

## Design 7: Allotment at Redacre Community Growing Project

### 1. Background

Redacre Community Growing Project is a community-run allotment site in Mytholmroyd, near Hebden Bridge, in Calderdale. I joined the waiting list for a plot at Redacre soon after my arrival in the area in summer 2015. By a happy coincidence, a plot became available to me at exactly the same time I was offered use of the mooring at Redacre Wharf for my narrowboat Innisfree (Design 6). This allowed me to approach my relationship with the site as an integrated design, placing my use of a growing space in the context of my wider lifestyle design. The Holmgren design principle '*Integrate rather than segregate*' is therefore foundational to this design.

I took up my plot at the same time as I became resident on Redacre Wharf, in July 2016, and worked it until my departure from Calderdale in September 2020. The design and its implementation therefore covers the full growing seasons during 2017, 2018, 2019 and 2020. It uses the **GoSADIM** design process and design tools including **client interview**, **site maps** at three levels of scale, **PASTE survey**, **SWOC analysis**, analysis of **function, systems and elements**, a **design map**, **design patterns**, an **implementation map** and **PMI evaluation**.

### 2. Goals

Goals were established on the basis of a **client interview**. As I was the client for this design, this took the form of a self-assessment of my needs, based on a personal reflection that took account of permaculture ethics and principles.

The key goals I identified were as follows:

- Have a space for gardening and connection with the earth
  - An expression of the principle *Everything Gardens*: I had learnt from my previous garden designs (none of them included in this portfolio, but listed in Design 1) that the practice of gardening is to me important in itself, as a way of being in relationship with nature, plants, the Earth and myself, regardless of the material outcomes. To me, the place I grow is a reflection of my inner garden (*Integrate rather than Segregate*) (Design 10). This goal reflects all three principal ethics: *Earth Care* in terms of taking responsibility for a piece of land, *People Care* in terms of the benefits to me, and *Fair Share* in terms of access to a small piece of land owned cooperatively and managed as part of a larger commons.
- Leave the space better than I found it
  - An expression of the Holmgren principle Capture and Store Energy and of the Earth Care and People Care ethics, translating the work I put into the land into tangible improvements in terms of ecology and productivity, for the benefit of subsequent users, via use of low impact and regenerative methods
- Provide me with fresh, local, seasonal fruit and vegetables, with the possibility of sharing surplus
  - Reflecting the *Obtain a Yield* Holmgren principle, the *People Care* ethic in relation to benefits to myself and *Fair Shares* in relation to providing for myself and others
  - More concretely, in relation to food shopping my needs were generally well provided for by Valley Organics, a wholefood retail workers cooperative based in Hebden Bridge. Having relied on it as my main source of food over the previous year, I noted two main needs that an allotment could provide:
    - Soft fruits: even those that can be grown locally were often not reliably available; prices tended to be high, even in season and packaging was often energy-intensive and/or non-renewable
    - Green leafy vegetables (for salads and cooking): in addition to unpredictable supplies and use of plastic bags, I often found it difficult to anticipate my needs

when buying; without a fridge, storage as also a problem. All this suggested it would make more sense to grow my on to pick and use as I needed.

- In combination with my status as resident boater (Design 6), to make a positive contribution to Redacre growing project and the land and community there (*Integrate rather than Segregate*).
  - This includes an integration of material flows and cycles, particularly in relation to the key material outputs from my boat (Design 6): humanure, liquid waste (urine), wood ash and kitchen scraps.

### 3. Survey

I conducted a physical survey at three **levels of scale**: the allotment site as a whole, the specific plot allocated to me, and the wider geographical area of my daily activity.

#### Redacre Growing Project Site

The site is located at the end of a lane branching directly off the A646, that provides vehicle access leading to the main gate at the north-east corner of the site, adjacent to a small hamlet of three large houses. The eastern border of the site is a large buttressed stone wall that separates it from the garden of one of those houses. The site is bounded to the north by Redacre Woods, a council-managed woodland dominated by oak and beech, open to the public and crossed by several footpaths, and to the south by the Rochdale canal. The western neighbour is the local waste water treatment plant; the plot immediately bordering the site contains no works but appears to be a nature reserve, consisting of a large pond frequented by many water birds (Canada geese, mallard ducks, heron) and surrounded by young birch woodland (see Figure 1: Site Map).

A **PASTE survey** of resources available onsite gave the following results:

PLANTS	ANIMALS	STRUCTURES	TOOLS AND TECHNOLOGIES	EVENTS
Communal Fruits (1)	Domesticated (4)	Growing spaces (7)	Shared Toolshed (11)	Delivery of organic materials (12)
Other useful cultivars available in communal spaces (2)	Wild but commonly associated with human activity (5)	Paths (8)	Wheelbarrows	Ad hoc sharing of plants and produce (13)
Wild edible plants (3)	Wild (6)	Communal Areas (9)	Compost Bays	Community days (14)
		Wharf (10)	Compost toilet	Winter floods (15)

(1) Including apples, pears, plums, blackcurrants, gooseberries, redcurrants, white currants, raspberries, rhubarb.

(2) e.g. comfrey, mint, rosemary, horseradish

(3) e.g. bramble (fruit, leaves), Himalayan balsam (seeds), nettle, dandelion, Good King Henry, chickweed (leaves)

(4) chickens, bees, rats (took up residence under chicken coop), dogs (regular visitors with owners), cats (from neighbouring houses)

(5) Blackbirds and robins (follow gardeners to feed off worms etc. in disturbed soil); mice (often feed, nest and/or breed in compost bins and polytunnel), frogs and toads (often found in polytunnel and allotments)

(6) Including numerous other land birds (crows, jays, magpies, various tits, finches, wrens, sparrows etc.); water birds on canal and in neighbouring pond (Canada geese, mallard ducks, goosander, heron, kingfisher); mammals (moles, rabbits, hedgehogs, badgers, squirrels)

(7) Allotments, raised beds, polytunnels. Also beehives and two chicken runs, respectively operated by members of bee and chicken groups.

(8) Well-planned and well maintained across whole site

(9) The main communal facilities are a roundhouse, pizza oven, gathering area (benches, tables), fire pit, wildlife garden, pond, willow structures, woodland fringes, parking areas

(10) Approximately 25m<sup>2</sup> of hard standing directly in front of the boat, ==

(11) Well-stocked and in good order

(12) The site receives occasional deliveries of organic wastes, from various sources: wood chip (from tree surgeons), hops (from local micro-brewery), Autumn leaves (from council collection), occasional deliveries of compost, topsoil and manure

(13) Many gardeners followed an informal custom surplus seedlings and other plants, and more rarely excess produce, in communal areas of the site for others to help themselves

(14) Monthly work days during growing season to collaborate on general site maintenance tasks, plus several celebrations annually

(15) The land is in the flood plain of the Calder Valley and often floods during heavy rain – contributing to water retention in the landscape and reducing the flood risk to nearby houses

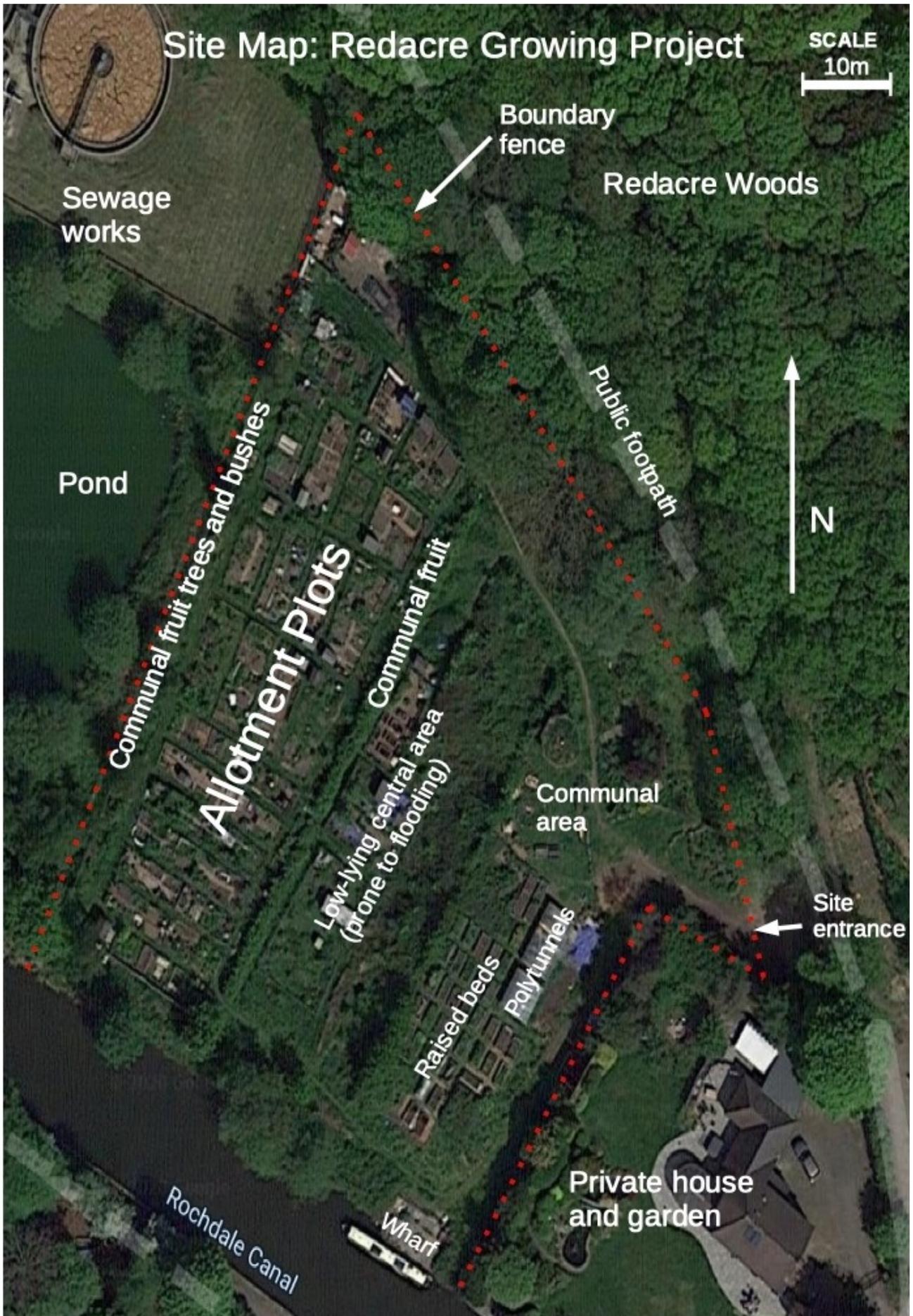


Figure 1: Site Map: Redacre Growing Project

### Allotment Plot

The plot I was allocated was, by chance, the closest to the wharf and my boat. I was a half-plot, in the form of a rectangle approximately three metres wide by nine metres long, with the long axis oriented roughly southeast-northwest. It was situated at the lower end of the allotment area, in a location prone to frost. Some parts of the plot were poorly drained, however, it was not susceptible to the severe flooding that commonly affected the lowest-lying central areas of the site. There was no significant shading, and the plot was relatively sheltered from wind in all four directions: by a hedge immediately to the southeast, by trees and bushes along the canal side to the southwest, by the birch woodland adjacent to the sewage works to the northwest, and benefiting from the general sheltering of the site provided by Redacre Woods to the northeast.

I inherited the plot in very bad condition, resulting from clear neglect and lack of understanding of soil management on the part of the previous owner or owners (Figures 2 and 3). The underlying soil was mostly clay and almost completely devoid of organic matter. Such organic matter as existing was mostly in the roots and stalks of well-established perennial weeds, mostly notably docks, couch grass and nettles. The only useful plants evident at the time were two comfrey plants near the centre of the plot. Patches of rushed marked an area prone to regular waterlogging towards the north end.



**Figure 2: Condition in which I found the allotment plot, July 2016**

The plot had a number of structures, all of them highly deficient in their design and exacerbating the general state of degradation. Several beds were delineated with sturdy wooden structures made from scaffolding boards. This appeared to be an attempt to make raised beds, which were a standard pattern on the site. However, the level of soil in the 'beds' was lower than in the adjacent paths, most of which had been elevated with bricks. The borders were buried in the ground for most of their height and the areas immediately adjacent to them thick in perennial weeds, which were

consequently very difficult to uproot. In addition, several beds were individually fenced to a height of about one metre, greatly impeding access.

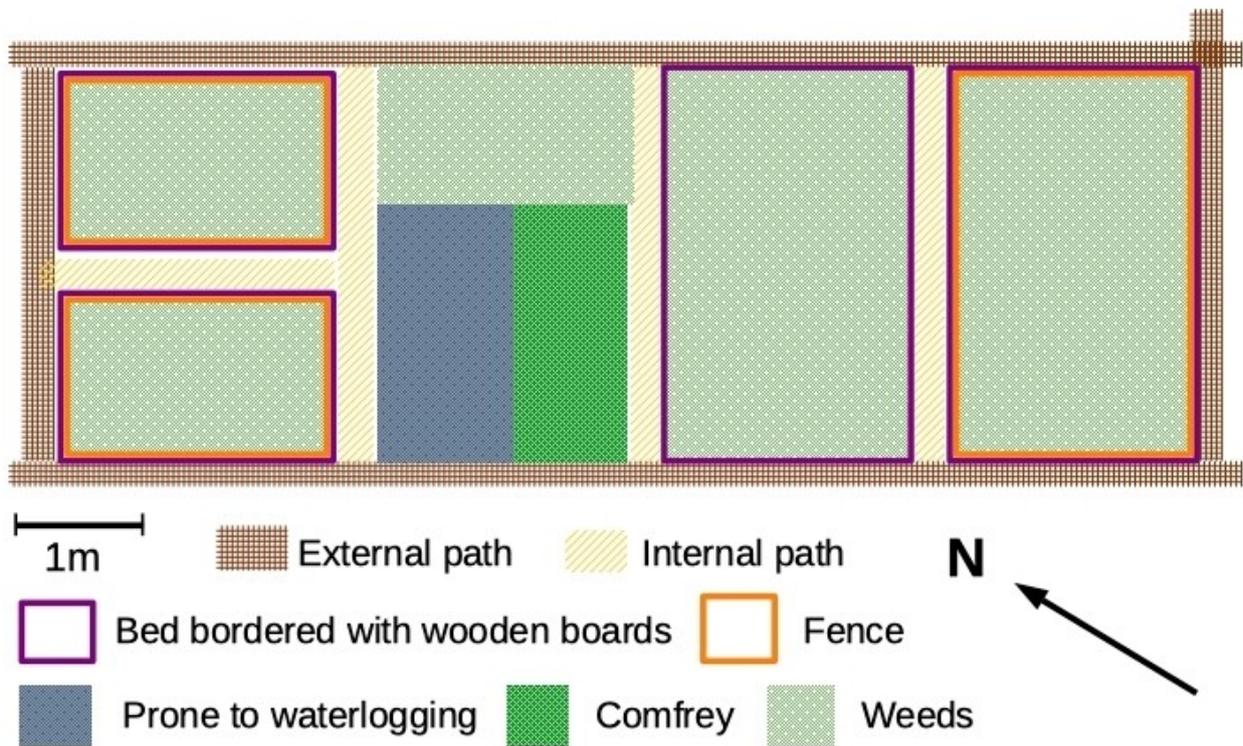


Figure 3: Base Map of Allotment, July 2016

### Wider Context

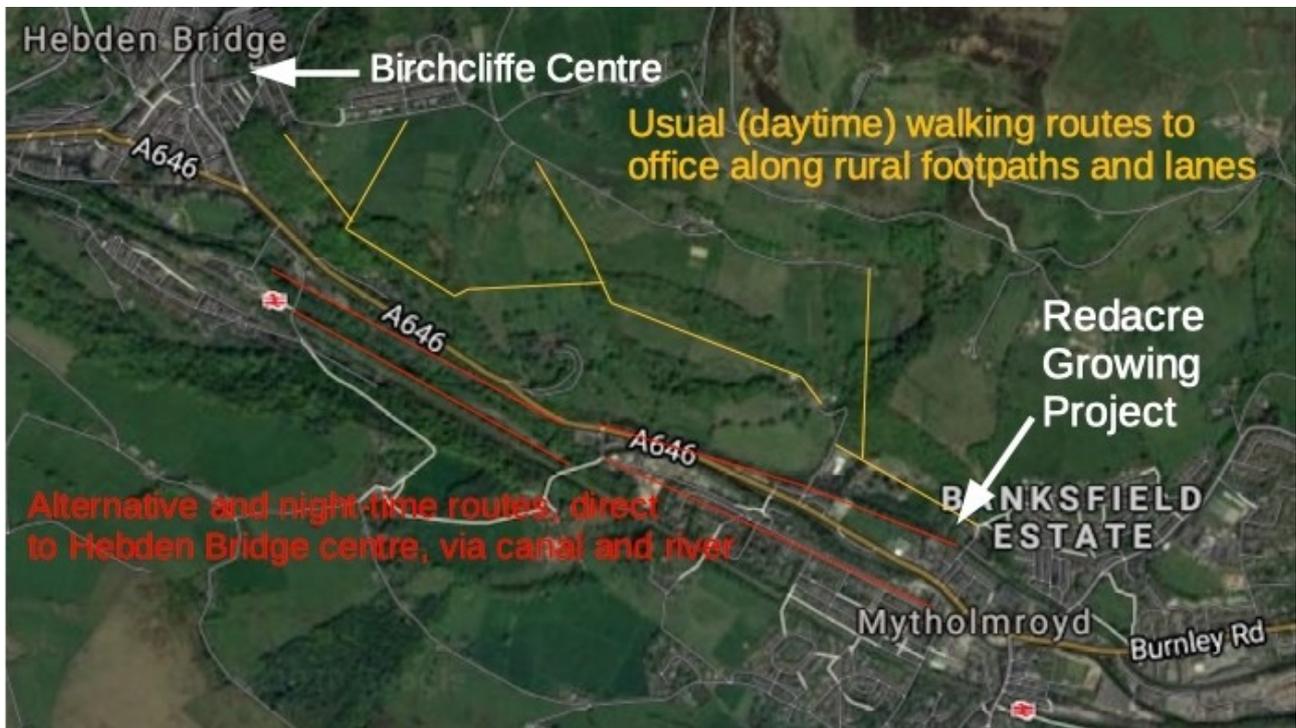


Figure 4: Context map showing main daily walking routes

Redacre is located just outside the village of Mytholmroyd, about a mile from the larger town of Hebden Bridge (see Figure 4). My everyday range of activity extended from the site to Hebden Bridge, where I rented an office at the Birchcliffe Centre, a converted chapel just above the town.

Hebden Bridge was where most of my professional and social activity took place, and where I did most of my shopping: a range of independent shops in the town centre covered all of my everyday needs. Mytholmroyd itself was home to a smaller number of my friends and offered access to some basic essentials of my life (a laundrette and agricultural supplier selling bottled propane of the type used for cooking and heating on my boat). Mytholmroyd also had the nearest train station (about five minutes walk from the site), which I used whenever needing to travel for work or on rare visits to any of the larger nearby towns and cities (Manchester, Leeds, Bradford, Halifax).

In the course of my everyday routines, all travel was on foot. The main pedestrian (and cycling) route into the centre of Hebden Bridge was along the canal towpath. To the north of the site, a network of footpaths and rural lanes offered several options for daytime walking routes through woods and farmland to my office at the Birchcliffe Centre.

#### 4. Analysis

My key conclusions from the survey phase, relevant to the design, were as follows:

- The state of the allotment plot meant that my management strategy needed to emphasise its physical rehabilitation and soil improvement rather than prioritise productivity.
- The alternative growing spaces in the raised beds became available more often, and could more quickly and easily be brought into production. Additionally, the raised beds and polytunnels lay close to my main walking route between the site gate and my boat, allowing easy observation and quick passing visits.
- The wharf was an unused and undesignated space with potential as a growing area associated with the boat. Although in theory I had no greater priority than any other member over use of the wharf, in practice people tended not to enter unless coming to see me. It was also a natural location for storage and labour associated with the boat and not possible in the limited indoor space available there.
- The boat provided limited indoor space for propagation, making polytunnel space particularly useful in that regard.
- My time and energy were constrained by several factors relating to my working life and need for regular rest and downtime:
  - My weekdays were mostly spent offsite working from my office; social engagements also kept me away some weekends
  - My work involved fairly regular travel, usually international, leading to absences of a week or more
  - Even when present, my need to ensure sufficient rest and relaxation time meant I was not always able to undertake physical work on the allotment. However, doing such work was a welcome balance to the largely indoor, sedentary and cerebral nature of much of my other work

The following **SWOC analysis** summarise these observations:

<b>STRENGTHS</b>	<b>WEAKNESSES</b>
<ul style="list-style-type: none"> <li>• Diverse material and social resources available onsite</li> <li>• Variety of growing spaces available</li> <li>• Living onsite close to growing space</li> </ul>	<ul style="list-style-type: none"> <li>• Poor physical state of allotment plot</li> </ul>
<b>OPPORTUNITIES</b>	<b>CONSTRAINTS</b>
<ul style="list-style-type: none"> <li>• Availability of raised beds as an alternative/additional growing space, facilitating easy observation and interaction</li> <li>• Potential access to a polytunnel bay</li> <li>• Possibility to integrate resource cycles at different scales (personal vs. site-wide)</li> <li>• Wharf as an unused and undesignated resource</li> </ul>	<ul style="list-style-type: none"> <li>• Need to prioritise physical rehabilitation and soil restoration in plot, over productivity</li> <li>• Limited indoor space for propagation in boat</li> <li>• My capacity for gardening work limited by my available time and energy, regular trips away, working days spent offsite, need for rest</li> </ul>

On the basis of the survey and analysis, I identified the following key functions, systems and elements:

FUNCTION	SYSTEM	ELEMENTS
Soil restoration	Sheet mulch	Cardboard
	Organic matter	Hops, leaves, compost
	Restorative crops	Legumes, potatoes
	Ground cover	Chard, lettuce, strawberries
Vegetable production	Propagation space	Polytunnel bay, boat roof
	Kitchen garden	Salad greens, leafy veg, onions, garlic, herbs, strawberries
	Allotment	Fruit bushes, raspberries
		Annual beds
Nature connection	Wildlife onsite	Crows, robins, blackbirds, Canada geese, kingfisher, goosander, squirrels, badgers
	Trees onsite	Birch
	Wildlife on commute	Deer, buzzard, kestrel, pheasants, jays, farm animals
	Trees and plants on commute	Beech, oak, hawthorn
Foraging	Edible plants and fungi	Chicken of the wood, hawthorn, bramble, wild garlic, Himalayan balsam, elder, dog rose, lime

## 5. Design

From the analysis emerged a clear **zonation**, and a number of **design patterns** (*Design from pattern to detail*).

A key overarching pattern was the only one in both Christopher Alexander's pattern language and the pattern language for edible forest gardens: *Site Repair*. This was most obvious in relation to the allotment plot, but also applied in other respects such as the opportunity to develop the wharf. It was an important feature of my Zone 00 work at the time (Design 10) - the state of the allotment reflected that of parts of my inner landscape that were undergoing deep healing and integration at the time I was living in Hebden Bridge.

Zones emerged naturally from the key functions and systems identified during the analysis stage. Figure 5 shows the placement of zones 0, 1 and 2.

Zone 0, the homestead, consists of the boat moored at Redacre Wharf (Design 6). I also rented an office in Hebden Bridge, at which I spent considerable time, and which provided some Zone 00 functions not available on the boat: space for yoga, dancing, and storage of gongs and large numbers of books; unlimited supply of 230V electricity (for running computers etc. and charging appliances in winter); internet and access to a refrigerator.

Zone 1, the kitchen garden, was initially located in two raised beds lying close to the walking routes between the boat and site gate. As time went on, I successively relocated these functions to new structures on the wharf. The roof of the boat acted as a plant nursery, where seedlings were free from predation by slugs and snails.

I initially dedicated one raised bed mostly to strawberries (along with chives), the other to leafy greens including chard, spinach and lettuce. I later also began to include brassicas, once I realised they grew far better here than in the allotment plot. As I extended and relocated to new growing containers on the wharf, I added to this additional crops such as pak-choi, oriental greens and other

salad vegetables, and second crops of peas and courgettes. I also created a small garden of pot herbs for teas and seasoning including several kinds of mint, lemon balm, sage, marjoram, parsley and coriander.

From 2018 (when a second polytunnel was installed onsite), I had access to a polytunnel bay for early propagation, extended growing seasons, and growth of warm weather crops. It also provided a possibility of additional undercover storage during winter, when it was not under cultivation. My most successful polytunnel crop was tomatoes, I also used the space to grow early salads and greens and one year for back-up crops of climbing beans and peas when my main crops in the allotment were lost to frost and slugs.



**Figure 5: Design Map showing placement of zones 0, 1 and 2**

Zone 2, the main growing space, consisted of the allotment and the communal fruit trees and bushes around the site. Within this zone, I applied the following design patterns:

*Minimum Dig Raised Beds:* physically disturb the soil as little as possible, to offer maximum support to its regeneration. Improve the soil by adding organic matter at the surface to elevate its level. Disturb the soil only to the degree necessary for harvesting and removal of unwanted plants. Maintain paths between beds such that there is no need to step within the beds.

*Lasagne Mulch:* control weeds and build up soil organic matter, in a fashion compatible with the minimum dig pattern, by alternately sheet mulching with cardboard and applying layers of whatever suitable organic matter is available (*Catch and store energy*).

*Living Borders*: remove and avoid rigid physical borders impede access and weed control; instead allow borders to slope up from paths and use the edge habitats thus created for the cultivation of suitable plants (*Use edges and value the marginal; Obtain a yield*).

*Vertical Layers*: plant in multiple layers to maximise use of limited space, support crop diversity and maximise the physical complexity (and hence diversity) of the ecospace (*Use and value diversity*).

*Regenerative Rotation*: use planting sequences and rotations that maximise the synergy between soil regeneration and productivity (*Obtain a yield*).

*Edible Ground Cover*: fill unused space at ground level opportunistically with low-lying edible plants to ensure continuous ground cover and promote diversity of availability of edible crops in space and time (*Use and value diversity*).

Zone 3: cultivation of staples. I did not have space, energy, skills or inclination to grow my own staples, which mainly consisted of rice, oats, nuts, dried fruits, and various pulses, along with cooking oils and condiments. These I purchased ethically from the Valley Organics workers wholefoods cooperative in Hebden Bridge, which also filled gaps in my vegetable and fruit supplies from Zone 2.

Zone 4: fuels and structures. My winter heating fuel consisted of wood purchased from independent suppliers dedicated to regenerative management of local woodlands. I also made occasional use of scrap wood onsite (e.g. following demolition of the raised beds in 2020).

Zone 5: my situation provided good access to nature on a daily basis. The canal attracted many water birds and other wildlife, while my daily commute to and from Hebden Bridge was a half-hour hilly walk starting in Redacre Woods and mostly passing through woods and farmland. Following the 'Solution in the Problem' principle, the distance between my home base and main work space provided an opportunity design an hour of good quality open-air exercise, and time for thinking and reflection, into my daily routine.

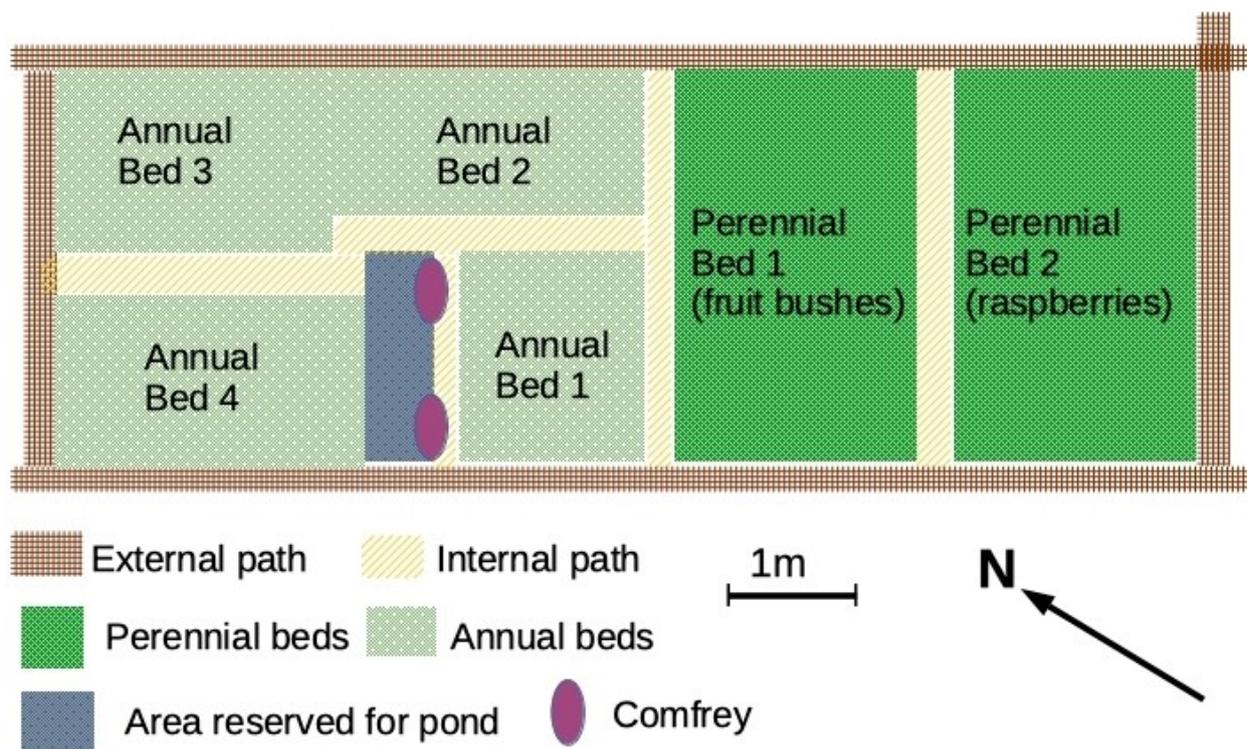


**Figure 6: Canada goose family on the wharf, spring 2020**

An important eco-social pattern at all scales, supporting all of the above as an obvious application of the *Fair Share* ethic, I termed *shared abundance*: take maximum advantage of available common resources, and find low-effort ways to maximise my contribution to their availability.

## **6. Implementation and Maintenance**

Implementation proceeded organically according to the demands of the season, availability of resources (including my own energies and many material resources available unpredictably) and the ongoing development of the design. The design patterns allowed this to take place incrementally, and to some degree opportunistically, in ways that would not be possible with a fixed design (and in accordance with the Holmgren principles *Use small and slow solutions* and *Creatively use and respond to change*).



**Figure 7: Final design and implementation map for the allotment**

Implementation of the design patterns ultimately led to the layout depicted in Figure 6, and proceeded as described in the following paragraphs.

Location of *minimum dig raised beds* in the allotment site was to a large degree constrained by the existing structures. Although I planned to remove the perimeter boards, they were of obdurate construction and in many cases well buried. This meant I could not change the structure of the two beds in the southeast half of the plot until the wood had rotted sufficiently to break it up, which was not until two or three years after I took over the plot. I therefore retained the layout in that half of the plot. In the other half, I reorganised the layout in order to accommodate the two existing patches of comfrey and the waterlogged area (which I set aside for later conversion into a pond), replacing two transversal paths with a single winding path, increasing the variation and creating new edge.

In order to maximise soil restoration on the allotment, I avoided removing plant matter, instead felling the weeds in place and sheet mulching the beds with cardboard as the first step in what became the *lasagne mulch* pattern. A ready supply of cardboard was available from the skip at the nearby Cooperative supermarket in Mytholmroyd, whose staff were happy for me to take it – both in order to fulfil the shop's aim to support the local community, and because it reduced their waste disposal costs. Over time, I alternated layers of cardboard with whatever organic matter was available, including compost (my own and from the site bins), leaves (collected during Autumn from Redacre Woods), hops, and animal manure on the rare occasions it was available. The beds where this pattern was applied accumulated several centimetres of healthy soil each year. Weeds returned every year, but clearly declining in numbers, and noticeably more of a problem in beds that for some reason were not sheet-mulched over winter.

I also used the *lasagne mulch* pattern to initiate cultivation of the raised beds, which were initially overgrown with weeds and depleted of soil. In each of the first two years I bought a bag of municipal topsoil from a local supplier and used this both to top up the raised beds and to establish pots and other containers on the wharf and in the polytunnel (in which cultivation was only

permitted in containers, due to chemical contamination in the underlying soil). Site rules required annual replacement of soil in the polytunnel, so I created a material flow from the polytunnel to the kitchen garden and allotment, using soil from the polytunnel to fill containers on the wharf or integrate it into the lasagne mulching process. After the second year, I was able to refill containers in the polytunnel and new growing spaces on the wharf entirely from compost produced onsite.

I dedicated one of the raised beds mostly to strawberries. This became an important source of early summer fruit. It also became a source of plants for the *living borders* of annual beds in the allotment. Fruit yields were consistently lower in this location, but they worked well in their role as part of the edge between path and bed. The strawberry borders required ongoing maintenance - they would spread to occupy the centre of any beds that were not sheet-mulched over winter - along with weeding and resetting in early spring.



**Figure 8: Raised bed before clearance, March 2017**

The design was implemented with up to four *vertical layers* of annuals and perennials. The two beds in the southeastern half of the allotment became permanent fruit beds planted with blackcurrant, jostaberry and gooseberry bushes, and raspberry canes. These were initially interplanted with annual vegetables wherever space allowed, but by the third year had grown to occupy the entire beds. The location within the plot meant that any risk of shading was restricted to my own plot, and did not affect neighbours; however the space between beds was sufficient that this was minimal in summer.



**Figure 9: Raised bed newly planted with strawberries, kale, chives and garlic, March 2017**

Strawberries in the *living borders* became a perennial layer of *edible ground cover*, along with low-lying annual crops such as chard, spinach, salad greens and oka. The highest vertical level consisted of climbers such as beans and peas or tall plants such as maize, with plants of shrubby habit such as courgettes, potatoes and broad beans forming an intermediate layer. I also tried brassicas (kale, sprouts, broccoli, tree cabbage) as an intermediate layer but found them to grow slowly and be very vulnerable to slug attack in that location. I instead grew them exclusively in the kitchen garden, where they grew better, and were more easily monitored and readily available to harvest as needed. Along with an occasional crop of hardy tomatoes, they formed the higher of two layers, above chard, spinach, pak-choi, salad greens and strawberries.

The basis of the *regenerative rotation* was potatoes for soil conditioning followed by nitrogen-fixing edible legumes (broad beans, climbing beans, or peas) for fertility, interspersed with a year of more demanding crops such as courgettes and maize for a three-year cycle. I also experimented with brassicas: as mentioned above they gave poor yields in this location, while the length of their growing cycle also made it difficult to sheet mulch over winter; they performed much better once

relocated to Zone 2. The rotation was initially applied in two beds in the northwestern half of the allotment, which had entered into their second cycle by the time I gave up the allotment, with the other two beds at the far end brought into full production by year three

I used *edible ground cover* to fill any physical and seasonal gaps in both annual and perennial beds.



**Figure 10: My friend Helen foraging in the allotment plot, September 2020**

This consisted of the same species of green leafy vegetables grown in the kitchen garden: notably, chard (which performed particularly well), spinach, pak-choi, lettuce and other salad greens. I always planted a surplus of these in order to maintain a constant stock of seedlings of varying sizes that I could use whenever space became available. Most of these crops performed best in Zone 1, with the populations in Zone 2 providing a back-up supply in the event of their scarcity there.

Surplus seedlings were also an important element of the ongoing application of the *shared abundance* pattern. Especially in the first year or two, I benefited greatly from surplus seedlings gifted by more established allotment holders. I made an effort to contribute to this by always planting more than I needed (also to buffer against low germination or loss of young plants to weather, slugs, mice and other hazards) and making surplus available to newer growers or others who for some reason found themselves short of plants. This also provided access to a wider diversity of crops than if I had relied entirely on what I planted myself.

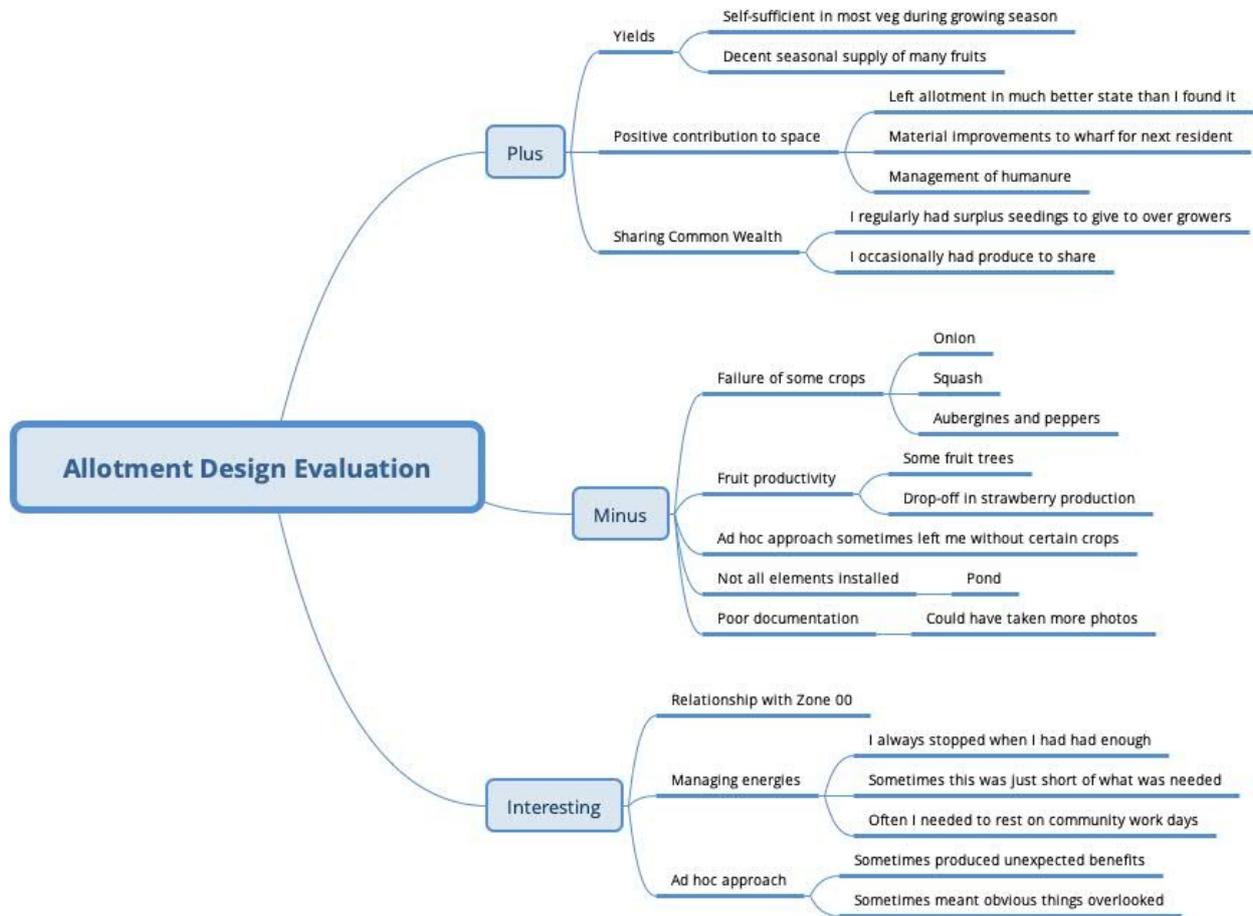
## 7. Evaluation

The PMI illustrated in Figure 11 represents my retrospective evaluation of the design. Overall, I was happy with it, particularly in relation to my design goals: I left the plot and wharf in far better condition than I found them, obtained a good yield of vegetables and fruit most years, felt a strong connection with the plot, site and wider ecosystem, kept my workload within my available time and energy, and felt I made a positive overall contribution to the Redacre project and community. I felt it would have been improved with better documentation (for example, I have few photos of its progress and missed many opportunities to take instructive pictures of the design patterns in implementation) and, at times, better organisation of planting and maintenance regimes.

## 8. Reflection

I consider this design a satisfactory conclusion to the gardening strand of my action learning pathway (Design 1). It was the last of several garden designs I undertook over the course of my diploma, both for myself and for others, and the only one I felt of sufficient quality to merit inclusion. This reflects a progression in my own learning, experience and understanding of garden design and management. It also reflects the fact that, of the various growing spaces I used over the ten years of this diploma, this was the only one where I was able to stay for successive growing seasons. This allowed me to experience the ongoing and incremental development of the garden,

and evolution of the design, as I accumulated resources and familiarity with the site and as aspects of the site matured.



**Figure 11: PMI evaluation of the design**

Another important learning here concerned attention to context, through working at multiple levels of scale. My residence at the site over several years greatly strengthened the integration of the design, and my management of my own growing space, into the operation of the site and my activities in the immediate and wider area. I would recommend (and intend to undertake) taking such a view, probably encompassing at least three levels of scale, in any future garden design. This is consistent with the scalar view of ecosystems and social-ecological systems employed in resilience theory. I suspect it is also the case with many more abstract designs (illustrated, for example, by the successive growth in scale in the sequence of research-related designs in this portfolio).

I also felt this design demonstrated significant maturation of my ability to use design tools. In contrast with some of my previous designs, I found concrete tools to use at every stage, which in each case genuinely helped my understanding of the situation and the development of the design. I particularly liked the way several design patterns emerged; one possible further development of the design could have been to elaborate these more fully at the higher levels of scale.

Garden and site designs are neither a particular strength of mine, nor the main focus of this diploma. However, I believe that connection with physical ecosystems achieved through land-based design is fundamental to maintaining the ecological focus at the heart of permaculture design: learning from, with and through nature. This design is therefore foundational to all the others in this portfolio.