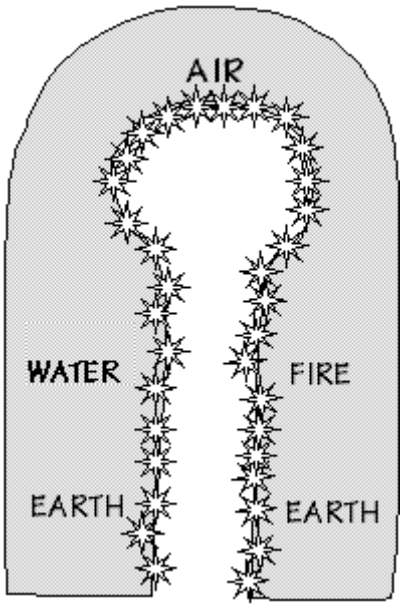
The area between the inside of the sculpture and the ponds may be strimmed to keep it more accessible to people.

PAGAN TEMPLE GARDEN

A garden in the style of a pagan temple is located to the E of the entrance track.



The altars, rectangular passage and semi-circular apse of Benwell Temple, Northumberland.



MAINTENANCE KEYWORDS
Refresh themed plantings
Over weave hazel

The arrival of the Romans from AD 43 onwards led to a mixing of Celtic and Romano religious tradition. Both were based on pagan beliefs that were cults dedicated to favoured mythical gods or successful rulers, or celebrated the life forces of nature and fertility. Temples were built to these deities, becoming revered places that gave a prestigious home to the cult statue of the deity. Devotees would advance along a colonnaded aisle towards altars where they gave thanks to the positive influence these deities possessed over their lives.

The Druids of Celtic society were a priestly caste that held a strong influence. Their power stemmed from demanding and obtaining loyalty from the Celtic aristocracy, using denial of religious access as their weapon. While the Romans were tolerant in religious belief, the overweening power of the Druids posed a threat, leading to the ruthless suppression that culminated in AD 60 with an attack on Anglesey. At the same time the Romans promoted their own religions, their tolerance showing in embracing oriental religions, but not extending to Christianity since it too was threatening.

An oriental religion that took hold was Mithraism, a Roman adaptation of an ancient religion from Persia. It became popular with soldiers as the god represented the victory of the soul after death, and popular with merchants because it represented honesty and fair dealing. Mithraic temples were oblong buildings, often built partly underground and with an apse at one end to contain the statue (apse is a semi-circular domed roof). The *mithraeum* had a dark interior with only a little light coming through a number of small upper windows. This tended to heighten the air of mystery and awe surrounding the god.

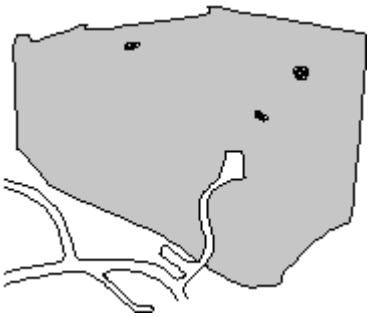
The pagan temple garden draws on many of the strands found in archaeological and historical evidence around the UK. The oblong entrance passage leading to an apse is created by planting hazel around an internal perimeter (see figure). When these trees are large enough, they can be woven together across the passage to form an archway and across the apse to form a dome. This will recreate the dark interior of a *mithraeum*.

The continuous raised bed to the outside of the passage and apse is separated, as was the tradition, into three areas, and they are used here to represent the natural elements (see figure). A concrete lined pond denotes water and plantings in the other areas are intended to be symbolic of a natural element. Thus water is represented by blue flowers, fire by orange and red, earth by plants that have predominant roots, and air by white flowers and silver leafed plants. The alignment of the whole is N to S. Two fruit trees planted to the N of the temple garden were symbolic of vernal equinox, but have not survived.

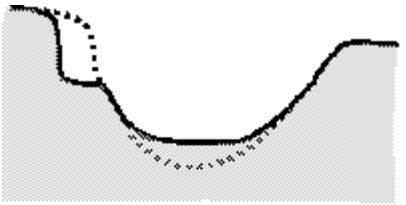
MAINTENANCE

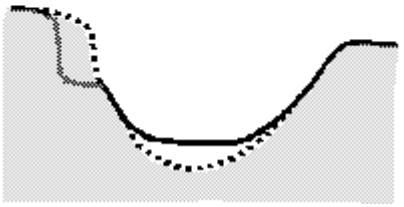
This garden rarely suffers from vandalism. The hazel is fast approaching the point where it can be woven across during winter dormancy. The plantings in the surrounding bed need refreshing in the themes of the original idea.

PONDS



Two ponds are in the NE, and there is a widening of the major swale in the NW that is a seasonal pond.





MAINTENANCE KEYWORDS
Clear debris
Backfilling

Permanent water opens up an inviting world to our wild friends. Water boatmen, whirligig beetles and mayflies will soon visit the still water of a pond. Birds will drink and wash themselves in the shallows, as will roaming hedgehogs. Frogs and newts will breed in the pond and their offspring will return each year. These are all the things that are loved by children, who always seem to make straight for a pond. But there are other good reasons for having permanent water on a site. Firstly, it creates a range of habitats that give us the chance to grow many different plants. Natural wetlands provide some of the most vigorous and colourful plants. The constant moisture keeps them growing without interruption from cycles of wet and dry from infrequent rain. The leaves of wetland and aquatic plants can grow much larger as there is plenty of water to fill out the leaf. Secondly, and as importantly, many of the insects and wild creatures attracted to water are pest predators. Thus they can control many of the pests that feed on our plants, without us getting involved.

The location of ponds needs careful thought. Sited poorly and they produce a hard and abrupt edge between dryland and open water. This would not happen in nature. A more natural setting would be backing the pond into an existing damp area. Larger ponds are more stable and easier to maintain than small ones. A small pond has rapid temperature changes and water levels fluctuate. It is important to aim for minimum depth of about 60cm (2ft) so that there is always some part that does not completely freeze up. Ponds benefit from tall plants by the side for emerging damsel flies, and some groundcover upto the edge so that frogs and others have a secure way in and out.

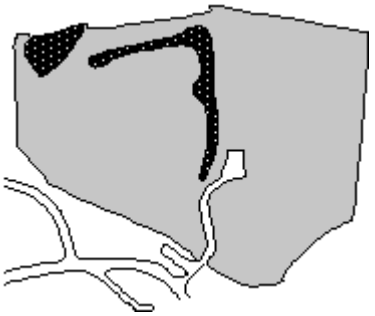
The widening in the middle of the swale in the NW of Springfield produced a seasonal pond. It is popular with children who have damaged most of the planting, giving Springfield one of its first lessons in safeguarding plants by spreading them around different locations. The top NE pond came about during the very wet winter of ‘95/’96. It was dug down to a clay level and served with water flow from secondary swales. When the rains stopped, the clay revealed itself to be incapable of holding water (its particle size is not small enough). Nevertheless, this pond has a longer season than the one in the swale and is visited by frogs and colonised by potomogeton, a native aquatic plant. The lower pond in the NE was dug as an overflow for water draining from the area of the comfrey bed. Again it has proved a seasonal pond as the clay subsoil fails to retain water.

MAINTENANCE

The ponds have become a magnet for materials collected from around the site and then thrown in. This makes the future of the two ponds in the NE unsecure. In the first instance, this debris needs regular clearance.

The longterm decision is to fill in the bottom pond near the comfrey bed. In an attempt to reduce problems with the top one, its overall size will be reduced by removing the tempting access onto the drier marginal areas by backfilling and possibly making the centre area deeper (see schematics). A new pond may be developed in the security of the compound.

SHELTER BELT WIND BREAKS



There are two main planted shelterbelts: one on the mound in the NW corner; and a band that runs below the major swale in the NW and turns S down the site at the mid point.

MAINTENANCE KEYWORDS
Beating up
Sycamore removal

Wind may not be a pest or disease, but it can do just as much damage to plants. Continual winds make a harsh climate for plants, robbing them and the soil of moisture and causing the plants to rock, loosening their roots. Wind chill will also lower the temperature around plants, slowing their growth. Windbreaks should be used to protect large areas from prevailing winds. They work by diffusing (scattering) the wind rather than breaking it, and the effect can be felt as far away as 5-10 times the height of the windbreak. Solid, impermeable barriers such as walls and lap fences are not suitable as they create wind eddies over the top, making the problem worse.

Commercial windbreak netting comes with varying diffusion, but it needs to be carefully sited and supported either by very stable posts, or flexible ones that bend with the wind. Thus any plan to reduce the problem of wind has to be windproof itself as mechanical damage often results from structures flapping in the wind or or being driven to take off in the wind and then landing directly onto and crushing plants.

Hedgerows make effective windbreaks in gardens and other small areas, but for the size of Springfield, trees will give greater coverage. The mix of trees is important as a windbreak consisting only of the same tree size and shape will have gaps through which the wind can rush. Far better to have a mix of small, medium and tall trees that has no gaps (see figure).

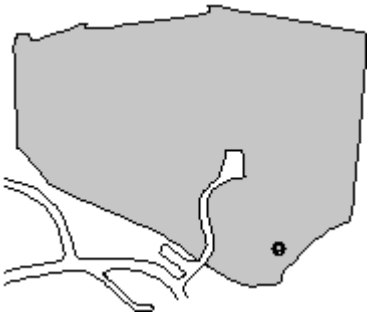
The prevailing wind direction on Springfield is from the W with the early months of the growing season being the coldest. The wilderness area (see WILDERNESS) provides some diffusion of wind over the site. It is added to by the mound in the NW corner being planted with a mixture of native tree species, each species planted randomly in groups of three. Another windbreak starts below the major swale in the NW and swings down at the midpoint, providing protection further across for the growing areas and forest gardens in the NE. These latter are also protected from the occasional cold easterly winds by the woodland walk along the E boundary (see WOODLAND WALK).

MAINTENANCE

The windbreaks will require little work now that the trees are reasonably well established. Beating up (replacement planting) maybe necessary where there are losses that create gaps.

Some sycamores were planted at the top of the windbreak area that runs down the centre. The reason these non-natives were planted was because of the slow establishment of other species in this area, and the natural vigour of sycamore. I would recommend that the sycamores be removed and replaced as they create the most shade of any tree, and their proximity to a growing area and the central forest garden may cause problems.

SPIRAL ARCH



The spiral arch is an entrance to a small woodland on the path going E from the Temple Garden.

MAINTENANCE KEYWORDS
Monitor deterioration of the wood
Dismantle to make safe

In the early days, a community artist called Jeremy Cunningham was employed on Springfield to encourage local involvement through highly visible projects. One of the first of these was to construct a spiral arch using green oak that was dragged out of the nearby Black Carr woods and delivered onsite by the working horses of the Industrial Museum. The irregular shaped oak logs were stripped of bark by local children and then bolted together in a spiralling circle to form the arch. The arch was then set between two, low dry-stone walls, providing a portal into a small wooded area in the SE (see figure).

A time capsule was placed under a large stone slab that forms a threshold at the base of the spiral. The capsule was a hinged wood casket, carved in the shape of a seed, in which the dreams and hopes of local people for the future of Springfield were placed. These were revisited four years after their first interment, and new ones were placed in there.

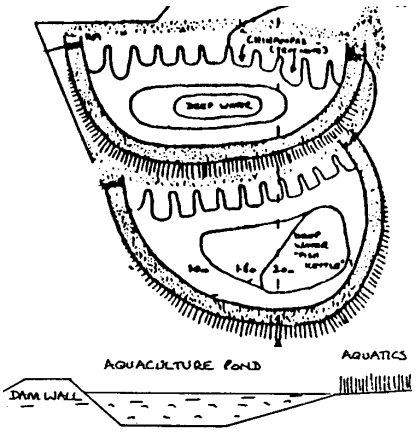
MAINTENANCE

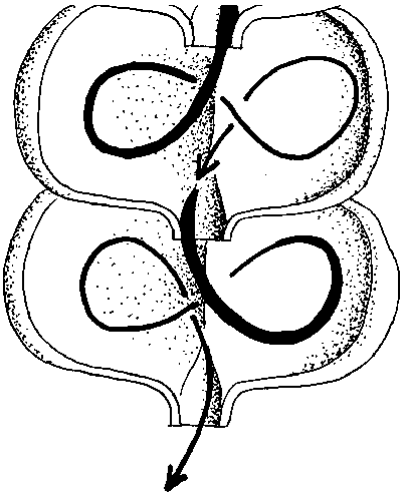
The stone slab will need to be lifted to confirm whether the time capsule is still there.

The wood of some of the smaller logs is beginning to deteriorate with the potential for making the arch unstable. Repair of individual portions of the arch may not prove feasible due to the uniqueness of each individual piece in the design. Thus the decision is to monitor the overall deterioration and dismantle the arch when is considered to be becoming unsafe.

SPRING, WATERCRESS AND REED BEDS

The capped spring and the reed beds are midfield, to the W of the centre, and surrounded by a living willow sculpture.





MAINTENANCE KEYWORDS
Flow barrier

Best use should be made of water on a site, whether it gets on by rainfall, drains over the surface, or from springs (see SWALES and PONDS). As the name would suggest, there are springs on Springfield that arise at mid-field. Its difficult to tell how many there are as the area seems generally wet most of the year. The water eventually drains S down the slope and ends up in the beck on the boundary to the wilderness area. Exploratory digging eventually found the most reliable spring.

The constant flow of water from a spring opens up a range of possibilities for productive use in plant and fish aquaculture. The original design for Springfield had ambitious plans for two large ponds downslope from the spring, using the clay subsoil dug out to create dam walls (see figure and cross-section). Each pond would have finger-like projections of land from the N side, called chinampas after a highly fertile system of horticulture from Mexico that had strips of land with canals both sides. The advantages of these chinampas would have been an increase in the length of available marginal edge to the pond and moister growing conditions in the finger portions of the land. The latter would make them suitable for the fast growth of productive plants that like moist soil (such as willows - see WILLOW ABSORPTION AREA). Unfortunately, gross contamination of the spring water with iron (the orange colour) and manganese, made the water unusable. The iron and manganese is typical of the coalfield geology that underlies Springfield.

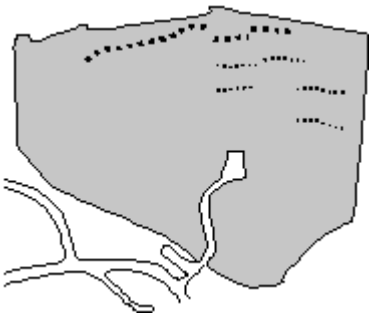
Various strategies have been carried out in an attempt to clean the water up. Limestone precipitates iron out and so a large concrete ring filled with crushed limestone was sunk onto the top of the spring. Watercress is a dynamic accumulator (see COMFREY BED) that can extract iron and so an ornamental cress bed was created, with a wooden cap to the top of the spring that directed flow through the cress bed. Soil excavated for the bed was used to create the semicircular earth berm (mound) around it. A community artist, Jeremy Cunningham, worked with volunteers to design and construct the stonework of the retaining wall and edging. Two reed beds were later dug downslope from the cress bed, again creating earth berms. The reeds in these beds can remove iron and there is some sedimentation as well, encouraged by the aeration of the water as it is agitated through a flowform linking the cress bed and first reedbed (see figure).

Although the spring water is visibly cleaner after these features, it is still unsuitable for the original aim of producing food. It can, however, support willow growth for early bee fodder, and withies from coppicing used for willow sculpture. The bog area into which the spring water flows is planted for these purposes.

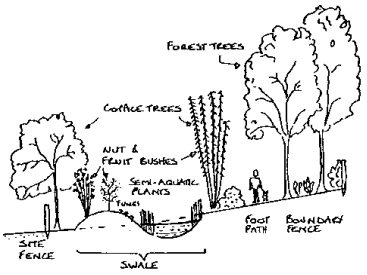
MAINTENANCE

The water height in the cress bed is created by a small dam at its exit. This dam has been broken and replaced numerous times, so that the establishment of plants in the cress bed is poor. Thought should be given to a more permanent repair.

SWALES



There are three major swales running along E-W contours at the top of the site, and various secondary swales in the NE that run the same way.



The major swale in the NW has been widened at midlength to create a seasonal pond (see PONDS). It was planted up with reeds, flag iris and other marginals that have mostly been lost to attrition.

MAINTENANCE KEYWORDS
Leakage to land drains

Swales are long, level ditches that are dug along a contour. Their purpose is to collect and retain rainwater that mostly has difficulty draining into sloping ground – the water normally just flows over the surface and down the slope into a sink at the base of the slope. With swales, surface water runs in and fills them before gradually infiltrating into the subsoil of the slope. This recharges the groundwater and keeps more water further up the slope. Because swales are dug along a contour line, the water in swales does not flow in any direction. Instead, particularly during the wetter periods, swales can be significant pools of stored water.

Springfield has a fall from top to bottom of about eight metres giving a south-facing slope of at most 1 in 15. As part of the initial design, three major swales were excavated along the top of the site in recognition that the field above Springfield would contribute a significant run-off. The swale is not continuous along the top so that access through it was available.

Soil excavated was mounded on the downslope side of the swale The depth and width of the swales were based on the need to be deep enough to reach subsoil and for the mounds to be large enough to be planted up with trees (see figure). In that way, swales create at least two further habitats - the boggy to aquatic of the ditch (depending on season) and the damp ground of the mound – as well as retaining water upslope. The planting of trees on the downslope mounds increase the effectiveness of the swales by the roots of the trees promoting absorption and infiltration of water (see figure).

The wet winter of '95/'96 found Springfield awash, with the swales seemingly unable to cope. A significant factor contributing to this was the discovery of various ages of land drain running into and across Springfield, draining into the beck along the edge of the wilderness. This land drainage meant that water from above Springfield could bypass the swales, and that the swales themselves were leaking into these land drains running downslope rather than recharging groundwater.

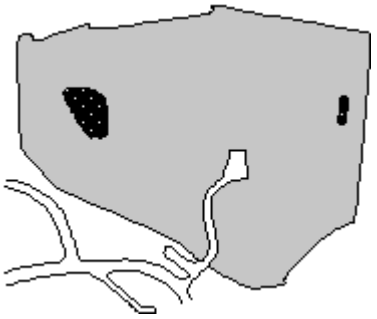
The solution was to channel water coming in from land drains above Springfield directly into the swales, and for the leaks in the swales to be plugged when they became apparent. In addition, secondary swales were dug at various stages downslope, providing more local control of surface runoff. These secondary swales are smaller and undeveloped.

MAINTENANCE

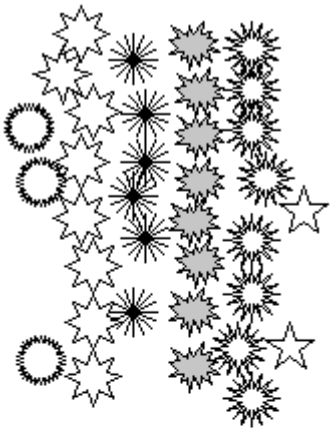
Check swales during winter for leakage via land drains, and seal up the breaches with clay and by revetting if necessary. If there is erosion of the downslope banks, more trees may be planted or a groundcover that can consolidate, such as crown vetch. Lift and divide flag iris – replant in the walls of swales.

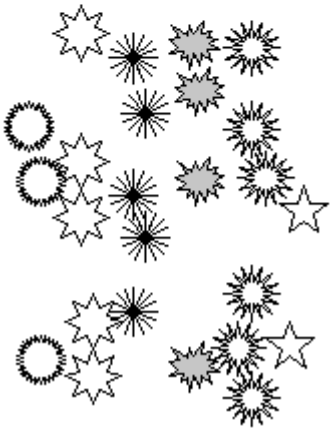
Consider planting bushes on the downslope mounds of the secondary swales to increase their effectiveness.

TREE NURSERIES



A large area of tree nursery is in the NW and a smaller area is in the NE, just past the bottom growing area.





MAINTENANCE KEYWORDS
Tree removal

If we travelled back in time to 5000BC, we would find ourselves on an island that was almost entirely covered by trees. The exceptions were the tundra of N Scotland, on mountaintops and on the coastal dunes and saltmarshes. People in that age lived on hilltops and only ventured down into valleys to forage for food and to catch game and fish. Trees are the natural climax vegetation of our country, having returned after the last ice age and settled in to the soils, rainfall and sunlight that a temperate climate can supply. They themselves provide home for wildlife, cycle minerals from subsoil to topsoil and prevent erosion and increase water infiltration through their extensive system of permanent roots.

A few thousand years on and early farmers from the Middle East had cleared half of that woodland as they brought in the cereal grasses and grew them as crops. Wholesale removal of trees is not without its consequences. Early clearance around Northants. in the E. Midlands, led to water flooding into E Anglia, harming the tree ecology there and inexorably leading to tree loss and peat formation. The same happened in Connemara in the W of Ireland, creating the large peat bogs in a landscape now virtually devoid of trees. So short were the Irish for usable wood that they had to resort to searching under this peat for buried trees.

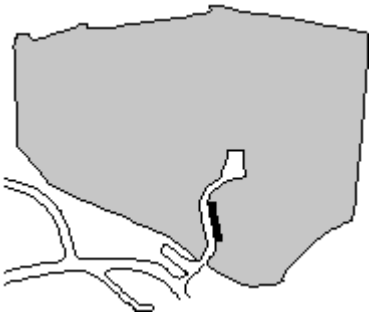
Permaculture argues for an acceleration of succession to climax species for all the benefits it can bring. Thus the design of Springfield aimed to replenish the overall loss of trees, and uses them as the principle tool in reshaping the ecology and soil economy of what was until recently just poor pasture. The planting of hundreds of trees around Springfield was done so with a range of purpose in mind that includes shelter, food, habitat, wood, water infiltration and amenity (see COPPICE, GUILDS, FOREST GARDENS, SHELTER BELTS, SWALES, WILDERNESS AREA, WILLOW ABSORPTION AREA and WILDFOOD WOODLAND WALK). Most of the trees were bought in as young bare-root whips. At end of planting season, however, some stock would be unused and so they were lined-out in tree nurseries for use in later years. The nursery to the far W was the first. Springfield also took the surpluses from the tree-planting program of the regeneration scheme in the Royds (SW Bradford) so that they too were maintained for use in later years. These whips made the younger nursery areas in the NW and in the NE.

MAINTENANCE

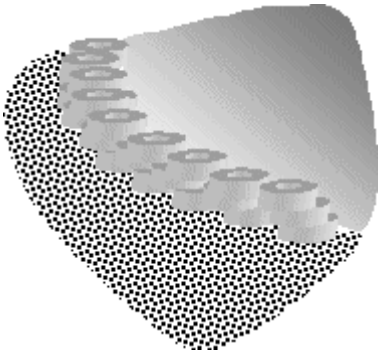
The utilisation of trees from these nurseries has been piecemeal resulting in many of them reaching ages where they will not transplant successfully. The Royds have indicated they will be removing the most recent additions to the NE nursery (silver birches, rowans and cherries etc.) over the winter of ‘01-’02, but have no interest in the remainder.

The older nursery areas have by default turned into woodland, but not in way that is visually pleasing. This is because the whips were lined-out by species and thus the woodland looks artificial. Removal of carefully selected trees during winter will reduce the overcrowding and should be done to break up the linear uniformity of the plantings (see figures).

TYRE WALL



A tyre wall supports the mound on the E side of the track, just after the causeway.



MAINTENANCE KEYWORDS
Weed control

A principle of permaculture holds that a better job is achieved through a minimum of intervention than is by the wholesale re-development of a site. This is particularly true when dealing with the development and maintenance of mainly natural sites such as Springfield. A key landscape challenge in the design was the building of a new access point from the south, linking onto Stirling Crescent. The SW boundary is characterised by a sharp N facing slope running along from the W that then changes when the roadfront ends by winding N and becoming a W facing slope. This latter slope is the W side of the mounded plateau that fills the SE quarter (see site plan).

The simplest and least interventionary solution to bringing a new track on was to exploit the change of topography at the end of the roadfront portion of the SW boundary. This was down by grading a track in and around the W edge of the mound and brining it onto the plateau in what is now the salvage area. While this may not have been the straightest route for the track, it did require the least earth movement, with the earth cut back from the edge of the mound being used to backfill the downslope side of the track at entrance. This falling away from the track at the entrance is probably why it can sometimes be seen described as the causeway.

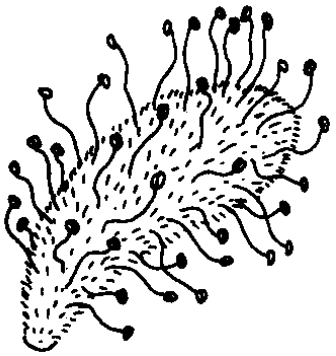
The cutting back of the W edge of the mound created a steeper slope that needed some form of stabilisation to prevent it eroding onto the track. The solution was to build in a three-layered tyre wall to consolidate the slope. Individual tyres in a layer were bolted together to form a chain and then filled with soil before the next layer was laid on top. The top two layers are set into the edge of the mound at a raked angle and the tyres in different layers are offset to ensure maximum stability (see schematic). Over the years, the tyre wall has been planted up with strawberries, parsley, nasturtiums and anything else that would was as ornamental. Thus the tyre wall has the virtues of reusing the waste material of discarded tyres as well as serving the function of consolidating the side of the track and providing planting spaces for the edible and ornamental. Thus it is a distinctive feature of Springfield.

MAINTENANCE

The weeds in the tyre wall need controlling either by wholesale removal and planting up with annuals, or in a phased program over a few years of replacing with groundcover and clump forming perennial flowering plants.

WETLAND WOOD

This is an area of marshy land to the W of the entrance track.



MAINTENANCE KEYWORDS
Leave alone

Wetlands away from the coast are created by some combination of rainfall, springs, poor drainage and obstructed rivers. These marsh-like areas can turn into wet woodland with time. Historically, these were the places where continual wetness caused trees eventually to decline with the surface vegetation dying back and, instead of rotting, accumulating to form peat.

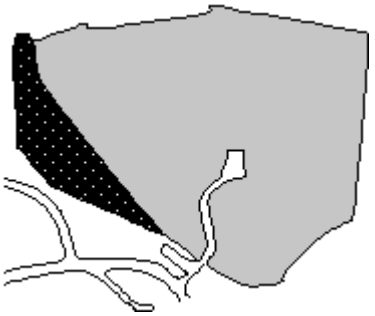
An area of wetland exists where the constant spring waters drain down the slope of Springfield and begin to spread out over the flatter land near the S boundary (see SPRING, WATERCRESS AND REED BEDS). The flora of this area remained mostly poor pasture while the field was still grazed, but some wetter land plants such as willow herb and creeping buttercup moved in once the grazing pressure was removed. This wetland area also offered the possibility of supporting tree growth of those species capable of growing in moister soil, such as alder and the grey willow (*Salix cinerea*). Consequently, the area was planted with these two trees and with yellow flag iris, an herbaceous perennial favouring wetlands.

These trees are beginning to reach some maturity and thus form an essential part of a wetland wood habitat, with their early blossom providing nectar for insects (see figure of willow catkin).

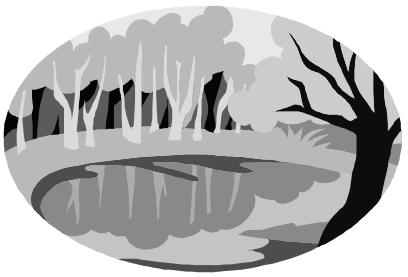
MAINTENANCE

Because of the valuable habitat value that these tree plantings have created, it is recommended that they be left intact rather than seek to harvest product such as by coppicing or pollarding. There should be no pressure on this area since there are a few osier willows (*Salix viminalis)* planted upslope from this area that better lend themselves to coppicing. There is also a plan for more planting of these along the length of the spring downfall between the bottom of the lagoons and reaching to the top of the wetland wood (see FUTURE USE plan).

WILDERNESS



The wilderness area is the steep bank that forms the W boundary of Springfield.



MAINTENANCE KEYWORDS
Fencing
Litter Clearance

Wilderness has a special place in Permaculture. The earth science on which Permaculture is based came about after protracted observation of natural systems (i.e. wild landscapes) and learning the lessons it had for self-regulating, sustainable living systems. Thus Permaculturists will always seek to maintain and conserve areas of wilderness. But they will also seek to create areas of wilderness which, because they are deliberately left unmanaged, can be important refuges for wildlife and reservoirs for maintaining plant biodiversity.

The steep bank that forms the W boundary of Springfield was an ideal candidate to be designated a wilderness area as it had most of the attributes usually associated: a native tree cover of hawthorn, alder, rowan and elderberry, and with a scrub understorey of briar, denser in the more open areas. The small watercourse at the base of the slope completes this mix of habitat. The whole is fenced around and has been untouched by development since Springfield was first occupied.

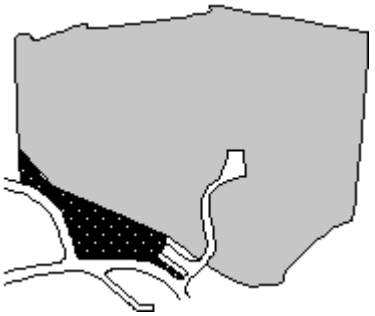
There are some drawbacks with this wilderness site. The area is refuge to a population of rabbits that can do damage by knawing tree bark and nibbling vegetables. This is controlled by use of tree guards on newly planted trees and by containing growing areas with rabbit proof fencing. The watercourse is contaminated, probably from a fractured sewage system, and should be avoided. The wilderness area is occasionally used as a shortcut entrance into the site. The topography is such that it would be difficult to incorporate this as a legitimate access point.

MAINTENANCE

The undisturbed nature of the wilderness depends on it being regarded as an area without access. Thus the fences surrounding it must be maintained in good order, and repairs must be made quickly after the damage has been done.

Fenced slopes are unfortunately a magnet for littering and fly tipping. Periodic group efforts will make lighter work of clearing this.

WILDFLOWER MEADOW



This is an area of public space to the SW of the wilderness area and between Copgrove Road and Sterling Crescent.

MAINTENANCE KEYWORDS
Landscape makeover

The creation of wildflower meadows has become popular in recent years because of their undoubted charm and the benefits of attracting insects; in particular the butterflies These meadows also provide a landscaping solution that has little need of maintenance, unlike the repeated mowing of grassed areas. The drawback is the difficulty in establishing the wildflower meadow, particularly if it is based on annual flowers. Nature is not easy to copy. The soils where these meadows naturally occur is often very poor, which assists the annuals but deters the grasses, which thrive in greater fertility. In the greater fertility of most urban soils, the grasses often quickly swamp out and subsume the annuals, preventing them from gaining a hold.

This is what happened to the attempt to create a wildflower meadow in the area of public space outside the boundary to the SW. The first year flush of was magnificent, especially so of corn-cockle ,but diminished quickly in subsequent seasons. The area now is rough grass sometimes grazed by tethered horses, and crossed as a shortcut.

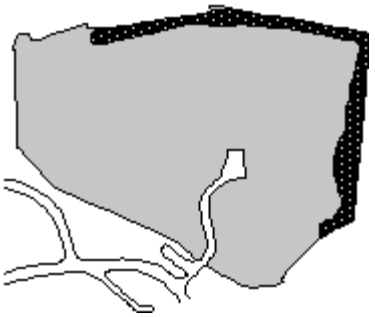
MAINTENANCE

Either Recreation or Highways are not aware of any responsibility for this area of public space, or the assumption is that it is Springfield's. Its uncared-for appearance is a distraction for those visiting Springfield, and may set the tone for how Springfield is perceived in the locality. This area needs a low maintenance landscape solution that has a better chance of establishment and longevity than the annual wildflower meadow.

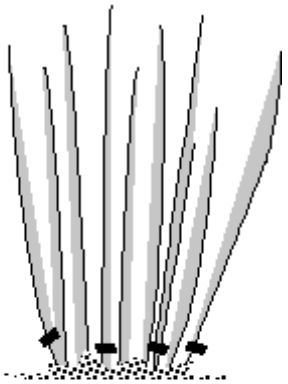
Some proposals for landscaping solutions are presented elsewhere.

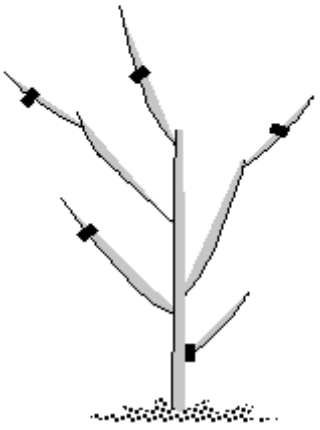
WILDFLOWERS, HERBS AND ORNAMENTALS FOR USE IN PLANT GUILDS			
Buffalo pea	*Themopsis montana*	Lucerne	*Medicago sativa*
Chicory	*Chicorium intybus*	Lungwort	*Pulmonaria spp*
Chives	*Allium schoenprasum*	Mallow	*Malva sylvestris*
Comfries	*Symphytum spp*	Marjoram	*Origanum vulgare*
Common toadflax	*Linaria vulgaris*	Mints	*Mentha*
Feverfew	*Tanacetum parthenium*	Musk mallow	*Malva moschata*
Figwort	*Scrophularia nodosa*	Ox-eye daisy	*Leucanthemum vulgare*
Garlic chives	*Allium tuberosum*	Red clover	*Trifolium pratense*
Goats rue	*Galega officinalis*	Soapwort	*Saponaria officinalis*
Greater celandine	*Chelidonium majus*	Sorrel	*Rumex acetosa*
Green alkanet	*Pentaglottis sempervirens*	Tansy	*Tanacetum vulgare*
Ladys mantle	*Alchemilla mollis*	Tree onions	*Allium cepa var. proliferum*
Lemon balm	*Melissa officinalis*	Welsh onion	*Allium fistulosum*
Lovage	*Levisticum officinale*	Yellow loosestrife	*Lysimachia punctata*

WILDFOOD WOODLAND WALK



A woodland walk that incorporates wildfood was planted in a continuous band around the SE, E and N boundaries.





MAINTENANCE KEYWORDS
Clearing obstruction
Beating up
Log walkways
Pruning
Tree ties and stakes

Childhood memories of walking country lanes and footpaths bring back the delights of learning about the wildfoods that can be picked from hedgerows and trees. There seemed to be something to harvest at most times of the summer, but the bumper crops came in late summer when the fruits, hips, berries and even hops were ready to take. Few things could be eaten straightaway - the odd leaf or fruit like raspberry, strawberry or blackberry - and so most had to be taken home to the kitchen where the berries got made into jams and pies, the crab apples into jelly, the rose hips into teas, the sweet chestnuts roasted, the damsons stuffed into a bottle of gin, and the hops were hung up as decoration as I don't remember the smell of brewing beer.

This conjures up a picture of an edible landscape where you can forage as you go, but without having to do any work for the crop as nature did it for you. This must have been what it was like many thousands of years ago, before we committed ourselves to farming for food. There is no reason why we can't recreate that foraging experience by building it into our landscapes. Thus whenever we plant hedgerows or woodlands, thought should be given to including shrubs and trees that can provide some food.

In the design of a site for community use, the areas and levels of public access are an important consideration. The decision to create a woodland walk around the SE, E and N boundary of Springfield gave purpose to and fixed an area of free public access to the site. The woodland creation itself had a number of advantages, such as shelterbelt, habitat and soil conditioning. And it was also an excellent opportunity to build an edible landscape. Thus in amongst the alder, holly, broom and silver birch, there are trees that have edible berries such as mountain ash, elder and hawthorn. To get people used to the idea of this edible landscape, more familiar fruit have also been planted such as black and redcurrants, and top-fruit trees such as apples, pears and crab apples. In addition, wild brambles line sections of the N boundary.

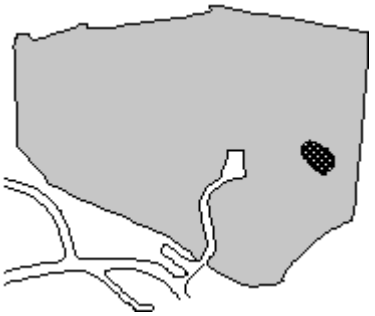
MAINTENANCE

Maintenance of the trees and hedge line should be guided by the need to keep the pathway through the woodland walk unobstructed. Remove obstructing branches during the winter dormant period. Clear dead trees and consider beating up (replanting) with a different species (the random death of a number of alders needs to be monitored). The pathway on the E is sometimes boggy in places. Consider a simple partially buried log walkway.

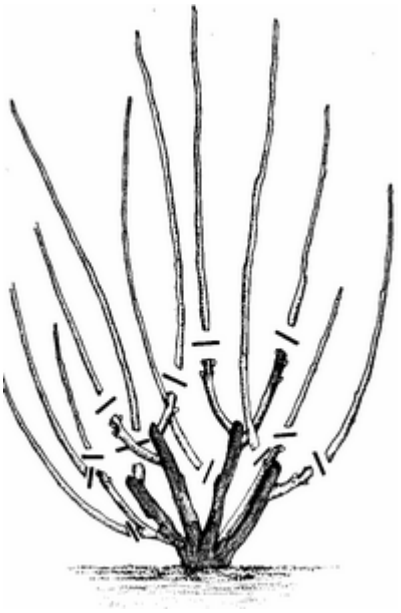
For maintenance of the top fruit trees, see FOREST GARDENS.

Brambles do not need any maintenance. The shrub fruit such as the currants will need occasional pruning to maintain their fruiting. For blackcurrants, a proportion of old wood should be cut down in late winter as low as possible to encourage new shoots (see schemeatic). Redcurrants are pruned differently – create and maintain an open bush structure growing on top of a main trunk/leg (see schematic). Use the prunings from both for hardwood cuttings).

WILLOW ABSORPTION AREA



The willow absorption area is a willow coppice in a slight depression to the E of the compound.



MAINTENANCE KEYWORDS
Coppicing

Modern day water management in settlements is hidden from view. Clean water comes in, and dirty water goes out, in pipes that create a vast network under the ground. There is no doubting the public health improvements that this common system gave rise to. But it does take away much of the responsibility that people could exercise in their own personal water management, and which could lead to a lowering of the burden placed on this common system. Moreover, while we may think of used water as a waste (particularly that associated with human excretion) it actually is a resource that can be used directly, or after some simple treatment.

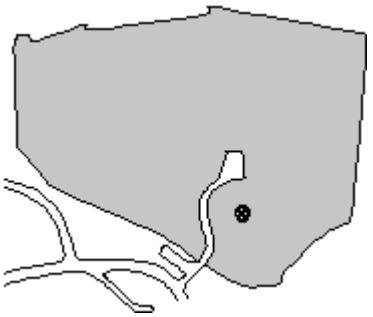
Gardeners have often used wash basin and bath water for irrigation when water is short. The soaps and detergents that lace them have all been designed to biodegrade and so it could be argued that these so-called grey waters are also adding nutrient. Others have systems of collecting grey water and re-using it to flush toilets. And then the nutrient from toilet flushings can also be extracted locally by passing it through the highly developed reed bed systems of today. The growth of the reeds provides compostable material that can eventually be used to feed soil, and the cleaned up water can be used for irrigation.

Early on in the design of Springfield, the bold decision was made not to connect to the sewage system. And to avoid the need for a septic tank for toilet flushings, the design called for the use of waterless, composting toilets. This still left the disposal of sink and wash basin water, and the solution was to pipe it over by gravity to a willow absorption area. This was an area of land with a slight depression to the E of the compound and a short distance from the farmhouse kitchen. The depression was planted up with willow (*Salix viminalis*) a tree that grows well in damp ground. Willow lends itself very well to coppicing, the cutting down of growth to ground level every three years or so, giving rise to willow withies used in willow sculptures and crafts, and biomass fuel for burning in wood stoves. Thus the grey water and its nutrient content from the farmhouse kitchen is used to grow these products. The demand for willow withies is high nowadays and so there should be a ready outlet for this product.

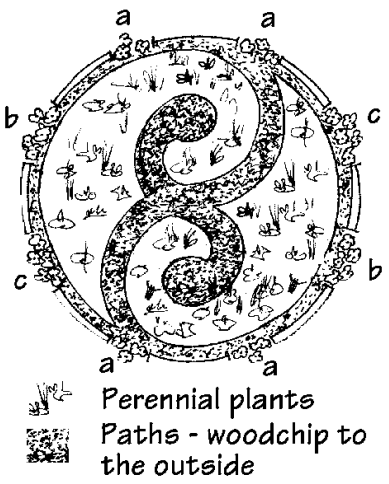
MAINTENANCE

The willows will need coppicing on a regular basis, normally a three-year cycle (see figure). It is better to maintain this cycle as productivity can be affected if the willow is allowed to grow much older. The clearance of a whole coppice can be visually disruptive and it may be best to divide up the willows into three groups and then stagger their coppicing over the three-year cycle. This will also ensure that there is product available very year.

YIN YANG GARDEN



This garden is on top of the mound to the E of the entrance track and behind the tyre wall.



MAINTENANCE KEYWORDS

Pruning
Division and propagation
Staking
Feeding and weeding
Making safe

The Yin Yang garden developed as a project for an Art and Design degree. The garden aims to be celebratory of life, death, rebirth and renewal. This cyclical theme is reinforced through the Yin Yang design, a Chinese symbol denoting the cyclical balance of opposites (Yin is female, Yang is male). The garden is meant as a place for tranquil reflection, partially screened from the rest of the site by the natural hedge, and carved clay wall, which also acts as a 'canvas' from which to project the meaning of the garden.

Construction of the garden involved the local community, carving the clay blocks (look for signatures), building the brick walls into which the blocks were set, planting up the beds and also creating the coloured glazed tiles set into the original path. The aim was for the garden, in return, to be a resource for the local community. The planting is perennial (plants which die down over winter and grow back each spring from the same rootstock). The plants propagate and grow easily, so people can be inspired to grow at home by what they see in the garden.

KEY TO HEDGE PLANTING in between brick walls

a – beech, holly, beech

b – hawthorne, beech, field maple, beech, hawthorne

c – Juneberry (*Amelanchier spp*.), blackthorn, dog rose, blackthorn, Juneberry

MAINTENANCE

Yearly winter pruning of the native hedge to keep it lower than the wall and off the outer path (see species in legend to figure).

Late winter division of perennial plants, potting on some for sale

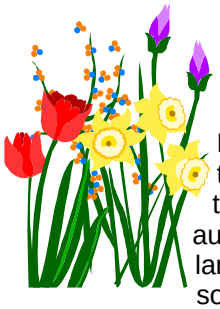
Stake tall growing perennials, which need support.

Weed, feed and re-mulch garden at least twice yearly.

Maintain structures – the wall, path and path edging to be sound in line with heath and safety requirements.

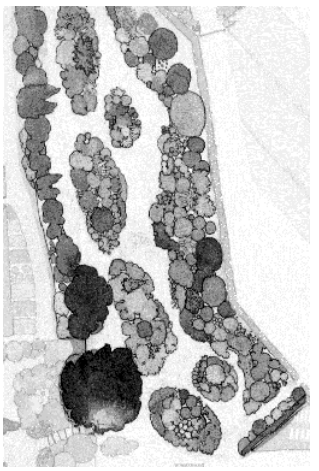
THE WILDFLOWER MEADOW - A LANDSCAPING SOLUTION

The open space to the south frontage of Springfield is in need of an overall landscape solution. The creation of an annual wildflower meadow has been tried there previously, but was perhaps not the best answer to the conditions that prevail as the rough grasses soon took over and became dominant. However, the informal style of a wildflower meadow would have been a significant improvement on the general wasteland that exists now. And what was ultimately a soft landscaping solution is infinitely more appealing than a green desert needing frequent cutting. Thus in that vein, a recommendation is made to consider other soft landscaping options that have a greater chance of enduring success. Below is a review of number of different soft landscaping styles with recent examples described so that a choice can be made for development of this site. It can be predicted that a scheme of this sort can be capital and labour intensive at first, but cheaper for both these in recurring maintenance. A comparison of the different options is given at the end of the review. The assumption is that the basic design would be a series of desire-line paths through this space, with possibly some public seating.



A REVIEW OF SOFT LANDSCAPING - EXOTIC MEADOWS, DRIFTS, PRAIRIES AND WOODLAND EDGES

Recent innovations in the landscaping of public parks in continental Europe have been the driving force for new ideas in planting up relatively large public spaces. Parks have traditionally used linearly defined herbaceous borders, but they are in decline as local authority budgets are squeezed and gardening services are cut down. Regular mowing of large expanses is also costly and is not justified by an obvious need for so much grass. A solution to both these is to grow herbaceous perennials in the style of ***wildflower meadows*** so that the grasses complement and support the flowering plants, but are not able to swamp them out.



These ***looser associations*** of plantings are either in meadow-like blocks or as drifts in open borders with undulating heights (rise and swell). The open borders have narrow paths cutting through them, making them appear as very broad bands. These plantings are thus less formal than those in linear herbaceous borders where they would traditionally be placed in groups, with the tallest at the back or centre and the shorter to the outside. Rather, in these more open plantings, the taller plants are scattered throughout the drifts. The plants themselves are chosen for their structure rather than necessarily for their flower colour. The same is true for the grasses, using those with spectacular tall stems and large flowers, followed by interesting seed heads. This style of ***ecological planting*** has been used in Europe in the Heem parks in Holland (De Braak Heem Park at Amsterdam) and in Germany where a style of planting using grasses and perennials has become popular in urban public parks (Hermanshof at Weinheim, Westpark at Munich).

PRAIRIE PERENNIALS	
Allium cernuum	*Lilium superbum*
Asclepias incarnata, tuberosa	*Lobelia siphilitica*
Aster ericoides, laevis	*Monarda didyma, fistula*
Chelone glabra	*Parthenium integrifolium*
Dodecatheon meadia	*Penstemon grandiflorus*
Echinacea pallida	*Pulsatilla patens*
Eupatorium purpureum	*Ratibida pinnata*
Euphorbia corollata	*Rudbeckia hirta, subtomentosa*
Filipendula purpurea	*Silphium laciniatum*
Geum triflorum	*Solidago rigida*
Helianthus angustifolius	*Verbena stricta*
Heliopsis helianthoides	*Vernonia crinita*
Liatris asper, pycnostachya	*Veronicastrum virginicum*

Many of the exotic perennials we grow in gardens today have come from meadows in their native habitats, such as the robust ***prairie*** perennials of N. America (i.e. *Eupatorium, Rudbeckia*, *Solidago*, and *Vernonia*). Thus we can add these exotics to meadows of our native herbaceous perennials, creating attractive and valuable natural habitats. This type of prairie planting is better suited to more the more ***fertile soils*** found in urban areas. The grasses used will tend to be more vigorous, but so will the robust perennials that can compete successfully with the grasses (grasses are covered later). As in the Heem parks, the grasses are chosen to be almost ***architectural*** in their contribution to the shapes and layers, with loosely

associated exotic perennials dotted throughout (a ratio of 3 to 2 of grasses to perennials works well). An advantage of the prairie perennials is that they flower in late summer to early autumn when most other plants are finishing. Thus they brighten up what is often a dull period for flowering.
Adopting these more open, meadow-like styles of plantings constitutes a ***break with conformity*** that is becoming increasing popular in public gardens and spaces. This is fortunate since it enables us to see these types of plantings being established and guage whether they have applicability for our own landscape challenges. Here are some examples.

MODERN FLOWERY MEAD
GRASSES
Carex oshimensis Evergold
Deschampsia flexuosa
Elymus magellanicus
Festuca glauca
Millium effusum Aureum
Ophiopogon Nigrescens
PERENNIALS
Ajuga reptans
Anthemis punctata
Aquilegia spp.
Corydalis flexuosa
Dicentra spectabilis
Geranium asphodeloides
Heuchera and *Tellima spp.*
Hieracium aurantiacum
Meconopsis cambrica
Nepeta govaniana
Papaver nudicaule
Schizostylis coccinea
Thalictrum aquilegifolium
Veronica gentianoides
Viola spp.
BULBS
Allium cernuum, christophii, moly, schubertii
Fritilaria meleagris
Zigadenus elegans
ANNUALS
Calendula
Linaria & Linum
Papaver commutatum

FLOWERY MEAD AT BARNSDALE

The late Geoff Hamilton described flowery meads as the medieval courtly gardens, depicted on the tapestries of the time, and that were used by the nobility for socialising outdoors. The meads were grassy areas where the garden flowers of the period (mostly what we would consider wildflowers) were encouraged to grow in great abundance, no doubt reflecting the natural meadows round and about. Geoff recognised the difficulties in recreating these in urban soils (see earlier) and came up with a modern solution. Geoff starts with a clean sheet where he first plants out ***low growing*** ornamental grasses in ***large drifts***. In between these drifts, he plants perennials that won't swamp out the grasses. Then to add to early success, he supplements the flowering perennials with bright, hardy annuals which should seed themselves about in later years. The effect is to give a new kind of flowery mead that has a much longer flowering period than its wild relative, and with the grasses providing colour and interest on through the winter.

This kind of flowery mead does not need cutting at any time of the year, unlike grassy meadows. In preparation, the ground is cleared first of any perennial weeds and the flush of new weed seedlings after disturbance of the ground are also removed – the latter being a significant reason why many meadow seedings fail. The soil can be fed with a light covering of organic matter and then it is ready to be planted up with potted plants. A detailed planting plan is helpful, but just as good is placing and rearranging on the ground until the right combinations appear. The annuals are probably better sown in modules and then planted out as plugs. Failing that, they are sown as ***drifts*** or in stations as ***clumps***.

NATURAL INSPIRATION AT HARLOW CARR

ORNAMENTALS IN GRASSLAND - A complex combination of plantings has been experimented with at Harlow Carr Gardens, near Harrogate. To a ***basic meadow*** of native grasses and wildflower perennials a number of different ***exotic perennials*** were added (see table). Three experiments were tested: the effective planting distances; the benefits of using mulches in establishing the perennials within the grass matrix; and three different hay-cutting times (late July, late August and late September). Cutting hay and removing it lessens the natural improvement in soil over the years, which would favour the growth of the grasses, allowing them to dominate.

HERBACEOUS PERENNIALS FOR NATURALISING IN GRASS MEADOWS			
NATIVE WILDFLOWERS		*EXOTICS*	
Achillea miliefolium	Yarrow	*Aconitum napellus*	Monkshood
Centaurea nigra	Knapweed	*Aruncus dioicus*	Goat's beard
Galium vernum	Lady's bedstraw	*Astrantia major* Rubra	Masterwort
Geranuim pratense	Meadow cranesbill	*Brunnera macrophylla*	Siberian bugloss
Hypochaeris radicata	Cat's ear	*Caltha palustris*	Marsh Marigold
Leucanthemum vulgare	Ox-eye daisy	*Campanula latifolia*	Bellflower
		Cephalaria gigantea	
Lythrunm salicaria	Purple loosestrife	*Euphorbia palustris*	Spurge
Lotus corniculatis	Birdsfoot trefoil	*Geranium psilostemon*	Cranesbills
Plantago lanceolata	Plantain	*Geranium sylvaticum*	woodland
Primula veris	Cowslip	*Hemerocallis flava*	Day lilly
Ranunculus acris	Meadow buttercup	*Iris sibirica*	
Rhinanthus minor	Yellow rattle	*Lychnis chalcedonia*	Maltese cross
Rumex acetosa	Sorrel	*Persicaria bistorta*	Knotweed
GRASSES		*Rheum* Ace of Hearts	Rhubarb!
Dactylis glomerata	Cock's-foot	*Sanguisorba obtusa*	Japanese burnet
Holcus lanatus	Yorkshire fog	*Thalictrum aquilegifolium*	Meadow rue
Phleum pratense	Timothy	*Trollius* Canary Bird	Globe flower

Results from the trials after three years showed that seven of the perennials outperformed the rest in naturalising in the meadow (*Euphorbia palustris, Thalictrum aquilegifolium, Trollius chinensis, Persicaria bistorta, Geranium sylvaticum, Geranium psilostemon, Sanguisorba obtusa*) and these are carried forward in further trials of spacing; mulching made little difference to establishment; and the best cutting time was late August/early September. Another interesting observation was that the inclusion of yellow rattle (*Rhinanthus minor*) amongst the wildflowers has, where it established well, markedly held back the development of the grasses. This is probably related to its semi-parasitic nature on grasses and offers a means of controlling the potential dominance of grasses over the perennial flowers.

GRASSES AND ARCHITECTURAL PLANTS
Carex siderosticha
Elymus magellanicus
Nassella trichotoma
Ophiopogon planiscapus Nigrescens
Pennisetum alopecuroides
Stipa arundinacea
Stipa tenuissima
Calamagrostis brachytricha
Calamagrostis varia
Carex pendula
Pannicum virgatum Rubrum
Sisyrinchium striatum
Arundo donax
Calamagrostis x acutiflora
Cortaderia selloana Pumilla
Miscanthus sinensis
Molinia caerula ssp. caerula & arundinacea

ORNAMENTAL GRASSES AND ARCHITECTURAL PLANTS The use of ornamental grasses has become very popular, probably because they add height and structure to the landscape, and because their end of season tall, brown stems and seed heads look stunning covered in a ***haw frost*** during winter. Words like grace, form, texture, drama and colour all get used by enthusiasts of ornamental grasses. A few use them entirely on their own, creating landscapes of differing heights and leaf colour, some gently ***waving in the wind*** and some stable and sturdy. To this, others have added the architectural plants that very much complement the grasses: the pampas grass (*Cortadiera*) with its massive white fluffy flowers; the flat spiky evergreen leaves of the New Zealand flax (*Phormium tenax*) C*ordylines*, *Sysirinchium, Yuccas* and black leaves of the *Ophiopogon* from the lily family; the leafy sticks of the bamboo and reeds; and the eccentricity of the sea holly (*Eryngium spp.).* But the pinnacle for me is when all these are combined with the restrained use of some choice perennial flowers that bring colour such as good blues from *Aconitum*, *Agapanthus*, *Cammassia, Salvia* and *Perovskia*, purples from *Allium,* and *Verbena*, pinks from *Aster* and *Schizostylus* and oranges from *Kniphofia* and *Crocosmia*. And they do so in an architecturally complimentary way.

This is a much bolder statement than the lower-growing and denser planting of the new flowery meads of Geoff Hamilton, but there is no reason why the two approaches cannot be combined. The tall ornamental grass planting at Harlow Carr Botanical Gardens does have small frontal and linking areas of lower growing grasses and perennials that fill in its mostly linear form. For some of the perennials to thrive, the heavy clay soil at Harlow Car was improved by digging in grit to a depth of 10cm.

PERENNIALS IN COPPICED WOODLAND In a second trial at Harlow Carr, a different approach is taken of naturalising exotic perennials, but this time in amongst ***woody plants***. Intuition tells you that this approach would have a limited season of interest since woodland only has a carpet of colour in spring, the leaf canopy depriving light for later flowering. However, we know that ***woodland edges*** can have complex layered arrangements of plants, as can hedgerows with the wildflowers at their base. In these situations, there is more light for longer at ground level, compared to inside a woodland.

We can achieve these results in a woodland-like setting by either choosing to grow shrubs or small trees that have a ***low, open canopy***, or by growing deciduous trees and ***coppice*** them. Coppicing reduces the impact of the tree canopy on light levels by lowering and concentrating the canopy into a more shrub-like growth. In this second trial, perennials are used as underplantings that give two main flowering seasons, split either side of summer. The shrubs are sumacs (*Rhus glabra lacinata* and *R. typhina*) and June berry (*Amelanchier lamarckii*). The coppiced trees are a coloured stem willow (*Salix alba vitellina* Britzensis) field maple (*Acer campestre*) aspen (*Populus tremula*) and laburnum (*Laburnum anagyroides*). These are underplanted with red campion (*Silene dioca*) wood cranesbill (*Geranium sylvaticum*) and a *short-lived* perennial foxglove (*Digitalis ferruginea*) to produce the spring to early summer flowering. The late summer to autumn flowering is produced with underplantings of coneflowers (*Rudbeckia fulgida dreamii* and *R.fulgida* Goldsturm) knotweeds (*Persicaria bistorta* Superbum and the darker red *P. amplexicaule*) a later flowering cranesbill (*Geranium psilostemon*) yellow golden rod (*Solidago spp*.) and a white Michaelmas daisy (*Aster divarticus*).

There are also blocks of other shrubs and coppiced trees under trial and these range from the more common hazel (*Corylus avelana*) ash (*Fraxinus excelsior*) a purple-violet stem willow (*Salix daphnoides*) white popular (*Populus alba*) various maples (*Acer spp*) and guelder rose (*Viburnum opulus*) to the exotic Chinese tulip tree (*Liriodendron chinense*).

DIVERSITY IN LANDSCAPE GARDEN – RYTON GARDENS

Set in five hectares, Ryton Organic Gardens has demonstrations covering most horticultural practice, including food growing, ornamental, wildlife, conservation, fruit, bees and craft trees. A recent addition has been the development of a ***modern landscape library*** in the form of an area containing semi-natural drifts of herbaceous perennials, shrubs and grasses. It is the inclusion of shrubs that continues our look at the inclusion of woody species in soft lanscaping.

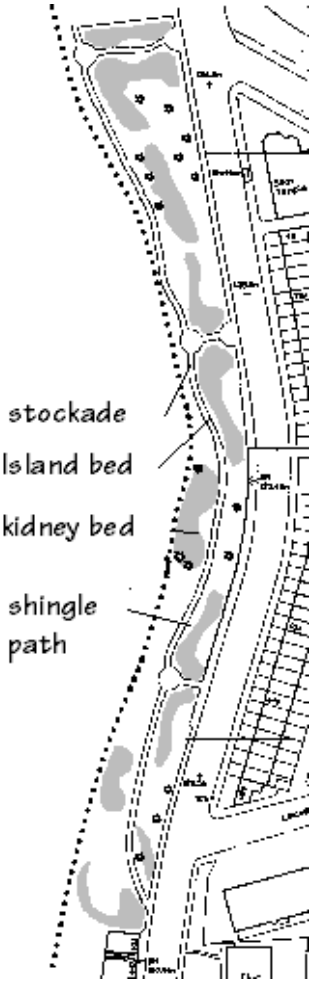
DIVERSITY IN LANDSCAPE PLANTS	
PERENNIALS	*Salvia nemorosa*
Achillea grandifolia	*Sedum spectaibile*
Alchemilla mollis	*Solidago glomerata*
Alium spp.	*Verbena stricta*
Anaphalis triplinervis	*Vinca minor*
Aster ericoides, novi-belgii	*Yucca filamentosa*
Brunnera macrophylla	SHRUBS
Bupthalum salicifolia	*Ceanothus thyrsiflorus repens*
Chelone obliqua	*Genista spp.*
Echinacea purpurea	*Lavandula angustifolia*
Geranium sanguineum, X cantabrigiense	*Potentila fruticosa*
Heuchera x brizoides	*Rosmarinus officinallis*
Nepeta Blue Beauty	*Spartium junceum*
Persicaria affine	GRASSES
Phlomis samii	*Miscanthus sinensis*
Rudbeckia fulgida	*Panicum virgatum* Rubrum

Striking in both colour and structure, the Diversity in Landscape garden was established in 1996 in unimproved soil that had been roughly cleared of surface vegetation. The plants chosen were predominantly ***clump-formers***, all of them suitably ***robust***, and they were grouped to repeat in ***drifts*** throughout the garden. After planting, weed control was done by hand until the second season where mulches and the continuing growth of the plants began to choke the weeds out. Paths wind through and across, and the early bark mulch surface has been changed to gravel to bring in more warmth.

The overall effect of the plants chosen is to provide ***matrices*** that are more ***rigid*** in structure than the softness of traditional herbaceous borders. Tall and medium height grasses (*Miscanthus* and *Panicum*) add peaks while the use of good flowering shrubs ***stiffens*** up the overall structure (the flowering *Yucca* is spectacular). Most of the perennials are of the varieties that ***stand up well*** or form good cover at the edges. In all, these are vigorous plants, fast growing and self-supporting, suffering little from insects or disease, and requirling little maintenance.

BOLTON ROAD LINEAR PARK, BRADFORD

The ***linear public park*** alongside Bolton Road in Bradford is an imaginative open-woodland landscaping of what was probably a neglected area after a row of terraced houses had been demolished. It consists of a range of elongated ***island beds,*** set in mowed grass and planted up with mostly woody species in the form of woodland edges. A few of the trees in the northern end are larger, suggesting that they were planted earlier. (This can be seen from the way the island beds have been arranged around them to complement them.) The island plantings themselves follow the pattern of having shrubs and small trees at their narrower ends, most of which produce autumn berries or have autumn foliage colour (i.e. guelder rose, hawthorn, barberry, holly, *Amelanchier,* rose). Where the beds widen, these shrubs are instead planted to the outer edges (joined by hazel, field maple and a fine-leafed willow). Taller trees fill the centres of the beds (rowan, birch, alder, grey poplar and aspen). Thus the overall style recreates the top and middle storeys of woodland edges, and because they are islands, there is interest on each side of the bed.



Some ***specimen trees*** dot the grassed areas: a line of autumn-yellow ash (*Fraxinus excelsior* aurea) follows along the pavement boundary and there are two false acacias (*Robinia*) either side of the path - these latter are common street trees as they fix nitrogen. A number of specimen whitebeam trees with good berries (*Sorbus* spp.) are dotted around, some of them highlighted by the borders of island beds forming cusps around them.

Three feature entrances punctuate the length of the park and the whole is linked together by a ***meandering path*** of compacted shingle. The plantings are at their most complex around these entrance paths. Shrubs and trees line the shingle paths, which start from the roadside pavement and end in a circular enclosure. These stockade-like structures are created from upright square

posts set tightly together, allowing them to act as retaining walls for earth mounding of the beds. Bench seats in the stockades give time for relaxation and for taking in the view.

The most complex planting takes place on the banks around the stockades and in two large ***kidney shaped*** beds that float free. The colour of buddleia flowers is used to great effect in all of these (blue and orange). In the kidney beds, the concave centres have a mix of other flowering shrubs (rosemary, *Wiegela*, *Spirea*, *Potentilla*, rose) and a variegated oleaster (*Elaeagnus pungens* maculata) that seem to be pushing through the blue-flowered periwinkle that binds the whole. And there are two perennials that provide groundcover at the front: the blue of a hardy geranium and the pink of the *Sedum spectabile*. The backdrop to these plants in the kidney beds are the taller rowan, aspen and birch.

The plantings around the stockades again have the shorter shrubs to the front and larger trees to the middle and rear. The colours here are much ***bolder***: a tree with multicoloured leaf (*Populus candicans* aurea) rises above the equally interesting shrubs - here are the blue flowers of the *Caryopteris* and rosemary, the yellow of *Brachyglottis*, the stunning orange of the sea buckthorn berries, along with purple-leafed barberry (*Berberis)* lime-streaked leaves of *Elaeagnus* and the orange/yellow flowers of *Kerria*, shrubby *Potentilla* and the pink flowers and berries of the snowberry (*Symphoricarpus*). A hellebore of bold foliage (*H. corsicus*) and an ivy groundcover that draws our eyes along the borders.

The linear park follows the principles of the ***woodland edge garden*** in creating storeys or layers from the trees, shrubs and plants of differing height. It makes good use of ***native trees***, but brings in plants of the same family from elsewhere, such as cousins of the mountain ash, the aspen and the colour forms of the ash - that add to the interest. In the more concentrated planting areas, it incorporates the exotics to very good effect, blurring the distinction between the natives and non-natives through their colourful and highly successful blending.

A COMPARISON OF THE DIFFERENT SOFT LANDSCAPING STYLES

An indicative guide to establishment cost for materials would be LOW = £1,500, HIGH = £10,000

OPTION	EASE OF ESTABLISHMENT	TIME TO ESTABLISH	ESTABLISHMENT COST	MAINTENANCE
Ornamentals in a wildflower meadow	**Medium** work. Plant into existing grass cover. Expect plant failures needing replacement	3-4 years	**Low**	**Low**. One yearly cut with removal of hay – early September
Prairie planting	**Low** work. Plant into existing grass cover	2-3 years	**Medium** Prairie plants not easy to obtain	**Low.** One yearly cut with removal of hay – late March
Modern flowery mead	**High** work. Remove existing groundcover and weed flush. Plant into cleared ground. Mulch through	1-2 years	**High –** amount of work and high number of plants	**Low** – selective clearance in late March will extend life of scheme
Tall grass and perennials	**High** work. Plant into cleared ground that may need drainage improved. Mulch through	1-3 years	**High**	**Low** – cut back in late March
Perennials and coppice	**Medium/high** work. Can be planted into existing cover. Probably best to plant into cleared ground	3-4 years	**Medium-high**	**Medium** – coppicing and pruning. Clear through in late March
Diversity in Landscape	**High** work. Plant into cleared ground.	2-3 years	**High**	**High** to start – weeding through then **Low** – clear through in late March
Woodland edge	**Medium** work. Clear island beds, plant up and mulch	4-5 years	**Medium** – plants cheap	**High** – regular cutting of remaining grassland around beds

FUTURE USE OF LAND AT SPRINGFIELD COMMUNITY GARDENS

Initial interviews with current site staff from Social Services (CBMDC) identified various commitments for the continuing care and maintenance of landscape elements on Springfield Community Gardens. These commitments varied depending on whether the element would be maintained inline with its original function or purpose, or on the basis for some elements that they would to be simplified so that maintenance could be reduced. In the case of a few elements, they would be completely taken out of use. In respect of two of the elements in that latter category, an external user of Springfield has provided a timetable of withdrawal of use, so allowing rationalisation (existing tree nurseries) or closure (boiler house). There are also some elements that remain unfinished on Springfield and to which there was a commitment to continue with their development. These commitments (and decisions) were collated and returned to site staff for agreement and are listed below.

Social Services indicated that there were now clients using Springfield for each of the weekdays and that some of these client groups had sufficient capability to greatly assist in this general maintenance. They expressed confidence that they would continue to be successful in drawing in materials or funding necessary for this work. There had also been encouraging expressions of interest from a number of external organisations in forming partnerships to expand on the use of Springfield. These organisations would benefit from having either the opportunity to set up new facilities for their activities (such as a tree nursery) or Springfield would provide a satellite base for them, adding new variety to their existing resources (such as new opportunities for craft production or for training opportunities). There was also the possibility that the continued development of some elements, and the development of completely new elements, may be carried out by one or more of these organisations as part of their training activity. It was recognised that these commitments to continued development would have a low priority until such time that the working partnerships were formed and functioning. To assist in the continuing discussions with these external organisations, which are noted below, a survey of spare land has been carried out and is reported here.

In compiling the following lists, the element name is consistent with their individual listings in the section in this report on technical description and maintenance. Please refer there for further details. There is also an accompanying site map that indicates the location of elements needing continuing development or new development, and of spare land identified in a recent survey.

MAINTAIN IN CURRENT FORM

- Comfrey bed
- Three of the four Growing areas – see later for future use of the fourth
- Coppice area (see under Cuttings Bed)
- Living willow sculpture – the Serpent
- Spring, cress and reed beds
- Shelterbelt windbreaks
- Wildfood woodland walk
- Willow absorption area

SIMPLIFY AND MAINTAIN

- Tree nurseries – usable stock to be removed by the end of winter, 2001. Elderly tree nurseries in NW to be selectively depleted to improve visual state.
- Yin Yang garden – convert to wholesale production of perennial herbs
- Pond in NE to be made smaller and deeper

TAKE OUT OF USE

- Entrance garden – remove any remaining features and make safe
- Lower pond in NE - fill in
- Spiral arch - when the condition of the wood becomes hazardous
- Bottom growing area in NE – put to alternative use (see later)
- Boiler house – remove contents by start of 2002

Refer to the Spare Land Map for the locations of elements in the following three categories:

CONTINUE DEVELOPMENT

- Forest Gardens – develop middle storey (shrub layer) and groundcover, probably in partnership with one of new organisations coming on to Springfield
- Pagan Temple Garden – refresh plantings and weave hazel over the central aisle and dome

NEW DEVELOPMENT

- Footbridge across boggy area in the top centre of the site
- A new, large coppice area that makes use of the broad band of damp land in the SE that runs down from and to the E of the spring and inter-linked pools. The recommendation is to coppice the new plantings involved in developing this new coppice, BUT to leave the existing willows in the Wetland Wood alone as they represent a valuable habitat

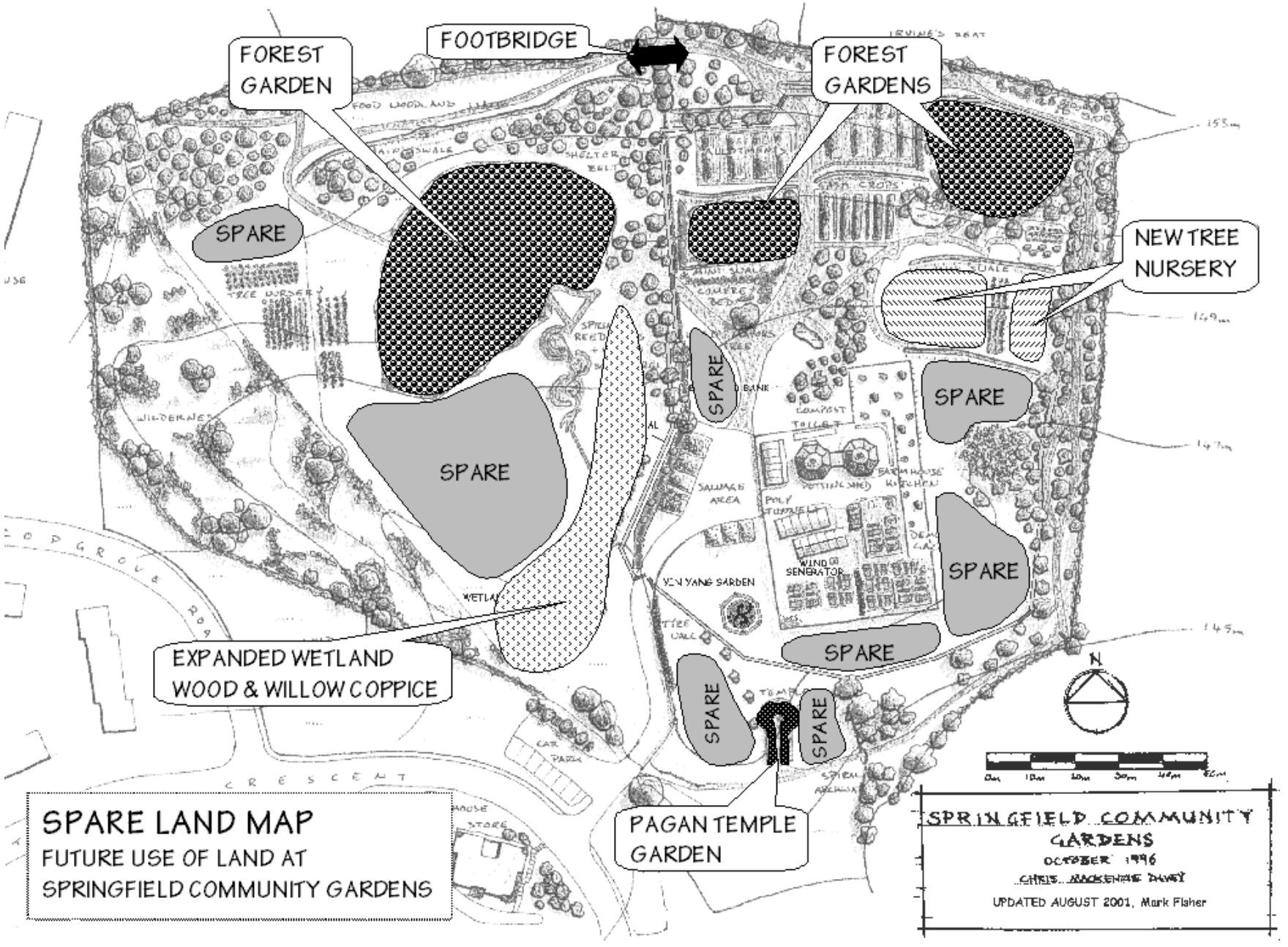
SPARE AREAS

- The removal of the Entrance Garden leaves available the land between the entrance road over to the Pagan Temple Garden
- Land between the Pagan Temple Garden and the Spiral Arch
- Land in the S between the internal fence and the compound fence
- Two areas of land in the E, above and below the Willow Absorption Area
- The bottom growing area in the NE which may be used as a new tree nursery by an outside partner
- An area in the SW below the largest Forest Garden– at one time, it was considered for planting as a vinery
- A strip of land in the NW between a shelterbelt planting and an old tree nursery

EXTERNAL ORGANISATIONS

The following external organisations have expressed an interest in forming working partnerships on Springfield. These are the subject of continuing discussion with the current site users:

- PARK LANE COLLEGE, Horsforth, Leeds
- SHIPLEY COLLEGE, Shipley, Bradford
- CALICO CONSERVATION, Bradford
- FOREST OF BRADFORD, Bradford


FOREST GARDEN
FOOTBRIDGE
FOREST GARDENS
NEW TREE NURSERY
SPARE
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SPARE
SPARE
SPARE
EXPANDED WETLAND WOOD & WILLOW COPPICE
PAGAN TEMPLE GARDEN
SPARE LAND MAP
FUTURE USE OF LAND AT SPRINGFIELD COMMUNITY GARDENS
SPRINGFIELD COMMUNITY GARDENS
OCTOBER 1996
CHRIS MACKENZIE DAVEY
UPDATED AUGUST 2001, Mark Fisher
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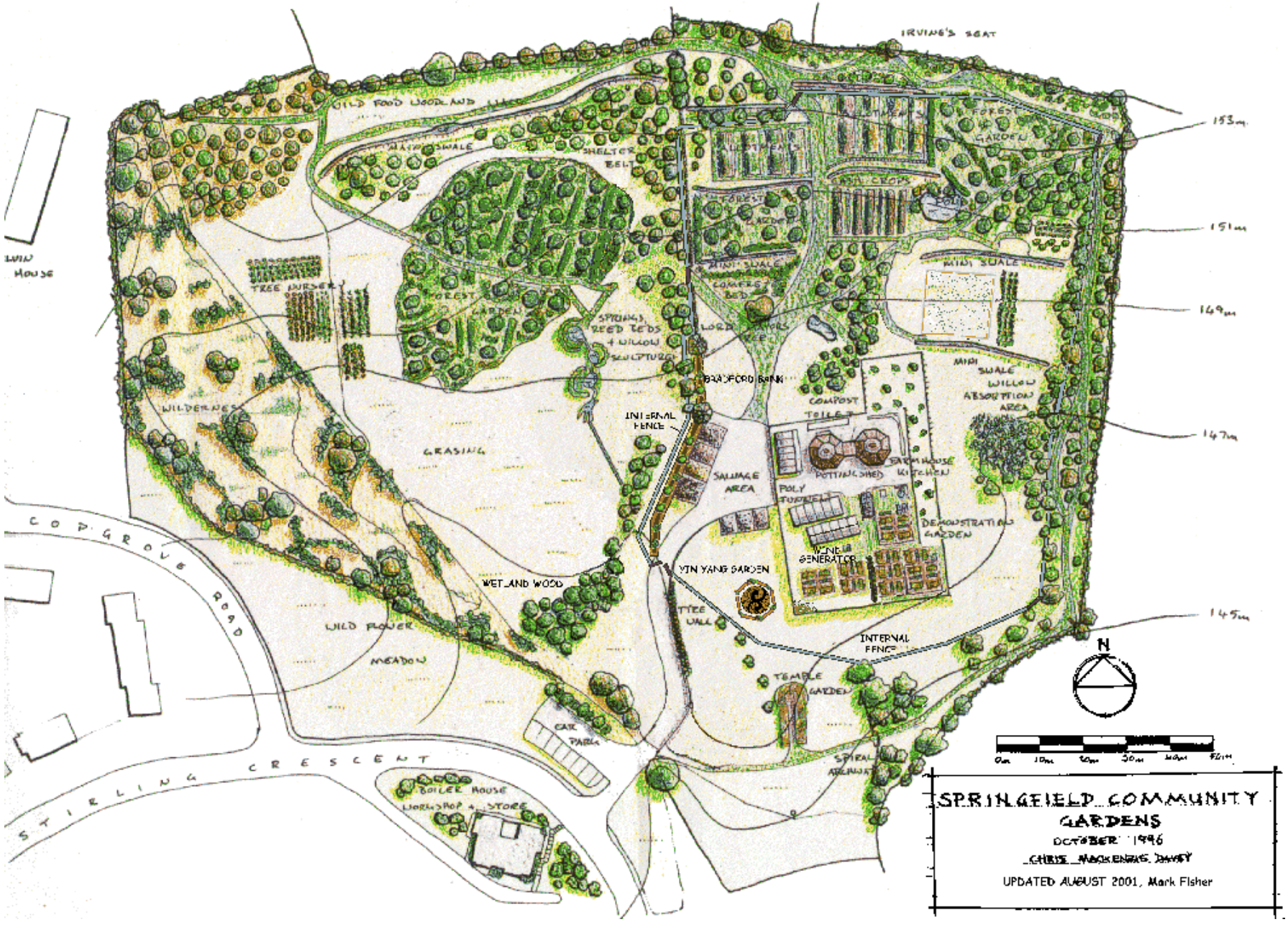
IRVING'S SEAT
WILD FOOD WOODLAND
MAIN SWALE
SHELTER BELT
FOREST GARDEN
BASIL CROPS
POLE BEANS
153m
151m
149m
147m
145m
TREE NURSERY
SPRING REED BEDS & WILLOW SCULPTURE
LORD MAYORS TREE
BRADFORD BANK
MINI SWALE
COMPOST TOILET
MINI SWALE WILLOW ABSORPTION AREA
WILDERNESS
GRASSING
INTERNAL FENCE
SALVAGE AREA
POTTING SHED
FARM HOUSE KITCHEN
POLY TUNNELS
DEMONSTRATION GARDEN
WIND GENERATOR
YIN YANG GARDEN
WET LAND WOOD
TREE WALL
COPGROVE ROAD
WILD FLOWER MEADOW
INTERNAL FENCE
TEMPLE GARDEN
SPIRAL ARGHNAT
CAR PARK
STIRLING CRESCENT
BOILER HOUSE
WORKSHOP & STORE
N
SPRINGFIELD COMMUNITY GARDENS
OCTOBER 1996
CHRIS MACKENZIE DAVEY
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