Fferm Clarke

Drefach Felindre
SA44 5JA

One Planet Development Management Plan

Contents

Summary

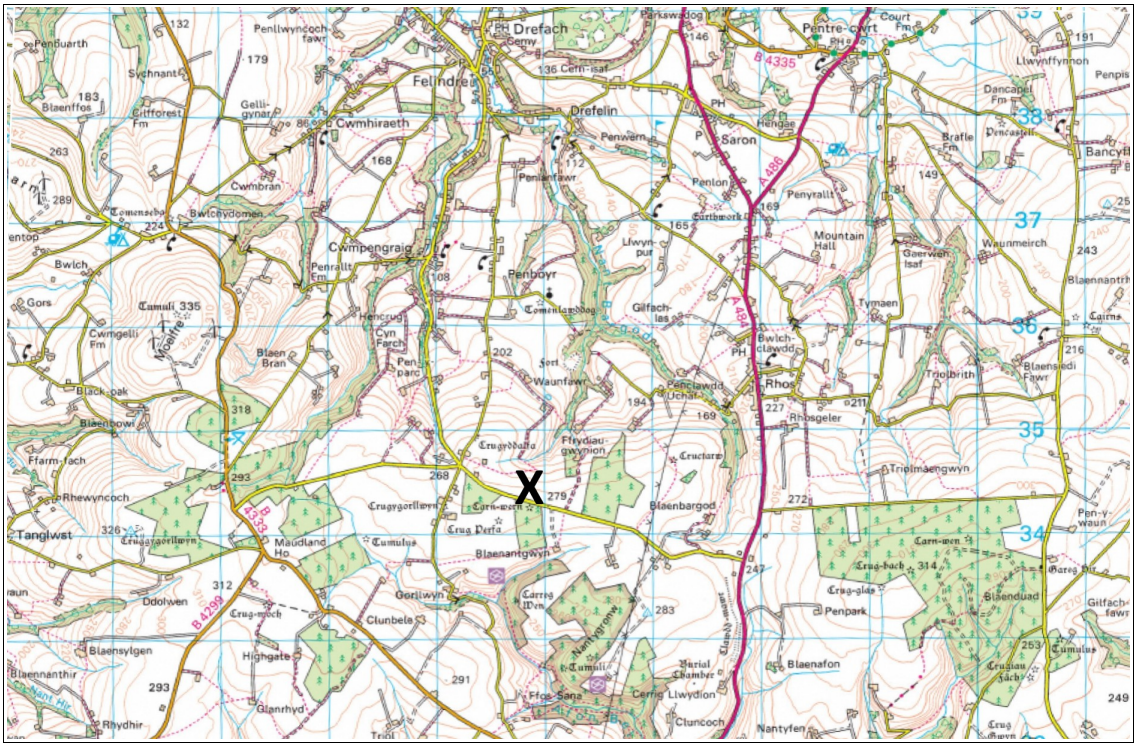
The development will consist of:-

- Caravan 1 (5.8m x 18m) with decking (18.5sqm)
- Caravan 2 (5.8m x 18m) with decking (24sqm)
- Chicken Shed (12m x 4m)
- Barn (12m x 21m)
- Produce Store (4.8m x 4m)
- Polytunnel (27.4m x 7.32m)
- Photovoltaic Array 10kW (2.3m x 20m) + (3m x 3m)
- Compost Toilet (3 x 2.4m)

and associated landscaping

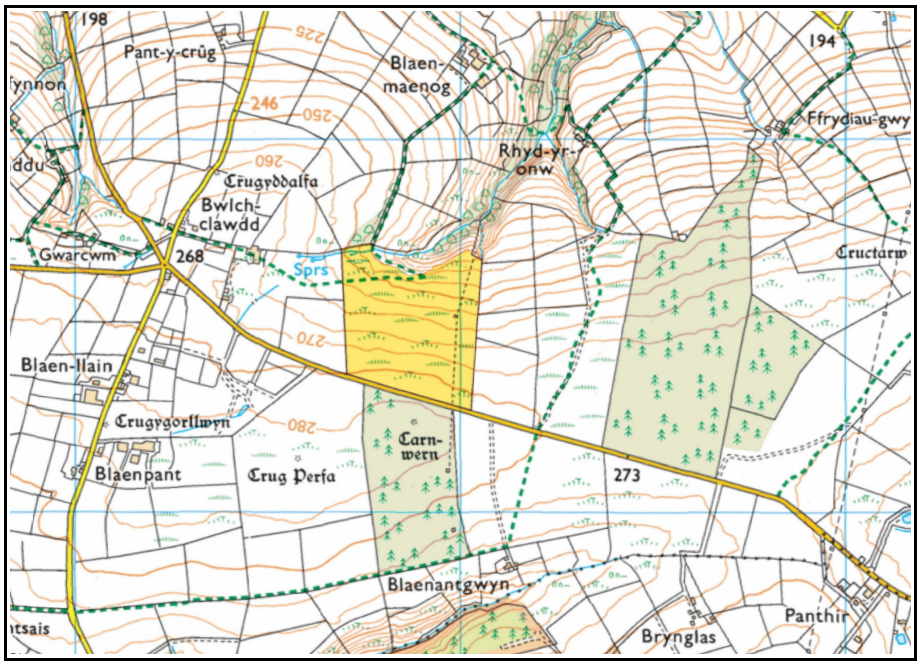
It revolves around livestock and horticulture management of a 12 hectare holding approximately 2.5 miles south of Drefach Felindre, Carmarthenshire.

Baseline



The plot measures 12.09 hectares (29.9 acres), and borders a road on its southern edge.

To the east and west the land is surrounded by grazing land. Patchy hedgerow lines mark the boundaries. To the north the land drops away to a steep valley which is regenerating with woodland.



The land slopes gently away from the road, and at its highest is 293m above sea level. The northern end of the land drops away into a valley and at its lowest point is 236m above sea level.

For the most part the land is relatively flat and the presence of rushes indicate poor drainage.

The plot is located in an landscape that is predominantly field enclosures for grazing. Occasional blocks of woodland (usually conifer) are regulaly interspersed through the area.

The land was purchased as freehold in spring 2020.

There are no electrical, phone line or sewer services connected to the plot.

The plot is accessed by an existing entranceway from the county road.

A footpath crosses the plot, linking the farms Bwlch-clawdd and Blaenmaenog.

One of the most striking features of the plot is a row of large concrete cubes and a pillbox – this line effectively divides the plot into two.

The surrounding landscape includes many prehistoric earthworks. The closest to the site, Carn Wern, is sited to the south, on the other side of the county road.

An archaeological survey was commissioned from Trysor, which revealed a ring cairn (possibly bronze age) within the plot. This report (Historic Environment Desk-Based Assessment for a One Planet Development at Fferm Clarke, SN3588534529, on Land Approximately 2 Km South of Cwmpengraig, Carmarthenshire) accompanies this management plan.

The land has recently been used for agricultural grazing, and there is an existing well on site which currently supplies various drinking troughs.

Under the ALC classification system the land is considered grade 5

The landscape character is defined as:

> *An area of plateau, western fringes of Cambrian Mountains. A mosaic of largely improved but relatively poor grazing land (wet and rushy) used for sheep rearing, with straight edged coniferous plantations, on flat to gently rolling lower plateau. Plantations reflect field patterns in terms of size and shape, many are of a similar age and felling of some has commenced (2006). Field sizes are fairly large and bounded by banks (some heather rich) and fences. There are few hedges or hedgerow/field* (Visual and sensory – Landmap)

The Historic Landscape is classified as:

> *Waunfawr ridge consists of unenclosed land on the highest point and regular fields with dispersed farms elswhere. Most of the fields and farms in this area probable originated in the 19th century, some as a result of Parliamentary enclosure. In modern times a number of single, on-farm wind turbines have appeared in the aspect area. Forestry here Most significant archaeological element(s): Bronze Age funerary and ritual sites, Deserted rural settlements (Landmap LLANGELER 8616)*

Landmap reports

Landmap visual sensory survey:

https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=11476

Landscape Habitat Survey:

https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=5142

Geological Landscape (Classification):

https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=11692

Cultural Landscape:

https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=63076

Landscape Setting

Looking east:

Looking north:

Looking west:

Looking south:

Further baseline information can be found throughout this management plan, and in the accompanying documentation.

Design Strategy

People

Up until very recently our family has been split across two households – and we plan to regroup as an extended family working the farm together. Whilst we plan to split our accommodation into two caravan pods, in effect we expect to live as one extended household, sharing facilities (including services, compost toilet, various work and living spaces) and working the farm together.

We have recently relocated and are currently living in rented accommodation in LLangunnor, Carmarthen.

Land

We aim to create a microclimate suitable for horticulture, screening our plot from the wind using a mixed woodland plantation.
We have a fairly traditional approach to farming – using a livestock manures to fertilise the ground for our crops.
We recognise that the land currently has poor drainage and will crate a ditch system across the plot to lower the ground water levels sufficient to farm successfully.

The ditch network will connect to two wildlife ponds that will bring about a massive increase in the wildlife and biodiversity potential of the plot.

The plot features some 2nd world war military defence structures and a bronze age cairn. The layout of the plot has been heavily influenced by these features, and their conservation is important to us.

As well as being broadly self-sufficient we plan to produce food and livestock for sale. This will be complimented with value-added produce.

Our hens, pigs, berries and fieldscale crops will be organically certified.[1] Certification costs £592 per year.

Produce

We plan to develop a broad range of land-based products reflecting the broad skill base which we have:
We plan to supply primary produce – organic food to local markets.
We plan to supply value added produce – both food and craft – to local markets.
We also plan to rear rare-breed livestock.

1https://www.soilassociation.org/media/15931/farming-and-growing-standards.pdf

Land Based Activity: Subsistence

Currently our food consumption patterns look like this:

Food Item	Current Yearly Spend £ Jeff,Trudy and children	Current Yearly Spend £ Emily, George and children	Total
Meat	145	1020	1165
Poultry & Poultry Products	100	442	542
Fish	244	260	504
Fruit & Veg	1392	1196	2588
Oils & Fats	104	156	260
Dairy	516	1146	1662
Grain meal products	260	520	780
Bread, Biscuits, Pastries and Cakes	180	364	544
Cocoa & Confectionery	777	572	1349
Other (inc preserves)	156	85	241
Non-alcohol beverages	520	468	988
Alcohol beverages	300	180	480
Eating Out	100	1040	1140
Total £	**4794**	**7449**	**12243**

We currently spend approximately £12,183 on food annually

5 years time

We will meet of our basic food needs from the site within 5 years.

Our vegetable garden, polytunnel and orchard will provide us with fruit and vegetables, our livestock will provide us with meat, dairy and eggs.

Vegetable Garden and Orchard

This area, approximately 3470 square meters in size, is situated in a fairly central location with a favourable micro-climate. We expect to grow:

Colour key

Processed for store
Fresh

Home produce	Jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec
Raspberry												
Strawberry												
Apple												
Plum												
Grape (polytunnel)												
Chard												
Beetroot												
Parsnip												
Carrot												
Potato												
Fennel												
Celery												
Globe artichoke												
French beans												
Broad beans												
Runner beans												
Haricot beans												
Squash												
Sweetcorn												
Cabbage												
Kale												
Peas												
Cucumber (polytunnel)												
Tomato (polytunnel)												
Aubergine (polytunnel)												
Pepper (polytunnel)												
Onion												
Garlic												
Turnip												
Salad (polytunnel)												
Courgette												

We also plan on growing the following herbs: basil, parsley, coriander, rosemary, sage, thyme, mint (various), bay, lemon verbena.

The polytunnel will provide sheltered growing space for tender crops, and a space to raise seedlings before planting out.

The Composting area will be important to the success of the food growing activities. We will collect the various biomass inputs from the site and aerobically mix these to create a highly nutritional compost. Lime and *Remin*[2] will be added as appropriate. Different compost mixes will be used for different purposes (for example an acidic woody based compost for the soft fruit bushes, and a neutral green compost for the vegetables).

Goats, milk and meat

We plan to keep goats primarily for their contribution to our self-sufficiency. We aim to keep two milking nannys plus followers. The goats will have access to the main grazing block from the barn so they will be able to come and go in response to their need and the weather. Their diet will be supplemented with the field crops.

We expect our goats to cost:

- Feed costs: estimated at 500kg barley a year: £120
- Hay: £40
- Medicine/ Supplements/ Minerals: £40
- Billy stud services: £40

We expect four kids a year – does will be sold on (£100 ea), and wethers will be raised for meat. Income from doe sales will be set against the cost of keeping the goats.

On balance we expect the goats to cost us £40 a year (based on selling 2 does a year), and we expect to benefit with 1500 litres of milk (partly to make cheese), plus 2 wethers a year for meat.

Ducks, slug control and eggs

We will keep 4 laying female ducks with one drake. These will be Khaki Campbell which is a good breed for controlling slug populations. The ducks will be kept in a duck house in an enclosed area next to the veg plot so they have access to the veg garden. There will be a small pond in the vegetable garden for them. For the majority of the year they will be allowed in the vegetable plot to eat slugs. During mid spring when there are many vulnerable young plants in the garden the ducks will be kept out to avoid unnecessary damage to plants, and instead let into the Orchard. Replacement birds will be raised using an incubator.

In summary, the ducks will provide us with approximately 1000 eggs a year (estimated at a value of £250), manure and pest-control. Associated costs are £18 a year for 75kg barley.

2 In effect a brand of Rockdust which provides a wide range of trace minerals

Food from our land-based businesses

We expect to benefit from one pig a year, and 156 boxes of hen eggs.

Storage of food

We will employ a number of methods to store food and ensure that we are eating food produced on site throughout the year. These include storing root crops and pumpkins in the barn, running a small energy efficient freezer, fermenting vegetables into sauerkraut, and drying produce in a dehydrator.

Costs of growing food

Category	Detail	Annual cost £
Vegetables and Fruit	Mineral supplements: lime and remin	41
	Compost	35
	Seeds (including seed potatoes)	66
	Tool replacement	25
Ducks	Supplementary feed	18
Goats	Supplementary feed	40
Total		225

Dietary Changes

We expect our diest to change in response to what we grow: eating more fruit and veg and less processed food. We expect to eat more eggs and less fish. We expect to eat more goats cheese and eat out less. Whilst each of the cabins will have its own kitchen, we expect that we will be eating together as one extended family most days.

In 5 years time we expect our food consumption pattern to look like this:-

Food Item	Specific Items	Yearly Spend £	Details	Value of food grown on the plot £	Associated Costs £
Meat	Pork		One organic pig a year	450	carried by business plan
	Goat		Two wethers a year	200	40
	Other	400			
Poultry & Poultry Products	Eggs		156 boxes hen eggs (£273) plus 167 boxes duck eggs (£250)	523	Hen eggs carried by business plan, duck eggs: 18
	Poultry meat	60	Occasional roast		
Fish	Fish	250			
Fruit & Veg		344	90% of fruit and veg produced on the land (1035)	3098	167
Oils & Fats		40	Olive oil and coconut oil		
Dairy	Butter	42			
	Goats Milk		Approximately 600 litres	600	(see above)
	Goats Cheese		Approx 12kg	240	
Grain meal products		624			
Bread, Biscuits, Pastries and Cakes		490			
Cocoa & Confectionery		1012			
Other	Sugar/ Honey	80			
	Honey	30			
	Preserves		Jams, pickles, ferments	300	20 (sugar/ vinegar/ salt)
Non-alcohol beverages	Tea/ coffee	200	Fruit cordials/ herb teas	700	20 (sugar)
Alcohol beverages			60 bottles fruit wine	480	40 (sugar)
Eating Out	Eating Out	400			
Totals £		**3972**		**6591**	**305**

In 5 years we expect to grow 62% of our own food on the plot. (6591/10563)

Land Based Activity Criteria – Food

The essential criteria are that:

The minimum food needs of all households are met from produce grown and /or reared on the site or purchased using income derived from other products grown and reared on the site.

- Our minimum food needs will be met from the site.

Land Based Activity Monitoring – Food

Monitoring: Essential criteria
The targets and indicators for monitoring the essential criteria are:

Target: That the minimum food needs (at least 65%) of all occupants are met from produce grown and reared on the site or purchased using income derived from other products grown and reared on the site.

Indicators: Annual reporting of food production consumed by household.
Annual reporting of spend on other food.

Method: *The annual monitoring report will provide details of the food we produce from the land and the food we purchase, demonstrating that our minimum food needs (65%) will be met from the site.*

Land Based Activity: Enterprises

As defined by the One Planet Development Policy (Practice Guidance point 3.27), our minimum income needs are:

Current minimum income needs:

Household needs		Current Yearly Spend £ Jeff,Trudy and family		Current Yearly Spend £ Emily, George and family	Totals £
	Phone contracts	540		1200	1740
Clothing	New Clothes	220		1400	1620
	Second hand clothes			400	400
	New footwear	300		360	660
Food	Total food purchased	4794		7449	
	65% of total food (see 3.25 Practice Guidance)				7958
Travel	Vehicle purchase (annual)	£667 (Hyundai 110, £6k/ 9 years)	£1300 (Land rover Defender, £20k/ 15 years)	£1000 (2016 VW Polo, £12k/ 12 years)	2967
	MOT and maintenance	250	285	280	815
	Road tax	20	250	20	290
	Insurance	233	233	310	776
	Mileage	14,100	2200	6,240	
	Fuel	1667 (1282 litres, 50mpg)	371 (285 litres, 35mpg)	697 (536 litres, 52.6mpg)	2735
Council Tax		0		1252	1252
	MINIMUM INCOME REQUIREMENT (£/annum)	**21213**			

In 5 years time we expect our minimum income requirement to be:-

Projected minimum income needs table:

Household needs		**Projected Yearly Spend £ Jeff,Trudy and family**	**Projected Yearly Spend £ Emily, George and family**	**Totals £**
	Phone contracts	540	1200	1740
Clothing	New Clothes	220	1400	1620
	Second hand clothes		400	400
	New footwear	300	360	660
Food	Total food consumed	10,563		
	65% of total food (see 3.25 Practice Guidance)	6,866		
	Total food grown	6,591		
	Food need (see 3.25 Practice Guidance)	275 (6866 - 6591)		275
	Cost of growing/ producing own food	305 (See above)		305
Travel	Hyundai 110 – domestic use	See Transport Chapter		1569
	Bus Travel	100		100
Council Tax		1252		1252
	MINIMUM INCOME REQUIREMENT (£/annum)	**7921**		

Land-Based Enterprises – Livestock

Hens

We plan to keep 48 white leghorn hens and 48 hy-line brown hens as layers. They will be kept in two separate enclosures, constructed with a series of inner and outer runs, connected to a central chicken shed. We will use home-grown miscanthus as bedding, and we have designed the chicken shed carefully with a central store-room separated from the coops with airlocks in between (to ensure the hens can't slip out when we're working there). The chicken shed has been designed to be both rat and fox proof, and the runs will be fenced with 6ft chicken wire dug into the ground.

Early morning the hens will be let out of their coops and fed in the inner runs. There will be a built-in dust-bath beneath the coops. They will have drinking water from rainwater harvesting. Around midday we will let the hens into the outer runs (which will be managed in rotation) and collect their eggs. Eggs will be cleaned, dated, stamped and boxed in the store room, then moved to the Produce Store ready for delivery.

The inner and outer runs will be planted up with a variety of annual and perrennial forage for the hens; including Elder, Crab-apple, Autumn Olive, Blackcurrants, Hawthorn, Sea-buckthorn, Rasberries, Comfrey, Wild Garlic, Clover, Plantain and Dandelion. We will be able to rest the runs in rotation, allowing the soil and vegetation to recover and regenerate for the chickens. Once the hens have scratched through a run, we will sow the run with a variety of seeds which will germinate and establish themselves before the hens return. The exact mix of seeds will depend both on the season and on our own trials as to what works best.

We will also be able to feed the chickens weeds and excess crops from the vegetable gardens and fieldscale cropping (with the runs having direct access from the track). We also intend to position piles of logs, brash and woodchip into their runs to encourage insects and deep litter activity. We want our hens to have a very high quality of life.

We anticipate our laying hens will each forage approximately 20kg of feed from the land a year, and we expect to supplement their diets with 40kg of brought in grain. In all we expect to buy in 3.8 tonne of feed for the hens in bulk bags, which will be dropped by the hen house, and moved into the feedstore with a pallet truck.

BW Feeds: Complementary feed for feeding to Poultry

ANALYTICAL CONSTITUENTS

Crude Protein	17.0%	Sodium	0.02%
Crude Fibre	3.0%	Magnesium	0.13%
Crude Ash	11.5%		
Crude Oil (AH)	4.4%		

COMPOSITION (In Descending Order)

Organic Wheat, Organic Soya Expeller, Organic Maize, Calcium Carbonate, Organic Soya Oil

Turnover

Assuming 300 eggs/year per hen, and a household use of 18 eggs/ week, we expect to sell 2322 dozen eggs a year (averaging 45 dozen eggs a week). We will be selling them as both 'Organic'[3] and 'One-Planet produce'[4], and our website will detail the high quality of life that the chickens will have. We expect to sell them for £3.50/ dozen wholesale[5], turning over £8127 a year.

Costs

- Organic Feed, 3.8 tonne[6]: @ £483/tonne = £1835.40
- Replacement hens (purchased as day-old chicks)[7] 30 chicks a year: £83
- Health, minerals and medicines: £58
- Seed for regenerating runs: £24
- Egg boxes[8]: £480
- Labels: £44

Outlets and Distribution

C & M Organics in Llanglydwen have indicated they would be willing to sell all our eggs. It is a 30 mile round trip, and we expect to do this once a week. We will also be selling our eggs in wholefood shops in all the local towns

3 Certified by the Soil Association
4 A scheme run by the One Planet Council
5 https://www.soilassociation.org/farmers-growers/market-information/price-data/dairy-and-eggs-price-data/
6 BW feeds. Prices include delivery in 1 tonne bags
7 Because there are no organically certified providers of day old chicks in the UK, we will apply to the soil association for dispensation to buy our replacement chicks from Pencwarre Poultry, Llechryd https://www.soilassociation.org/media/21091/poultry-suppliers.pdf

8 Based on 4700 boxes a year, prices from https://www.flytesofancy.co.uk/chickenhouses/Grey_Egg_Boxes.html

Pigs

We plan to buy weaners, raise them on the land, and sell them as whole pigs to local butchers.

We will chose local weaners and will aim purchase them at 8 weeks old, keep them for 6 months (in order to satisfy the organic certification requirements) and aim to sell them at 34 weeks. We will buy and sell them in slightly staggered batches two weeks apart. We will raise 8 pigs per year, and will time them to coincide with our crop rotations (June – December). They will be housed in mobile arks in the Field Crop areas.

The field crop areas will be sown in rotation with crops such as beet, jerusalem artichoke, swede and clover to feed our pigs (and other livestock). We will aim for 50% of the pigs food to come directly from the plot – see Land Management chapter for more detail. In addition to field forage they will get 350g supplementary feed per day to begin with (8 weeks old) , rising to 700g at 16 weeks, and finishing off with 1kg at 26 weeks. We would aim for a finish liveweight of 80 - 100kg[9]. They would be transported to Tregaron abbatoir in a livestock trailer and the carcasses will be collected in a refrigerated trailer, before either being delivered direct to local butchers, or being turned into sausages in the produce store, before packing and freezing.

Age	Duration	Period	Forage crops	Concentrate
8 – 16 weeks	56 days	May - June - July	Clover/ field beans	350g/day +
16 – 26 weeks	70 days	July - Aug – Oct	Beet/ turnips	700g/day +
26 – 34 weeks	56 days	Oct - Nov – Dec	Swede/ artichoke	1kg/day +

Costs associated with this:

- Weaner purchase: £320[10]
- Supplementary feed: 125kg per weaner: 1tonne: £480[11]
- Mineral supplements, health and medicines: £160
- Abbatoir costs: £280 [12]
- Seedstock and mineral applications for forage crop areas[13]: £70
- Tractor diesel for forage crop areas: £40

9 With a deadweight of approx 70kg
10 Based on average price £40 (preloved .com)
11 Based on quote from bw feeds (delivered)
12 Rhyd Y Gwreiddyn, Tregaron, Dyfed, SY25 6JL (£35 per pig)
13 Clover ley seed, lime and remin

Total costs: £1350

Income associated with this:

We would aim to sell 7 Organic pigs a year direct to local butchers for £450 each, or we would process the meat on site (in our Produce Store), selling them as Organic frozen sausages to local outlets for the equivalent income[14], bringing in an income of £3150. We would keep one pig for ourselves.

Supplementary feed

BW Feeds Organic Pig Blend:

Raw Materials in descending order:

Organic Wheat, Organic Soya Expeller, Organic Beans, Organic Soya Oil

Analytical Constituents:

Protein	Oil	Fibre	Ash	Sodium
17.5	4.0	2.6	3.0	0.02

14 Includeing C&M Organics, Llanglydwen

Blueberries

Our Blueberry area is approximately 1180m2 – and we plan to plant 300 highbush blueberry bushes. We will plant a range of varieties which will include 'Bluecrop' (which has a reputation for being the best cultivar for this region).

The soil, being acidic and high in organic matter, is very suited to blueberries. We will plant them in rows for ease of management, and will mulch them with woodchip and stake them during their early years (to ensure they don't suffer from windrock).

By year 5 we expect the bushes to be well on their way to maturity – standing at 3 – 4 ft and yielding 2kg per bush (a conservative estimate). They will continue to grow and will reach maturity around year 8 (when we expect a yield of 3.5kg per bush).

Assuming a harvest at year 5 of 600kg of blueberries, and allowing for 10% for home consumption and losses[15]. We expect to produce 540kg of berries selling wholesale for £10/kg: turning over £5400.

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Blueberry Harvest (kg)		200	400	600	700	800
Blueberry sales (£)		1800	3600	5400	6300	7200
Punnet and labels (number)		720	1440	2160	2520	2880
Punnet and labels (cost)		108	216	324	378	432
Replacement bushes		100	100	100	100	100
Income		1592	3284	4976	5822	6668

15 Blueberries do not suffer unduly from losses – they have very few pests and the fruit sits on the bush without suffering from rain damage or mould.

Rare Breed Livestock

We are planning 2 lines of rare-breed livestock. In both cases early years will be predominantly concerned with building up viable herds. There will be some sales of male offspring and female offspring will be retained for breeding.

Miniature Mediterranean Donkeys

Miniature Mediterranean Donkeys originate from the islands of Sardinia and Sicily. Now almost extinct in their native land, they are quickly becoming popular pets and many are now imported to the UK.

The donkeys are measured at the wither and are usually between 32 to 34 inches but not more than 36 inches (or they cannot be registered as a miniature). An adult donkey should weigh 90-170kg. They are quite at home with rough grazing, though they will need access to shelter if its wet. We plan to give them access to 11 acres of grazing (which they will share with other livestock). During wet weather periods they will be kept in the barn. They typically have a life span of 25-35 years but many have been known to exceed that estimate.

Building up our herd.

Their gestation period is 11-13months and foals will suckle from their mother for between 4-6 months.

We plan to begin with 2 breeding jenny's, one filly and one young jack. We will source these from different herds to create a wide genetic pool. During the early years we expect to produce 2 foals a year – we plan to keep the filly foals and sell the colts. We will be aiming for a herd of 1 jack and 5 breeding jenny's. We expect the program to look something like this[16]:

Breeding Program

(We will start our donkey line in Year 2 (See Phasing Chapter))

Early year 2: 2 breeding jennys arrive, A and B,(both in foal), plus one filly (C) and one colt (D).

Early year 3: Jennys A and B foal: one new colt (E), one new filly (F) are born. Colt D becomes a jack. Filly C becomes a breeding jenny and is served by jack D.

Late year 3: Jennys A and B are served by jack D.

Early year 4: Jenny C foals: one new colt is born (G). Colt E is sold.

16 For the purposes of planning we are going to assume alternate jack/ filly births.

Late year 4: Jennys A and B foal: one new filly (H) and one new colt are born (I). Jenny C is served by jack D.

Early year 5: Jennys A, B and F are served. Colt G is sold.

Late year 5: Jenny C foals, filly J is born.

Early year 6: Jenny C is served. Jennys A, B and F foal. Colts K and M and Filly L are born. Colt I is sold.

Late year 6: Jennys A, B, F and H are served by jack. Filly J is sold

So that by year 6 we have one jack and 5 breeding jennys. Therafter we expect to have a stable herd of 1 jack, 5 jennys and be able to sell 2 - 3 donkeys a year.

Health and wellbeing

Every 6 weeks donkeys need to have their hooves trimmed. To begin with we will employ a farrier to show us how, so that we can do this ourselves.

Donkeys are affected by several different internal parasites, making de-worming necessary. We plan to use herbal preventatives for this[17].

We expect some vetinary attention will be required[18] – and we will budget £75 per adult per year for this.

They will need shelter over winter from November to May and also through any bad weather spells. The barn will be supplied with miscanthus bedding (which we will grow ourselves) and the donkeys will have access to hay. We expect to supply 1.5kg hay per adult per day (for 6 months of the year), and we will buy this in. This amounts to 270kg hay per adult donkey per year. Currently hay is sold at around £50/ tonne (big round bale).

We do not anticipate the donkeys will need any concentrate feeds, and the donkeys will have pickings from the field scale crops when in season.

Year	Adult Donkeys	Young Donkeys	Vetinary provision/ Healthcare	Hay provision	Other costs[19]	Donkey sales
2	2	2	150	27	100	
3	4	2	300	54	150	
4	5	2	375	68	175	1
5	5	3	375	68	200	1
6	5	3	375	68	200	2

17 Garlic delivered as part of their feed
18 Sometimes donkeys need their teeth filing down
19 Other costs including registrations, administrations, certifications and tack, estimated at £25 per donkey per year

7	5	3	375	68	200	3

Prices for Miniature Donkeys – Market Research

The following gives an idea of current prices[20]:

6month old colt unregistered £2,500 (preloved)
6.5month old filly registered £2,500 (norleyfarm.co.uk)
6year old Jenny registered £3,000 (wellground.com)
£2000+ gelding foal (meadowviewminiatures.co.uk)
£2750+ filly foal (meadowviewminiatures.co.uk)
£4000+ breeding jenny in foal (meadowviewminiatures.co.uk)

We will assume average sale prices of £2500 per donkey.

Income over time:

Year	Total costs	Donkey sales	Income
2	277		
3	504		
4	618	2500	1882
5	643	2500	1857
6	643	5000	4375
7	643	7500	6875

20 July 2020

Valais Blacknose Sheep

Originating from Switzerland, the Valais Blacknose were originally imported to the UK in 2014, and since then they are becoming increasingly popular due to their extraordinary endearing look. They have been named “the worlds cutest sheep.”

They are a rare breed of sheep with about 12,000 registered in their native country. They are a large breed of sheep - ewe’s weigh in between 70-90kg and stand at 72-78cm high and rams are 80-125kg and 75-83cm tall. Their lifespan is around 10-12 years and they usually produce a single or twin lambs once a year. Ewes are able to breed from 18months old with a gestation period of five months. The lambs will be weaned from four to five months old, and have their first vaccination at 6-8weeks and then a booster 4 weeks later. Each sheep will need yearly vaccinations, in breeding ewes these will be given 4-6 weeks prior to lambing.

Breed standard

There are three areas to be aware of; appearance, confirmation and wool. The value of the sheep will depend on if they meet the breed standard. We will be very careful in selecting our breeding stock and we will aim for 2/3rds of our lambs meeting the breed standard. Any lambs that do not meet the breed standard will be sold off cheap. The full standard can be found on vbns.org.uk or valaisblacknosesheepsociety.co.uk

Breeding Plan

As Valais Blacknose sheep come with a large price tag, we will aim for a situation where the lambs produced by our flock will be sold to other collections as pets or for breeding stock. We aim to start with three ewes of breeding age. In early years we will hire in a ram.

Year	Breeding Ewes (Rams)	Yearlings	Lambs for keeping	Lambs for sale
2	3		2	2
3	3	2	2	2
4	5	2	4	4
5	7(1)	4		12
6	11(1)			16
7	11 (1)			16

Feed and Shelter

Throughout summer months the sheep should not require any supplementary feed – and will have access to a large expanse of grazing. During wet weather periods we will bring them into the barn. We estimate that they will be inside 5 months of the year, and during this time we expect to feed them 1.5kg of hay per adult per day. We also plan to supplement their diet with portions of the field crops as they come into season.

In the lead up to going to the ram, we will monitor the ewes' health and body condition carefully. Underweight ewes will be given additional concentrate feed beforehand. Ideally ewes will only need a compound feed 6weeks pre-lambing. Ewe nuts will be introduced slowly and built up to approximately 1kg/day for the six-week period leading up to lambing. Ewe feed is £20.00 for 20kg.

Year	Ewes plus followers (and Rams)	Yearlings	Hay (weight)	Hay (£)	Concentrate (£)	Vetinary provision/ Healthcare (£)[21]	Shearing (£)[22]	Other costs (£)[23]	Total Costs (£)
2	3		675kg	34	63	75	112	45	329
3	3	2	1125kg	56	63	125	120	75	439
4	5	2	1575kg	79	105	175	128	105	592
5	7(1)	4	2700kg	135	147	300	144	180	906
6	11(1)		2700kg	135	231	300	160	225	1051
7	11 (1)		2700kg	135	231	300	160	225	1051

Prices – Market research

The cost of buying these sheep depends on age, gender and pedigree.

New Forest Valais -

A ram with 100% Swiss origin and rare genotype £6,000
Proven ram with rare genetics £3,250
Potentially in- lamb breeding age rare genotype ewe £9,000

Theblacknosesheep.com- have two castrated “pet lambs” up for sale for £1,500 for both as they haven’t made the breed standard.

Valaisblacknose-sheep.co.uk- ewe and ram lambs born in spring 2019 for £1000-£5000

Valaisblacknosesheepsouthwest.co.uk advertises ram lambs for £500 ewe lambs for £3,000, wethers (castrated pet lamb) for £400

21 estimated at £25 per sheep per year – to include flystrike treatment, worming treatment, etc
22 Based on £50 set up plus £2 per sheep twice a year
23 Other costs including registrations, administrations, certifications and tack, estimated at £15 per sheep per year

We expect 66% of our lambs will meet the breed standard, and when we consider a 50/50 ewe/ram probability, using the above prices as a guide, we estimate an average lamb sale price of £780. This is based on 1/3rd not meeting the breed standard (assume a sale price of £100 per lamb), 1/3rd ewe lambs (assume an average sale price of £1500), 1/3rd ram lambs (assume an average sale price of £750). These are very cautionary estimates, far below the current market values, allowing plenty of space to cover any unforeseen eventualities.

Income over time:

Year	Total costs	Lamb sales	Turnover	Income
2	329	2	1560	1,231
3	429	2	1560	1,131
4	592	4	3120	2,528
5	906	12	9,360	8,454
6	1051	16	12,480	11,429
7	1051	16	12,480	11,429

Value-Added Produce

We will produce a range of value-added products:

Soft Fruit Cordials

We plan to grow organic soft fruit and turn it into a delicious cordial for sale locally.

Our currant area is 1040m2, sufficient for 240 bushes. We expect to plant 80 blackcurrant bushes, 80 redcurrant bushes and 80 gooseberry bushes.

By year 5 we would expect a harvest of 4kg per bush. Some of this will be set aside for home consumption, and the bulk will be for making cordial .

We plan to sell 250 bottles of each of our our cordials each year. The 75cl bottles will be sold in local outlets for £7 each wholesale, retailing around £10 bottle[24]. Costs include organic sugar £287[25], bottles and labels[26] £473, citric acid £15, Sterilisation fluids £30.

Any excess fruit will be fed to the pigs and chickens.

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Blackcurrant Yield per bush (kg)		2.5	3.5	4.0	4.5	5
Blackcurrant Harvest (kg)		200	280	320	360	400
Allowing for losses (20%) (kg)		160	224	256	288	320
Home consumption (60 bottles of wine and 60 jars of jam) (kg)		75	120	150	150	150
Blackcurrants for Cordial(kg)		38	75	94	94	94
Number of bottles sold		100	200	250	250	250
Redcurrant Yield per bush (kg)		1.5	2	2.5	3	3.5
Redcurrant Harvest (kg)		120	160	200	240	280
Allowing for losses (20%) (kg)		96	128	160	192	224
Redcurrants for Cordial(kg)		38	75	94	94	94
Number of bottles sold		100	200	250	250	250

24 Belvoir cordials – retail around £5 - £7 a bottle, but are not organic

25 112Kg Organic Sugar (150g per bottle), (£63.75 per 25kg) https://www.watsonandpratts.co.uk/p/Raw_Cane_Sugar_organic/eba44066fae7482594b10460e9900b05/4de8b89ea5ba427683ef4468801e46ff/

26 Costed at 63pence per bottle (incl labels and corks)

Gooseberry Yield per bush (kg)		2	2.5	3	3.5	4
Gooseberry Harvest (kg)		160	200	240	280	320
Allowing for losses (20%) (kg)		128	160	192	224	256
Gooseberries for Cordial(kg)		38	75	94	94	94
Number of bottles sold		100	200	250	250	250
Total Turnover		2100	4200	5250	5250	5250
Production costs (£)		322	644	805	805	805
Cordial Income		1778	3556	4445	4445	4445

Woolcraft

Shearing/Grooming: Valais blacknose sheep require shearing twice a year. Due to their long wool they require regular brushing and dagging (the removal of faeces from their wool).The wool is coarse: fibre diameter averages approximately 38 microns, and staple length is 100 mm or more. The annual yield is about 4 kg per head.

Year	Wool Harvest (kg)	Spinning costs (£) [27]	Balls wool [28]
2	12	240	180
3	20	400	300
4	28	560	420
5	48	960	720
6	48	960	720
7	48	960	720

We plan to sell approximately one third of the spun wool as balled yarn. There is currently a gap in the market for Valais Blacknose wool in the UK [29], and we hope to fill that gap. We expect to sell the wool for £3 a 50g ball (plus delivery and commissions).

We plan to make blankets and shawls with the remainder of the wool. We will use a knitting machine for this, and will produce a range of sizes and styles. Assuming the average blanket/ shawl is 1kg in weight and sells for an average of £120.

Year	Balls wool	Yarn sold (50g balls)	Yarn sold £	Wool for Knitted Shawls kg	Shawls sold £
2	180	60	180	6kg	720
3	300	100	300	10kg	1200
4	420	140	420	14kg	1680
5	720	240	720	24kg	2880
6	720	240	720	24kg	2880
7	720	240	720	24kg	2880

Other costs will include packaging (labels and bags) and advertising (online). We expect most sales to go through our website or through Etsy/ Ebay, though we will also stock our balled wool and stalls in local craft shops. We will model our products and employ a professional photographer for this.

27 Curlew weavers, Newcastle Emlyn
28 50g balls of wool; Assuming 25% losses to spinning
29 Raw fleeces are sold for £25.00 per fleece from (theblacknosesheep.com). Rare-breed yarn is being sold £6.25/ ball at (https://www.etsy.com/uk/shop/owlfarmshop).

Year	Spinning Costs £	Other costs £	Balls of wool sales £	Knitted shawls sales £	Income £
2	240	120	180	720	540
3	400	120	300	1200	980
4	560	130	420	1680	1410
5	960	140	720	2880	2500
6	960	140	720	2880	2500
7	960	140	720	2880	2500

Land Based Enterprises:Fixed Costs

Our website will be key to advertising and sales of our produce. We have already begun to build it. We estimate that this will cost £300 a year to run.
www.clarkes-farm.co.uk
The website will feature all our land-based products, promoting the love, care and attention that we will pour into our animals, plants and crafts.

We will register our chickens, pigs, field crops and berries as organic. This will cost £592 per year with the Soil Association.

Land Based Enterprises: Markets, Outlets and Distribution

We expect C&M Organics to be one of our primary outlets (particularly for food), and expect to do weekly drops there.
We have begun approaching potential outlets (wholefood shops, butchers, craft shops, cafes, and restaurants) in all the local towns; Newcastle Emlyn, Cardigan, Newport, Fishguard, Haverforwest, Whitland, Carmarthen, and are confident that we will be able to secure plenty of outlets for our produce. We expect to do drops every 10 days to these outlets.
The markets for our rare breed livestock are particularly specialised – we expect most of our custom to come through our presence at shows and online.
Note that this aspect of our management plan has been quite difficult to research during the coronavirus pandemic.

(Please see Transport Chapter for more details).

Land-Based Enterprises: Projected Income Streams

The following table shows how our expected income streams will develop over time. Note that the direct costs of each income stream have been previously accounted for.

	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Eggs (organic)			5603	5603	5603	5603
Pigs (organic)		3150	3150	3150	3150	3150
Blueberries (organic)		1592	3284	4976	5822	6668
Miniature Donkeys			1882	1857	4375	6875
Valais Black Nose Sheep	1231	1131	2528	8454	11429	11429
Blackcurrant Cordial (organic)		1778	3556	4445	4445	4445
Wool and Woolcraft	540	980	1410	2500	2500	2500
Fixed Costs	-892	-892	-892	-892	-892	-892
Estimated Delivery costs (see Transport Chapter)	-2163	-3486	-3486	-3486	-3486	-3486
Totals	**-1284**	**4253**	**17035**	**26607**	**32946**	**36292**

It is worth noting that our projected income streams far outweigh our projected minimum income requirement . At year 5 our projected income is £26,607 compared to our projected minimum income requirement of £7,921.

It is also worth highlighting the fact that our income streams are diverse and resilient, and that if any two of our income streams do not come to fruition – the viability of the whole remains intact.

Land Based Activity Criteria – Income

The essential criteria are that:

The basic domestic needs of all households are met from income derived from produce grown and reared on the site, including processing and adding value, and other income streams derived from the productive and regenerative capacity of the site, such as from training and education courses, or consultancy directly linked to land based activities on the site. These latter activities should be clearly subsidiary to the primary activity of growing and rearing produce.

- *Our minimum income requirement is defined in the table above. The business plans describe how we will meet this income requirement from our land-based enterprises.*

The contributory criteria are that:

The land based enterprise provides food and other products to local markets, reducing local footprints.

- *We will supply local people with food, and will supply livestock and craft to local people and to people further afield.*

Facilities for processing produce are made available to other local producers.

- *We are open to sharing any processing equipment with other local producers*

Training / courses / consultancy are offered as components of the land based enterprise to share best practice of One Planet Development.

- *Once we are established we will share our expertise so that others can learn from our experience.*

Land Based Activity Monitoring – Income

Monitoring: Essential criteria

The targets and indicators for monitoring the essential criteria are:

- Target: That the minimum income needs of all occupants are met from income derived from land use activities on the site.
Indicator: Annual household income and costs reporting.

Method: *The annual monitoring report will quantify our minimum income needs and will demonstrate how we meet these needs from income derived from land use activities on the site.*

- Target: That income derived from other land based enterprises such as training and education courses, or consultancy remain subsidiary to the primary activity of growing and rearing produce.
Indicator: Annual reporting on the total value of produce grown and reared on the site compared with income derived from other land based enterprises.

Method: *The annual monitoring report will detail the respective land-based income streams demonstrating that our 'other' land-based income streams remain subsidiary to the primary activity of growing and rearing produce.*

Monitoring: Contributory criteria

The targets and indicators for monitoring the contributory criteria are:

- Target: That the land based enterprise provides food and other products to local markets, reducing other local footprints.
Indicator: Annual reporting of sale volumes and market areas by each on-site enterprise.

Method: *The annual monitoring report will include sales volumes and market areas of our land based enterprises demonstrating that we are providing food and other products to local markets.*

- Target: That facilities for processing produce are made available to other local producers
Indicator: Annual reporting on use of processing facilities by others.

Method: *The annual monitoring report will include any details of processing facilities.*

- Target: That training / courses / consultancy, as components of the land based enterprise, share best practice in sustainable land based activities with the wider community.
Indicator: Annual reporting on training and consultancy activities.

Method: *Our annual monitoring report will include details of any training/ consultancy activities.*

Land Based Activity: Occupants

Up until recently we were one extended family living in two separate households – and we want to return to being an extended family. We expect to share household facilities (including water electricity, toilets, vehicles, food) and the tasks on the farm will be taken on by every family member. The roles on the farm will evolve over time and to begin with we imagine something along these lines:

Family member	Task	Detail	Hours
Jeff (adult):	Fencing	Installation	40
		Maintenance	40
	Trees	Planting and treecare	120
		Biomass Harvest: wood	160
	Buildings	Construction and Maintenance	400
	Planning and coordination	Assume 3 hours a weeek	156
	Hedges	Maintenence and care	20
Trudy (adult):	Woolcraft	Spinning/ dyeing	16
		Ball wool marketing and sales	64
		Knitting shawls	145
		Shawls marketing and sales	36
	Fruit Cordials	Production	36
		Marketing and sales	32
	Goats	Daily care (including milking) Assume 1.5 hours a day	548
Jasmine (teenager):	Chickens and Eggs	Assume 2 hours a day daily routine (including collecting eggs)	730
	Miniature Donkeys	Assume 1 hour a day	365
	Valais Blacknose Sheep	Assume 1 hour a day	365
	Ponies	Assume 1 hour a day	365

Jordan (teenager, 3 days a week studying agriculture mechanics at Gelli Aur colleg, Llandeilo):	Pigs	Assume 1hour a day 6 months of the year	180
	Fieldscale crops	Assume 1.5hours a day 9 months of the year	405
	Ditching	Maintenance	80
Emily (young adult with small children to look after):	Website	Assume 3 hours a week	156
George (young adult, works part-time in St Clears)	Buildings	Construction and Maintenance	400
	Landscaping	Blueberry care	120
		Track maintenence	40
	Biomass	Miscanthus management and harvest	30
	Deliveries	Assume 8 hours a week	416
Shared tasks	Fruit picking	Blueberries	600
		Soft Fruit	240
	Compost	Assume 6 hours a week	312
	Vegetable Gardens	Assume 3 hours a day 8 months of the year, 1 hour a day 4 months of the year	840
	Polytunnel	General	730
		Watering	365
	Orchard		200
	Preserving food		420
	Marketing and Outreach		200
Total			**9372**

Land Based Activity Criteria – Occupants

The essential criteria are that:

The number of occupants is directly related to the ability of the site to support their minimum food and income needs and the number of people needed to run the site effectively.

- *As one extended family we fully expect to be able to meet our food and income needs without additional labour inputs.*

Land Based Activity Monitoring – Occupants

Monitoring: Essential criteria

The targets and indicators for monitoring the essential criteria are:

- Target: That the number of occupants is directly related to the ability of the site to support their minimum food and income needs and the number of people needed to run the site effectively.

Indicator: Annual reporting on number of occupants by household and their roles on site.

Method: *The annual monitoring report will detail the number of people living on the plot and their respective roles within the holding.*

Land Management

Stream on the northwest boundary

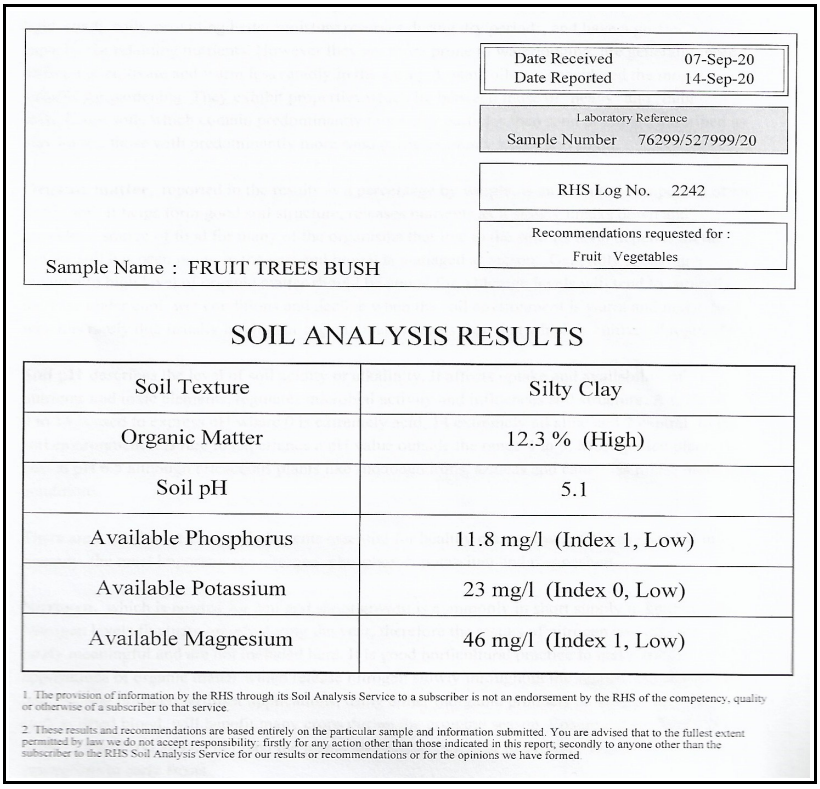
We plan to run a mixed smallholding – adopting the classic mixed farm pattern that has stood the test of time: Livestock will assist us in managing the land in a complimentary and symbiotic balance. Manure will be used to fertilise crops, and crops used to feed both humans and livestock.

We plan to conserve existing biodiversity features on the plot (namely the wetland and the regenerating scrub) and cultivate new biodiverse habitats (including ponds, orchard, (organic) arable and vegetable garden) across the plot.

There will be no artificial fertilisers, herbicides or pesticides used on the land.

Soil

We commissioned a soil analysis from the Royal Horticultural Society:



Date Received	07-Sep-20
Date Reported	14-Sep-20

Laboratory Reference
Sample Number 76299/527999/20

RHS Log No. 2242

Recommendations requested for :
Fruit Vegetables

Sample Name : FRUIT TREES BUSH

SOIL ANALYSIS RESULTS

Soil Texture	Silty Clay
Organic Matter	12.3 % (High)
Soil pH	5.1
Available Phosphorus	11.8 mg/l (Index 1, Low)
Available Potassium	23 mg/l (Index 0, Low)
Available Magnesium	46 mg/l (Index 1, Low)

1. The provision of information by the RHS through its Soil Analysis Service to a subscriber is not an endorsement by the RHS of the competency, quality or otherwise of a subscriber to that service.

2. These results and recommendations are based entirely on the particular sample and information submitted. You are advised that to the fullest extent permitted by law we do not accept responsibility: firstly for any action other than those indicated in this report, secondly to anyone other than the subscriber to the RHS Soil Analysis Service for our results or recommendations or for the opinions we have formed.

The soils are acid – which is excellent for our blueberries, but challenging for many of our other crops. This will be remedied with regular light top-dressings of lime, which will be rotivated into the soil (in the vegetable garden/ polytunnel/ field cropping areas) or dug in before planting (in the orchard)

The low levels of trace minerals will be remedied with top dressings of 'Remin'[30], applied in much the same way as the lime.

We will also grow a large patch of comfrey (430m2) which will bring up trace minerals from the subsoil for use in the compost making.

Grazing fields

We will allocated the eastern portion of our plot to grazing. We have 4.45 hectares (11 acres) of dedicated grazing pasture in this block, plus two additional paddocks (an access paddock between the barn and the main grazing area and a lambing paddock – totalling 1820m2), making a total of 4.63 hectares.

30 https://www.reminscotland.com/wp-content/uploads/2017/06/REMIN-FLIER-JUNE-17.pdf

We also have an additional 4800m2 light grazing around the ring cairn, bringing our total grazing area to 5.11 hectares.

The grazing is poor – and we do not intend to improve it in any way, treating the area as conservation grazing. We have done our best to estimate grazing densities that will support the grassland ecology – and recognise that there will be an ongoing process of evaluation in this regard.

Whilst we will review our grazing patterns on a regular basis, our current plans are to graze this area with 3.98 GLU:

- 2 ponies (estimate- 1.2 GLU, 0.6ea)[31]
- 2 nanny goats (plus kids) (estimate- 0.32 GLU, 0.16ea)
- 12 sheep (plus lambs) (estimate- 0.96 GLU, 0.08ea)
- 6 miniature donkeys (plus foals) (estimate- 1.5 GLU, 0.25ea)

For the most part the grazing will be weather dependent. The livestock will have supplementary feed (hay, concentrates and field crops) and be kept in the barn when the weather is poor.

New Plant Woodland

We will plant approximately 2 hectares of new-plant mixed woodland, in a shelterbelt around the main growing areas. This will help create a favourable microclimate for our crops and will provide screening for the smallholding from the wider landscape.

Natural Regeneration

We will set aside 1.27 hectares (3.1 acres) of land for natural regeneration. For the most part this sits on our northern boundary above the valley. Some of this land is already regenerating and we do not think it will take long for this area to revert to natural woodland/ scrub.

Miscanthus

We will plant an area of approximately 4420m2 miscanthus for animal bedding and mulch crops. This area will be ploughed, rotivated and ridged before being planted with the miscanthus rhizomes. We expect it to take 3 – 4 years to establish itself, and once established we expect to annually harvest 4.4 tonnes of elephant grass for use as animal bedding and mulch.

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31 *Grazing Livestock Units(GLUs) are a way of comparing the nutritional requirements of grazing animals. They therefore assist with the calculation of stocking densities.*
One LU will require roughly one acre of land for summer grazing and one acre of land for conservation to provide forage for winter.

Forage Crop Areas

We have 3 Field Crop areas which will be rotated year on year. At the moment our cropping plans look like this:

Field Crop Area Rotations:

Field Crop	Size (m2)	Year 1	Year 2	Year 3	Year 4	Year 5
Area 1	4750	Clover Ley with Field Beans	Jerusalem Artichoke and Swede	Fodder Beet and Turnip	Clover Ley with Field Beans	Jerusalem Artichoke and Swede
Area 2	3000	Jerusalem Artichoke and Swede	Fodder Beet and Turnip	Clover Ley with Field Beans	Jerusalem Artichoke and Swede	Fodder Beet and Turnip
Area 3	3550	Fodder Beet and Turnip	Clover Ley with Field Beans	Jerusalem Artichoke and Swede	Fodder Beet and Turnip	Clover Ley with Field Beans

We will manage these with our tractor, and will pen pigs in the different areas as and when appropriate. For the most part we plan to grow and harvest our own seed for these crops. In the case of field beans and artichokes this simply means harvesting a proportion (up to 5%) of the crop. In the case of Swede, Beet and Trurnip this means planting a small bed in our vegetable garden and harvesting seed from there.

Estimated yields:

Crop	Estimated Yield: tonne per acre	Low Yield (smallest area) tonne	High Yield (largest area) tonne
Clover Ley	16	5.9	9.3
Field Bean	5	1.9	2.9
Jerusalem Artichoke	20	7.4	11.6
Swede	24	8.9	13.9
Fodder Beet	24	8.9	13.9
Turnip	22	8.1	12.8

Vegetable Garden

Vegetable Gardens provide diverse habitats for a wide range of species. We will use a minimum-dig method for all our food crops to improve soil structure and minimize compaction.

Hedgerows

The hedgerows on the plot are in very poor condition. We will focus our attention on restoring two hedgerow lines; one that runs alongside the road, and one to the East of the conservation grazing area – bringing these back to health. Native hedgerow trees[32] will be used to thicken up the hedges, and bring back health and biodiversity. The restored hedges will act as wildlife corridors, connecting the woodland block to the north of the plot, to the roadside and new mixed woodland coppice plantation.

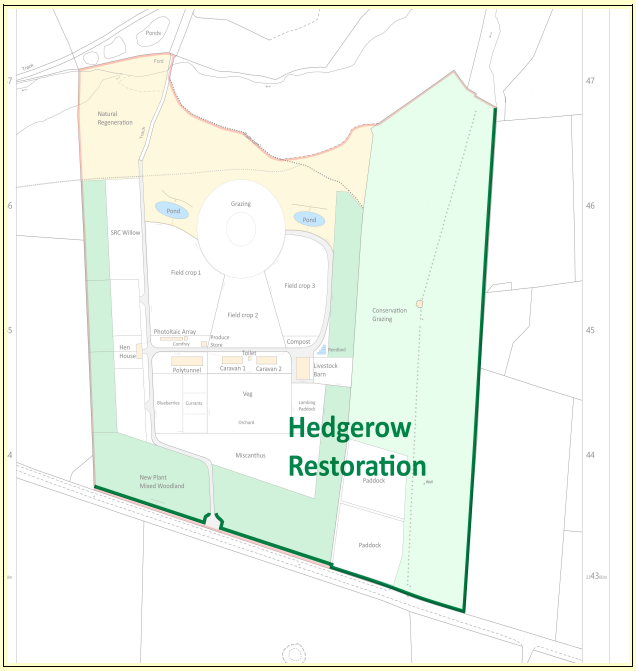

Illustration: hedgerow restoration

The hedgerow that borders the southern end of the large field, running alongside the county road, will be moved back 2 meters in order to provide visibility splays for the new entranceway. The new entranceway will be banked and planted up as a hedgerow. See drawing 10.1.

32 Including Blackthorn, Hawthorn, Rowan, Hazel and Holly

HEDGEROW TRANSLOCATION METHOD

Objective: to retain the shrubs, flowering plants, and seed bank of a very well established and diverse hedgerow that has taken 100+ years to reach its current diversity. It is important that the existing hedge bank material with all its plants is entirely incorporated into the new position and that fresh soil is not used to build a new bank while the old bank is dumped/discarded.

- The canopy/shrub layer of the hedgerow to be moved will be cut to within 20cm of the bank.

- A slight dip (c 15cm) will be excavated between the initial hedge bank position and the final position of hedge bank by removing the turf. The turves can be kept and used to reinstate any roadside verge that is to remain as vegetation. The strip where turves have been removed will help ease the translocation and reduce the amount of break-up of the hedge bank.

- A bladed excavator (>15 tonne) with a large bucket (and a skilled operator) will be used to pull the hedge bank back across the bare ground resulting from operation 2, above, to the final position. The bank will try to break up, so it is very important that each section is only moved a few inches at a time, working up and down the length to try and retain the integrity of the bank. It is a slow process, but if carried out with care, the time subsequently needed to reshape and patch the hedge bank is much reduced and overall time will be saved by going slowly and carefully.

- All material that breaks away from the main bank will be used to fill in any gaps at the end. Some of this work is best done using hand tools to get the best result.

- The work will preferably take place during September and February. If it is not possible to work within this timing constraint then a suitably qualified ecologist will be required to assess the site immediately prior to the intended works taking place and decide on whether progress is possible, without disturbing nesting birds (March to August).

Orchard

The young orchard will be managed primarily for productivity, and a healthy orchard creates a diverse ecology in itself. The trees will be mulched and care will be taken to remove any canker. Varieties will be selected for their suitability for our site (canker resistant strains on M25 standard rootstocks). The Orchard will also include crab apples, damsons and bullaces.

Barn Owls

The conservation grazing provides good habitat for barn owls. We will build two custom-made barn owl boxes in the North and South apexes of the barn. We will not use any rodenticides on the plot – and will instead control rodent populations through diligent management of food stores and conventional traps.

Landscape

The plot sits in a landscape described as:

A mosaic of largely improved but relatively poor grazing land (wet and rushy) used for sheep rearing, with straight edged coniferous plantations, on flat to gently rolling lower plateau.[33]

Our intention is to leave the eastern section of our plot open and grazed – an extension of the predominant land-use pattern in the locality. The remainder of the plot will be screened by a mixed woodland plantation – with the farming and horticultural activities essentially screened from the wider landscape by a thick belt of trees.

Please refer to the Independent VIA Assessment that accompanies this management plan

33 LANDMAP, visual and sensory, landscape character.

Cultural Heritage

We do have a line of old military defences that runs across our plot. This is punctuated by a pillbox. We plan to conserve these features – and will use the area in which they sit for conservation grazing only.

Grazing Regime for Marshy Grassland Conservation Area:

The favourable conditions for the grassland/scrub conservation area are:

- ***Scrub extent:*** *the same as in 2020 (i.e., as shown in Figure 2 of the ecology report).*
- ***Scrub openness:*** *as in 2020, with 10-25% grass-dominated gaps.*
- ***Grassland Flush/marshy grassland area:*** *Sward in early June to have flowering examples of common cotton-grass and a sward height of at least 150-300mm across at least 75% of the marshy grassland area. Less than 5% with heavy poaching.*
- ***Northern flush:*** *Maximum shading 25%.*

Notes

The nutritional quality of grass will vary considerably across the conservation area with the poorest quality occurring in the flush/marshy grassland part, and the more nutritional grasses in the improved and semi-improved parts (Figure 2 Ecology Report). This will no doubt lead to the drier areas being favoured by stock, and the grazing of the wetter parts occurring at a much lower level, a very desirable situation. However, due to the potential for damaging soil structure by hoof damage during excessively wet periods, it may be necessary to exclude stock from the wetter areas separately, by a temporary electric fence, for example, but such damage is only likely to happen when the grass is exhausted in the rest of the improved and drier areas. Therefore, it is preferential to control overall access to the whole area by removing or reducing stock as the grass in the drier areas becomes exhausted and thus discouraging desperate animals to venture into the boggy parts.

Common Cotton Grass

The Main Flush and Marshy Grassland

Ring Cairn

Location of the ring cairn

The discovery of the ring cairn by Trysor will result in two conservation efforts.

1. The ring cairn area itself will be enclosed in a circular fence (see drawing 1.2), and no vehicles or heavy traffic will be allowed within this area. The area will benefit from light grazing – specifically sheep and goats. Ponies, pigs and donkeys will be excluded from this area.

2. A 'watching brief' on intrusive groundworks associated with the development (a Written Scheme of Investigation) will be agreed with the Local Authority. This will focus on examining the interface between the natural subsoil and the ploughsoil which overlays it (this is the level at which archaeological features show up).

Land Management Criteria

The essential criteria are that:

All existing semi-natural and other important habitats on the site are conserved and enhanced through appropriate traditional management.

- *All existing semi-natural and important habitats on the site (hedgerows, wetland) will be conserved and enhanced through appropriate management.*

All cultural heritage features (e.g archaeology) on the site are conserved and enhanced through appropriate management.

- *The ring cairn will be conserved. The miltary defences and pillbox will be conserved.*

The landscape of the site is enhanced by the addition and traditional management of characteristic or once characteristic local landscape features that, amongst other things, may be used to screen and filter views to built elements of the proposals and to provide shelter and screening to horticultural areas.

- *The landscape character will be enhanced by traditional local landscape features including hedgerow conservation, grazing field management, and a woodland plantation that will screen and filter views from the wider landscape.*

Buildings and other structures and access tracks are located where they can be recessed into the landscape and do not stand out in views from public vantage points.

- *All new buildings and other structures have been located in positions that will not be visible from public vantage points.*

The contributory criteria are that:

Existing semi-natural habitats are extended or once characteristic habitats are recreated, ideally creating wildlife corridors across the site, linking to other habitats beyond the site.

- *Orchard and woodland habitats are linked across the site by hedgerow lines.*

Populations of once characteristic farmland birds of the local area are increased through appropriate habitat creation.

- *New hedgerow and new orchard, as well as careful woodland and field management, will support increased biodiversity in the area.*

Soil organic matter is increased.

- *The land management practices will lead to an increase in soil organic matter in the fieldscale crop, orchard and vegetable growing areas.*

Populations of pollinating insects are increased.

- *The land management practices will naturally lead to an increase in insect numbers and diversity through habitat creation (including new hedgerow and orchard).*

Land Management Monitoring

Monitoring: Essential criteria

The targets and indicators for monitoring the essential criteria are:

- Target: That all existing semi-natural habitats are in favourable condition.

Indicators: Spread of characteristic species of that habitat against an established baseline.

Decline in non-characteristic / commercial agricultural species within each habitat (seek advice of Wildlife Trust).

Method: *The annual monitoring report will include a description of the health of the key features as identified in the Ecology Report:*

Table: Overview of monitoring arrangements in regard to Ecology:

Habitat	Timing	Action
Hedgerows	Annual: autumn or winter	Walk and inspect total length of hedgerow and record any gaps of more than 1m. **Response:** *Plant a new native sapling in each 1m gap during winter.*
Conservation area: **Scrub extent**	In Year 1	Mark current extent of scrub with permanent posts.
	Annually in autumn	Check extent of scrub in relation to marker posts. **Response:** *If scrub extent is receding then temporarily exclude grazing for the following season. If expanding, then cut new scrub manually.*
Conservation area: **Scrub density**	Annual:	Estimate the percentage grass cover within the scrub at a sample of three points. **Response:** *If less than 10%, then increase grazing levels within the scrub, or manually clear a network of small paths. If greater than 25% then exclude grazing for the following season.*
Conservation area: **Marshy Grassland/flush**	Monthly	Check that there no patches of heavily poached ground within the marshy grassland. And exclude stock if necessary.
Conservation area: **Marshy Grassland/flush**	Annual: Early June	Check that common cotton grass is in flower, and sward is 150-300mm across 75%. See photos 1 and 2. **Response***: If sward is too short – reduce grazing pressure, long sward then soft rush is probably becoming over dominant so increase grazing or top rushes in August and rake off. Common cotton grass presence will indicate that rush dominance is not excessive.*
Northern Flush 1	Annual: September	Estimate the extent of shading by gorse/grey willow by % cover. **Response:** *If greater than 25% then coppice scrub growth. To within 150mm.*

- Target: That all identified cultural heritage features are maintained in good condition.

Indicators: No cultivation or soil erosion over buried archaeological sites and historic earthworks.

Scrub and trees removed over buried archaeological sites and historic earthworks.

Above ground historic/ cultural features stabilised and scrub / trees removed.

Method: *The annual monitoring report will report on the condition of the military defences and pillbox, and the management practices (conservation grazing) being used to maintain these features.*

The annual monitoring report will report on the condition of the ring cairn, and the management practices (light grazing) being used to conserve this feature.

A 'watching brief' on intrusive groundworks associated with the development (a Written Scheme of Investigation) will be agreed with the Local Authority.

- Target: That there is an increase in the number and /or area or length of traditional characteristic landscape features and all are under appropriate traditional management.

Indicators: Increase in the number / area / length of x landscape feature. Increase in the number / area / length of y landscape feature.

Method: *The annual monitoring report will report on the management of the hedgerows and this will quantify the areas of new hedgerow planted.*

Monitoring: Contributory criteria

The targets and indicators for monitoring the contributory criteria are:

- Target**:** That (named) semi-natural habitat(s) are extended / created.

Indicators: Area of new habitat.

Spread of characteristic species of that habitat.

Method: *The annual monitoring report will report on the creation and establishment of the orchard and the new hedgerow.*

- Target: That there is an increase in the population of farmland birds on the site.

Indicator: Number of breeding farmland birds on the site against an established baseline

Method: *No baseline for the number of breeding farmland birds on the site has been set. Should the opportunity arise for such a survey to be commissioned this will be recorded in the annual monitoring report.*

- Target: That there is an increase in the population of honey bees.

Indicator: Number of active bee hives on site.

Method: *There are currently no plans for keeping bees on site, and our annual monitoring report will indicate if this changes.*

Energy and Water

Energy

We expect to meet all our electricity needs and all our hot water and cooking needs from renewable sources on site.

Domestic: Thermal Efficiency

Our plan is to design and construct two highly insulated cabins (caravan) which will benefit from solar heat harvested from large windows facing south, using natural convection currents to heat and/or ventilate the building, depending on the season and requirements.

The cabins would have high levels of insulation all round, and double glazing on all external windows (please refer to zero carbon chapter). The doorways will have draught lobbies.

Domestic: Electricity

We will have a 10kW solar array. The array will consist of 40 x 250W panels, and has been pitched at 45 degrees (facing due south) to maximise on winter solar gain.

We estimate that this will generate approximately 9030 kWhr/ year[34], although there is going to be considerable seasonal variation in this.

The battery reserve (1320Ahrs)[35] will balance our loadings over sunny and cloudy periods. The batteries, along with the solar MPPT controller, 240v inverter, will be situated in a shed next to the solar panels, before being distributed to the various buildings on the plot.

It is estimated that in Carmarthenshire there is an average 1 hour sunshine per day in December and 6 hours sunshine per day in June.

During the winter we estimate we will be generating 28 kWhrs/ week.[36]

During the spring and autumn we estimate we will be generating 180 kWhrs/ week.[37]

During the summer we estimate we will be generating 343 kWhrs/ week.[38]

In addition to seasonal generation, our activities and usage will also vary with the seasons.

34 www.pvfitcalculator.energysavingtrust.org.uk
35 12 x 110Ah batteries
36 Based on 40% efficiency
37 Based on 55% efficiency
38 Based on 70% efficiency

Seasonal electricity use:

Item	Electrical use	Winter Load (per week) kWhr	Spring and Autumn Load (per week) kWhr	Summer Load (per week) kWhr
Water treatment	Filters, UV continuous load 5W	0.84	0.84	0.84
Washing Machine	6 washes per week (variable)	5.2	5.2	5.2
2 Fridge Freezers	Constant (A+++)	5.38	5.38	5.38
Fire Alarms	Constant	0.07	0.07	0.07
Lighting	Predominantly LED – estimated load 24W	0.8	0.4	0.2
Kitchen appliances	Blenders/ juicers	0.26	0.26	0.26
Laptops phones	Estimated load 3 laptops + 6 phones 320W (2 hrs/day)	4.48	4.48	4.48
TVs and consuls	Assume 120W, 2 x 2hrs/day	3.36	3.36	3.36
Other (inc. rechargeable torches)	Misc, 100W for 1 hr/day	0.7	0.7	0.7
2 Cookers	Based on 0.87kW/hr, 2 x 2hrs a day	0	34	34
Hot water	Based on 2 x 3kW immersion running for 2.5 hr a day	0	105	105
Compost Toilet	LED Lighting	0.1	0	0
Barn	LED Lighting, fire alarm	0.1	0.05	0.05
Produce Store	LED Lighting, Chest Freezer (A++)	4.3	4.3	4.3
Chicken Shed	LED Lighting, heat lamps(occasional), small fridge,fire alarm	1.1	1.1	1.1
Fruit Cordials	Low heat pasteurisation and sterilising bottles for cordials	0	0	96
Totals		26.69	165.14	260.94

If for any reason our electricity production levels do not meet our electricity use, we will either adjust our lifestyle patterns, or will increase our photovoltaic capacity.

Domestic: Timber Biomass Heating

In midwinter we will light the wood-fired ranges in our cabins. This will supply cooking, hot water and space heating provision.

We estimate our weekly hot water load to be 105kWh, leading to a requirement of between 1.2 – 2.4MWh/ year[39]

We estimate our weekly cooking load to be 34kWh, leading to a requirement of between 0.3 – 0.6MWh/ year.

We estimate our annual space heating load to be approximately 9.7 MWh.[40] If we assume our wood ranges having an efficiency of approximately 70%, then we require 13.9MWh for space heating.

Our total annual requirement for heating from biomass is expected to be between 15.4 – 16.9 MWh, or the equivalent of 7.05 m3 of wood[41], or 4.1 tonne a year[42]

We will plant 2 hectares of mixed broadleaf woodland. This will be a mix of natives (including alder, willow, birch and oak) and conifers (including spruce, pine and fir). The conifers will act as a nursery crop – protecting the deciduous trees from the wind and establishing a favourable microclimate across the plot. In the early years of planting there will be overlaps in growth rates using this approach, leading to increased yields. For the purposes of calculating energy yields we will assume a 50/50 planting pattern. The trees will be harvested on a rotational basis – thinning and coppicing to maximise growth.

50% broad leaf coppice would be considered as yield class 6, producing 6m3/ha/yr weighing in at 700kg/m3. Assuming 20% moisture (wood will be seasoned and dried under cover) will lead to an energy density of 2.74MWh/m3. 10,000m2 of broadleaf coppice would supply us with 6 m3, (4.2 tonnes), producing an estimated 16.4MWh

50% softwood plantation, yield class 12, weighing in at 470kg/m3, leading to an energy density of 1.84MWh/m3. 10,000m2 of softwood plantation would supply us with 12 m3, (5.6 tonnes), producing an estimated 22.0MWh.[43]

The woodland will take approximately 7 - 12 years to come into full production.

In addition we will plant approximately 2450m2 of Short Rotation Coppice (SRC) willow. This will produce an estimated 1.96 tonne biomass per year (3.92 m3) producing an estimated 7.7MWh. This coppice area will come into full productivity relatively quickly (by year 5).

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39 Assuming an 8 – 16 week period when thesolar panels are unable to supply our needs.

40 This figure is for the two cabins. Note that our cabin construction type is considerably more insulated and therefore efficient than conventional housing. https://www.plumbnation.co.uk/heating-calculator/

41 Assuming the wood is 50% softwood and 50% broadleaf coppice: 2.29MWh/m3

42 Assuming an average density of 585kg/m3

43 *Baseline figures for woodland coppice growth rates and yields from Centre for Alternative Technology*

In total we expect to be harvesting approximately 14 tonne timber biomass each year once our plantation areas have established themselves. We expect to use approximately 4.1 tonnes timber biomass each year for domestic heating and cooking purposes, and the remainder will be chipped and used as mulch.

Non renewable fuels

In line with practice guidance point 3.60, we will be using small amounts of non-renewable fuels:

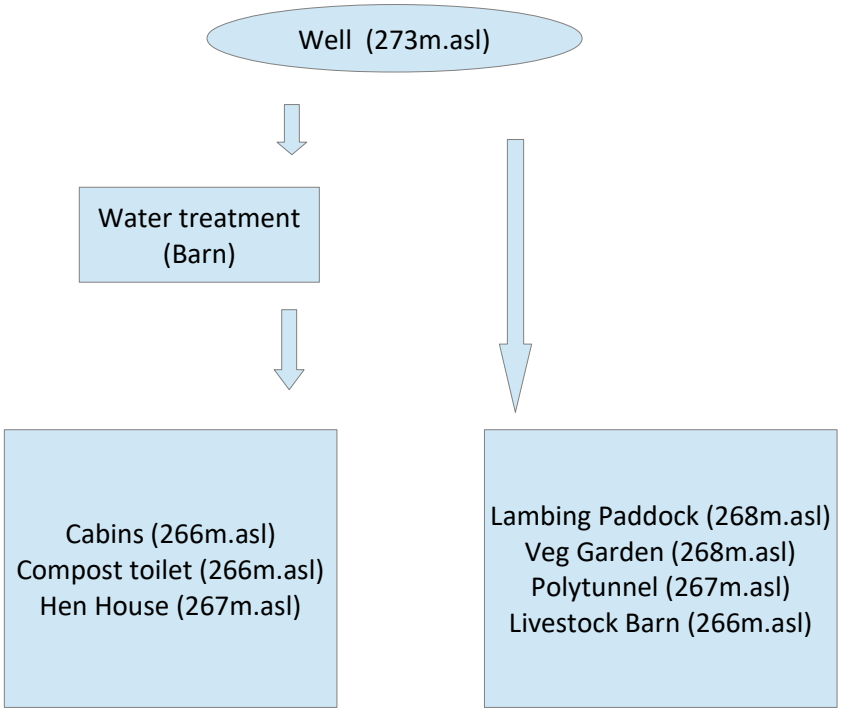
- diesel for the tractor – estimated at 120 litres a year
- petrol for the chainsaw and strimmer – estimated at 30 litres a year

Water

We plan to meet all our domestic water and all our horticultural/ livestock water needs from an existing well. We plan to maximise our rainwater harvesting systems to feed the wildlife ponds.

The plot has its own well. It is a deep concrete ring well, capped with a concrete lid (removable only with heavy machinery). When we purchased the plot this supplied various drinking troughs across the land. It is sited at 273m asl, and appears to never run dry[44].

Potable water will be filtered and treated with a UV lamp. The entire system will be gravity fed.



44 This has been confirmed by the previous land owner

Domestic Use

Water use within the household will be minimised. Cabin 1 will include a kitchen sink , three hand basin and one shower. Cabin 2 will include two kitchen sinks, one hand basin, one shower and a washing machine. The compost toilet will include a hand basin.

The average person in the UK uses 150 litres of water per day. A conventional household of eight people would be expected to use 8400 litres a week. We expect to use less than half this amount.

Water Use

Activity	**Volume water used**	**Volume water per week (litres)**
Drinking	3l per person per day	168
Veg/ food prep	5l per day	35
Cooking	10l per day	70
Washing up	30l per day	210
Washing Machine	100l per load, six times a week	600
Bathing	50l per shower, plus sink use	1800
Hand Washing (including compost toilet)	1l per wash, 20l per day	140
TOTAL		3023

Horticulture Use

We do not expect to water any of our outdoor plants, unless exceptional cicrcumstances arise (an early season drought after having planted out a new crop for example). The organic matter content of our soil is high which means that it is very good at retaining moisture. This will be increased by the use of top mulches.

We do expect to water our polytunnel daily and expect to require between 50 litres and 250 litres a day depending on the season.

Livestock Use

We expect to keep the equivalent of 3.98 GLU plus 96 hens. Their water needs are going to vary considerably with the season and our best estimates are that it will be between 40 l and 160 l a day.

Note that potable water is being supplied to the hen house – this is for hand washing/ egg washing.

Produce Store Use

The produce store will have 3 sinks: one for hand washing, one for fruit/veg washing and one for meat (and associated equipment) washing. We estimate that their use will be occasional: up to 20 litres a day, 20 days of the year.

Energy and Water Criteria

The essential criteria are that:

The energy needs of the site will be **minimised** through suitable design and use of technology, including that which enables re-use.

- *The energy needs of the site have been minimised though designing highly insulated living spaces that benefits from passive solar gain. Low energy appliances and light fittings will contribute to minimising our energy needs.*

All of the energy needs of all activities shall be met from sources of **renewable energy** on site, with the exception of small amounts of non-renewable fuel for particular uses for which they are best suited and justifiable (para 3.60).

- *We will meet all our electrical, cooking and heating needs from a photovoltaic array complimented with timber/ biomass grown on site in the winter. We will use a tractor and petrol strimmer/ chainsaw from time to time.*

The water needs of the site will be **minimised** through suitable design and use of technology, including that which enables re-use.

- *Water use will be minimised through our own lifestyle patterns, supported by an infrastructure designed for responsible water use.*

Rainwater **harvesting** from buildings and structures must be maximised.

- *We will harvest the rainwater from all our roofs and this water will be used to supply the wildlife ponds.*

All of the water needs of all activities should be met from water available on site, unless there is a more environmentally sustainable alternative. Abstraction from water bodies (including groundwater sources) must be at levels that do not cause environmental harm. Harm would result from the lowering of surface and ground water levels.

- *We will be using an existing well supply for our water. The levels of abstraction from the well will be so small that there will be no discernable impact on local groundwater levels.*

The contributory criteria are that:

The embodied energy of renewable energy equipment should not outweigh its benefits from energy generation.

- *A recent study by researchers from the Netherlands and the USA (Fthenakis, Kim and Alsema, 2008) [45] found that it takes 250kWh of electricity to produce 1m^2 of crystalline silicon PV panel. Under typical UK conditions, 1m^2 of PV panel will produce around 100kWh electricity per year, so it will take around 2.5 years to "pay back" the energy cost of the panel. PV panels have an expected life of at least 25-30 years [46], so under UK conditions a PV panel will, over its lifespan, produce many times more energy than was required to manufacture the panel.*[47]

Human and animal labour should replace the use of non-renewable energy whenever possible and practical.

- *The holding will be predominantly run on human labour, though we will use machines fwhen pragmatic to do so.*

Any water pumping should be renewably powered.

- *There are no plans for water pumping – the water systems are designed to be gravity fed.*

Any ponds / lakes created should maximise habitat creation and should not destroy important existing habitats.

- *There will be two new wildlife ponds on an area currently considered to be low in biodiversity (semi improved grassland).*

Energy and Water Monitoring

Monitoring: Essential criteria
The targets and indicators for monitoring the essential criteria are:

- Target: That all of the **energy needs** shall be met from sources of renewable energy on site.

Indicators: Annual reporting on use of renewable energies generated on site (as percentage of energy needs).
Annual reporting on use of all non-renewable fuels, recorded in terms of use (what for) and amount (quantity)

45 http://pubs.acs.org/doi/pdfplus/10.1021/es071763q

46 http://info.cat.org.uk/questions/pv/life-expectancy-solar-PV-panels

47 http://info.cat.org.uk/questions/pv/what-energy-and-carbon-payback-time-pv-panels-uk

Annual reporting on quantity of electricity exported to the grid and imported from the grid.
(Note: all purchased energy will form part of the EFA making it necessary for energy use to be minimised)

Method: *The annual monitoring report will contain a description of our energy usage and production patterns which details sources, methods and quantities. It will include figures for the amount of renewable electricity we generate and use, as well as data on the amount of biomass we harvest and use, as well as data on our use of non-renewable fuels.*

- Target: That all **water needs** are met from water available on site (unless there is a more sustainable alternative).

Indicators: Annual reporting on use of water sources (amount used from each source), including that harvested from site and that abstracted from water bodies (surface and ground water). Annual reporting on ground and surface water levels (reported on monthly basis).

Method: *The annual monitoring report will contain a description of our water usage and our rainwater harvesting patterns which details sources, use and quantities.*

Waste

We intend to assimilate all biodegradable waste on site and to minimise non-biodegradable waste.

Domestic Food Waste

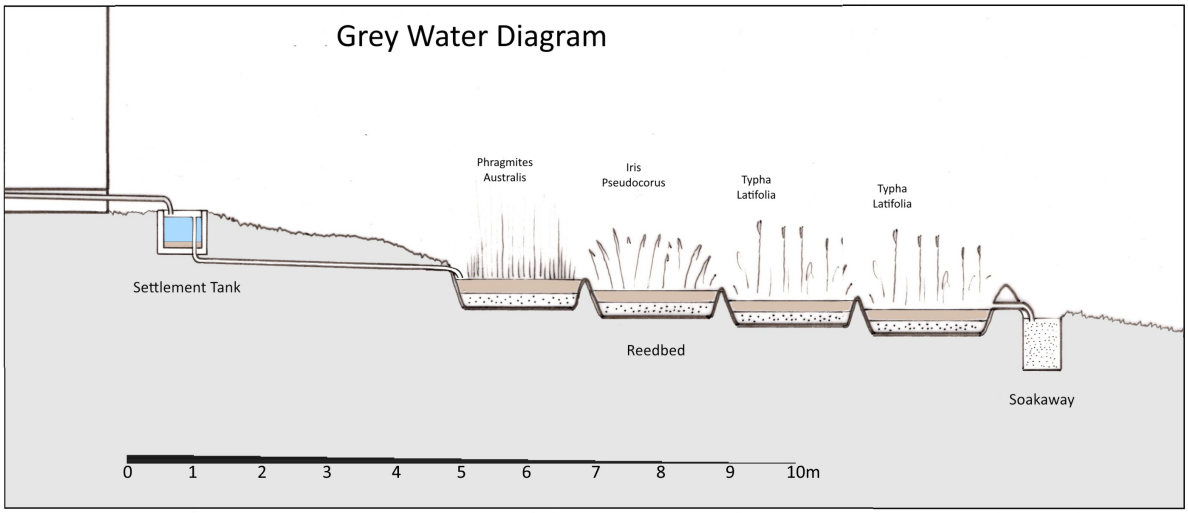
All domestic raw food waste will be fed to the animals. All domestic cooked food waste will be composted in galvanised steel bins to prevent rodents. These bins will be ventilated and stirred occasionally to ensure aerobic decomposition.

Grey Water

Grey water from the two cabins will go to a reedbed. The grey water volume is estimated to be an average of 400 litres a day. We will not use conventional cleaning agents and detergents – and will only use soft biodegradeable soaps.

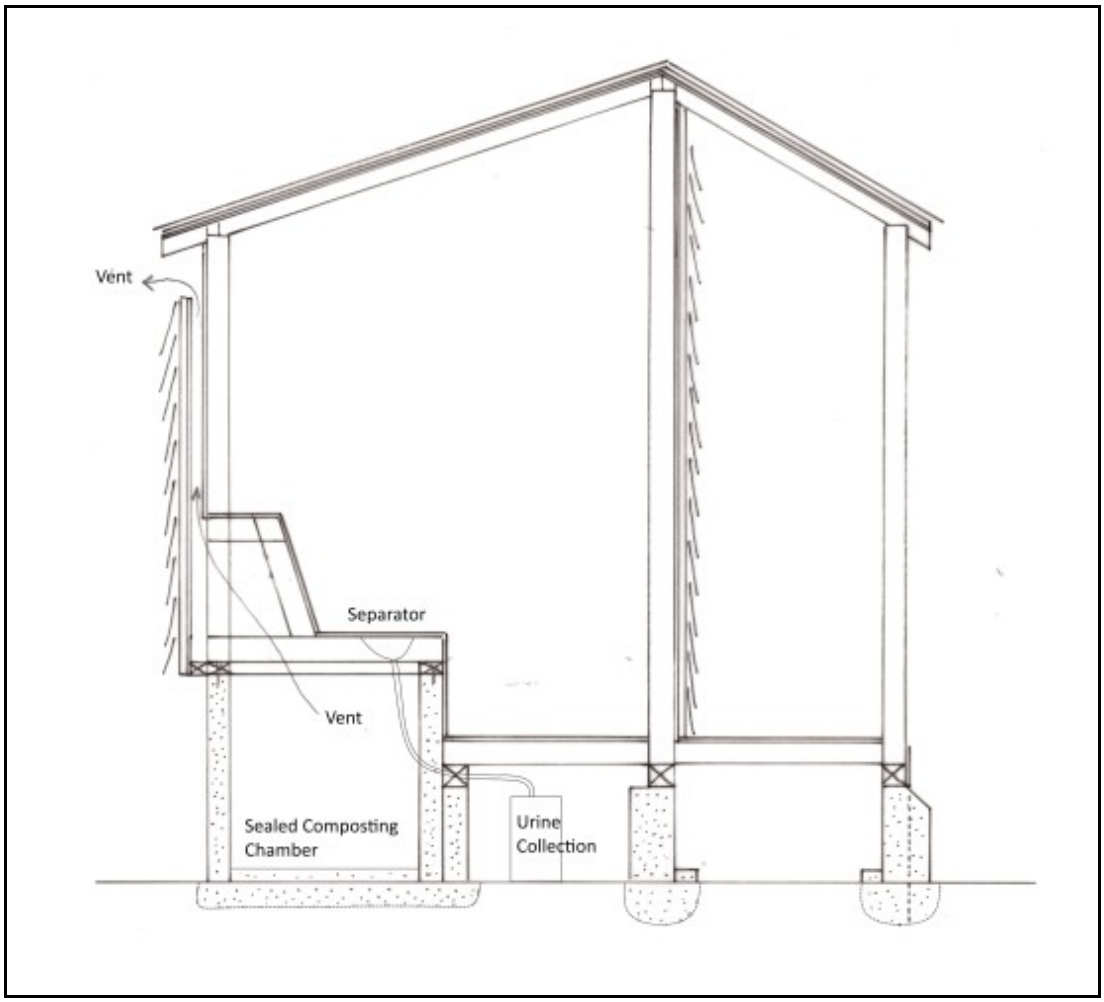
This waste water will be channelled via a brick-lined settlement tank (with a standing water volume of 110 litres), and enclosed with a standard manhole cover. (External measurements 600mm x 750mm x 700mm). Sediment from the settlement tank will be removed for composting every 6 months. With any solid particles having been separated out in the settlement tank, the grey water will be piped to the reedbed (which is situated downhill from the cabins).

The reedbed itself will measure approximately 40 sqm, and will be lined with an EPDM membrane, on top of which sits 100mm depth gravel, and onto this 100mm growing zone for different reeds. The grey water will percolate down through the reedbed before returning to ground via a gravel drain soakaway (500mm x 500mm wide, 750mm deep).



Human Faeces and Urine:

A dual-chamber dry composting toilet will be located as shown on the layout plan. It is more than 10m from natural water courses. There will be no polluting outflows from the building.



Solid human waste will be collected and composted in rotation in two masonry chambers. When the aerobic composting processes have turned the humanure into compost, this will be used in the coppice areas to mulch trees. The human liquid waste (urine) will be collected in a storage container before being diluted and watered into the compost heaps, gardens and fields.

This tried and tested approach enables human waste to be processed cleanly and completely.

Packaging, Cardboard and Paper

Paper-based waste will generally be composted. Paper waste with indelible inks, along with plastic, glass and metal packaging will be recycled through the Council's recycling services.

Green Waste

All green waste will be used for making compost or mulching

Livestock Waste

Livestock manure is an important element for nutrient cycling and soil fertility. It will be used as a key ingredient in our compost making.

Waste Criteria

The essential criteria are that:

All biodegradable waste produced on site is assimilated on site in environmentally sustainable ways.

- *All organic waste will be composted on the holding.*

The only exception to this is occasional off-site disposal of small nonbiodegradable amounts of waste, which cannot be assimilated on site which arise from things used on site wearing out or breaking irreparably.

- *As a result of engaging with the modern world we do expect to produce small amounts of nonbiodegradable waste that cannot be assimilated on site.*

All waste handling and assimilation on site must comply with Environment Agency guidelines.

- *All waste handling and assimilation on site will comply with Environment Agency/ NRW guidelines.*

The contributory criteria are that:

The re-use of organic waste on site should increase overall site fertility and productivity so long as this is not at the expense of important semi-natural habitats dependent on low soil fertility.

- *We will compost organic waste on site to increase soil fertility and productivity in our growing areas.*

Waste Monitoring

Monitoring: Essential criteria

The targets and indicators for monitoring the essential criteria are:
- Target: That all biodegradable waste produced on site will be assimilated on site in environmentally sustainable ways.

Method: *The annual monitoring report will contain a description of our on-site biodegradable waste assimilation processes.*

- Target: The only exception to this is occasional off-site disposal of small amounts of non-biodegradable waste items which cannot be assimilated on site that arise from things used on site wearing out or breaking irreparably.

Indicators: Annual reporting on quantity of all waste production by types of waste and sources - domestic and other (specified). Annual reporting on quantity of on-site waste assimilation and offsite waste disposal.

Method: *The annual monitoring report will also contain a breakdown of the types and quantities of waste we produce.*

- Target: That all waste handling and assimilation on site must comply with Environment Agency guidelines.

Indicator: Annual statement of compliance with Environment Agency guidelines.

Method: *The annual monitoring report will include an annual statement of compliance with Environment Agency guidelines.*

Monitoring: Contributory criteria

The targets and indicators for monitoring the contributory criteria are:
- Target: That the re-use of organic waste on site should increase overall site fertility and productivity, so long as this is not at the expense of important seminatural habitats dependent on low soil fertility.

Indicator: Addressed in annual reporting of on-site waste assimilation (see above)

Method: *(See above) The annual monitoring report will contain a description of our on-site biodegradable waste assimilation processes.*

Zero Carbon Buildings

We have designed our buildings to be low in height so that they sit discreetly in the landscape, and built predominantly from natural materials. Where possible, materials will be sourced locally, and where possible recycled materials will be used in place of new materials. The buildings are designed to be straight forwards to construct/ assemble, and to have good performance and longevity, whilst minimising their environmental impact.

Building Regulations

The buildings do not require Building Regulations approval:

- The Cabins which fall under the definition of caravans, complying with size, construction and mobility test .
- The Compost Toilet which is less than 30m2 and does not contain sleeping accommodation.
- The Barn which is an agricultural building.
- The Produce Store is an agricultural building.
- The Chicken Shed which is an agricultural building.

- The Polytunnel and pv array are lightweight and temporary structures that do not require building regulations.

Thus, in line with point 3.82 of the practice guidance the zero carbon requirement does not apply to any buildings.

Outline Specifications

Cabins (caravans) (5.8m x 18m)

The cabins will be constructed as caravans – pre-fabricated in two sections which will be bolted together and capable of removal. They will be built predominantly from locally-sourced larch timber (structure and cladding), insulated with woodfibre insulation, finished internally with lime plaster, and roofed with metal roofing sheets. The construction will be lightweight and breathable. Windows and doors will be timber-framed and recycled as far as possible. There will be some purchased manufactured elements in the construction – breather membrane[48], dpc, fixings, plumbing, electrics. The cabins will sit on masonry piers.

Outline Specification:

- Foundations and piers: Pad foundations built from a light concrete mix (depth dependant on advice from structural engineer). Masonry piers 500mm x 500mm built with reclaimed brick/ block.[49]
- Frame: 200mm x 40mm studwall timber frames made from sawn larch (locally sourced)
- Insulation and internal wall finish: 200mm Pavotherm (lightweight woodfibre insulation) with OSB board (FSA certified), and a lime plaster finish.
- Floor: 400mm timber frame with Pavotherm (lightweight woodfibre insulation) sandwiched between OSB (FSA certified) below and larch floor boards (locally sourced)
- Ceiling: OSB boarding (FSA certified), 200mm Pavotherm (lightweight woodfibre insulation)
- Roof: breather membrane, zinc metal roofing sheets.
- Cladding: Locally sourced and sawn larch

Compost Toilet (3m x 2.4m)

Outline Specification:

- Foundations: Masonry foundations and piers built using reclaimed brick/ block.
- Composting chambers: Masonry chambers built with recycled brick/ block on a concrete slab base (75mm), with marine ply doors.
- Frame: 50mm x 100mm timber frame made from sawn larch (locally sourced)
- Insulation and internal wall finish 100mm Pavotex (woodfibre insulation) with OSB board (FSA certified), and a lime plaster finish.

48 Note that bat-friendly breather membrane will be used

49 We will do our best to source reclaimed brick/ block. If we are unable to source these in sufficient quantity we will aim to source block made using recycled aggregate.

- Floor: 200mm timber frame with 100mm Pavotex (woodfibre insulation) sandwiched between OSB (FSA certified) below and larch floor boards (locally sourced)
- Roof: 200mm timber frame, 100mm Pavotex (woodfibre insulation), OSB boarding (FSA certified), breather membrane, zinc metal roofing sheets.
- Cladding: Locally sourced and sawn larch. Timber door. Glazed window units.

Barn (12m x 21m)

Outline Specification:

- Foundations: Strip foundations (depth dependant on advice from structural engineer) with a low masonry stem wall built with reclaimed brick/block
- Frame: Roundwood pole frame - larch (locally sourced)[50]
- Roof: zinc metal roofing sheets with occasional corrugated glazing panels to allow for light.
- Cladding: Locally sourced and sawn larch. Timber doors and aperture windows.

Chicken Shed (12m x 4m)

Outline Specification:

- Foundations: The store room will have a concrete slab foundation and masonry walls (to ensure feed stores remain dry and rodent free) and the coop areas will be built on brick piers (all masonry elements will be reclaimed where possible).
- Frame: 150mm x 50mm studwall construction with trussed roof frames tied together with purlins - larch (locally sourced)
- Roof: zinc metal roofing sheets.
- Cladding: Locally sourced and sawn larch, single glazed windows, wooden timber slat vents, timber doors.

Produce Store (4.8m x 4m)

Note that this building will need to pass health and safety legislation around food processing and storage

Outline Specification:

- Foundations: Brick piers (all masonry elements will be reclaimed where possible).
- Frame and walls: 100mm x 50mm studwall construction, insulated with sheeps wool, finished internally with green ply, and then tiled.
- Roof: 200mm span rafters, with sheeps wool insulation and an internal plastered ceiling, finished with zinc metal roofing sheets.

50 We will probably commission a local company – Ty Pren – to prepare and assemble the frame

- Cladding: Locally sourced and sawn larch, double glazed windows, timber doors.

Zero Carbon Buildings Criteria

The essential criteria are that:

Domestic and ancillary buildings will be 'zero carbon' in construction and use as explained in this guidance and using the up to date Welsh definition of zero carbon.

- *In accordance with point 3.82 of the practice guidance, none of our buildings fall under the zero carbon policy requirements because they are not subject to Building Regulations control.*

Proposals will identify which structures require Building Regulations approval and that this approval is obtained either before or during construction.

- *No structures will require Building Regulations approval.*

All structures identified for removal in the Exit Strategy are capable of removal with low environmental impact.

- *The cabins (caravans) can be easily removed from the site with no appreciable negative environmental impact as described in the Exit Strategy.*

The contributory criteria are that:

The construction of buildings should make as much use of recycled materials as possible so long as this does not affect their ability to satisfy the essential criteria.

- *As far as possible recycled materials will be used throughout the structures. These will include reclaimed block and brick and reclaimed windows and doors.*

Existing buildings are re-used where this would have an overall lower environmental impact than new buildings, or where they are of particular value in landscape or heritage terms, but provided that they are not unsightly or have a negative impact on the surrounding landscape.

- *There are no existing buildings on site.*

Zero Carbon Buildings Monitoring

Monitoring: Essential criteria

The targets and indicators for monitoring the essential criteria are:

- Target: That domestic and ancillary buildings are zero carbon in construction and use.

Indicators: Achievement of zero carbon assessment for all buildings requiring Building Regulations approval in construction as described in this guidance

Achievement of zero carbon assessment for all buildings requiring Building Regulations approval in use as described in this guidance

Method: *The cabins (caravans) have been designed to minimise their carbon footprint. The development will be zero carbon in use because it is essentially off-grid. No structures will require Building Regulations approval.*

- Target: That structures requiring Building Regulations approval obtain this approval.

Indicators: All structures requiring Building Regulations approval are identified in the proposals.

This approval is obtained either before or during construction.

Method: *No structures will require Building Regulations approval.*

- Target: That all structures identified for removal in the Exit Strategy are capable of removal with low environmental impact.

Indicators: Specification of how each structure identified for removal in the Exit Strategy is capable of removal with low environmental impact.

Method: *The structures identified in the Exit Strategy are capable of removal with no appreciable environmental impact.*

Monitoring: Contributory criteria

The targets and indicators for monitoring the contributory criteria are:

- Target: That the construction of structures should make as much use of recycled materials as possible so long as this does not affect their ability to satisfy the essential criteria.

Indicator: Detailed summary of use of recycled materials in construction of structures.

Method: *Details of the recycled elements to be used in the construction of the cabins will be included in the annual monitoring report.*

- Target: That existing buildings are re-used where this would have an overall lower environmental impact than new buildings, or where they are of particular value

in landscape or heritage terms, but provided that they are not unsightly or have a negative impact due to their siting

Indicator: Explanatory statement on the re-use of any existing buildings.

Method: *There are no existing buildings on the site.*

Community Impact Assessment

We understand that we are moving into an area where there is an established Welsh language community and culture. We all expect to integrate fully into the local community culture. Our children will attend Welsh language primary schools and all adults will attend Welsh language courses. We aspire to play an active role in the local community, both as farmers and producers, as well as supporting all the small independent businesses by doing all our shopping locally.

We have met many of our neighbours and like to think we have good working relationships in which there is a free exchange of skills and services between ourselves and our neighbours.

Community Impact Table: **Positive impacts**

Aspect	Details
Social: Community	We expect to play an active role in the local community.
Economic	We will produce high quality food and craft for local people. We plan to sell rare breed livestock, and expect all our income to be spent in the local economy.
Public Footpath	We will maintain the public footpath that runs through our plot.
Positive Influence on ecological footprint.	The Welsh Government has declared a Climate Emergency. In living a one planet footprint we believe we can play a positive role in the community's transition toward sustainability.

Community Impact Table**: Negative impacts**

Aspect	Details
Siting two residential caravans in the open countryside	The development creates a new farmstead in a rural location. To mitigate this the household will live a one planet lifestyle.
Visual impact of built structures	The buildings will be positioned to be unobtrusive, screened from the wider landscape.

Community Impact Criteria

The essential criteria are that:

There is a thorough assessment of all impacts of the proposals on neighbouring communities. One Planet Development in the open countryside should not impact negatively on neighbouring communities.

- *An assessment of all impacts of the project is provided above. It demonstrates that the project does not have an overall negative impact on the local community.*

Any negative impacts are mitigated.

- *The negative impacts are mitigated by the measures described above.*

The contributory criteria are that:

OPD children attend local schools and residents support local groups, clubs and events.

- *Our children will attend local schools, and we will support local groups, clubs and events.*

.
There are open days, permissive footpaths and other access, as well as the hosting of local events on-site.

- *Once we have established ourselves we will offer occasional tours of our holding.*

Residents shop locally and use other local businesses.

- *We do the majority of our shopping locally and support local businesses.*

Residents sell food and other produce locally.

- *We will sell our food locally.*

Community Impact Monitoring

Monitoring: Essential criteria

The targets and indicators for monitoring the essential criteria are:
- Target: That community impacts are thoroughly assessed and there are measures in place to mitigate any negative impacts.

Indicators: Annual monitoring of community impacts.
Implementation of mitigation measures to address any negative impacts.

Method: *Our annual monitoring report will include a commentary on community impacts, along with any mitigation measures to address any negative impacts.*

Monitoring: Contributory criteria

The targets and indicators for monitoring the contributory criteria are:

- Target: That all positive community impacts are fostered and recorded.

Indicator: All positive community impacts are fostered and recorded.

Method: *The annual monitoring report will record positive community impacts.*

Transport and Travel Assessment Plan

We plan to minimise our travel through a combination of living a self-sufficient lifestyle, and keeping our work and social activities local.

Survey of existing travel options in area:

Footpaths

There is a good network of footpaths in the area (including one that crosses our plot).

Please see OS maps in baseline chapter.

It takes approximately 40 minutes to walk to Drefach Felindre (2.2 miles)
It takes approximately 10 minutes to cycle there.
Note that there is a post office here.

It takes approximately 1 hour 20 minutes to walk to Cwmduad (4.2 miles)
It takes approximately 20 minutes to cycle there.

Local buses

Bus route 460 links Cardigan to Carmarthen (via Newcastle Emlyn). It takes approximately 20 minutes to walk to the bus stop (which is on the A484). There is generally an hourly service, and it takes approximately half an hour to get to Carmarthen, and half an hour to get to Newcastle Emlyn.

Trains

The nearest railway station is Carmarthen. There are regular trains east and west of Carmarthen.

Entranceway

The application proposes to replace the existing entranceway with a new entranceway which has much longer sight lines: 120meters in each direction as viewed from a point set back 2.4m from the tarmac road edge to the nearside edge of the carraigeway. Please see drawing 10.1.

Private Vehicles

We expect to run two vehicles: a Landrover Defender and a Hyundai 110. Generally the Landrover will be used for haulage (such as moving farm materials, livestock and feed) and the Hyundai will be used for lightweight journeys, deliveries, school runs and such.

It is 7 miles to Newcastle Emlyn.
It is 13.5 miles to Carmarthen

Once we have established ourselves on the plot we expect our vehicle travel pattern will look like this[51]:

Domestic: family, friends, social and other.

Hyundai:

- twice a week to college for Jordan (3800 miles)
- once a week to St Clears for George part time work (1680 miles)
- twice a week to Newcastle Emlyn (pre-school education) (980 miles)
- 'other' social visits estimated at 1000 miles a year.

Shopping will be tied in with other journeys.

Land-based Livelihood: travel associated with livestock and the farm (including infrastructure set-up).

Landrover:

- fortnightly runs to Newcastle Emlyn for feed/ equipment/ supplies (364 miles)
- exchanges with neighbours (100 miles)
- 8 trips to Tregaron Abbatoir (with pigs) a year (520 miles total)
- average 4 trips a year delivering, collecting or attending shows for our rare breed livestock (960 miles total)

Hyundai:

- weekly trips to C&M Organics, Llanglydwen (delivering eggs, blueberries, cordial, sausages) (1560 miles)
- round trip to local towns/ outlets every 10 days; Newcastle Emlyn, Cardigan, Newport, Fishguard, Haverforwest, Whitland, Carmarthen (delivering eggs, blueberries, sausages, cordials, woolcraft) (3600 miles). *Note that we may well be able to manage with a much reduced frequency for this route – it all depends on how quickly our produce moves through C&M Organics. We are taking a precautionary approach here to ensure that we have covered all eventualities.*

51 Note that this does not include bus travel

Projected vehicle use table:

	Landrover Defender	**Hyundai 110**
Mileage : Domestic Use		7460 (59%)
Mileage : Land -based businesses	1944 (100%)	5160 (41%)
Vehicle purchase (annual) £	£1300 (£20k/ 15 years)	£667 (£6k/ 9 years)
MOT and maintenance £	285	250
Road tax £	250	20
Fuel	£328 (252 litres, 35mpg)	£1490 (1146 litres, 50mpg)
Insurance	233	233
Total costs	2396	2660
Domestic use (minimum income requirement)		1569
Land-based business use (business - costs)	2396	1090

Comparison

In terms of comparative statistics; In rural English areas[52] the average distance travelled by private car is 8599 miles per person per year[53]. This does not cover journeys for delivering

52 These statistics are not available for Wales

or moving goods or produce[54]. As a family of 4 adults, 2 teenagers and 2 children we expect to travel approximately 7460 miles per year for our domestic needs, and 7104 miles per year for our land-based business.

Transport Assessment and Travel Plan Criteria

The essential criteria are that:

The management plan must be accompanied by a Transport Assessment and Travel Plan (which may be combined).

- *A (combined) Transport Assessment and Travel Plan is included in this management plan*

Overall the development should achieve a significant reduction in transport impacts from all activities on site (residents, enterprises and visitors) in comparison to what would be the 'norm' for such activities.

- *We expect that once established we will be driving approximately 7460 miles per year for domestic needs, and 7104 miles per year for our land-based businesses. This is a significant reduction in transport activities compared to the norm.*

There should be detailed monitoring of all trips to and from the site in terms of purposes, distances, modes, and any transport sharing.

- *Detailed monitoring of all trips will be included in the annual monitoring report.*

The contributory criteria are that:

The use of low and zero carbon modes of transport should be maximised.

- *We regularly walk and will use public transport locally whenever it is practical to do so*

On site vehicle numbers should be controlled and vehicle pools used for One Planet Developments of more than one household.

- *As a family we will share vehicles.*

53 https://www.gov.uk/government/statistical-data-sets/nts99-travel-by-region-and-area-type-of-residence Table NTS9904

54 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337241/nts2013-notes.pdf

Connections between the site and local suppliers and customers for goods and services requiring travel, should be maximised opposed to those at a greater distance.

- *Our food and craft will be sold locally*

Visitor travel should be the subject of proactive management to reduce transport impacts.

- *Visitors will be encouraged to share vehicles, arrive by public transport or travel on foot or by bicycle*.

Transport Assessment and Travel Plan Monitoring

Monitoring: Essential criteria

- Target: That there is a significant reduction in transport impacts from all activities on site in comparison with 'typical' levels for the number of occupants and activities on site.

Indicators: Annual monitoring of all trips to and from the site by purpose, distance, mode, and any transport sharing. Annual assessment of the transport impact of the site against the Transport Assessment Strategy and Travel Plan.

Method: *The annual monitoring report will include a breakdown of all vehicle trips to and from the site by purpose, distance, mode, and any transport sharing. It will review our travel impact in relation to this management plan*

Monitoring: Contributory criteria

- Target: That there is maximisation of use of low and zero carbon modes of travel.

Indicator: Annual monitoring of use of low and zero carbon modes of transport (part of annual monitoring of all trips).

Method: *The annual monitoring report will include information about low/ zero carbon modes of travel*

- Target: That there is a reduction in on-site vehicles through the use of vehicle pools.

Indicator: Annual monitoring of vehicle numbers and use of vehicle pools.

Method: *The annual monitoring report will include details of vehicle numbers and any car-sharing*

- Target: That there is maximum use of local suppliers and customers over those from a greater distance

Indicator: Annual monitoring of local suppliers and customers.

Method: *The annual monitoring report will include a description of outlets for our produce.*

- Target: That there is pro-active management of visitor travel.

Indicator: Annual monitoring of visitor travel.

Method: *The annual monitoring report will include an overview of visitor travel.*

Ecological Footprint Assessment

The Welsh Government EFA calculator was used for these figures. The excel spreadsheet is included as part of the planning application.

Notes

- Row 1: Following advice from our planning consultant we have not counted the small children in this number (because to do so would lead to unrepresentative calculations)
- Row 6: When we first move onto the site we will be in temporary caravans – and expect to use bottled gas for cooking and heating water through the midwinter period (estimated at 8 weeks).
- Row 7: We expect to buy in biomass timber from the locality when we first arrive – to heat the temporary caravans. By year 5 we expect to be in our cabins and expect our SRC Willow coppice to be in full production.
- Row 11: We expect our standalone pv system to cost in the region of £8700 to install.
- Row 12: We expect our temporary caravans to cost £1000 each (second hand), and we only expect them to last 3 years. We expect our cabins (caravan) to cost in the region of £29,000 each (note this is materials cost – we will provide the labour)
- Row 15: Replacement water filtures and UV bulb
- Row 16, vehicle cost (£667) x 59% (proportion of domestic use)
- Row 17, vehicle operation costs (£1760) x 59% (proportion of domestic use)
- Row 43, Size of plot: Veg garden + Orchard (3470) + Cabins and deckings (251) + PV Array (55) + Compost Toilet (7.2) + Polytunnel (200.6) + 1/8th of the field cropping areas (to account for one pig) (2076) + 2 acres for the goats (8094) = 14154 sqm
- Row 71, Smallholders Insurance (NFU) and car insurance

We calculate our ecological footprint to be **2.30** gHa/ cap, dropping to **1.20** gHa/ cap after 5 years. The National average is 4.88 gHa/cap.

Other Footprints

Whilst the EFA analysis undertaken is very comprehensive, it is essentially based on domestic lifestyle patterns and some elements of the project do not fall within its remit. These have been identified as:

Negative influences:

- Social visitors

The ecological impacts of our friends and family will be small. The bulk of these visits will be from local friends who will be tying in practical exchanges of produce and tasks. It is very difficult to quantify these impacts at this stage, however we expect it to be in the region of 1 - 6 visits per week

- Transport impacts associated with land based enterprises

We expect to be generating an estimated 7104 vehicle miles per year as a result of transporting food, livestock and craft grown on the site to local markets.

- Footprint of ancillary buildings

There are a range of ancillary buildings associated with the proposed land-based enterprises. For the most part these are built with natural or recycled materials, and are zero carbon in use. Their footprints are:

  - Chicken Shed: 48sqm
  - Barn: 252sqm
  - Produce Store: 19sqm

- Machinery

We expect to use a tractor (estimated at 120 litres diesel a year) and a strimmer and chainsaw (estimated at 30 litres petrol a year).

Positive Influences

- Local healthy food

After 5 years we expect to produce approximately £21,900[55] of food for local markets. Given that over 90% of fruit and vegetables are imported into Wales this represents a massive energy and pollution saving.

55 Turnover for eggs, pork, blueberries and fruit cordials

- Demonstrating a sustainable lifestyle

Our project will promote both the concepts and practicalities of a One Planet Development offering a positive contribution to the local community and Wales as a whole.

Phasing

If we are granted planning permission, we will implement the following phasing plan:

Prelimary works	Plant mixed woodland (including SRC Willow area) Begin fencing and ditching work Begin hedgerow restoration work
Year 1	Excavate and install hardstanding for tracks and buildings Excavate Ponds Construct Compost Toilet Build PV Array Build Reedbed Position 2 temporary caravans in 'Field Crop 3 area' alongside track. Move into temporary caravans. Register specified areas for Organic certification Plant Blueberries and Currants
Year 2	Build Barn Erect Polytunnel, establish the Vegetable Garden Plant Orchard and Miscanthus Begin preparing Field Cropping areas
Year 3	Construct Cabins Build Produce Store Build Chicken Shed Start keeping Pigs

Year 4	Install Cabins, Move into cabins, remove temporary caravans from the plot. Start keeping Hens
Year 5	Start keeping Goats Develop land-based businesses

Monitoring

An annual monitoring report will consider the project's progress against the objectives contained in this management plan. It will include:

- An EFA progress report: a short commentary on changes made since the previous year that are likely to impact upon the EF of the households and other footprints.
- An EFA assessment in year 5.
- A revised/ updated Management Plan in year 5 and every fifth year thereafter.

As well as:-

Target	Indicator	Method
LAND BASED ACTIVITY: MONITORING ESSENTIAL CRITERIA		
The minimum food needs (at least 65%) of all occupants are met from produce grown and reared on the site or purchased using income derived from other products grown and reared on the site	(a) Annual reporting of food production consumed by household. (b) Annual reporting of spend on other food.	*The annual monitoring report will provide details of the food we produce from the land and the food we purchase, demonstrating that our minimum food needs (65%) will be met from the site.*
The minimum income needs of all occupants are met from income derived from land use activities on the site.	(a) Annual household income and costs reporting	*The annual monitoring report will quantify our minimum income needs and will demonstrate how we meet these needs from income derived from land use activities on the site.*
Income derived from other land-based enterprises, such as training and education courses or consultancy, remain subsidiary to the primary activity of growing and rearing produce.	(a) Annual reporting on the total value of produce grown and reared on the site compared with income derived from other land-based enterprises.	*The annual monitoring report will detail the respective land-based income streams demonstrating that our 'other' land-based income streams remain subsidiary to the primary activity of growing and rearing produce.*
The number of occupants is directly related to the ability of the site to support their minimum food and income needs and the number of people needed to run the site effectively.	(a) Annual reporting on number of occupants by household and their roles on site.	*The annual monitoring report will detail the number of people living on the plot and their respective roles within the holding.*
LAND BASED ACTIVITY: MONITORING CONTRIBUTORY CRITERIA		

The land based enterprise provides food and other products to local markets, reducing other local footprints.	(a) Annual reporting of sale volumes and market areas by each on-site enterprise.	*The annual monitoring report will include sales volumes and market areas of our land based enterprises demonstrating that we are providing food and other products to local markets.*
Facilities for processing produce are made available to other local producers.	a) Annual reporting on use of processing facilities by others.	*The annual monitoring report will include any details of processing facilities.*
Training / courses / consultancy, as components of the land based enterprise, share best practice in sustainable land based activities with the wider community.	(a) Annual reporting on training and consultancy activities.	*Our annual monitoring report will include details of any training/ consultancy activities.*
LAND MANAGEMENT: MONITORING ESSENTIAL CRITERIA		
All existing semi-natural habitats are in favourable condition.	(a) Spread of characteristic species of that habitat against an established baseline. (b) Decline in non-characteristic / commercial agricultural species within each habitat (seek advice of Wildlife Trust).	*The annual monitoring report will include a description of the health of the key features as identified in the Ecology Report. See Table: Overview of monitoring arrangements in regard to Ecology*
All identified cultural heritage features are maintained in good condition.	(a) No cultivation or soil erosion over buried archaeological sites and historic earthworks. (b) Scrub and trees removed over buried archaeological sites and historic earthworks. (c) Above ground historic/ cultural features stabilised and scrub / trees removed.	*The annual monitoring report will report on the condition of the military defences and pillbox, and the management practices (conservation grazing) being used to maintain these features.* *The annual monitoring report will report on the condition of the ring cairn, and the management practices (light grazing) being used to conserve this feature.*

		A 'watching brief' on intrusive groundworks associated with the development (a Written Scheme of Investigation) will be agreed with the Local Authority.
There is an increase in the number / area / length of traditional characteristic landscape features and all are under appropriate traditional management.	(a) Increase in the number / area / length of x landscape feature. (b) Increase in the number / area / length of y landscape feature.	*The annual monitoring report will report on the management of the hedgerows and this will quantify the areas of new hedgerow planted.*
LAND MANAGEMENT: MONITORING CONTRIBUTORY CRITERIA		
(Named) semi-natural habitat(s) is/are extended / created.	(a) Area of new habitat. (b) Spread of characteristic species of that habitat.	*The annual monitoring report will report on the creation and establishment of the orchard and the new hedgerow.*
There is an increase in the population of farmland birds on the site.	(a) Number of breeding farmland birds on the site against an established baseline.	*No baseline for the number of breeding farmland birds on the site has been set. Should the opportunity arise for such a survey to be commissioned this will be recorded in the annual monitoring report.*
There is an increase in the population of honey bees.	(a) Number of active bee hives on site.	*There are currently no plans for keeping bees on site, and our annual monitoring report will indicate if this changes.*
ENERGY AND WATER: MONITORING ESSENTIAL CRITERIA		

All of the **energy needs** shall be met from sources of renewable energy on site.	a) Annual reporting on use of renewable energy generated on-site (as percentage of energy needs). b) Annual reporting on use of all nonrenewable fuels (included grid connected electricity), recorded in terms of use (what for) and amount (quantity). c) Annual reporting on quantity of electricity exported to the grid and imported from the grid.	*The annual monitoring report will contain a description of our energy usage and production patterns which details sources, methods and quantities. It will include figures for the amount of renewable electricity we generate and use, as well as data on the amount of biomass we harvest and use, as well as data on our use of non-renewable fuels.*
All **water needs** are met from water available on-site (unless there is a more sustainable alternative).	a) Annual reporting on use of water sources (amount used from each source), including abstraction from water bodies (surface and ground water). b) Annual reporting on ground and surface water levels (reported every month).	*The annual monitoring report will contain a description of our water usage, and our rainwater harvesting patterns which details sources, use and quantities.*
WASTE: MONITORING ESSENTIAL CRITERIA		
All biodegradable waste produced on site will be assimilated on site in environmentally sustainable ways. Only exception to above is occasional off-site disposal of small amounts of non-biodegradable waste items which cannot be assimilated on site that arise from things used on site wearing out or breaking irreparably.	a) Annual reporting on quantity of all waste production by types of waste and sources - domestic and other (specified). b) Annual reporting on quantity of onsite waste assimilation and off-site waste disposal.	*The annual monitoring report will contain a description of our on-site biodegradable waste assimilation processes. The annual monitoring report will also contain a breakdown of the types and quantities of waste we produce.*
All waste handling and assimilation on site must comply with Environment Agency guidelines.	a) Annual statement of compliance with Environment Agency guidelines.	*The annual monitoring report will include an annual statement of compliance with Environment Agency guidelines.*
WASTE: MONITORING CONTRIBUTORY CRITERIA		

The re-use of organic waste on site should increase overall site fertility and productivity, so long as this is not at the expense of important semi-natural habitats dependent on low soil fertility	a) Addressed in annual reporting of onsite waste assimilation (see above).	*The annual monitoring report will contain a description of our on-site biodegradable waste assimilation processes.*
ZERO CARBON BUILDINGS: MONITORING ESSENTIAL CRITERIA		
That domestic and ancillary buildings are zero carbon in construction and use.	a) Achievement of zero carbon assessment for all buildings requiring Building Regulations in construction, as described in this guidance. b) Achievement of zero carbon assessment for all buildings requiring Building Regulations in use, as described in this guidance.	*The cabins (caravans) have been designed to minimise their carbon footprint. The development will be zero carbon in use because it is essentially off-grid. No structures will require Building Regulations approval.*
All structures requiring building regulations approval obtain this approval.	a) All structures requiring building regulations approval are identified in the proposals b) This approval is obtained either before or during construction.	*No structures will require Building Regulations approval.*
All structures identified for removal in the Exit Strategy are capable of removal with low environmental impact.	a) Specification of how each structure identified for removal in the Exit Strategy is capable of removal with low environmental impact.	*The structures identified in the Exit Strategy are capable of removal with no appreciable environmental impact.*
ZERO CARBON BUILDINGS: MONITORING CONTRIBUTORY CRITERIA		
The construction of structures should make as much use of recycled materials as possible so long as this does not affect their ability to satisfy the essential criteria.	a) Detailed summary of use of recycled materials in construction of structures.	*Details of the recycled elements to be used in the construction of the cabin will be included in the annual monitoring report.*

Existing buildings are re-used where this would have an overall lower environmental impact than new buildings, or where they are of particular value in landscape or heritage terms, but provided that they are not unsightly or have a negative impact due to their siting.	a) Explanatory statement on the re-use of any existing buildings.	*There are no existing buildings on the site.*
COMMUNITY IMPACT ASSESSMENT: MONITORING ESSENTIAL CRITERIA		
Community impacts are thoroughly assessed and there are measures in place to mitigate any negative impacts.	a) Annual monitoring of community impacts. b) Implementation of mitigation measures to address any negative impacts.	*Our annual monitoring report will include a commentary on community impacts, along with any mitigation measures to address any negative impacts.*
COMMUNITY IMPACT ASSESSMENT: MONITORING CONTRIBUTORY CRITERIA		
All positive community impacts are fostered and recorded.	a) All positive community impacts are fostered and recorded.	*The annual monitoring report will record positive community impacts.* .
TRANSPORT ASSESSMENT AND TRAVEL PLAN: MONITORING ESSENTIAL CRITERIA		
There is a significant reduction in transport impacts from all activities on site in comparison with 'typical' levels for the number of occupants and activities on site.	a) Annual monitoring of all trips to and from the site by purpose, distance, mode, and any transport sharing. b) Annual assessment of the transport impact of the site against the Transport Assessment Strategy and Travel Plan.	*The annual monitoring report will include a breakdown of all vehicle trips to and from the site by purpose, distance, mode, and any transport sharing. It will review our travel impact in relation to this management plan*
TRANSPORT ASSESSMENT AND TRAVEL PLAN: MONITORING CONTRIBUTORY CRITERIA		
There is maximisation of use of low and zero carbon modes of travel.	a) Annual monitoring of use of low and zero carbon modes of transport (part of annual monitoring of all trips).	*The annual monitoring report will include information about low/ zero carbon modes of travel*
There is a reduction in on-site vehicles through the use of vehicle pools.	a) Annual monitoring of vehicle numbers and use of vehicle pools.	*The annual monitoring report will include details of vehicle numbers and any car-sharing*

There is maximum use of local suppliers and customers over those from a greater distance.	a) Annual monitoring of local suppliers and customers.	*The annual monitoring report will include a description of outlets for our produce.*
There is pro-active management of visitor travel.	a) Annual monitoring of visitor travel.	*The annual monitoring report will include an overview of visitor travel.*

Exit Strategy

In line with the practice guidance (point 5.11), a 'failure of the site as a whole' would be a failure to achieve one or more of the essential characteristics of One Planet Development in the open countryside (paragraph 1.9 of the One Planet Development Practice Guidance (October 2012)) over a period of two years without instituting clear and effective measures to address the identified problems.

If there is a failure of the site as a whole, our exit strategy is that **the two cabins (caravans) with deckings, the compost toilet, the pv array, the produce store** and **the polytunnel** will be removed.

- The two cabins (caravans) will be unbolted, split into two sections, craned onto a flatbed lorry and removed from the site. The masonry foundations will be dismantled and removed. The decking areas will be removed from the site.

- The compost toilet will be dismantled, with the recyclable elements (glazing units, roofing sheets) being removed from the site and the timber elements being gathered together for composting.

- The pv array will be disassembled, with the panels being sold on, and the timber elements (including the shed) being gathered together for composting.

- The produce store will be dismantled, with the recyclable elements (glazing units, roofing sheets) being removed from the site and the timber elements being gathered together for composting.

- The polytunnel will be dismantled, sold on and removed from the site.

The areas which these buildings occupied will be landscaped such that the footprints of these structures disappear. All the masonry rubble will be gathered together and a used to build a hibernaculum. Any timber will be gathered up into a pile next to the woodland edge for composting.

The barn, the chicken shed and the **landscaping** (ponds, ditches and tracks) would remain, being relevant to the ongoing agricultural use of the holding.

Section 106 Undertaking

In addition to this management plan we propose a s106 unilateral undertaking to the Council that would secure the following obligations:

- Tie to the land

The occupation of the dwelling shall be limited to resident(s) solely or mainly working or last working on the land in horticulture/ permaculture/ forestry/ woodcraft and associated activities and to any resident dependents.

- Sole Residence

The dwelling will be the sole residence of the resident(s).