



Berllan - ddu

One Planet Development Management Plan

Llanbradach, Ffordd Pandy
Caerffili
CF83 3DZ

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1. Introduction

This management plan has been written by myself, Louise Monico, along with ideas from my family, and draws upon support from friends, colleagues, sustainability visionaries and various independent professionals as required.

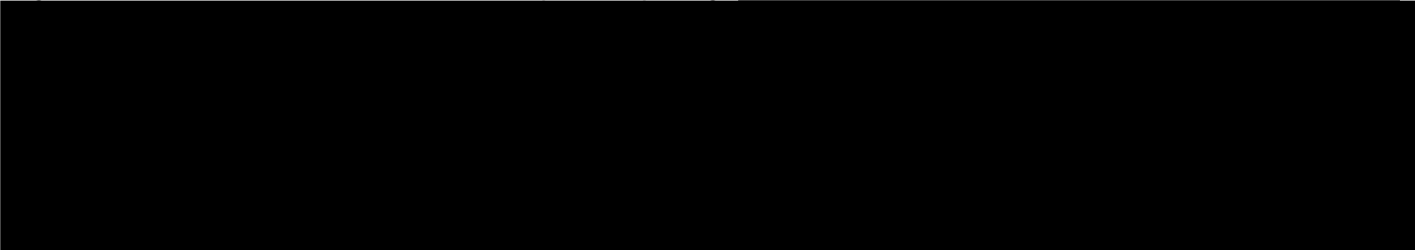
This management plan concerns the Berllan-ddu apiary/smallholding at Llanbradach.



This plan has been prepared to outline our intention to create a land-based low-impact lifestyle, and has been designed to provide a framework against which our sustainable lifestyle can be suitably assessed. It adopts the format as suggested in the One Planet Development Practice Guidance (TAN6, Oct 2012).

This management plan is a proposal for a One Planet Development (OPD) at Berllanlwyd near Llanbradach. We have chosen to call the OPD 'Berllan-ddu' as this sums up what we can achieve from the land; 'fruition'. The intention behind this management plan is to engage with all the key points of the OPD policy, and show a clear and heartfelt commitment to the principles of sustainable development, demonstrating that Berllan-ddu has the ability to deliver the project's objectives over the long term through the medium of Welsh. We will transform the land from a field of poor-quality monoculture comprised of 'improved grassland' to a rich biodiverse landscape that will have the capacity to produce an abundance of produce for our family and for the wider community to benefit from.

We realise that what we are embarking on at this site requires an enormous amount of dedication and technical expertise in order to successfully comply with the aims and objectives of the One Planet Development policy.



The information policy will provide a clear plan as to how my family will sustain ourselves in terms of producing food, water, power, fuel and income from the land. It demonstrates how we will be providing a valuable resource to local people in terms of organic produce, experiential and wellbeing opportunities, as well as partnerships with other local sustainable organisations & businesses to work toward creating a more sustainable community. Our environmental impact is outlined in detail. We aim to bring a number of benefits to local biodiversity through our land management techniques.

I consider that sustainable initiatives such as Berllan-ddu, form a vital part of the transition that our society must undertake in order to create a secure and viable future for the generations that follow us. We have and will help to reduce wider environmental degradation through both our choice of construction, lifestyle & ongoing site management. Our OPD plan with outline how we are helping to achieve the 7 well-being goals for Wales, including healthy and resilient communities, a thriving Welsh language, and innovative low carbon businesses.

2 . Summary

Our 2 acre OPD development will consist of;

- Chicken coop (1.5m by 1.5m)
- One garden area for food (20m by 20m)
- Fruit orchid (16m by 16m)
- 1 small natural pond
- Solar Panels (8m by 8m)
- Eco hay bale greenhouse (5m by 5m)
- Equipment and tool shed x2 (5m by 6m)
- One cabin- Dwelling, work and Education areas with decking, in the form of a twin unit (bolted together), again designed to be an example of naturally blended building embodying the principles behind a Low Impact Development (20m by 6.8m- currently used as a well-being/agricultural twin unit).

Through the natural materials used, the growth of hedgerows and trees the site will be screened from all public viewpoints and will blend beautifully into the landscape, enhancing the natural beauty of the area and improving air pollution. (See Ariel view map at page 20) We are determined to do what we can to preserve our planet for future generations to enjoy.

'So my answer to the question, 'how do I want to live my life?' is that I want to be a part of the solution rather than part of the problem.'
(Permaculture author Patrick Whitefield)

The creation of OPDs bolsters Caerphilly County Council's and the Welsh Governments environmental targets and supports the Well-being of Future Generations Act. Since COVID-19 public opinion has significantly shifted towards the importance of a 'green recovery'. The Climate Assembly UK recently found that 80% of people support an economic recovery designed to help reach net zero carbon. Also, the pandemic has highlighted the need for regions to be able to produce their own produce as we have all seen how fragile supply chains are in a crisis especially with the current food inflation rises.

The government have demonstrated that they want more OPDs, the public are behind them and future generations need them



2.1 Welsh Language

The Well-being of Future Generations (Wales) Act 2015 This Act aims to improve the social, economic, environmental and cultural well-being of Wales. The Act will make the public bodies listed in the Act think more about the long term, work better with people and communities and each other, look to prevent problems and take a more joined-up approach. One of the seven Wellbeing goals listed in the Act is "A Wales of vibrant culture and thriving Welsh language".

As I am a Welsh teacher, Steve a Welsh learner and I than a fluent Welsh speaker we will be adhering to the act and promoting the WAG's five-year Welsh Language Strategy for 2022-27 at Berllan-ddu development by promoting the Welsh language in the Community. Promoting to:

- Speak Welsh as a family at home
- To encourage families to speak more Welsh when visiting
- Teach in the medium of Welsh
- For children and young people to see its value by using it outside of education.
- To create a community group and business that supports and promotes the use of the language.
- To increase opportunities for people to use the Welsh language in the area

The Vision for Welsh language The year 2050: The Welsh language is thriving, the number of speakers has reached a million, and it is used in every aspect of life. Among those who do not speak Welsh there is goodwill and a sense of ownership towards the language and a recognition by all of its contribution to the culture, society, and economy of Wales. Our vision is to secure favourable circumstances throughout the country that support language acquisition and use of Welsh language skills. We want to see an increase in language transmission in the family, early introduction of Welsh to every child, an education system that provides Welsh language skills for all Cymraeg 2050 – A million Welsh speakers (Welsh Government, 2017)



Throughout this plan this Welsh symbol will be added to show where and when it will be promoted

3. Baseline

3.1 Location, area, boundaries and tenure

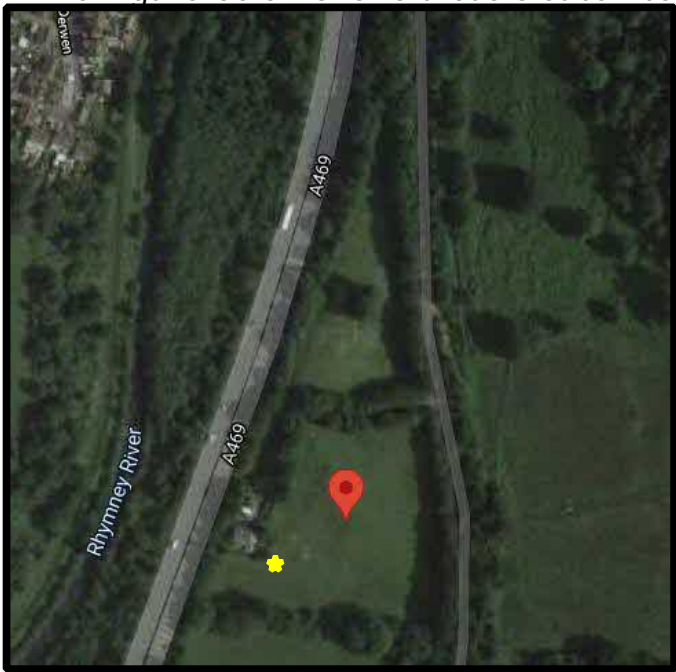
The land is jointly owned, freehold, by both of us . We own 2 separate parcels of land, 2 acres on the North and 2.77 to the South. The total land we own comprises 4.77 acres (1.94 hectares) of land with water and lane access rights to Berllanlwyd house. The North 2 acres will be used for our OPD.

It is situated in the Rhymney Valley , located in a prominent position West of Pandy Lane along the A469 Llanbradach. The land benefits to its close proximity to Llanbradach, Bedwas, Caerphilly and Ystrad Mynach towns. The land is accessed via Pandy lane and surrounds the nearby Berllanlwyd house.

Google Maps reference: 51.613334, -3.220273

OS Grid reference:- ST 15608 91201

The figure below shows a basic satellite and map of the site :



There is a road that runs through the centre of the land, that allows access to the two separate pasture areas and Berllanlwyd house with one electrical pole for connection only to the house (situated next to the house on the field- Please see star above). The outskirts of the land defined by a mature tree line/hedgerow that circles the whole outline of the boundary. The South side is defined by a stream, treeline / hedgerow and is adjoining to the land owned by Duffryn farm . Within the boundary, two of the areas of pasture are separated from each other by a tree line and the remaining two areas of pasture are separated by another mature hedgerow / treeline.

3.2 Context/adjacent land uses

A residential property, Berllanlwyd house, is situated to the bottom South-West of the land, Duffryn Farm is next door, Ty Newydd Farm is then located 1 mile to the south, along Pandy Lane.

Pandy Lane Fishery is located 1.5 miles to the North

Llanbradach town is located adjacent to the A469 bi-pass, Rhymney river, approx 4 miles by car. Over Pandy road, to the East, is Bluebell wood.

Our OPD is located ideally between many different towns (Bedwas , 2.4 miles 10 min cycle , Llanbradach 8 min cycle and Ystrad Mynach 2.7m 17min cycle) with Llanbradach as the closest and our main hub.

This will enable us to embed ourselves into the existing infrastructure, resulting in significantly lower carbon emissions than many existing OPDs which are located in more remote locations. We are both keen cyclists who have cycled to work for many years and our location will enable us to continue

1.1 miles to Llanbradach train station (on the 'Rhymney Valley' line- 22min walking 8min cycle)

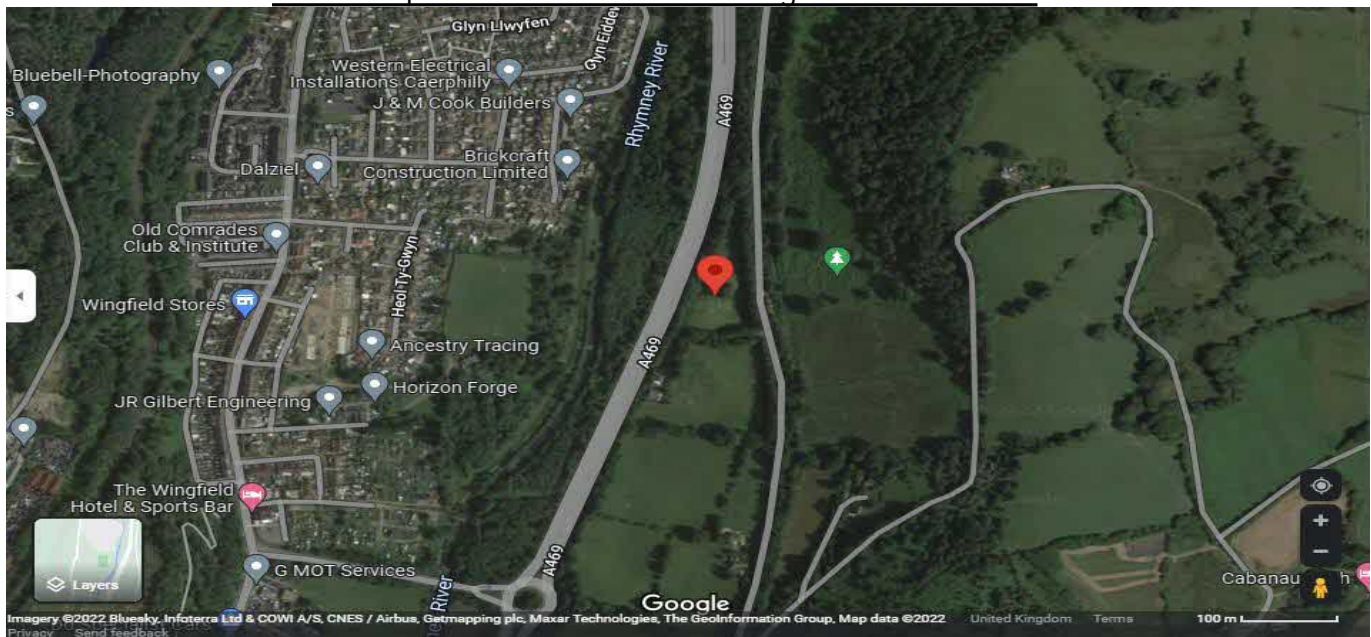
1 mile to the nearest bus stop

1.5 miles to local shops (where we can sell our produce)

1.5 miles to pubs, restaurants and cafes

1.5 miles to the bank and post office

Aerial Map of Llanbradach showing local amenities



3.3 Existing on-site services and access

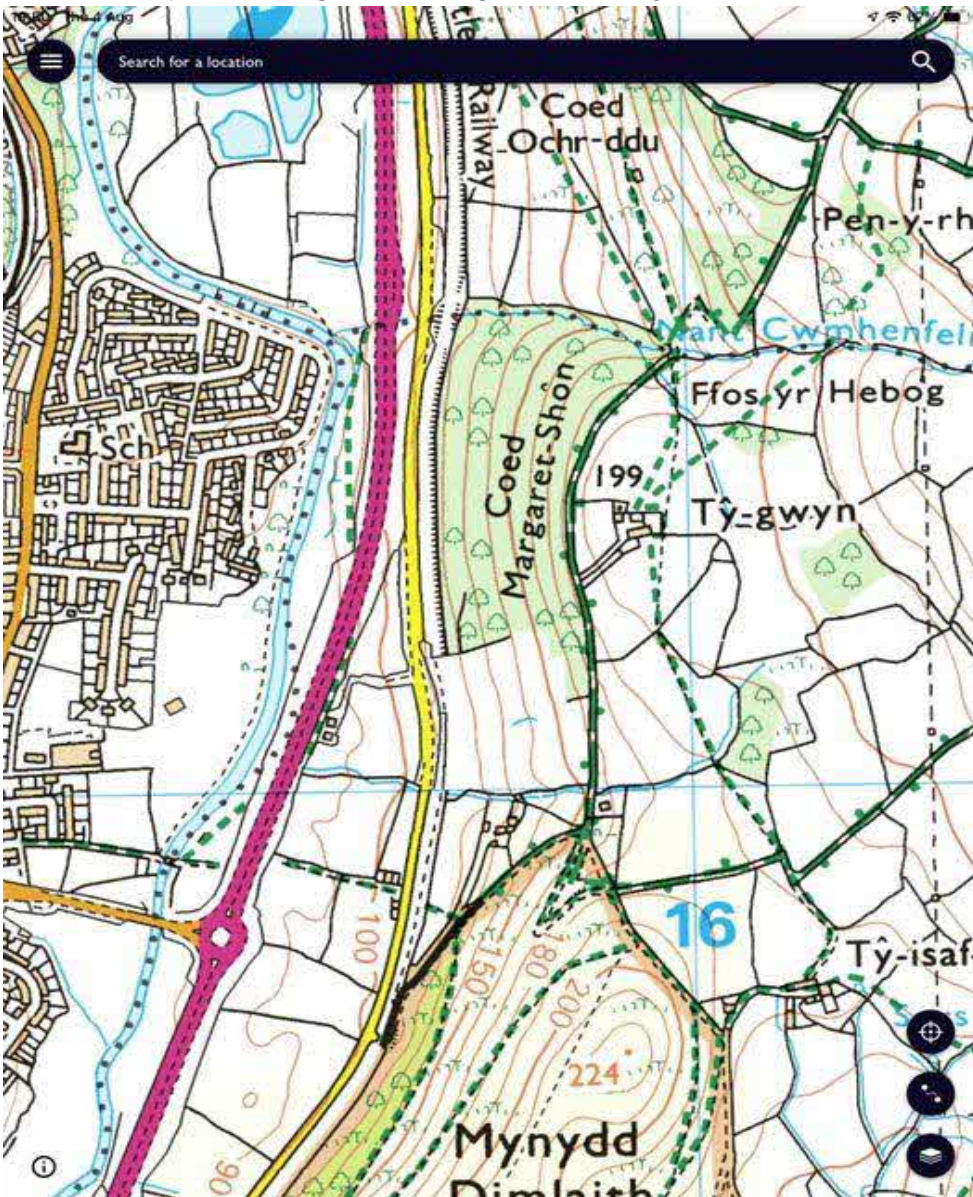
There are currently no on-site services.

There is good mobile phone coverage- 5G.

There is a single, unimproved access point from Pandy Road for both pedestrians and vehicles.

There are no public footpaths, bridle paths or other public rights of way onto or over the land as shown in the following map.

Maps showing Public Rights of Way around our immediate surrounding area



1:25 000 Scale Map Legend

PUBLIC RIGHTS OF WAY AND OTHER ACCESS

- Footpath
- Bridleway
- +++++ Byway open to all traffic
- Restricted byway (not for use by mechanically propelled vehicles)
- Other routes with public access (not normally shown in urban areas)
- Recreational route
- ◇◇◇◇◇ Alternative recreational route
- National Trail England & Wales; Scotland
- Traffic-free cycle route
- Permissive footpath
- Permissive bridleway

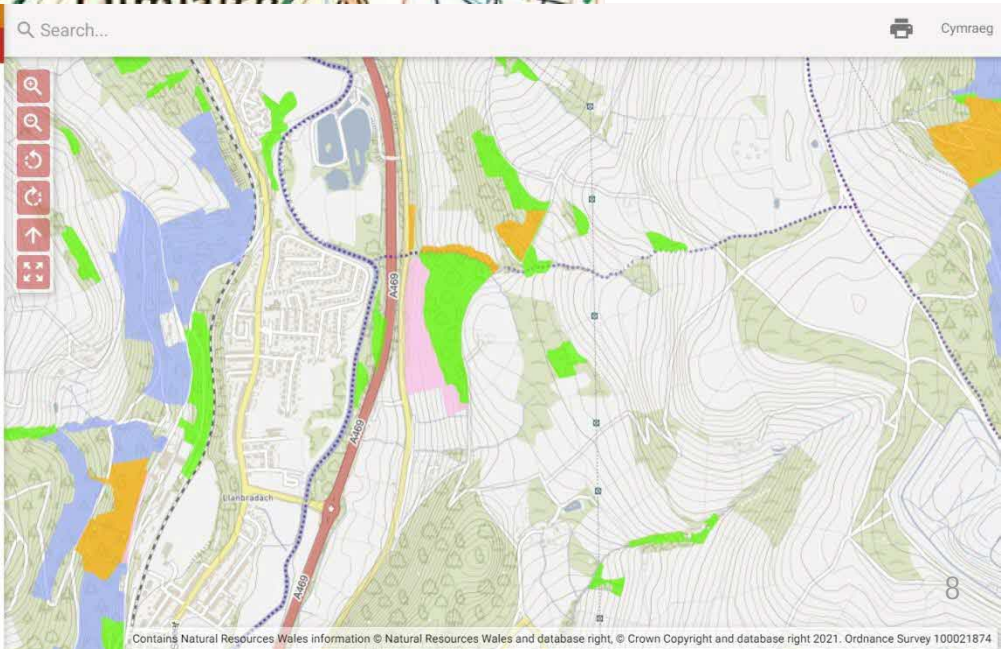
Lle - Map Browser

BETA

Layers Tools Legend

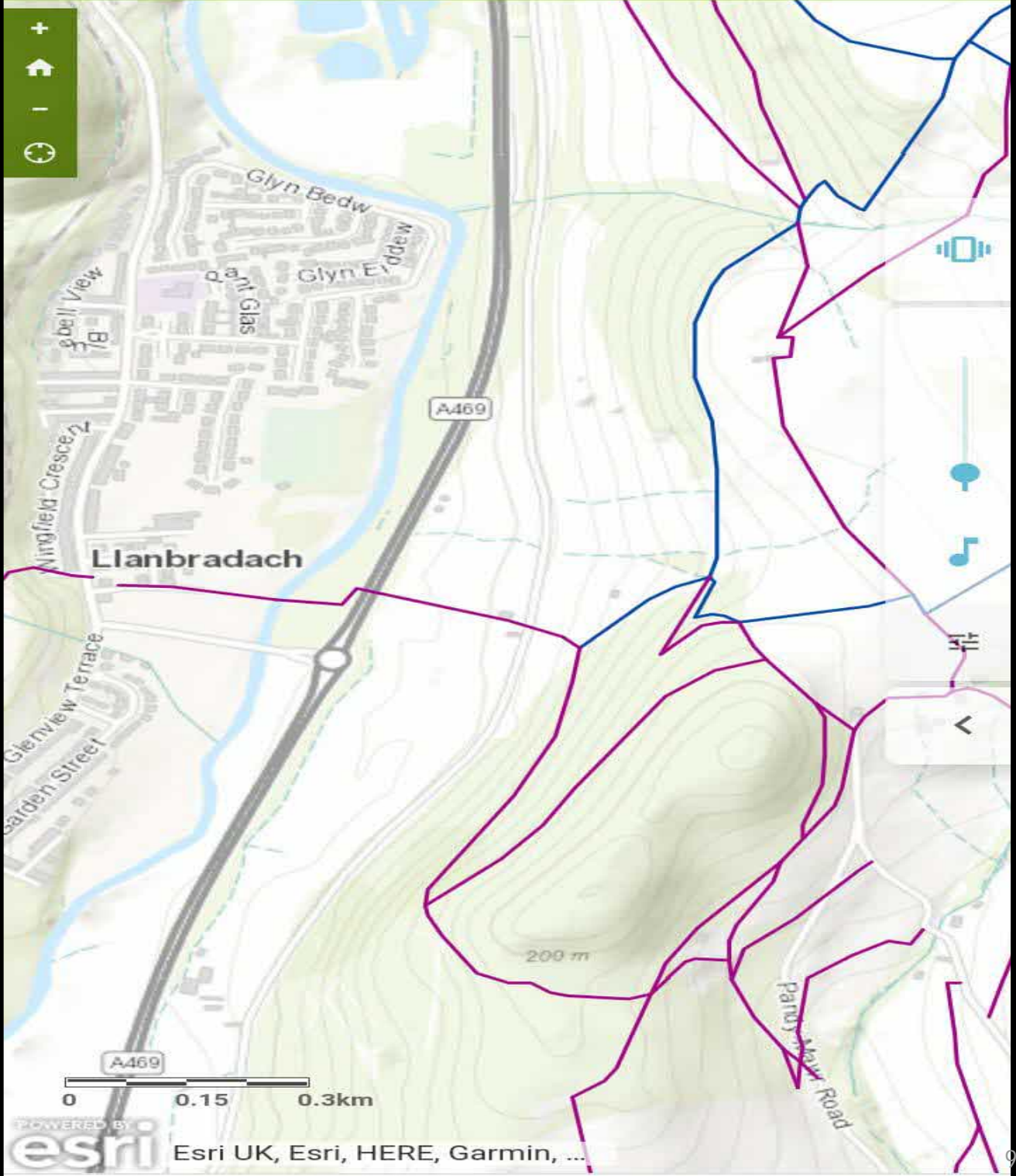
- Ancient Woodland Inventory 2021 - WMS
- Ancient Semi Natural Woodland
 - Ancient Woodland Site of Unknown Category
 - Plantation on Ancient Woodland Site
 - Restored Ancient Woodland Site

http://lle.gov.wales/map?fbclid=IwAR1tbJ9cUDqFweQ8QXTJoXbcTOHioTulFuWqA7oLY_lu5zr5cEzovTlv-4#m=3.21461,51.61505,15&b=europa&l=2042





Hawliau Tramwy Cyhoedd...



3.4 Tenure

We have purchased the land and our allocated title number is CYM750463. We reserved the land from the seller in June 2022 and have visited the site many times along with visiting in the neighbouring field. We completed the land purchase on 20/06/2022.

Existing On-site Services

There are no services on the land.

Physical characteristics

As per the LANDMAP1 information at https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=1096



, the geological and topographical character of the Mountain and Upland Valley area is, 'Glaciated mountain terrain/valley with some areas of glacial clay.

https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=1096

shows that the land has been classified by the Welsh Government as '3b - moderate agricultural quality', mainly due to its workability in the wet; 4-poor due to its clay content

and <https://www.landis.org.uk/soilscapes/> shows that the soil type has been classified as freely draining slightly acid loam, suitable for a range of spring and autumn sown crops.

First hand, we have found the land is quite patchy in terms of drainage, with some areas much dryer than others. We plan to manage this at an overall level by maintaining the traditional drainage ditches bordering the main field and by careful situation of each element of the development according to its need for drier soil; but also to ensure the wetter, more species rich areas are maintained as wildlife habit, as detailed below.

3.6 Site

Within 2km there are ten Sites of Importance for Nature Conservation (SINCs) designated as important in the local area (Appendices 1 of the Ecological Appraisal for Berlan Llwyd by Matt Levan). The nearest are the river Rhymney 36m west of the site Mynydd Dimlaith 146m southeast at Mynydd Bach Slopes 232m northeast. The latter two sites support a range of woodland and grassland habitats and are considered likely to support a high diversity of plant, fungi, and animal species. There is one Site of Special Scientific Interest (SSSI) within 2km 1771m to the southwest on the other side of the valley. Evaluation Due to the position of the site between multiple SINCs it is considered of local ecological value, with potential to achieve county ecological value with appropriate management.

The OPD will:-

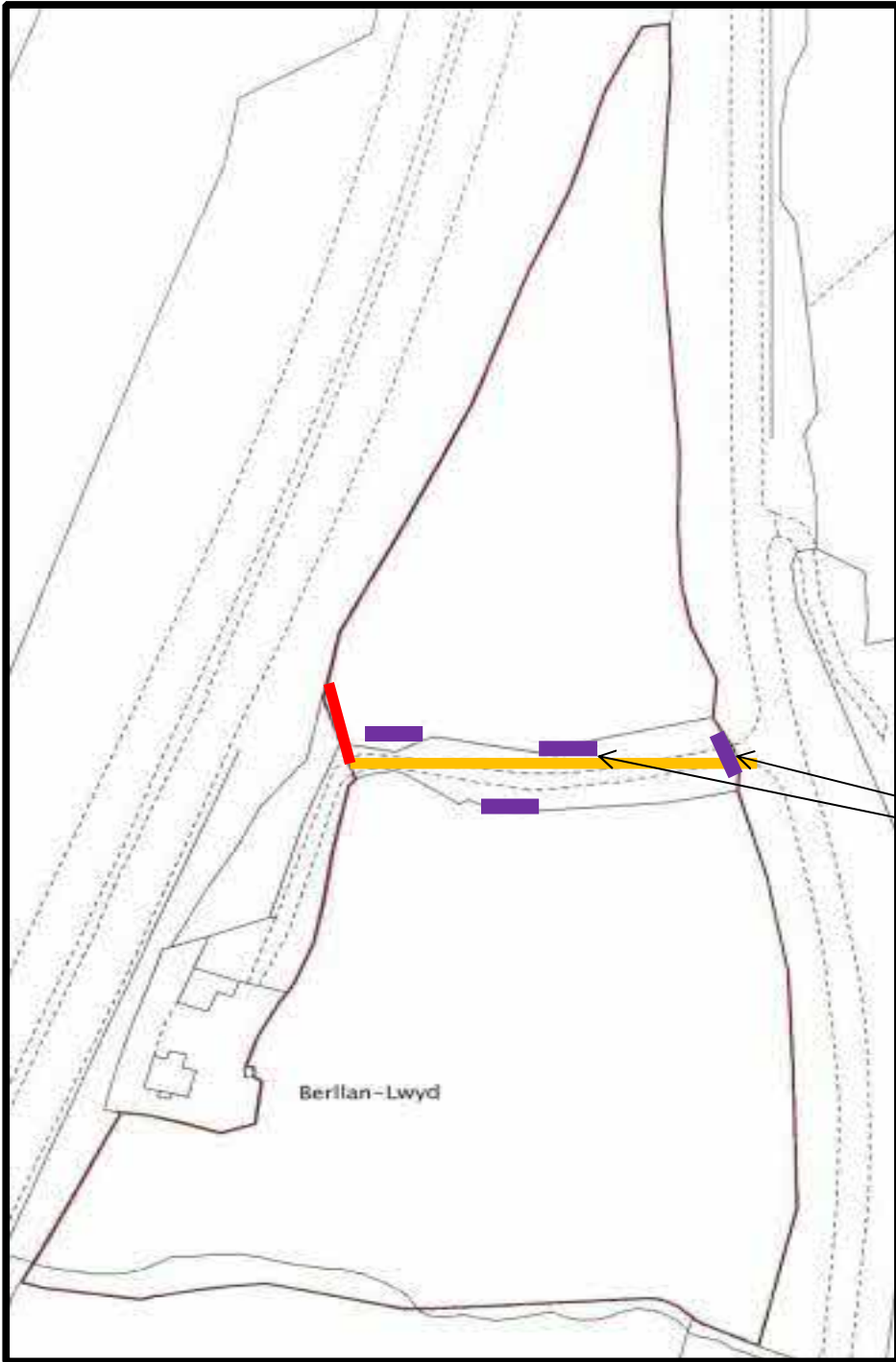
- Contact the relevant bodies to ensure the correct and appropriate land management that will protect and support nature conservation
- Ask for community support
- Support and improve the landscape in order to improve its Biodiversity and soil quality

3.7 Site access

We will access the plot via Pandy Lane.

We have full legal rights and access and as it comes as part of the purchase deeds. We will allow access to the sole resident at Berllanlwyd House who's located at the bottom of the lane.

The orange line denotes the existing vehicle access points and to both sites.
The purple line shows existing gates and entry points to the fields.
The red line shows where our boundary line ends.



Access points

3.5 Biodiversity

Due to the position of the site between multiple SINC's and as it is considered of local ecological value, we endeavour to develop it to its full potential and achieve county ecological value with appropriate management.

"As we move through the twenty-first century, these animals and plants will also depend upon us for their survival. The actions of the council, and its partners, can have significant effects upon the biodiversity of our county borough. We all need to be aware of the value of places that are special for wildlife and that these special wildlife places also depend upon the everyday green spaces in which we live our daily lives" CCBC Biodiversity Action Plan

Please see The Preliminary Ecological Assessment report in Appendix 1.

The Preliminary Ecological Assessment report stated that the field is comprised of two habitats; improved grassland and hedgerows. 'Improved grassland consists of mainly Ryegrass with few flowers such as buttercups, docks and thistles. Although there may be high numbers of these 'weeds', they have little value for wildlife.'

(<http://www.highweald.org/look-after/land-management/grassland/improved-grassland.html>). This poor level of biodiversity provides the opportunity for us to rapidly increase site habitat and biodiversity through a permaculture approach. The existing hedgerows and treelines will be maintained to improve biodiversity, also there is one mature Oak and one mature Ash on the land these will be retained.

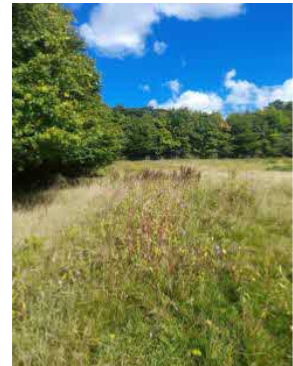
The Phase 1 Habitat Survey at Appendix 1 undertaken by Matt Levan Ecology earlier this year shows the following habitats are present:

- Semi-improved neutral grassland
- Marshy grassland
- Hedges with trees
- Semi natural broadleaf woodland
- Dense scrub.

The survey summary states that:

'The site is botanically-diverse, and contains Biodiversity Action Plan habitats and species. Provided conservation of the marshy and dry grassland can be accommodated within the management plan, there is scope for a development which works with the current ecological interest and enhances it'.

Section on Land Management demonstrates how this will be done.



Caerphilly County Borough Council also have produced a Local Biodiversity Action Plan. That we at Berllan-ddu wish to adhere to and work with.

"The overall aim of the Caerphilly Biodiversity Partnership is: To actively protect, conserve and enhance the biodiversity of Caerphilly county borough on a continuing basis According to the Science Daily website: 'A Biodiversity Action Plan (BAP) is an internationally recognised program addressing threatened species and habitats, which is designed to protect and restore biological systems.'

https://www.sciencedaily.com/terms/biodiversity_action_plan.htm

The overall objective of the LBAP

To set up a local partnership that is guided and represented by a steering group to coordinate and encourage the local BAP process. [Set up a partnership]

2. To examine existing information on habitats and species in the county borough, fill the information gaps and update regularly. [Find out what we have]

3. To select species and habitats and write local action plans that reflect the values of local people, and meet regional and national biodiversity priorities. [Write action plans for wildlife]

4. To raise awareness and appreciation of habitats and species in the county borough, and encourage their protection and enhancement. [Let everyone know what is happening]

5. To encourage all partners to incorporate targeted actions from the local BAP into their policy making processes. [Incorporate targets]

6. To measure the effectiveness of our LBAP and to report findings to the public as well as regional and national biodiversity groups. [Make sure we are doing it correctly]

7. To seek ways of adequately resourcing the local BAP process.

<https://www.caerphilly.gov.uk/caerphillydocs/planning/biodiversity-action-plan-caerphilly-county-borough.aspx>

Our OPD could support these objectives in the following ways:

- We would welcome the council to carry out a survey on our land as long as they do not cause disruption or damage.
- We will carry out on-going surveys ourselves using The Biological Records Centre's iRecord app. 'iRecord app enables you to get involved with biological recording. Contribute our species sightings with GPS acquired coordinates, descriptions and other information, thus providing scientists with important new biodiversity information that contributes to nature conservation, planning, research and education.' <https://irecord.org.uk/app/>
- We would encourage volunteers to support the OPD and as part of this they would have the opportunity to learn about mammals and how to develop the site to serve them.
- As I am a qualified teacher and am passionate and knowledgeable about nature, I would be keen to work with schools and the public to improve engagement in learning about specific species. I would like to make connections with local schools and to develop learning opportunities.

The OPD Practise Guidance requests that the management plan should provide an audit of 'broad habitats present, especially habitats identified in the Local Biodiversity Action Plan and records of important flora and fauna (species) and their abundance on the site and in the immediate vicinity, again especially those noted in the Local Biodiversity Action Plan'. This information can be seen in **Appendix 1**.

The CCBC LAPB report also states that :-

"Sustainable Development and biodiversity are intimately linked - biodiversity is a fundamental component of Sustainable Development. Human life, health and well-being depend on a healthy environment"

3.6 Agriculture and forestry

Over 75% of Caerphilly county borough's land is used for farming on both enclosed and unenclosed land. Agriculture has therefore a major influence on Caerphilly's biodiversity and farmers and landowners play a vitally important role in ensuring that existing biodiversity is maintained and enhanced. Changes in agriculture over the past 50 years have led to an increase in treated (improved) grassland at the expense of species rich untreated (unimproved) pasture. However, while other parts of the UK has witnessed major changes in agricultural practices, the pastoral nature of the county borough and its topography has ensured that agricultural changes in the county borough have been less marked. The major influences on habitats within the county have been related to the change over from hay production to silage, increased drainage and increased grass productivity from artificial fertilisers and reseeded. Higher stocking rates have also contributed to a decline in biodiversity in many areas. However, many types of habitat have become fragmented and if these remaining habitats are to flourish, new approaches are needed which combine farming practices that are sympathetic to biodiversity with the economic requirements for food production. Details of how this has effected "Bee-lines" are outlined in later sections.

3.7 Forestry

Forestry is a major land use that has a great effect on biodiversity. Broadleaved woodlands throughout Wales have suffered from lack of management for decades due to changing markets and the reduced economic viability of woodland products. In the past, over-grazing, replacement of native broadleaved woodland with conifers and the cessation of traditional forms of management such as coppicing and pollarding have all led to a reduction in biodiversity. The Government has set out its approach to sustainable forestry in the UK Forestry Standard 1998. This provides a framework for protecting and managing woodland in the future and gives specific attention to biodiversity.

"All existing trees within and around the site must be preserved due to their high biodiversity value.

The planting of additional trees and hedgerows within the site would provide suitable habitat for a range of species including birds, bats, and dormice. It is understood that the use of hedges to screen the building has already been considered and further planting would be beneficial if the following recommendations are followed. New hedges and tree lines should be planted to connect with existing ones to provide habitat corridors through the site. Plants chosen must be native to Wales and ideally from a nursery specialising in local provenance trees from southeast Wales."

Our OPD could support these objectives in the following ways: -

- The management of all existing broadleaved trees and hedgerows
- Replacement of native species of both trees and flowers
- Creating a better wildlife corridor to the rivers and streams
- The planting of trees and hedgerows to encourage wildlife
- Reducing the emissions in the area
- Encouraging more wildlife to the area

3.8 Invasive species

Large numbers of non-native species already occur within and around urban areas in Caerphilly county borough. In some cases these threaten biodiversity where they result in: · damage to or degradation of semi-natural habitats; · direct competition with native species; · predation of native species; · threat to genetic integrity of native plants and animals; and · introduction of disease organisms, parasites or other associated problems The Berne Convention, Habitats and Species Directive and the Biodiversity Convention include articles requiring the UK to regulate or prohibit the introduction into the wild of species likely to have a detrimental effect on wildlife or natural biodiversity. These requirements are reflected in the WCA 1981 and the CROW Act 2000. Examples of established populations of introduced species currently threatening native biodiversity include:

- American mink - affecting the water vole and ground nesting birds
- Japanese knotweed, Giant hogweed, Himalayan Balsam - threatening riparian habitats and linear habitats such as roadside verges, railway lines (wildlife corridors)
- Grey squirrel - affecting nesting birds

The Biodiversity report by Matt Levan has suggested that:-

"Himalayan balsam within the site will need to be controlled to prevent further spread as it is an invasive species".

3.9 Pond life

"A pond provides of the easiest and most rapid ways to both benefit biodiversity and to use natural habitats to fix carbon dioxide (Anderson 2022)"

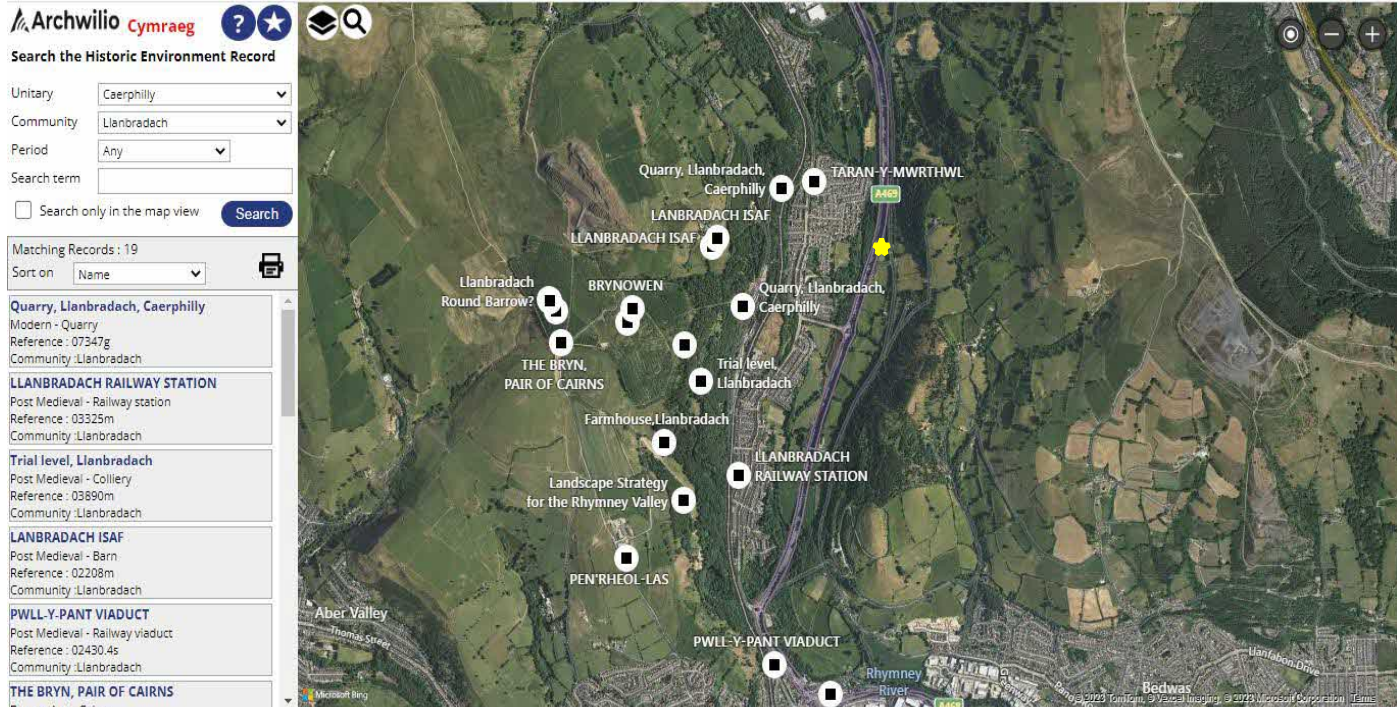
We will be digging out areas for two ponds as advised by Margret Isles in Biodiversity team at Caerphilly County Borough to further more enhance the biodiversity. The area selected will have plenty of sunshine, with a small shaded area, that will encourage the widest range of wildlife such as hedgehogs, dragon flies, newts, frogs and birds. We will introduce a variety of different plants and ensure that all types of wildlife can access the pond with ease. As shown below in the photograph.



3.10 Historic and cultural heritage

Please see 'Historic Landscape' https://landmap-portal.naturalresources.wales/view_survey.php?survey_id=1051 for details.

Also, the 'Archwilio' website <https://archwilio.org.uk/wp/> found that there are no sites of cultural importance on the parcel of land or in the immediate vicinity as all are situated on the adjacent site of the valley. ★ Berllanlwyd



The map above shows that the dominant cultural landscape is categorised as rural, industrial, with significant influences being agricultural, rural settlement and minerals and mining. It is a formal industrial area.

In terms of living history, the land is bordered by mature hedges which include a number of large oaks, beeches and willows, and these will be managed to ensure long term preservation.

On site there is a large Sycamore tree that has fully matured. We will endeavour to nurture and protect her.



3.11.1 Previous buildings and structures

No previous structures have been noted on archival plans on the North/triangular parcel of land .

3.11.2 Existing buildings and structures

There are three existing structures on site:

- X4 thriving Beehives
- Well being Cabin/Caravan , 65ft by 22ft, constructed by us as a non-permanent, twin, well being/agricultural dwelling to allow us to clear, prepare, maintain and develop the land and development of the OPD, look after the wildlife, trees/shrubs, Bees and chickens
- Moveable temporary chicken coop

3.12 Landscape

The landscape is typical of its surrounding area in that there are relatively small enclosures of improved agricultural pasture land, bordered by either mature hedgerow / treeline or scrubby gorse and hazel hedgerow.

Although two public roads run alongside the north-east and south-west borders, due to the mature treeline and slope, the land cannot be seen for the majority of the year when the trees are in leaf. During the winter months, the site can be partly viewed from some vantage points. We propose a number of measures to ensure all buildings and structures are hidden during the winter, and these are set out later in the Plan. The view from Glen View, a residential street across the other side of the valley will have the main view. Due to the large number of mature trees, and the gentle nature of the valley slope, even in winter, after the measures have matured, the site will not be seen from here.

3.13 Past and present land use

Prior to purchase, the site was used and grazed, by sheep and cows. Currently the land is being cleared of rubbish (sofa's, silage film, hay netting, old tyres, etc) and prepared for the development outlined within this Management Plan. At least 4 acres of the land has been re wilded to allow for natural rehabilitation and more trees and flowers will be planted.

3.14 Statutory designations on the site and in the immediate vicinity

There are no statutory designations on site or in the immediate vicinity. The nearest are as follows:

- Bluebell Wood , opposite the land
- Listed buildings- none
- Monuments- Llanbradach village, approx 4 miles away
- Penallta Park, Approx 4 miles away
- Caerphilly Castle and town- Approx 5 miles away

3.15 Present Land Use

In August 2019 the farmer who was renting the field removed his sheep, since then it has been left to lie fallow. Sheep and cows from Duffryn Farm eat the grass down twice a year. Since ownership we have allowed the grass to grow and area to rewild.

3.16 Statutory Designations

Natural Resources Wales have confirmed that there are no statutory designations in the field or in the immediate area.

3.17 Existing Transport

When viable we travel by train with a bike to ride to the land. If we have to deliver items such as saplings, we will use our car and van for larger items. On a few occasions consultants and surveyors have/will visit the land.

3.18 Landmaps - Links provided above also

See Appendix 2 for Landmaps which provide details of the area's: geological landscape; habitats; visual and sensory status; historic landscape and the cultural landscape. We have highlighted sections in yellow and have commented on these to demonstrate how Berllan-ddu OPD would support the recommendations

4. Design / Strategy

This section provides an overview of how; the land will be utilised; how the elements of the land interrelate; how the land will sustain its occupants; how it will be managed and how it will be developed over time.

Our main aim is to create a place where we can live and work in a sustainable and productive way, ensuring the ongoing availability and biodiversity of the land's natural resources for future generations. Key to this is the integration of everything we do on site, to support ourselves both generally, by growing food and fuel, and generating our own energy, and also financially, by extending some of these activities to create a viable, on-site business. Then educationally to provide an educational base for current and future generations.

Berllan-ddu is engaged in 4 main strategies:-

- A. Adoption of permaculture principles
- B. Promotion of the Welsh Language
- C. Education
- D. Nourishing biodiversity and habitat plus land and air improvement

This intrinsic link between the elements reduces the required inputs in terms of labour, facilities and other resources that would be required to set up and run a Welsh land based business.

We also see mutually beneficial relationships being created both with our immediate natural environment and with the wider community.

Although supporting and encouraging wildlife and biodiversity will be an integral part of how we do everything on site, there will also be a number of areas which will remain uncultivated wildlife habit, thus protecting local priority species and enabling them to thrive i.e. wilding.

4.1 Berllan-ddu land layout

Please see proposed site layout below:



The main aim of this site is to respect and enrich current wildlife habitats, enhance its biodiversity and along with boosting overall bee numbers, which have been in decline in recent years, it is also hoped the project will improve the grounds through pollinating plants and foliage.

"Recent years have seen a worrying decline in pollinator numbers with some species declining by a quarter. The loss of suitable habitats has meant that pollinators have found it hard to find food, water and shelter. One way gardeners can help halt this decline is by planting garden flowers that provide forage for a wide variety of pollinating insects."

Caerphilly County Borough News Bulletin July 2022

<https://www.caerphilly.gov.uk/news/news-bulletin/july-2022/caerphilly-county-borough-council%E2%80%99s-plant-a-pollin?lang=cy-gb>

4.2 Distribution of Land Uses

Principles

The cabin has been tucked into a sheltered and sunny position at the top right hand corner of the one field in the hollow of the valley as it is completely screened from both the prevailing wind and weather whilst minimising any visual impact in the wider landscape and taking in the earth's heat. It also has an uninterrupted south facing aspect, allowing for the greatest solar gain and therefore the greatest potential in performance in terms of fuel efficiency. It has been dug in for heat, windbreak and fire protection from grass fires.

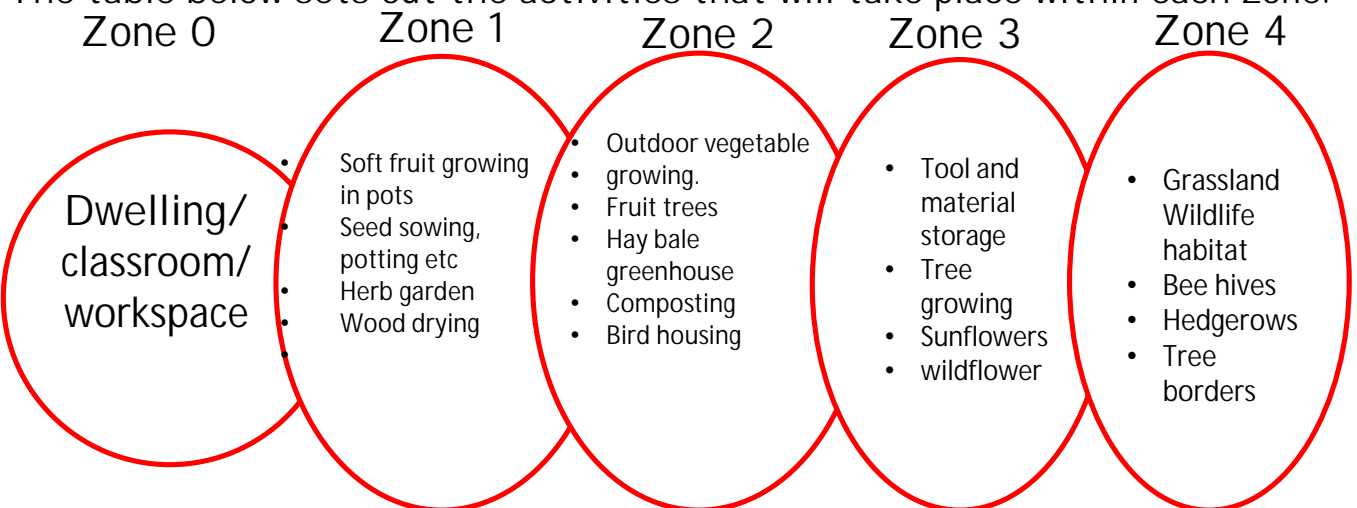
The poultry will be kept close to the house to minimise the regular trips to care for them, to enable us to keep an eye on their behaviour pattern and egg-laying habits and to minimise the risk from predators.

The fruit and vegetable growing areas have been chosen for their beneficial aspects, sun coverage and good soil depth and health. They have been located between both areas as a bridge between both educational and personal use

The pond will be situated directly in front of/south of the main dwelling, to magnify the positive solar gain from the micro-climate; reflecting the sun's heat and light into the build.

Permaculture design principles employ the use of 'Zoning', ensuring the activities that require the most frequent attention are situated closest to the dwelling (Zone 0).

The table below sets out the activities that will take place within each zone.



Existing habitats and ecologies have been incorporated and integrated into the design and management of the holding.

Zone 0 - Dwelling - it is south West facing to maximise afternoon/evening sun. It will be built by marrying 'Earth ship' and Permaculture principles. It is proposed to be built out of both natural and upcycled materials. The earthship design incorporates a solar window in the entire south wall (this will act as a heat trap by absorbing the sun's energy throughout the day producing a warm micro-climate, which will create an excellent environment for growing soft vegetables and fruits such as peaches, tomatoes, courgettes and squashes). The north side is dug into the ground, giving it an almost earth-sheltered design. Using the planet's natural systems to provide all utilities, earth ship buildings heat and cool themselves, harvest their own water, and use plants to treat grey water waste. By working with the landscape to build an dwelling we would like to end up with a structure that blends comfortably into the surrounding area, with a smaller ecological footprint. It will be located to have minimal visual impact and is situated on a lower flatter area of the field away from the road. The roof will be used to harvest rain water. We will fit bat boxes on the exterior walls.

The eco cabin has a large kitchen with large surface areas for harvesting food, honey and can be harvested using traditional methods, as an office and as a classroom discussion/teaching area. The cabin is currently used as a well being cabin whilst clearing, preparing, forestation and agricultural purposes. We will utilise this space as an education centre and as part of our business plan will be offering education to a variety of different purposes. It has been built using second hand materials. An eco filter tank will filter sewage and be emptied once every 2 years.

Wood store: Is situated close to forest garden, willow and dwelling to reduce the distance wood must travel, it will also be used to harvest rainwater.

Zone 1 - Decking area and porch

Herbs - Herb growing and drying used for food preparation and seasoning

Wood drying= situated at both the front and back end of the cabin, under porch, for easy access and best drying environment

Potted soft fruits, flowers and trees- Easy access, sun coverage. Soft fruit potting and growing

Zone 2-

Allotment/Horticultural area. The horticultural area is just over $\frac{1}{4}$ (0.0519) of an acre (this is equivalent to approximately 1000 square meters; an allotment of the size 210 square meters is considered enough to support a family of three with fresh produce through the year). We will use raised beds and intensive organic horticulture which will significantly increase productivity per acre.

Composting- A compost heap is located close to the greenhouse, horticultural area and the dwelling to allow compostable food waste to be added easily and compost to be spread easily.

Haybale greenhouse - this will be south facing to maximise sunlight. We have chosen a Hay bale greenhouse rather than a polytunnel for the following reasons: Lower visual impact; uses natural materials; absorbs and radiates heat; able to 'weather the elements' especially the wind well and can be returned to the earth after its useful life. It will include an area for propagation and greenhouse tools and will also be used to harvest rainwater. It is located next to the horticultural area.

Mobile/movable chicken run- We will build a mobile run for ducks and chickens which will allow them to scarify the ground and provide nutrients to the land when and where required.

Zone 3 -

Wildflowers- Growing and nurturing a wide variety of native wildflowers will enhance the current biodiversity of the land. Its main aim is to attract wildlife and increase its biodiversity. Biodiversity is central to the functioning of organic systems. More predators will be present due to healthy zones which will result in less pest problems. It will also add variety of nectar for the Bees.

Sunflower area- The meadow will be a highly biodiverse area; beneficial for bees; for enjoyment and as part of the land-based businesses.

Trees/hedges- This acts as food for both ourselves and wildlife, visual screening and a windbreak. It will be a haven for wildlife and highly biodiverse. We will include bird boxes when the trees are mature enough. It will incorporate multi-layer food growing including apples, pears, nuts, berries and a herb under story.

Natural pond- Natural water purifying reed ponds will be dug using the existing stream. Research has found that invertebrate biodiversity and abundance is greater in ponds than in rivers. Frogs, toads and newts use small ponds to breed. It may also encourage other wildlife such as Herons and dragonflies.

Vehicle/cycle parking track and paths - Recycled tyre grids will be created to prevent growth of natural grasses. The tyres will act mainly as an easy access area away from the zones where vehicles, cycles can be stored or parked. The track and parking area have been located close the hedge to minimise visual impact.

Shed: this will include an area for tools, maintenance, general storage, seed storage and harvested crop storage. It is located in close proximity to all related ancillary buildings. The roof will be used to harvest rainwater also

Bee-care shed- This will mainly house Bee suites, tools for hive building and repair, seeds, house spare racks/shelves and bee harvesting equipment

Pathways- Natural materials such as bark or builders cobble (locally sourced or produced on site) will be used to ease access. Again will be confined to one area to minimise the impact on the zones.

Zone 4-

Trees and hedgerows- As the area and the entire border of the land has an abundance of deciduous trees e.g. Blackthorn, Oak, Ash, Elder, Sycamore. Other native trees will be planted e.g. native Willow, Hazel and Hawthorn, These particular species have been selected to reflect those found in the local area. Also alongside some fruit trees such as apple, crab apple and pear will be planted. The hedgerow has many purposes including: marking the boundary of the land; visual screening; a wind break; increased biodiversity; a new wildlife corridor (connecting existing hedgerows to woodlands) and a source of food. Also, in the microclimate created by the boundary, soft fruit and shade or semi-shade tolerant plants like Rhubarb and Comfrey, Wild Garlic and so on will grow. We will source regionally appropriate fruit trees from nurseries as local as possible.

Tree sapling growing area- Again another area for nature and as part of the land base business.

Bee Hives-There are currently 4 beehives on site with plans for a further 6. Beehives will be located at the top to take advantage of the existing well-established hedge and Oak tree to provide shelter from wind, sun and the cold travelling down the hill. It is near to the tree sapling area (pollination) , sunflower meadow, fruit trees and within reachable distance to the wildflower meadow. It has a broken shelter belt around it to reduce wind and sunlight but not to block it out.

4.3 Permaculture

Permaculture is a design system inspired by nature, which is based on ethics and design principles that we have used to guide us 'beyond sustainability'. By adopting the ethics and applying these principles in our daily life we will make the transition from being dependent consumers to becoming responsible producers. This journey will build skills and resilience at home and in our local community that will help us prepare for an uncertain future with less available energy. Permaculture will provide us with a system to aid the harmonious integration of humans and the environment. The permaculture philosophy (which we will practice) requires interrelations between elements so that they support each other and maximise beneficial relationships. Outputs from one part of the system should be used as an input for another creating a cycle with no or little waste. Land that utilises permaculture philosophies 'mimics' nature rather than working against it.

4.4 CO2 emissions

An article titled 'Can Permaculture Reverse climate change' on the Down to Earth permaculture website stated in their study

"The project estimates that the increase in regenerative agriculture from the current 108 million acres to 1 billion acres by 2050 could result in a total reduction of 23.2 gigatons of carbon dioxide, from both sequestration and reduced emissions. This is equivalent to 65 per cent of the world's carbon emission in 2015.

Regenerative agriculture is also the focus of a zero carbon emission by 2030 strategy in the UK, called [Zero Carbon Britain](#) (ZCB). Developed by the Centre for Alternative Technology (CAT), there are two approaches to ZCB. The first is to include food and land-use to both reduce emissions and sequester carbon by re-localising food growing/supply and transitioning to more regenerative forms of agriculture."

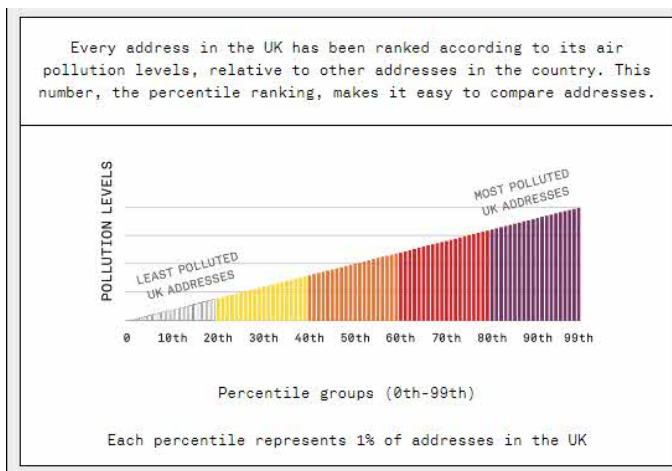
For further reading:-

<https://www.downtoearth.org.in/blog/agriculture/can-permaculture-reverse-climate-change--58729#:~:text=The%20project%20estimates%20that%20the,world's%20carbon%20emission%20in%202015.>

The Welsh government also has aims to lower emissions and encourages tree, food and flower planting as highlighted in its document titled 'Achieving our low carbon pathway to 2030'.

As permaculture-based practises are highly biodiverse, they absorb significantly more CO2 than monoculture (the land at Berllan-ddu is currently monoculture) therefore will benefit from more of a CO2 absorbing environment.

The amount of air pollution at the location that mainly derives from the A469 road exceeds three of the World Health Organisations limits. The report (01/12/24) results state that action is required:-



<https://addresspollution.org/results/d95b0cec-5711-47be-81c5-7da4b1b163d1>

Pollutant one: PM2.5

At this address, the annual average of the pollutant PM2.5 is 8.88mcg/m3. The World Health Organization limit is 5mcg/m3.

These particles, which are less than 2.5 micrometers in diameter, can cause [asthma, respiratory inflammation](#) and even [promote cancers](#).

Pollutant two: PM10

The reading for PM10 at this address is 15.39mcg/m3. The limit is 15mcg/m3.

PM10 can cause [wheezing, bronchitis and reduce lung development](#).

Pollutant three: NO2

The reading for NO2 at this address is 17.34mcg/m3. The limit is 10mcg/m3.

Exposure (for a year or more) to 30mcg leads to a 5.5% increased risk of [disease related mortality](#).

Woodland Trust states that "Trees and other vegetation planted in the right places can help improve urban air quality on a local scale by forming a barrier between wildlife, people and pollutants. They also remove some particulate pollution from the air by catching the tiny particles on their leaf surfaces. Research has found significantly lower asthma rates among children aged 4-5 in areas with more street trees. As well as reducing air pollution, trees take carbon dioxide from the air, helping in the fight to limit further climate change."

Berlla-ddu OPD will actively reduce emissions and capture pollutants by planting more trees and vegetation acting as a more robust 'Air Quality Buffer'. This in turn will benefit the health of the wildlife, occupants and community.

In one recent study, Barbara Maher and colleagues at the University of Lancaster tested the ability of nine tree species to capture PM in wind-tunnel experiments. 'Of nine tree species to capture PM in wind-tunnel experiments. [Silver birch, yew and elder trees were the most effective at capturing particles](#), and it was the hairs of their leaves that contributed to reduction rates of 79%, 71% and 70% respectively'. Also 'Conifers, like pines and cypresses are also good natural purifiers'

All screening trees and vegetation along the A469 West side and along Pandy Road have been carefully selected to combat and improve air pollution along with improving the current wildlife corridor. Even though there are trees along the border more trees are needed in particular evergreen type trees as all the current vegetation are deciduous. Levels of pollution are therefore higher 25% of the year.

4.5 Interrelations

Here are some examples (not an exhaustive list) of how systems/elements on the land interrelate (as described above): -

- 1) Fertiliser will be produced from food composting and green waste
- 2) The forest garden will also create wind breaks, visual screening, habitats, food, shade for growing, enjoyment, absorb CO₂, absorb water, improve soil quality and structure and fuel.
- 3) Hedges will create wind breaks, visual screening, habitats, food, boundaries, shade for growing, absorb CO₂ and pollutants, absorb water and wildlife corridors.
- 4) The chickens and ducks will provide, eggs, fertiliser, pest control, income and they also scarify the land.
- 5) The bees will provide a source of income from honey sales, wax for sealing mushroom logs and, of course, they are vital pollinators.
- 6) The areas of re-wilding will further increase the land's biodiversity, which will result in an increase of pollinators and a natural balance that will reduce pests that damage crops by introducing natural predators. This balance can also help prevent diseases.



5. Business and Improvement Plan

What TAN 6 requires

- That land use activities on the site should be able to provide directly for the minimum needs of its occupants in no more than five years in terms of income and food. The Management Plan should quantify how these minimum needs can be obtained directly from the site [4.15.2, 4.16.1, 4.17.1].
- That the need to live on site is justified and that the number of occupants has a clear relationship to (a) the site's ability to sustain them; (b) the smooth running of the venture; and (c) the return that is gained [4.16.1, 4.17.1].
- That the site should be the sole residence of the occupants [4.17.1].

5.1 Subsistence – food

The following table shows our current household spend per year, using the categories set out in the Ecological Footprint Calculator provided by the Welsh Government,

	Current yearly spend £	Percentage %
Meat and meat products	624	9,37
Poultry	728	10.93
Fish	312	4.68
Fruit and Veg	780	11.71
Vegetable and animal fats and oils	52	0.78
Dairy products	806	12.10
Starches and starch product	208	3.12
Bread , rusks and biscuits, pastry and cakes	312	4.68
Cocoa, chocolate and sugar confectionary	260	3.90
Other food products	100	1.50
Non alcoholic beverages	416	6.24
Alcoholic beverages	500	7.50
Eating out and take aways	1560	23.43
Total	6,658	100 ²⁶

The OPD Practice Guidance requires: -

- A minimum of 30% of basic food needs of all occupants are grown on the site

We intend to grow at least 50% + of our basic food needs on site within 5 years. This is a prudent prediction which we may exceed especially beyond year 5 as shown in the table below.

Our vegetable garden, greenhouse and orchard will provide us with herbs, fruit and vegetables, our chickens and ducks will provide us with eggs. And as we are transitioning to more of a plant based diet we will drastically reduce our meat, poultry and fish consumption with stored and dried lentils bought in bulk stored in the cabin.

The table below gives an approximate overview on how this has been estimated.

	Spring	Summer	Autumn	Winter
Vegetables	Asparagus Carrots Cauliflowers Kale Purple Sprouting Broccoli Savoy Cabbage Spinach Spring Greens Spring Onion Watercress Garlic Peas	Asparagus Carrots Cauliflowers Cucumbers Curly Kale Purple Sprouting Broccoli Savoy Cabbage Sorrel Spinach Spring Greens Spring Onion Watercress	Field Mushrooms Lettuce Potatoes Pumpkin Rocket Squashes Sweetcorn Watercress	Brussels Sprouts Cabbage Carrots Cauliflower Celeriac Curly Kale Leeks Parsnips Potatoes Red Cabbage Swede Turnips
Fruit	Gooseberries Rhubarb lemon	Blueberries Elderflower berries Loganberries Plums Raspberries Strawberries Cherries	Apples Blackberries Damsons Elderberries Pears Plums Sloes	Apples Pears
Herbs	Parsley Basil Chives Sage	Basil Oregano Thyme Mint Coriander Sage	Parsley Coriander	Dried and stored herbs

*Dairy - We will also eat eggs from our chickens and ducks

Food preservation/drying- To extend the longevity of food used at home, we will use refrigeration, canning, sugaring, salting, and even vacuum packing food preservation methods.

We are currently looking at storing most in a ground cold store with hopes to add by year 5.

Hay bale greenhouse - Will provide sheltered growing space for tender crops, and a space to raise seedlings before planting out.

Composting- Will be important to the success of the food growing activities. We will collect the various biomass inputs from the site and aerobically mix these to create a highly nutritional compost. Different compost mixes will be used for different purposes (for example an acidic woody based compost for the soft fruit bushes, and a neutral green compost for the vegetables).

5.2 The following table shows our expected food consumption in year 5: -

	yearly spend £ @year 5 from shops	Our takes from food produced on land	Value of food grown/ reared on plot for business	Details/ notes Total value of produce on site
Meat and meat products	0			Dietary change
Poultry meat	60			
Poultry products e.g. eggs	0 (52 boxes of chicken and 52 duck is own produce- 1 box 12 each per week)	52x3.00= 156 156= £312	£3.00 (box) x 100 = £300 £3.50 (box) x 100 = £300	152 boxes of chicken and 152 boxes of duck eggs £912
Fish + fish products	0			
Veg - general (potatoes, carrots, onions, swede, cabbage, runner beans)	0	52 x 10 £520	300 boxes of veg £3,000	£5 per week on other veg/fruit e.g. bananas or oranges £3,520
Pumpkins	0	4x2 £8	296 pumpkins £592	300 x£2 (each) £600
Fruit- Apples (8trees)	0	6kg £30.60	34kg £173.40	40kg £204
Pears (5 trees)	0	0	£100	20kg £100
Blackberries (10 plants)	0	0	£500	50kg @£10kg= £500
Strawberries (260 plants)	0	0	£560	80kg (£7kg) 52 boxes £560
Blueberries (80 bushes - approx 2kg per bush)	0	0	£1,600	£20per bush =£1,600
Vegetable and animal fats and oils	30	0	0	Coconut oil
Dairy products	416	0	0	lactose free milk and butter
Starches and starch product	312	0	0	Increase due to change of dietary

Bread , rusks and biscuits, pastry and cakes	312	0	0	0
Cocoa, chocolate and sugar confectionary	100	0	0	0
Honey	0	£54	£4.50 50 jars =£225	340g jars 2,700g honey per hive X6 16,200g £275
Other proteins e.g. lentils. Beans and pulses	400	0	0	Plant based dietary need instead of meat and fish
Non alcoholic beverages e.g. tea and coffee	336	0	0	0
Alcoholic bev	240	0	0	0
Eating out	480	0	0	0
Total	£2,374	£924	£7,350.40	£8,571

Blueberries are an excellent crop for upland areas - thriving in the locality and giving reliable crops year on year. I will grow 80 blueberry bushes. Once they have established themselves (5 years) they will give a yield of 2.5 - 3kg per bush. Allowing for 20% losses to birds I expect to harvest 2kg per bush for sale.

Currently blueberries sell wholesale for £10/kg. This will bring in a good income of £1600.

Strawberries - Home grown variety will be better for anyone's health as we can control how we grow them i.e. water, no pesticides and natural fertilizer. Commercially grown strawberries in general are on the top of the [EWG Dirty Dozen list](#) - they rank #1 on the 2022 list meaning that they contain high levels of pesticides. As they are perennial and self propagating a one time investment is all that is needed. Currently they wholesale at £7 per kg. This will bring a good income of at least £560.

Pumpkins are indeed one of the most nutritious superfoods one can grow. The edible seeds of pumpkins are full of healthy fats, protein, zinc, iron, magnesium and many more nutrients which make them very beneficial to your health in a variety of ways. Rather than just being picked at Halloween we would like to offer them to the community with a few home recipes and nutritional value cards to up the ante on eating them. We aim to grow 300 Pumpkin's initially with the hopes to grow more as time goes by. The chickens and wildlife could also benefit from their nutritional value. We will sell them at only a £1 each as we believe this will benefit the community more than overpricing.

Herbs-A variety of different will be grown for personal use and for others to benefit from.

- A further 35% of 'food needs' needs to be purchased or bartered using the income or surplus produce from our land based business
- This leaves 35% that can be bought with other income

The government states that an average family of 4 needs a 250 square meter plot .
 Our vegetable allotment - 400 sqm with hopes to extending for our pumpkin patch
 Our orchid -256 sq m
 Other e.g. wild berries, sloes and berries- outskirts of 5 acre plot land
 By the size of our plot we will exceed the 35% requirement

See also Cost of growing food on page 42



5.3 Our minimum income needs annually are: -

Household needs		Current £	Notes	Year 5 Projected £
Telecoms	Telephone/ internet	720		800
Clothing	Clothes/ foot ware	200	Mostly second hand or gifts	150
Food	Food spend (up to 65% total)	4,182		
Travel spend	Purchase and maintenance		See travel section for details	
	Vehicle Fuel			
	Bus or train			
Tax	Council Tax	1200		1300
	Minimum income requirement (£/per annum)			

5.4 Business Plans - Berllan-ddu

Initially we will concentrate on many micro businesses. With all our businesses we will work with the community and ensure that we do not infringe on other businesses' customer base. However in the current climate we will be a help to our local community. Our micro businesses are:-

- Seed bombs for Bees
- Honey
- Forest School education programme
- Fruit
- Veg Boxes
- Tree Sapling growing
- Bird box building courses using reusable materials



Welsh signs
and names
used

5.4.1 Seed Bombs for Bees

There is a real and urgent need to encourage the health and wellbeing of bees. Bees are essential when it comes to growing food - plants do not produce fruit or vegetables without bees and other insects first pollinating the flowers. Our bee population in the UK has been steadily declining over the last 50 years - however, today bees are facing an even greater threat to their population than ever before.

Legalisation of bee-harming pesticides

Emergency use of Thiamethoxam has been authorised in the UK this year in an attempt to control a virus which attacks sugar beet crops. This chemical is a neonicotinoid and is toxic to bees as well as other pollinators.

A decline in wildflower meadows in CCBC

Wildflower meadows, where bees have foraged for nectar for millennia, are increasingly disappearing from our countryside today as pressure to grow more and more food becomes greater.

Asian hornet predation

Asian hornets are up to 3cm in length and prey on many species of insects including bees. They have been spreading rapidly across France in recent times and it is feared they will soon become an established invasive species in the UK. From 2016 to date, in total there have been 19 confirmed sightings of Asian hornets in England. This figure includes a total of 10 nests, all of which were destroyed.

Fewer people keeping bees

The number of beekeepers in the UK has been estimated to be in the region of only approximately 50,000 and this is believed to have reduced by 75% over the past 100 years

Increasing disease prevalence

Bees are susceptible to a number of diseases which can quickly spread through colonies. Varroa mites are proving an increasing problem, as well as a number of viruses such as chronic bee paralysis virus.

In summary

There has never been a better time for us a Berllan-ddu to do our bit for bees. So as our plans show we aim to plant as many permaculture principles in effect with a variety of different native wildflowers, trees and sunflowers. We hope that locals will also benefit and buy some locally produced honey to support us as beekeepers.

Why we use native and home grown and why it's so important to us?

Fashions change with the wind, but evolution of species occurs over millennia. That's why we feel it's so important that we cater for pollinating insects within our plans and encourage higher levels of wildlife to the area.

As well as providing a valuable source of nectar and habitat, wildflowers have evolved together with pollinating insects over thousands of years to live side-by-side symbiotically. The shape, colour, scent, etc. of these flowers have become part of insects' genetic make-up - and they have both adapted to be of benefit to each other. We have specific and carefully designed designated to adhere to this.

Our Seed bombs at Berllan-ddu

With this in mind I have been developing close relationships with Caerphilly Council's Environmental Services to encourage Bees on to the land. We now have 4 Bee hives with the intent to have at least 4 more. For the past year we have been planting and nourishing native species of plants and trees. From this I have developed the concept of a business which will specialize in seeds for bees. I will collect and package seeds from the bee friendly plants, and sell them. Over the next years my main goal is to plant , and cultivated many more species of trees, herbs, flowers and vegetables that are beneficial for bees.

Some of the Flowers aimed to be at site



Musk Mallow



Kidney Vetch



Knapweed



Wild Carrot



Hedge Bedstraw



Field Scabious



Oxeye Daisy



Ribwort



Salad Burnet

Why our 'Wild Species' and Organic Plants are Ideal for Bees...

Wild (or horticultural term: 'species') plants are un-altered by man. All flowering plants have evolved over millions of years with their pollinators - in mutual-dependency on each other (pollen and nectar in return for pollination which produces fruit and seed).

Wild plants have the ability through a healthy gene-pool, of evolving to adapt to changing environmental conditions, it being the mechanism by which all species on earth have so far survived.

Organic methods of growing ensures there are no toxic residues in pollinators' food source. Loss of original wild species, (from which we have bred and flooded the market with artificial hybrid-clones which do not produce viable seed therefore no vital genetic material needed by their wild origin) ultimately means loss of their pollinators.

Pollinators and wild flowering plants are totally interdependent. (Bees are the primary pollinators, but also butterflies, moths, midges, dragonflies and some wasps). Continued extinction of wild plants (by destroying their habitats and planting only hybrid-clones in our gardens), will continue the extinction of pollinators.

The UNEP have warned: (in their Global Bee Colony Disorders and other Threats to Insect Pollinators report)

"An estimated 20,000 flowering plant species, upon which many bee species depend for food, could be lost over the coming decades unless conservation efforts are stepped up." For humans, sustainability is the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Environmental sustainability demands that ecosystems are not damaged beyond their capacity to maintain their own biological processes, functions, biodiversity and natural productivity.

Sustainable beekeeping must first consider the place of honey bees within an ecosystem and their impact on its ecological services. The relationship between bees and people has become central to this understanding. People have the potential to disturb irretrievably the balance between bees and their environment, as the advent of exotic varroa mites in many countries of the world has demonstrated.

At the heart of sustainable beekeeping is the welfare of honey bees: not just at the level of the individual colony or apiary, but at the level of the whole bee population of the region. Beekeepers have often focused effort on their colony and apiary, ignoring their relationship with the wider bee populations of the locality or region. Meanwhile our social, economic and environmental activities and policies may be damaging the fundamental relationship between bees and the ecosystems on which they depend.

The aim of sustainable beekeeping should be the protection and maintenance of viable populations of indigenous bees.

To do this we must first protect and maintain the bees' habitat, not just locally, but in the wider regions of Wales.



Everyone, not just beekeepers, can participate in the broader activities of environmental protection. Principles of wildlife-friendly farming and gardening, protecting wild areas and native flora, and other activities carried out at individual, community and policy levels can all work to ensure that bees have sufficient nesting sites, forage and protection to survive and thrive. Hence, our idea to sell local seeds to our local community.

By planting more, giving selling and growing more seeds wild patches we at Berllan-ddu support Caerphilly County Boroughs' different initiatives by promoting biodiversity and reduce carbon emissions:-

Caerphilly Grass Cutting Regime (22March 2023)

Cllr Chris Morgan, the Council's Cabinet Member with responsibility for Green Spaces, said "This approach has been piloted previously in the borough, with positive feedback received, including a public commendation from Welsh naturalist Iolo Williams.

"As well as promoting biodiversity in our approach to managing green spaces this will also help reduce carbon emissions and tackle climate change; a commitment made when the Council declared a climate emergency in 2019."

<https://www.caerphilly.gov.uk/news/news-bulletin/march-2023/caerphilly-grass-cutting-regime-promotes-biodivers?lang=en-GB>

Plant a Patch for Pollinators Pack 2023

The Caerphilly County Borough Council initiative aims to help residents connect with nature – as well as boost biodiversity and help pollinators such as bees, butterflies and more.

countryside@caerphilly.gov.uk

Caerphilly Council to review 'No Mow May' policy (June 28th 2023)

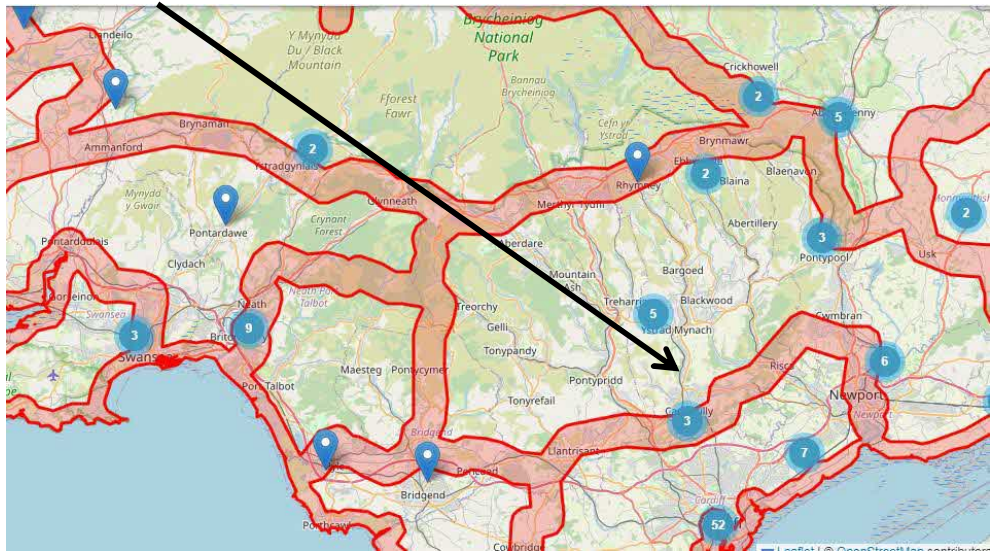
A policy of not cutting grass during May, with the aim of boosting biodiversity, is to be reviewed, the leader of Caerphilly County Borough Council has said.

Councillor Sean Morgan said the right balance needed to be struck and that lessons had been learned during the taking part of the UK-wide 'No Mow May' campaign.

Cllr Morgan said: "After reviewing complaints and compliments and through looking at social media posts, it is very clear that there is an appetite amongst residents to support biodiversity and the clear environmental benefits.

<https://caerphilly.observer/news/1023206/caerphilly-council-to-review-no-mow-may-policy-to-strike-right-balance/>

'Our bees, butterflies and hoverflies have suffered badly over the last fifty or so years, due to changes in land use as a result of modern farming methods, urban spread and new transport links. Over 97% (an area the size of Wales) of all flower-rich grasslands have been lost in England since the 1930s, (and this is mirrored in other parts of the UK) reducing pollen and nectar sources and leading to a serious decline in the wildlife depending on wildflower-rich habitat.' As the B-Line map shows there are no current B-Lines here, therefore more areas need to create a travel corridor. This is mainly due to modern farming methods, urban spread and transport links. It is hoped that the flowers, fruit and trees at Berllan-ddu will begin to add to another B-Line corridor that is vitally needed.



5.4.2 Honey for local residents

The benefits of eating honey have long been known, mainly because of its antimicrobial properties. Now, more research has shown that taking local honey helps with seasonal allergies, digestion and sore throats. After reading many local requests on social media it had become evident to us that many people in the community of Llanbradach were looking for local honey. We hope that providing local honey to residents in the surrounding area will benefit health and well being of the community.



5.4.3 Education

Open days for sustainable living/OPD

We aim to run open days for future and potential OPD's in Wales. Offering tried and tested knowledge on sustainable living and permaculture principles.

We would like to team up with Nant y Cwm Farm, Rudry OPD and any other OPDs that may become established in the local area to enable us to provide a broader provision and to share knowledge and skills.

When:-5th year of our established development

How:- No more that 4 open days per year, car sharing and local bus routes will be encouraged for attendees, lunch will be provided using our fruit and vegetables.

Promoting the Welsh Language throughout will be of vital importance.



Forest Schools

The benefits of teaching outdoors became evident to me both during my teaching career and especially when I qualified to become a Level 3 Forest School practitioner/Leader. My aim is to Develop urban and rural community projects which encourage children's contact with and active involvement in the natural world. Afterwards then to promote and organise events suitable for families.

I would also like to encourage other local wildlife groups within the Caerphilly Borough, such as Wildlife Watch, Young Ornithologists Club, and Woodcraft Folk.

I aim to run events once a week and will encourage the use of local transport or bikes for attendees. With the main aim to minimise the amount of traffic coming and going.

Forest Schools

1 An Introduction to Forest School

What is Forest School?

Forest School is an inspirational, process led approach to teaching in an outdoor environment (usually woodland). It can be inclusive of, or separate to the requirements of the National Curriculum. Forest School must offer the participant opportunities to engage with their local natural environment over a period of time, ideally with the same leaders. Forest School Leaders need to complete training in order to fully understand and be able to implement the physical and mental processes that Forest School encapsulates, as well as to feel confident leading others in what for many is a new and different environment for learning.

Who is Forest School for?

Children, young people and adults of all ages and abilities benefit from the Forest School approach to teaching and learning.

What makes Forest School different?

The learner centered approach enables all round (holistic) development as well as fostering the notion that our everyday choices can affect how and what we learn.

Physical activity promotes mental and physical wellbeing which can form part of a life long process.

The repeated visits to a local natural environment over a range of seasons enables the participant to progressively build on skills acquisition over time, ideally with the same leader in the same setting, giving unique learning opportunities.

This new and sometimes challenging learning environment enables some learners to fully realise their potential for the first time.

Forest school offers people a means to engage in a positive way with their local outdoor environment. It is hoped that this contact engenders respect and a more knowledgeable approach to our environment, viewing it as something to be valued and managed sustainably.

What makes Forest School special?

It offers opportunities for development of human relationships with positive interaction between different people is key.

Forest School is process not product led, so it's not so much about what you learn as about how you learn it.

It has a low leader:learner ratios helps with the building of personal skills as well as in other Forest School related areas eg. Ensuring the safety of all.

Intra and inter-personal societal skills are developed that are often transferable to other areas of life and learning.

Forest School can provide opportunities for emotional review and generally it encourages emotional literacy (processing and sometimes learning how to vocalise the feelings that happen during sessions)

It provides opportunities to grow in confidence, self esteem and independence.

It fosters appreciation for and increased understanding of natural world.

Learning in a multi-sensory way enables the physical and mental skills learned to be remembered.

Where should Forest School be practiced?

A local natural environment that has the capacity to stimulate the learners that use it and that is robust enough to stand repeated visits in all seasons

What sort of activities take place at Forest School?

Forest School sessions can be planned to fit in with almost any desirable learning outcomes and so can be adapted for schools, youth groups, alternative curriculum, special needs etc. These activities may or may not require the use of tools or the use of camp fires but the leader should be confident to teach the use of a range of hand tools and at managing the fire for the required use eg. Cooking lunch, charcoal making etc.

Use of tools will be dependent upon a number of factors including the age and ability of the learners, the ratios of leaders to learners and how well the leaders know the children. Other equipment such as may be used in the classroom may obviously be taken outside to enhance the learning in any session eg. Bug pots, magnifying glasses, identification guides, art materials, writing materials etc.

More details about the Forest School ethos and the 6 Forest School principles can be found here: <https://www.forestschoollassociation.org/full-principles-and-criteria-for-good-practice/>

What I will offer at Bluebell Forest school

Through the medium of Welsh , a parent and toddler group with Children from the ages 2 to 5 will attend the sessions accompanied by their parents.

We will offer the children?

Sessions will be planned around the individual's and group's needs, and built upon each week. All Forest School Leaders are qualified through nationally recognised and accredited training, therefore ensuring Forest School is a high quality learning experience
L. Monico Level 3 FS Leadership + BA Hons in Primary Education and S. Monico Level 2 FS practitioner.

The earlier sessions will concentrate on safety; establishing boundaries and routines and allowing time for the children to become comfortable and confident in our setting. As the children develop in confidence and familiarity with the environment the sessions focus on developing and reinforcing skills, promoting nature connection and developing relationships within the group.

Where will the sessions take place

The sessions will take place on Berllan ddu land on the right hand side plot. The area is fenced the whole way around the perimeter.

Parents will access the site via the main through road via Pandy Road with a bespoke car parking area. Parents will be encouraged to car share or travel via local bus/train.

Educational base/ Cabin

Legislation of importance to Forest School includes the Health and Safety at Work Act 1974. This act makes it a statutory that an employer has a duty to ensure the Health, Safety and Welfare at work of their employees (in the case of us adults and children) and any equipment used by them, and that employees are responsible for the Health and Safety of themselves and others they may be affected by their acts. The risk assessments carried out for the forest school are written with the Health and Safety of all participants in mind; children, volunteers and members of staff. The Children's Act 1989, makes it important to consider adult ratios for all activities, equal opportunities and access, clear communication with parents and DSB checks for staff and regular volunteers. Routines and procedures in the forest school area are developed with reference to this act and safeguarding practices.

Therefore to adhere to this our aim is to turn the current agricultural twin base unit into our business and educational hub . Where we will harvest honey, educate, prepare and wash vegetables, tend to any gardening needs, store equipment and have office space for business purposes. For business purposes and the Heath and well being of all we aim to install Eco toilets and washing facilities e.g. sinks or basins. We will harvest rain water and use a grey water system for all water waste.

5.4.4 Wildlife boxes education

This is a hands-on short course for beginners in how to design and build their own wildlife house from recycled materials will be run by Steve, once a month. Visitors will get discounts if coming via care share, bike, bus or train. Community people will gain practical skills and experience of materials, tools, and construction used in upcycling. Wildlife will benefit from residents in the near area providing them somewhere to nest.



Steve is a master carpenter, has taught and has links with Ystrad Mynach College and has experience in using recycled materials to make bespoke items.

Courses will be £115 per session from 10am until 4pm once a month. Students will be provided with a list of tools to bring as our aim is for them to continue to build more items at home. Screws and sanding blocks will be provided along with refreshments e.g. fruit juices and water (made on site).

Boxes that can be built include:

- General bird Boxes
- Owl box
- Sparrow Box
- Swallow box
- Bat box
- Minibeast/bug hotels
- Wildflower Planters



Welsh signs and names used for tools and materials

5.4.5 Welsh Organic food boxes

As we will be growing a lot of fruit and vegetables we would like to do our part to help our local community and offer discounted food boxes.

Using our own compost and permaculture principles we aim to keep our outgoing costs as low as possible. We will sell our produce to the local shops in the surrounding areas i.e. Bedwas, Llanbradach and Ystrad Mynach.



Welsh signs
and names
used

Peak production is likely to be six months of the year (we will use greenhouses to extend the season as long as possible).

As we are steadily growing our produce we aim to sell at least 4 boxes a week initially, with the aim to increase as we plant and develop more .

Eggs- These will be included in our sales and sold in boxes of 12. we aim to produce 152 boxes a year for hens and ducks. We will sell 100 a year , £300 for hen eggs and £3.50 for duck eggs.

	Year 1	Year 2	Year 3	Year 4	Year 5
Per week	3	4	4	5	6
Boxes per year	100	210	210	250	300
Income per year £10 each	£1,000	£2,100	£2,100	£2,500	3,000

Community Questionnaire

In order to find out what produce would be most successful or needed, both my husband and I did an online poll and went door to door to complete a community questionnaire.

Response

We had an overwhelming response.

Potatoes, onions, swede, carrots, runner beans and garlic were most popular.

Fresh eggs were also a welcome addition, with seasonal options also welcomed. An experienced gardener added that a pumpkin patch was also an idea once the sunflowers had died off. Berries, herbs, apples and pears could also be added from existing hedgerows.

5.4.5 Tree sapling growing

Continuing on our ethical journey we will grow and sell a variety of tree saplings. We will sell to local people, farmers and gardener's. Every tree we plant, grow or sell will help in the fight against global warming.

This works in partnership with the Welsh governments 2023 target to plant 86 million trees.

We will Choose saplings that grow well in the area, help the wildlife and that are in demand with local growers. The main trees we will sell will be the native trees that are surrounding the area and where we can collect certain offshoots and seeds i.e.

Blackthorn, Silver Birch Oak, Hazel, Field Maple, Wild Cherry and Rowan. We will introduce Goat Willow We have an extremely large and ancient Sycamore tree that drops thousands of seeds each year.

In order to increase productivity and yield, we believe it is a good idea to consider diversifying into agroforestry. Whereby growing trees is integrated alongside and between other types of crop that we will call forest gardening. We will use a green house or cob house to protect and aid growing if needed as selling pot grown as well as bare-root saplings will give us higher profits. We will use our own compost and harvested rain water for growth.

As shown on the areal plans we will also use the saplings to plant and grow at Berllan-ddu also. We hope that the trees will aid the biodiversity and will help animals to feed and live and again to fight against global warming.

We will also introduce an orchard growing fruit and nut trees such as Chestnut, apple, crab apple, pear and cherry. After all the English translation of our name is 'Black Orchid' with 'Grey Orchid House' nearby.

The trees will also shield the dwelling from strong winds and help with the visual impact of the main dwelling and educational hub.

The fumes and extra emissions will also be neutralised from the A469 and Pandy Road offering better cleaner air for the wildlife and community.

Much care and attention will be given to ensure that seed collecting will not be over collected. A lot of seeds will be left for wildlife and natural growth also.



Welsh signs and names used



We will provide individual sales and also tree packs with an aim to help wildlife as much as possible.

Bee friendly mix

Pack	4	15	25
Price	£15.00	£35.00	£45.00
Trees Pack 1	1 x Goat Willow, 1 x Hazel, 1 x Crab apple and 1 x Rowan	4 x Goat Willow, 3 x Hazel, 4 x Crab apple and 4 x Rowan	8 x Goat Willow, 6 x Hazel, 8 x Crab apple and 8 x Rowan

Forest Garden Mix

Pack	4	15	25
Price	£15.00	£30.00	£45.00
Trees Pack 2	1 x Rowan, 1 x Silver birch, 1 x Field maple and 1 x Wild cherry	4 x Rowan, 3 x Silver birch, 4 x Field maple and 4 x Wild cherry	8 x Rowan, 6 x Silver birch, 8 x Field maple and 8 x Wild cherry

Silver birch is a striking tree which provides food and habitat for over 300 species of insect.

Wild cherry's beautiful spring flowers provide bees with pollen and nectar, and their cherries are a great source of food for birds and mammals.

Rowan produces bright red berries that provide a valuable source of food for birds during autumn, including blackbirds, song thrushes, redwings and fieldfares.

Silver birch is a striking tree which provides food and habitat for over 300 species of insect.

Field maple trees produce 5-lobed leaves that turn a rich golden yellow colour in autumn.

Wild cherry's beautiful spring flowers provide bees with pollen and nectar⁴² and their cherries are a great source of food for birds and mammals.

5.5 Description of overheads for all food

(Mainly indirect costs as no direct costs e.g. labour or electric)

Category	Cost	Quantity
Seeds	£100	1
Chicken supplements	£276	23 bags of corn
Egg boxes	£15	100
Sundries	£25	1
Mineral supplements	£45	1
Punnets	£100	600
Labels	£7	800
Boxes	£50	800
Total	£618	

5.6 Year 5 projection profit and loss estimates of all

	Sales	Costs and Overheads	Net Profit	Notes
Food Produce	£7,350.40	-£618	£6,732	Sales-Veg, fruit and Honey sales
Seed Bombs	£3,000 (Qty 1,000)	-£297	£2,703	Costs-Hessian bags and labels
Tree Saplings	£600	-£122	£478	Costs-Fibre pots S&L
Wildlife Boxes	£8,280	-£209.44	£8,070.56	Costs-Screws and pallet wood,
Forest School	£5,940	-£600	£5,340	Costs- Soap, marshmallows, shavings for compost toilet. Holidays -330 (x2 weeks)
Total	£25,170.40	-£1,846.44	£23,323.96	
Total minus car running costs			-£1,441.49	
Overall total			£21,882.47	

5.7 Estimated Hourly Labour Distribution

The table below is based on three people working on the land and demonstrates their need to live on the land.

Family member	Task	Hours	Detail	
Steve	Screening- Fencing	40	Installation	
		40	Maintenance	
	Screening- planting	120	Planting and care	
	Buildings	2,000	Construction and maintenance	
	Trees	200	Planting and care	
	Bat and Bird boxes (for land)	10	Building and maintenance	
Louise	Planning , paperwork and coordination	156	Assume 3 hrs a week	
	Honey gathering and jarring	10	Gathering, spinning , jarring and labelling	
	Forest school	200	6 months a year- March to August . 8hrs per week	
	Website	156	Assume 3 hrs a week	
	OPD courses	50		
I than	Buildings	1000		
	Chickens and ducks	530	Care, feed, water, clean coops. Gathering eggs and boxing	
	Fruit and berry orchid	10	August to September= picking and washing	
	Compost	312	Assume 6 hours a week	
	Deliveries	104	Assume 2 hrs a week	
	Shared responsibilities	Vegetable patch	400	Assume 1 hr a day . Possibly more during summer months
		Hedges	40	Planting, Maintenance and care
Wildflowers		120	Seeding, care and fellow	

	Orchard	100	
	Track maintenance	40	
	Watering	365	
	Materials	30	Sourcing and picking up Second hand materials for development
	Food preservation	365	
	Marketing	100	
	Reed bed system	48	
	Pond	160	Digging, planting and maintenance
Total		6, 706	

Buisness Improvement plan Criteria

Essential Criteria	How it's met	Proposed date criteria can be met
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 income requirement is defined in the table above. The business plans describe how we will meet this income requirement from our land-based enterprises	Year 2
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	We will supply local people with food Detailed in section Education and sharing practices- Once we are established we will share our expertise so that others can learn from our experience.	Year 5
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.	Details in section demonstrates how minimum needs are calculated. Further in the section demonstrates that three adults are required to meet needs.	Year 2
Contributory criteria	How it's met	
The land-based enterprise provides food and other products to local markets, reducing local footprints	Described in land base business especially veg boxes, egg produce, seed bombs and tree saplings	Year 5
Facilities for processing produce are made available to other local producers.	We will work closely with our farmer neighbours	Pre, during application and beyond
Training / courses / consultancy are offered as components of the land-based enterprise to share best practice of One Planet Development.	See section which describes courses that we will deliver. We will work closely with Nant y Cwm and have good links with other OPDs that we have forged through courses that we have attended and through being active members of the One Planet Council Facebook group.	Year 5

6. Land Management

What TAN 6 requires

- Preparation of a baseline assessment of biodiversity and landscape character with clear management proposals to enhance features of importance [4.20.1]

“Due to the position of the site between multiple SINCs it is considered of local ecological value, with potential to achieve county ecological value with appropriate management. “
Ecological Report Matt Levan

We will manage the land appropriately and will endeavour to add value. We have already begun to clear the Himalayan Balsam as suggested in the recommendations. Also:-

6.1 Overview

- New hedgerows will be planted
- Trees will be planted
- Re wilding
- Wildflowers and plants
- Ponds

All these improvements discussed on numerous occasions throughout this policy will result in the land becoming more similar to what it would have been before it was converted into a field for grazing.

An ecology survey report was carried out in September 2022 (Copy of which is included within this application).

Essential Criteria 1: ‘All existing semi-natural and other important habitats on the site are conserved and enhanced through appropriate traditional management’

The land has a border of deciduous woodland and brambles. All trees within an around the site will be preserved and protected due to their high biodiversity value.

The planting of additional trees more hedgerows to improve biodiversity and to create more effective wildlife corridors which would provide suitable habitat for a range of species including birds, bats, and dormice. We will encourage this by applying organic compost regularly. We will leave them uncut as much as possible. According to DEFRA: ‘It is estimated that every year a hedgerow is left uncut it will gain two species of breeding bird; whilst some insects, such as the brown hairstreak butterfly, only lay their eggs on new growth. If the new growth is cut off each autumn or winter the eggs will die; one reason why the brown hairstreak is now so rare.’

Hedgerows will be planted over many years using transplants grown from locally collected seed. We will use a similar mix of species to that in other hedgerows nearby, these are the species most likely to thrive.

In areas where the hedgerow is weak, we will plant native species from cuttings. The use of hedges will be used also to screen any buildings.

Plants

Plants chosen will be native to Wales and ideally from a nursery specialising in local provenance trees from southeast Wales.

Live stock

Stock can damage hedgerows by browsing and trampling. New re-growth after hedge-laying is particularly vulnerable therefore we will not be keeping or allowing any livestock once the hedgerows, plants and flowers have been planted.

Flailing

Where possible we will not flail. Not only will this improve the biodiversity, but it will also reduce the visual impact of the OPD. As we do have a lot of Blackthorn in our rows there is a possibility that brown hairstreak butterflies may use these, so we will avoid flailing altogether or cut every 3 or 4 years to ensure a supply of 3-year-old blackthorn for the butterfly. Advice will be taken from the Butterfly Conservation

Wildflowers

Wildflowers that will provide a visual benefit as well as a food source for the bees being kept on site and native insects.

Pond

The report requests :-

Point 1- 'Due to the sloping nature of the site the precise location of the ponds will need to be decided based on drainage and the need to avoid flooding of properties further downhill. To increase habitat diversity, it is recommended that at least two ponds are dug and that the depth within these is varied with a maximum of around 1m and wide shallow margins, which are favoured by many amphibians. Clay lining is preferred over artificial pond liners as it is more robust and avoids the risk of plastic pollution as a liner decays.' -We have consulted with local experts regarding this and all points will be actioned responsibly

Point 2- 'Ponds should be left at least 12 months to allow pond plants from the local area to colonise and only if they are unvegetated in the second spring after construction should planting with suitable plants native to Wales be considered'. - We will do so as requested

Re-wilding

Hedgerows will be used to allow for the regeneration of the woodland as suggested in the report.

We will manage our coming and going by making small pathways to walk the same footpath each time. So that we don't trample on any saplings or disturb any habitats.

Control of Himalayan balsam

We will follow guidelines as recommended on the WAG website

<https://www.gov.wales/himalayan-balsam-public-information-controlling-invasive-species>

Fruit tree Orchard

According to The Wildlife Trust 2022 , In the last 70 years there has been a huge dip in the number of orchards as we have moved away from small-scale fruit farming. A loss of these biodiverse hotspots meant a loss of suitable habitats for wildlife. As fruit trees age quickly, they create the perfect habitats for invertebrates and birds

Vegetable patch

The horticultural area will create a diverse range of healthy habitats and improve soil quality through mulching and the application of organic compost and fertiliser. The plants will help hold the soil together, which reduces erosion and helps conserve the soil. The decomposed plants add nutrients to the soil.

Compost

Will improve soil quality which by doing so will also increase adaptation and resilience of the natural environment to climate change.

Overflow Pond

We will create an overflow pond, a series of grey water reed bed ponds and a wildlife pond. These will all be created in areas which are currently monoculture with very poor biodiversity. They will significantly improve biodiversity and in no way will they destroy any existing habitats. We will introduce a range of native aquatic plants. All life requires water and most of the UK's wetlands have disappeared, so we, as a country, need more ponds. The pond's inhabitants and visitors such as frogs, toads, bats and dragonflies etc are highly beneficial in pest control.

Beehives

Bees are vital pollinators; we will start initially with two hives each consisting of approximately 10,000 bees each.

The highly biodiverse habitats that we will create will support an abundance of pollinating insects i.e. in the forest gardens, re-wilding areas, the wildflower meadows, in the diverse hedgerows and amongst the willow (which flower early providing an excellent source of nectar for bees). We will create log piles in the forest gardens which will act as a bug house. The wildlife pond will be useful for supporting the larvae of many species. The compost will support larvae of many species as they will feed off the rotting organic matter.

Bats

The tree lines within and around the site are used by bats as commuting routes to move between roosts and from roosts to feeding areas. A set of bat roosting boxes will be installed on the main dwelling and education/work cabin to encourage bats to roost on the site.

Birds

As the report by Mat Levan states there are many birds that have been recorded on site. All trees and hedgerows will be maintained and more native species will be planted to support this.

Owl boxes will also be installed. One specifically on the large Sycamore tree on the North side of the land.

Mammals

Bats, field mice, voles, shrews and hedgehogs eat the plants and invertebrates found in meadows.

Chickens

A mobile chicken run will be used in order to move it around the site to allowing for the regeneration and re-planting of fresh seedlings to be undertaken.

Ducks

It is a natural method of control; no chemicals which could be harmful to other invertebrates or the wider environment. Your ducks will provide eggs and meat having feasted on your garden pests, thus your slugs and snails become a valuable resource.

Re-Wilding

The site has potential to allow natural regeneration of woodland, sometimes referred to as rewilding. This will be achieved by leaving areas without cutting or grazing for an extended period of time - several decades for a mature woodland, centuries to match the diversity of the nearby ancient woodland. This approach will be balanced with access to the site by the owners, the existing biodiversity value of the grassland and the need to control the Himalayan balsam. For this reason, it is suggested that the hedges are used to divide off areas of the site that are to be left for natural regeneration.

6.2 Biodiversity conclusions

- All existing priority habitats will remain intact.
- There are no predicted negative impacts on any protected or priority species.
- There are no predicted negative impacts on the nearby SSSI /SAC sites.
- The additional wooded habitats will improve the foraging quality for a range of
- Priority and protected species, and increased plant diversity in these areas will also benefit invertebrate diversity.
- The site has been designed with the intention of increasing the overall biodiversity of this site, it is anticipated that biodiversity will increase following the land use changes proposed by this development.
- All invasive species will be removed

6.3 Time and land management

One of the fundamental aspects to success of the site will be in time and land management, the aim will be to keep the site productive without affecting Species diversity, I will do this by avoiding over exploitation, pollution and unnecessary habitat conversion, careful thought will go in to the introduction of any new plant species and how this may affect the integrity of the site.

Unquestionably the biggest investment in time and resources will be the establishment of each area. The layout has been designed so that the plot can be managed and maintained with minimum labour inputs.

6.3 Landscape and visual screening

The whole outline of the land is surrounded by a double layer of a variety of native trees and bush. We will maintain the existing heath and height of all trees.

In areas where there are any visibility either hedgerows or trees will be planted to add to the visual screen. Some evergreen trees and bush will also be planted in areas that are needed to have screens first e.g. evergreen, holly, spruce. Also some native Whips' will be planted along the West side where the A469 lies. This will add benefits for wildlife for nesting/gathering nectar/food ; both noise and air pollution will be reduced also.

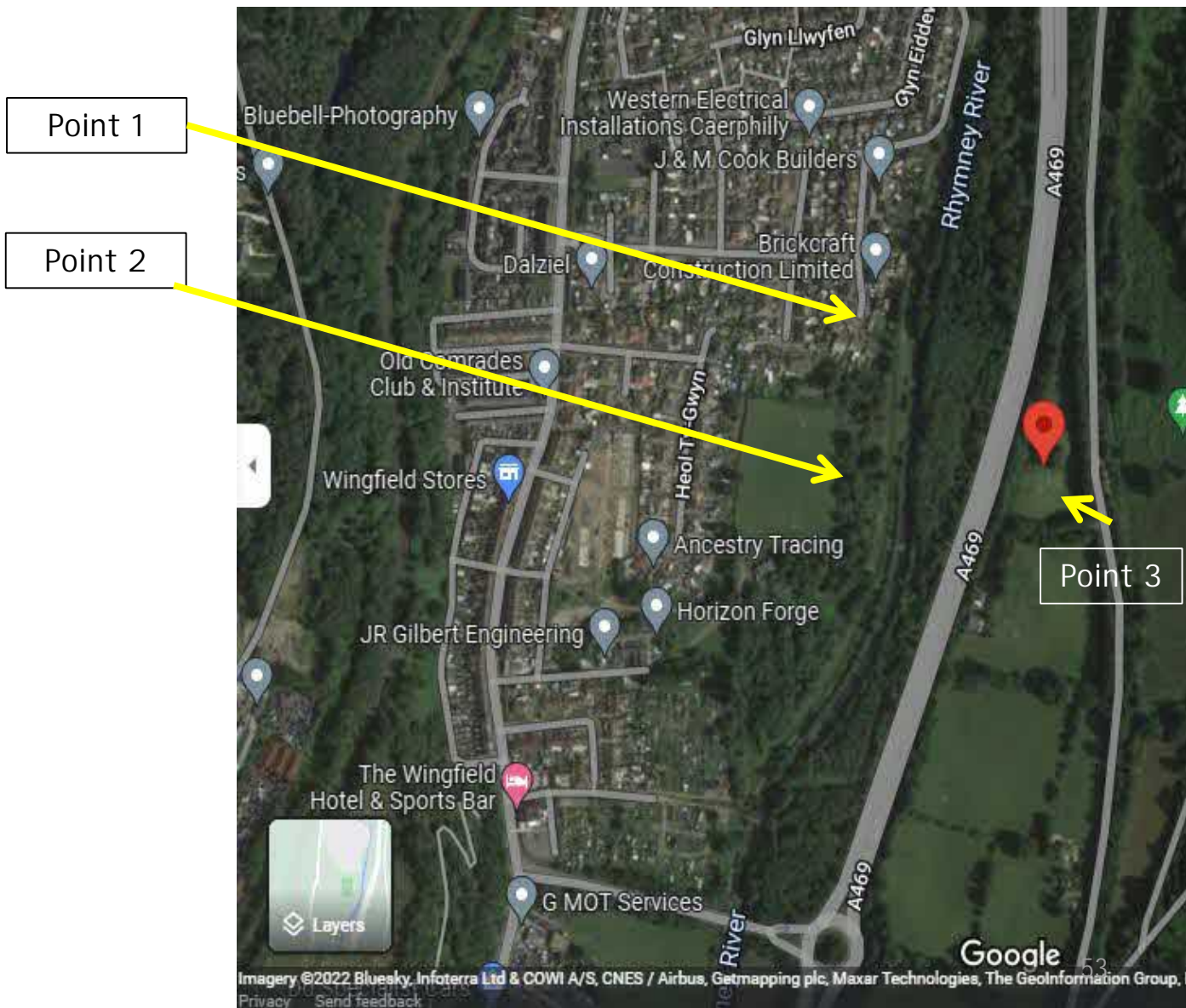
- The Orchid will provide a further , more dense screen.
- All new hedgerows will be unbroken to reduce visual impact and existing hedgerows will be improved by planting native species.

The screening to be implemented as discussed above, along with the use a local and natural materials for buildings will certainly help the overall development blend into the wider landscape.

The visual impact of the house is reduced by the use of local natural timber and within the simplicity and natural aspects of the design.



In terms of the public view of the site, photos show the proposed site development will not be visible in the Summer, however during the Winter it is visible from points 1, 2 and 3. Evergreen screening will therefore be planted along the West boundary, as shown on the site plan. Species will be selected carefully to ensure multiple functions are performed, for example *Elaeagnus Ebbingei* is not only an evergreen hedging plant, it also fixes nitrogen in the soil and provides flowers and fruit for bees and other wildlife. Native species such as holly, which also provide food for birds and small mammals, and gorse which is already prolific on site, will also be used. On the south-east side of the evergreen screening will be the main short rotation coppice area for biomass harvest, thereby providing further screening of the proposed dwelling site, and any horticultural activities taking place. There is no public view of the site from the south, ensuring that solar panels will remain unseen.



Land Management Criteria

Essential Criteria	How it's met	Proposed date criteria can be met
Essential Criteria 1: 'All existing semi-natural and other important habitats on the site are conserved and enhanced through appropriate traditional management'	All existing semi-natural and important habitats on the site (hedgerows, wetland) will be conserved and enhanced through appropriate management	Year 5
Essential Criteria 2: 'All cultural heritage features (e.g archaeology) on the site are conserved and enhanced through appropriate management.'	n/a - none on site	
Essential Criteria 3: '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, wild flower meadow management, and an orchard and woodland plantation that will screen and filter views from the wider landscape. During winter months evergreen trees will provide additional screening.	Year 5
Essential Criteria 4: '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	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. During winter months evergreen trees will provide additional screening.	Year 3
Contributory criteria	How it's met	
Contributory Criteria 1: '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.'	Existing and enhanced wildlife corridors will be a main character of site. Orchard, wild flower meadows and ponds making further and more widespread links.	Year 5
Contributory Criteria 2: 'Populations of once characteristic farmland birds of the local area are increased through appropriate habitat creation.'	Bird boxes, hedgerows, ponds, new trees , wild flower meadow	Year 5
Contributory Criteria 3: 'Soil organic matter is increased.'	The land management practices will lead to an increase in soil organic matter in orchard and vegetable growing areas.	Year 5
Contributory Criteria 4: 'Populations of pollinating insects are increased	Inevitable due to practices and additions	Year 5

Land Management Monitoring: Essential criteria

Target	Indicators	Method
That all existing semi-natural habitats are in favourable condition	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).	The annual monitoring report will include a description of the health of the key features as identified in the Ecology Report
That all identified cultural heritage features are maintained in good condition.	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.	N/A
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	Increase in the number / area / length of x landscape feature. Increase in the number / area / length of y landscape feature.	The annual monitoring report will report on the management of the hedgerows and this will quantify the areas of new hedgerow planted.

Monitoring: Contributory criteria

That (named) semi-natural habitat(s) are extended / created	Area of new habitat. Wildlife corridors Spread of characteristic species of that habitat.	The annual monitoring report will report on the creation and establishment of the orchard and the new hedgerow.
That there is an increase in the population of farmland birds on the site	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
That there is an increase in the population of honey bees	Number of active bee hives on site with wildflower meadows	Report will indicate on successful hives on site and success of meadows

7 Energy and Water



What TAN 6 requires

- Quantification of how the inhabitants' requirements for energy can be obtained directly from the site [4.17.1]
- There is the potential to have wider community carbon reduction benefits through the export of any surplus electricity to the grid [4.19.1]

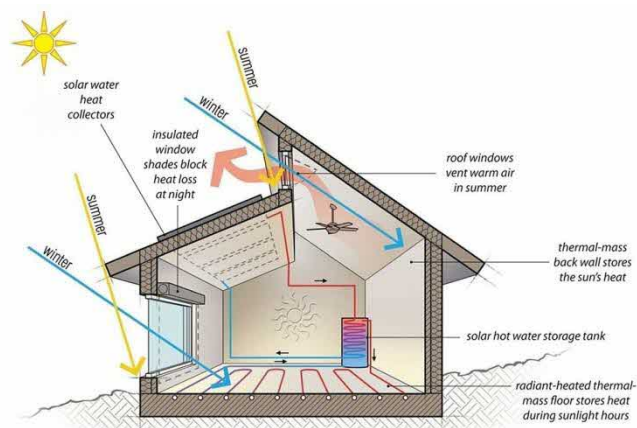
Energy 7.1

Essential Criteria 1: 'The energy needs of the site will be minimised through suitable design and use of technology, including that which enables re-use.'

7.1.1 Passive Solar Energy

Then passive solar energy systems are primarily concerned with the design of our main buildings. Passive solar design focuses on the placement of the home or building and on windows, ventilation, and insulation to cut down on the need for electricity by using the sun. The energy in the sunlight entering directly through the windows is absorbed, converted to heat, and stored in the thermal mass of the walls and floor.

The factors below will result in a dwelling rarely needing any supplementary heating other than heat generated from cooking etc :-



- The dwelling and Work space Cabin will be orientated to make maximum use of natural light, whilst being shaded from the heat of the Summer by the veranda.
- Floor to ceiling double glazed doors on the South/West are used to maximise heating and light during both summer and Winter months.
- The two timber-framed off-grid buildings are sitting on stilts and resting on wooden foundations.
- Insulation- In order to maximise the passive solar energy, both the main dwelling and the cabin will be highly insulated. Insulation will be carefully installed to ensure there are no gaps for cold air to flow through.

Cabin

- ❖ Walls- Outer layers of Larch wood, breathable membrane, ply board, 100 recycled plastic wool insulation, 40mm acoustic insulation, reclaimed pine planks
- ❖ Floor- Reclaimed Celotex 120mm boards, aluminium bubble insulation membrane (R value 1.46m² K/W), 22ml reclaimed mdf
- ❖ Roof- YBS Super quilt 19 layer insulation blankets , ply board, roofing felt and tin sheets, sedum roof trays
- Measures will be taken to reduce any draughts such as well fitted, insulated doors.
- It will have a low ceiling to reduce volume of space required to be heated.
- The rooms will be relatively small, with plenty of doors to ensure we can keep heat where we need it.
- The use of blinds, curtains or awnings to block the sunlight and prevent the building from overheating
- A simple ceiling fan will be used for the heat to be distributed around the building
- A porch on both buildings will block the sun during the summer months but allow sunlight to enter the building during winter
- A brick chimney between the kitchen sunroom and the living room acts also as additional thermal mass. Heat generated as a by-product of the stove will be used to heat other rooms and domestic water
- We will build a solar water heating panel to reduce/eliminate further heating

- Photovoltaics power all electricity needs.
- Cooking is done on a wood-burning range, which also heats the house and provides hot water in the winter.
- Summer hot water comes from roof mounted solar-thermal panels.
- Use of mains water is greatly reduced by rainwater harvesting from rooftops and is used for growing crops
- We will use campfire tripod and grill to cook on outdoors in the summer. This will reduce the amount of biofuel required and prevent excess heat indoors
- We will not use a gas cooker/oven, dish washer, microwave, TV or a tumble drier
- We will use the minimum number of very low voltage; super-efficient LEDs required to light rooms and will direct light at specific work areas rather than a high level of lighting for the entire room
- We will use a cold store to utilise the natural regulating temperature of the ground to keep produce cool
- We will follow the rule; reduce; repair; re-use; re-cycle

7.1.2 Solar Energy

The first year we will install a 10kw solar panel system to the education/work place cabin. The vast amount of our energy needs will be met this way. Our panels will be located on the roofs on adjustable frames to enable the maximum solar gains. We will use lithium batteries to store energy and are more efficient and last longer.

We will be purchasing our panels and equipment from a local business 'Cymru Solar'. Excess energy generated once the batteries are fully charged will be diverted to power an immersion heater which will work in conjunction with the hot water solar panel reducing energy required from the wood burner.

Small amounts of petrol will be required to power the non-domestic machinery used on site, e.g. chainsaw. Here, the use of such items will be minimised, for example by using alternatives where appropriate, e.g. the battery powered chainsaw, or bow saw.

We will utilise battery powered hand tools such as; chainsaw; drill; strimmer etc rather than petrol and we will charge these on days of extended sunlight. These tools will be required to be used more frequently in summer when energy required to charge them will be abundant

7. 1. 3 Hydro Power

During the times when less energy from solar is produces we will use hydro power. Mainly for the dwelling as we predict that will need the most energy and is the closest to the stream. The main dwelling sits by the side of a continuously flowing stream. We will use the ECOHYDRO system.

Please see details Appendix 4.

7.2 Water

Essential Criteria 1: 'The water needs of the site will be minimised through suitable design and use of technology, including that which enables re-use.'

Statista 2023 states that the average household water usage per person per day in England and Wales in 2022 is 146 litres. Dŵr Cymru customers had the highest daily water usage in England and Wales in 2022, at 169 liters per person.

Household water consumption varies greatly from appliance to appliance, with baths and washing machines consuming by far the most. A full bath in the United Kingdom uses an average of 80 liters of water, while showers are far less demanding. An electric shower uses just five liters per minute, with power showers slightly less efficient at 13 liters per minute.

We will use significantly less than this and are aiming to achieve a 50% reduction (85ltrs/day).

We will put in place the following measures to reduce our water usage:-

- All water will be harvested from rainwater and stored in water butts for both personal use and watering plants, and it will be carefully managed and stored in potable containers for personal use and in large water containers
- We will use electric showers and very rarely take a bath
- We will use compost toilets in the main dwelling
- Rain water will be used to flush toilets in the education/work cabin
- Our grey water (from washing up and showering etc) will be assimilated on-site through a reed bed system and the output water will be used on the land. Soap and shampoo etc. will be eco-friendly which will prevent harmful pollutants entering the system.
- We will not use a dishwasher as these use more water than efficient washing by hand.
- We will only use washing machine when fully loaded and use ecological zeolite washing balls and we will purchase the most water efficient model that we can afford.

Essential Criteria 2: 'Rainwater harvesting from buildings and structures must be maximised.'

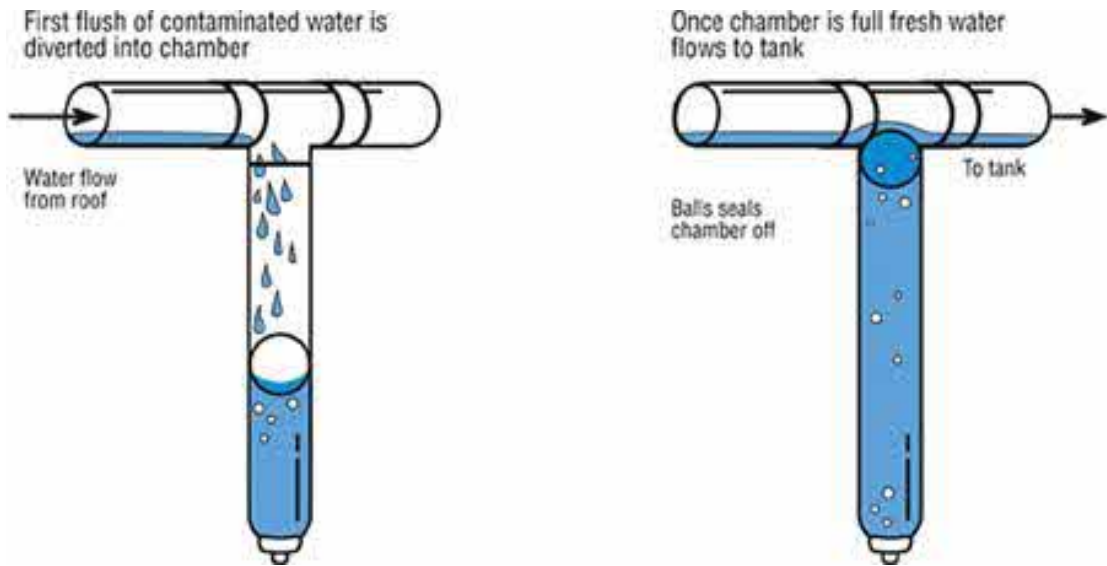
Water will be harvested from all buildings on site especially the main dwelling/education/work place cabin. Sloped roofs will be put on all to allow for collection. Second hand IBC tanks to store all water. This system would allow us to add more IBCs if we find that a greater volume of water storage is required. These will be clad with local/recycled wood to prevent algae growth, overheating and to improve the aesthetics. Any overflow will be directed to water trees, flowers, vegetables and the fruit orchid trees.

We will use a 'first-flush separator' which will send the water from the beginning of the rainfall to a water butt for irrigation use.

The first flush filters simply work by diverting a set amount of the initial rainfall to a drain and not to the water butt or storage tank. Once the initial rain has passed it and is running clear of contaminants it is diverted to conventional storage



Rainwater First Flush comparison



Essential Criteria 3: 'All of the water needs of all activities should be met from water available on site, unless there is a more environmentally sustainable alternative. Abstraction from water bodies (including groundwater sources) must be at levels that do not cause environmental harm. Harm would result from the lowering of surface and ground water levels.'

As previously stated all water will be harvested from rainwater as it's the most ecological and easiest method to reduce water consumption and efficiency.

The following tables will show how this will be done and how much can be calculated.

The annual yield from the roof can be calculated as follows:

1. Area of roof in m²
2. The runoff coefficient which allows for the proportion of rainfall which evaporates, leaks or overflows before it reaches the tank. The value for a pitched roof in the UK is **0.7**.
3. The average filter efficiency is between **0.8** to **0.9**. We will use 0.8 to err on the side of caution.
4. The average rainfall in the area is **1071mm/year** according to ClimateData.org

The formula is:

Roof area in m² x run off coefficient x filter efficiency x rainfall in mm = annual amount of harvestable water in litres.

Size of cabin roof	160sqm	Calculation 160 x 0.7x0.8x1071=
Annual rainfall	1071 mm	
Total amount of harvestable water	95,962 litres	

Size of tool sheds roof x2	25sqm	Calculation 25X0.7x0.8x1071=
Annual rainfall	1071 mm	
Total amount of harvestable water	14,994 litres x2	

Size of greenhouse roof	25sqm	Calculation 25X0.7x0.8x1071=
Annual rainfall	1071 mm	
Total amount of harvestable water	14,994 litres	

Total amount of water harvested = 308,277 ltrs/year

The daily use per person will calculate as

$85 \times 3 = 255$ ltrs per day

$255 \times 365 = 93,075$ ltrs a year

This shows there will be more than sufficient rainwater for our domestic needs. All other water will be used to water vegetables, fruit, flowers and trees. This is calculated of course without the rain that also falls on the land. We will also allocate some storage tanks for the drier months to cover our needs which is 15,300ltrs. Therefore two 1,000ltr IBC tanks will be sufficient. Storage tanks will be insulated, constructed from an opaque material and located behind the house, shielding it from warmth and sunlight and therefore minimising the growth of algae and other organisms.

Contributory Criteria 1: 'Any water pumping should be renewably powered.'
No water pumps will be needed as the land slopes will aid our collection. If any were needed in the future these would be powered using solar energy.

Contributory Criteria 2: 'Any ponds / lakes created should maximise habitat creation and should not destroy important existing habitats.'

We will create overflow ponds, a series of grey water reed bed ponds and a wildlife pond. These will all be created in areas which are currently monoculture with very poor biodiversity. They will significantly improve biodiversity and in no way will they destroy or harm any existing habitats. We will introduce a range of native aquatic plants. All life requires water and most of the UK's wetlands have disappeared, so we, as a country, need more ponds.

Energy and Water Criteria

Essential Criteria	How it's met	Proposed date criteria can be met
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 through designing highly insulated living spaces that benefits from passive solar gain. Low energy appliances and light fittings will contribute to minimising our energy needs.	By year 2
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)	Detailed below Energy, electricity from Solar PV and hydro Some use of petrol some time for tools/strimmer	By year 2
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.	By year 2
Rainwater harvesting from buildings and structures must be maximised.	Detailed in this section=All roofs will harvest rainwater with water used productively on site	By year 2
All of the water needs of all activities should be met from water available on site, unless there is a more environmentally sustainable alternative. Abstraction from water bodies (including groundwater sources) must be at levels that do not cause environmental harm. Harm would result from the lowering of surface and ground water levels	Detailed and explained in section	By year 2
Contributory criteria	How it's met	
The embodied energy of renewable energy equipment should not outweigh its benefits from energy generation	Under typical UK conditions, 1m2 of PV panel will produce around 100kWh electricity per year, so it will take around 2.5 years to "pay back" the energy cost of the panel. PV panels have an expected life of at least 25-30 years 46, so under UK conditions a PV panel will, over its lifespan, produce many times more energy than was required to manufacture the panel.	Year 2
Human and animal labour should replace the use of non-renewable energy whenever possible and practical	Predominantly human labour on site with an occasional tool use	Year 5 continuous

Any ponds / lakes created should maximise habitat creation and should not destroy important existing habitats	Described in Biodiversity sections throughout policy	Year 5
Any water pumping should be renewably powered	Water systems are designed to be gravity fed- see details in section	Year 2

Monitoring: Essential criteria

Target	Indicators	Method
That all of the energy needs shall be met from sources of renewable energy on site.	<p>Annual reporting on use of renewable energies generated on site (as percentage of energy needs).</p> <p>Annual reporting on use of all non-renewable fuels, recorded in terms of use (what for) and amount (quantity)</p> <p>Annual reporting on quantity of electricity exported to the grid and imported from the grid.</p> <p>(Note: all purchased energy will form part of the EFA making it necessary for energy use to be minimised)</p>	<p>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.</p>
That all water needs are met from water available on site (unless there is a more sustainable alternative).	<p>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).</p> <p>Annual reporting on ground and surface water levels (reported on monthly basis).</p>	<p>The annual monitoring report will contain a description of our water usage and our rainwater harvesting patterns which details sources, use and quantities.</p>

8 Waste

What TAN 6 requires

- Quantification of how the inhabitants' requirements for waste assimilation can be obtained directly from the site [4.17.1]

Our other main priority is waste minimisation. Permaculture principles state that all waste is 'pollution' and therefore waste should be eliminated. The output of one element should be an input of another i.e. kitchen waste ceases to be waste when it is used as an input to produce compost. This is the approach we will use to assimilate waste at Berllan-ddu.

All waste handling and assimilation on site will comply with Environment Agency Guidelines.

The minimisation of waste will be greatly assisted if the majority of food needs are obtained directly from site. Waste is also minimised due to the overall design of the site and the activities taking place within it.

8.1 Kitchen Waste

Essential Criteria 1: 'All biodegradable waste produced on site is assimilated on site in environmentally sustainable ways.'

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.'

All kitchen waste from domestic and business purposes will be disposed in 2 ways,

1. Compost heap
2. Wormery

This will be used to provide valuable nutrients to plants and thus improve soil quality.

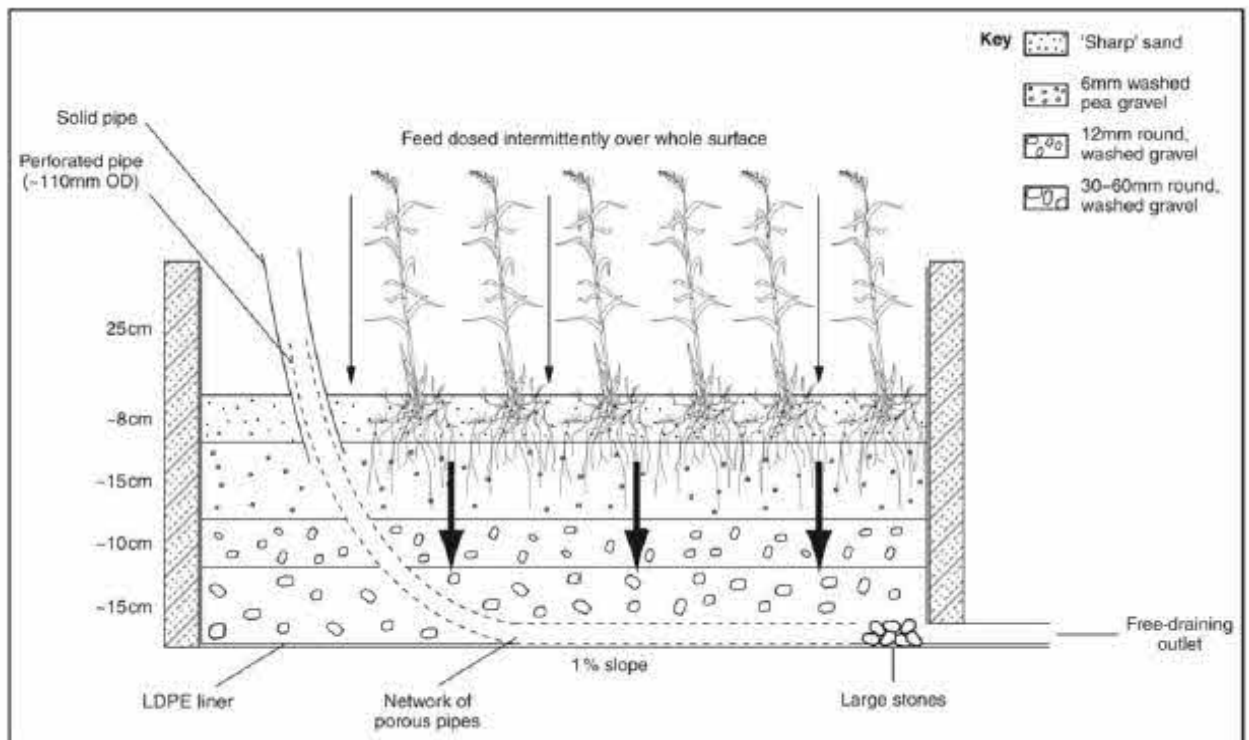
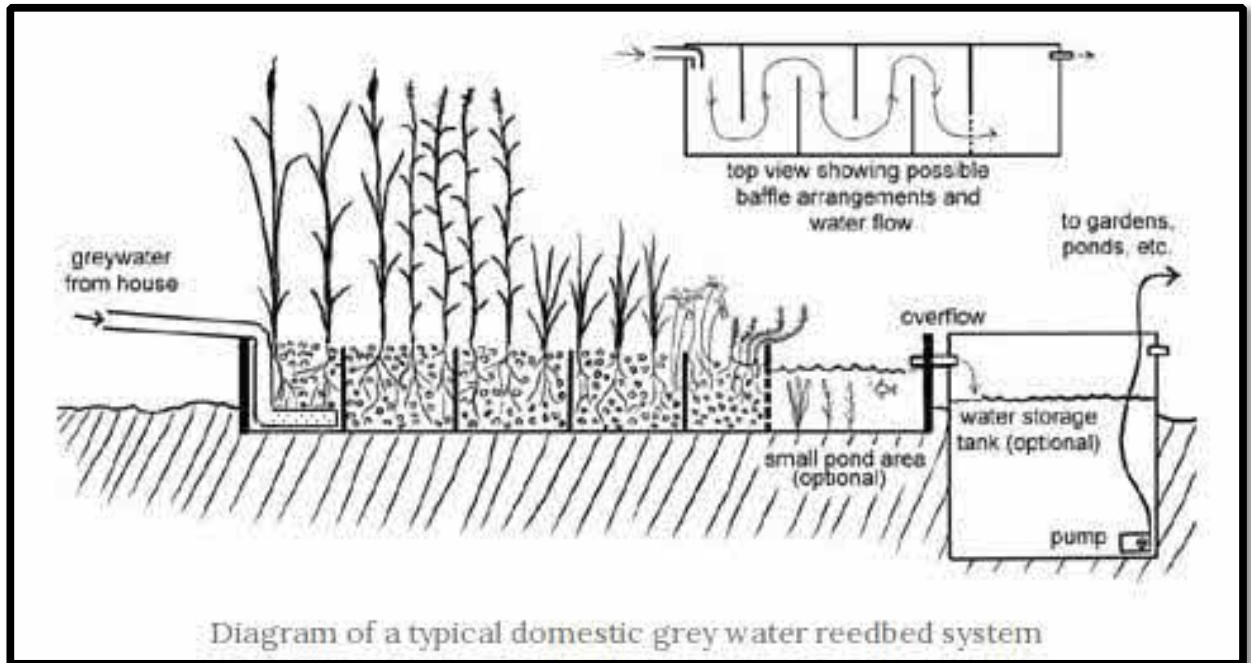
The natural hay/wood shaving bedding with chicken manure will also be added to the heap as brown layer

8.2 Grey Water

Essential Criteria 1: 'All biodegradable waste produced on site is assimilated on site in environmentally sustainable ways.')

Essential Criteria 3: 'All waste handling and assimilation on site must comply with Environment Agency guidelines.'

Grey water will be generated from the kitchen sink, bathroom sinks, shower and laundry. Only ecological toiletries and laundry products will be used to eliminate harmful content. A wormary will filter the food from the kitchen sink into a 'Grease trap'. This will be used to prevent any food particles and fat from entering the reed beds. It will be treated using a reed bed wetland system. Initially the water will flow via gravity down into a vertical flow reed bed such as shown below:



From here the water will run through a number of soakaway ditches through the willow plantation and wildflower meadow and onto a wildlife pond which will further purify the water and create a diverse habitat. Grey water will not be used on edible crops.

The reed beds will be located close to the dwelling so that the grey water treatment can start as close to its source as possible. It will be located on the south/west side of the dwelling in an unshaded location as sunlight improves reeds' growth and thus the overall effectiveness of the system. We will use plants such as the common reed (*Phragmites australis*), reed maces (*Typha latifolia*), the rush (*Juncus effusus*), the true bulrush (*Schoenoplectus lacustris*) as well as members of the sedge family (*Carex*) and the yellow flag (*Iris pseudacorus*).

The minimum reed bed size recommended by the Environment Agency for a 1-3 bedroom house, serving up to five people is 12m² (3.5x3.5m).

8.3 Human Waste

Essential Criteria 1: 'All biodegradable waste produced on site is assimilated on site in environmentally sustainable ways.

Essential Criteria 3: 'All waste handling and assimilation on site must comply with Environment Agency guidelines.'

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.'

Human faeces and urine

Composting toilets will be used which will separate faeces from urine. Urine will be used both on compost heaps and diluted for use directly on forest garden areas and comfrey beds. Faeces will be left to break down naturally in the composting chamber. This composting process is allowed to continue for a further two years, after which the human pathogens will have been killed. The resulting compost is safe and free from odour and will be used on the fruit trees and bushes.

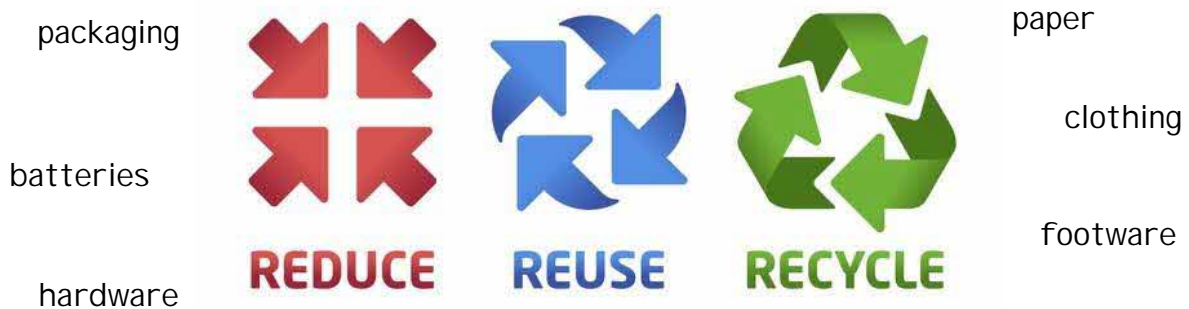
8.4 Livestock manure

This will be minimal as during the first 5 years, the only livestock will be poultry. Animals will be encouraged to roam in specific areas at specific times of the year with the use of temporary fencing.

This will not only help clear ground, but also keep pests down and ensure areas are manured where additional fertility is needed. Soiled bedding will be added to compost heaps.

8.5 Inorganic Matter

Essential Criteria 2: 'The only exception to this is occasional off-site disposal of small non- biodegradable amounts of waste which cannot be assimilated on site which arise from things used on site wearing out or breaking irreparably.'



The three R's has been our main virtue and will continue to be so. The following examples will explain further:-



We will grow a high percentage of our food on site which will reduce the amount of packaging we will obtain. As we will no longer need to make regular visits to the super marked we will greatly reduce our travel output.



We will re-use all materials such as cardboard, tin and glass on site. Even shoes such as wellies can be used for planting or making animal homes. Cardboard can be used as mulch on flower and vegetable beds. Paper an be used to light fire and glass for food or liquid storage.



Some items/materials which we can not re-use will be recycled following CCBC recycling rules. These will be taken to the Trehir recycling centre 0.5 miles away from the site.



Re thinking how we live and what we really consume is also as vital. For example if we need more clothes, we will think about where they have come from, could we buy second hand and the impact they may have. I f possible buying from local shops also.



Repairing any items that break rather than throwing them away will be a vital part of our practice at Berllan-ddu.

Waste Criteria

Essential Criteria	How it's met	Proposed date criteria can be met
All biodegradable waste produced on site is assimilated on site in environmentally sustainable ways	Described in this section. The annual monitoring report will contain a description of our on-site biodegradable waste assimilation processes.	Year 1 +
The only exception to this is occasional off-site disposal of small non- biodegradable amounts of waste which cannot be assimilated on site which arise from things used on site wearing out or breaking irreparably	Described in this section The annual monitoring report will also contain a breakdown of the types and quantities of waste we produce.	Year 1+
All waste handling and assimilation on site must comply with Environment Agency guidelines	Detailed below - following all guidelines	Pre, during application and year 1 +
Contributory criteria	How it's met	
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.	Detailed below	Pre, during and year 1+

Monitoring: Essential criteria		
Target	Indicators	Method
That all biodegradable waste produced on site will be assimilated on site in environmentally sustainable ways.		The annual monitoring report will contain a description of our on-site biodegradable waste assimilation processes.
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.	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.	The annual monitoring report will also contain a breakdown of the types and quantities of waste we produce

<p>That all waste handling and assimilation on site must comply with Environment Agency guidelines</p>	<p>Annual statement of compliance with Environment Agency guidelines</p>	<p>The annual monitoring report will include an annual statement of compliance with Environment Agency guidelines</p>
<p>Monitoring: Contributory criteria</p>		
<p>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.</p>	<p>Addressed in annual reporting of on-site waste assimilation</p>	<p>The annual monitoring report will contain a description of our on-site biodegradable waste assimilation processes.</p>

9. Zero Carbon Buildings

What TAN 6 requires

- OPDs should be exemplars of Welsh Government's zero carbon aspiration and achieve zero carbon status in terms of construction and use of the development [4.19.1].
- Planning applications should be accompanied by supporting information confirming that the development will be zero carbon in construction and use [4.19.2].
- Plans should be monitored as part of the annual monitoring report [4.19.2].

9.1 Design overview

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

Section 3.89 of the OPD Guidance requests that OPD applicants follow the Welsh Government's definition for 'zero carbon in use for buildings in Wales'. Unfortunately, they do not currently have a definition for this.

In line with point 3.82 of the practice guidance the zero carbon requirement does not apply to any buildings at Berllan-ddu.

The buildings do not require Building Regulations approval:

The cabin falls under the definition of a caravan, complying with size, construction and mobility test . Built in two halves which can be un-bolted, de-mounted from footings and transported off-site.

- ❖ The tool sheds are agricultural buildings
- ❖ The greenhouse is an agricultural building
- ❖ The Chicken Shed is an agricultural building.
- ❖ The decking /log store are lightweight and temporary structures that do not require building regulations.

The dwelling design and construction will follow the guidelines set out in TAN 12 (which has now superseded TAN 22) and the Welsh Government's L1A of the Building Regulations regarding conservation of fuel and power in a new dwelling.

The primary requirements of a One Planet Building are:

- to provide a functional space which, in addition to housing residents, can also be used as a working area, as a water collection system, as a growing area, as a drying space, and as a source of electricity;
- to be embedded into the landscape;
- to be made of local, natural materials;
- to be zero-carbon in construction and use.

All buildings at Berllan-ddu will comply with these requirements. Description and Specifications are as followed:-

9.2 Cabin (20m by 6.8m)

Education, office workspace, honey production, preparation area, agricultural rest.

One Education Centre with decking, in the form of a twin unit, again designed to be an hideaway example of natural building embodying the principles behind Low Impact Development (20m by 6.8m- currently used as a well-being/agricultural twin unit)

- ❖ Foundations- Local reclaimed builders rubble, treated wood frame on wooden stilts.
- ❖ Walls- Outer layers of Larch wood, breathable membrane, ply board, 100 recycled plastic wool insulation, 40mm acoustic insulation, reclaimed pine planks
- ❖ Floor- Reclaimed Celotex 120mm boards, aluminium bubble insulation membrane (R value 1.46m² K/W), 22ml reclaimed mdf
- ❖ Roof- YBS Super quilt 19 layer insulation blankets , ply board, roofing felt and tin sheets.

9.3 Chicken coop

- Metal frame, chicken wire fox proof walls, wooden layers house

The footings will be reclaimed hard core and external walls will be used to grow plants, thus increasing productivity and biodiversity and reducing visual impact by blending well into the natural environment.

9.4 Workshop, general tool storage and seed drying facilities (5m by 6m)

The sheds will have a footprints of 5 x 6m and the overall heights will be 2.8m. They will be constructed from a timber frame and timber clad with locally sourced or reclaimed timber. It will have a mono-pitch tin roof to minimise visual impact and will be used to harvest rainwater. When the wood comes to the end of its useful life as part of the shed it will be replaced and either composted or used as biomass

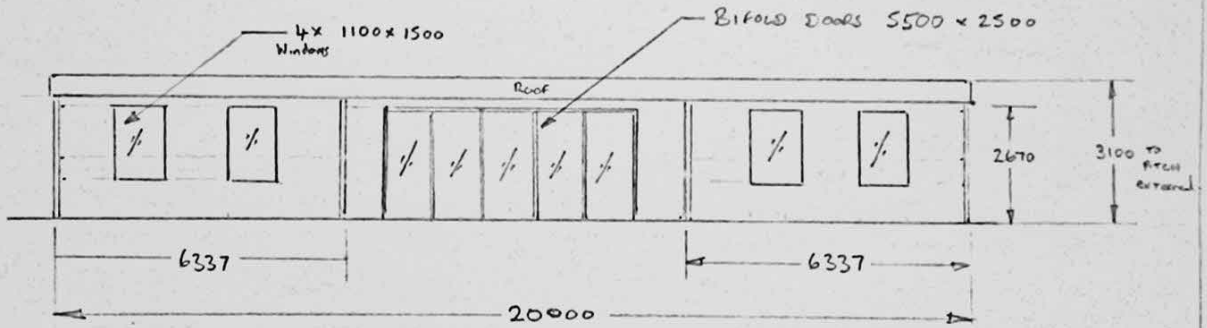
9.5 Eco hay bale greenhouse (5m by 5m)

Timber frame, walls and ceiling- polycarbonate sheets or 2litr plastic bottles fed through bamboo poles, hay bales from local farm and reclaimed wood workbenches



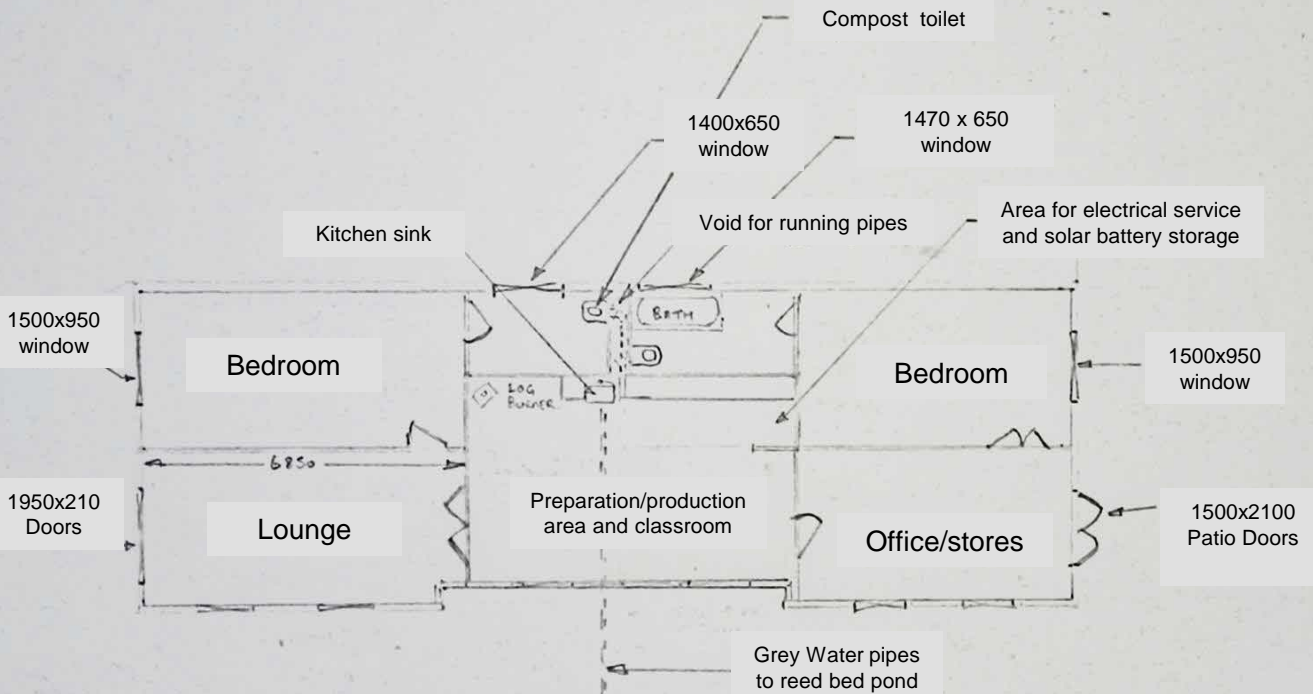
Cabin plans and Layout

The Cabin has been tucked into a sheltered and sunny position at the top right hand corner of the one field in the hollow of the valley as it is completely screened from both the prevailing wind and weather whist minimising any visual impact in the wider landscape. It also is allowing for the greatest solar gain with windows and patio doors at all sides with an aim for the greatest potential in performance in terms of fuel efficiency. It has been dug in for insulation, windbreak and fire protection from grass fires.



BERLLAN - DDU FRONT ELEVATION

SCALE 1:100

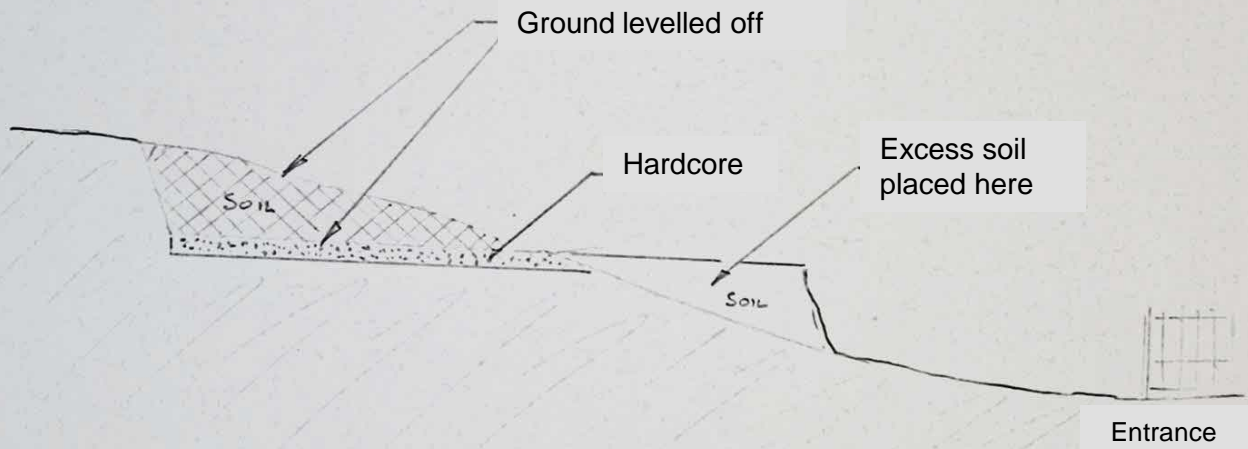


BERLLAN - DDU

PLAN VIEW

SCALE 1:10

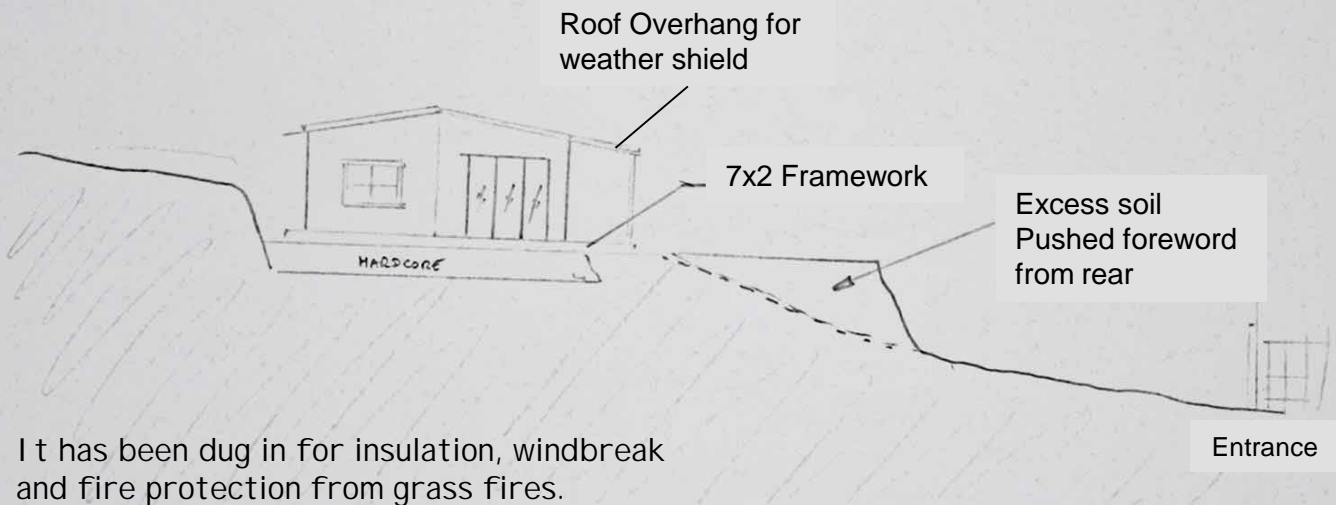
Ground base - Earth-sheltered design



BERLLAN - DDU

CROSS SECTION SHOWING BASE

NO SCALE.



BERLLAN - DDU

CROSS SECTION OF LAND AFTER LEVELLING.

NO SCALE.

Zero Carbon Building Assessment Criteria

Essential Criteria	How it's met	Proposed date criteria can be met
Domestic and ancillary buildings will be 'zero carbon' in construction and used as explained in this guidance and using the up to date Welsh definition of zero carbon.	In accordance with point 3.82 of the practice guidance, none of our buildings fall under the zero carbon policy requirements because they are not subject to Building Regulations control.	Year 1 +
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.	Year 1 +
All structures identified for removal in the Exit Strategy are capable of removal with low environmental impact	The cabins (caravans) can be easily removed from the site with no appreciable negative environmental impact as described in the Exit Strategy	Year 1 +
Contributory criteria	How it's met	
The construction of buildings should make as much use of recycled materials possible so long as this does not affect their ability to satisfy the essential criteria.	Throughout the section it describes how we will continue to adhere to the 3 R's and Reduce, reuse and recycle. It is not possible to determine exactly what recycled materials will be available at the time of build, however, they will be utilised as much as possible and a record of their use will be kept.	Year 1
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	N/A

Monitoring: Essential criteria

Target	Indicators	Method
That domestic and ancillary buildings are zero carbon in construction and use.	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	The cabins (caravans) have been designed to minimise their carbon footprint. The development will be zero carbon in use because it is essentially off grid. No structures will require Building Regulations approval.
That structures requiring Building Regulations approval obtain this approval.	All structures requiring Building Regulations approval are identified in the proposals. This approval is obtained either before or during construction.	No structures will require Building Regulations approval
That all structures identified for removal in the Exit Strategy are capable of removal with low environmental impact.	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.

Monitoring: Contributory criteria

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.	Detailed summary of use of recycled materials in construction of structures.	Details of the recycled elements to be used in the construction of the cabins will be included in the annual monitoring report.
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	Explanatory statement on the re-use of any existing buildings.	There are no existing buildings on the site.

10. Community Impact Assessment



- What TAN 6 requires**
- Identification of the potential impacts on the host community (both positive and negative) and the identification and implementation of any mitigation measures that may be necessary [4.16.1 & 4.21.1]

10.1 Our community

We have been an avid part of the local community and have travelled, worked and socialised since birth. We have family and friends in most areas in the Caerphilly borough. Our children have attended Welsh schools and our Welsh culture is sound. We are a local Welsh speaking family.

The location of our site is perfect for us to continue to be a positive attribute and have a positive impact on our local community and even more so with our OPD. We have built friendships with the local farms on Pandy Road and with the Local councillors to

As we have always done we will continue to attend and support local events and social gatherings. Both my husband and I often take part in litter picking and support community improvement campaigns/events to improve and look after the area on a regular basis. We shop at the local shops and attend annual/seasonal fairs of which we hope to contribute to with our honey, organically grown vegetable and seed packs in the near future.

Both Steve and I are highly educated and multi skilled and are keen to work with and support the local schools and youth groups especially through Forest school principles and Eco living. I will also continue to teach through the Welsh medium in a local Primary school on a part time basis.

10.2 Local consultation

From the very beginning we have been totally transparent with our plans and have spoken openly in town meetings and on social media. I have posted different blogs on the town of Llanbradach's Facebook page and answered any comments. I have done a presentation to the local Councillors and intend to do a town open afternoon if needed. We would like to hold open days for locals to attend our land, sample and buy our products, socialise, learn about OPDs and sustainable living and have fun.

Our project will have a high aim to improve the local area, have low ecological footprint and the site is in an isolated location so should have a very limited impact, and it's our intention to avoid over development in the countryside.

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;

10.3 Economic

As we have lived here for all our lives we have seen a definite depuration in the Economics of the area, especially after the Pandemic which unfortunately had a negative impact on moral, health and local businesses. We aim to continue help rejuvenate and bring back the community support. We have always been advocates of supporting small independent businesses in our area especially and will continue to do so. We will provide locals with the opportunity to purchase sustainable and ethical produce .

We will shop locally for produce we cannot produce ourselves . We will shop locally for building materials and tools etc. and use Facebook Market place also. Which in turn keeps many items from going to landfill.

For jobs that we simply need help with we will use local companies and possibly start a youth programme based around forest schools to help educate the future land keepers.

10.4 Environmental

Berllan-ddu OPD will provide benefits to the local and wider community from an environmental point of view by:

- Improving biodiversity
- Improving soil quality and structure
- Attracting wildlife
- Improving air quality
- Sequestering carbon
- By planting a diverse range of native trees, bushes and flowers etc and visually shielding the built and horticultural areas the aesthetic of the site will be transformed from a fairly barren monoculture of improved grassland into a beautiful, rich and diverse natural landscape
- The environmental benefits will extend far beyond the site's boundaries by increasing local populations of wildlife
- These environmental improvements will be generational as the biodiverse improvements will exist and manifest in perpetuity
- By providing the local community with sustainable food with a carbon negative footprint Our nearest neighbour is 'Berllanlwyd house' .There is already visual screening and we will grow more, they will be unable to hear us or see our site.
- The nearest village is across the dual carriageway away, again after extra screening they will not be able to hear us or see our site. Also we will ensure to match the look of the local farm houses in our design.
- We intend to inspire and educate others to live sustainable lifestyles

10.5 Negative impacts and mitigating measures

- To a certain aspect there will be some negative impact in terms that the site will through the development introduce new structures in to the countryside. The site will be well planned in relation to visual impact, location of structures will be carefully planned and where necessary trees will be planted to provide screening to reduce unnecessary visual impact.
- Social visits will be limited to friends and family which will be very small but are also very difficult to quantify, the majority of visits will be from local friends and are likely to tie in with work help or exchange.
- Transport impact associated with land based business will be limited to supply and sales. We would always opt to use bicycles where appropriate as we are keen cyclists who currently cycle to our place of work whatever the weather! We would also minimise journeys by organising our time so that we attend locations for multiple purposes.

10.6 Welsh Language

The Vision for Welsh language The year 2050: The Welsh language is thriving, the number of speakers has reached a million, and it is used in every aspect of life. Among those who do not speak Welsh there is goodwill and a sense of ownership towards the language and a recognition by all of its contribution to the culture, society, and economy of Wales. Our vision is to secure favourable circumstances throughout the country that support language acquisition and use of Welsh language skills. We want to see an increase in language transmission in the family, early introduction of Welsh to every child, an education system that provides Welsh language skills for all Cymraeg 2050 – A million Welsh speakers (Welsh Government, 2017)

As I am a Welsh teacher, Steve a Welsh learner and I than a fluent Welsh speaker we will be adhering, promoting and adding value to the WAG's five-year Welsh Language Strategy for 2022-27 at Berllan-ddu development by promoting the Welsh language in the Community. Promoting to:

- Speak Welsh as a family at home
- To encourage families to speak more Welsh when visiting
- Teach in the medium of Welsh
- For children and young people to see its value by using it outside of education.
- To create a community group and business that supports and promotes the use of the language.
- To increase opportunities for people to use the Welsh language in the area

The Well-being of Future Generations (Wales) Act 2015 This Act aims to improve the social, economic, environmental and cultural well-being of Wales. The Act will make the public bodies listed in the Act think more about the long term, work better with people and communities and each other, look to prevent problems and take a more joined-up approach. One of the seven Wellbeing goals listed in the Act is "A Wales of vibrant culture and thriving Welsh language".

Raising Attainment Raising Standards Strategy (RARS) (2021-2026) The Learning Department of Caerphilly County Borough Council launched its RARS Strategy in 2021. Linked to this is improving standards for Welsh education from birth to adulthood. One of its aims is to provide more opportunities for children and young people to use Welsh in an informal environment through working with Welsh language partners in Caerphilly Borough.



Community Impact Assessment Criteria

Essential Criteria	How it's met	Proposed date criteria can be met
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 social, economic and environmental project is provided above. It demonstrates that the project does not have an overall negative impact on the local community.	During Application Assessed yearly
Any negative impacts are mitigated	The negative impacts are mitigated by the measures described above heading details mitigation of visual impact as does is Land management section Distribution of Land Uses discusses visual screening), Zero Carbon Buildings (discusses blending buildings into the landscape)	During Application Assessed yearly
Contributory criteria	How it's met	
OPD children attend local schools and residents support local groups, clubs and events	N/A	
There are open days, permissive footpaths and other access, as well as the hosting of local events on-site.	Tours and educational OPD developments will be held annually for locals to attend our land, sample and buy our products, socialise, learn about OPDs, sustainable living and to have fun	Year 5
Residents shop locally and use other local businesses.	We will shop locally as we have always done so	Pre application and Year 1
Residents sell food and other produce locally	As motioned above- Veg box scheme and attend local fairs and events	Year 2

Monitoring: Essential criteria

Target	Indicators	Method
That community impacts are thoroughly assessed and there are measures in place to mitigate any negative impacts.	Annual monitoring of community impacts. 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.
That all positive community impacts are fostered and recorded.	All positive community impacts are fostered and recorded.	The annual monitoring report will record positive community impacts.

11. Transport Assessment and travel plan



What TAN 6 requires:

- Planning applications should be accompanied by an assessment of the traffic generated from the use of the site by its residents and visitors [4.22.1]
- The travel plan accompanying the planning application should clearly identify a preference for low or zero carbon modes of transport including walking, cycling and car sharing schemes [4.22.1].

11.1 Aim

We plan to minimise our travel through a combination of living a self-sufficient lifestyle, and keeping our work and social activities local. All our family are avid walkers and/or cyclists. We also use local train and buses when traveling light or needing to get to destinations that are further away.

Transport is fundamental to the social, economic, environmental and cultural well-being of Wales. That's why our vision is fully aligned with the seven goals of the Well-being of Future Generations (Wales) Act; helping to create a Wales that we all want to live in, now and in the future.

We have many options in the surrounding area. Our options are as follows:-

11.2 Transport for Wales

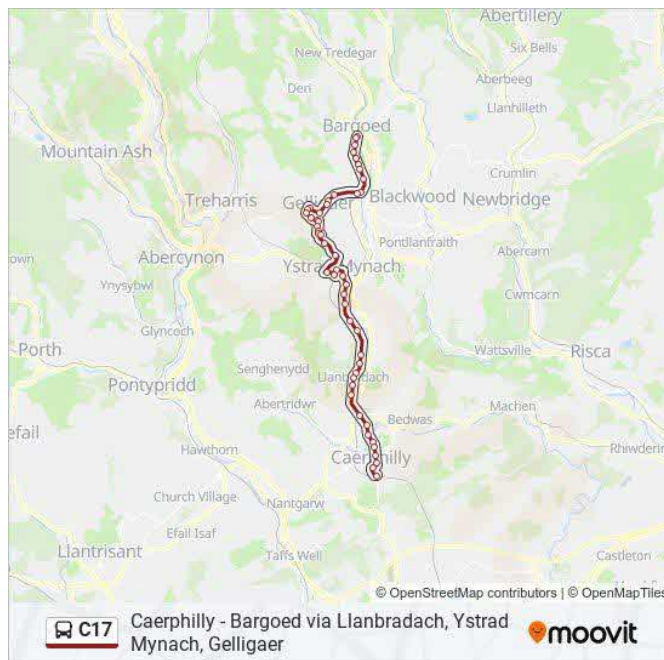
Transport for Wales (TfW) was set up by the Welsh Government to change the way Wales travels. Their transport system connects people to one another, binds communities together and enables businesses to grow and expand. It's one of the most powerful and dynamic tools for community cohesion, social justice and inclusive economic growth that they possess. We're here to make sustainable travel a natural choice and to help combat the climate emergency. We will adhere to and support this initiative.

We trust and believe in TFW's initiative and commit to changing our behaviour, travelling more sustainably and doing our bit for all our futures. The multimodal, integrated transport network they are building will enable us to do this.

Whether it's public transport, walking, wheeling or cycling, we want to make sustainable travel not only the right thing to do, but also an easier thing to do. Forming part of the South Wales Metro, an integrated bus, rail, wheeling-walking and cycling routes. Metro will improve connectivity and make door-to-door sustainable travel easier across the region

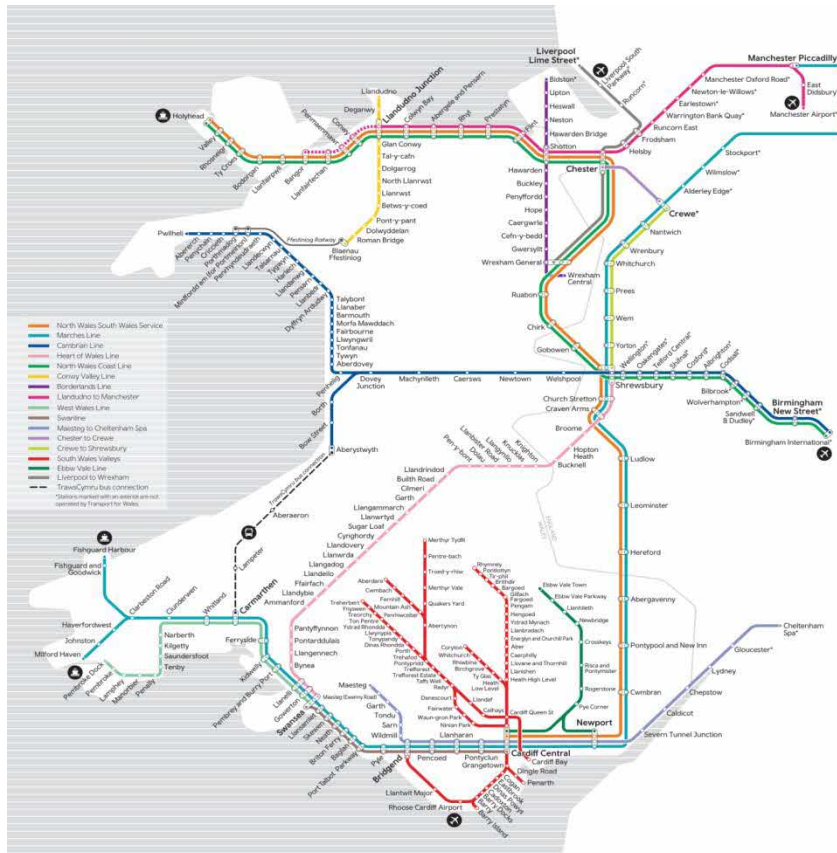
11.3 Local buses

The C17 bus (Bargoed) has 50 stops departing from Caerphilly Interchange Stand 9, Caerphilly and ending at Bargoed Interchange Stand 5, Bargoed that stops directly outside the Wingfield pub in Llanbradach, which then is a short walk to the the crossing across the A469. At either interchange depot we can also travel to other areas such as Cardiff and Newport.



11.4 Trains

The map below shows the extended routes (TFW) that we could take if needed. Our nearest station is Llanbradach which is 1.9 miles away which will take 40 min to walk or 12 min to cycle.



11.5 Footpaths and Bridge ways

Please see all maps and details in Baseline chapter on [page 6](#)

There are a good network of footpaths in our area. We often walk these with our family dog Milo and shopping. Our OPD is located ideally between many different towns (Bedwas , 2.4 miles 10 min cycle , Llanbradach 8 min cycle and Ystrad Mynach 2.7m 17min cycle) with Llanbradach as the closest and our main hub.

This will enable us to embed ourselves into the existing infrastructure, resulting in significantly lower carbon emissions than many existing OPDs which are located in more remote locations. We are both keen cyclists who have cycled to work for many years and our location will enable us to continue to

1.1 miles to Llanbradach train station (on the 'Rhymney Valley' line- 22min walking or 8min cycle)

1 mile to the nearest bus stop

1.5 miles to local shops (where we can sell our produce)

1.5 miles to pubs, restaurants and cafes

1.5 miles to the bank and post office

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

11.6 Vehicles

We will use our private vehicles mainly for work purposes and development including collecting haulage e.g. feed for our animals and hay ; delivering produce linked to our land based business to the community of Bedwas, Llanbradach and Ystrad Mynach and part time work (Louise) .We intend to limit its use for essential journeys which are impractical to be undertaken by cycling or walking. For non-local journeys we intend to use the train. We will car share as much as possible. In Year 1 we will use the Rav 4 for domestic and Sprinter for LBB. Year 1 will create the most journeys as we build and collect materials, however it is expected that by year 5 vehicular journeys will only be associated with the land based business. By year 5 we aim to own electric bikes with trailers to reduce our output/footprint even more.

We expect to run vehicles initially in Year 1 as we develop the site. Which will be as follows:-

Domestic: family, friends, social and other + part time work

As we are already well established in the area all our friends and family are between Ystrad Mynach and Caerphilly. If it is needed Shopping will be done locally and on the same route.

Vehicle	Mpg official	Miles to Part Time Work (both ways)	Other social
Rav 4 2.0 D4D (XT)	53 to 61	24 miles week x40 =960 Year	1,216.8 year

Land Base Lively hood

Steve will be using the local area Facebook Marketplace social media site for second hand and unwanted materials. Where this will not be possible local companies between Ystrad Mynach and Caerphilly will be used e.g Bedwas Industrial estate

Vehicle	MPG	Miles for material pick ups	
Mercedes Sprinter	35	Approx 1800 Year	83

By year 2 our aim is to sell the Mercedes Sprinter to drastically reduce our footprint. The tables below will show comparisons between year 1 and year 5. The use of the Rav 4 will then in year 2 act for land based business also. The use of zero modes of transports will be maximised by year 5 i.e bike, cycle, walk, car pool.

Year 1	Rav 4 2.0 D4D (XT)	Mercedes Sprinter Van
Mileage: Domestic Use	960 (penallta) + 1, 216 (gym) =2, 176miles per Year	0
Mileage: Land Based business	0	Approx 1800miles per Year
Vehicle purchase (annual)	£166 (2,500÷15years)	£266 (4,000÷15years)
MOT and maintenance (year)	£242	£250
Road Tax (year)	£365	£336
Fuel (year)	£412.36 (282.63litrs of fuel- @35mpg @145.9 pence)	£397.96 (272litrs- @30mpg @145.9ppg)
Insurance	£100	£100
Total Domestic Cost	£1285.36	
Total Business cost		£1, 349.96

After the sale of the Mercedes Sprinter (Year 2) and the use of electric bikes that will be kept in the bike shed that will be charged using Solar power.

Year 5	Rav 4 2.0 D4D (XT)	Mercedes Sprinter
Mileage: Domestic Use	1,000	0
Mileage: Land Based business	2,000	0
Vehicle purchase (annual) £	£166 (2,500÷15years)	0
MOT and maintenance £	£242	0
Road Tax £	£365	0
Fuel	£568.49 (389.65litrs @35mpg @145.9ppl)	0
Insurance	£100	0
Total Cost	1,441.49	0

Enterprises (year 5)

We will set a specific day per week to deliver items to shops, restaurants and customers in general in the local area. These will be delivered either via bike (we intend to purchase an electric bike with a trailer) or on-foot. If the weather is poor, we will deliver by car, but will ensure these journeys are multipurpose. We will attend local seasonal markets via pooling or trailer.

Visitors (year 5)

We will encourage all visitors to the site to utilise public transport where possible. For those attending open days, training or experiences from further afield we will offer discounts for those who use public transport.

We would run up to a maximum of six training days for up to five people at a time per year. We would run up to a maximum of three open days per year. We intend to have guests visiting no more than once a month on average.

Comparison

In terms of comparative statistics; An average one-way personal trip in Wales, where someone is travelling to reach a specific destination, covers 8 miles (in 2012) . On average, people living in Wales take almost a thousand trips a year and travel around 7,500 miles or around 144 miles a week.

This does not cover journeys for delivering . These statistics are not available for Wales 80 or moving goods or produce. **As a family of 3 adults, we expect to travel approximately 7460 miles per year for our domestic needs, and 7104 miles per year for our land-based business.**

11.7 Transport assessment plans

Transport assessment and travel plan for residents at year 5

Description	Estimated Journeys per year	Distance (individual return journeys)	How
Groceries from Llanbradach, Ystrad Mynach or Bedwas	Avg 52 (We will choose one area a week depending on need of produce)	<u>Llanbradach</u> - 8mi car, 3.8mi walk/cycle (Avg 5.9mi) <u>Bedwas</u> - 5.2mi (car, cycle, walk) <u>Ystrad Mynach</u> - 5.8mi(car, cycle, walk)	Cycle or use electric bike. Car share or multipurpose journey. Purchase non-perishables in bulk to reduce journeys. (Ystrad Mynach will usually be the main destination for Groceries as it may be part of the multipurpose journey to and from Part Time work)
Social- friends, family	76	<u>Caerphilly</u> - 3.8mi <u>Ystrad Mynach</u> - 5.8mi (car, cycle, walk)	Cycle, walk or use electric bike. Car share or multipurpose journey. Bus or train to Valley areas,
Journey to Part Time Work in Ystrad Mynach	40 (x3 times a week, excl school holidays)	24 miles week x40 trips = 960mi a Year	Car share, cycle, walk, train or bus to Ystrad Mynach

Transport assessment and travel plan for our enterprises at year 5

Description	Estimated Journeys per year	Distance (individual return journeys)	How
Delivery of produce (seeds, Veg, tree saplings, Honey) locally (shops, post offices, flower shops)	42	<u>Llanbradach</u> - 8mi car, 3.8mi walk/cycle <u>Bedwas</u> - 5.2mi (car, cycle, walk) <u>Ystrad Mynach</u> - 5.8mi(car, cycle, walk)	Electric cycle and trailer Car (multipurpose) Local areas
Materials, equipment and resources pick up	12	<u>Llanbradach</u> - 8mi car, 3.8mi walk/cycle <u>Bedwas</u> - 5.2mi (car, cycle, walk) <u>Ystrad Mynach</u> - 5.8mi(car, cycle, walk)	Electric cycle and trailer Car

Transport assessment and travel plan for [visitors](#) at year 5

Description	Estimated Journeys per year	Distance (individual return journeys)	How
Social (friends and family from Caerphilly and Ystrad Mynach)	52	<u>Caerphilly</u> - 3.8mi <u>Ystrad Mynach</u> - 5.8mi (car, cycle, walk)	Local transport Walk or cycle Car share
Forest school	52	5m (Avg estimate)	Local children from Llanbradach, Bedwas and Ystrad Mynach will be our client base. We will offer discounts to customers who walk, ride or use public transport.
Open days	20	5m (Avg estimate)	We will offer discounts to customers who walk, ride or use public transport. We will also offer discounts to local people.
Training Courses	10	25mi (Avg estimate)	We will offer discounts to customers who walk, ride or use public transport. We will also offer discounts to local people.
Volunteers	10	25mi(Avg estimate)	We will offer to local people on the whole. All volunteers will be encouraged to use the most sustainable modes of travel available. Volunteers will be welcome to use our bicycles to travel to and from our site.

11.8 The use of Technology as an advantage

On approval we will live on-site which will significantly reduce the amount of travel. There is fibre optic broadband in the area so we would have excellent internet connection and there is a good 5G 'phone signal at the site with a mast just 0.2 miles a way. This will reduce the need to travel as some meetings, social 'chats' and courses could take place on-line. We can also order items on-line. This will also be useful to promote our products and events.

Transport Assessment and Travel Plan Criteria

Essential Criteria	How it's met	Proposed date criteria can be met
The management plan must be accompanied by a Transport Assessment and Travel Plan (which may be combined).	Included in this section.	pre - application and monitoring annually
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.	By year 3 we would have drastically reduced our transport impacts as residents. Our enterprise will be on site with little or no impact. Visitors will be kept to a minimum.	Year 3
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 that's in this section.	Year 3 and 5
Contributory criteria	How it's met	
The use of low and zero carbon modes of transport should be maximised.	We regularly walk, use cycle's, will use electric bikes and public transport as all is abundantly available Details in this section	Pre application and all modes by year 3
On site vehicle numbers should be controlled and vehicle pools used for One Planet Developments of more than one household	N/A- One household only We regularly walk, use cycle's, will use electric bikes and public transport as all is abundantly available As a family we will share vehicles when needed	After year 3
Connections between the site and local suppliers and customers for goods and services requiring travel, should be maximised opposed to those at a greater distance.	Our food and produce will be sold locally	By year 3
Visitor travel should be the subject of proactive management to reduce transport impacts	Visitors will be encouraged to share vehicles, arrive by public transport or travel on foot or by bicycle.	After year 3

Monitoring: Essential criteria

Target:	Indicators:	Method:
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.	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.	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
That there is maximisation of use of low and zero carbon modes of travel.	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
That there is a reduction in on-site vehicles through the use of vehicle pools	Annual monitoring of vehicle numbers and use of vehicle pools.	The annual monitoring report will include details of vehicle numbers and any car-sharing
That there is maximum use of local suppliers and customers over those from a greater distance	Annual monitoring of local suppliers and customers.	The annual monitoring report will include a description of outlets for our produce.
That there is pro-active management of visitor travel.	Annual monitoring of visitor travel	The annual monitoring report will include an overview of visitor travel.

12 . Ecological footprint

12.1 The Welsh Government EFA calculator was used for these figures. The excel spreadsheet is included as part of the planning application in Appendix 5.

Notes:-

Energy

Pre application we live in a 3 bed terraced house with on grid gas and electric.

As we will be transitioning and living on site In year 1 we will use mostly caravan type energy using gas bottles and wood logs for heating and cooking.

By year 5 all will be run totally self sufficient using the electric generated by the PV solar system and hydro system.

Housing

Building using second hand materials will estimate for all at around 40,000. We will do all building and maintenance.

Our PV system will initially cost 8,000 plus 1,500 for the hydro power generator.

Rainwater harvesting will be used as our main water supply.

Transport

Pre application with 3 adults we had 3 cars and our distance travelled in year 1 with 2 cars will roughly be the same as we develop the site.

By year 2 we will only have one vehicle (Rav4). We will switch to using local transport and electric scooters.

In pre and year 1 of the build we have included petrol as a fuel for some tools/equipment

Food

As we will have chickens we aim to mostly live on eggs, fruit and vegetables. We will continue on our journey to transition to more of a plant based diet. Therefore meat will be drastically reduced. This will also have an effect on takeaway and alcohol consumption.

Food home grown

We will create our own compost.

We will initially plant and grow everything from seed that is not possible through re-wilding. This will include fruit trees, brambles and vegetables. We will only need feed for the chickens in year 1.

Consumable goods

As we have pledged to reduce, reuse recycle this will impact our usage and purchasing

Ecological Footprint results(synopsys)gha		Summary and explanation of main changes
Pre application	3.30 (Below national average of 4.88 gha/cap)	Full mortgage on a 3 bed house, On grid with gas and electricity, 3 cars with both petrol and diesel, work locally, walk and cycle regularly, buying food from supermarkets locally, hardly no use of public transport, purchases from retail , some second hand items
Year 1	1.92	No mortgage, using gas and wood for fuel, 1 car with diesel fuel, walk and cycle regularly, rainwater harvesting, work locally, buying some food from local community shops plus starting to grow our own food, more use of public transport, use of second hand materials and purchases.
Year 5 (prediction)	1.76 (Below 1.88 gha/capit requirements)	Solar and Hydro power, rainwater harvesting, 1 car only, use of public and eco transport, land based business, growing all our own food with only re stocking for lentils on occasions, reduce/reuse and recycle materials

The National average is 4.88 gha/cap. We have clearly demonstrated we will be able to meet the requirement of 1.88 gha per capita by year 5. As this is also a prediction we would hope to reduce this even more with a personal target of around 1.50gha/cap by year 5.

The success of such a low gha comes solely from our way of living. The main reasons for reduction are:-

- Solar or hydro energy
- More food grown and consumed on site
- Reduce, reuse and recycle
- Harvesting rainwater
- Eco friendly travel
- Minimal car travel
- Land base businesses

Although the EFA only applies to our domestic and subsistence activities, it is difficult to separate these from activities relating to the on site business due to the integrated nature of the two. With clear record keeping, over time this will become easier and more accurate. Currently, where there is uncertainty, amounts have been included in the EFA to ensure our footprint has been over, rather than under estimated.

12.2 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:

Positive footprints not accounted for in the EFA

- Demonstrating a sustainable lifestyle

Our project will promote/inspire both the concepts and practicalities of living in a sustainable way on a One Planet Development, offering a positive contribution to the local community that is fully aligned with the seven goals of the Well-being of Future Generations (Wales) Act; helping to create a Wales that we all want to live in, now and in the future.

- Produce

We will provide local, seasonal organic food to the local community, thus reducing food miles and improving people's health

Ingredients will be grown by ourselves if possible, and if not, organically and sustainably produced, and purchased from local growers and suppliers

- Education

We will share knowledge and help educate those who attend course and open days

Biodiversity

- We will significantly improve the biodiversity of the area (on-site and the surrounding area)

Planting

- We will improve the aesthetic of the area by planting trees and hedgerows

Economy

- We will help the local economy through buying local and supporting local schools for example

- We will only sell to local suppliers and combine trips to suppliers where possible

- It will also contribute to the Welsh Seed Sovereignty Programme, enabling more of the seed sold in Wales to be grown in Wales.

12.3 Negative influences:

- Visitors

Social, residential and business visitors will be expected on site (please see explanation in the 'travel plan' section)

- Builds

The EfA calculator only records the results of the dwelling. As we have an education and work space ancillary, we have considered this and included them in the figures. All buildings are zero carbon and self-sufficient using solely second-hand or reused materials and techniques as explained in the 'Zero Building' section.

Phasing, Monitoring and Exit Strategy

The phases have been carefully sequenced to ensure the process is as effective as possible and at the same time resulting in minimal environmental disruption and the mitigation of inconvenience to others.

13. Phasing

Preliminary works	<ul style="list-style-type: none"> Ecological report/ survey Clear area of many years of fly tipping and rubbish build up Clear brambles and clean up boundaries Clear invasive species Clear stream of debris and Himalayan balsam Plant native trees Plant evergreen trees in places where screening is needed Plant fruit trees in orchid 4 to 5 beehives on site Re-wilding after years of overgrazing Use wood chippings and builders rubble to establish a hardstand then move agricultural rest cabin/caravan on to site Temporary solar system Temporary water harvesting Set up composting systems Temporary/movable coop for chickens Temporary small caravan for storage and cooking Consultation with neighbours and community Work closely with CCBC Biodiversity team
Year 1	<ul style="list-style-type: none"> Plant more hedgerows and natural visual screening Make and put up bat, bird and owl boxes Start seeding wild meadow patch Start seeding Sunflower patch Build wood store, tool storage and bee care shed Continue with water harvesting development Continue with water waste reed bed systems Excavate ponds Begin vegetable patch Install solar PV system Remove temporary caravan Build bike shed

Year 2	Develop a hydro power system for cabin Migrate established seed gathering of wildflowers to create a larger wildflower meadow patch Continue to develop vegetable patch Continue to develop herb and berry garden Establish bird box building courses
Year 3	Build a moveable chicken coop Begin developing vegetable box selling to community Establish more hives on to land (approx 5 more)
Year 4	Begin selling local honey Seed gathering for locals Start keeping ducks
Year 5	Give up my (Louise) Part Time teaching position and establish Forest school education and sustainable living open days

14. Monitoring

The proposed date for each essential and contributory criteria is included at the end of each stage of the whole policy (see end of each section above). In short an annual monitoring report will be produced that will include:-

- An EFA progress report : a commentary on changes made since the previous year that are likely to impact upon the households and other footprint.
- An EFA assessment in years 3 and 5
- A revised management plan in year 5 and every 5th year after.
- An evaluation detailing the proportion of food derived from the site (as set out in 3.23 - 3.25 of the practice guidance)
- An assessment of the projects minimum needs(as set out in 3.27 of the practice guidance)
- An evaluation of the land based production (as set out in 3.28 - 3.29 of the practice guidance)
- Clear evidence that the residential use continues to be clearly linked to the management of the land.
- An assessment of the energy needs and productivity of the site.
- An assessment of the water needs and sources within the project.
- Annual monitoring of community impacts, with mitigation measures being implemented to balance any negative impacts.
- A short commentary on the environmental health of the site's habitats and biodiversity including references to the objectives described in the land management section.
- Annual assessment of the transport impact of the site against the travel and transport assessment plan(including data on the number and nature of vehicle trips generated by the site)

15. Exit strategy

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

If there is a failure of the site as a whole, our exit strategy is that:-
the cabin dwelling with decking and the PV array will be removed.

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

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

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

The woodstore, bike, cob greenhouse, tool and equipment sheds, the bee hives and the chicken shed and the landscaping (ponds, ditches and tracks) would remain, being relevant to the ongoing agricultural use of the holding.