

**Plot 2**

# **Tir-y-Gafel**

## **Plot Management Plan for House 2, Plot 2**

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## **1. Background and Introduction:**

We are a family composed of two adults, Catherine (Katy) and Leander and three young children Maisie, Matilda and Sonny (aged 7, 4 and 2). Between us, we have a wealth of experience and skills to bring to the low-impact settlement and Pembrokeshire.

Leander has a degree in Agricultural Botany and PhD from Aberystwyth University together with over 15 years experience in botany, horticulture and ecology including two years experience working in a kitchen garden alongside adults with learning difficulties and one year running an organic vegetable garden for 20 scientists in the West of Ireland. In addition he spent 2 years working at Ness Botanic Gardens during which time he was responsible for maintaining the willow collection. He was the Head of Botany at the World Museum Liverpool for 3 years and is currently Curator of Botany at The Manchester Museum and has an extensive knowledge of plants.

Katy has a degree in Visual Art from Aberystwyth University and over 9 years experience of running her own illustration business. Although currently living in a city, Katy is keen to utilise local plants wherever possible for cooking etc. She regularly harvests crab apples, rose hips and blackberries to make a range of jams and marmalades. She attended a house building course at the Centre of Alternative Technology in 2000 and this year (2008) helped build a timber framed roundhouse with a reciprocal roof at Coed Marros, Carmarthenshire.

## **2. The Plot Design**

The plot design is shown in drawing no. 1.

### **Zoning**

Although no zones are shown on the plan, the general layout of the plot is broadly zoned so that herbs and salads regularly used for cooking will be grown adjacent to the house. The intensive work areas; the vegetable garden, and polytunnel are close to the house. Areas of the plot that need less tending such as the orchard are located further away. The outskirts of the plot are dominated by willow plantation and for growing native wild plants. One of the terrace (i.e. dwellings 1-4) common fields will be used to grow fuel (*Miscanthus* and short rotation coppice willow) and the other field will be rented out for grazing pasture the profits from which will be shared. Within Plot 2 there will be one main path running south to a roundhouse workshop at the centre of the plot and then running south-west to the edge of the plot. Branching from this main path will be smaller subsidiary paths which provide access to other areas of the plot. The main track will be an aggregate based light grade forestry track using stones quarried on the Pont y Gafel site. The plot will be fenced on all sides by rabbit proof fencing.

### **Visual Impact**

New hedgerows (composed of native species sourced on site or locally) will be planted around the boundary of our plot on all sides. This together with the planting of willow coppice along the south east side of the plot means that the plot will be largely hidden from view on all sides. The visual impact will be to create a much more wooded environment.

### **Land Based Produce**

The main area for domestic food production is to be sited at the top part of the plot closest to the house. It covers an area of approximately 160m<sup>2</sup>. This area is then divided into raised beds for vegetable and fruit growing. There will be a 9m<sup>2</sup> pond and an area for growing green manures e.g. comfrey and *Phacelia*. There will also be an orchard encompassing an area of approximately 940 m<sup>2</sup>.

For business purposes 84m<sup>2</sup> will be devoted to growing basketry willows and 3462.5 m<sup>2</sup> will be devoted to growing native wild plants.

Grassy non-cultivated areas will be managed using a scythe and a manual lawn-mower to keep the grass in check. If necessary we will hire the two-wheel tractor from the Lammas 'Tractor Club' for grass cutting.

The soil survey by Saara Asikainen for the plot indicates that the soil pH ranges from 4.8 to 5.2. Prior to the onset of cultivation, the pH of the soil for the whole plot will be raised to bring it to pH 7.0 by the application of agricultural limestone at a rate of 14 tonnes/ha (1.4kg/m<sup>2</sup>) at a cost of £40/tonne plus VAT and delivery and spreading (cost estimate from Clunderwen and Cardiganshire Farmers Ltd.). The plot covers an area of 0.77ha. The entire plot will be limed prior to the onset of cultivation. This area will require 10.78 tonnes of agricultural lime costing £431.20. This cost will be split evenly between household needs and business needs. Clunderwen and Cardiganshire Farmers Ltd require a minimum delivery of 15 tonnes so purchasing of lime will undertaken in conjunction with other village households. The acidity of the soil will be monitored on an annual basis and further applications of lime in future years will be undertaken when necessary to raise the soil pH.

## Vegetables

28 raised beds will be used for vegetable growing encompassing an area of 112.05m<sup>2</sup>. The crops to be grown and area devoted to each crop and expected yields are detailed in Table 1 below. The beds vary in length but area all linear in shape and 1m wide. They will be separated by 60cm wide paths.

11 raised beds will be used for soft fruit growing encompassing an area of 48m<sup>2</sup>.

There will be two composting areas; one near the vegetable garden and one in the orchard (for leaf mould). There will also be a wormery adjacent to the house for composting kitchen scraps. The fertility in all the raised beds will be raised by the addition of compost. Manure procured from other Lammas smallholders and local suppliers will also be used to raise fertility and enhance soil structure.

**Table 1: Details of areas of vegetables grown and expected yields:**

<b>Crop</b>	<b>Area (m<sup>2</sup>)</b>	<b>No. plants per m<sup>2</sup></b>	<b>Yield per plant (kg)</b>	<b>Yield (per m<sup>2</sup>)</b>	<b>Total Yield</b>
<b>Roots</b>					
Potatoes (tolerate acid conditions and wide variety of soils - deep fertile well-drained medium loam best)	35	5	0.64	3.2 kg	<b>112 kg</b>
Carrots (light, deep, fertile well-drained soil)	2	100	0.1	10 kg	<b>20 kg</b>
Swede (lime the soil) - prefers light humus-rich soils	1.55	11	1	11 swedes	<b>17 swedes</b>
Celeriac (needs fertile soil rich in organic matter)	1	11	1	11 celeriacs	<b>11 celeriac</b>
Parsnip (lime the soil) grows best in deep, light, stone-free, well-drained soil	1	22	0.12	2.6 kg	<b>2.6 kg</b>
Beetroot (prefers pH 6.5 lime acid soil but don't over lime) prefers rich, light, sandy soil	1	50	0.2	10 kg	<b>10 kg</b>
Jerusalem Artichoke (tolerates all soils)	1	3	1.5	4.5 kg	<b>4.5 kg</b>
Radish (Light drained soil lots of moisture)	0.5	160	1 radish	20 bunches (8)	<b>10 bunches</b>
Celery (prefers alkaline soil, very rich, moisture retentive, soil with plenty of organic matter)	0.5	16	0.25	4 kg	<b>2 kg</b>
<b>Alliums</b>					
Onion (lime soil good drainage essential) employ 4 year rotation	20	44	0.09	3.96 kg	<b>79.2 kg</b>
Red Onions (as above)	4.5	44	0.09	3.96 kg	<b>17.82 kg</b>
Garlic (as above)	1	33	1 (bulb)	33 bulbs	<b>33 bulbs</b>
Leek (grows best at pH 6.5-7.5 lime soil)	2	22	0.2	2 kg	<b>4 kg</b>
Spring Onion (as with onions)	0.5	128	1 (plant)	16 bunches (8 plants per bunch)	<b>8 bunches</b>
<b>Brassicas</b>					
Cabbage (acid soil should be	2	6	1 (head)	6 heads	<b>12 (heads)</b>

limed to avoid clubroot) employ 3 year rotation. high nitrogen requirement					
Brussels Sprouts (as above)	3	2.5	0.4	1 kg	<b>3 kg</b>
Calabrese (as above)	1.5	6	0.5	3 kg	<b>4.5 kg</b>
<b>Legumes</b>					
Broad Beans (well dug soil, manured previous winter) employ rotation.	1.5	12	0.3	3.6 kg	<b>5.4 kg</b>
Runner Beans (well cultivated, rich, light, well drained but moisture retentive with plenty of organic matter, not too acid soil)	4	10	0.6	6 kg	<b>24 kg</b>
Green Beans (prefer well- drained, light fertile, slightly acid, moisture retentive soil)	1.5	22	0.4	8.8 kg	<b>13.2 kg</b>
Peas (fertile, deeply worked soil manured the previous autumn - with good drainage)	0.5	26	0.2	5.2 kg	<b>2.6 kg</b>
<b>Cucurbits</b>					
Courgette (lime soil, reasonably fertile, moisture- retentive, humus-rich soil with good drainage)	2.5	2	0.9	1.8 kg	<b>4.5 kg</b>
Pumpkin (as above)	1.00	2	4	8 kg	<b>8 kg</b>
<b>Cereals</b>					
Maize (moderately fertile, well-drained, moisture- retentive soil)	10	9	9 cobs	9 cobs	<b>90 cobs</b>
<b>Greens</b>					
Chard (heavy well manured soil)	1.5	14	0.26	3.64 kg	<b>5.46 kg</b>
Kale (lime soil) fairly rich, well cultivated soil, manured the previous autumn	0.5	5	0.8	4 kg	<b>2 kg</b>
Spinach (lime soils, very fertile, moisture-retentive soil, rich in organic matter)	5	22	0.08	1.76 kg	<b>8.8 kg</b>
Lettuce (neutral soil) light, well-drained, fertile soil, slightly acid to slightly alkaline	6	10	0.2	2.0 kg	<b>12 kg</b>
<b>Polytunnel</b>					
Cucumber (reasonably fertile soil, moisture retentive, humus rich, with good drainage. Lime soil)	1	4	6 fruits	24 cucumbers	<b>24 kg</b>
Tomatoes	3	3	3	9 kg	<b>27 kg</b>
Aubergines	1.5	3	2.5 fruits	7.5 aubergines	<b>11.25 kg</b>
Peppers	3	4	4.5 fruits	18 peppers	<b>54 kg</b>
<b>Soft Fruits</b>					
Strawberries* (slightly acid soil)	8.5	6	0.75	4.5 kg	<b>38.25 kg</b>
Rhubarb* (slightly acid soil)	5	5	0.34	1.7 kg	<b>8.5 kg</b>
Raspberries* (neutral to acid soil)	9	2	1	2 kg	<b>18 kg</b>
Gooseberries*	1	1	3 kg/bush	3 kg	<b>3 kg</b>

Red Currants*	4	1	4 kg/bush	4 kg	<b>16 kg</b>
Black Currants*	8	1	2 kg/bush	2 kg	<b>16 kg</b>
Blueberries* (acid soil)	8.5	0.67	1.5 kg/bush	1 kg	<b>8.5 kg</b>
Tayberries* (neutral to acid soil)	4	2	2	4 kg	<b>16 kg</b>
<b>Herb Garden</b>					
The following herbs will be grown adjacent to the house for picking as and when required: Mint, Thyme, Parsley, Rosemary, Chives, Pot Marjoram, Dill, Coriander, Bay, Fennel They will take up about 2m <sup>2</sup> of land. Herbs such as basil and chilli will be grown in the conservatory attached to the house.					

### Sources:

The values used in these calculations have been collected from a number of sources. In all cases, values have been collected from at least three independent sources and averaged together. Plant spacings were taken from seed and plant suppliers including The Organic Catalogue, Buckingham Nurseries, Down Garden Services and books including Organic Kitchen and Garden (Spevack *et al.*, 2004), Pippa's Organic Kitchen Garden (Greenwood, 1999) & Grow Your Own Vegetables (Larkcom, 2002). Plant yields were taken from interviews with experienced local and national growers including Spring Grove Market Garden, Organics To Go and numerous individuals. Additional yield data has been taken from Organic Farming (Lampkin, 1990), The Earth Care Manual (Whitefield, 2004) and the Farm Management Pocketbook (Nix, 2008).

### Basketry Willow Beds

In the first year of setting up the basketry willow beds we plan to plant 1000 plants. These will consist of a wide variety of willow for fine and rough basketry and willow suitable for living willow sculpture. The willow cuttings will be mainly sourced from West Wales Willows and below is a list of proposed varieties.

#### Fine Willows

Salix triandra - Noir de Villaine (disease resistant)  
Salix triandra - Whissender  
Salix purpurea - Dicky Meadows  
Salix alba x fragilis - Flanders Red  
Salix purpurea - Narbury  
Salix alba - Chermesina Yelverton  
Salix daphnoides - Netta Statham  
Salix triandra - Black Maul  
Salix fragilis - Dicipiens  
Salix purperia - Jagiellonka

#### Rough Willows

Salix viminalis - Longifolia  
Salix viminalis x purpurea Ubrichteveide (disease resistant)  
Salix alba x fragilis - Jaune Hative

#### Living Willow

Salix x cinera x viminalis (disease resistant)  
Salix alba x fragilis (disease resistant)

Salix koriyangi (disease resistant)

Salix linder stipularis - Shubbery ex China (disease resistant)

Willows will be planted in March in ploughed ground (using the tractor from Kit and Saara's 'tractor club'). We will plant the willows fairly densely (as recommended to me by an established willow grower and basket maker: Geoff Forrest of Art Galore) to encourage willows to grow straight and long. The spacing will be 30cm between plants and 40cm between rows. Sheets of biodegradable jute will be used as a mulch to suppress weeds in the first year of growth. By the time the willows are established the jute will be degrading. Rather than replace it we will rely on the willows shading out potential weeds and we will undertake additional hoeing as required. At the end of the first growing year the willows will be cut down at the base to encourage new growth. At the end of the first season there will be something of a harvest to be had but the willows will not be at full production until after the third season. Willow rods will be harvested by hand in winter or spring before the sap rises and stored in the willow storage area of the round house for use for basket making etc. and for sales.

## **Orchard**

**Apples:** We are planning to grow four apple trees, each a different variety with a view to maximising the fruiting season. We aim to use apple trees on a very vigorous MM25 rootstock. This has been recommended by local apple growers as being particularly suitable for the area. We estimate the yields will be 15kg per tree per annum. The varieties of apple listed below have been recommended by local growers.

They will be planted in two pollination groups:

### **Group 2**

Limberland

Red Roller

### **Group 4**

Red Ruby

Pitmaston Pineapple

### **Pear Trees**

We plan to grow four pear trees on a QA rootstock. We are expecting a yield of 15kg/tree per annum (source [www.gardenaction.co.uk](http://www.gardenaction.co.uk)).

2 x Conference

1 x Doyenne du Comice

1 x William's Bon Chretien

### **Other Trees**

We are planning to have 2 sweet cherries, 2 plums, 2 walnut, 1 mulberry, 1 sweet chestnut and 3 elder. We are expecting yields of 20kg/tree per annum for plums, 5kg/tree per annum for cherries, 9kg/tree for mulberries, 3kg/tree for elder, 20kg/tree for walnut and 6kg/tree for sweet chestnut.

### 'Wild' Native Plants (cultivated)

A range of 'wild' native plants will be grown for sale. These are listed in the Table 2 below together with details of planting density, estimated yield and harvest period. Standard data for yield/m<sup>2</sup> for these crops does not exist. The final column explains the origin of the estimated figures in the table. The estimates for yield are highly conservative due to the experimental nature of the crops grown and also allowing for losses due to pests and diseases.

**Table 2 Plant Areas and Expected Yields from Native Plants**

Plant	Approx. density (plants/m <sup>2</sup> )	Estimated Yield (kg/m <sup>2</sup> )	Growing Area (m <sup>2</sup> )	Annual Yield (kg)	Availability of crop	Source of Yield Information
Chickweed (annual - often overwintering)	60	1	202.5 (at any one time - rotation system in operation)	405 (double due to 2 crops/ harvests per year)	April-October 7 months	Based on actual harvested chickweed from 1m <sup>2</sup> .
Bittercress (annual to biennial)	100	0.6	640	384	April-October 7 months	Estimated as similar to chickweed but likely to yield less as it is a smaller and more delicate plant.
Wood Sorrel (perennial)	50	0.25	240	60	May-Oct. 5 months	Estimated - a very delicate plant.
Good King Henry (perennial)	5	1	400	400	April-September 5 months	A cautious estimate based on that of spinach i.e.1.76kg/m <sup>2</sup> .
Pignut (perennial)	50	0.5	128	64	May-July 3months	Estimate based on actual harvested amounts.
Dewberry (perennial)	0.3	0.25	1600	400	August-September 2 months	Estimate based on blackberry yields of 1.1kg/m <sup>2</sup> (from Free Range Practice Guide No.5 FRPG- but reduced.
Silverweed (perennial)	50	1	160	160	May-September 5 months	Estimate based on actual harvested amounts.
Horseradish (perennial)	5	1	60	60	May-September 5 months	Estimate based on Parsnip yield (i.e. 2.6 kg/m <sup>2</sup> ) but much reduced.
Salsify (biennial)	50	3	8	24	September, October & April 3 months	Estimate based on actual harvested amounts.

Burdock (biennial)	2	1	24	24	3 months August-October	Estimate based on Parsnip yield (i.e. 2.6 kg/m <sup>2</sup> ) but much reduced.
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All the plants listed currently grow wild in Pembrokeshire and seed will be harvested from Pembrokeshire wild plants to start off the cultivated crops to ensure local provenance. The one exception is horse radish which does not produce seed in this country. Land owners permission will be sought to uproot and divide existing plants for planting on the plot.

A brief overview of each of the plants is given below:

#### **Chickweed (*Stellaria media*)**

An annual or short-lived perennial capable of two or three generations per year. It is found in a wide range of disturbed habitats, especially in nutrient-enhanced conditions. It is a conspicuous weed of gardens or crops, also found on manure heaps. Seed will be sown directly into the plot. 20m<sup>2</sup> sections will be harvested each week. Once a section is harvested it will be re-sown thus ensuring a constant supply of chickweed.

#### **Bittercress**

##### **Hairy Bittercress (*Cardamine hirsuta*)**

A winter annual (i.e. the seed germinates in autumn and the plant flowers and fruits the following spring). Under favourable conditions it can flower and seed again in autumn. It is particularly common as a weed of cultivation and in other ruderal (wasteground) habitats.

##### **Wavy Bittercress (*Cardamine flexuosa*)**

A winter-or summer annual or rarely short-lived perennial most frequent in open moist, shaded vegetation in marshland, by rivers and streams, and in gardens.

The bittercresses will be sown directly into the plot and harvested in a similar rotation system to the chickweed thus ensuring a constant supply of bittercress. The two species will be used to complement each in terms of their growth period. Hairy bittercress will be harvested over spring and autumn period and wavy bittercress harvested over the summer.

##### **Wood Sorrel (*Oxalis acetosella*)**

This is a low growing perennial that has a fast rate of growth. It flowers from April to May. It is found in woodland, hedgerows, banks, and other moist, usually shaded habitats. It grows on both calcareous and non-calcareous soils, though only those which are moisture-retentive. On the plot it will be grown adjacent to boundary hedgerows to ensure shady conditions.

#### **Propagation**

The seed will be sown directly into the ground. Once mature the plants can be divided in spring and numbers of plants can be increased in this way.

##### **Pignut (*Conopodium majus*)**

A perennial herb found in damp or shaded meadows and pastures, hedgerows, roadside verges, copses and woodlands, especially characteristic of some types of hay meadow. It grows on a wide range of acidic and base-rich moist soils. It is in flower from May to June, and the seeds ripen from July to August.

**Propagation**

The seeds will be sown directly into the ground. Mature plants can be divided in late summer as the plant dies down and the numbers of plants will be increased in this way.

**Dewberry (*Rubus caesius*)**

A deciduous perennial relative of blackberries. It grows in a wide range of habitats; hedges, woodland borders, scrub, dry grassland and semi-stable dunes. It flowers from June to September producing fruit from July to September. It is easily grown in a good well-drained loamy soil in sun or semi-shade. It produces a number of new stems each year from the perennial rootstock. We will build up our stocks of deberries year after year and expect to reach full production by year 5.

**Propagation**

The seed - requires stratification (i.e. a period of chilling) and will be sown directly in the ground in early autumn in trays and placed outside during cold weather for vernalisation. Tip layering can take place in July and division of mature plants in early spring or just before leaf-fall in the autumn. These methods will be used to increase the numbers of plants on the plot.

**Silverweed (*Potentilla anserina*)**

Silverweed is a stoloniferous perennial herb occurring on dry, damp or periodically inundated soils in open grassy swards or on bare ground. It is a very easily grown plant, succeeding in almost any soil. It grows best in a well-drained loam, preferring a position in full sun but tolerating shade.

**Propagation**

Seed will be sown in early spring directly into the plot.

**Salsify (*Tragopogon porrifolius*)**

An annual/biennial herb, occasionally naturalised on sea walls, cliffs, rough grassland and road verges. It was first recorded wild in Britain in 1695. It succeeds in ordinary garden soils, including heavy clays and prefers an open situation.

**Propagation**

The seed will be sown *in situ* as early in the year as possible, in March if weather conditions permit but best sown around mid-April. The roots will be harvested in late autumn and the following spring.

**Horse Radish (*Armoracia rusticana*)**

Horse radish is a perennial plant, persisting in old gardens and allotments, roadsides, waste ground, railways, sandy seashores. The plant is highly sterile and seed-set is unknown in Britain. A very easily grown plant, horseradish prefers a good deep moist well-drained soil and a sunny position. Plants require a good soil if they are to produce good roots, though once established they are very tolerant of neglect and will continue to produce a crop for many years.

**Propagation**

Division is very easy and can be carried out at almost any time of the year, though it is probably best in spring. Sections of root about 20cm long, will be planted out into their permanent positions in February or March. Division will be carried out at least once every three years to prevent the crop from deteriorating.

**Burdock (*Arctium minus*)**

This is a monocarpic perennial (i.e. it dies following fruiting) of woodlands, scrub, hedgerows, roadsides, railway banks, rough pastures, sand dunes and waste ground. It succeeds on most soils, preferably moist. It prefers a sunny position.

**Propagation**

The seed will be sown *in situ* in autumn for a late summer/autumn harvest the following year

**Good King Henry (*Chenopodium bonus-henricus*)**

A perennial plant, forming patches on disturbed, nutrient-rich soil around farm buildings, ruins, roadsides and waste ground.

**Propagation**

By dividing the rootball

From seed; direct sowing outdoors in autumn

**Summary of Native Plant Sowing and Harvesting Activity**

The following is a summary of sowings and harvestings of native plants over a five year period:

**Year 1:** Bittercress and Chickweed sown early in year with continual sowings throughout the year to maintain supply. Both species harvested throughout the year. With respect to bittercress; hairy bittercress (*Cardamine hirsuta*) is a winter annual whilst wavy bittercress (*Cardamine flexuosa*) is a summer annual. Wavy bittercress will be sown and harvested through the summer and hairy bittercress sown and harvested in autumn and spring.

The following seeds will be sown in spring of year 1: wood sorrel, pignut, silverweed, horseradish (divisions)

The following seeds will be sown in autumn of year 1: dewberry, burdock, good King Henry

**Year 2:** Bittercress and chickweed will be sown and harvested throughout the growing period as in year 1. Wood sorrel will be harvested from May to September. Pignut will be harvested from May to June. Silverweed will be harvested from May to September. Horseradish will be harvested from May to September. Good King Henry will be harvested from May to September. Burdock will be harvested in the autumn. Salsify will be sown in spring and harvested in autumn.

Pignut will be sown in spring for the following year. Plants of wood sorrel, silverweed, horseradish, dewberry and burdock will be divided in autumn to increase stocks for the following year. Good King Henry seeds will be sown in autumn for the following year.

**Year 3:** Bittercress and chickweed will be sown and harvested throughout the growing period as in years 1 and 2. Wood sorrel will be harvested from May to September. Pignut will be harvested from May to June. Silverweed will be harvested from May to September. Horseradish will be harvested from May to September. Good King Henry will be harvested from May to September. Burdock will be harvested in the autumn. Salsify will be sown in spring and harvested in autumn. Dewberries will be harvested from August to September.

Pignut will be sown in spring for the following year. Plants of wood sorrel, silverweed, horseradish, burdock and dewberry will be divided in autumn to increase stocks for the following year. Good King Henry seeds will be sown in autumn for the following year.

Year 4 and 5: As in year three.

## **Large Shared Terrace Field**

The 12 acre field through which the entranceway runs will be managed as a shared resource for the four terrace plots. It will be made available to each of terrace household either as part of a shared enterprise or as an extension of their individual plot enterprises. In the short term it will be rented out as grazing either to other plot holders (should they need it) or to local farmers. A provisional rate of £30 per acre per year will be charged, bringing in an annual income of £90 per year per terrace household.

### **Fuel:**

Under floor heating and hot water for domestic use will be supplied from the terrace hybrid solar biomass system. See terrace document for details.

For cooking fuel we aim to harvest 3 tonnes of short rotation coppice willow per year. This will be grown together with the other terrace households' S.R.C. in the southern shared field. See terrace document for details.

It will take 12 months for the S.R.C. to season and we need a maximum of 12 cubic metres of storage area for this at any one time. There will be 9.2 cubic metres of storage space under the eaves on the north side of the house and the remaining 2.8cubic metres of S.R.C. storage will be sited to the west of the compost toilet under a cover against the Miscanthus barn.

### **Water and Drainage**

Domestic water for drinking, cooking and washing will be supplied from the spring. We will have a 500L storage facility within the house for this. This will allow for three days provision of water for the family in case of an emergency.

Given the wet climate of the area (1600mm rain/year) we are hoping that the need for irrigation of crops won't be too demanding. Nonetheless we are planning some irrigation. Rainwater will be harvested from the roof of the house and stored in a 6300L water storage tank. This will be used to irrigate the vegetable garden. The overflow from the tank will feed into the polytunnel pond where rainwater from the roof of the polytunnel will be also feed into the pond using a drainage channel running along the base of the tunnel.

We will harvest water from the roundhouse workshop collecting water from the roof using guttering and storing it in two large water butts.

### **Waste**

There will be a compost toilet situated adjacent to the main house (see plan).

Organic matter will be placed onto the compost bins/heaps and kitchen vegetable waste will be placed into the wormery which will be positioned close to the kitchen.

Paper will be composted and used as mulch.

Glass will be re-used for jams and preserves and other uses. Any surplus glass that cannot be used will be stored and taken to a recycling centre. Any glass waiting to be taken to the recycling centre will be stored in the store room at the back of the house.

The aim is to re-use tins wherever possible. Any surplus tins will be taken to a recycling centre. Any tins awaiting recycling will, again, be stored in the store room at the back of the house.

Plastic - the acquisition of plastic will be kept to the bare minimum. When acquired it will be re-used wherever possible. Surplus plastic will be taken to a recycling centre. It is envisaged that the quantity of plastic stored for recycling will be small and this will be stored in the store room at the back of the house.

Ash from the rocket stove will be used in the compost toilet.

Clothes and shoes will be re-used (e.g. given to friends or charity shops), or composted or used as mulch where appropriate.

Ink cartridges - recycled (e.g. sent to a charity that collects them) or re-filled.

We do occasionally eat fish. The fish waste will be dried, ground and used on plants as fertiliser.

We will also be part of community exchange schemes e.g. freecycle etc.

### **Energy Use and Generation**

We won't be using power tools for food production or craft activities. We aim to coppice the willows by hand (hopefully with the aid of volunteers e.g. wwoofers).

### **3. Building Design**

We will live in the terrace (see Terrace Plan)

#### **Additional Buildings**

In addition to the terrace we are planning to build a tool-shed/willow storage roundhouse, and erect a second-hand polytunnel.

#### **Tool-shed/Willow Storage Roundhouse.**

##### **Purpose**

The building itself will serve as a place to store garden tools and willows. A garden will surround the roundhouse and this will act as a base for the children to play when we are busy working on the plot.

It is placed quite centrally in the plot so it can be reached fairly quickly from any part of the plot. This will be useful from the point of view of it being a place for the children to play and in terms of collecting and returning tools. (We will store any dangerous tools in a lockable metal case to protect the children from any accidents). Rainwater will be harvested via a guttering system and will flow into two large tanks outside the building which will be used for irrigation in the garden.

##### **Materials**

The frame will be built from local woodland round-wood and in-filled with straw bales and cob. The flooring will be made from wood which we hope to source locally from reclaimed timber. The door will probably be reclaimed wood possibly an old door and the glass in the windows will be reclaimed double glazing. Sheet rubber will be used to act as a waterproof membrane on the roof between the straw bales and the turf. A length of rubber will also be used to act as a damp-proof course running under the outer wall. The windows must be able to open to help prevent the stored willow from becoming damp. The roof will be turf. The straw and cob walls will be lime plastered and finished with an environmentally friendly exterior paint in a suitable earth colour. We will use reclaimed guttering for rainwater harvesting.

##### **Construction**

There will be 12 round-wood (local larch from the site) upright posts positioned evenly in a circle to form the outer frame of the 6 metre diameter roundhouse. Once in the ground the exposed posts will measure 2.4 metres high. 12 horizontal pieces of round-wood will join the up-rights to form a circle at the top. A reciprocal roof, also made from local larch round-wood, will be constructed. To strengthen the building an inner 12 uprights will be installed to help support the weight of the roof. A further strengthening of the building will be made by constructing diagonal bracing within 6 of the 12 spaces created in the main outer wall.

Thin lengths of willow or hazel will be laid over the rafters of the reciprocal roof (and tied in place) to help distribute the weight of the straw bales. The straw bales will be placed onto the roof (and tied together) until the roof is covered. A piece of rubber membrane will then cover the whole of the roof and a layer of turf can then be placed on top of this.

For the creation of the walls a rubber membrane will first be laid around the base of the circumference of the building to act as damp proofing and then the straw bales and cob will be built up with gaps left for windows and a door.

### **Reversibility**

The building can easily be knocked down and left to decompose unobtrusively. The guttering, glazing, rubber and water collection tanks would need to be taken away to be re-used in some other building or repair work.

### **Polytunnel**

#### **Purpose**

The polytunnel will be 5.2 meters long and 2.5 meters wide. It will be 2 meters high. The polytunnel will be invaluable in helping us extend the growing season of our crops and enabling us to grow a more varied selection and a more significant proportion of food for our own consumption.

It will be situated close to the entrance of our plot as it will be one of the more high maintenance areas of the plot. Also the proximity of it to the house will be convenient when we need to collect fresh produce for food preparation. A further reason for the tunnel's proximity to the house is so that ventilation control (by means of opening and closing the entrance way and rolling up the sides) can be undertaken swiftly.

#### **Materials, construction**

We will try and source a small second-hand polytunnel. If no suitable second hand ones are available we will purchase a new one locally. Polytunnels are generally made from steel and polythene. We would fix the frame to the ground using metal anchor plates.

Along the lengths of the structure, where the polythene meets the ground, the polythene will curve out and upwards to form a narrow channel which will divert rain water into a pond which will be situated at the southern end of the tunnel. The rainwater collected in the pond will be used to irrigate the polytunnel..

#### **Reversibility**

The polytunnel will not biodegrade in a way that would be environmentally acceptable but it is something that can be removed and transported quite easily and used again in another location.

#### **4. Business plan for all land based produce**

**Name of Business:** Pembrokeshire Willows and Wild Plants

##### **Introduction**

The business can be divided into two distinct areas:

1. Willows and associated products
2. 'Wild' Native Plants for Food

Much of the work involved in harvesting and planting willows will take place during the winter months whilst most of the work involved in harvesting and planting native plants, will be in the spring and summer months. Therefore the combination of the two aspects of the business ensure year round activity and sales.

The share of the work will broadly be divided between Katy and Leander so that Katy takes the lead on willows and Leander takes the lead on 'Wild' Native Plants for Food. Having said this, the business is very much a partnership with each partner helping out with the other's specialist area.

##### **Willows and associated products**

This section of the business is based around growing willows and can be divided into five sections:

- selling rods and cuttings.
- weaving and selling baskets, Christmas decorations and plant climbers (working closely with Cassandra Lishman)
- selling craft bundles
- selling Living Willow kits (e.g. wigwams & dens for children)
- willow workshops with Cassandra Lishman in November, December and January.

##### **'Wild' Native Plant foods**

This involves growing and selling a range of wild native plants as crops e.g. chickweed, bittercress, wood sorrel, pignut, burdock, salsify, silverweed and dewberries etc. to restaurants, shops and market stalls. A strong expression of interest has been made by 'Forager' a company that supplies native edible plants (mostly foraged i.e. gathered from the wild) to the London market and beyond (see attached letter in Appendix 1 of the business plan). The aim of the business is to act as a grower, supplying crops to Forager who will then market and supply the produce to buyers.

##### **Market**

###### **Willows**

Demand for willows and willow produce is high and there are many products on the market indicating a buoyant trade. There are also a number of suppliers offering kits such as wigwams and children's dens etc. (e.g. [www.englishwillowbaskets.co.uk](http://www.englishwillowbaskets.co.uk)). Primarily this will be a web-based business but plant climbers, baskets and Christmas Decorations will also be sold at the local farmer's markets the main two being - Carmarthen and Cardigan. We will be

working closely with Cassandra Lishman and Katherine and Steve Moseley, who will also be selling willow products, to ensure the products complement rather than duplicate each other. In the months of November, December and January, Katy will be working alongside Cassandra, undertaking living willow workshops at local schools and community settings.

Other opportunities to explore:

Haverfordwest Farmers Market

Fishguard Farmers Market

Clare's shop - Crymych

Welsh Crafts Gift Shop - Crymych

Market Hall - Crymych

Castell Henllys Iron Age Fort gift shop

Gwalia gift shop - Newport Pembro

Narberth Gallery

Hill Court Gardens and Crafts

St. Ishmaels Nurseries - Haverfordwest

Fishguard Garden Centre

National Botanic Gardens of Wales

Crofty Nurseries Narberth

Rhos Garden Centre - Haverfordwest

The Pembrokeshire Plant Centre - Fishguard

The Greenman Festival - Brecon Beacons

### **Native and foraged plant foods**

Interest in native and foraged food produce is growing rapidly. For example there has been a recent batch of popular television series that covered this topic i.e. Ray Mears, (Wild Food), Fergus Drennan (the Road-kill chef) and Thomasina Miers (The Wild Gourmets). It is also becoming increasingly fashionable for London restaurants to offer native and foraged food as part of their menus (e.g. The Ivy, 15, Corrigan's and Lindsay House). In other cities too 'wild food evenings' are becoming popular e.g. Battery Park Juice Bar, Chorlton, Manchester.

E-mail and telephone correspondence with Forager, Fergus Drennan ('The Roadkill Chef') and the London restaurant '15' indicate that the market for native wild produce is buoyant. Miles Irving the director of 'Forager' states the 'you can't be too enthusiastic about the market...you couldn't hype it up anymore' and that 'it's a fantastic time'...to become involved.

In addition a report 'Powys Wild Food Project' by Doriene Robinson produced for GLASU in 2006 explores the demand for wild food produce in Powys and concludes that there is a demand for wild foods from local restaurants. There is also demand from the general public. 60% of shoppers expressed an interest in trying wild foods if they were sustainably harvested and guaranteed safe.

An article by Dick Peebles of Caledonian Wildfoods in a report produced by Reforesting Scotland following a conference held in April 2004 titled 'Making a Livelihood from Plants, Animals and Woods in Scotland' states that between £20,000 and £30,000 a year can be made from foraging wild foods. Caledonian Wildfoods themselves had a turnover in 2004 of £1,000,000 and anticipated that it would double in the following year. Dick Peebles points out that there is room in the market for others to set up similar ventures but counters that new legislation in Scotland may make it a little more difficult to gather ad hoc without permission.

## **Potential**

We see the business growing rapidly, particularly through links with 'Forager' so that the turnover in year 3 is expected to be £11,431 with a net profit of £4,555 rising to in year five to a turnover of £19,772 with a net profit of £12,747. If the demand for native plant produce continues to be strong, and we believe it will, there is the possibility of increasing our area of productivity and taking on additional staff in the five-ten year period.

## **Personal Skills and Experience**

### **Willows**

Katy has good manual dexterity, an artistic flair (she has BA in Visual Art from Aberystwyth University), experience of weaving willow baskets and has attended willow weaving courses. She has run her own illustration business for over 9 years. Leander has experience of managing a willow collection whilst working at the University of Liverpool's Ness Botanic Gardens.

### **Wild Native Plant Foods**

Leander has a degree in Agricultural Botany plus a PhD in plant breeding from Aberystwyth University. He has over fifteen years experience working as a professional botanist and ecologist. He has gained considerable experience in horticulture having worked in projects including a horticultural project working alongside adults with learning difficulties at L'Arche, Liverpool, working at the University of Liverpool's Ness Botanic Gardens and running organic vegetable garden to feed 20 scientists at Sherkin Island Marine Station, Co. Cork, Ireland.

## **The Product**

### **Willows**

#### **Baskets**

Three types of baskets will be made and sold. These are; a round Shopping Basket which will be sold for £35, a Log Basket which will be sold for £35 and a Garden Harvest Basket £35. The baskets will be made and sold year round and we plan to make and sell 19 each year. We will work closely with Katherine and Steve from plot 3 who will also be making some baskets.

#### **Living Willow Kits**

Three types of living willow sculpture will be sold. These are; a Dome/Wigwam which will be sold for £40, a fence at £40 per length and a tunnel at £40. Willow kits will be sold whilst the willows are dormant from December to March. We aim to sell 20 Dome/Wigwams, 15 lengths of fencing and 10 tunnels.

#### **Garden Climbers**

We plan to make and sell 15 fan shaped garden plant climbers at £20 each. We hope to sell 15 Fans each year. Cassandra will be producing another style of Garden Climber to complement the Garden Fans and we will be working closely together.

#### **Willow Cuttings and Rods**

Willows will also be sold raw to other growers as live Rods (long pieces, approx. 1.5m) at 50p/rod and cuttings (short pieces, approx. 25cm long) at 25p/cutting. These will be sold at the optimal time of year for planting i.e. when the willows are dormant from December through to March.

### **Craft Bundles**

Craft bundles are composed of non-living willow for sale to basket weavers and other crafts-people. Each bundle will be composed of 120 withies and will sell for £30/bundle. The withies will be harvested between December and March, dried out and sold year round.

### **Christmas Decorations**

These will be woven out of non-living willow and sold at markets and shops during the Christmas period. They will sell for £3.50 each.

### **Native Plant foods**

Following a telephone conversation with 'Forager' the following estimates of prices and the quantity 'Forager', would take are listed below:

Bittercress	£8/kg; Forager would need 15kg/week
Chickweed	£3.50/kg; Forager would need 15kg/week
Wood sorrel	£27/kg; Forager would need 3kg/week
Pignut	£30/kg; Forager would need 8kg/week
Dewberries	(£1.70/punnet) = 6.80/kg; Forager would need 100kg/week
Good King Henry	£3.50/kg Forager would need 20kg/week
Silverweed	£3.50/kg Forager would need 8kg/week
Burdock	£3.50/kg Forager would need 2kg/week
Horse Radish	£3.50/kg Forager would need 3kg/week
Salsify	£3.40/kg Forager would need 1.5kg/week

### **Marketing**

#### **Unique Selling Points**

##### **Willows**

The willows will be organically grown and grown on a low-impact eco-village (i.e. Lammas brand). There is only one other company in Wales producing organic willows that we are aware of. This is Heartwood Crafts in Carmarthenshire. There is currently an ethical revolution which, according to the market analysts, Mintel, has seen sales in free range, fair trade, ethical and organic products and services rise 62% in the past 4 years. There is a growing interest in art and craft and 'getting back to nature' and a strong desire to use spending power to promote sustainability. The willow enterprise is entirely in tune with this ethical revolution and has the right ingredients to make it a viable business.

##### **Native Wild Plant Foods**

Despite a recent increase in interest, it's still a highly unusual product to be selling. One of the key concerns about foraging, and its increasing popularity, is the sustainability of the industry (i.e. the risk of depleting wild stocks). This will be the first time native plants have been grown as crops and it is guaranteed not to have a negative impact on wild populations of plants. In addition foraging for roots is very difficult as it has a big impact on native populations and the uprooting of plants is prohibited under the Wildlife and Countryside Act (1981) without the landowner's permission.

Cultivating native plants means that a wider variety of produce can be offered for sale and with greater reliability than with foraged food.

The wild plants will be grown by an experienced and well-qualified botanist.

## **Competitors**

### **Willows**

Rods and cuttings are sold by West Wales Willows, also based in Pembrokeshire. We feel there is a large market for rods and cuttings with all suppliers we came across selling out during the winter months and feel there's room in the market for one more, small organic supplier.

Baskets - We don't know of any basket makers/sellers in Pembrokeshire. However there is a basket weaver based in Tipi Valley who sells through a range of craft shops throughout Wales. A shop worker from Gwalia (craft shop in Newport) told us that this basket maker makes a decent living from his craft and felt that there was room in the market for more basket products in Wales.

Kits - We're not aware of any kit-sellers in Pembrokeshire.

### **Native Wild Plant Foods**

There is a forager, Yun Hider, based in the neighbouring village, Hebron. However, the market is so buoyant there's unlikely to be an impact on his business and our business is unlikely to be inhibited by his as ours is based on cultivated plants. He doesn't sell through 'Forager' and therefore has a different network of outlets.

## **Advertising and Selling**

We are aiming to sell the willows through a website. We are aiming for the regular and reliable appearance of our products at the Carmarthen and Cardigan farmer's markets.

All other advertising and selling of native wild plants will be undertaken on our behalf by 'Forager'. We will work with Forager to open up markets for native plant produce in Wales. There is already some interest in Pembrokeshire, for example, there is a Really Wild Food Festival in St. David's each year and the Pembrokeshire market has a lot of potential.

## Appendix 1



Miles Irving  
Director  
Forager  
13 Tillard Close  
Petham  
Kent CT4 5RA

01227 700141  
information@forager.org.uk

To Whom it may concern,

this to confirm our interest in working with Leander Wolstenholme, to market the native edible plants which he proposes to grow at Pont y Gafel Farm, Glandwr, Pembrokeshire should planning be granted. We presently supply about 25 restaurants in London and 15 in other parts of the country with native plant materials and fungi gathered from the wild. We know that our business could greatly increase, at present we are held back in part by limited supplies of some of our produce, a problem which could easily be solved if it were cultivated. We have succeeded in popularising many native edible plants with high end restaurants; to meet future demand some of them will need to be cultivated. Certain wild ingredients, roots in particular, cannot be harvested commercially without damaging plant populations. There is therefore a particular demand for such plants, should they be cultivated. I understand that Mr Wolstenholme intends to grow a number of edible root bearing species, such as Pignut, Salsify and Burdock. We also need to supplement our foraged supplies of many edible leaves and fruit, which Mr Wolstenholme also intends to grow. There is a particular demand for Dewberries, which could easily be grown in quantity on the site.

We would be able to purchase most or all of what is cultivated on this site for sale to restaurants. However, we would also be able to assist them in marketing these products through retail outlets in Pembrokeshire, under our Forager brand. We have developed our products for local retail outlets in Kent and have a good knowledge now of how to package and market them. I am quite sure that these products would fit in well with the growing interest in local seasonal produce.

I will be more than happy to answer any queries regarding our potential involvement in this innovative and timely project, which I feel sure would be a success in many ways, were it given the go ahead.

Yours sincerely,

Miles Irving

## 5. Needs

<b>Need</b>	<b>Requirement</b>	<b>Total</b>
<b>Fuel for heating</b>	Heating fuel winter: 3.5 tonnes miscanthus biomass @ £50 tonne = £175 plus Heating fuel summer: harvested solar power equivalent of 600 kWhrs over 6 months @ £0.15kWhr = £90	<b>£265</b>
<b>Fuel for Cooking</b>	3 tonnes per annum of SRC seasoned firewood at £90/tonne	<b>£270</b>
<b>Provision of Drinking and Cooking Water</b>	25,550l/annum at 0.26 pence per litre plus £30 standing charge (Dwr Cymru)	<b>£96.43</b>
<b>Provision Washing, Bathing Water etc.</b>	44,450l/annum at 0.26 pence per litre (Dwr Cymru)	<b>£115.57</b>
<b>Household Food (annual)</b>	see below for detailed list of food needs*	<b>£7440.16</b>
<b>Basic household clothing</b>	5 people at £235 per person per year	<b>£1175</b>
<b>Household Electricity</b>	1200kWhr/annum at 13.56p per kWhr plus £13 standing charge (source: Good Energy)	<b>£162.85</b>
<b>Telephone</b>		<b>£300</b>
<b>Annual Dwelling Maintenance</b>		<b>£200</b>
<b>Other Overhead Requirements</b>	£500 Council Tax per annum £1,000 Lease Rental	<b>£1500</b>
<b>Transport Costs, Car Repairs, Car Tax etc.</b>		<b>£1000</b>
<b>Insurance (household etc.)</b>	£450	<b>£450</b>
<b>Total</b>		<b>£12,975</b>

**\*Detailed Breakdown of Annual Food Needs for Household with details of Food produced from the plot (food produced from plot given in bold)**

<b>Food Item</b>	<b>Quantity Needed per Annum</b>	<b>@</b>	<b>Price/annum</b>	<b>Source</b>
Pasta	26kg	£1.60/kg	41.60	Shop
Oats	8.3kg	£1.43/kg	11.87	Shop
Muesli	30kg	£3.50/kg	105.00	Shop
Rice	104kg	£2.00/kg	208.00	Shop
Split peas	6kg	£1.20/kg	7.28	Shop
Dry beans	13kg	£2.00/kg	26.00	Shop
Wholewheat Flour	26kg	£1.10/kg	28.6	Shop
Nuts (e.g. peanuts, brazil, pine, cashews, pistacios etc.)	20.8kg	£9.11/kg	189.49	Shop
Seeds (e.g. pumpkin, poppy, sunflower)	5.2kg	£3.06/kg	15.91	Shop
Sunflower oil	5.2l	£3.68/l	19.14	Shop
Tea bags (Fairtrade)	1560 bags	£1.75/80 bags	34.13	Shop

Ground coffee	7.8kg	£8.00/kg	62.40	Shop
Honey	26 jars	£2.86/jar	74.36	Shop
Sugar for general use	12kg	£0.99/kg	11.88	Shop
Sugar for Cordial making	30kg	£0.99/kg	29.70	Shop
Sugar for jam making	12kg	£0.99/kg	11.88	Shop
Sugar for wine making	15.5kg	£0.99/kg	15.35	Shop
Baked beans (organic)	208 tins	£0.65/can	135.2	Shop
Kidney beans (organic)	26 tins	£0.48/can	12.48	Shop
Chocolate (organic)	5.2kg	£10.68/kg	55.54	Shop
Bread (wholemeal organic)	364 loaves	£1.40/loaf	509.60	Shop
Beer	104 litres	£1.40/litre	145.60	Shop
Pickling vinegar	36.4 litres	£1.20/litre	30.33	Shop
TVP mince	7.8kg	£5.40/kg	42.12	Shop
Oat cakes	26 packs	£1.16/pack	30.16	Shop
Stock cubes	26 packs	£1.00/pack	26.00	Shop
Soy sauce	1.5 litres	£5.56/litre	8.34	Shop
Balsamic vinegar	1.5 litres	£5.96/litre	8.94	Shop
Cheese	26kg	£5.00/kg	130.00	Shop
Butter	13kg	£4.80/kg	165.4	Shop
Dried Fruit (Apricots)	13kg	£3.50/kg	45.50	Shop
Dried Fruit (Raisins)	13kg	£1.00/kg	13.00	Shop
Tofu	8kg	£12.47/kg	100.00	Shop
Yoghurt	46.8kg	£3.20/kg	149.8	Shop
Fish	72.8kg	£7.50/kg	546.00	Shop
Eggs	312 eggs	£0.20/egg	62.40	shop
Jam (organic)	52 jars	£1.43/jar	74.36	Fruit produced from Plot (see table below)
Cordial	41.6 litres	£3.50/litre	145.60	Plot (Fruit produced from plot, see table below)
Wine (various fruits e.g. Elderberry) (Home made wine will be given as gifts as well as own consumption).	67 litres	£5.99/litre	401.33	Plot (Fruit produced from plot, see table below)
Milk	936 pints	£0.50/pint	<b>468.00</b>	<b>Plot</b>
Mixed herbs	520g	£0.023/18g	<b>6.64</b>	<b>Plot</b>
Mint tea	2080 bags	£0.99/20 bags	<b>102.96</b>	<b>Plot</b>
Potatoes	112kg	0.91	<b>101.92</b>	<b>Plot</b>
Carrots	20kg	1.00	<b>20.00</b>	<b>Plot</b>
Swede	17 swedes	1.00/swede	<b>17.00</b>	<b>Plot</b>
Celeriac	11 celeriac	1.00/celeriac	<b>11.00</b>	<b>Plot</b>
Parsnip	2.6kg	2.03	<b>5.28</b>	<b>Plot</b>
Beetroot	10kg	1.53	<b>15.30</b>	<b>Plot</b>
Jerusalem Artichoke	4.5kg	3.38	<b>15.21</b>	<b>Plot</b>
Radish	10 bunches	0.90/bunch	<b>9.00</b>	<b>Plot</b>
Celery	2kg	2.09/bunch	<b>16.72</b>	<b>Plot</b>
White Onion	79.2kg	1.61	<b>127.51</b>	<b>Plot</b>
Red Onion	17.82kg	1.90	<b>33.86</b>	<b>Plot</b>
Garlic	33 bulbs	0.40	<b>13.20</b>	<b>Plot</b>
Leek	4kg	3.21	<b>12.84</b>	<b>Plot</b>
Spring Onion	64 plants (8 bunches)	0.73/bunch	<b>5.84</b>	<b>Plot</b>
Cabbage	12 (heads)	1.46/head	<b>17.52</b>	<b>Plot</b>

Brussels Sprouts	3kg	2.00	<b>6.00</b>	Plot
Calabrese	4.5kg	4.53	<b>20.39</b>	Plot
Broad Beans	5.4kg	3.25	<b>17.55</b>	Plot
Runner Beans	24kg	5.99	<b>143.76</b>	Plot
Green Beans	13.2kg	5.47	<b>72.20</b>	Plot
Peas	2.6kg	9.93	<b>25.82</b>	Plot
Courgette	4.5kg	3.71	<b>16.70</b>	Plot
Pumpkin	8kg	0.80	<b>6.40</b>	Plot
Maize	90 cobs	0.70/cob	<b>63.00</b>	Plot
Chard	5.46kg	4.67	<b>25.50</b>	Plot
Kale	2kg	4.50	<b>9.00</b>	Plot
Spinach	8.8kg	5.00	<b>44.00</b>	Plot
Lettuce	12kg	2.00	<b>24.00</b>	Plot
Cucumber	24 cucumbers	1.50/cucumber	<b>36.00</b>	Plot
Tomatoes	27kg	3.00	<b>81.00</b>	Plot
Aubergines	11 aubergines	1.06/aubergine	<b>11.66</b>	Plot
Peppers	54 peppers	0.65/pepper	<b>35.10</b>	Plot
Strawberries*	38.25kg	8.18	<b>312.89</b>	Plot
Rhubarb*	8.5kg	3.60	<b>30.60</b>	Plot
Raspberries*	18kg	20.00	<b>360.00</b>	Plot
Gooseberries*	3kg	8.00	<b>24.00</b>	Plot
Red Currants*	16kg	12.50	<b>200.00</b>	Plot
Black Currants*	16kg	12.50	<b>200.00</b>	Plot
Blueberries*	8.5kg	13.00	<b>110.50</b>	Plot
Tayberries*	16kg	10.00	<b>160.00</b>	Plot
Apples	60kg	2.00	<b>120.00</b>	Plot
Pears	60kg	3.00	<b>180.00</b>	Plot
Plums	40kg	5.00	<b>200.00</b>	Plot
Cherries	10kg	2.00	<b>20.00</b>	Plot
Mulberry*	9kg	2.00	<b>18.00</b>	Plot
Elderberry	9kg	2.00	<b>18.00</b>	Plot
Walnut	40kg	2.50	<b>100.00</b>	Plot
Sweet Chestnut	6kg	3.00	<b>18.00</b>	Plot

<b>Total Household Annual Food Needs</b>			<b>7440.16</b>	Plot plus Shop
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<b>Total Value of Food Produced from Plot</b>			<b>3709.87</b>	Plot only (only figures highlighted in bold used for this calculation)
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\*Detail showing quantities of soft fruits required for various uses

	<b>Wine (kg)</b>	<b>Cordial (kg)</b>	<b>Jam (kg)</b>	<b>Eating (kg)</b>	<b>Total (kg)</b>
Strawberries	1.25	8	3	26	<b>38.25</b>
Raspberries	2	8	3	5	<b>18</b>
Red Currants	1.5	8	1.5	5	<b>16</b>

Black Currants	1.5	8	1.5	5	<b>16</b>
Blueberries	1.5	0	0	7	<b>8.5</b>
Tayberries	2	9	0	5	<b>16</b>
Mulberry	4	0	0	5	<b>9</b>
Gooseberry	0	0	3	0	<b>3</b>
Rhubarb	0	0	0	8.5	<b>8.5</b>
Elderberry	9	0	0	0	<b>9</b>

The values used in these calculations have been collected from a number of sources including HDRA/DEFRA market reports as well as major suppliers including Calon Wen, Riverford, Abel & Cole and The Organic Delivery Co., and Tesco on-line price check.

#### 7. Percentage of household needs met through land based activities.

	Need	After 3 years	After 4 years	After 5 years
<b>Fuel for heating</b>	£265	£176*	£176*	£176*
<b>Fuel for Cooking</b>	£270	£135	£200	£270
<b>Provision of Water for Drinking/Cooking</b>	£96.43	£96.43	£96.43	£96.43
<b>Provision of Water for Bathing/Washing etc.</b>	£115.5	£115.5	£115.5	£115.5
<b>Household Food (annual)</b>	£7440.16	£1236	£2473	£3709
<b>Basic household clothing</b>	£1175	£0	£0	£0
<b>Household Electricity</b>	£162.85	£162.85	£162.85	£162.85
<b>Telephone</b>	£300	£0	£0	£0

<b>Annual Dwelling Maintenance</b>	£200	£50	£50	£50
<b>Other Overhead Requirements</b>	£1500	£0	£0	£0
<b>Transport</b>	£1000	£0	£0	£0
<b>Insurance</b>	£450	£0	£0	£0
<b>ST</b>		£1972	£3274	£4580
<b>Other land based products and services (see cash flow forecast for profit figures)</b>	0	<b>£4555</b>	<b>£6001</b>	<b>£12,747</b>
<b>Total</b>	<b>£12,975</b>	<b>£6527</b>	<b>£9275</b>	<b>£17,372</b>
<b>Percentage</b>		<b>50%</b>	<b>71%</b>	<b>134%</b>

\* Heating fuel winter: 3.5 tonnes miscanthus biomass @ £50 tonne minus running costs of £89 (25% of total miscanthus running costs) = £86  
plus  
Heating fuel summer: harvested solar power equivalent of 600 kWhrs over 6 months @ £0.15kWhr = £90

## 8. Positive Contribution

### To the Project

We are willing and eager to help the community in any way we can whether this be mucking in with house building or helping out at lambing time. We would be happy to help with the milking of cows and goats and we will be an active part of the cow club run by Paul and Hoppi Wimbush. Leander is happy to act as an ecological advisor and to share his knowledge of plants and other wildlife with the group and is happy to give wildlife tours around the site.

In the context of the wider community Leander will offer wildlife walks, evening talks and plant identification training. Also specialist native wild plant products will be made available to the local community. There is the possibility in the future of interacting with the local community through willow weaving courses, community sculpture and events.

We both attended Welsh language classes whilst students at the University of Aberystwyth and are keen to restart lessons again.

## 9. Transport

### Personal Transport:

We will not own our own car but will participate in the Lammas car-share scheme. The children will need to be transported each day to a local school in the Lammas minibus together with other children from the site attending the same school.

We will also have a range of miscellaneous transport needs such as going to the swimming pool, days out, trips to the beach etc. We are aiming to use a combination of cycling and public transport for most of these activities.

**Willow Business:**

As much of the Willow Business will be web based any orders in a given week for craft bundles, rods and cuttings will be transported at the same time to the Crymych using a scheduled Lammas mini bus journey. They will then be sent on to customers by courier e.g. Amtrack.

Trips to Farmers Markets and Craft outlets with willow products will be co-ordinated with other Lammas members to enable car sharing to take place when necessary.

**Native Plant Business:**

It is essential that the native plants arrive at Forager in Canterbury in the freshest condition possible. We have explored several different avenues to achieve this and consulted widely with growers and haulage contractors in the local area (e.g. Frenni, Amtrack, Organic Farm Foods, Lampeter). The best option is offered by Langdons who specialise in controlled temperature transport especially frozen and chilled palletised food. They run a service called Chillnet which specialises in consignments of one or two pallets of chilled or frozen food for next day delivery. They have a bi-weekly pick up and delivery service that runs through the Hermon (SA36) area on Mondays and Thursdays and will be able to pick up from the Tir y Gafel site at Glandwr. The Chillnet van maintains goods at a temperature of between 1°C and 5°C. From April through to October we plan to produce two pallets of native plant produce per week; one pallet picked up on Monday and one on Thursday for delivery in Canterbury on Tuesday and Friday respectively. The native plant produce will be carefully packed in insulated packaging with measures taken to keep the roots/stems moist to prevent wilting. The packages will be loaded onto a pallet and secured ready for pick-up. The cost of delivery from Glandwr to Canterbury is currently £78.36 plus VAT £13.71 plus a fuel surcharge which is currently running at 6% (£4.70) bringing the total transport cost to £96.77 per delivery.

In the first instance, as the business establishes, much of the native plant produce will be sold to existing markets in London, through Forager. However we will be working closely with Miles Irving in the future to develop local networks of native plant buyers in Wales and in particular in Pembrokeshire.

**10. Functional Need Essay**

Agricultural and horticultural standard labour requirements are available based on MAFF and DEFRA figures and can be used in assessing labour requirements to undertake enterprises and tasks. However, the enterprises undertaken on the plot are quite complex, totally organic with the use of little or no machinery. Therefore many of the tasks such as weeding will be very time-consuming much more so than in non-organic, highly mechanised systems. A recent report published in the International Journal of Agricultural Sustainability in 2005 "Survey and Analysis of Labour on Organic Farms in the UK and Republic of Ireland by James Morison, Rachel Hine and Jules Pretty indicates that following a survey of 1144 organic farms those less than 5ha in size have an average of 237.5 full time equivalent (FTE) staff per 100ha per farm (2.38 FTE/ha). The number of FTE in smallholdings was considerably higher than for larger farms.

Examples of daily tasks and routines throughout the four seasons:

April	Willow Business	Native Plants Business	Other Jobs
7.30am		Check seedlings in polytunnel for watering and for pests and diseases etc.	Partner 1 gets children ready for school. Partner 2 check seedlings in polytunnel for watering and for pests and diseases etc. Milking duty twice a week.
9.00 - 12.00am	Processing orders and packaging willow (2 hours/week) Visit to Crymych Post Office once a week. Soaking willow for future use.	Harvesting Native Plants. Packaging plants in insulated boxes and preparing pallet for pick up twice a week for wild food distribution using Langdons Chillnet service. Mulching paths when needed	Bed preparation - clearing, digging, raking, sowing (direct or into module trays 20 mins / bed or 15 mins / module tray) composting. (90 min / bed) Harvesting salad crops
		Check watering and ventilation in polytunnel	
12.00 - 5.00pm	Make 1.25 Christmas decorations a week. Make baskets (3 hours every 2 weeks for one basket) Make garden climbers (1 1/2 hours every week for one climber)	Bed preparation digging, clearing, raking, sowing, composting (90 min / bed) Planting in polytunnel General maintenance .	
		Mowing - 3 hours / week	
6.00pm			Milking duty twice a week.
8.00pm		Check watering and ventilation in polytunnel	
	Paperwork and record keeping 2 hours a week		

July	Willow Business	Native Plants Business	Other Jobs
7.30am		Check seedlings in polytunnel for watering, pests and diseases etc. Partner 1 gets children ready for school.	Milking duty twice a week. .
		Waters seedlings in polytunnel. Check plants for pests and diseases.	
9.00 - 12.00am	Processing orders and packaging willow (2 hours/week) Visit to Crymych Post Office once a week. Soaking willow for future use. Check willow beds for	Harvesting Native Plants. Packaging plants in insulated boxes and preparing pallet for pick up twice a week for wild food distribution using Langdons Chillnet service.	Bed preparation - clearing, digging, raking, sowing, composting. (90 min / bed) Harvesting fruit and vegetable produce Food storage and processing.

	pests and diseases once a week. Check irrigation during dry weather and irrigate accordingly.	Mulching paths when needed	
		Weeding 1-2 hours / bed Planting out 1-2 hours / bed	
		Seed harvest for Native Food plants and vegetables. Check irrigation for Fruit, vegetables and Native Food plants and irrigate accordingly.	
		Check watering and ventilation in polytunnel	
12.00 - 5.00pm	Make 1.25 Christmas decorations a week. Make baskets (3 hours every 2 weeks for one basket) Make garden climbers (1 1/2 hours every week for one climber)	Bed preparation digging, clearing, raking, sowing, composting (90 min / bed) Planting in polytunnel General maintenance	
		Mowing - 3 hours / week	
6.00pm			Milking duty twice a week.
8.00pm		Check watering and ventilation in polytunnel	
		Paperwork and record keeping 2 hours a week	

September	Willow Business	Native Plants Business	Other Jobs
7.30am			Partner 1 gets children ready for school. Partner 2 Milking duty twice a week.
		Check seedlings in poly-tunnel for watering and for pests and diseases etc.	
9.00 - 12.00am	Processing orders and packaging willow (2 hours/week) Visit to Crymych Post Office once a week. Soaking willow for future use. Check willows for irrigation, pests and diseases.	Harvesting Native Plants. Packaging plants in insulated boxes and preparing pallet for pick up twice a week for wild food distribution using Langdons Chillnet service. Mulching paths when needed	Check beds for irrigation, pests and diseases. Bed preparation - clearing, digging, weeding, composting. (90 min / bed) Harvesting fruit and vegetable produce. Food storage and processing.
		Seed harvesting from vegetables and Native Food plants. Plant biennial seeds. Check irrigation for Vegetables, fruit and Native Food plants.	

		Check watering and ventilation in polytunnel	
12.00 - 5.00pm	Make 1.25 Christmas decorations a week. Make baskets (3 hours every 2 weeks for one basket) Make garden climbers (1 1/2 hours every week for one climber)	Bed maintenance digging, clearing, raking, composting (90 min / bed)	General maintenance
		Mowing - 2 hours / week	
6.00pm			Milking duty twice a week.
8.00pm		Check watering and ventilation in polytunnel	
		Paperwork and record keeping 2 hours a week	

December	Willow Business	Native Plants Business	Other Jobs
7.30am			Partner 1 gets children ready for school. Partner 2 Milking duty twice a week.
		Check polytunnel for irrigation and for pests and diseases	
9.00 - 12.00am	Processing orders and packaging willow (2 hours/week) Visit to Crymych Post Office once a week. Soaking willow for future use. Cutting and storing the willow. Cutting, packaging and selling Living Willow Kits.	Harvesting Native Plants. Visit to Crymych twice a week for Wild Food distribution. Harvesting Native Plants. Packaging plants in insulated boxes and preparing pallet for pick up twice a week for wild food distribution using Langdons Chillnet service. Mulching paths when needed	Check stored produce for mould, rodent damage etc. Tree maintenance (pruning weeding) Hedge maintenance (trimming) Maintenance of buildings and fencing.
12.00 - 5.00pm	Make 1.25 Christmas decorations a week. Make baskets (3 hours every 2 weeks for one basket) Make garden climbers (1 1/2 hours every week for one climber) Willow Workshops with Cassandra once a week in the months of November, December and January.		Planting more trees etc.
		Landscaping - making new beds. Cropping plan for following year.	

6.00pm			Milking duty twice a week.
8.00pm	Paperwork and record keeping 2 hours a week		

As the plot will be run as an organic enterprise, the plants on the plot, especially in the kitchen garden and in the polytunnel, will require intensive management with constant attention to pests and diseases. Problems such as mildew and damping off can only be contained with careful control of ventilation and irrigation as fungicides are not permitted. Slugs and snails will be controlled by hand picking late in the evening as slug pellets are not permitted under organic standards.

Watering may be required 2 or 3 times a day depending on conditions and ventilation in the polytunnel may need to be attended to early morning and late in the evening. Outdoor crops may need occasional frost protection at short notice (with the application of hay for insulation against the frost)

As part of the cow club we need to be on site to milk the cow. As there are only two cows, it would be unviable to have to drive or walk three miles to milk them.

Occasionally it will be our turn to take products to craft outlets and Farmers Markets. We will work together with other residents to keep these journeys to a minimum.

The smooth running of the community relies upon a network of co-operative encounters and interchanges which would be severely disrupted if people were coming and going off the site. For example Katy will be working closely with Cassandra in relation to willow products.

The attention to detail on which this livelihood depends is more than a nine to five job and requires a permanent presence on the site to keep it viable and successful.

## 11. Implementation Timescales

When we arrive on the site we are planning to live, for the first year - 18 months, in a yurt purchased from Woodland Yurts, North Somerset until the terrace is ready to be lived in. The priorities in the **first year** are to build the terrace, establish the kitchen garden put up the polytunnel and get the willows and the native plant business up and running. For the purpose of this proposal the year will start in March. In October of the first year we will plant the new native hedgerow all around the plot.

The schedule for the construction of the terrace is given in the Terrace Plan. The construction will take place over five phases i.e. groundworks, production and erection of timber frame, roof & infill, windows & services and finish. Based on 22 working days/month the whole process will take a year and a half.

In sales terms we will have some native plants to sell, also some Christmas decorations and 4 baskets made from what can be collected from the first willow harvest. Seeds for the native plants aspect of the business will be harvested from the wild this summer (2008).

In the **second year** tree planting in the orchard will begin in October and will be completed before the following spring. During the summer the main track through the plot will be created.

The quality of the willow from a second year's harvest will not yet be suitable for selling but withies can be selected to produce climbers, baskets and Christmas decorations.

As the willows are becoming established it is important in **year three** to get the workshop/willow store built in time for the third harvest. At the end of year three willow cuttings and rods, willow kits and craft bundles are available for sales.

In the **fourth year** we will have time to create the pond in the kitchen garden. Everything should be up and running by this point and on the business side sales are good.

By the **fifth year** we are hoping to have some fruit from the orchard. There will be jam making for home consumption and for exchanging with other residents for honey, eggs etc.

## 12. Additional Sources of Income

During the first three years Leander will take on occasional part-time freelance work.

Thereafter, Katy will be running willow workshops in the winter months generating £200 per annum.

## 13. Set up Costs

<b>Domestic Start up Capital</b>	<b>Totals</b>
Savings	<b>15,000</b>
Sale of House	<b>80,000</b>
<b>Total</b>	<b>95,000</b>
<b>Less Domestic Set up Costs</b>	
House-build	<b>36,000</b>
Lease of Plot	<b>30,000</b>
Temp. accommodation (yurt)	<b>3,500</b>
Wood burning stove for yurt	<b>150</b>
Food & Sundries whilst plot establishes	<b>2600</b>
SRC 37p/cutting from West Wales Willows	<b>600</b>
Purchase of Fruit Trees	<b>620</b>
Liner for pond	<b>300</b>
Lime Application	<b>215.6</b>

Hedging	<b>206</b>
Purchase of seeds (Real seed Catalogue)	<b>100</b>
Soft fruits	<b>200</b>
Main path	<b>700</b>
Rabbit Proof Fencing	<b>304</b>
<b>Total Domestic Set up Costs</b>	<b>75,661</b>
<b>Remainder</b>	<b>19,504</b>

From the remaining £19,504 of the domestic start up capital after the domestic set up costs have been subtracted, £2000 will be used as business start-up capital. The remainder will be set aside to assist with household costs during the establishment period.

**Katy Taggart and Leander Wolstenholme Tir-y-Gafel House 2 Plot 2 Business Cash Flow Forecast**

**Business Plan Cash Flow**

**Assumptions:**

Inflation is assumed to be 2.5% and assumed to affect both receipts and payments equally and so the figures have not been amended each year.

It is assumed that the yields will not drop below 80% of the expected.

The market for native plants will remain steady.

The market for willow products will remain steady.

The business start up capital of £2000 comes from personal savings.

Business Start Up Capital													
<b>Business Start Up Capital</b>													
<b>From Savings</b>													2,000
<b>Less Business Set Up Costs</b>													
100 Willow Cuttings from West Wales Willows													42
Purchase of tools (2nd hand - e-bay)													50
Purchase of seeds (Real seed Catalogue)													100
Fencing													500
Polytunnel (2nd hand)													500
Piping for irrigation (2nd hand)													50
Ground limestone													215.6
Jute mulch mats													106
<b>Total</b>													<b>1563.6</b>
<b>Savings minus set up costs</b>													<b>436.4</b>











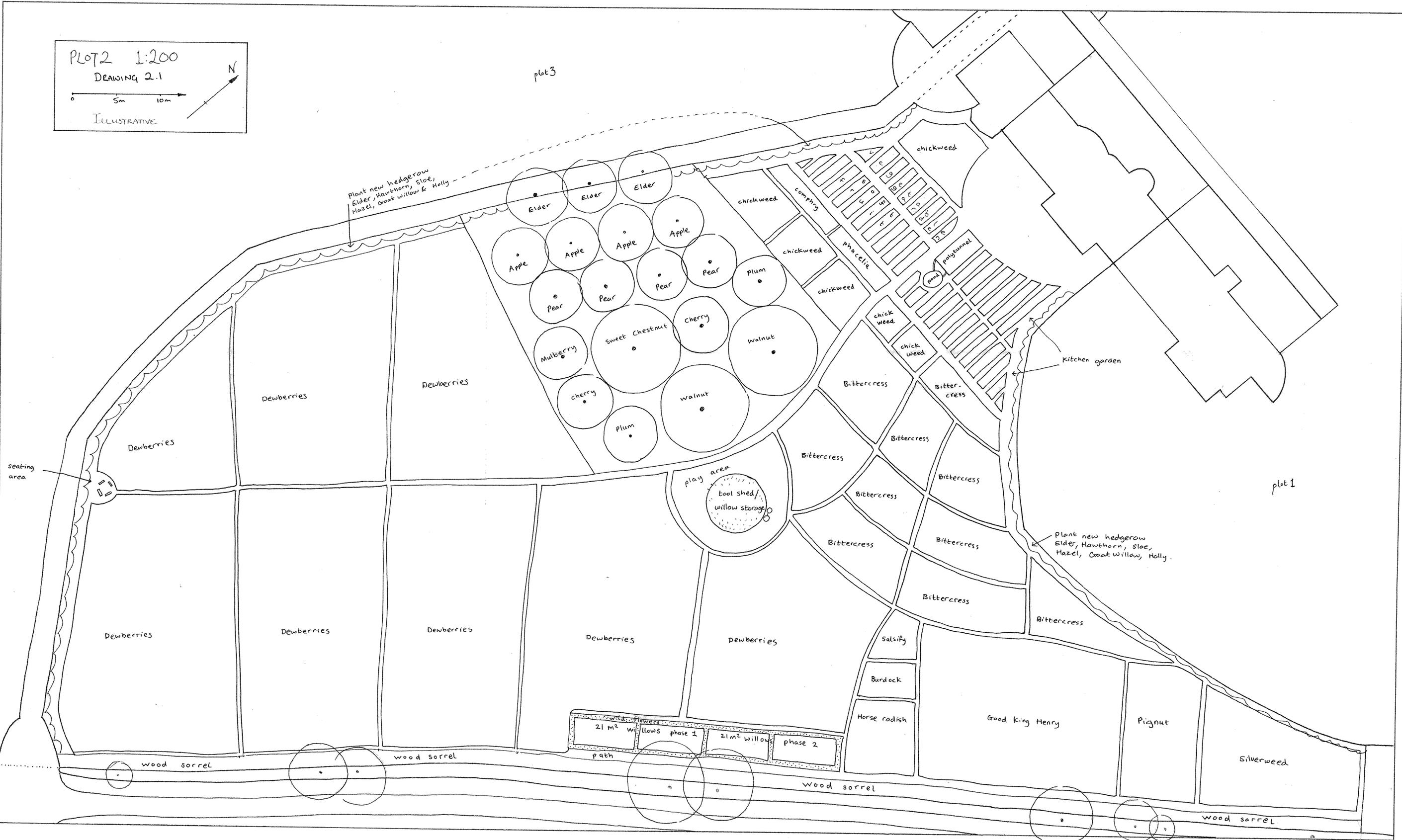
PLOT 2 1:200  
 DRAWING 2.1  
 5m 10m  
 ILLUSTRATIVE

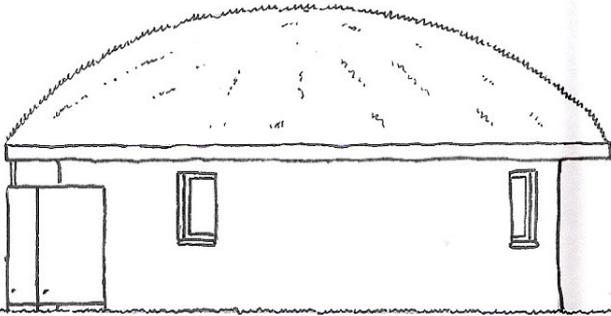
plot 3

plot 1

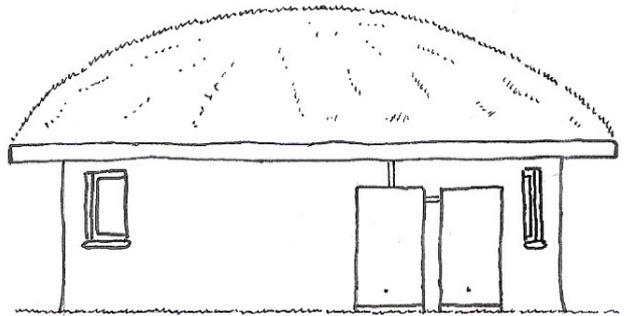
Plant new hedgerow  
 Elder, Hawthorn, Sloe,  
 Hazel, Great willow & Holly

Plant new hedgerow  
 Elder, Hawthorn, Sloe,  
 Hazel, Great willow, Holly

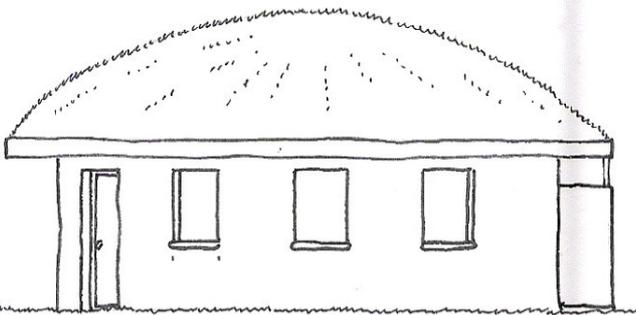




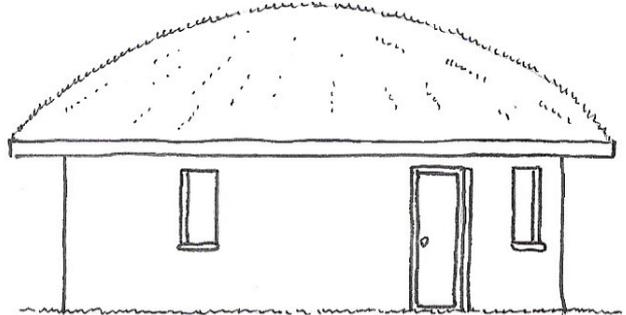
North



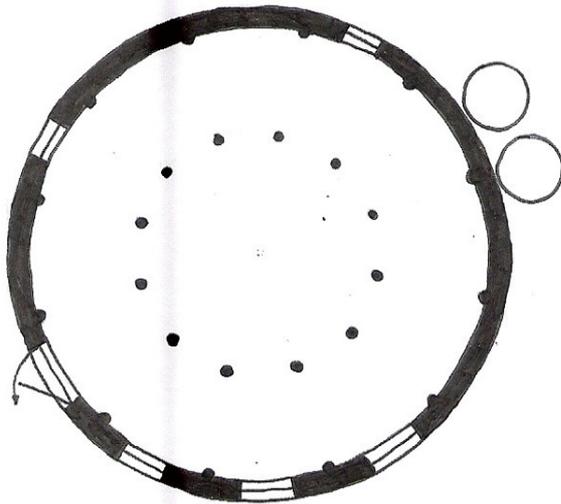
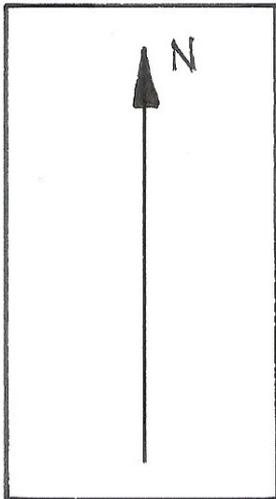
East



South



West



Plot 2  
DRAWING 2.2  
Barn Workshop  
1:100

0 1 2 3m