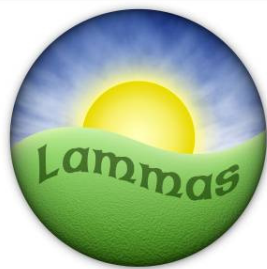


A permaculture appraisal of the **Lammas project**



Research commissioned by Science Shops Wales, in response to a request from a civil society organization (Lammas Low Impact Initiatives Ltd.)

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Executive Summary

A site visit, interviews with Lammas members and an extensive documentation review gives me the confidence to say that in my opinion the Lammas project will meet each and every criteria specified in Policy 52.

The documentation and background research is thorough and covers every aspect required by Policy 52, and some areas not specified in, or required by, the policy. The Lammas group have produced one of the most comprehensive low impact development (LID) proposals to date and should be commended for their rigour and efforts to produce an exemplar sustainability scheme.

The permaculture design has produced a coherent overall framework for the individual plots to work within and for the project as a whole. The project is fully in line with permaculture ethics, and has used ecological principles to inform and guide decisions, strategies and policies. The design of the individual plots is of a good quality and in places highly imaginative.

Whilst it is always impossible to determine in advance whether a business will succeed or fail, my overall opinion is that the majority of enterprises have a good chance of success, and although it is possible that some may be marginal or fail, there will be others that thrive, and with a flexible approach the plot holders will be able to make each unit successful.

The enterprises, activities required for maintaining household subsistence, and the development of shared infrastructure and individual low impact housing will provide ample functional requirement to be living on the site for each and every adult engaged in the Lammas project. Indeed, it is highly likely that it will only succeed in the first two to three years with the support of additional volunteer effort. Lammas have a plan in place to engage people and there is good evidence to suggest that there will be many volunteers from the permaculture network, WWOOF, and their own networks of support.

The baseline surveys and clear monitoring schedules will enable the project to deliver useful research benefits, and provide unequivocal assessments of whether criteria have been met.

Over the longer term, beyond the five-year period, Lammas looks set to become an exemplary low impact development that will provide significant education and research benefits and inspiration to others also wishing to live sustainable land based lifestyles.

My humble recommendation is to grant Lammas permission to proceed, and indeed to provide them with every possible support so that the benefits for rural land use, affordable housing and farm diversification can be learnt and shared as quickly as possible.

Andy Goldring
10th November 2008

Background and scope of the report

The Permaculture Association has been aware of the Lammas project since its inception, with some members of the group also being members of the Association. Lammas has engaged external permaculture designers to support their design work and project planning, and the Association has sent letters of support to accompany planning applications. In September 2008, following the further refusal of the Lammas project, the Association was asked by Lammas to conduct an appraisal of their proposal to provide a contrast and an alternative to the conventional agricultural assessment conducted by ADAS. Lammas articulated the need for an appraisal of the project by an organisation with experience in low impact living and permaculture projects. This was specified as:

1. Carry out a brief appraisal of the viability of the Lammas project from a permaculture perspective.
2. Carry out a brief appraisal of the projects ability to meet criteria 6 and 7 of policy 52. Namely:
 - a. The proposal will provide sufficient livelihood for and substantially meet the needs of residents on the site.
 - b. The number of adult residents should be directly related to the functional requirements of the enterprise.

Using a combination of direct evidencing techniques such as interviews and a site survey along with desktop research, such as the permaculture report (and other associated support documentation) as submitted as part of the planning application to Pembrokeshire County Council on 10 March 2008 for the development at Pontygafel, Glandwr, Pembrokeshire (these reports are available online- , www.lammas.org.uk)

3. Produce a report (either pdf or word) with findings and recommendations by November 10th 2008.

The brief was accepted and a site visit was made on the 8th October during which all plots were inspected, the woodland explored across its entire length with small forays into different compartments to establish their current condition, the leat and hydro barn were inspected, and current and future access routes surveyed. I was accompanied by Paul Wimbush, who provided useful background information about a range of site and project related details.

Interviews with the Lammas group were then conducted on the evening of the 8th and then the 9th and 10th October. Extensive questions and discussion allowed a much deeper understanding of the proposal and a better understanding of the group's skills and relevant experiences.

After the visit and interviews, desk research was conducted with some of the Lammas documentation re-read in light of interviews and the site visit.

The findings in this report are based on that research.

Lammas and permaculture

A number of Lammas members have permaculture design skills and training, and the group engaged a recognised permaculture designer to facilitate the development of a permaculture design for the site. The design process used methods and processes that are tried and tested and the resulting design was of a good quality. The design has provided a coherent and useful overall framework for the site as a whole, and for the division of the site into nine smallholding units. It is well phased and helped to establish clear priorities. The project is consistent with the stated ethical framework adopted by permaculture and uses the ecological principles and concepts to underpin its many activities and policies. If allowed to move from theory into action, the Lammas project is set to become a flagship permaculture initiative, of international importance. (See appendix 1 for detailed notes.)

Some general comments on Lammas and Policy 52

From '*Supplementary Planning Guidance: Low Impact Development making a positive contribution.*'
Para 1. "...but the Authorities consider that exemplars of sustainable development may be permitted."

Based on the proposals put forward, the skills and experience of the group and my experience of permaculture and sustainability projects in the UK, and mainland Europe, I feel confident that the Lammas project has every prospect of becoming an exemplar scheme and should be permitted. The commitment, intent and vision of the group suggest that the high quality proposal will be matched with a high quality scheme. In my opinion, the Lammas scheme is possibly the most sustainable and experimentally useful LID project currently proposed in Wales. It offers an excellent opportunity to test Policy 52 and set a high standard for future projects. The group's commitment to recording, monitoring, evaluating and disseminating their work will also provide a strong evidence base which can be used to support and inspire further rural development across Wales, both within new LID schemes and for more conventional farm diversification.

Para 3. "*A planning application ... will need to be accompanied by a management plan. Both a planning application and related management plan must cover all development comprehensively, particularly where a proposal is for a large area of land or number of residents and activities. Piecemeal proposals will not be accepted.*"

All requested documentation suggested in the SPG has been submitted, alongside additional complementary documentation. After a thorough review of Lammas documentation (which is extensive!) I have concluded that it is of a good quality and based on sound evidence including advice from recognised experts and specialists. Furthermore, the documentation demonstrates that the proposal is integrated, well thought through, has a coherent overall vision and has appropriate SMART objectives (Specific, Measurable, Achievable, Realistic, Time related.)

Meeting Criteria 6: Financial need

"The proposal will provide sufficient livelihood for and substantially meet the needs of residents on the site."

In my opinion the Lammas project will achieve this criteria. I would suggest that it is in fact unquestionable in the broad policy statement. (See appendix 1 for notes.)

A review of livelihoods suggests that there is ample scope in each case and for each plot, that there is sufficient land, appropriate business plans and requisite skills to ensure that livelihoods can and will be

generated from land based activities. A business plan is a declaration of intent and it is impossible for anyone to know with any certainty that any business will succeed. However whilst it is possible that some may be turn out to be marginal or even fail, some are equally likely to thrive. With a flexible approach and cooperation between plot holders, it will be possible for the Lammas residents to develop sufficient livelihoods across the site over a five year period, even if they do not turn out to be exactly those livelihoods initially indicated.

Having reviewed the permaculture designs and business plans, it is also apparent that there is substantial scope for further livelihood and yield development. The broad designs for the individual plots focus on key elements of production, but as with any permaculture design, there is always scope to introduce new elements in to the system, and to 'stack' (in both space and time) more plants and animals into an existing system. This may be a new plant understory of herbs and vegetables into an area of orchard, bees, seasonal introduction of livestock etc. It may also be the introduction of some of the embryonic enterprises that are mentioned in business plans, but not yet built into the cash flow for the first five years. And indeed there will also be the businesses and opportunities not yet imagined.

In addition, three significant areas of enterprise and livelihood offer significant opportunity for further income to the Lammas project:

1. Educational activities. These have been mentioned in the Lammas business plan, and also in some of the plot plans. I am aware that Pembrokeshire County Council (PCC) have asked that income from educational activities is not included within the 75% calculation. However a project of this nature, with educational objectives explicitly stated, and such a large network of people keen and interested to learn from the project is very likely to be able to develop a varied and well attended programme of education and training. Any such educational activities would reasonably be considered to fall within the SPG definition within criterion 6 "that needs be met by means of activities centred around the use of resources grown reared or occurring naturally on the site."
2. The twelve-acre field (terrace grazing field which accommodates the proposed new access route entrance) is currently set aside for grazing by residents or local farmers. When the Lammas project has established itself and the plot holders have established their primary enterprises, this area can be reviewed and redesigned to become much higher yielding and create new enterprise opportunities.
3. The millpond and new ponds developed over the site can become the basis of a new aquaculture initiative that can meet a useful proportion of the resident's protein needs and an additional income through sales locally to shops and restaurants.

It is essential, due to the bold and ambitious nature of the Lammas project, that they are given a five-year period in which to make their case and demonstrate they can achieve the 8 requirements of Policy 52. Three years in my view will not be sufficient time to build the low impact structures, establish key infrastructure such as trackways and community hub, subsistence growing areas, enterprise related crops and systems for adding value, marketing and distribution systems, monitoring and research reports and preserve enough time for family and community life. Five years is still a challenging goal, but on this timeframe it should be possible for the Lammas project to establish itself, its businesses and show that it meets the criteria of Policy 52.

Concerning subsistence, or 'the needs of the residents', again, in my opinion this is both possible and likely given the acreage, design thinking and skills of the group. The group includes established low impact builders, gardeners, composters, water and energy specialists, craftspeople, horticulturalists, and those with marketing and business skills.

Unquestionably, the Lammas residents will meet a high proportion of their needs from the site:

- Energy: 100% as clearly demonstrated in the hydro-energy report
- Water: 100% as clearly demonstrated in the water report and the management plan

- Building materials: a high % - wood from the larch plantation compartments, soil for cob building, turf for roofs, possibly stone.
- Housing: materials as above, and the substantial majority of the building work itself by residents.
- Food: 75% + from vegetable and salad gardens, herb beds, fruit (hard and soft), nuts (although not producing until year five), livestock for both meat and dairy. The main import will be grains.
- Recreation and community life: hard to put a figure, but it will be substantial.

It is impossible to give a confident estimate based on my research as to what the exact figure might be. Substantial? Yes. More than 75%, probably after 3-4 years, or as soon as key infrastructure is in place and gardens and fruit trees etc have had time to establish. After 5-10 years the site will almost certainly be meeting well above 75% of its needs and be exporting surpluses.

Meeting Criteria 7: Functional need

“The number of adult residents should be directly related to the functional requirements of the enterprise.”

This criteria to my mind rests on one key question “What is the enterprise?” Is the enterprise ‘sustainable living tied to land based activity’ or is it narrowly focussed on only the primary production from the land?

There are at least three possible interpretations:

1. Enterprise being the primary production of crops derived from the land for sale.
2. Enterprise being the primary production, work of adding value to that produce, administration and marketing of the business, and required monitoring and reporting.
3. Enterprise being ‘sustainable living tied to land based activity’, including all of 2 above, plus subsistence production, development and maintenance of the housing, domestic support, education and research, and family and community life.

If we first review Lammas against the first possible interpretation, I would suggest that they do meet this criteria, but that the argument will be closely fought, with both sides having justified points to consider. Each plot has two adults, there are nine plots. Do the businesses provide sufficient functional requirement for eighteen adults? In the establishment phase I would suggest that there is unquestionably sufficient functional requirement. After the businesses have established and have become part of the local marketplace, feedback will be received, products and services developed, new enterprises started (as suggested above) and the functional requirement will grow, and will take up any ‘slack’ that has appeared now that the project has been established. I would even suggest that over time, Lammas may even become a local employer.

On the basis of the above statement, it then becomes apparent that when considering interpretation 2, and the wider (and more likely) definition of ‘enterprise’ there is clearly sufficient functional requirement for all the adults, indeed they will have to work hard to achieve their aims.

Before addressing possible interpretation 3, it is important to go back to basics and look at the context. This policy is designed to enable ‘sustainable living tied to a land based activity’. There is already ample planning policy to deal with simple cases of the need for housing for agricultural workers. Policy 52 was introduced exactly because current policy does not easily allow families that want to live sustainably on modest income from land based activities, to do so.

So when viewed holistically, and in my view if a reasonable interpretation of the criteria were adopted, then the question “Does the Lammas proposal provide sufficient functional requirement for the number of adults?” leads to a very simple and clear cut answer. Yes.

Criterion eight states “...development involving members of more than one family”. Families are clearly welcome in policy 52. Well to make that a reality, a reasonable determination of whether any particular proposal meets the requirement for the number of adults to be tied to the requirements of the enterprise must take family life into account.

If the first interpretation was adopted this would have serious implications for Lammas and Policy 52. Any project would have to show that all adults were working full time to develop the land-based activities. They would then need maids and nannies, cleaners and administrators, cooks and gardeners to help them with their subsistence and domestic life! This is surely not the meaning or purpose of the policy, and it may be that a re-wording of the policy is needed to avoid future confusion.

In conclusion, if a very narrow interpretation of this criterion is taken, in my view they meet it, but it could be closely argued. However if a reasonable and holistic interpretation is used, then the Lammas proposal clearly meets this criterion, and indeed will need a good number of enthusiastic and hard working volunteers to meet its aims over the first five years.

Conclusion

The Lammas project is an important sustainability project that is well conceived and has every likelihood of succeeding both in its own terms, and those of Policy 52. The project should be allowed to proceed at the soonest possible instance, and given every support to facilitate its development.

Appendices

Permaculture Project Appraisal

SECTION ONE: PROJECT DETAILS	
Site / project name:	Lammas
Location:	Pont-y-Gafel Farm, Glandwr, Pembrokeshire
Size of holding:	76 acres
Summary description:	Predominantly pasture with 5.33 hectares of mixed woodland and water rights to an adjacent spring. Mostly sloping with mainly south facing aspect and some flat land, a series of established ponds, with hedges and mature trees along most of the field boundaries. Includes a leat and hydro turbine in reasonable condition.
Ownership:	Lammas Low Impact Initiatives Ltd. has a legal option to buy from the current owner Rosalind Susan Burke.
Main contact:	Paul Wimbush, paul.wimbush@lammas.org.uk , 01437 563175 / 07769 817229
Visited by:	Andy Goldring
Date(s):	8-10 th October 2008

SECTION TWO: DEMONSTRATING USE OF PERMACULTURE THINKING AND PRACTICE	
A/ Demonstrating use of the ethical framework	
Earth Care	
<ul style="list-style-type: none"> • Management plan details practical earth care strategies and techniques extensively. This includes guidance and detail for the management of livestock, crop, pasture, hedgerow, water, soil, woodland. • Low impact structures designed for low embodied energy and use of local resources. • Ecological footprinting – ongoing monitoring will be in place to ensure that the project remains focused on its commitment to live sustainably. • Traffic plan to ensure low impact and emissions. • A long term plan for habitat creation, soil improvement and increasing site fertility. 	
People Care	
<ul style="list-style-type: none"> • Food – the project has been designed to ensure a substantial proportion of dietary needs are provided on the site. A diversity of foods are planned, including meats, vegetables, fruits, nuts, dairy and wild food. • Shelter – designs for shelter ensure that residents will be warm, comfortable and secure within a pleasant internal environment. • Water – adjacent spring will provide good quality drinking water. • Sanitation – adequate provision has been designed for hygiene and cleaning, and the grey water is re-integrated into the landscape via reed beds. • Basic needs are well provided for. • Community life – the community hub will provide a social space that will multifunction as both social and business space offering many opportunities for informal meeting as well as planned formal meetings. • Education and learning – a wide range of courses will be provided including ‘hard’ skills provision and personal or ‘softer’ skills. The regular flow of volunteers and course participants will provide a rich and intellectually stimulating environment of benefit to all members young and old of the Lammas community. • Meaningful employment – Lammas will provide opportunities for all residents to find interesting engaging and challenging work which will be also offer financial reward. • Recreation – café, wide range of social activities envisaged in the hub – film evenings, yoga classes, children’s playground, seasonal celebrations, meeting volunteers and visitors etc. 	
Fair Shares: Limits to consumption	

<ul style="list-style-type: none"> • A clear commitment to living within the earth's carrying capacity is made practical and transparent through the annual eco-footprint monitoring. • Legal commitment is made by residents via the lease which is tied to the management plan. • This commitment is further borne out by their choices regarding shelter, energy etc.
<p>Fair Shares: Fair distribution of resources</p> <ul style="list-style-type: none"> • Work has been undertaken to ensure that each plot has an equitable share of the whole Lammas site. Plots with poorer soil get more land. Woodland harvest is carefully allocated to each plot holder. Electricity and water are also distributed fairly. • Lammas as a whole will share its skills and project experience more widely via courses and visitor support.
<p>B/ Demonstrating use of permaculture principles</p>
<ul style="list-style-type: none"> • This is dealt with in the permaculture report by Looby Macnamara of Designed Visions and can be found in part 8 of the planning application. Looby has based her work on a recent update of permaculture principles by David Holmgren, co-originator of the permaculture concept. • Each key principle is linked to clear examples of how Lammas has used the principles to inform its design and management plan. • The use of integrative ecological thinking is also apparent in plot designs and business plans, and from anticipated formal and informal cooperation between plot holders.
<p>C/ Demonstrating use of design strategies and techniques</p>
<ul style="list-style-type: none"> • Looby supported Lammas to go through a permaculture design process via a series of workshops and meetings. "The site was initially viewed as a 'blank canvas' and by the final session had been designed into an intricate design with plot boundaries established – a fully comprehensive plan had been established including social principles and patterns of interaction." (Paul Wimbrush) • The design framework used was SADIMET (Survey, Analysis, Design, Implement, Maintain, Evaluate, 'Tweak'), with each stage of the framework using appropriate methods, some of which were designed to be participatory and engage younger members of the group (such as the PASTE sheet – Plants Animals Structures Tools Events), and some based on evidence gathered by the group between meetings (plot size based on other permaculture /LID projects). • The design process led by Looby took approximately six months and resulted in the permaculture report and the updated and revised management plan. It should be noted that permaculture design was happening within the group before this date, and has continued afterwards for individual plots and further levels of detail. • Individual plots were designed by plot holders themselves within the overall permaculture framework. Their designs were reviewed by an independent panel of smallholders, low impact practitioners / experts and permaculture designers. • Permaculture design strategies have clearly been used by Lammas, and have informed the overall layout of the site, the management plan and individual plot designs. The design work is of a good standard and the methods used have enabled the whole group to engage with the process, including children for aspects of it. • The site visit confirmed that the final plot boundaries work on the ground as well as on paper, and will enable an efficient use of the site by residents on a daily basis.
<p>General comments: The Lammas project has a clear commitment to the ethics of 'earth care, people care and fair shares'. This commitment is practical and embedded in the design, management plan and long-term legal arrangements. The choice of enterprises, living arrangements, water, energy and food production will allow low eco-footprints to be the norm at Lammas. Regarding 'people care', resident's basic needs will be met, but the project will go well beyond this and provide a rich, stimulating and caring environment within which to live and bring up children. This rich community life will be shared with others through volunteering, visiting and learning opportunities providing many people with the opportunity to experience 'exemplar sustainable living'.</p> <p>The use of permaculture principles and design strategies has resulted in a coherent and practical design that relates well to the land. The overall pattern of plots makes good use of topography and existing paths and field boundaries. Woodland, fuel plots and additional grazing are well placed and the overall design allows for both focused autonomous effort on each plot, and wider group cooperation both regular and occasional. Within this</p>

overall framework, individual plot designs can and will change over time depending on the success or failure of certain crops, observation of the plot and its evolving vegetation structure and micro-climates, the changing needs of the enterprises and new skills and local opportunities.

SECTION THREE: EVIDENCE OF SOUND RESEARCH, MANAGEMENT & PROJECT MONITORING

Business plan

- The original business plan was submitted early in the life of the project. This has now been substantially updated. The business plan is seen as a working document and will become the business manager's responsibility once permission is granted.
- The business plan lays out a clear set of objectives for the running of the organisation, including ongoing monitoring mechanisms and the employment of project managers, other employees and their roles.
- The business objectives balance and include financial accountability to the authorities, leaseholders and shareholders, ethical and environmental considerations and wider public outreach.
- It describes and examines the income streams for the project including the role of the hub.
- It describes project establishment and infrastructure development and appropriate sources of finance for individual aspects of infrastructure development.
- It describes the ongoing running of the project, including how Lammas will support the individual plot enterprises, and how it will achieve its wider aims. A clear and useful distinction is made between how Lammas will meet its wider aims and how it will meet its specific business objectives.
- The new business plan includes an in-depth cash flow forecast, based on sound market research on visitor numbers, likely sale of shares (revised downwards) etc.
- The business plan makes a realistic approach to the establishment phase and allocates resources to pay employees to deliver specific tasks and roles. Employees are also planned on an ongoing basis. Therefore the core tasks and roles of the project will be maintained on a professional basis and will not rely on the goodwill of residents.
- The business plan is well conceived, funding sources are identified and income streams are conservative and based on sound research of similar schemes.

Ecological Footprint Analysis

- Agreement in place from the Stockholm Environment Institute, University of York to monitor the project year on year.
- A commitment to use ecological footprint analysis annually will ensure that a useful 'headline indicator' will be in place to monitor overall progress towards sustainability goals.

Management Plan (MP)

- The MP brings together the vision, objectives, policy statements, procedures and rules that will inform and guide project development, and the day-to-day actions of plot holders, visitors and volunteers.
- The Lammas MP is the most comprehensive plan that I have yet come across for a LID and includes a good level of detailed rules and procedures such as what to do in the event of nesting Kites, animal tethering times and expected visitor behaviour.
- The work put into developing a comprehensive MP will significantly help to 'dissolve' or pre-empt future disputes and conflicts that sometimes occur within similar schemes. The MP will prove to be a very useful model that can inform future LIDs.
- The monitoring criteria are thorough and ambitious, and if fully implemented, will create a strong evidence base for LID, permaculture and sustainable agriculture / horticulture techniques.
- The management plan is a critical document as each lease is tied to it. Changes in the management plan can be made by an elected committee, by standard committee procedures which include notification of agenda items and proposals to all plot holders, and the opportunity for them to discuss and influence decisions.
- Within the section 106 proposal that will form part of the Lammas appeal, it is proposed that Section 2 (Lammas Objectives) and Section 10 (Monitoring Arrangements) cannot be changed without the agreement of Pembrokeshire County Council Planning Department. This gives confidence that Lammas will work over the long term to meet its original objectives and provide useful monitoring information.

Woodland Management Plan

- Has five clear aims, that are then used to inform the plan.
- Takes into account the findings of the ecological survey.
- Clearly laid out with sound recommendations and action plans. Provides sufficient detail for it to be put

<p>into practice.</p> <ul style="list-style-type: none"> • Includes schedule for monitoring and review so that the plan can be revised. • Based on a Continuous Cover Forestry approach that seeks to enhance both productivity and biological diversity. • Provides a realistic estimate of likely extraction volumes of both larch pole-wood and other timber for craft materials. • Includes procedures for the equitable distribution of timber harvest between plot holders. • Recommendations are included for further design work regarding the woodland's amenity use. • A sound plan, based on good observation and ecological considerations, which has every prospect of meeting its stated aims.
<p>Ecology report (ER)</p> <ul style="list-style-type: none"> • Undertaken by Leander Wolstenholme, the ER is extensive, detailed and authoritative. • Recommendations for site development made in the ER (section 9) have all been fully incorporated into the overall design and management plan, and individual site plans. • A monitoring regime has been suggested and a commitment to implement this is included in the management plan (section 10.2) • The ER that provides a substantial baseline reading against which the project's environmental / biodiversity performance can be firmly monitored and any benefits clearly identified.
<p>Traffic Management Plan</p> <ul style="list-style-type: none"> • Details existing travel options available locally. • Develops designs and proposals for bikes, cars, minibus service and horses. • Provides clear disincentives for travel by car (high parking charge). • Sets clear parameters for car ownership by residents (between 1:2 and 2:3, i.e two vehicles per three dwellings maximum) and thus ensures lower than average car use. • The minibus service provides a unique public service and will help to ensure that visitor numbers are higher than would otherwise be the case. • This has good consequences for courses, volunteering and sales of Lammas produce. • Sets out likely traffic movements per year for establishment and on-going phases. • A comprehensive and imaginative plan that has every prospect of achieving good visitor numbers without causing large emissions and travel movements.
<p>Geological Report</p> <ul style="list-style-type: none"> • Conducted by Dr. Geraint Owen, Department of Geography, School of the Environment and Society, Swansea University. • The commissioning of this report is indicative of the thorough research that Lammas have undertaken generally. • An understanding of the underlying geology has supported a deeper appreciation of the soil, the key limiting factors and the opportunities to create more fertile soils. • Will also help to identify likely sources of track material for the new road.
<p>Soil Report</p> <ul style="list-style-type: none"> • A detailed report that took soil samples from across the site. • Main conclusion is that soils are on the acidic side and will need lime in order to make them productive for food production. • Soil enhancement will clearly be needed to help the site reach its optimum productivity, and this has been taken into account by Lammas within individual plot management plans. • Minor soil improvements can be made relatively quickly, and over the long term they can be significantly improved through good husbandry, addition of organic matter, use of green manures, re-mineralisation of important areas used for intensive production and soil food web techniques such as activated compost teas.
<p>Permaculture report and site layout</p> <ul style="list-style-type: none"> • Dealt with in SECTION TWO.
<p>Entranceway</p> <ul style="list-style-type: none"> • A design for the entranceway that meets traffic regulations.
<p>Welcome point / bus shelter</p> <ul style="list-style-type: none"> • A design for a structure that in the short term acts as a temporary office and in the long term acts as a minibus shelter and welcome and information point located in the car park.
<p>Community Hub</p>

<ul style="list-style-type: none"> • This design has been recently updated to create an even more low impact construction approach. • The buildings function remains the same and is threefold: firstly to act as a hub for the smallholding's shared needs such as food processing, marketing and overall project administration; secondly to act as a visitors centre for education, dissemination of research and inspiration; thirdly to act as a community resource for the local area. • A useful multi-functional space that will provide value for each plot holder, the overall project and the wider community.
Visual Impact Assessment
<ul style="list-style-type: none"> • Suggests no major visual impact. • The main recommendation was to site the poly-tunnels across the site rather than in one place. This has been done. • The overall design has been sensitive to the landscape's character.
Eco-terrace
<ul style="list-style-type: none"> • Outlines the design and construction of the four unit self-build terraced structure and includes detail on fuel sourcing and management. • Includes a co-housing element that came out of the permaculture design process with Looby Macnamara. • An interesting feature of the project which will form a cluster of enterprises on a 9 acre field. • The enterprises in this area will also have access to 21 acres of shared adjacent land.
Hydro Report (supplemented with a new report by Simon Dale concerning viability under a abstraction license regime.)
<ul style="list-style-type: none"> • Carried out by Richard Drover, an independent renewable energy expert. • The energy supply within all possible abstraction regimes would be sufficient to meet the electricity needs of the whole community, notwithstanding the worst case scenario in which there would be a modest requirement for additional energy from solar pv. • Lammas will export surplus energy to the Pont-y-Gafel farmstead. • Report shows that Lammas will be energy self-sufficient using sustainable on-site water resources.
Legal documents, lease template, legal option
<ul style="list-style-type: none"> • Evidence the firm legal foundation of the project. • Provide clear legal relationship between Lammas and individual plot holders, including requirements to meet the management objectives.
Water report
<ul style="list-style-type: none"> • Clearly demonstrates the presence of sufficient water to meet all domestic needs of the project • Figures suggest that even in dry periods supply is three times greater than would be required within a conventional dwelling. • Since these are not conventional dwellings, that all use compost toilets and have environmentally aware residents in habitation, it is reasonable to assume that for all intents and purposes there is ample water supply.
Household needs
<ul style="list-style-type: none"> • Provides background research into the figures that Lammas employ for the household need calculations. • Carried out by Dr Jenny Pickerill, Leeds University, based on research from the Family Budget Unit and the Government's Family Expenditure Survey.
Social and Economic Status Report
<ul style="list-style-type: none"> • A useful summary of the social and economic context within which Lammas will be placed.
Economic Survey and Marketing Report
<ul style="list-style-type: none"> • The Economic Survey looked at economic activity within a five mile radius. • The Marketing Report has shown that there is local demand from local retailers for Lammas produce. • The information from these reports has supported the development of the overall and individual business plans
Individual Plot Management Plans (nine)
<ul style="list-style-type: none"> • All plot management plans broadly follow the same format: plot design; building design; business plan; annual needs; positive contribution; transport; functional need; timescales; additional income; set up costs. • Each of the business plans includes yield analysis, market research and five year cash flow forecast. • Each plan includes detailed drawings and reasonings for plot layout and building design. • Building design sections include standard sections that all plot holders have been required to consider.

- Each report is comprehensive and on reading them, financial figures seem reasonable and based on adequate research, often gained from similar enterprises. The John Nix Farm Management Pocketbook (edition 38) has been used throughout to establish a conservative estimate of yields.
- Where yields have been difficult to establish from conventional sources (such as the hydroponic strawberry production in plot 1) detailed research has taken place to establish likely estimates.
- Reading and assimilating the information from all nine management plans is challenging! In my opinion, they are comprehensive, well thought through and show a good level of research, that suggests they are realistic and achievable.

Other reports

- Include Pontygafel history, an essay from local smallholder, and letters from Sue Burke.
- Read but no comments required.

SECTION FOUR: YIELD / ENTERPRISE ANALYSIS AND PROSPECTS FOR FUTURE PRODUCTIVITY

All plots

- All plots seek to maximise food production for own consumption, and have appropriately sized vegetable plots.
- All plots have established ways in which they can contribute to demonstration, education and research, thus providing intellectual and educational yields.
- All plots produce something unique, and can thus contribute to the project's wider aim of meeting 75% of household needs. Some plots will focus less on own food production, others more. When taken in the round, it appears that sufficient acreage has been devoted to meeting household needs.

Plot 1 (approx. 2 acres) Jane and Andy Wells

- Cash crops: Strawberries, salads, eggs and asparagus. Fruit trees and bushes.
- Pigs for own consumption and as trial for future production.
- Strawberries include inside and outside varieties.
- As a water engineer, Andy has the relevant experience to carry off this imaginative and innovative hydroponics strawberry enterprise.
- The plot holders have significant land skills and experience including keeping chickens.
- Key income streams are focussed on relatively small areas of the plot, allowing intensive effort and soil development to take place quickly.
- Chickens and pigs offer key 'volunteer labour' that can be used to keep weeds and pests to a minimum within orchards and vegetable areas (with appropriate electric fencing.)

Plot 2 (approx. 2 acres) Catherine Taggart and Leander Wolstenholme

- Cash crops: Wild food harvest, willow cuttings. Value added: Willow baskets and sculpture kits, crafts, Christmas decorations.
- The wild food business is supported by Leander's experience as a botanist. A proposal to cultivate pig nut for example is certainly experimental (to my knowledge). If this is achieved, then his income streams are both assured and potentially highly conservative.
- An agreement is in place with Forager Ltd who specialise in distribution of wild food to restaurants.
- There is an established market for willow rods, cuttings and baskets. Modest income is projected from this area of activity.
- Both businesses are planned to build gradually over the five years.

Plot 3 (approx. 2 acres) Katherine and Steve Moseley

- Cash crops: Soft fruit and top fruit, Salad and herbs, Eggs. Value added: Flax linen sold as tablecloths, napkins, scarves etc., Baskets and other willow objects, Christmas and seasonal garlands, jams and chutney.
- The design is well zoned and ensures that home food production is close to the house.
- Adequate space is given to each main crop, with one acre given to flax production.
- Yields and income projections appear to be highly conservative, and I would expect them to bring in more money than stated.

Plot 4 (approx. 2 acres) Marianne and Ayres Gipson

- Cash crops: Basil, Parsley, and Coriander, and several varieties of Garlic. Value added: Composting worms, Composting Tea, Compost, Chilli, Garlic, and Herb products
- Ayres Gipson has experience of running a medium scale vermiculture project with the Esalen Institute,

<p>California.</p> <ul style="list-style-type: none"> • Well thought through proposal based on practical experience, and a similar business in Bath. • Cash crops integrate well and allow a range of high demand gourmet goods. • Worm castings, tea and worms themselves are all rising in demand due to the growing interest in organic gardening and home food production. • The enterprise meets a local need (diverting kitchen waste to compost rather than landfill) and offers interesting potential to utilise daily trips to collect compost with distribution of salads etc.
<p>Plot 5 (approx. 7 acres) Ant Smith & Dawn Houghton</p> <ul style="list-style-type: none"> • Cash crops: Seasonal vegetables, soft fruit, heritage and unusual varieties, medicinal & culinary herbs. Eggs. Geese. Potted herb collections, fresh cut and dried herbs. Value added: Small wood crafts. • This one of the biggest plots and is mainly devoted to vegetable growing with little value added. • Based on an existing business model already operating in Northampton. • A detailed plan and site design.
<p>Plot 6 (approx. 6 acres) Paul and Hoppi Wimbush</p> <ul style="list-style-type: none"> • Cash crops: Hazelnuts, Soft fruit, Top fruit, Poultry/ livestock. Value added: Gypsy Caravans, Pasties and Quiches • Main short term emphasis on soft fruit production with longer term crops of nuts and top fruit. • Paul is a carpenter and will use the quieter garden winter months to convert woodland timber into a high added value gypsy caravan (using bought in trailer base). • Crop selection is based on research on the most robust and site suitable crops and varieties (acid tolerant and already growing successfully on the site in a wild form.) • Animals selected have been chosen for similar reason – geese and cows are both present on the site already and so are reliable options. • Stated yields are again highly conservative and I would expect that the actual yields will be greater than presented in the plan. • Other value added products are suggested in the plan, but are not expected to be in operation until after five or so years when the basic plot infrastructure is fully realised.
<p>Plot 7 (approx. 7 acres) Jasmine Saville & Simon Dale</p> <ul style="list-style-type: none"> • Cash crops: Comfrey liquid feed, comfrey root cuttings, fruit bushes. Value added: Mini Edible Gardens, Woodwork craft: Furniture, boxes, candlesticks, hurdles etc. • A very thorough design for the land, well zoned and good use of shelterbelts for one of the windiest plots on the site. • The building design is highly innovative and is proposed by Simon Dale, a person who has already produced an iconic low impact structure in Carmarthenshire. • If the new design achieves the same standard of wow factor, then this will provide another significant draw for visitors, volunteers and potential course participants. • The gourmet organics mini edible gardens enterprise has been well researched and a website is already in place. • The woodwork is based on proven ability and Simon already has a number of clients. • Again income streams are conservative.
<p>Plot 8 (approx. 5 acres) Casandra and Nigel Lishman</p> <ul style="list-style-type: none"> • Cash crops: Wholesale craft willow, wool wholesale, flowers. Value added: Organic plant dyed wool, Felting kits, Honey, Jams, Chutney. • The Lishman's have an established willow and woolcraft business and can thus demonstrate they have the required skills to process the materials and an existing market. • The work at Lammas will now extend this work to include the primary production of wool and willow. • The plot design shows appropriate placement, although I would encourage the plot holders to further consider some of the areas that are currently undefined.
<p>Plot 9 (approx. 5 acres) Kit and Saara</p> <ul style="list-style-type: none"> • Cash crops: piglets. Value added: One-off furniture pieces and artworks, Smoked Hams/ Pork products, (Soap, Candles as reserve enterprises to be explored at a later stage) • Six plots of 750m² each for two breeding sows (and fodder crops). Based on recognised requirements, but deliberately at the low end of capacity (one breeding cycle per annum rather than the potential 2.2). This suggests that if required, production could be increased significantly. The main limiting factor will be the capacity to grow sufficient feed. • Design allows for one fallow plot and one under vegetable production.

<ul style="list-style-type: none"> • Work by Sepp Holzer in Austria may be relevant here and could offer opportunities to increase overall yields further. • High quality furniture and artwork is produced from their allocation of woodland hard woods, with some external sustainably managed welsh hardwoods brought in during the initial stages of the project whilst onsite timber is seasoned.
<p>Hydro-electric and other energy provision</p> <ul style="list-style-type: none"> • Will yield between 88.5 and 141MWh per annum, depending on final abstraction regime agreed by the Environment Agency. • All buildings are planned to include solar water heating systems. • A small number of solar pv and one temporary wind turbine is also planned. • Energy provision will easily meet expected requirements.
<p>Woodland</p> <ul style="list-style-type: none"> • Management plan details yields as 6.4 m3 high forest timber per annum, 130-320 2m hazel rods, plus around 1300-3200 mishapen rods in the first eleven years of the coppice cycle (thereafter around 500-2000 quality hazel rods per annum) plus approx 500 larch poles every five years in three thinning cycles over fifteen years. • The high forest timber will enable significant volumes of craft products. • The pole wood will be sufficient to significantly support site building requirements.
<p>Hub</p> <ul style="list-style-type: none"> • Although not included in the 75% test at this stage, education forms a significant financial opportunity of benefit to all. Traditional land management skills and modern design and technology will both be available, alongside permaculture design, forest schools, personal development etc. • The café provides an opportunity to turn lower value primary products into value added goods, eg bags of carrots into carrot soup. This will not be full time, but in peak season can add another useful contribution to the finances of Lammas. • Volunteer support. The hub will be the central space for volunteers providing washing and toilet facilities and shelter. Camping is adjacent. Volunteers are an important source of extra labour that will be invaluable in the initial stages of the project. They will benefit through increased skills. • Social yields will be enhanced through interaction at the hub, where local residents, Lammas residents and visitors can meet. • Trading post will provide a shop front for the value added products and regular services and activities provided by Lammas.
<p>Terrace Fuel Field (approx. 9 acres)</p> <ul style="list-style-type: none"> • Designed to operate in three distinct parts: Miscanthus, mixed long rotation coppice and willow short rotation coppice. • Miscanthus average yields are 13 tonnes per hectare. On 1.2 ha they will produce approx 14 tonnes per annum. • Short rotation willow average yields at 10 oven dried tonnes (ODT) per hectare. On 1.2 ha they will produce 12 ODTs. • Mixed long rotation yields not yet established, but these will not start to produce for 15-20 years, so they can probably wait for the figures.
<p>Terrace 'spare field'</p> <ul style="list-style-type: none"> • This field is currently available for grazing by local farmers or plot holders. • It represents a very significant opportunity to expand food production and therefore total project yield in the future. • Once the buildings, key infrastructure, individual plot holder enterprises, and hub activities are in place, this field should be subject to a full design to maximise its potential.
<p>Comment on plot design and yield prospects</p> <ul style="list-style-type: none"> • Whilst I have not been able to study each plot design in detail, each physical plot design seems sound and with a good prospect for achieving its aims. • No major design flaw has come to my attention within any of the plot management plans. • Some of the business plans are ambitious, but none appear far fetched. • One criticism may be that a number of the plots have six or seven enterprise activities in addition to subsistence needs. Some of the enterprise activities are small scale such as jam and chutney production, and it may be that they are all achievable and that my concern is not justified as they fit into an overall seasonal division of tasks. Even if this is not the case, overall this is not a problem as long as

the successful projects are given attention and the less successful ones are suspended until a future point.

- Several plot-holders are explicitly working to support each other's enterprises such as eggs and chickens. This skill and responsibility sharing bodes well for the likelihood of the enterprises succeeding.
- Where enterprises are working on similar or the same enterprise, such as willow basket production, agreements are in place to ensure that different products are made to avoid direct competition between plot holders.
- The reality of project implementation and 'market feedback' will be sufficient to amend plans where necessary. Each plot has sufficient flexibility to adapt to new demands.
- Whilst it is possible that some of the businesses within plots will not succeed, it is equally likely that some of the businesses will thrive and need to grow further. With sufficient flexibility and cooperation between plot holders, it seems reasonable that the yields from Lammas will be sufficient to meet its objectives and those of Policy 52.
- Almost every plot business plan and yield estimate is on the conservative to very conservative end of the scale. In most cases I would expect that yields (certainly from year 3-4 onwards when soil has improved) will be greater than those stated.
- In almost every plot holder plan it is true to say that yields will increase year on year and only start to stabilise close to a likely optimum, some ten to twelve years or more in the future. Many of the trees planted, especially fruit and nut trees will only start to bear fruit after five or so years, and many of the additional benefits of integrating different elements of plots (animals and orchards for example) will again only develop when the tree systems are starting to mature. In short the site will become more productive year on year, and will annual yields will certainly be much greater than those given in year five of the business plans.
- With 76 acres, backing from a large network of supporters and future learners, and a well conceived design, the Lammas scheme has a very realistic prospect of becoming a major food and craft producer in the area, and even a useful source of local employment.

SECTION FIVE: GENERAL COMMENTS BASED ON VISIT

No further comments needed.

Recommendations to Lammas

1. **Volunteers** can be a blessing and a curse!
 - a. Develop a volunteer engagement plan to cover the first year of establishment, along with clear volunteer contracts based on the management plan.
 - b. This should specify clearly volunteer opportunities, roles and the skills sets required.
 - c. Each plot holder needs to consider how and whether volunteers are needed to support their own plot.
 - d. The project as a whole needs to decide how volunteers can support whole site infrastructure.
 - e. Consider making only month long volunteer placements available initially.
 - f. Recruit volunteers as soon as the project manager is in place and plot holders have been on site for a month or so, and have had the opportunity to settle in and make good connections with each other.

2. **Develop a soil 'action research' programme** to establish in more detail any specific mineral deficiencies, and the latest available techniques for soil enhancement based on work that considers the soil as a living organism rather than a crop substrate.
 - g. Use the expertise of Jasmine Saville to support other plot holders to develop their soil building skills.
 - h. Monitor and test a range of strategies (likely to include green manures, activated compost teas, addition of organic matter via mulches etc, liming, and potentially sub-soiling on larger areas using a Wallace plough or similar.)
 - i. Consider investing in the equipment needed to create large volumes of activated compost teas. This could be the most cost effective soil improvement method, and the only one that can be applied to the whole site.
 - j. Lavestock Park can provide excellent soil analysis (only registered soil food web laboratory in Europe). Subject to cost, consider using their laboratory service

3. *Where it has not already occurred, ensure each plot has a phased plan for establishment.*
 - k. Include detailed designs for particular areas of the plots.
 - l. Focus initially on zones 0 and 1 to ensure functions that meet basic needs are met first.
 - m. The golden rule – start small, get it under control and when it is, expand the perimeter – will help to keep work focussed and effective and avoid the difficulties of keeping 'a thousand plates spinning'.

4. **Establish a series of photographic recording points** across the site and in each plot.
 - n. These should be clearly marked posts (that can multi-function as fence posts etc) placed to allow a good panoramic view of each plot and area of the site.
 - o. Using the site map establish how many posts will be needed to record the majority of the site.
 - p. Use the posts to take a series of photographs (directions of shot can be marked into the top of the post) at least quarterly to reflect the changing seasons.
 - q. This will enable a detailed and consistent photographic record of project and land development to build up over the years and will form a powerful resource that can accompany written documentation, monitoring and research reports.
 - r. Make this an early priority so that photos are taken before the site is developed.

5. **New road needs consideration of water flows.**
 - a. Ensure the new road is part of an overall water catchment strategy for the field as a whole.

6. Account for everything needed to prove the case.

- a. Ensure that from day one, the project as a whole and each plot, puts in place a simple but effective mechanism to record for hours spent on enterprises, subsistence needs met from the site, income from enterprises, including in-kind support given or received from one plot holder to another.
- b. Ensure that all plot-holders use the same accounting methods to enable whole project analysis.
- c. Monitor accounting methods and adjust them where necessary to ensure that they are as simple and unobtrusive as possible.

About the author

Andy Goldring has been working within the field of permaculture design since 1992. He was trained in 'Environmental Design and Permaculture' at Bradford University, and has had extensive training in many aspects of sustainability, community development, systems design, thinking and learning tools and permaculture specialist areas since then. He has provided detailed support to permaculture projects across Britain, Europe and El Salvador in his capacity as coordinator of the Permaculture Association since 1999. He teaches permaculture design courses in Leeds and across Yorkshire and provides teaching support to other courses across the UK. He has written letters of support for a number of permaculture planning appeals and has been a witness in three permaculture planning appeals, most recently the successful Landmatters case in Devon (Appeal Ref: APP/K1128/A/06/2018778).

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About the Permaculture Association

The Permaculture Association is a registered education and research charity that has been operating since 1983. The Association helps people use permaculture in their everyday lives to improve their quality of life and the environment around them. It supports individuals, projects and groups working with permaculture in Britain by:

- Running a national office providing information and support.
- Running a membership scheme to inform, educate, support and network between permaculture designers and groups in Britain, as well as supporting the general public.
- Supporting the development of permaculture education and training.
- Responding to government (national, Welsh, Scottish and English regional) consultations and strategy papers.
- Providing planning support and advice to members.
- Undertaking research, collating member research and identifying common issues within the permaculture network.
- Organising national and local events.
- Networking nationally and internationally.
- Providing information to members, the media and the public
- Working to make permaculture accessible to everyone in Britain

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