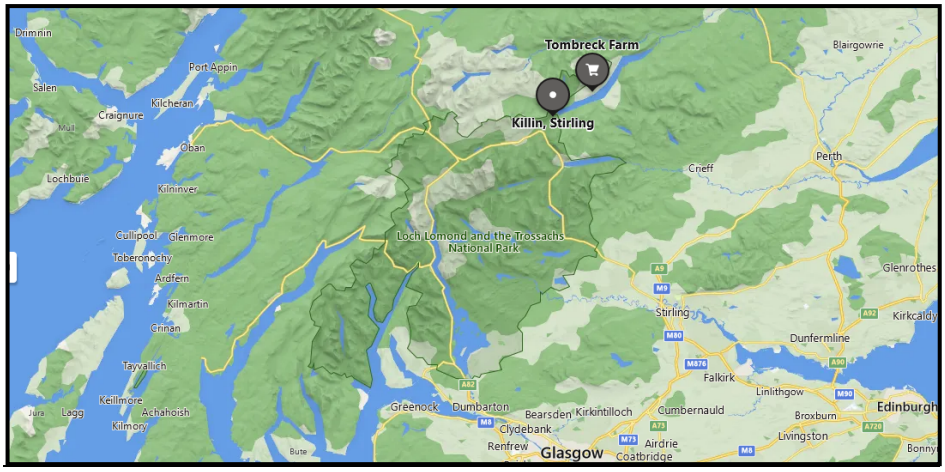
Tombreck market garden application information

1.0 Introduction

This document has been created in order to provide detailed information for prospective applicants for a market garden at Tombreck farm, Perthshire, Scotland. www.tombreck.co.uk The following information was gathered from a site visit and soil analysis in February 2022 by Adam Keeves, an independent consultant.

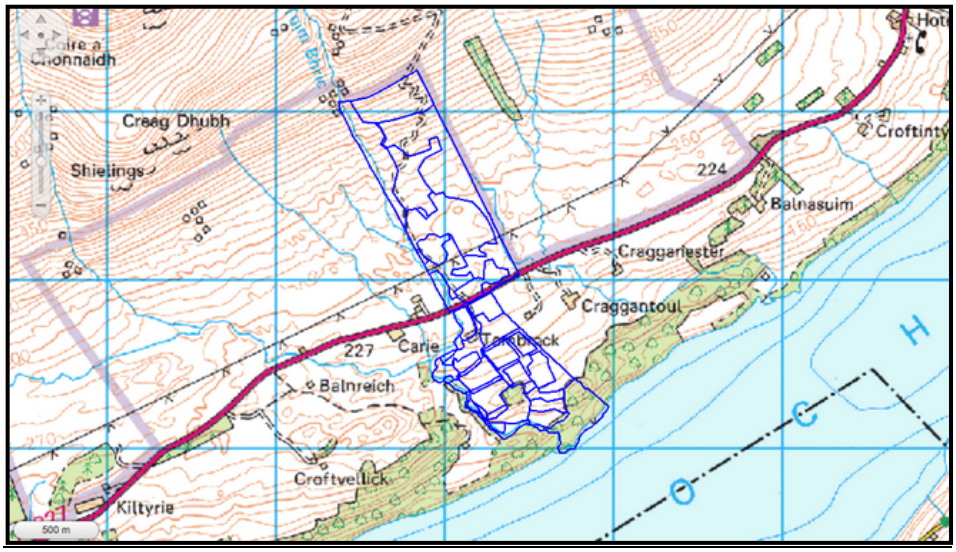
2.0 Farm location

Tombreck Farm is located in Perthshire 6.5 miles northeast of the village of Killin, adjacent to Loch Tay, around 65 miles north of Glasgow (Tombreck Farm, Lawers, Aberfeldy, Perth & Kinross, Scotland, PH15 2PB) Grid Reference NN 65184 37614



Map1: Showing the local village Killin and Tombreck farm, Perthshire, Scotland

Tombreck is a 112 ha farm running from the loch side at 120m up to 420m on the southern side of the Ben Lawers hill range and is adjacent to a special area of conservation. The woodland that runs alongside the loch is also a part of the Carie/Cragganester SSSI. The agricultural land is registered as a Less Favourable Area (LFA) but the field designated for horticultural use is Class 4.2.



Map 2: Ordnance survey map of Tombreck farm showing the outlines of fields

3.0 Tombreck history

There is a mass of evidence to show that the southern slopes of Ben Lawers, which consist of fertile limestone and schist based soils, have been cultivated since the Bronze Age. The area is now dominated by grazing but has a long history of producing grains, chiefly oats along with beans, peas, potatoes, kale, rape and turnips. From the middle of the eighteenth century until 1948, Tombreck, along with thousands of acres of surrounding land were part of the Breadalbane Estate with lands rented out to tenant farmers or crofters. Tombreck Farm was bought in 1948 by Andrew Brown and his son James Brown. For the next 35 years the land at Tombreck was a traditional mixed stock farm until ill health resulted in stock being sold off and the land rented out. When Tober Brown took over Tombreck in 1997 from his late father the land had become neglected and over grazed.

Following Tober's return, the slow process of regenerating the farm began, with some drains repaired, gardens brought into cultivation, mass planting of native trees (80,000 trees approximately covering 1/3rd the farm) and in recent years a reduction in stocking rates. The farm now houses 20 people and is home to the 'Big Shed' community building which provides affordable work and meeting spaces for people in the local area as well as bring available for outside hires.

Tombreck also has a number of small land based enterprises including willow growing, Scottish native wildflowers[i], a fledgling vegetable seed saving and production business, eggs, a small market garden and micro green business[ii], and a beekeeper. Currently there is also a small flock of Castlemilk Moorit sheep and a pedigree herd of free-range KuneKune pigs that graze within the agroforestry areas. Produce from the farm is sold through the 'honesty box' Tombreck farm shop or local outlets.

4.0 Tombreck Vision

The long-term vision for Tombreck has always been to build a community of people who live and work on the farm and in the local area. Access to affordable housing is key to this vision. We want the farm to be managed regeneratively and productively providing a local, low carbon, resilient food production system. One that builds soil health fosters biodiversity and protects water sources. The current aging demographic of the community is such that we are especially welcoming applications from young people and families.

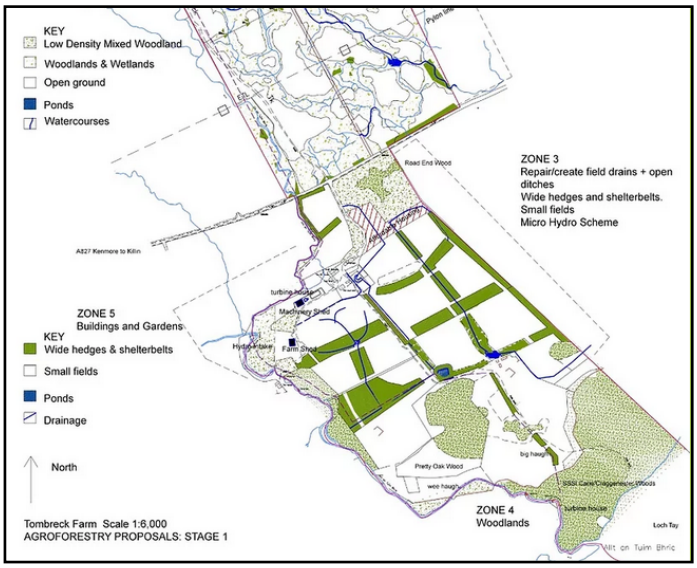


Figure 1: Tombreck landscape map showing its vision for a resilient regenerative farm

5.0 Organisational structure

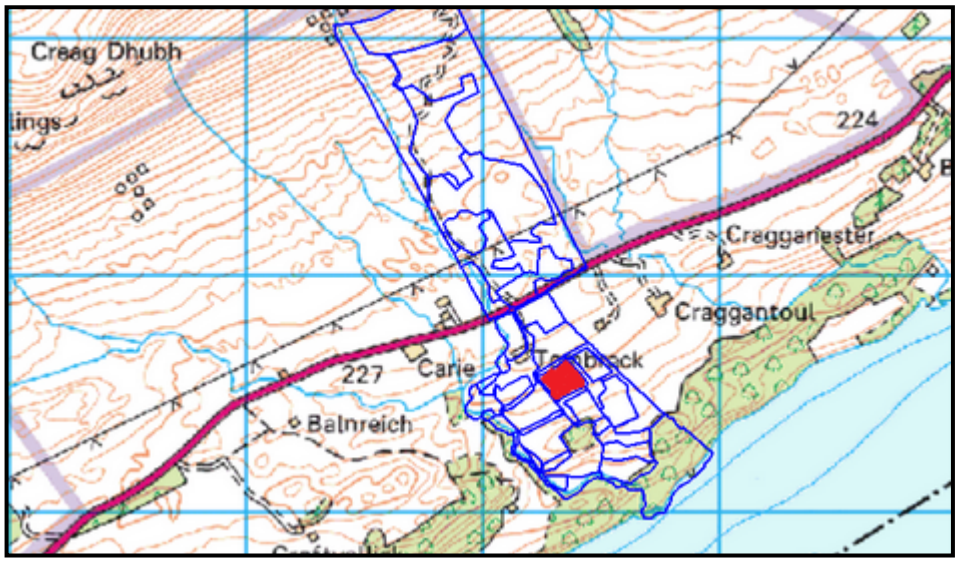
The farm is currently owned by Tober Brown, and is run in partnership with a number of trustees made up of family members. The farm finances and day-to-day operations are run by Sue Manning and Tober Brown, who both live and work on the farm. Everyone who lives on the farm is also a part of the Tombreck Action group. The aim of this group is to "To work as a farm, and to diversify into other activities so as to include other people, and to provide housing and employment at a sustainable level." This initiative has helped projects such as the Big Shed and the Tombreck Rural Housing Co op to be established. Everyone living and /or working at Tombreck has to be a member and also to pay a monthly amount (currently £10/month). This goes towards maintaining the sewage treatment system, the water supply, the access track and the courtyard etc. Meetings are usually held twice a year and otherwise as required. Any new enterprise would be expected to pay into this scheme and work with the initiative.

6.0 Tombreck market garden vision

The development of a field scale market garden is key to the vision of this 'small farm future'. The enterprise would ideally be able to produce both staples such as potatoes and root vegetables and higher value leafy crops for 9 months or year round production. Other crops or produce could also potentially be grown and we are open to ideas and proposals. This business could be operated as a cooperative, community supported agriculture scheme or a box scheme. However the enterprise is structured, it needs to be one that is based on mutuality and cooperation and have openness to involving the community. It also needs to recognise and implement the four International Federation of the Organic Movements principles of Care, Health, Ecology and Fairness.

7.0 Field location

The field that has been allocated for horticultural production lies within the lower half of the farm as shown by map 3. The field was chosen for its good access, historic cropping history and good soils. Picture 1 below shows the view from the north-east top corner of the allocated field looking south to Loch Tay.



Map3: Ordnance survey map shows the allocated field for horticulture at Tombreck Farm (red block in the centre of the map.

Picture 1: View from the North east of the field allocated horticultural production

8.0 Field details (total field size 1.9ha)

For the purpose of this report the field has been split into four distinct areas as displayed by picture 2. The following information is regarding areas A and B and their suitability will be discussed separately later. Area C (0.36ha) is already rented to Scrumptious Garden and not available for production. Area A and B are divided by a sunken historic stone drain and is unsuitable for annual cropping but could provide a space for a windbreak or possible perennial production, although viability for the later cannot be determined.

Picture 2: The above satellite picture shows different areas of the allocated field for horticultural production. Area A on the right hand side, Area B on the left hand side and Area C at the top and D in the centre.

8.1 Field coordinates

56.510946, -4.198021

8.2 Aspect

Both Areas A and B are south facing and drop away 25m over the 123m length of the field (0.2:1 gradient)

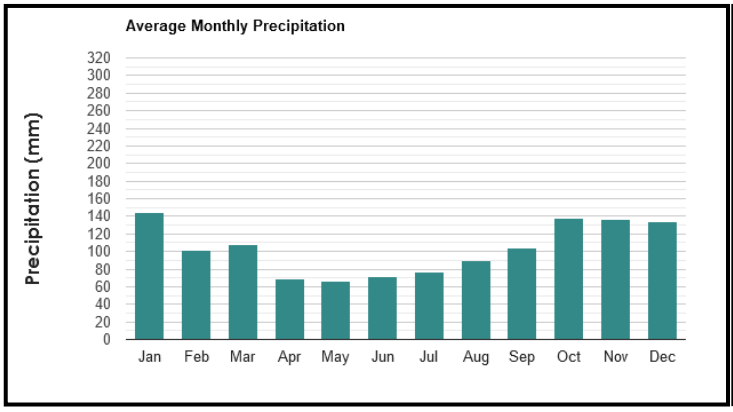
8.3 Altitude

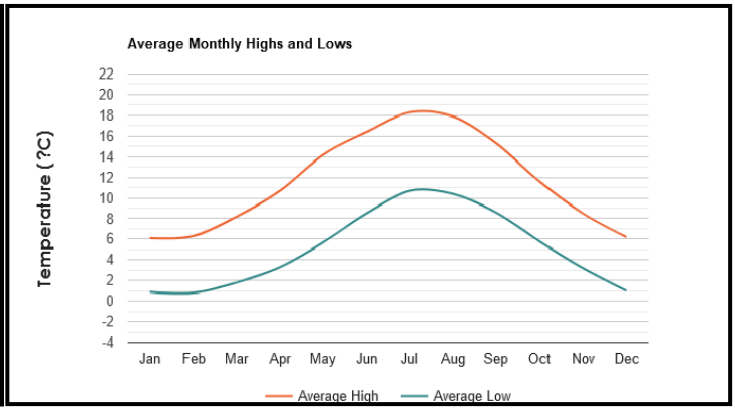
The field altitude ranges from 185m rising to 200m at the top of the field

8.4 Wind direction

Predominate westerly and southwesterly but also a northeasterly wind at times.

8.5 Climate





The nearest climate modelling that could be found is in Killin 6.5 mile east. Temperature information will only be able to provide a guideline as Killin elevation is 113m. However both rainfall and daylight hours will be similar to Tombreck.

Figure 2: Killin average monthly precipitation

Figure 3: Killin average monthly temperature

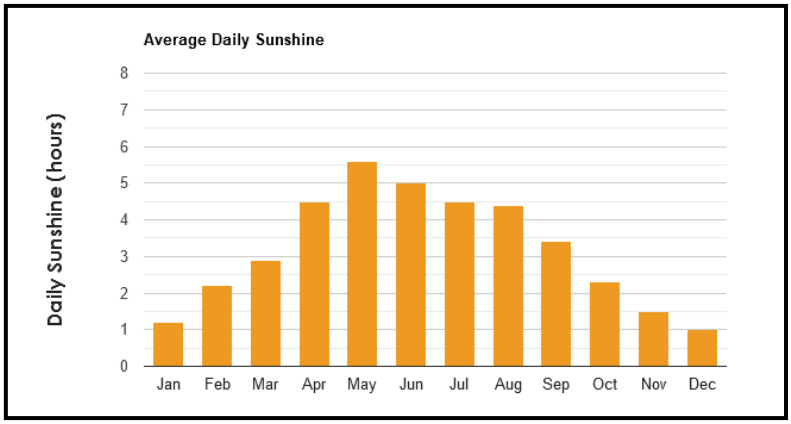


Figure 4: Killin average daily sunshine

As seen in figures 2, 3 and 4 Tombreck is a high rainfall area with a total average of 1200mm over 175 days of the year. This is not dissimilar to other areas of the north, west and southwest of the UK.

Temperatures are low with regards to vegetable production with the warmest month of the year July averaging a temperature of 11.9 °C and the lowest in January averaging 0.5 °C. Hours of sunshine (*for clarity, not daylight hours*) are low for the UK with an average of 1228 hours per year and vary considerably across the year. In May there is an average of 5.62 hours of sunshine a day and a total of 174.16 hours of sunshine throughout. In January there are an average of 1.48 hours of sunshine per day and a total of 45.95. With increasing climate change there are periods of heavy rain and drought.

8.7 Growing season

From records of current vegetable growing at Tombreck and through discussions with a local market garden, https://www.tomnaha.com/, the growing season can normally start in March under protected cropping, outdoor production can start in April if temporary cloches are utilised. A local box scheme is able to run from May – November with support from brought in staples but stops through Nov-March due to weather variability affecting their capacity to produce.

8.8 Past Cropping

The fields have a long history of cropping arable crops such as oats, barley and neeps. Since the farm was let out to grazing in the early 90's the field was in continuous grass grazed by sheep until it was ploughed in 2018 (and again in 2022) for a AECS wild bird seed agreement. The field was left to naturally grass over and has been grazed periodically since.

8.9 Weeds

The main visible weed within the field was rushes, although this only affected a very small area of field A but larger swathes of field B. No other pernicious weeds where visible at the time of visit but dockens, buttercups and creeping thistle are reported. A high annual seed bank from the birdseed production may also be present. The area of wild birdseed for 2022 can be grazed from March 2023.

8.10 Pests and diseases

The soil samples found few soil borne pests such as wireworm or leatherjackets; however both pests can be a serious issue growing in established grasslands and caution should be taken. Rabbits are not recorded on the farm. Pigeons, voles, mice and moles are present and are likely to cause crop damage, crop protection such as enviromesh might needed to mitigate the issue. There are no notable soil borne diseases but blight has been observed in potato crops in the past.

8.11.0 Soil classification

Generalised Soil Type	Mineral podzols
Major Soil Group	Podzols
Major Soil Subgroup	Humus-iron podzols
Parent Material	Drifts derived from arenaceous schists and strongly metamorphosed argillaceous schists of the Dalradian Series
Soil Association	Strichen
Component Soils	Humus-iron podzols
Land Form	Undulating lowlands and hills with strong and steep slopes: non-rocky
Land Classification	Class 4.2; Land is primarily suited to grassland with some potential for other crops.

Figure 5: Soil classification information

8.11.1 Soil texture and profile:

The first soil horizon was an organic layer of residues and organic matter approximately 2.5cm in depth. The second horizon was the top soil and consisted of a Loam /slit clay loam to a depth of 25 – 30cm. The third Horizon with little transition was a structureless humus and/or iron/aluminium enriched illuvial horizon which ran from 30cm to an unknown depth. The parent material consists of an arenaceous schist.

8.11.2 Visual assessment of the top soil

Several soil pits where dug across the areas A and B. A very good soil structure was consistently observed across the areas and was categorised as a VESS score of 1. The characteristics being highly porous, numerous well distributed roots, sweet earth smell and small rounded aggregates.

Picture 3: Example soil pit displaying good soil structure in both areas A and B.

8.11.3 Earthworm counts

A mixture of juvenile and adult epigeic, endogenic and anecic worms were found within the soil pits. This indicates a healthy regenerating population, although total earthworm numbers were low. This may be due to the acidity of the soil, which can be ameliorated, or perhaps due to climatic conditions at the time of surveying.

8.11.4 Organic matter

Organic matter levels for the field are good at 7.2 %(LOI) although slightly below average of 9% (LOI) for the soil series and area. This could be improved up to a possible 12% (LOI).

8.11.5 pH

P.H was low reading 5.5 as 6.5 is needed for good vegetable production. This is normal for the soil series and region however it will be limiting plants access to other nutrients and should be mitigated by the application of calcitic lime. This will also help raise calcium levels, which are marginal. An application of 8.4 tn/ha has been recommended however this should split into two applications as Soil Association standard allow a maximum of 7 tn/ha to be applied in one application.

8.11.6 Soil fertility indexes

Laboratory Sample Reference	Field Details			Index			mg/l (Available)		
	No.	Name or O.S. Reference with Cropping Details	Soil pH	P	K	Mg	P	K	Mg
348010/22	1	**MARKET GARDEN FD** *1.5 hectares* *Grassland into Vegetables*	**5.5**	**1**	**1**	**1**	**9.8**	**76**	**49**

Figure 6: Soil fertility indexes and ph results from soil samples taken from the field

As seen above in figure 6 the soil has low fertility indexes, which are common for Podzol soils. Although indicative of current potential yields agroecological systems see fertility as a biological issue and not simply a chemical process. Increasing the pH, production of fresh labile organic matter by green manures and the application of farm yard manure or composts will support the biological system, improve soil structure as well as adding plant available nutrients. Full results of the Soil Analysis can be sent on request.

8.11.7 Area A soil suitability for vegetable crop production (0.31 ha)

Area is A is the most appropriate area for further production of vegetables at Tombreck. Soil structure is in very good condition with a free draining top soil, although while undertaking soil pits, standing water was found at the transition to the alluvial horizon where the soil become structureless (depth of 25- 30cm). This displays impeded drainage so the area may not be appropriate for winter production especially root crops. Soils that are at, or near, water holding capacity may be easily compacted or damaged by machinery, resulting in high bulk densities and lower yields.

Correctly timed, low intensity tillage and the use of plant roots to remediate any issues are key to maintaining the structure. A no dig system or min tillage system may be most appropriate and allow earlier access to outdoor production. The reinstatement of field drains would be beneficial in improving drainage and will also aid the reduction of rush encroachment at the margins of the production area; this would be a responsibility of Tombreck farm and not the tenant. The fertility of area A is low but able to produce moderate yields once the pH has been raised. Maintaining good organic matter levels and structure will be essential to building fertility. These indices could potentially be raised to 2 producing good yields over the course of 2 – 5 years if regenerative soil health principles are implemented.

8.11.8 Area B soil suitability for vegetable crop production (0.48ha)

Area B also has good soil structure and high organic matter but is currently only partially suitable for vegetable production (0.25ha). This is due the visual signals of extended water logging through mineral deposits and rush encroachment. Extensive drainage will be needed to extend cropping to the remaining 0.23ha but would possibly be much more suited to biomass production such as willow that could be used to produce on farm fertility. The suitable 0.25ha for vegetable production would also benefit in the long term with the instalment of drainage. It is also essential to lime area B at a maximum 7.5 tn/ha with calcitic lime to raise the pH before production commences. Area B will also be suited to a reduced tillage or no dig system. Historically area B was as productive as area A.

9.0 Suitable Crops

Due to the climate, altitude and soil, some crops normally grown within the UK will not be suitable for production at Tombreck. As stated the maximum main growing season outdoors is from May – September with protected cropping and selection of varieties this season can be extended. Due to the long daylight hours in summer growth can be fast and yields high if temperatures are suitable. Most crops can be grown but with a shorter season, brassicas, leeks, beets, potatoes, soft fruit and top fruit traditionally do well. To give a few examples of crop production limitations, crops such as squash are more suitable to be grown in protected cropping; sweetcorn is not suitable in either inside or out as yields will be small. Tomatoes are possible in protected cropping although experience lower yields, while peppers and aubergine may not be commercially viable.

Most other field scale crops suitable to the UK can be grown outdoors, although outwintering crops such as kales, cabbages and root vegetables may experience quality issues after November. However storage methods such as clamping can be successfully adopted. It must be noted that Scrumptious Garden already produce a number of specialist crops such as microgreens. Cooperation would be need with any new applicant to complement the existing production at Tombreck.

10.0 Infrastructure

There is a stock proof fence that surrounds the whole field and one that separates Scrumptious Garden from areas A and B. The field also sits within a fully deer fence protected area of the farm. The field is serviced by a track to the northwest and access can also be had to the northeast across the field above. There is treated water mains to the field, which is paid for through membership of the Tombreck Action Group and also access to a piped spring, which is suitable for crop production but not potable.

There is electricity to the field, which is located in Scrumptious Garden. There are currently no tunnels in areas A and B to extend the season, and an area for seedling propagation protected cropping will need to be installed. This would be expected to be an investment for the prospective tenant although an agreement could be made to remunerate any infrastructure improvements on departure. Large infrastructure improvements such as tunnels will be subject to planning 'Permitted Development' and the farm falls with the Ben Lawers protected landscape area. The Big Shed also has a commercial kitchen, which can be hired by the hour for secondary processing. www.bigshed.org.uk

11.0 Windbreaks

Both areas A and B are moderately exposed to the dominant westerly winds. There is an established headland to the west of area B and a new newly planted shelter belt planted to east of area A, and the establishment of a hedge / windbreak in section D would be beneficial to crop production in both areas. This could also be utilised as an area for biomass production. Perennial crops could also be grown although the extent of water logging is unknown which may cause issues with rootstocks.

12.00 Carbon survey

As set out in the vision of Tombreck in the outset of this document it is recognised that, through correct land management, the farm has the potential to be a carbon sink. A Carbon Footprint survey was undertaken of the whole farm in 2019. The report highlighted a number of core activities that Tombreck could undertake to reduce its greenhouse gas emissions. The full report is available on request. These included:

- Using energy and fuels efficiently
- Developing renewable energy
- Locking carbon into the soil and vegetation
- Optimising the application of fertiliser and manures
- Optimising livestock management and storage of waste

13.0 Production system requirements

There are a number of production system requirements that any prospective tenant will need to display how they can implement. The following requirements are core to the vision and principles of Tombreck. Any tenant not upholding these would be at risk of having the tenancy retracted.

- Produce to a minimum of Organic standards based on a diverse rotation (although do not required to be certified)
- Maintain soil organic matter levels
- Minimize soil erosion and leaching through timely tillage and keeping soils covered
- Aim to have a constant living root
- Foster agricultural and local biodiversity providing natural infrastructure to reduce alliance on pest control inputs
- Maintain water quality
- Minimise inputs of fertility, aiming toward a closed loop system
- Commitment to reducing the carbon footprint of production

14.1 Sales avenues

There are a number of possible outlets for produce in the local area, which could be complementary to a box scheme.

- Tombreck farm shop. (This will be available to rent as an independent outlet at some point)
- Other Box schemes
- Online Local food hub Neighbourfood https://www.neighbourfood.co.uk
- Local restaurants and shops
- Big Shed hires and on farm camping groups
- Local Farmers Markets – ie Aberfeldy

14.2 Note on the SOSA (Simply Organic Supplies Aberfeldy) vegetable box scheme

This seasonal (20 week) vegetable and fruit box scheme from the Biodynamic Garden in Camserney near Aberfeldy, ran for four years from 2018 to 2021. They started with 12/13 boxes per week, selling 35 per week by the final year. As garden space was limited they bought in some produce from other growers. The scheme worked very well, but the administration along with the organisation of volunteers was too much work for one person and the project is not going to continue. The garden will sell some produce from their site and at the Hamdam shop in Aberfeldy, but has changed direction to focus on running workshops and biodiversity. https://www.biodynamiccamserney.com/sosa.html

15.0 Housing

The Farmhouse will be available to rent from spring 2023. Although there are currently no spare houses on the farm, there might be capacity to site a yurt or temporary living structure but this is subject to availability and suitability of proposal. Please state in your application if and when you would require housing.

The Tombreck Rural Housing Co-op was established in 2020 and development proposals are at an early stage. New member applications will be open to people with a business plan for a land based farming or growing project.

16.0 Applicant requirements

- Commitment local resilient sustainable food production
- Commitment to cooperative working relationships and mutuality
- Commitment to Tombreck values
- Commitment to maintaining productivity
- 2 years practical commercial experience

Note. We would be interested in collaborative or group ventures and especially interested in proposals where horsepower is used or partially used. On farm advice and assistance regarding the latter is available.

17.0 Application process

We are open to anyone submitting a **proposal for use of the whole field as discussed above.** This information should provide all applicants with a base line of information to enter into the application process. A successful applicant will need to pass through a number of stages.

1. Express interest via email or letter to Tombreck with a proposal no more than 1 page long. This should highlight your vision for the field, how this complements the Tombreck vision, the main produce you intended to grow and a simple description of the production and marketing system/s. This should be supported by a small amount of information about you, your experience, housing needs and who will be joining you.
2. If the proposal is fitting for Tombreck then you will be invited to attend a farm visit to meet both Tober and Sue and discuss any further details or clarifications. You will also meet other people living and working on Tombreck Farm.
3. The next stage of application then requires the applicant to submit a more detailed enterprise plan which should include:

- Timeline, including proposed start date
- Business plan
- Start up costs plus capital and other funding available
- Brief proposals for reducing greenhouse gas emissions
- Enterprise Gross margins
- Projected monthly income and expenditure including proposed rent
- Cash flows
- Other sources of income if needed
- Infrastructure required
- Field layout plans
- Proposed rotation

- Production program for one crop
- A simple SWOT business analysis (Strengths, Weaknesses, Opportunities, Threats)
- Two References

4. Please let us know if you intend to submit a full application, as we may set a closing date.

5. Following the Business Plan, we may invite short listed applicants to attend an interview

We look forward to hearing from you!

18.0 Contact information:

Sue Manning and Tober Brown, The Farmhouse, Tombreck, Lawers, Aberfeldy PH15 2PB

Email suemanning@tombreck.co.uk Mobile 07725 320546

19.0 Useful resources for applicants

Vegetables and Herbs for green house production: Klaus Laitenberger
Growing Green: Ian Tolhurst
Vegetable production: A complete Guide: Gareth Davies
The Market Gardener: A Successful Grower's Handbook for Small-Scale Organic Farming: J M Fortier
Basic of soil fertility: Fibl
Sort out your soil: Cotswold Seeds
Small farm future: Chris Smaje

AK / SM 23/03/22

[i] [i] https://www.wildflowersscotland.com

[ii] https://www.scrumptiousgarden.com