Maes Gwenyn

Cilgwyn, Newport, Pembrokeshire

Sophie and David Wellan

One Planet Development Management Plan

Contents

Introductions

David and Sophie Wellan have worked closely with the land most of their lives.

David moved to Wales in 1987 when his parents bought a working dairy farm in Pembrokeshire, lock stock and barrel! He then studied at The Welsh Agricultural College in Aberystwyth, achieving a distinction and gained several awards, including grassland management, RABDF Dairy Husbandry and The Riverlea Tractors Machinery Award. He proceeded to work on a dairy farm for over 10 years, where he gained valuable experience in all aspects of stock husbandry, crop, grassland and business management.

He took a 6 month break during this time and travelled to Uganda, working with the Lutheran World Federation and Medecins Sans Frontieres, involved with repatriating Sudanese refugees and setting up subsistence farming and community based projects. During his time there he taught himself computer programming, developing inventory systems to help with food aid logistics.

On returning to the UK, he started a small business as a computer programmer and developed simple business management and stock control systems for small to medium sized local businesses. This eventually became a full time business and he moved away from agriculture. He has worked with a number of very successful local businesses and then expanded into working with some of the biggest companies in the world as an IT Consultant and specialist programmer.

David's interests lie in engineering, problem solving, the natural world and living sustainably. He has a great fascination and interest in renewable energy, simplifying the way we live within our environment, involving himself in community based projects and has always wanted to build a passive, off- grid and sustainable house.

David has a strong belief in educating and encouraging young people, the future guardians of our environment and sees OPD as a great opportunity to lead by example. For example, he ran the local Goodwick football team for 7 years and has been involved in many youth based projects in the locality.

David and Sophie have had two children together, who are now at University. They believe it is crucial to encourage and educate the next generation to live lightly and sustainably on the earth. They have been a 'host family' for the Chernobyl Children's Project on several occasions.
They visualise their place as becoming a valuable community asset, where young children can learn, as well as it being a fully productive and supportive environment.

Sophie was born in North Wales and spent the rest of her life in Pembrokeshire where all her children were born, raised and educated. She

has four grown up children. During her first marriage she lived and worked on a dairy farm, she then ran a popular organic market garden and cafe in Pembrokeshire, serving food, freshly grown in the market garden. She also grew cut flowers to sell.

More recently she has designed and built living willow gardens for schools all over Pembrokeshire, after studying with Steve Pickup Ragman's Farm Hereford. She has been involved with many local primary schools, working on their 'Sustainable Schools Projects' creating an orchard for Holy Name Primary School, Fishguard and becoming their sustainable schools artist in residence, focussing on projects dealing with recycling and sustainability.
Sophie has a Degree in Sculpture and an MA in Design for Performance from RWCMD Cardiff. Her work is dedicated to the world of materials and nature and is particularly interested in plants and their healing properties.
Her work is also concerned with our lack of connection to the natural world and our loss of our intuitive nature www.sophiemyfanwywellan.co.uk

Sophie is passionate about giving children the opportunity to explore the natural world and learn about caring for it.
As part of the management plan for the site, Sophie would like to forge a link with the local primary school, Newport which is less than 2 miles away.
As the OPD site in Cilgwyn has such biodiversity and large number of different species of plants and insects it seems a perfect classroom for groups of children to come and observe and take part. Ideas include the school adopting an apple tree and children could come and watch the trees being pollinated by bees in the spring and then press the apples to make juice in the autumn.

We currently live in Letterston.

We have spent 2 years working on our management plan and application and feel we have put together a realistic and completely viable proposal. We have a beautiful and established orchard, healthy viable soils and a plentiful water supply. We have organised local markets for all of our produce and our management plan has impressed many local businesses with its realistic and achievable targets. We have worked very closely with our friends and the local community in Cilgwyn and we have their full support in our project. All our immediate neighbours have given their unequivocal support and we are both moved and appreciative of it. They are as excited as we are and we feel very proud to be embarking on such a challenging (for us) and pioneering project.

Cilgwyn has been a major focal point and leader in West Wales, if not the UK, for self-sustainable development and living, including; Brithdir Mawr, Fachongle Isaf, Ty Rhos Trees and many others. Again, we have gained the support and help from leading figures in the community, who are all keen to see us succeed and create a viable, small scale, sustainable entity that can be used as a 'model example'. We are very keen to share our project with the community, the local schools, the National Park and local councils, so that they can learn from it and take pride in the

fact that they have had a small part in creating something special at a time when the planet is going through enormous environmental challenges and changes.

We feel very strongly that this is the time to make real changes in the way that we live. We have chosen to embark on an OPD project as we want to take full responsibility for what we use and consume. We are fully aware of what a huge responsibility and commitment we are undertaking, but feel that we want to do something positive in our lifetimes, for the benefit of ourselves, our family, our community and above all our planet. We feel we want to take positive action and live more gently on the earth. We choose to take full responsibility for growing the food we eat, for producing the power we use and above all, for minimising, if not eliminating, the waste and / or pollution we are putting back into the environment. We want to look back on our lives and say: 'We did something real and positive for the benefit of our family, our community and our planet.'

We are in a climate emergency, the Welsh Government's current legally binding target is to reduce greenhouse gas emissions by 'at least 80%' by 2050, in the Environment (Wales) Act and we want to be part of the 'revolution' that enables this. We are proud of what we are trying to achieve and we are also fully aware that we take full responsibility for our actions and the success of our project. As a computer programmer, I will be embarking on building various monitoring solutions to help us keep an almost 'real time' view of our activities. We are also aware that all the money we invest in the project, which will come from the sale of our house, will be completely tied up in the project and should it fail, we will loose it all and have the responsibility of putting the land back to how it was! We are also aware that there is no financial gain in what we are doing and that our OPD is not a saleable commodity. This makes it a once in a lifetime commitment, it is not for the fainthearted, we are fully aware of what we are getting involved with and it strengthens our resolve in ensuring the success of the project.

We are passionate about what we are doing, we are choosing to do something that we feel is very positive for us, our family and our community. With all the storms, forest fires, flooding, rainforest destruction, global soil deterioration / erosion, plastic pollution, soring carbon emissions, mountains of toxic waste and mankind's fundamental apathy for wanting to take responsibility for his actions and make positive changes to his world, we choose to be part of the positive revolution and be pioneers for change.

Summary

The development will consist of:-

- Cabin (caravan) (5.8m x 18m) (104.4m2)
- Greenhouse ((13.72m x 4.8m)
- Compost toilet (2.4m x 3.75m)
- Barn (14.63m x 6.10m) with lean-to Goose House (4.85m x 4m)
- PV array (11.5m x 6m)

And revolves around the management of a plot of land broadly divided into four aspects. The buildings, pathways, vegetable gardens and site entrance are clustered to the west. A wetland meadow occupies the northern part of the site – this area is important ecologically and will be managed for biodiversity. To the south there is a young orchard with considerable potential for productivity. To the east is an established area of woodland (predominantly willow) along with a spring.

Area of different land uses (proposed):-

- Total area: 7110 sqm
- Wetland 1680 sqm
- Existing woodland: 1320 sqm
- New-plant coppice 600 sqm
- Orchard: 1850 sqm
- Vegetable Beds (Outside): 340 sqm
- Covered Growing Area: 60 sqm
- Soft Fruit: 143 sqm

Planning Context

Pembrokeshire Coast National Park has its own *Low Impact Development – Making a positive contribution* policy with Supplementary Planning Guidance (June 2013). The following table lists the policy criteria and references them in relation to this management plan:

Policy 47: criteria *Note: italics indicates a requirement specific to the National Park*	**Where this is described in the Management Plan**
A. The proposal will make a positive environmental, social and/or economic contribution with public benefit. a) Positive environmental contribution *with public benefit*. b) *Positive social and/ or economic contribution with public benefit.*	The positive environmental contribution is covered in the Baseline chapter (which provides contextual reference) along with its supporting appendices, the Strategy Chapter (which describes the design principles), and is summarised in the Land Management chapter. An Ecology Report provides independent professional perspectives on the environmental impact of the project. The economic contribution that the project offers is detailed in the Business and Improvement plan: Land based activity chapter. The Community Impact Assessment describes the local community benefits of the proposal.
B. All activities and structures on site have low impact in terms of the environment and use of resources. Relating to: a) Waste b) Water and energy c) Buildings d) Traffic generation e) Reversibility of proposals f) *Scale no greater than necessary*	a) See chapter on Waste b) See chapter on Energy and Water c) See chapter on Zero Carbon Buildings d) See Transport Assessment – Travel Plan chapter e) See Exit Strategy f) See Strategy chapter
C. Opportunities to reuse buildings which are available in the proposal area of operation have been investigated and shown to be impracticable.	There are no existing buildings on the proposal site.
D. The development is well integrated into the landscape and does not have adverse visual effects. a) Generally *b) Associated activities*	Refer to the Landscape section of the Land Management Chapter.

c) Lighting	
E. The proposal requires a countryside location and is tied directly to the land on which it is located, and involves agriculture, forestry or horticulture. a) Food needs from the site b) Income from the site c) Energy and waste assimilation	a) Refer to the Food component of the Land Based Activity chapter b) Refer to the Income component of the Land Based Activity chapter c) Refer to the 'Energy and Water' and 'Waste' chapters
F. The proposal will provide sufficient livelihood for and substantially meet the needs of residents on the site. a) Generally *b) Provision of financial information*	Refer to the 'Business and Improvement Plan' Chapter and the Cash Flow Forecast
G. The number of adult residents should be directly related to the functional requirements of the enterprise.	Refer to the 'Occupants' component of the 'Business and Improvement Plan' Chapter
H. In the event of the development involving members of more than one family, the proposal will be managed and controlled by a trust, co-operative or other similar mechanism in which the occupiers have an interest.	The development does not involve more than one family

Baseline

The plots address is Maes Gwenyn, Cilgwyn, Pembrokeshire, SA42 0QW

The OS coordinates are: 207552E, 236192N

The plot measures 7110m2 (1.8 acres).

The land rises from 110.8 metres above sea level in the southwest corner to 114.5 metres above sea level on the eastern corner.

The land comprises of species-rich wetland, grazed orchard and unmanaged woodland. It is bounded on four sides by mature hedges and trees and on two sides by good flowing streams. The main stream on the south boundary has never been known to dry up. There are several springs on the property, one of which has already been capped. There is a public footpath running through the land which is mainly used by neighbours. The land is largely south facing and is open, but sheltered by the mature hedges.

The land is owned freehold by David John Wellan and Sophie Myfanwy Wellan (title number WA830505).

There are no services connected to the plot. There are no existing buildings on the plot.

The plot is accessed by an existing entranceway, and a footpath crosses the plot.

Landmap reports

The Geological Landscape report (Cilswyn) describes the area as…

Depression on the W side of Cwm Clydach, surrounded on the N, E and S by solid geology. Very irregular stream dissected floor suggests glacial deposits (Quaternary, Pleistocene). Opens to W into Cydach valley. Some crags present on S side, however, possibly of Ordovician igneous rocks.

The Landscape Habitats report (Ty-canol & Pentre Evans Woods) states…

Area is Broadleaved woodland dominated but a number of other habitats are also present within the area such as valuable heath and grassland that add to the value.

The Visual and Sensory report (Mynydd Crogwy) describes the area as…

A large Aspect Area which forms the contextual setting for the Preseli Hills. It is characterised by an upland area of rolling farmland with occasional wooded valleys and areas of grazing, having a moorland "feel" on more exposed hill tops. Whilst the topography varies the landscape has a similar characteristic throughout. Open borrowed views of the Preseli Hills to the west and further borrowed views northwards to the coast add to the sense of place within the Aspect Area.

The Historic Landscape report (Cilgwyn) states:

The dominant landscape/settlement pattern in this area, characterised by dispersed farmsteads set within a pattern of small irregular field enclosures, is well defined and visually coherent. Evidence of prehistoric ritual/funerary activity, represented by the outstanding Neolithic chambered tomb of Pentre Ifan, represents a key historic component of this aspect area

Google maps image of the field.

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

Design Strategy

The aim of the proposed development is to provide for our subsistence needs alongside creating a cluster of land-based businesses that can be managed on a human scale.

Using the existing baseline of the site to build upon, we will significantly increase the sites biodiversity through intelligent careful design, creating yields not only for ourselves but the many different species of wildlife that we will be sympathetically co inhabiting alongside.

We are interested in designing systems that are sustainable, bio-diverse, robust, self-regulating and productive.

Plans include bringing an existing young orchard into production, bringing an area of willow woodland into coppice management and extending this area, managing and conserving a wetland area for its biodiversity, and building a vegetable garden and soft fruit area. We plan to keep hens, geese and bees to assist us in our endeavours.

Within 5 years we will meet the criteria set out by TAN 6. Due to the diversity of the development outputs there is not a reliance on one single crop or product; giving us a resilient broad support base. As our growing systems mature the site will increase in abundance making the development more sustainable and regenerative, independent of external inputs.

We will adopt a flexible and responsive approach to the marketplace, so that we are can adapt to changes in the market or in our environment.

In terms of the proposed buildings –

- Cabin (caravan): Designed to accommodate our family needs, which for the most part revolves around 2 adults with space for family and/or social gatherings. From time to time our children (and/or other members of our family) will come to stay.
- Greenhouse: Primarily a growing area, this space provides a covered growing area for tender crops.
- Compost Toilet: Provides services to the cabin.
- Barn: The main space will accommodate the tools and equipment associated with working the plot, as well as land-based activities (including harvesting, processing and storing apples). It will house our cider press, our beekeeping equipment, our woodchipper as well as acting as a store for seasoning and drying our timber biomass harvest. It will act as a space for processing seed (both vegetable and wetland meadow) and storing root crops. We will store poultry feed in here.The Kitchen area will enable us to have a processing room (primarily for apples) and it will include a pasteuriser. The studio will provide a craft space for Sophie. The workshop is a multi-functional space designed to accommodate a range of materials and tools associated with woodcraft, as well as a breakout music space for David.
- Goose House: Protects our geese from the fox.

Mitigating Plot Size

We recognise that our plot is relatively small in terms of OPD. However we are confident that our intensive management practices will demonstrate that we are able to exceed productivity targets using an intelligent, holistic and organic approach.

The site layout design has been carefully arranged for maximum efficiency, with our composting area central to our growing activities. Considerable thought and care has gone into developing approaches that increase soil health and potential. We will be working with and taking advice from a professional soil/ compost biologist. In-depth monitoring of our soils will inform and update us as we progress. The production of high quality compost will be part of an ongoing programme in building soil fertility.

We will be following the vegetable and food production principles of Jean Martin Fortier and Charles Dowding (both pioneers in food production on a small scale).The vegetables will be grown on raised beds fed with specialised high-quality compost, created to meet the specific needs of what we are growing.

We have been careful to design and cultivate micro-climates, and a large greenhouse space will enable us to extend our growing season. The Orchard and Soft Fruit area slope gently to the south and are sheltered by the mature hedgerows.

Food Production on a Small Scale

The Environment Trust states that: *'An allotment could produce enough veg to feed a family of five throughout the year.'* [1]and a book on the subject states*: 'The traditional allotment was deemed to feed a family of four for a year.'* [2] A standard allotment is 250 square meters.

We are a family of two, and have 400 square meters of dedicated growing space for vegetables, plus a large Orchard and Soft Fruit area.

In addition to this we will maximise food production from the other areas of our plot – both directly by cultivating and utilising wild vegetables (for example wild garlic), wild fruits (for example damsons), wild nuts (for example hazels), wild flowers (elderflower), and wild mushrooms (for example oyster mushrooms) as well as indirectly; the wetland meadow will provide an abundance of biomass for making compost, and the surplus timber biomass will provide woodhip for top-dressing beds.

Our apiary will ensure that we can maximise on pollination opportunities.

1 Www.environmenttrust.co.uk
2 S Morgan, Living On One Acre Or less

Land Based Activity: Subsistence

Our smallholding will include covered growing space, a horticultural area, a soft fruit area and an orchard. These areas will meet both our subsistence and income requirements.

We plan to keep Geese, Chickens and Bees. Again these aspects of the smallholding will support both our subsistence and our income needs.

Currently our food consumption patterns look like this:

Food Item	Specific Items	Current Yearly Spend £	Details	Value of food grown on the plot £	Associated Costs £
Meat		360	Red meat		
Poultry & Poultry Products	Eggs	0	Produce 1.5 doz eggs / week @ £2.80/doz with £6/ month on chicken feed	218.4	72
	Chicken	180			
	Geese				
Fish	Fish	60			
Fruit & Veg	All	1040	Purchase £20 / week. Grow some salad and some fruit at the moment	180	20
Oils & Fats - butter	Butter	104			
	Olive Oil	184	4 x 5 litre tins / year - £46 / 5l		
	Veg oil	16	1 litre / 3 months - £20 / 5l		
Dairy	Cheese	520			
Milk	Milk	124.8	2 litres / week - £1.2 / litre		
Grain meal products	Rice	22	0.5 kg / month - 18.27 / 5kg		
	Pasta	4	125g / month - £13.29		
	Oat milk	273	3 litres / week - £1.75		
	Oats	52	2 sacks / year - £25.61		
	Meusli	208	1kg / week - £20 / 5kg		
	Pulses	84	1kg / month - £21 / 3kg		

	Flour	14	1kg / month - £18.61 / 16kg		
Bread		520	Buy locally made sourdouge rye		
Cakes		120			
Cocoa & Confectionary		120			
Other	Sugar	51	Organic sugar - £16.73 / 3kg - 3 bags / year (jam)		
	Honey	120			
	Peanut Butter	60			
	Marmalade	60			
	Jam	0	50 jars / year @ £3.50	175	
Non-alcohol beverages	Tea	34.2	1 box / month		
	Coffee	240			
	Apple juice	0	0.5 litres / kg (50%) - last year 350kg apples @£3 / litre	525	
Alcohol beverages	Beer	260			
	Cider	260			
	Wine	120			
Eating Out	Eating Out	1040			
Totals £		**6251**		**1098.4**	**92**

We currently spend approximately £6251 on food annually and produce approximately £1098 of our own food (eggs, fruit and veg, preserves and apple juice) with associated costs of approximately £92.

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

Food Item	Specific Items	Projected Yearly Spend £	Value of food grown on the plot £	Projected Details	Cost of growing food £
Meat		360			

Poultry & Poultry Products	Eggs	0	218.4	6 hens laying an average 18 eggs /week, now costing £4 month supplementary feed	48
	Chicken	0			
	Geese	0	300	4 birds year (valued at £75 ea). Costs are eggs (16) and barley	27
Fish	Fish	60			
Fruit & Veg	All	120	1100	compost 4 bags £28, minerals £12, seeds £32, tools/other £30	102
Oils & Fats – butter	Butter	104			
	Olive Oil	184			
	Veg oil	16			
Dairy	Cheese	520			
Milk	Milk	125			
Grain meal products	Rice	22			
	Pasta	4			
	Oat milk	52		We will make our own oat milk - purchasing 2 sacks oats / year	
	Oats	52			
	Meusli	208			
	Pulses	84			
	Flour	116		Increase to 100kg / year for bread	
Bread		0		We will make our own	
Cakes		0		We will make our own	
Cocoa & Confectionary		120			
Other	Sugar	51			
	Honey	0	324	We will keep 2 hives for our own honey: 24kg / year @£13.50/ kg	36
	Peanut Butter	60			
	Marmalade	60			
	Jam	0	175	We will continue to make our own jam	
Non-	Tea	34.2			

alcohol beverages					
	Coffee	240			
	Apple juice	0	375	125 litres apple juice	
Alcohol beverages	Beer	20	260	We will make our own– note that the £20 spend is sugar, yeast and materials for home production	
	Cider	20	260	We will make our own – note that the £20 spend is sugar, yeast and materials for home production	
	Wine	80			
Eating Out	Eating Out	400			
Totals		**3112.2**	**3012.4**		**213**

We estimate that in 5 years time we will spend approximately £3112 on food annually and produce approximately £3012 of our own food from the plot with associated costs of approximately £213.

Part of our apple harvest 2018

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 £	Notes
Telecoms	Telephone/ internet/ communications	1560	We currently have two mobile phone contracts and high speed broadband
Clothing	Clothes/ footwear	895	New Footwear £95 per year New Clothes £600 per year Second hand Clothes £200 per year
Food spend	(see 3.25 Practice Guidance)	6251	
	Cost of growing/ producing own food	92	Compost, Seed, Mineral dressings, Other
Travel spend	Purchase and maintenance of vehicles/ other travel costs	1644	Car purchase £1900 in January 2012; £240/ year Tax £204/yr, Maintenance (inc MOT) 1200/yr
	Vehicle fuel costs (including insurance)	914	Currently our car does 25,200km per year. Approximately 30% of this is domestic use. 7560km , 348 litres @ £1.35 = £470 Insurance £444
	Public Transport	165	Local buses and occasional trains
Tax	Council tax costs	1387	
	MINIMUM INCOME REQUIREMENT (£/annum)	**10336**	

Projected minimum income needs:

Household needs		5 year projection £	Notes
Telecoms	Telephone/ internet/ communications	720	We will retain one mobile phone contract and plan to install standard broadband at Maes Gwenyn.
Clothing	Clothes/ footwear	895	New Footwear £95 per year New Clothes £600 per year Second hand Clothes £200 per year
Food spend	(see 3.25 Practice Guidance)	3112	
	Cost of growing/ producing own food	213	Compost, Seed, Mineral dressings, Other
Travel spend	Purchase and maintenance of vehicles/ other travel costs	1254	Car purchase £300/ year (note we plan to purchase a smaller/ more economical car) Tax £204/yr, Maintenance (inc MOT) will be reduced with a newer vehicle 750/yr
	Vehicle fuel costs (including insurance)	628	3,492km, 136 litres @ £1.35 = £217 (based on 60mpg) Insurance £444 Once established at Maes Gwenyn our work commitments and lifestyle will be completely different. Our lives and our work will be local and we will be able to cycle more.
	Public Transport	165	Local buses and occasional trains
Tax	Council tax costs	626	Band A (Pembrokeshire)
	MINIMUM INCOME REQUIREMENT (£/annum)	**7613**	

Income streams

Our main income will be derived from the products made from our 100 tree orchard. Including; cider, apple juice, and cider vinegar.

As a cash crop we will grow blueberries, planting several different varieties to have successional cropping and providing us with a more sustained income.

We will also produce and sell honey from our Warre hives, and eggs from our chickens.

We intend to have around 20 geese, penned within and used to graze the orchard until near Christmas and then fattened and sold. The geese will help to manage grass height and provide manure and additional income.

We will seed save from the species rich marshy grassland and sell packets of the seed for others to create wetland meadow plant life.

The greenhouse will be used to grow the bulk of our food and for high value crops including specialised salad leaves and edible flowers for sale.

We will have a mobile farmgate stall selling our surplus produce including honey, seasonal fruit, veg and apple juice products to neighbours/ passing trade. We will sell to shops and restaurants in the local town, as well as at our son’s London restaurant.

Orchard

There are 100 existing apple trees, about 4 - 5 years old and of mixed varieties[3], specifically for cider production. The trees cover an area of approximately 1850m2, and are thriving in the microclimate at Maes Gwenyn.

- All the trees are on M26 rootstocks which achieve 30 – 40% of full-size growth
- Estimated yield of 30-35kg per tree once mature.[4] Many of our trees are approaching maturity – and will be in full production within 5 years.
- One of the advantages of using apples for their juice is that poor quality fruit can be harvested. Nonetheless to make provision for poor years we are allowing for 5 – 10kg losses per tree, and are working on a harvest of 25kg per tree.
- From an overall harvest of 2,500 kg, we will use an apple press to extract an expected yield of 1,625 litres juice[5]

At harvest time apples will be taken to the barn and washed before being milled and pressed in a traditional screw pack press. We estimate that we consume 125 litres apple juice as a household, which leaves 1500 litres of apple juice as the source for an income stream.

3 *There are 18 different varieties*
4 *The Fruit Expert, Dr Hessayon.*
5 *Estimated juice yield of 65 litres / 100kg apples*

Our apple juice, cider and cider vinegar production will comply with The Food Hygiene (Wales) Regulations 2006, and we will write a HACCP (Hazard Analysis and Critical Control Points) document to demonstrate good practice.
The premises will be registered with the Food Standards Agency, and will have a Premises Licence from the local authority.
Sophie has food hygiene certification.

We have been working on designs for our bottles and labels:

Pressed Apple Juice
600 litres
The apple juice will go through low- temperature pasteurisation using an immersion bath in which the juice will be held at 70 degrees for 20 minutes before being bottled. This will give the apple juice a shelf life extending for several years.
We will use glass bottles – and will offer a recycling service for our customers. Costs for bottles, corks and labels and work out at 75 pence/ bottle (75cl)
We expect to produce 800 x 75cl bottles which we will sell (wholesale) @ £2.25 a bottle
Turnover £1800
Gross Income £1200

Cider

750 litres
The juice will be fermented in fermentation tanks before being 'racked off' into large wooden barrels for secondary fermentation and maturing.

We will comply with all the relevant licencing legislation[6]
We expect to produce:

- 12 x 20l bags (selling at £70 ea),
- 25 x 10l bags (selling at £35 ea),
- 350 x 75cl bottles (selling at £3 ea)

We estimate packaging costs to be approximately £420 (£300 bottles corks and labels, £90 boxes (printed), £30 bags and taps)
Turnover £2765
Gross Income £2345

Cider vinegar
150 litres
Cider vinegar will be made in two stages – first we will make cider, and then we will introduce anaerobic bacterium[7] and air. The mix will be stored for approximately two months at until it has acetified.
We estimate costs to be approximately £150 (bottles, corks and labels)
200 75cl bottles @ £3.75 a bottle
Turnover £750
Gross income £600

We are spending 2 weeks in September touring small cider producers in Wales/ West of England as a research and development exercise.
We are attending a one day Cider Making course in October.
Gethins Cyder[8] are the only other local cider producer in the area – and they have a range of local distributors. They produce 7000 litres each year.

6 Including the Alcoholic Liquor Duties Act 1979, The Cider and Perry Regulations 1989, and The Cider and Perry (Exemption from Registration) Order 1976. HM Revenue and Customs Notice 162 allows small scale producers (like ourselves) to apply for exemption from registering with HMRC.
7 Acetobacter Xylinum
8 http://www.gethinscyder.co.uk/

Salad

We plan to sell salad bags locally. These will be grown in our vegetable area, and our greenhouse.

We will pick, pack, and sell 30 salad bags per week for 28 weeks in the year (7 months). This is the equivalent of 6kg of salad per week – and we expect this to occupy between 40 – 50 square meters of growing space (partly outside – partly covered)

The mixed salad leaves and edible flowers will be packed into cellophane bags, and sold (wholesale) at £2.00 for 200g. We will explore different mixes through the seasons depending on availability – and appealing to different tastes. We will include mizuna, mibuna, landcress, various types of lettuce, winter puslane, chervil, wild sorrel, chives, nasturtium, as well as calendula and borage flowers.

Costs will include the bags and labels, as well as additional compost. We will save and use our own seed.

They will be sold on our farmgate stall, and through local shops and restaurants.

Surplus Vegetables

As a consequence of our self sufficiency activities there are bound to be vegetable surpluses. During the summer months these will be sold on and we expect to generate an income of £200 a year from this.

Examples of what might be excess crops (in any one year) are listed below:

- 15 squashes @£3ea, 20kg tomatoes @£5/kg, 30 cucumbers @£1ea, 50 courgettes @50p ea

- 30 lettuce @£1 ea, 30 peppers @50p ea, 10kg strawberries@£10/kg, 20 aubergines @£1 ea, 15kg onions @2.50kg

Soft Fruit

We will grow blueberries in a fruit cage situated in a central position in the Orchard.

Blueberries do very well in West Wales. There are very few predators – blackbirds being the only reported issue for local growers. We plan to net our bushes.

They:

- Require 5.5pH soil, and benefit from mulching with softwood woodchip.
- Plant spacing to allow 3.5m2 per bush; 40 bushes in our fruit cage
- Yields – 5-10 years to reach peek yield of 2.5kg per bush. Allowing for unforeseen losses of up to 20%, 40 bushes @ 2kg per bush = 80kg
- Potential sales: £12.00 / kg (wholesale) = £960.00
- Costs: punnets, labels estimated at £60 (15 pence per 200g punnet)

Honey

We have kept bees in the past using the conventional beekeeping method, and following a period of reflection, research and training[9] we have decided on a different approach for our holding. We are planning to adopt the Warre Hive method, and have been shadowing other OPD practitioners who keep bees in this way (notably Charis and Matthew at Beeview farm, Newport).

We plan to keep 12 Warre style bee hives positioned facing south-east between the polytunnel and the hedge. We will start with few hives and build them up year on year.

Maes Gwenyn is surrounded by heather-rich mountains, thousands of acres of trees and open farmland with flower-rich hedgerows. There is abundant forage for bees in this area with far reaching nature corridors, hugely diverse tree and plant species and vast expanses of heather on the mountain. Our land is surrounded by flowering trees - willow, hazel and alder (all of which provide early food for the bees) and diverse meadows, and there is the orchard.

We have consulted with local bee expert Ceri Morgan who states:

> *'In my view the property is ideal and placing some beehives there is not only feasible but would be of benefit to the cultivated fruit trees and also the native flora surrounding. The field itself has been planted with many varieties of native apple trees which could do with the early pollination from honey bees and the surrounding land has abundant forage for bees throughout the season and the area could support a good number of hives (dozens in my view)...'*

Please refer to accompanying letter of endorsement.

9 Ragmans Lane Farm; Natural beekeeping with Warre hives (Oct 2019).

Income/ Cost projections for beekeeping:

- Average yield of around 12kg per hive[10].Two of the hives will be harvested for our own use (and the direct running costs for these two hives have been accounted for in our food growing costs. Honey from ten of the hives will be harvested for sale. At a retail price of £13.50 per kg[11], estimated income would be £15/kg x 12kg x 10 hives = £1620.
- Running costs of keeping bees are estimated to be around £18 per hive per year (£180 per year). This includes frames, treatments, etc.
- Hive/ equipment/ depreciation costs are estimated at £200 per year. This includes protective clothing, hives, smokers, extractors, etc.
- Jars and labels are estimated at £210/ year[12]
- Fees for Pembrokeshire Beekeepers' Association are estimated at £40/ year.

The beeswax will be used for Sophie's sculptures

10 Based on conservative estimates. https://www.bbka.org.uk/news/british-beekeepers-honey-survey-2016 and http://www.warre.biobees.com/guillaume_cost_benefit_analysis_2012.pdf)

11 Based on £4.50 for a 333g jar

12 Based on 360 jars plus lids plus labels

Eggs

We have kept chickens for egg production for over 20 years and very experienced with their benefits, management and requirements.

We will have Rhode Island Reds:

- Hardy and good layers
- 200-300 eggs per year per hen
- Multi-purpose– good for meat and eggs
- Active foragers and can tolerate confinement

They will be housed in a ‘chicken tractor’ in the Orchard for optimum management.

We will have 6 hens providing eggs for sale (in addition to keeping 6 hens for our own egg production). We estimate that we will produce 24 eggs a week for 40 weeks a year. We will sell these at £2.80/doz.

Costs for keeping the hens amount to £4/ month supplementary feed. Boxes and labels will cost an estimated £15/ year.

Geese

We will raise 20 Brecon Buff Geese each year, for the Christmas market (in addition to the four we raise for home consumption).

We will buy fertilised eggs and incubate them. Once old enough they'll graze in the Orchard. The grasses and plants within the orchard offer a good balance for their diet, and we'll plant comfrey for additional forage for them. The geese will provide top grade fertilizer, soil conditioner / compost activator.

Brecon Buff are:-

- developed to be a hardy medium-weight goose
- grow well on free-range grazing
- easier to dress for the table than white or grey geese
- more docile than white or grey geese
- estimated selling price @£75 per bird[13]

We have decided on Brecon Buff geese as our choice of breed for several reasons: They tend to be calmer than other breeds, doing well in a 'free range farming system'. They are a hardy breed, suitable for our climate (being a native Welsh breed).[14]

13 Based on the sales of Brecon Buff table geese from Maes Melangell OPD, Glandwr
14 References www.ashtonwaterfowl.net/brecon_buff_geese.htm

We are aware that generally these birds only reach about 16 - 18 pounds[15] as a dressed goose for the table, but this is the market we are aiming for; smaller, free range, organically reared birds for discerning families.

Costs include buying fertilised eggs (£4 each), and locally sourced barley as a supplementary feed (estimated at 1 sack a month to begin with – rising to 2 sacks/ month at finishing).

We will advertise the geese through Newport Wholefood Shop (who are confident that they will be able to sell them all with prior advertising), our stall and by word of mouth. We will slaughter and dress the geese on the plot, and have a experienced friend to assist us with this.

15 Reference 'Starting with Geese', Katie Thear

Sophie's Sculpture and Art Work

Sophie creates sculptures using materials from the land. Here is an example of some of Sophie's work:

SHOES

Our primary physical connection with the earth that nurtures us is through our feet. Throughout our history we have been shod in materials drawn from nature, created by artisans with knowledge, tools, materials and processes all drawn from nature. In this collection Sophie draws upon our ancient connection with the earth and the materials it provides us.
Healing plants in beeswax have been used as balms and ointments since man first walked the earth, by ancient people across the planet, Egyptians and iron age Celts and is still used in exactly the same way today, healing and preserving, sealing and antiseptic. The bees themselves without which there would be no pollination, no plant life and therefore no mammal life on this planet are at this time in a fragile state and therefore so are we.
The smallness of these shoes and their obvious fragility symbolise how vulnerable we are, they are a message that we must learn to tread lightly on the earth and a plea for a time of healing, of ourselves, of our nature and connection with the earth and for our stripped and abused planet.

These pieces are made using:

- Beeswax
- Pressed medicinal plants
- Soil

Sophie will continue to explore her art, using materials harvested from Maes Gwenyn to create beautiful and inspiring pieces.

Sophie has been commissioned on several occasions by the Arts Council of Wales and has existing outlets for her work, including the local gallery in Newport.

The gallery in Newport sells at least 4 pieces of work per year at £900 per piece, less 40% commission, generating at least £2160.00 income per year. Material and framing costs are approximately £45 per piece

Community Seasonal Feasts

This is part of our engagement with the local community, bringing people together seasonally to enjoy food grown from our land and share our experience.

Sophie has worked locally as a chef and has an excellent reputation in the area. Sophie started the pink café at Nevern and ran it in conjunction with a market garden establishing it as a successful business.
She has since catered for large parties for Howies and Fforest in Cardigan, and has cooked at many large festivals and weddings over the years. She also ran the kitchen garden café at Llysmeddyg in Newport for two summers, and currently cooks part time at PWNC café Newport.

We aim to host the feats nights at two local venues, the first being 500 yards up the road at Buestone Brewer (a popular social hub and the second at Pwnc Cafe, Newport, 2 miles from Maes Gwenyn.

These feat nights will coincide with changes of the season and we aim to do four nights at each venue during the year for around 20 people per feast. We will be celebrating locally produced food, seasonality and community, charging in the region of £35 per head.

The idea of creating meals almost totally from things growing on the plot seasonally is a dream. Here are two notional menu’s to give an idea of what we are planning:

Summer

To start.....Summer Garden Tempura.
(beets, beans ,sage, peppers, nasturtiums, parsley and courgette flowers)

Main.....Sourdough Mustard Green and Tomato Pizza.
With little-gem salad, cherry tomatoes, fine herbs and shaved radish.
Roasted beet salad with cider vinegar and olive oil.

Dessert....
Blueberry meringue with candied rose petals.
Elderflower fritters with honeycomb and salt.

Autumn

To start.....celeriac and apple soup, with crispy kale and sourdough bread.

Main.....Pumpkin and Sage Ravioli.
Italian Stuffed Aubergines.
With apple cider salad and local organic brie.
Mixed peppery leaf salad with edible flowers.

Dessert....Apple and Quince cake.
Baked spiced apples with honey.
Wild blackberry tart with honey .

There will be some food costs. For the above two recipes I will need to buy in flour, olive oil, sugar, cheese and butter. We anticipate costs will amount to no more than £10 per head. We have agreed to pay venues 10% of sales, as a hire charge.

For a typical feast night we estimate:

20 guests @ £35/head	£700.00
Extra food costs @£10/ head	£350.00
Venue hire @ 10%	£70.00
Income	£280.00

Over the year this will generate around £2240.

Future Markets

Honey Gar – a mix of honey and apple cider vinegar, which has many health benefits and has been used since ancient times. This sells at around £10 per litre and is something we would like to develop.

Transport Costs

Our distribution pattern has been organised to tie in with our domestic travel patterns. Newport is the only destination for our fresh produce, and we will be visiting there twice a week as a matter of course.
Produce destined for Cardigan can be transported once a month – in line with our domestic use.
As such the distribution costs of our land-based businesses are for the most part covered by our household and are accounted for in our minimum income need calculation.

Other Costs

We expect to commission and run a website to promote our produce and expect this to cost in the region of £160 a year.

Provision has been made to cover any unforeseen costs/ expenses; £500 in year 3, £750 in year 4 and £1000 in year 5.

A 5 year cashflow forecast is attached.

Annual Income Summary

We have opted to create a diverse range of income streams because we are interested in building resilience. We are very confident that with our experience as farmers, growers and individuals who have run their own businesses for decades, that our proposed income streans are robust and viable.

It is worth noting that our project minimum income requirement for year 5 is £7613. Our projected income from land-based produce for year 5 is £12342.

There is a considerable margin here; suffiicent to cover any unforeseen eventualities.

Estimated projection for year 5

	Item	Details	Turnover £	Direct Costs £	Income £
Orchard	Apple juice	600 litres	1800	600	1200
	Cider	750 litres	2765	420	2345
	Cider Vinegar	150 litres	750	150	600
Vegetables	Salad packs & edible flowers	30 packs per week for 28 weeks	1680	28	1652
	Excess vegetables	seasonal - £20 / week for 10 weeks	200	0	200
Soft Fruit	Blueberries	Estimated yield (2kg) from 40 bushes	960	60	900
Bees	Honey	10 hives producing 12kg	1620	630	990
Poultry	Chickens eggs	6 laying 4 eggs / week each – 2 doz excess for 40 wks	224	63	161
	Geese	20 fattened geese for Christmas	1500	134	1366
Craft	Sophie's Sculpture & Artwork	4 definite sales from Newport gallery, (commission accounted for)	2160	180	1980
Community Seasonal Feast	Food from the land	4 seasonal feasts for 20 people - £35 / head	5600	3360	2240
	Indirect costs	Website/ transport		292	-292
		Unforeseen costs/ expenses		1000	-1000
Total			19259	6917	**12342**

Available Markets / Selling Produce

Friends and relatives – we have a large family and are well known in the area. Everyone is happy to support us and purchase our produce.

Field Gate – we aim to have a small farmgate stall selling produce to passing trade. We are on a known tourist route and are opposite Bluestone Brewery, which attracts a lot of trade and will also be an outlet for our cider and apple juice.

Newport is within easy walking / cycling distance and has a large number of cafes, restaurants and pubs. We are very friendly with a number of these, including: Llysmeddyg Restaurant, The Golden Lion pub, Pwnc Café, The Canteen and Tides Kitchen and would have no problem selling our produce to them. There is also a wholefood shop. If there is a need, we would sell our produce through the Newport market – though at this stage it appears this will not be necessary

Tom Simmons, Tower Bridge, London – Tom is our son and runs a very successful restaurant in London (http://tom-simmons.co.uk/) he is very excited with our project and is desperate to use our produce in his cooking. He is also looking to expand to Cardiff in the near future. He has strong links with his home country of Wales and sources a lot of his ingredients from here. We would only supply Tom with produce that has a long shelf-life, and imagine sending one pallet a year by courier. The cost of transport would be covered by the additional mark-up as a result of selling in London.

Outlet Distribution:

	Apple Juice	Cider	Cider Vinegar	Salad	Vegetables	Blueberries	Honey	Eggs	Geese
Friends and Relatives	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Farmgate Stall	**Y**		**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**
Local Seasonal Feasts	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	**Y**	
Wholefoods of Newport			**Y**	**Y**		**Y**			
Bluestone Brewery Cilgwyn	**Y**	**Y**							
PWNC café Newport		**Y**		**Y**	**Y**	**Y**			
The Canteen Newport				**Y**	**Y**	**Y**			
Llysmeddyg Restaurant Newport		**Y**		**Y**	**Y**	**Y**			
The Pizza Tipi Cardigan.	**Y**	**Y**							
Bara Menyn Cardigan	**Y**	**Y**							
Tom Simmons London/ Cardiff	**Y**	**Y**	**Y**				**Y**		

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.

- The household 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 markets with food and other products

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

- Our apple press will be made available to other local producers

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

- We are open to offering training/ consultancy in the future if demand arises – though are limited by a lack of parking provision on the plot.

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

Maes Gwenyn will be the sole residence for 2 people: Sophie and David Wellan. We will manage the holding together – sharing tasks in a fluid and cooperative manner.

The following table gives an overview of the estimated labour involved in running the plot (once the infrastructure has been put in place).

Aspect	Hours/ year
Landcare	
Orchard management	96
Wetland management	124
Hedgerow management	60
Subsistence	
Vegetables and Fruit	924
Preserves and home kitchen	482
Coppice Management	208
Enterprises	
Apple Harvest	60
Salad	114
Processing apple juice	480
Blueberries	198
Sophie's Craftwork	600
Seasonal Feasts	148
Livestock	
Hens	110
Geese	140
Bees	60
Bees (building hives and frames)	100
Other	
Infrastructure and Maintenance	240
Marketing and Promotion	240

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 household 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

We plan to conserve existing biodiversity features on the plot (namely the wetland meadow and hedgerows) and cultivate new biodiverse habitats (namely orchard, coppice and vegetable garden) across the plot.

We plan to minimise any landscape impact by concentrating all new buildings in an area which is not overlooked from the wider landscape.

We will adopt a permaculture approach to the design and management of our land-based activities.

Wetland Meadow

This area extends to approximately 1690m2. It will be managed solely for biodiversity.

We will continue to consult with ecologists/ Natural Resources Wales as to the best way forwards with this – and we expect ongoing observation to be an integral part of any management program. The area will be fenced off so that we can introduce seasonal grazers if need be. At the moment, following consultation with Aderyn Ecology and the PCNPA ecologist[16], we plan to take a high cut from the meadow once a year after we have had a chance to harvest the wildflower seeds[17] (August) for their value to other conservation projects, with the biomass removed for compost making and mulching on other areas of the plot. The ground is unsuitable for machines and so this work would be undertaken with scythes. Young trees would be regularly cut back with loppers to avoid any further encroachment into the wetland area.

Hedgerows

The hedgerows have been unmanaged for many years now and whilst there is a healthy upper canopy, the lower shrub layer is absent in places.

16 Through our pre-application process PA/18/0165

17 The following seeds would be harvested:

- Meadowsweet
- Ivy-leaved Bellflower
- Marsh violet
- Sharp-flowered Rush
- Wild angelica
- Marsh thistle
- Purple moor-grass
- Devil's bit scabious
- Common sorrel
- Bistort

We will manage the hedgerows in order to maintain their health and biodiversity. This will involve some trimming of both the upper canopy and the lower shrub layer, as well as some underplanting (using native hedgerow species[18] - of local provenance if possible). Any trimmings will either be used as fuel, or will be used to create additional micro-habitats.

Whilst the proposal includes some built structures close to the hedgerow lines, care will be taken to minimise root disturbance of the hedgerows, and for the most part the buildings are raised off the ground. The groundworks for all of the buildings will be minimal (see zero carbon section), and for the most part the roots from the nearby hedgerow trees will remain largely undisturbed.

A Tree Inspection Report accompanies this Management Plan

A Method Statement for hedgerow management and ground clearance works is included alongside this Management Plan.

Bat boxes will be installed in the hedgerow as detailed in the recommendations in the Ecology Report (section 7.4.1).

Orchard

The young orchard will be managed primarily for productivity, and a healthy orchard creates a diverse ecology in itself. The grass around the trees will be kept in check with grazing from our small flock of geese. Chickens will aid us in converting herbage to fertiliser. The trees will be mulched and care will be taken to remove and treat any canker. The orchard will be interplanted with comfrey – to act as a feed for our compost making and as fodder for the geese.

Please refer to accompanying 'Orchard report for Maes Gwenyn' from Martin Hayes.

Coppice – existing woodland

This area, approximately 1320m2, predominantly willow, will be brought into a short rotation coppice cycle. The trees will be cut on a 4 year rotation and any gaps will be interplanted with the native willow.

Coppice – new plant

This area, approximately 600m2, currently semi-improved grassland, will be planted up with biomass willow cuttings and brought into a short rotation harvest alongside the existing woodland.

18 As recommended in the Ecology Report (section 6.1)

Compost Area

In order to increase the productivity of our vegetable growing areas – we will have an active composting area that will mix the various biomass harvests from the plot to build soil health and fertility.

Bees

Keeping beehives will be crucial to pollinating our food source.

We will keep bees and use Warre bee hives as this form of beekeeping poses the least interference and encourages 'happy bees' as well as plenty honey. It is also a much simpler and less time consuming system.

The bees will help to pollinate the orchard and all other fruiting plants and trees and annually the beeswax will be utilized in Sophies sculpture work.

Vegetable Gardens

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. Vegetables will be interplanted with herbs and flowers. There will be no herbicide or pesticide use in the gardens (or indeed anywhere across the plot).

Buildings and Landscape

The plot is screened from the wider landscape. It is predominantly flat and surrounded by mature hedgerows. There is a public road that runs alongside the plot and a public footpath that intersects the plot. All buildings have been clustered in the lee of the mature hedgerow on the western boundary, to reduce any visual impact.

A Visual Impact Assessment accompanies this management plan.

Soil

A soil analysis taken across different parts of the plot is included as part of the planning application[19]. Broadly speaking the soil is fairly acidic averaging at 4.9ph. Potassium and Phosphorus levels are low across the plot.

Lime, and a mineral rockdust application will be added to soil in the greenhouse and vegetable garden to counter this, and this will be monitored over time to ensure a gradual change towards a more productive soil balance. Care will be taken to ensure that these changes are not passed onto other areas of the plot.

19 CCF Analysis results (Soil), July 2019

We will be working with an organisation that specialises in increasing soil health and fertility (59 degrees) [20]. Please refer to letter 'Maes Gwenyn Biological Fertility Management' from Josef Carey.

Lighting

There will be no significant external lighting provision.

There will be seasonal low-wattage LED fairy lights around the buildings. These will provide a low-level lighting provision so that we can find our way between buildings in the dark. Care will be taken to ensure that this lighting provision is not visible from the road or any nearby houses.

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 (wet meadow, hedgerows) 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.

- There are no cultural heritage features on the site

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 (which will screen views of the built elements), as well as wetland meadow, orchard and coppice.

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.

20 https://www.soilbiology.se/about

- All built structures have been located in positions that are recessed into the landscape and do not tsand out in views 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.

- Wetland meadow, orchard and coppice 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.

- Willow warbler has been recorded on the site and bullfinch is likely to be present. Both species of red-listed birds will benefit from the proposed habitat management. Other species typical of scrub and woodland will also benefit from the range of vegetation structure.

Soil organic matter is increased.

- The land management practices will lead to an increase in soil organic matter in the 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 wildflower meadow and orchard). Honey bees will be kept on site.

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 wet meadow, hedgerows and orchard and this will highlight any increase or decline in key species as identified in the Ecology Survey

- 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 highlight any cultural features that may be discovered in the future and it will describe management practices which maintain these in good condition.

- 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 land areas and will quantify the areas of new coppice 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 Coppice areas.

- 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: The annual monitoring report will report on the number of active bee hives on site.

Energy and Water

We expect to meet our household heating and water heating needs, our electricity needs and the majority of our cooking needs from renewable sources on site.

We plan to meet our domestic water needs from a spring on the plot, and our horticultural/ livestock water needs through a combination of rainwater harvesting and overflow from the spring.

Thermal Efficiency

Our plan is to design and construct a super-insulated caravan cabin which will benefit from solar heat harvested from large windows facing south-east, using natural convection currents to heat and/or ventilate the building, depending on the season and requirements.

The cabin would have 400mm lightweight woodfibre insulation all round, and high efficiency triple glazing on all external windows. The main doorways will have draught lobbies.

The workshop, studio and kitchen spaces within the barn have also been designed with thermal efficiency in mind. These spaces are wrapped in 200mm woodfibre insulation (floor, walls and roof), benefit from passive solar gain and are accessed via a draught lobby.

Electricity

We will have a 6kW solar array installed on the roof of cabin. The array will consist of 24 x 250W panels, and has been pitched at 28 degrees (facing 30 degrees south of east).

We estimate that this will generate approximately 4040 kWhr/ year[21], although there is going to be considerable seasonal variation in this.

We will also have a 1.5kW solar array next to the greenhouse. The array will consist of 6 x 250W panels, and has been pitched at 45 degrees (facing 30 degrees west of south). This array is designed specifically to maximise on winter sunlight.

We estimate that this will generate approximately 1380 kWhr/ year[22], although there is going to be considerable seasonal variation in this.

The battery reserve (1320Ahrs)[23], along with the solar MPPT controller, 240v inverter, will be situated in the cabin, and we will run armoured cables

21 http://pvfitcalculator.energysavingstrust.org.uk
22 http://pvfitcalculator.energysavingstrust.org.uk
23 12 x 110Ah batteries

underground to supply the other buildings. The battery reserve is designed to level out supply and demand over a weekly period.

It is estimated that in coastal areas in Pembrokeshire there is between 1.5 hours sunshine per day in December and 6.5 hours sunshine per day in June.

During the winter we estimate we will be generating 20.5kWhrs/ week.[24]

During the spring and autumn we estimate we will be generating 92.4kWhrs/ week.[25]

During the summer we estimate we will be generating 211.6kWhrs/ week.[26]

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

Seasonal electricity use:

Item	Electrical use	Annual Load kWhr	Winter Load (per week) kWhr	Spring and Autumn Load (per week) kWhr	Summer Load kWhr
Washing Machine	2 washes per week (variable)	109.2	2.1	2.1	2.1
Water pump and filters	Amos jet pump JS05 running for 4 minutes a day (370W)	9	0.17	0.17	0.17
Chest Freezer	Constant (with minor seasonal fluctuation)	235	3.5	4.2	4.9
Fire Alarms	Constant	3.5	0.07	0.07	0.07
Lighting	Predominantly LED – estimated load 120W	177	6.7	3.4	0.2
Kitchen appliances	Blenders/ juicers	27	0.53	0.53	0.53
Laptops phones	Estimated load 2 laptops + 2 phones 130W	81.1	1.82	1.56	1.3
Other	Misc, 100W for 3.5hrs/wk	18.2	0.35	0.35	0.35
Cooker	Based on 0.87kW/hr, 2 hrs a day	475.8	-	12.2	12.2

24 Based on 20% efficiency for cabin pv, and 50% efficiency for standalone pv (10.5 hrs/ wk)
25 Based on 40% efficiency for cabin pv, and 60% efficiency for standalone pv (28 hrs/ wk)
26 Based on 60% efficiency for cabin pv, and 70% efficiency for standalone pv (45.5hrs/ wk)

Hot water	Based on a 3kW immersion running for 1hr a day	819	-	21	21
Totals			15.24	45.58	42.82

There will also be some seasonal electrical loads – propagators in the spring, dehydrators in the summer, sterilising and pasteurising equipment (for apple juice) in the autumn.

During the spring and autumn we will have spare electricity to space heat the cabin and the barn (workshop and studio) if needed. We will use storage heaters for this – dumping spare electricity during the day into thermally massive stores for slow release.

During the summer we will have an abundance of electricity.

During the winter we will generate enough electricity to meet our Household electrical requirements. Cooking, heating and hot water heating will come from our biomass.

Biomass Heating

When it is cold and gloomy in the winter we will light a wood-fired range in our cabin. This will supply cooking, hot water and space heating provision. Based on detailed feedback from the Rhiw Las development (Carmarthenshire), which has similar thermally efficient cabins with large photovoltaic capacity, we estimate that we will only require the range for a maximum of 8 weeks a year, and that we will require approximately 850kg biomass fuel for this[27].

We have 1920sqm of willow woodland. This will generate an estimated 1.54 tonnes biomass per year[28].

Surplus biomass will be chipped and used as mulch.

Water Supply

The field has a bountiful supply of natural water, including:

27 Based on 15kg a day
28 Yield data taken from John Nix Farm Management Pocketbook 2013, 8 tonne/ ha

1. We have a capped spring which we have checked the flow rate on several occasions, consistently producing 5 gallons or 19 litres per minute.

2. There is a significant stream running on our southern boundary which has never been known to dry up.

3. We will be harvesting all roof water for hortinculture/ livestock.

4. There are several other significant springs which if we needed to we could investigate and utilise.

5. There is a mains water pipe running directly through our land. Currently we are not connected to it though the possibility of connecting to it exists.

The spring being cleared and showing good flow rate.

Domestic Water

Water use within the household will be minimised. This includes the use of a dry composting toilet instead of a flush toilet. The cabin will include a low-flow bathroom sink, a low-flow kitchen sink and one shower/bath (as well as a washing machine). The average person in the UK uses 150 litres of water per day.
We expect to use half this - 150 litres a day for our household of 2.

The cabin will be supplied by the spring (using an electric pump) – and will include a header tank in the roof cavity.

This source will also supply the barn (including the studio and kitchen area). As a result of our food processing activities the supply comes under the Private Water Supplies (Wales) Regulations 2010, and we will register as a small supplier with Pembrokeshire County Council[29]. As such there will be periodic risk assessments and water quality will be tested from time to time. UV tube and filters will be fitted if required.

Rainwater Harvesting

Rainwater will be harvested from the roofs of all buildings.

The greenhouse roof harvest will supply the greenhouse beds by means of a dripper irrigation system. This will be run via a 7000litre water tank[30] which will provide water during dry periods.

Rainwater will be harvested from the cabin roof where it will supply an irrigation system for the outdoor vegetable beds via a 2000 litre water tank[31].

Rainwater will be harvested from the barn roof where it will supply the goose pond.

Rainwater will be harvested from the goose house roof where it will join the supply to the goose pond.

Rainwater will be harvested from the compost toilet roof, where it will feed the reedbed.

29https://www.pembrokeshire.gov.uk/pollution-control/private-water-supplies

30 7000 litre Rainwater Harvest tank – 2.45m diameter, 1.8m tall

31 2000 Litre Enduratank Rainwater HarvestingTank , 1.2m dia, 1.9m tall

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 work and living spaces that benefit from passive solar gain. Storage heaters and 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 needs, plus the lions share of our cooking and heating needs (both water heating and space heating) from a large photovoltaic array. During winter we will meet our cooking and heating needs from timber/ biomass grown on site. We will use a 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. This will include a dry compost toilet, enabling us to process human solid waste without using water. Conventionally toilets use about 30% of the total water used in an average household[32].

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

- We will harvest the rainwater from all our roofs and this water will be used for irrigating greenhouse crops, outdoor vegetable beds and watering the goose pond.

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

32 http://www.waterwise.org.uk/pages/indoors.html

environmental harm. Harm would result from the lowering of surface and ground water levels.

- We will be using water from a capped spring – and all evidence to date suggests that there will be no appreciable impact on the natural water levels as a result of this.

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) [33] 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 [34], so under UK conditions a PV panel will, over its lifespan, produce many times more energy than was required to manufacture the panel.[35]

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.

Any water pumping should be renewably powered.

- Our water pumping will be powered by our photovoltaic array

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

- There will be a new goose pond which is sited on semi-improved grassland

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

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

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

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)
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 spring water usage, and rainwater harvesting patterns which details sources, methods and quantities.

Waste

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

Domestic Food Waste

All domestic food waste will be chopped and processed in a high temperature, tumbler type compost bin.

Grey Water

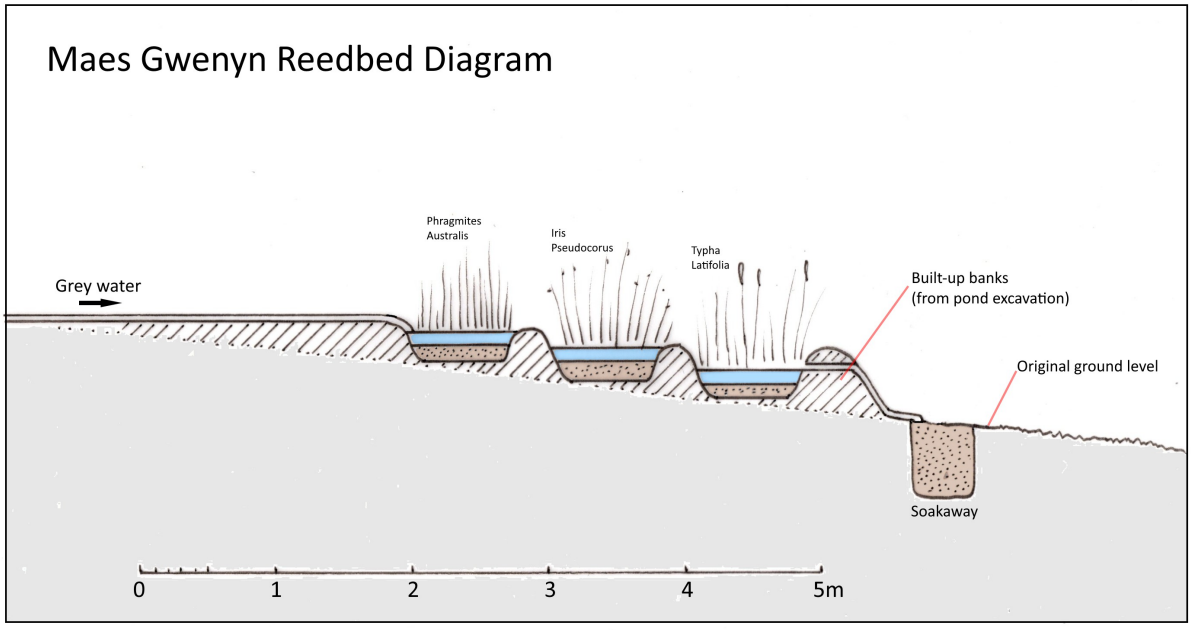
There will be three sources of grey water:

- From the cabin (one bath/ shower, washing machine, kitchen sink.
- From the compost toilet (handwashing sink).
- From the barn (studio sink, kitchen area sink, handwashing sink)

The grey water will travel to a lined reedbed (measuring approximately 10 square meters), before returning to ground.

The grey water from the cabin will pass through a settlement tank before reaching the reed bed in order to separate any solid particles.

Any cleaning products will be carefully chosen to ensure they are able to breakdown quickly and completely.



Human Waste

The compost toilet will separate solid human waste from urine. The solid waste will be composted in waterproof ventilated masonry chambers and the urine will be collected for use in the composting area. When the aerobic composting processes have turned the humanure into compost, it will be used to build soil health and fertility in the coppice woodland.

Packaging, Cardboard and Paper

Paper-based waste will be an essential element in our systems of composting mulching and growing food. 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

Poultry manure is a valuable commodity for a productive garden and it will be used as a high nitrogen fertiliser ingredient for 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 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 (Vegetable Garden, Orchard, and Coppice). The fertility of the wetland meadow area will not be affected by these activities.

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 quantify the amount of offsite waste generation 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 so that they are lightweight, minimising any impact on ground structure and drainage, and will be 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.

All buildings are capable of removal with low environmental impact. The cabin can be removed by road and the other structures can be dismantled and removed as described in the Exit Strategy.

We have chosen to use screw piles in our foundations in order to minimize ground and tree root damage. Screw piles are as easy to remove as they are to put in and it is common practice for them to be used in any temporary structure.

Please refer to accompanying information – 'Screw piling near protected trees'

Building Regulations

The following structures do not require Building Regulations approval:

- The barn which is an agricultural building
- The greenhouse which is an agricultural building
- The goose house which is an agricultural building
- The cabin which falls under the definition of a caravan, complying with size, construction and mobility test
- The compost toilet which is less than 30m2 and does not contain sleeping accommodation.

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

This approach is in line with PCNPA recommendations for previous One Planet Developments, including Parc y Delyn (NP/18/0545/FUL), and Lily Pond Farm (NP/19/0309/FUL).

Outline Specifications

Cabin (caravan) (5.8m x 18m)

The cabin will be constructed as a caravan – pre-fabricated in two sections which will be bolted together and capable of removal. It 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[36], dpc, fixings, plumbing, electrics. The cabin will sit on screwpile fixings.

Outline Specification:

- Foundations: 89mm Screwpile foundations (depth dependant on advice from structural engineer)
- Frame: 400mm lightweight composite timber I frames made from OSB (FSA certified), and sawn larch (locally sourced)
- Insulation and internal wall finish: 400mm 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), 400mm Pavotherm (lightweight woodfibre insulation)
- Roof: breather membrane, zinc metal roofing sheets.
- Cladding: Locally sourced and sawn larch

Greenhouse (13.72m x 4.8m)

Outline Specification:

- Stem wall: Railway sleepers
- Structure: 100mm timber frame (locally sourced larch)
- Cladding: 4mm greenhouse glass

Compost Toilet (3.75m x 2.4m)

Outline Specification:

- Foundations: Screwpile foundations (depth dependant on advice from structural engineer)

36 Note that bat-friendly breather membrane will be used

- 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.
- 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

Barn (14.63m x 6.10m)

Outline Specification:

- Foundations: 140mm Screwpile foundations (depth dependant on advice from structural engineer)
- Frame: 200mm x 200mm larch (locally sourced)
- Insulation and internal wall finish (Workshop and Studio): 200mm Pavotex (woodfibre boarding) with lime plaster.
- Floor (Workshop and Studio): 200 x 50mm timber frame with Pavotex (woodfibre boarding) in Studio, Kitchen and Workshop areas. No insulation in barn area.
- Roof: OSB boarding (FSA certified), breather membrane, zinc metal roofing sheets. Corrugated glazing panels for barn section and velux windows for workshop and studio.
- Cladding: Locally sourced and sawn larch

Goose house (4.85m x 4m)

Outline Specification:

- Foundations: 89mm Screwpile foundations (depth dependant on advice from structural engineer)
- Frame: 100mm x 50mm stud frame - larch (locally sourced)
- Floor 150mm timber frame with timber boarding (locally sourced) and a reclaimed impermeable floor finish.
- Roof: 150mm x 50mm stud frame, metal roofing sheets.
- Cladding: Locally sourced and sawn larch

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.

- *I*n 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.

- All built structures 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 (cabin, barn, goosehouse, compost toilet), reclaimed windows and doors (cabin).

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: All buildings have been designed to be constructed in such a way that minimises 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 cabin 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 site.

Community Impact Assessment

Overview

Having lived in this area for over 30 years, we are already familiar with the community here in Cilgwyn. Many of the people here are friends and everyone we have spoken to in the immediate area is very supportive and positive about our plans at the field.

Please see accomanying Maes Gwenyn – Map of Supporters.

We intend to forge a link with the local primary school, offering educational visits for small groups of children to the site. The meadow and orchard are great habitats for nature study, and for plant and insect identification. We want to encourage the school to adopt a couple of apple trees which the children could feel ownership of. They could observe the bees pollinating the orchard in spring and follow the growth into apple where they could pick the apples and take part in juice pressing.

Table: **Positive impacts**

Aspect	Details
Part of the local community	We have lived in the area a long time and are part of the local community here.
Cultural Contribution	We contribute to local craft, food and music.
Contributing to a low-carbon land-based economy	Food will be produced on the holding that will contribute to the local economy
Footpath	The footpath that crosses our land will be kept in good condition
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.

Table**: Negative impacts:**

Aspect	Details

Siting a residential caravan in the open countryside	The development creates a new household 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.

- We do not have children living with us, however we ourselves are active members of the local community.

.

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

- A public footpath crosses our plot

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 and other produce 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

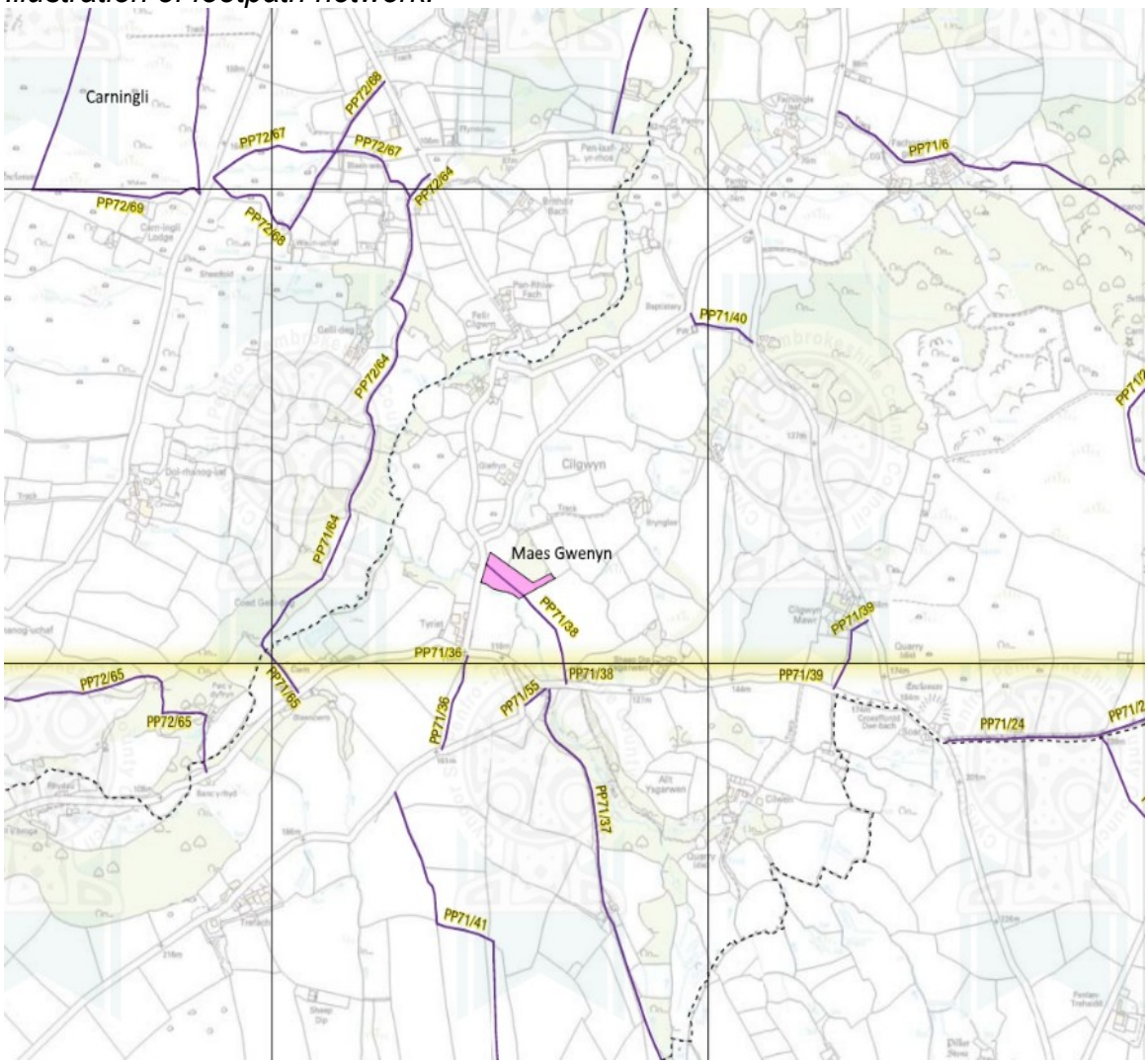
We plan to minimise our travel through a combination of working from home, living a self-sufficient lifestyle, and walking wherever possible.

Survey of existing travel options in area:

Footpaths

There is a comprehensive network of footpaths in the area. It takes approximately 30 mins to walk to the main road (where the bus routes run).

Illustration of footpath network:



It takes approximately 45 minutes to walk to Newport. It takes approximately 15 minutes to cycle to Newport (and 20 minutes to cycle back – because of the hill!).

Local buses:

Newport is the closest bus stop.

Bus Route 405 – POPPIT ROCKET – Newport to Fishguard or Cardigan: 3 (return) buses a day (summer and winter)

Bus Route T5 Aberystwyth – Cardigan – Newport – Haverfordwest: 17 (return) buses a day

Trains:

Fishguard Harbour is the local train station. There are generally 6 (return) trains a day that link Fishguard to Whitland, Carmarthen and towns to the east.

Private Vehicles:

We currently own a diesel estate car.
It cost £1900 in January 2012, and it has now done 360,000 miles! It still does 51mpg, goes like the wind and starts on the button every time. It is however getting quite old now and maintenance costs are relatively high. We plan to replace this car with a smaller, more efficient car (or van) over the next 5 years.

At the moment we are both living fairly conventional lives. In 2018 our car drove 25,200 km. Approximately 70% of this was business use.
Sophie was gardening for clients all over Pembrokeshire and David had IT clients locally; Pembrokeshire, Ceredigion and Carmarthenshire and from time to time would also visit offices in Leicester or London.
We also had two very active children. Our son played football, rugby and hockey, which meant several trips for practice sessions during the week and several trips for games at weekends, with clubs all over the county, this is a lot of driving. Our daughter played cello and was in the county orchestra, again incurring a lot of travelling.

We are now just the two of us at home, Sophie no longer does the gardening and David is solely based at home for his IT work. Sophie works in a Newport cafe 3 days a week and uses the local bus.

Once we are on the land, our transport requirement will be very minimal. We will cycle or walk to Newport (2 miles away) and take small deliveries of fresh produce with us. Newport should provide us with the bulk of our needs and if not, we can catch the bus from there into nearby towns. We anticipate 1 or 2 trips a week with bulk / heavy deliveries by car to Newport will cover the majority of our transport needs. We would coincide deliveries with collecting additional goods and shopping to bring back. We are also part of a known community in Cilgwyn and would seek to car share or 'delivery share' where possible. For any major deliveries, we would try to liaise with other local producers and share vehicle space, we are fortunate to be near Bluestone Brewery and could utilise either their vehicles or load on to returning courier vans.
Once we have established ourselves on the plot, we imagine our pattern for private car use will look something like this:

Destination	Purpose	Frequency	Journeys per year	Miles per journey (there and back)	Miles per year
Newport	Land-based business: Deliveries (Shopping)	Twice a week	102	5	520
Cardigan	Land-based business: Deliveries (Social)	Once a fortnight	26	23	598
Fishguard	Domestic: Train station	monthly	12	20	120
Various (local)	Domestic: Friends and Family visits	various	52	24	1248
Various (further afield)	Domestic: One-off collections/ deliveries/ visits	various	12	80	960

We estimate that once established (after 5 years) we will be making approximately 200 journeys per year, driving approximately 3450 miles (combined domestic and business use).

Note that for the purposes of the EFA calculation we have attributed deliveries[37] to our land-based enterprises (accounted for in 'Other Footprints'), with the remainder[38] attributed to our domestic use (accounted for in EFA calculator)

Comparison

In terms of comparative statistics;

- In rural English areas[39] the average distance travelled by private car is 8599 miles per person per year[40]. This does not cover journeys for delivering or moving goods or produce[41].

37 Travel associated with land-based enterprises: 1118 miles/ 1677km
38 Travel associated with domestic use: 2328 miles/ 3492km
39 These statistics are not available for Wales
40 https://www.gov.uk/government/statistical-data-sets/nts99-travel-by-region-and-area-type-of-residence Table NTS9904
41 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337241/nts2013-notes.pdf

- The average person living in a rural location makes 1644 trip (822 return journeys) by private vehicle per year. This does not cover work related journeys.[42]

42 https://www.gov.uk/government/statistical-data-sets/nts99-travel-by-region-and-area-type-of-residence Table NTS9903

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 the 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 on the site we will be making approximately 200 journeys per year, driving approximately 3450 miles (5200km) per year. Thus we fully expect to achieve 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 cycle 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 household we will share one vehicle.

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.

- We will prioritise local trading.

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

- Visitors will be encouraged to travel on foot or by bicycle. The farmgate stall will be designed to serve passing trade only.

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.

We calculate our ecological footprint to be **3.20** gHa/ cap, dropping to **2.04** 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, and these will take place through sustainable transport means - cycling and walking. It is very difficult to quantify these impacts at this stage, however we expect it to be in the region of 3 visits per week

- Business Impacts

The land-based businesses will inevitably carry an ecological footprint of their own. Because the business will be off-grid, and will take place in structures built with consideration of their footprint, this footprint is going to be relatively small. The largest ecological factor in this aspect will be transport. We estimate travel associated with our land-based businesses to be in the region of 1118 miles (128 vehicle journeys) per year, plus an occasional delivery to London (estimated at one pallet per year). These footprints will be carried by the consumers of our produce.

- Machinery

We will occasionally use a strimmer/ chainsaw to assist us with the management of the soil. We estimate that this will use somewhere between 15 and 45 litres of petrol a year.

Positive Influences:

- Local healthy food

We will be supplying organic local healthy food to the local community. Wales currently imports an estimated 93% of its vegetables and 97% of its fruit[43] - we will reduce the ecological footprint of this.

- 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.

43 This figure is taken from the One Wales:One Planet document

Phasing

Our management of the site has yet to begin in earnest. We have been maintaining the Orchard, boundaries and water courses whilst planning our next steps. If we are granted planning permission, we will implement the following phasing plan:

Year 1	Install cabin Build compost toilet Begin wetland management Establish apiary Establish compost area Plant soft fruit bushes
Year 2	Build greenhouse (with in-built rainwater irrigation system) Build pathways and raised vegetable beds Build up apiary Introduce chickens Plant new coppice
Year 3	Build barn Begin apple juice processing and launch apple juice businesses Position farmgate stall
Year 4	Build goosehouse, introduce geese
Year 5	Launch seasonal communty feasts

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	(a) Annual reporting of sale volumes and market areas by each on-site enterprise.	*Annual reporting of sale volumes and market areas by each on-site enterprise.*

footprints.		
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 wet meadow, hedgerows and orchard and this will highlight any increase or decline in key species as identified in the Ecology Survey*
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 highlight any cultural features that may be discovered in the future and it will describe management practices which maintain these in good condition.*
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 land areas and will quantify the areas of new coppice 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 Coppice areas.*

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.	*The annual monitoring report will report on the number of active bee hives on site.*
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 spring water usage, and rainwater harvesting patterns which details sources, methods 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.	*All buildings have been designed to be constructed in such a way that minimises 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 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 all buildings (cabin, greenhouse, barn and goosehouse, compost toilet, pv array) will be removed and the hardstanding, pond and reedbed would remain, being relevant either to access or to wildlife.

- The **cabin** will be unbolted, split into two sections, craned onto a flatbed lorry and removed from the site. The screwpile foundations will be removed.
- The **greenhouse** will be dismantled. The glass will be removed and either sold or taken to a glass recycling centre. The timber will be dismantled, de-nailed and either removed from the site or stacked in the coppice area as habitat.
- The **barn and goosehouse** will be dismantled. The timber will be separated, de-nailed and either removed from the site or stacked in the coppice area as habitat. The roofing sheets, glazed units and other building materials will be removed from the site. The screwpile foundations will be removed.
- The **compost toilet** will be dismantled. The timber will be separated, de-nailed and either removed from the site or stacked in the coppice area as habitat. The roofing sheets, glazed units and other building materials will be removed from the site. The masonry chambers will be demolished.
- The **pv array** will be taken down. The solar panels will be sold off and the timber framework removed from the site.

The masonry rubble will be gathered together to build a hibernaculum on the site for reptiles and amphibians. All other building materials will be removed and there will be no remaining trace of these buildings on the plot.

Section 106 Undertaking

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

- The Dwelling shall be tied to the land shown in red on the Plan as comprising the whole of the land to be used for the Development.

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