A Business Plan for the Arlington site, the Ecological Land Co-operative

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Full biographies for Mark and Iain can be found in Appendix 7 (below).

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Section I. The Arlington site

1. Introduction

The Ecological Land Co-operative (henceforth "ELC") was set up to address the lack of affordable smallholding sites for ecological land-based livelihoods in England. It operates three farms in Devon and has recently acquired a new site at Arlington, East Sussex, which it proposes to make available for the operation of three separate businesses or holdings. Mark Measures and Iain Tolhurst (Advisers) have been commissioned to assess the site and prepare a business plan for the three holdings.

In undertaking the work the Advisers have visited the site, consulted soil survey data and reviewed an assessment of the local market for produce.

The suitability of the site and the potential viability of small scale horticultural holdings has previously been assessed by a number of experienced organic growers and advisers including Roger Hitchings, formerly an IOTA Accredited Adviser working for Organic Research Centre, Adrian Halstead, commercial grower Barcombe Nurseries, Lewes, Ru Litherland, a commercial grower Organic Lea Ltd. and Colin Tingle, an environmental consultant. The reports from these sources have been reviewed and taken into account in preparing this Business Plan.

In preparing the Plan the Advisers have based their projections on the following assumptions:

1. The growers are experienced horticulturalists with appropriate skills;
2. The land has undergone an appropriate conversion period to organic status;
3. Yields are those that can be expected after conversion, potentially in yr. 3 or 4;
4. That all produce will be sold direct to consumers or local third party retailers;
5. There will be some level of cooperation between the holdings, including supply of plants, shared machinery and complementary products.

This Report provides an initial assessment of the overall site and then provides three separate business plans for each one of the three holdings: A, B and C. The enterprise mix takes into account the size of each holding, the market and opportunities for collaboration. The enterprise mix is not necessarily fixed but has been selected to provide the basis for a system that is a physically and financially viable business; there are many other different options available, including processing and added value. The market demand and individual smallholder skills and interests may mean changes in practice. Those selected in this Report are ones for which there is evidence of a market and good experience of successful business. The budgets that have been prepared are for the businesses once they have been through the conversion and establishment phase.

2. Background information

Location: Field to the south of Copyhold Cottages, formerly part of Wilbees Farm, Arlington, Hailsham, BN26 6RU

Land area: 7.5ha (not verified)

3. Site and topography

The land in question occupies 7.5ha in one block of land adjacent to the road. The land is mostly level with the exception of an area approximately 0.5ha in the NE corner that has a slight gradient facing NE. The average for the field is approximately 15m above sea level.

100% of the land is cultivatable.

A public footpath running N-S exists in the NE corner of the field.

The field has previously been part of a conventionally managed dairy farm and it is believed to have grown continuous maize for 10 or more years.

4. Shelter

A well-developed hedge with mature trees exists along the western boundary, a tree line along the southern boundary and along the eastern boundary there is a small wooded area. The presence of some sheltered boundaries gives reasonable protection to the field but more tree planting is needed to give full protection and there is currently no shelter to the north.

5. Ground cover

The existing ground cover is predominately a cultivated white clover. It is understood that the field was sown in spring 2017 with a grass/clover ley containing 5 separate species of ryegrass and clovers. Only one species of clover has survived to date. The cover was very well developed and growing strongly. Some evidence of weed species was present within the cover; mostly perennial types.

6. Soil type

The Soils Guide (Cranfield University) classes these soils as lowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils. Land cover: grassland and arable. Timeliness of operation will be important, particularly in early and late season to avoid soil structure damage. Maintenance of tile drainage and periodic sub-soiling will be required (Reference Cranfield University 2017. The Soils Guide. Available: www.landis.org.uk).

The site visit on 22 August 2017 included trial diggings across the site to a depth of 0.6m and the soil profile was inspected. The visit confirmed this as a silty clay soil, increasing clay content at depth.

Soil analysis for the 3 plots shows that all 3 are slightly acid, which is suitable for most crops. Phosphate is low in Plot A, but satisfactory in Plots B and C, Potassium is low in Plot A and slightly low in Plot C, satisfactory in Plot B. Magnesium is slightly low in Plot C but elsewhere satisfactory. This marginally low nutrient status on some of the plots can be remedied by straightforward application of mineral fertiliser, which is acceptable to organic standards.

The soils type across the field is consistent, as is the depth of topsoil. The soil surface immediately under the clover ley showed some remnants of the previous maize crop, and a fair number of worm casts present. No other evidence of biological activity was

found. It is possible that the field was cultivated using minimal tillage rather than ploughed prior to sowing the ley, as there is no sign of buried crop debris.
Soil profiles showed a soil that was beginning to exhibit a good structure and rooting within the top 75mm but considerable compaction was evident below that level. The compaction was not arranged in horizons but was throughout the entire profile, no specific plough or cultivation pan was present. Most of the rooting was within the top 75-100mm zone but there were indications of rooting down to 0.6m depth. The rooting depth of docks was very deep and showed no sign of horizontal branching.
A very healthy earthworm population was present mostly within the 75-100mm zone; this population comprised mostly of young active earthworms with good breeding potential. There were many earthworm burrows within the upper (75-100mm) soil profile and some indication of reduced activity to the lower levels. Indications were that the worms were feeding mostly on the maize residues.
At levels below the upper soil profile there were clear indications of seasonal waterlogging indicated by Iron and Manganese deposits. These deposits increased as the profile became deeper. The waterlogging is an inherent feature of the soil type but is exacerbated by poor soil management.
No standing water was seen at any place within the field despite the wet July and August weather.
Despite the past intensive management the soils was showing healthy signs of recovery in a relatively short space of time. Compared with the findings of Colin Tingle less than a year ago, the soil and especially the earthworm population, has improved by a marked degree. The latter tends to indicate that the biological activity of the soil is improving from what would have been a very low level during previous management techniques.
Given appropriate management with deep rooting green manures/leys, applications of organic materials and a suitable conversion period it is our opinion that this soil has fairly good potential to grow a range of vegetable crops. The soil is prone to physical damage if cultivated inappropriately but conversely has the ability to repair easily given suitable management. Nutrient retention-ability is potentially high providing the soil is managed appropriately.
The soil has good water holding potential but will be slow to warm up in a wet spring and difficult to cultivate between October and March most years.
Reference should be made to the Environmental Report prepared by Dr Colin C D Tingle, August 2016

7. Drainage systems

The solar farm catchment pond in the SW corner of the field shows a pea-gravel lined drain where excavations have been made. This may indicate a plastic drain system laid at some point in the last 30 years.

8. Water supply

There is a water trough in the eastern boundary supplied by a 20mm pipe. It is connected to the original farm and it not known if it is separately metred. It would

need to be separated from the farm and independently metred. The flow and pressure is not known. It would not be suitable for irrigation purposes. A borehole with associated pipework/pump could be installed.

9. Electricity supply

No supply available on site. There are dwellings close by so a supply is potentially available.

10. Access

Existing access is adequate for farm vehicles only. Exit vision is good but could be improved.

11. Weeds

Annual weeds are few, due primarily to previous cropping and herbicides, but this will change as the weed seed bank begins to germinate in future seasons and with fresh cultivations. It is expected that there will be a wide range of arable weeds.

The main perennial weed is nettle across the whole site in small groups, but not as yet, in epidemic proportions. Very occasional small areas of couch were noted. Neither of these two weeds pose a long-term threat as they are easily controlled with appropriate management. There is a low population of one-year-old docks over the whole field with a higher concentration on approximately 1ha on the eastern side. Docks favour high N and low P+K the very conditions which probably exist in the field at the present time.

12. Pest and disease

No known problems. The fact that the field has not grown any vegetable crops for over a decade would tend to indicate that soil borne disease risk is very low. However without soil tests or records of previous cropping for 30+ years it is not possible to guarantee this.

13. Compost/organic material availability

No materials available on site. Green waste and compost will be sourced from local farms to comply with the ELC's statement on the 'Effect of the proposed scheme on the Ashdown Forest SAC'.

14. Weather information

Weather records show that the area has some of the highest light levels in the country with over 9 hours sunlight average for April to September. Rainfall is moderate at an annual average of 600mm evenly spread across the year. Average temperatures April to September are 14C and October to March 7C. There are few days when temperature are below zero during winter. Average last frost for this site would usually be end April and the earliest being the middle of November.

The site is well placed to take advantage of these favourable weather conditions.

15. Buildings and Infrastructure

Proposed buildings to be constructed by ELC

The ELC will provide internal access, hard standing, shared office/barn/packing shed (23 x 5m), solar electricity and water which could be in the form of a borehole and water harvesting. There will be no charge for these services.

Areas for proposed dwellings, barns, retained plot and hard standing come to approx. 0.8ha.

The proposed orientation and layout shown on the current plan may be subject to change in order to make best use of the site.

The smallholder will be responsible for paying for any additional building requirements, internal irrigation equipment etc.

16. Financial information

ELC propose to charge a fee of £1,200 per year for monitoring and a rent of £4,800 per year which includes the stationing of an incidental mobile home.

There are no area grants applicable and it is expected that any capital grants will be allocated to the building and infrastructure development provided by ELC.

17. Proposed markets

The viability of small-scale commercial holdings producing vegetables and other horticultural products is dependent on accessing a direct retail market, or at least supplying local retailers, which will pay a premium. Wholesale markets to multiples are not relevant in this situation. The Market Survey undertaken by ELC, Appendix 1. Markets for Arlington Smallholding Produce, shows that while there are 6, mostly long term horticultural businesses in the area, indicating a secure local market, there are in fact none in the immediate vicinity. There is no evidence that new production at Arlington would create unwelcome competition and indeed several of the existing producers are seeking additional product to purchase.

An assessment of the local farmers markets indicates that that there are 8 local markets and that there is a gap with opportunities for crops including flowers.

There are 9 potential retailers in the area, with at least one having lost its supplier recently.

There is a clearly a market opportunity.

This experience locally, in one of the wealthier parts of the country where the organic market is growing fastest, is consistent with national statistics; the Soil Association Market Report 2017 reports that the £2.09 billion organic market is currently growing at over 7% per year. https://www.soilassociation.org/certification/market-research-and-data/order-the-2017-organic-market-report

Experience in other parts of the country indicates that the potential for local in-season organic flower and floral displays is strong, subject to an appropriate marketing strategy.

It is anticipated that almost all of the produce will be sold direct to consumers via shops and restaurants therefore achieving high prices. Organic certification for all

produce is assumed as the market survey indicated that this is what the market demands and our experience is that organic offers the greatest potential for premium prices for ecologically produced crops.

18. Conversion planning

The land in question has been managed conventionally for a long period of time with more than 10 years continuous maize planting. No specific history of inputs and management for that period exists but it can be assumed that the land has received regular chemical inputs and tillage practice over that period. Soil inspection and trial diggings confirm that the land is in need of rejuvenation.

The existing clover ley is useful in restoring the soil but lacks deep rooting plants. It needs to be improved by over-sowing with appropriate species.

Management during the conversion period should be regular flail mowing with control of flowering docks as the main criteria for timing. Grazing is not ideal given the dock problem and should be avoided. No material should be removed from site.

Annual applications of either green waste compost or thoroughly composted farmyard manure (FYM) should be made during the growing season. Any materials must conform to Organic Standards.

An application to an Organic Certification Body should be made as soon as possible to get the land into organic conversion. A period of 24 months from certification to planting fully organic crops is needed. If organic certification were made and approved before January 2018 then the first organic crops would be available for sale from January 2020

If livestock are used they must be certified as organic, except that conventional stock are permitted for up to 120 days per year.

Infrastructure needs establishing on the site in readiness for cropping and growers will need to develop their potential markets and outlets.

Section II. Ecological Land Co-operative Business Plan Holding A: 1.21ha

Reference: Appendix 2. ELC Farm Budget Holding A, which includes:
Page 1. Summary of sales, costs and total margin
Page 2. Crop Sales. Individual crop yields, prices according to the specified market outlet, and crop sales
Page 3. General Crop Costs. Includes variable costs
Page 4. Overhead costs including rent to ELC
Page 5. Depreciation. Itemised machinery, cost and depreciation.

1. Crop enterprises

Holding A will concentrate on high value produce, primarily flowers/herbs and floral products grown and made on site. As it will have a propagation unit it will be supplying many of the vegetable transplants for the other Holdings B and C.

2. Rotations

Approximately 50% of the land area will be used for established perennial herb and flower plots. The remainder will be annual flowers and herbs. As flowers occupy a wide range of family groups no specific rotation will be needed, the only requirement being that any plants of either, allium or brassica families be separated by a period of at least 4 years, therefore a 5 year rotation.
Cropping area for perennials therefore will be approx. 0.35ha and annuals at 0.35ha with tunnel area at 0.3ha.
The tunnels will be standard unheated structures. A small area of approx. 250 square meters will be set up for plant propagation with heated gravel beds and propagation facilities.

3. Crop areas and yields

Appendix 2. ELC Farm Budget Holding A, Crop Sales Appendix page 2 provides details of the crop areas and yields which are based on commercial experience, the Organic Farm Management Handbook 2017 and A Matter of Scale, Laughton R (2017), adapted to the site conditions and Arlington.
Total holding area = 1.21ha
The cropping will be as follows:
0.3ha Tunnels: comprising flowers 2,000m2, herbs 700m2, propagation area 250m2
0.80ha Outdoor: annual flowers 0.35ha., perennial flowers 0.35ha., peg plants 0.02ha
An area of standing beds will contain potted plant material approx. 0.05ha
Remaining area of land is service paths and storage areas and shelter screens/hedges.

4. Crop inputs.

Crop and soil inputs assume the use of 10 tonne/year of purchased manure or compost and mineral fertiliser from local sources, consistent with organic standards.

5. Livestock
There is no livestock included in the budget as the scale is unlikely to make a significant financial contribution. However it is practicable for small numbers of poultry for personal use.

6. Machinery and equipment
Appendix 2. ELC Farm Budget Holding A, Depreciation, page 5 provides an itemised list and the cost of the machinery required, all purchased by the grower. The delivery vehicle will shared with Holdings B and C.

7. Infrastructure
The ELC will provide access roads and the buildings required for packing and storage of crops, the cost of which is included in the annual rent. ELC will provide a water supply for irrigation, which is assumed to be a borehole, subject to permission.
The smallholder will provide the financial investment for the 3,000m2 of polytunnel at a cost of £36,500. The budget depreciates this cost over 10 years.

8. Labour requirements
In addition to the one labour unit provided by the grower/proprietor of Holding A there will be a requirement for one employed person and three quarters of a unit of volunteer labour, which will be provided with pocket money and food.
Given the nature of the crops grown, on-site residence is essential due to the need to monitor and manage polytunnels, tunnel ventilation and general crop irrigation, throughout 24 hours of the day. Organic management is particularly dependant on preventative management, and taking action to avoid disease build up by maintaining correct moisture levels, regular monitoring of disease incidence and pest populations and dealing with them by the use of permitted inputs and introduced predators. These inputs are typically slower acting and less effective than pesticides used in conventional production, hence requiring a rapid response time to avoid build of the pest or disease; on site residence is needed to ensure frequent monitoring and action as remote monitoring systems are not appropriate for pests and disease.
Optimum crop irrigation requires regular monitoring; this is most effectively undertaken by regular personal assessment, including early morning and late at night. On-site residence is needed.
Given the high level of capital investment and crop value, which are liable to theft and vandalism, on-site residence is a recommended precaution.
In the experience of the authors on-site residence is a necessary pre-requisite to the success of the overwhelming majority of commercial organic holdings.

9. Financial Budget
Appendix 2. ELC Farm Budget Holding A, Summary, page 1. shows sales of £76,351and a Margin of £8,706 after all costs. The costs include a figure for interest

on bank borrowings for operation of the business, excluding any interest on the capital investment (itemised under Depreciation page 5, column 2) by the Holding proprietor at the start of the project which is £52,900, the biggest cost being the polytunnels.

10. Conversion and establishment management

The use of a two year clover ley, as discussed above, should be followed as far as possible during the conversion period from intensive high input and high offtake maize cropping to a sustainable management system growing a range of horticultural crops. The first year ley will be completed in 2017 and the second year in 2018. Depending on the timing of recruitment and start of the businesses, there may in addition be some limited opportunity to commence cropping on a small proportion of the area in 2018, mainly to start getting experience of the land and developing the market. In 2019 the land will be ready for the majority of the cropping proposed above, and it will be expected to reach full production in 2020. The returns during the establishment phase (2018 and to lesser extent in 2019) will obviously be much lower than that which can be achieved once the proposed crop rotation has been fully implemented. The majority of the capital investment will be required in late 2018 and early 2019.

Section III. Ecological land Co-operative Business Plan Holding B: 1.97ha

Reference: Appendix 3. ELC Farm Budget Holding B, which includes:
Page 1. Summary of sales, costs and total margin
Page 2 and 3. Crop Sales. Individual crop yields, prices according to the specified market outlet, and crop sales
Page 4. General Crop Costs. Includes variable costs
Page 5. Overhead costs including rent to ELC
Page 6. Depreciation. Itemised machinery, cost and depreciation.

1. Crop enterprises:

Holding B will concentrate on high value vegetable crops, primarily salad leaf mixes and salad type crop, both in tunnel and outdoors. Cropping will be all year around with sales to local outlets.
Transplants will be purchased from Holding A.
A proposed tunnel area of 1500m2 will concentrate on high value salads all year around.
The outdoor land will occupy an area of around 1.7ha which, allowing for access ways and other features will be a crop area of around 1.5ha.

2. Rotation outdoor

Outdoor cropping will be in a 6-year rotation.
The field will be divided into 6 plots each around 2,000m2 . Each plot is planted with one family group as far as possible. Most of the land will be cropped March to October with winter cover crops in place when resting.
Over 80% of the land will be cropped.
Year 1 Mixed legume ley
Year 2 Brassica salad crops O/W G manure Cereal OW cover crop.
Year 3 Beet family. Leaf beet, Swiss chard and red beetroot.>OW
phacelia/buckwheat
Year 4 Mixed salads and lettuce. >O/W clover.
Year 5 Legumes. Runner beans. These are undersown with mixed legume at the end of June/early July.
Year 6 Courgette. These are planted into the green manure ley.

3. Rotation tunnels

1500m2 tunnels will be multi-cropped all year round with a 5-year rotation. Each rotational year is one tunnel bay: 250m2.
Year 1 Salad leaves non-brassica September - April
Tomatoes April- October
Year 2 Spinach October - April
Cucumbers April- September
Year 3 Over-winter carrot October - April
Celery June-August

Year 4 Salad leaf September –March
Pepper April-November
Radish December -March
Year 5 Courgettes March-July
The tunnels will be standard unheated structures.

4. Crop areas and yields

Appendix 3. ELC Farm Budget Holding B, Crop Sales, page 2, provides details of the crop areas and yields which are based on commercial experience, the Organic Farm Management Handbook 2017 and A Matter of Scale, Laughton R (2017), adapted to the site conditions at Arlington.
Total holding area = 1.97ha
The cropping will be as follows:
0.15ha : comprising mixed rotational vegetable 6 x 250m2
1.5ha Outdoor land: annual mixed vegetable cropping
0.3ha Outdoor land is service paths and storage areas and shelter screens/hedges.

5. Crop inputs.

Crop and soil inputs assume the use of 25 tonne/year of purchased manure or compost and mineral fertiliser from local sources as required, consistent with organic standards.

6. Livestock

There is no livestock included in the budget, as the scale is unlikely to make a significant financial contribution. However it is practicable for small numbers of poultry for personal use.

7. Machinery and equipment

Appendix 3. ELC Farm Budget Holding B, Depreciation, page 5 provides an itemised list and the cost of the machinery required, all purchased by the grower. The delivery vehicle will shared with Holdings A and C.

8. Infrastructure

The ELC will provide access roads and the buildings required for packing and storage of crops, the cost of which is included in the annual rent. ELC will provide a water supply for irrigation, which is assumed to be a borehole, subject to permission.
The smallholder will provide the financial investment for the1,500m2 of polytunnel at a cost of £19,000. The budget depreciates this cost over 10 years.

9. Labour requirements

In addition to the one labour unit provided by the grower/proprietor of Holding B there will be a requirement for one employed person and one and a half units per year of volunteer labour, which will be provided with pocket money and food.

Given the nature of the crops grown, on-site residence is essential due to the need to monitor and manage polytunnels, tunnel ventilation and general crop irrigation, throughout 24 hours of the day. Organic management is particularly dependant on preventative management, and taking action to avoid disease build up by maintaining correct moisture levels, regular monitoring of disease incidence and pest populations and dealing with them by the use of permitted inputs and introduced predators. These inputs are typically slower acting and less effective than pesticides used in conventional production, hence requiring a rapid response time to avoid build of the pest or disease; on site residence is needed to ensure frequent monitoring and action as remote monitoring systems are not appropriate for pests and disease.

Optimum crop irrigation requires regular monitoring; this is most effectively undertaken by regular personal assessment, including early morning and late at night. On-site residence is needed.

Given the high level of capital investment and crop value, which are liable to theft and vandalism, on-site residence is a recommended precaution.

In the experience of the authors on-site residence is a necessary pre-requisite to the success of the overwhelming majority of commercial organic vegetable holdings.

10. Financial Budget

Appendix 3. ELC Farm Budget Holding B, Summary, page 1, shows total sales of £76,748 and a Margin of £12,652 after all costs. The costs include a figure for interest on bank borrowings for operation of the business, excluding any interest on the capital investment (itemised under Depreciation, page 5, column 2) by the Holding proprietor at the start of the project which is £38,850, about half of which is made up by the polytunnels.

11. Conversion and establishment management

The use of a two year clover ley, as discussed above, should be followed as far as possible during the conversion period from intensive high input and high offtake maize cropping to a sustainable management system growing a range of horticultural crops. The first year ley will be completed in 2017 and the second year in 2018. Depending on the timing of recruitment and start of the businesses, there may in addition be some limited opportunity to commence cropping on a small proportion of the area in 2018, mainly to start getting experience of the land and developing the market. In 2019 the land will be ready for the majority of the cropping proposed above, and it will be expected to reach full production in 2020. The returns during the establishment phase (2018 and to lesser extent in 2019) will obviously be much lower than that which can be achieved once the proposed crop rotation has been fully implemented. The majority of the capital investment will be required in late 2018 and early 2019.

Section IV. Ecological Land Co-operative Business Plan Holding C: 3.45ha

Reference: Appendix 4. ELC Farm Budget Holding C, which includes:
Page 1. Summary of sales, costs and total margin Page 2. Crop sales. Individual crop yields, prices according to the specified market outlet, and crop sales Page 3. General crop costs. Includes variable costs Page 4. Overhead costs including rent to ELC Page 5. Depreciation. Itemised machinery, cost and depreciation.

1. Crop enterprises

Holding C will grow a range of staple crops to complement those grown on the other two holdings. All transplants used on this unit will be produced on holding A. There will be a mixture of summer and winter cropping with harvestable crops all year around.

2. Rotations

A total of 3.3ha of land will be available for cropping the remainder being access and bio-diversity areas.
A 5-year rotation is planned with the field divided into 5 plots each around 0.6ha. Each plot is planted with one family group as far as possible. 80% of the land will be cropped.
The rotation will be as follows:
Year 1 Fertility building green manure
Year 2 Brassicas selection of winter/summer cabbage sprouts, kales etc.
undersown with legumes/phacelia
Year 3 Allium family onion and leeks. After onion overwinter green manure.
Leeks undersown rye/vetch
Year 4 Root crops: carrot/parsnip/celeriac/beets
Year 5 Squash undersown with year 1 fertility ley.

3. Crop areas and yields

Appendix 4. ELC Farm Budget Holding C, Crop Sales, page 2, provides details of the crop areas and yields which are based on commercial experience, the Organic Farm Management Handbook 2017 and A Matter of Scale, Laughton R (2017), adapted to the site conditions at Arlington.
Total holding area = 3.45ha
The cropping will be as follows:
3.3ha mixed vegetable crops (individual crop areas provided in Appendix 4. Crop sales page 2.
Remaining area of land is service paths and storage areas and shelter screens/hedges.

4. Crop inputs.
Crop and soil inputs assume the use of 30 tonne/year of purchased manure or compost and mineral fertiliser from local sources, consistent with organic standards.

5. Livestock
There is no livestock included in the budget, as the scale is unlikely to make a significant financial contribution. However it is practicable for small numbers of poultry for personal use.

6. Machinery and equipment
Appendix 4. ELC Farm Budget Holding C, Depreciation, page 5, provides an itemised list and the cost of the machinery required, all purchased by the grower. The delivery vehicle will shared with Holdings A and B.

7. Infrastructure
The ELC will provide access roads and the buildings required for packing and storage of crops, the cost of which is included in the annual rent. ELC will provide a water supply for irrigation, which is assumed to be a borehole, subject to permission.

8. Labour requirements
In addition to the one labour unit provided by the grower/proprietor of Holding C there will be a requirement for one employed person and one and a half units per year of volunteer labour, which will be provided with pocket money and food.
Given the nature of the crops grown, on-site residence is essential due to the need to monitor and manage polytunnels, tunnel ventilation and general crop irrigation, throughout 24 hours of the day. Organic management is particularly dependant on preventative management, and taking action to avoid disease build up by maintaining correct moisture levels, regular monitoring of disease incidence and pest populations and dealing with them by the use of permitted inputs and introduced predators. These inputs are typically slower acting and less effective than pesticides used in conventional production, hence requiring a rapid response time to avoid build of the pest or disease; on site residence is needed to ensure frequent monitoring and action as remote monitoring systems are not appropriate for pests and disease.
Optimum crop irrigation requires regular monitoring; this is most effectively undertaken by regular personal assessment, including early morning and late at night. On-site residence is needed.
Given the high level of capital investment and crop value, which are liable to theft and vandalism, on-site residence is a recommended precaution.
In the experience of the authors on-site residence is a necessary pre-requisite to the success of the overwhelming majority of commercial organic vegetable holdings.

9. Financial Budget

Appendix 4. ELC Farm Budget Holding C, Summary, page 1, shows total sales of £72,651 and a Margin of £6,397 after all costs. The costs include a figure for interest on bank borrowings for operation of the business, excluding any interest on the capital investment (itemised under Depreciation, page 6, column 2) by the Holding proprietor at the start of the project which is £40,200.

10. Cropping options

Reference: Appendix 5. Strawberry Margins.

The crops selected for the crop planning and budgeting in this report is not an exhaustive list, and not necessarily the most profitable but it is a mix that suits the balance of crops to meet market needs. Depending on market demand and experience of the land, other crops may be substituted. For example, given the market demand for soft fruit identified in the market survey there is the possibility of substituting strawberries in the cropping of Holding C.

The gross margin for strawberries shows a return of approx. £3,800 per annum on 0.3ha of land, this being one half of a rotational plot. This compares favourably in financial terms with the vegetables in the budget, which average £1,500 for the same 0.3ha area.

It should be noted that strawberries would occupy the ground for 3 complete seasons and are difficult to rotate with vegetables; ideally they need a minimum rotation of 10 years, three years in and seven out.

Strawberries make heavy demands on labour at a busy time of the year for vegetables therefore 100% of the picking labour needs to be catered for. The investment costs are very high particularly for plants. The crop risk for strawberries is very high, particularly for outdoor crops in the 2nd and 3rd year; this has not been included in the returns as it depends on the individual circumstances. Use of Spanish tunnels reduces the risk to very low levels but increases management and capital costs.

To gain maximum benefit from the crop almost the entire yield would need to go to local direct sales. It would need two and a half people full time for approximately 7 weeks to pick/grade and pack the crop, picking seven days per week. The culture and harvest of strawberries is very demanding and should only be included in the planned cropping by persons that have the necessary experience of the crop.

11. Conversion and establishment management

The use of a two year clover ley, as discussed above, should be followed as far as possible during the conversion period from intensive high input and high off-take maize cropping to a sustainable management system growing a range of horticultural crops. The first year ley will be completed in 2017 and the second year in 2018. Depending on the timing of recruitment and start of the business, there may in addition be some limited opportunity to commence cropping on a small proportion of the area in 2018, mainly to start getting experience of the land and developing the market. In 2019 the land will be ready for the majority of the cropping proposed above, and it will be expected to reach full production in 2020 when full organic

status will be achieved. The returns during the establishment phase (2018 and to lesser extent in 2019) will obviously be much lower than that which can be achieved once the proposed crop rotation has been fully implemented. The majority of the capital investment will be required in late 2018 and early 2019.

DISCLAIMER

In undertaking this work, Mark Measures Associates and Tolhurst Organic Partnership have based their advice on the figures and information provided by the client or its representatives, the responsibility for which rests with the Client.

Mark Measures Associates and Tolhurst Organic Partnership have taken reasonable steps to ensure that the advice offered is accurate and applicable to the client's circumstances.

No liability shall lie with Mark Measures Associates and Tolhurst Organic Partnership in respect of any disclosure made of this advice and acceptance of this advice shall constitute an indemnity from the client to Mark Measures Associates and Tolhurst Organic Partnership.

It should be noted that the client is responsible for contacting where appropriate any relevant Government departments (e.g. DEFRA and the Intervention Board) to ensure that its individual situation in respect of points of law or procedure is ascertained and it is advisable that written replies are obtained to all queries.

Appendix 1. Markets for Arlington Smallholdings Produce

Preliminary market research for Mark Measures and Iain Tolhurst. Written by Zoe Wangler and Lauren Simpson, Ecological Land Co-operative (ELC).

Last edited: 27/08/2017

All contact details for producers, retailers and farmers' markets can be found at the end of this document.

Q1 What local competition is there? Farm shops, specialist retailers, box schemes, farmers markets, food assemblies, etc.

There are six existing organic growers / primary producers and 2 non-certified producers that we're aware of and that sell in the surrounding area through local Farmers Markets and box schemes and also to local shops, cafes and restaurants. However, from conversations with these and retired local growers, with retail buyers and with the manager of the Lewes Friday Market, there is significantly more demand than supply. This is due to the fact that this area is both densely populated and wealthy, and hosts high-end venues such as Glyndbourne as well as many popular health food shops, including Infinity Foods and HiSBe in Brighton.

The local organic producers are:

1 Barcombe Nurseries, established 1997, 14 miles from Arlington.

Barcombe grows covered and open field crops to supply 400 boxes, the Lewes farmers' markets and the Sussex Peasant (mobile stall). They produce alliums, brassicas, curcubits, legumes, graminae, as well as the following under cover: chard, brassica greens, spring onions, herbs and salad for year-round supply. In the summer they produce unusual varieties of tomatoes, aubergines, courgettes, beans, speciality crops including peas, green garlic, shallots and beetroot.

Barcombe buy their basic veg e.g. carrots, onions, beets from a wholesaler in Herefordshire and so would welcome a local equivalent to supply their box. They would also welcome soft fruit and any "special produce" to add as ' optional extras' to their box offering. They don't have a refrigerated van and so can't buy in meat or dairy at present.

Adrian Halstead has seen / evaluated the Arlington site.

2 Ashurst Organics, established 1994,18 miles from Arlington.

Ashurst grow 40 varieties of vegetables on 15 acres to supply their box scheme and to sell at Lewes farmers' markets, local shops, the Sussex Peasant, cafes and caterers. They supplement boxes with veg from other local growers who have glasshouses to extend the season and increase variety. At certain times of the year when local seasonal veg is limited they buy in from further afield.

Ashurst would welcome new suppliers for amounts of all fresh produce as and when they need to buy in (so not necessary frequently, or predictable). They would also welcome suppliers with polytunnels as they don't have much covered space and would buy in crops from under cover to extend the season of certain veg or for out of season crops. To supply their actual box it would need be certified organic. For optional extras to their box it doesn't need to be certified organic and they would welcome soft fruit. Collette said they'd sell "loads and hardly anyone is doing it", and that there's also an appetite for anything unusual and heritage varieties for the "rich Sussex market'. They don't have refrigerated vans so wouldn't distribute meat nor dairy.

As an aside, Collette said if you can build up a loyal direct customer base you're winning and that's how you have regular customers you can rely on.

3 Laines Organics, established 1979, 30 miles from Arlington.

Laines grows field and polytunnel crops (c. ¼ acres) on 10 acres and supplies Lewes Friday Market, Infinity Foods, to other box schemes and wholesale to Covent Garden. The principal grower, Toos Jueken and her daughter Rosa are supportive of the ELC and happy to provide advice.

4 CLOSING SOON: Pannel Organics.

A member of the ELC, Metske van de Laan is due to close his Pannel Organics as he's losing his site which is on a short-term tenancy. Pannel was one of Infinity Foods principal local suppliers who they're now looking to replace as a result of the closing. Metske is an experienced and successful grower and is a valuable information resource. He's happy to be contacted as he's supportive of the project.

5 Tablehurst Farm: established 1995, vegetable garden since 2010, 23 miles from Arlington.

You'll be familiar with Tablehurst. Part of Tablehurst Farm is an 8 acre vegetable garden. It is made up of three main growing areas and 1,500 sq. meters of protected cropping. Produce from Tablehurst rarely makes it as far as Hailsham / Lewes / Arlington, although small quantities are sold through Laports Café and Shop. The Sussex Peasant sells their produce on his mobile stall. Tablehurst's vegetable garden is primarily focused on supplying their award winning shop and café in Forest Row.

6 Hankham Organics, established ?, 9 miles from Arlington.

Hankham is on 4 acres, of which 1.5 acres are under glass. They primarily operate a box scheme and will only deliver between Brighton and Eastbourne. They also sell wholesale. They are almost self-sufficient in vegetables and have a loyal supplier of eggs but are always looking for certified organic fruit to buy in. The main grower, Miles Hankham, mentioned that it is the 1.5 acres of glasshouse which makes what they do viable and also mentioned that the cost of labour has gone up in last 18 months.

There are two other national box schemes that serve the area: Riverford, and Abel & Cole.

Other, non-organic, producers are:

1 Southdowns Dairy, established 2016, 15 miles from Arlington.

   Tom Bennet is a new entrant, operating a 'small' dairy herd in Rodmell and selling fromage frais and yoghurt at Lewes Friday Market and into Infinity Foods and HiSBe.

2 Greenaway Fruit Farm, established 1951, 11 miles from Arlington.

   A fruit farm producing primarily apples and pears on 40 acres. They also grow asparagus, cherries, plums, strawberries, raspberries, and gooseberries with the minimum use of pesticides. Greenaway supplies Sharnfold Farm Shop, Lewes Friday Market Hailsham and Heathfield Farmers Market as well as wholesale to supermarkets and to breweries. They also sell directly to the public from their farm.

There is a food assembly coming soon to Eastbourne and currently selecting producers for on-line order and local collection. No fruit and vegetable producers have yet joined: https://thefoodassembly.com/en/assemblies/8998

There are currently no listed producers in Sussex via the Open Food Market: https://openfoodnetwork.org.uk/shops#

Q2 What farmers markets are within supply reach, what are the gaps in produce and the potential for a new entrant?

Lewes Friday Market: weekly (10 miles)

Lewes' Friday Market has just lost a grower – Fletching Glasshouses – which specialised in covered crops. The Market manager believes that the gap that this has created is particularly in salads. Based on my observation as a regular customer the following produce are not currently available in Lewes' Friday Market: eggs, mushrooms, flowers, covered crops (tomatoes, peppers, melon), plums, blueberries, sweet potatoes, watercress, seed sprouts (e.g. alfalfa), honey and extended season produce.

The growers selling at Lewes Friday Market are collaborative and supportive, and I believe would consider selling with another grower or selling another grower's produce at their stall. This may be to the everyone's advantage as the 'offer' would be more comprehensive.

The Friday Market has sufficient meat and dairy producers, and jam and chutney. Stallholders selling added value produce like fermented foods struggle to do well each week, according to the Market manager, but could be viable if they supplied valued added products once a month.

Prices are on the high-end, for example:

- Organic cherry tomatoes: £10/kg
- Organic cucumber: £1.30 per unit
- Organic salad bag (250g): £2.75

Stall charges are:

- Four foot table = £12.00
- Six foot table = £18.00

Lewes Saturday Farmers Market: 1st Saturday of the month (10 miles)

Both Barcombe Nurseries and Ashurst Organics sell at this market, along with an array on non-organic dairy and meat producers. The same comments about gaps in the Lewes Friday Market apply to this market at it's largely populated by the same fruit and vegetable producers.

Other farmers' markets we've yet to research:

- Bird in the Eye Market: 4th Saturday of the month, April – Sept only (13 miles)
- East Dean Local Produce Market: Every Wednesday (10 miles)
- Framfield Village Market: 4th Saturday of the month (12 miles)
- Hailsham Farmers' Market: Every Saturday (5 miles)
- Heathfield Farmers Market: 3rd Sat of month (11 miles)
- Pevensey Bay Country Market: Fridays Mid-March to December (10 miles)
- Uckfield Farmers' Market: 1st Saturday of the month (13 miles)

Farmers' markets not to be considered, due to the need to avoid generating traffic in the Ashdown Forest:

- Blackham Market
- Chelwood Gate Village Market
- Crowborough Farmers' Market
- Forest Row Village Market
- Waldron Country Market

Q3 What retailers are within supply reach and what is the type and volume of produce that they are interested in purchasing?

Infinity Foods would be interested in any green *certified organic* vegetables on a regular basis because they're losing their local supplier, Pannel Farm (Metske van de Lann). Metske is losing his site and will have to stop supplying them. Infinity would be interested in the following in the summer (example amounts per week from last week):

- spinach (70 bags)
- chard (20 bags)
- kales (60 bags)
- lettuce (96 heads)

- french beans (10kg)
- fennel (15kg)
- cucumbers (150)
- aubergine (15kg)
- tomatoes (22kg)
- celery
- sweet potatoes
- blueberries
- raspberries
- beetroot and
- squash.

Separate to this he said there are never any local organic carrots or classic white cabbages and Infinity Foods have to buy these from wholesalers; when they are from the UK they are from Devon.

We've not spoken yet to Infinity Foods' buyer for non-vegetables such as dairy and value-added products.

We've yet to speak with (not exhaustive):

- Down to Earth Health Food Shop, Hove.
- HiSBE (How It Should Be), Brighton community interest company running an independent supermarket. They've already let us know that they need a larger supply of local produce. They don't need produce to be certified organic.
- Landsdown Health Store, Lewes.
- Laports Café and Store, Lewes.
- Parkham Foods, Falmer.
- Sharnfold Farm & Shop, Pevensey.
- Sunny Foods, Brighton.
- The Village Shop and Café, Upper Dicker.

Q4 What other markets are potentially available to the businesses (e.g. box schemes, food assemblies) and what produce could be supplied?

We've not yet spoken to the following:

The Sussex Peasant is a new offering a mobile stall which buys / picks up organic produce from Sussex farms and sells daily at popular locations such as Brighton railway station.

Brighton Open Market rents out shelves to local organic producers, certified and non-certified.

There are a host of high-end restaurants, pubs and caterers that we've not yet researched. There are also more than a dozen festivals in East Sussex each year, including many festivals aimed at the ethical / organic consumer market. Glyndebourne is only 8 miles away and caters for thousands of visitors each year.

Contacts

Ashurst Organics
Peter and Collette Haynes
Tel: 01273 891219
Email: ashurstveg@btinternet.com
http://www.ashurst-organics.com/

Bird in the Eye Market
Stephanie Wheeler
Tel: 07912 648793

Barcombe Nurseries
Adrian Halstead
Tel: 01273 400011
Email:
vegbox@barcombenurseries.co.uk
https://www.barcombenurseries.co.uk/

Down to Earth
Tel. 01273 770600
E-mail: info@downtoearth-hove.co.uk

East Dean Local Produce Market
Sam Stannistreet
Tel: 01323 423481
Mob: 07730 325398
Email: zoe@newbarnexceat.plus.com

Foodshed Coop
http://www.foodshedbrighton.com

Framfield Village Market
Ann Newton
Tel: 01825 890182
Email: framfield.pc@virgin.net

Greenway Fruit Farm
Graham Love
Mobile: 0784 3576625
Tel: 01323 833118

Glyndebourne
https://www.diningatglyndebourne.com
/index.cfm/seasons/content/cid/93

Hankham Organics
Miles Hankham
Tel: 01323 741000
Mob: 07815 019902

Hailsham Street Market
Manager: 01323 841701

Heathfield Farmers Market
Manager: Joanne Aldous
Tel: 01892 616314

HiSBe
Ruth Anslow (although this isn't their buyer but initial contact)
Email: ruthanslow@hisbe.co.uk
http://hisbe.co.uk/

Infinity Foods
Ivan
Email: infinityveg@gmail.com
Tel: 01273 603563

Laines Organic
Toos Jueken
Tel: 01444452480
Email: toosjeuken@hotmail.co.uk

Landsdown Health Store
Tel: 01273 474681

Laports Café and Shop
http://www.laportes.co.uk/

Lewes Friday Market
Manager:Lily Ills
Tel: 07824711727
Email: lewesfoodmarket@hotmail.com
Website: http://lewesfoodmarket.co.uk

Lewes Saturday Market

Pannel Organics

Parkham Foods
Tel: 01273 671002

Pevensey Bay Country Market
Janet Ellis
Tel: 01323 768994

Southdown Dairy
Tom Bennet

http://www.southdownsdairy.com/
tom@southdownsdairy.com

Sharnfold Farm & Shop
Tel: 01323 768490

Sussex Peasant
Ed Johnstone
Mob: 07843099883
http://www.thesussexpeasant.co.uk/

Sunny Foods
Tel: 01273 507879

Tablehurst Farm
http://tablehurst.farm/the-farm/our-vegetable-garden/

Uckfield Farmers Market
Manager: Phil - 01435 873009

Other potential retailers as per this list:
http://bhfood.org.uk/local-and-organic-food-stockists

Appendix 2. ELC Farm budget for Holding A

SUMMARY

Capital investment	£52,900.00
Crop Sales	£76,351.00
General crop costs	£7,200.00
Overheads	£55,640.00
Depreciation	£4,805.00
TOTAL MARGIN	£8,706.00

ELC Farm Budget Holding A **1.97 ha**

CROP SALES

														Fertility building	
	Units	**Outlet**	**Outlet allocati**	**Peg Plants**	**Module Plants**	**Pot Plants**	**Herbs outdoo**	**Per Flwrs**	**Annual Flwrs**	**Flwrs (Tunnel)**	**Herb (tunnel)**	**Ornamental**	**Ley**	**Green manure**
Area	Square meters						500	2000	3500	2000	700	300		
Produce yield	Kg or head/ M2			No. of plants	No. of plants	No. of plants	M2							
Total produce	Kg or head or number			36000	23000	10000		0	0	0	0	0	0	0
Produce sold	Kg or head	Direct Marketing	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	50.00%	50.00%
Produce price	£/kg or £/m2 or 1000			22	33	0.45	12	6	5	10	7	33		
Sales	£			792	759	4500	6000	12000	17500	20000	4900	9900	0	0
Produce sold	Kg or head	Wholesale	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	50.00%	50.00%
Produce price	£/kg or head													
Sales	£			0	0	0	0	0	0	0	0	0	0	0
Total sales				£792.00	£759.00	£4,500.00	£6,000.00	£12,000.00	£17,500.00	£20,000.00	£4,900.00	£9,900.00	£0.00	£0.00

TOTAL SALES **£76,351.00**

ELC Farm Budget Holding A

General Crop Costs

Direct costs (whole holding)

Seeds flowers	£1,500.00	total seed cost for all crops
Seeds Green Manure	£250.00	
Plants in Pots	£0.00	0 x £0.45
Plants in Modules	£0.00	0 x £33/1000
Supplementary fertilisers	£250.00	e.g. 1 tonne Rock Phosphate at £250
Manures and green waste composts e	£250.00	Bought in 10 tonne x £25/tonne
Crop covers	£1,000.00	
Pest control	£1,500.00	
Liquid feed	£450.00	
Total direct costs	£5,200.00	

Direct costs - propagation

Growing costs - greenhouse	£0.00	
Growing media	£2,000.00	bought in
Total direct costs - propagation	£2,000.00	

Direct costs- tunnels

Soil preparation	£0.00	
Supplementary fertilisers	£0.00	
Manures and green waste composts e	£0.00	
Other		
Total direct costs - tunnels	£0.00	

TOTAL General Crop costs	£7,200.00

ELC Farm Budget Holding A

Overhead Costs

		Number	Cost per unit	per year	Notes
Labour	Wage costs regular labour	1	20000	£20,000.00	
	Costs of volunteer labour	0.75	5000	£3,750.00	
	Total labour costs			£23,750.00	
Land	Land -rent/ELC charge			£6,000.00	£400/month plus £1,200/year r
	Other land expenses			£0.00	
Buildings	Repairs and maintenance			£800.00	
	Building rent (if separate)				
	Maintenance (buildings & site)			£3,500.00	
Equipment	Maintenance (equipment &machinery)			£3,500.00	
	Contractors charges (e.g. cultivation)			£500.00	
	Hire			£300.00	
Transport	Vehicles			£0.00	
	Vehicle insurance			£0.00	
	Transpot costs (inc diesel)			£1,800.00	£0.35/mile x 6,000/year
Resource use	Electricity tunnels			£3,500.00	
	Water			£1,000.00	Shared bore hole with B and C
	Gas			£0.00	
	Tractor diesel			£0.00	
	Electricty for building			£200.00	£600 sharedwith B and C
Other costs	Certification Fees			£440.00	
	Membership fees			£100.00	
	Professional fees			£0.00	
	Website / marketing			£2,000.00	
	Soil analysis			£100.00	
	Staff Training			£0.00	
	Work clothing			£400.00	
	Office Costs			£1,750.00	
	Travel			£0.00	
	Bank Charges			£900.00	6% on £15,000 overdraught
	Accountancy			1,250.00	
	Packaging			1,950.00	
	Insurance			1,400.00	
	Phone/internet			500.00	
Total overheads				£55,640.00	

ELC Holding A

DEPRECIATION

Investment costs -protected cropping	Costs	Area	Years to spread cost	Cost per year			
Total protected area		Area					
Cost of tunnels	£36,500.00	10 x 300 m2 bays	10	£3,650.00		New	
Total cost	£36,500.00			£3,650.00			

Investments - field	Costs	Area	Years to spread cost	Cost per year			
Tractor			10	£0.00			
Trailer			10	£0.00			
Rotavator	£3,500.00	0	10	£350.00		Secondhand	
Drill	£150.00	0	10	£15.00		New	
Mower	£800.00	0	10	£80.00		New	
Barrows etc	£150.00	0	5	£30.00		New	
Irrigation	£600.00	0	10	£60.00		New	
Plant stoc/standing beds 250 sm x £8	£2,000.00		10	£200.00			
Fixed spinkler irrigation for beds	£400.00		10	£40.00			
Total cost	£7,600.00			£775.00			

Investments -general	Costs	Area	Years to spread cost	Cost per year			
Delivery vehicle	5000		5	£1,000.00	Total cost £15,000	Second hand	Shared with Holdings B+C
Garden: machinery	£0.00	0	10	£0.00			
Garden hand tools	£800.00	0	10	£80.00		New	
Hort sundries	£3,000.00	0	10	£300.00		New	
Total cost	£8,800.00			£380.00			

TOTAL	£52,900.00			£4,805.00			

Appendix 3. ELC Farm budget for Holding B

SUMMARY

Capital investment	£38,850.00
Crop Sales	£76,748.50
General crop costs	£5,506.00
Overheads	£55,190.00
Depreciation	£3,400.00
TOTAL ANNUAL MARGIN	£12,652.50

ELC Farm Budget Holding B **1.97 ha**

CROP SALES

Sales

				Outdoor Crops							
	Units	**Outlet**	**Outlet allocation**	**Brass salad**	**Leaf Beet**	**Spinach**	**Mix salads**	**Lettuce**	**French Bns**	**Runnr Bns**	**Courgette**
				kg/m2	kg/m	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2
Area	Square meters			2000	1000	1000	1000	1000	1000	1000	2000
Produce yield	Kg or head/ M2			0.6	1.4	0.6	1.2	6	1.5	0.9	1.5
Total produce	Kg or head			1200	1400	600	1200	6000	1500	900	3000
Produce sold	Kg or head	Direct Marketing	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%
Produce price	£/kg or head or bunch			10	3.8	6.5	10	1.1	4.5	4.5	2.5
Sales	£			6000	2660	1950	6000	3300	3375	2025	3750
Produce sold	Kg or head	Wholesale	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%
Produce price	£/kg or head			6.5	2.65	5.5	6.5	0.8	3.2	3.2	1.85
Sales	£			3900	1855	1650	3900	2400	2400	1440	2775
Total sales				**9900**	**4515**	**3600**	**9900**	**5700**	**5775**	**3465**	**6525**

TOTAL SALES **£76,748.50**

Tunnel Crops												Fertility building		
W Salads	**Toms**	**Spinach**	**Cues**	**Carrot bunch**	**Celery**	**W Salad**	**Pepper**	**Radish**	**Courgette**	**Other crops**		**Ley**	**Green manure**	**Cropped area**
kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2					
250	250	250	250	250	250	250	250	250	250	250			2400	15150
1.2	3.2	0.72	16	7.2	8	1.2	1.6	6	3.2					
300	800	180	4000	1800	2000	300	400	1500	800	0		0	0	
50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%		50.00%	50.00%	
12	4	7.8	1.2	1.25	1.25	12	6.5	0.5	5					
1800	1600	702	2400	1125	1250	1800	1300	375	2000	0		0	0	
50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%		50.00%	50.00%	
8	3	6.6	0.8	0.9	0.85	8	4.5	0.35	3.5					
1200	1200	594	1600	810	850	1200	900	262.5	1400	0		0	0	
3000	**2800**	**1296**	**4000**	**1935**	**2100**	**3000**	**2200**	**637.5**	**3400**	**3000**		**0**	**0**	

ELC Farm Budget Holding B

General Crop Costs

Direct costs (whole holding)		**Notes**
Seeds veg	£1,100.00	total seed cost for all crops
Seeds Green Manure	£750.00	
Plants in Pots	£2,385.00	5,300 x £0.45
Plants in Modules	£396.00	12,000 x £33/1000
Supplementary fertilisers	£250.00	e.g. 1 tonne Rock Phosphate at £250
Manures and green waste composts e	£625.00	Bought in 25 tonne x £25/tonne
Total direct costs	£5,506.00	

Direct costs - propagation		
Growing costs - greenhouse	£0.00	
Growing media	£0.00	bought in
Total direct costs - propagation	£0.00	

TOTAL General Crop costs	£5,506.00

ELC Farm Budget Holding B

Overhead Costs

		Number	Cost per unit	per year	Notes
Labour	Wage costs regular labour	1	20000	**£20,000.00**	
	Wage costs volunteer labour	1.5	5000	**£7,500.00**	
	Benefits in kind				
	Total labour costs			**£27,500.00**	
Land	Land -rent/ELC charge			**£6,000.00**	£400/month plus £1,200/year monitoring
	Other land expenses			**£0.00**	
Protected cropping					
	Repairs and maintenance			**£400.00**	
Buildings					
	Building rent (if separate)				
	Maintenance (buildings & site)			£2,500.00	
Equipment and tools					
	Maintenance (equipment &machinery)			£3,500.00	
	Contractors charges (e.g. cultivation)			£500.00	
	Hire			£300.00	
Transport					
	Vehicles			£0.00	
	Vehicle insurance			£0.00	
	Haulage costs (inc diesel)			£1,800.00	£0.30/mile x 6,000/year
Resource use					
	Electricity			£1,250.00	
	Water			£1,000.00	Shared bore hole
	Gas			£0.00	
	Tractor diesel			£250.00	
	Van diesel			£0.00	
Other costs					
	Certification Fees			£440.00	
	Membership fees			£100.00	
	Professional fees			£0.00	
	Telephone/ internet			£600.00	
	Website / marketing			£2,000.00	
	Soil analysis			£100.00	
	Staff Training			£0.00	
	Work clothing			£400.00	
	Office Costs			£1,750.00	
	Travel			£0.00	
	Bank Charges			£900.00	6% at £15,000 overdraught
	Accountancy			1,250.00	
	Packaging			1,250.00	
	Insurance			1,400.00	
Total overheads				£55,190.00	

ELC Farm Budget Holding B

Depreciation

Investment costs -protected cropping	**Costs**	**Area**	**Years to spread cost**	**Cost per year**	**Notes**			
Total protected area		Area						
Cost of tunnels	£19,000.00	5 x 300 m2 bays	10	£1,900.00				
Total cost	£19,000.00			£1,900.00				

Investments - field	Costs		Years to spread cost	Cost per year				
Tractor	£4,000.00		10	£400.00	Toatl cost £10,000	Secondhand equipment	with foreloader	Shared with Holding C
Tractor	£2,000.00		10	£200.00	Total cost £4000	Secondhand equipment		Shared with Holding C
Trailer	£500.00		10	£50.00	Total cost £1200	Secondhand equipment		Shared with Holding C
Rotavator	£3,500.00		10	£350.00		New		
Drill	£500.00		10	£50.00		New		
Mower	£800.00		10	£80.00				
Barrows etc	£150.00		5	£30.00				
Irrigation	£800.00		10	£80.00				
Total cost	£12,250.00			£1,240.00				

Investments -general	Costs		Years to spread cost	Cost per year				
Delivery vehicle	5000		5	£1,000.00	Total cost £15,000	Second hand		Shared with Holdings A and C
Garden: machinery	£0.00		10	£0.00		New		
Garden hand tools	£800.00		10	£80.00		New		
Hort sundries inc crop covers	£1,800.00		10	£180.00		New		
Total cost	£7,600.00			£260.00				
TOTAL	£38,850.00			£3,400.00				

Appendix 4. ELC Farm budget for Holding C

SUMMARY

Capital investment	£40,200.00
Crop Sales	£72,651.50
General crop costs	£7,829.00
Overheads	£54,890.00
Depreciation	£3,535.00
TOTAL MARGIN	£6,397.50

ELC Farm Budget Holding C **3.45 ha**

CROP SALES

Sales

	Units	Outlet	Outlet allocation	Wtr Cabbage	Smr Cabbage	Cauli	Kale	Brocolli	Onion	Leek	Carrot	Parsnip	Leef beet	Beetroot	Celeriac	Squash	B Beans	Fertility building Ley	Green manure	
				head/m2	head/m2	head/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2	kg/m2			
Area	Square meters			1066	2133	1066	1066	1066	3200	3200	3200	1600	1066	1066	533	4266	2133	6400		33061 M2
Produce yield	Kg or head/ m2			2.4	2.4	1.25	1.5	1.5	1.65	1.06	1.25	1.33	1.4	1.3	6.2	1.25	1.25			
Total produce	Kg or head			2558.4	5119.2	1332.5	1599	1599	5280	3392	4000	2128	1492.4	1385.8	3304.6	5332.5	2666.25	0	0	
Produce sold	Kg or head	Direct Marketing	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%			
Produce price	£/kg or head or bunch			1.2	1.2	1.3	3.5	4.5	1.25	3.5	1.45	2.1	4.25	1.4	1.4	2.6	2.6			
Sales	£			1535.04	3071.52	866.125	2798.25	3597.75	3300	5936	2900	2234.4	3171.35	970.06	2313.22	6932.25	3466.125	0	0	
Produce sold	Kg or head	Wholesale	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%	50.00%			
Produce price	£/kg or head			0.75	0.75	0.9	2.3	3.25	0.7	2.25	1.05	1.65	3.5	1	0.9	1.9	1.7			
Sales	£			959.4	1919.7	599.625	1838.85	2598.375	1848	3816	2100	1755.6	2611.7	692.9	1487.07	5065.875	2266.3125	0	0	
Total sales				**2494.44**	**4991.22**	**1465.75**	**4637.1**	**6196.125**	**5148**	**9752**	**5000**	**3990**	**5783.05**	**1662.96**	**3800.29**	**11998.125**	**5732.4375**	**0**	**0**	

TOTAL SALES **£** **72,651.50**

ELC Farm Budget Holding C

General Crop Costs

Direct costs (whole holding)		Notes
Seeds Veg	£1,600.00	total seed cost for all crops
Seeds Green Manure	£1,200.00	
Onion sets	£450.00	
Plants in Pots	£2,385.00	5,300 x £0.45
Peg plants	£792.00	36,000 x £22/1000
Plants in Modules	£352.00	11,000 x £33/1000
Supplementary fertilisers	£300.00	e.g. 1 tonne Rock Phosphate at £250
Manures and green waste composts e	£750.00	Bought in 30 tonne x £25/tonne
Total direct costs	£7,829.00	

Direct costs - propagation	
Growing costs - greenhouse	£0.00
Growing media	£0.00
Total direct costs - propagation	£0.00

Direct costs- tunnels	
Soil preparation	£0.00
Supplementary fertilisers	£0.00
Manures and green waste composts etc	
Other	
Total direct costs - tunnels	£0.00

TOTAL General costs	£7,829.00

ELC Farm Budget Holding C

Overhead Costs

		Number	Cost per unit	per year		Notes
Labour						
	Wage costs regular labour	1	20000	**£20,000.00**		
	Wage costs volunteer labour	1.5	5000	**£7,500.00**		
	Benefits in kind					
	Total labour costs			**£27,500.00**		
Land	Land -rent/ELC charge			**£6,000.00**		£400/month plus £1,200/year monitoring
	Other land expenses			**£0.00**		
Protected cropping						
	Repairs and maintenance					
Buildings						
	Building rent (if separate)					
	Maintenance (buildings & site)			£2,500.00		
Equipment and tools						
	Maintenance (equipment &machinery)			£3,500.00		
	Contractors charges (e.g. cultivation)			£500.00		
	Hire					
Transport						
	Vehicles			£0.00		
	Vehicle insurance			£0.00		
	Haulage costs (inc diesel)			£1,800.00		£0.30/mile x 6,000/year
Resource use						
	Electricity			£1,250.00		
	Water			£1,000.00	ELC charge	Shared bore hole £30,000 /3 over 10 years
	Gas			£0.00		
	Tractor diesel			£650.00		
	Van diesel			£0.00		
Other costs						
	Certification Fees			£440.00		
	Membership fees			£100.00		
	Professional fees			£0.00		
	Telephone/ internet			£600.00		
	Website / marketing			£2,000.00		
	Soil analysis			£100.00		
	Staff Training			£0.00		
	Work clothing			£400.00		
	Office Costs			£1,750.00		
	Travel			£0.00		
	Bank Charges			£900.00		£15,000 overdraught at 6%
	Accountancy			1,250.00		
	Packaging			1,250.00		
	Insurance			1,400.00		
Total overheads				£54,890.00		

ELC Farm Budget Holding C

Depreciation

Investment costs -protected cropping	**Costs**	**Area**	**Years to spread cost**	**Cost per year**	**Notes**			
Total protected area		Area						
Cost of tunnels	£0.00	0	10	£0.00				
Total cost	£0.00			£0.00				

Investments - field	Costs		Years to spread cost	Cost per year				
Tractor	£6,000.00		10	£600.00	Toatl cost £10,000	Secondhand equipment	with foreloader	Shared with Holding B
Tractor	£2,000.00		10	£200.00	Total cost £4,000	Secondhand equipment		Shared with Holding B
Trailer	£700.00		10	£70.00	Total cost £1200	Secondhand equipment		Shared with Holding B
Plough	£2,000.00		10	£200.00		Secondhand equipment		
Power Harrow	£2,500.00		10	£250.00		Secondhand equipment		
Rotavator	£3,500.00		10	£350.00		Secondhand equipment		
Spring tines	£500.00		10	£50.00		Secondhand equipment		
Harrows	£100.00		10	£10.00		Secondhand equipment		
Roller	£400.00		10	£40.00		Secondhand equipment		
Topper	£1,800.00		10	£180.00		Secondhand equipment		
Lifter	£750.00		10	£75.00		Secondhand equipment		
Drill	£600.00		10	£60.00		Secondhand equipment		
Inter row hoes	£800.00		10	£80.00		Secondhand equipment		
Comb harrow	£600.00		10	£60.00		Secondhand equipment		
Barrows etc	£150.00		5	£30.00		New		
Irrigation equipment	£9,000.00		10	£900.00		New		
Total cost	£31,400.00			£3,155.00				

Investments -general	Costs		Years to spread cost	Cost per year				
Delivery vehicle	5000		5	£1,000.00	Total cost £15,000	Second hand		Sharedwith Holdings A and C
Garden: machinery	£0.00		10	£0.00		New		
Garden hand tools	£800.00		10	£80.00		New		
Hort sundries inc crop covers	£3,000.00		10	£300.00		New		
Investment 4			10	£0.00				
Investment 5			10	£0.00				
Investment 6			10	£0.00				
Total cost	£8,800.00			£380.00				

TOTAL	£40,200.00			£3,535.00				

Appendix 5 Strawberry margins

Total crop area = 0.3ha comprising of 3 plots each 0.1ha being: 0.1 ha maiden plants. 0.1ha second year plants. 0.1ha third year plants
Maiden crop covered with cloches for 3 week harvest gain *These figures are for three years of cropping*

Crop costs			**£**	**£**
Plants 15,000 @£375/1000			5625	
Woven mulch 2000m @£0.55/m			1100	
Woodchip mulch 100m3 @£15/m			1500	
Cloche hoops 1/3 area		270 @£0.90 each	240	
Ground clips		400 each @ £0.20	800	
Cloche cover 1/3 area		700m @£0.40/m	280	
Packaging @£0.30/kg		4750kg	1425	
Labour picking only		950 hours @£9.00	8550	
Labour-planting cleaning mulching etc		270 hours @£9.00	2430	
Total crop cost for three years				**13400**

Sales				
Year 1	1250kg	£8.00/kg	10000	
Year 2	1950kg	£4.00/kg	7800	
Year 3	1750kg	£4.00/kg	7000	
Total sales over 3 years				**24800**
Margin over sales for 3 years				**11400**
Margin average per annum				**3800**

Appendix 6.

Sources of information and references

Organic Farm Management Handbook 2017. Lampkin N, Measures M and Padel S.

Soil Association Organic Standards: https://www.soilassociation.org/media/1220/farming-and-growing-v17-4-august-2016.pdf

Soil Association 2017 Market Report: https://www.soilassociation.org/certification/market-research-and-data/order-the-2017-organic-market-report

A Matter of Scale. Laughton R. https://landworkersalliance.org.uk/2017/07/small-scale-agroecological-farms-attract-uk-workers-produce-high-yields-of-vegetables-and-deliver-multiple-environmental-and-social-benefits/

The Soils Guide. Cranfield University 2017. Available: www.landis.org.uk

Letter from Metske van der Laan Pannel Organic.

Report from Roger Hitchings on the Arlington site.

Letter from Ru Litherland Organic Lea Ltd.

Appendix 7 Biographies

Mark Measures: Biography

Cow Hall
Newcastle
Craven Arms
Shropshire SY7 8PG UK
Tel. 01588 640118
Email mark@organicadvice.org.uk
IOTA website www.organicadvice.org.uk
MMA website www.organicmeasures.org.uk

Qualifications: BSc. Hons. Farm Management, IOTA accredited

Mark Measures is the leading UK organic agriculture consultant, specialising in farm business management, conversion planning and organic systems development. He has practical, management and advisory experience in mixed and arable farming and growing on family farms and estates throughout the UK.

Mark has over thirty years experience of organic advisory work, having established and headed the Organic Research Centre's Organic Advisory Service, in 1985. He has extensive knowledge of all aspects of the organic industry and its markets and many years experience of organic research and training. He was responsible for the establishment of the Organic Milk Suppliers Co-operative (currently 300 dairy farmer members) and is joint editor of the Organic Farm Management Handbook, a biannual publication providing management and financial information for organic farmers. Overseas interests have involved him in provision of technical and management advice in the Czech Republic, Argentina and Iceland. He is director of an education and conservation trust operating an estancia in Argentina and an education trust in the UK operating a 300 ha dairy farm and market garden.

Working as an independent consultant he provides advice to farmers and farmer producer groups and provides technical and policy advice to the Organic Research Centre. He is a partner in a mixed farm in Shropshire. He is Managing Director of the Institute of Organic Training and Advice, a division of ORC, which provides training, information and accreditation to advisers throughout the UK.

Iain Tolhurst: Biography

Tolhurst Organic Partnership CIC
2 West Lodge. Hardwick
Pangbourne
Reading
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07770 316008
Email tolhurstorganic@yahoo.co.uk
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IOTA accredited

Iain Tolhurst has been an active commercial organic grower of a wide range of crops on 8ha for over 40 years and has held the Soil Association symbol since 1976.
Iain has over 30 years experience of organic horticultural advice and has worked closely with Mark Measures on a number of projects for many decades. He was the first organic horticultural adviser to join I.O.T.A . He has written three books on organic production the most recent being "Back to Earth" a compilation of almost 40 years of articles that were written for a range of technical and other journals.

His experience has travelled to more than 10 countries worldwide from Moldova in the East, Iceland in the north and Mozambique in the South where he has advised on horticultural systems and crop production. He was co-founder of the Stockfree Organic standards in UK and wrote the first ever organic standards for the Republic of Moldova in 2002. He also works part time as an advisor for many horticultural farms in the UK, various organic organisations delivering seminars and conducting farm walks. He carries out some voluntary work overseas and was founder member and chairman for 10 years of Thames Organic Growers. He is considered to be a leading expert on stock-free organic horticulture, and low carbon local vegetable production systems.

His farm is a working example of agroecology in action that has been developing over a long period of time and displays a high level of self-sufficiency whilst maintaining close links with the local community. A range of trials into organic systems takes place on the farm and it has regular visitors from across the world to share in its knowledge.

Ecological Appraisal of Land to the South of Copyhold Cottages, Wilbees Farm, Arlington

Carried out by
Dr. Colin C.D. Tingle FRES, Environmental Impact Ecologist, and
L. Louise Holloway, Restoration Ecologist

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Summary

- This document presents a Preliminary Ecological Appraisal of land previously part of Wilbees Farm, Arlington, on behalf of the owners, the Ecological Land Co-operative (ELC). ELC seeks planning permission for three temporary dwellings on 18.54 acres of existing farmland to create three residential smallholdings.
- This appraisal is based on two site visits and a review of a comprehensive Biodiversity Data Report for the site and a 2 km radius around it, provided by Sussex Biodiversity Record Centre. Our review of the Biodiversity Data Report also included extracting information on the natural capital and ecosystem services of the surrounding 2 km area of land.
- During the site visits, basic data and information was also collected on the natural capital of the site, the ecosystem services it provides and of the natural capital and ecosystem services provided by the neighbouring surrounding land and water (over a maximum of 1 km from the site).
- Our findings are that the biodiversity of the field portion of the site itself is of low value, and that the biodiversity value of the surrounding hedgerows is considerably higher.
- The oldest hedgerows along the internal boundaries and part way along the road boundary contain mature oak, ash and willow trees (with all their associated biodiversity) along with 6 other species of native tree and bush plus a range of common climbing, spreading and ground-layer species. More bird species were seen and heard within the hedgerows than in the field itself during field visits, despite a significant bias the other way in terms of land area of the two.
- A preliminary assessment was also made of the natural capital of the site and, again, the field itself has low natural capital:
    - mineral, clay soil with little or no visible organic matter content and low below-ground biomass;
    - no standing or flowing water and little evidence of water flow across or around the site;
    - temporary habitat of ruderal weeds which does not indicate high ecological health; and
    - low biodiversity.
- The natural environment provides a wide range of benefits to people. These include, for example, production of clean water and many raw materials used in economic activities, regulation of climate and flooding, soil formation and crop pollination, and

cultural benefits such as aesthetic value and recreational opportunities. These multiple benefits that people derive from ecosystems are known as 'ecosystem services'. Ecosystem services underpin our health, economy and quality of life, albeit that many have been overlooked over many decades and up until very recently. For this reason, ecosystem services will increasingly frame the way that we assess the impacts and implications of how we interact with the natural environment, and they will also shape the ways in which we manage both the environment and human activities impinging upon it. It isn't just the environment that will gain from enhanced biodiversity, natural capital and ecosystem services, but the local human population too – the enhancement of these important elements has the potential to make the local economy more resilient.

- The ability of the field part of the site to provide ecosystem services is currently limited and thus the number and quality of ecosystem services provided is low and the extent of each individual ecosystem service that is provided is also small.
- By contrast, the surrounding area is relatively rich in biodiversity, with relatively high natural capital value over significant areas and with specific 'hotspots' providing a very large range of ecosystem services to fairly high levels.
- In part, due to its strategic location, there is considerable opportunity for the site to be enriched by ecological restoration for the benefit of livelihoods of on-site smallholders, biodiversity in general, and also for targeted species as well as extending to contributing to the living landscape. Of primary restoration value will be strengthening woodland continuity. Rehabilitation of soil and hydrology is envisaged by ELC as part of the smallholders' creation of viable livelihoods for themselves.
- Farming has been an important component of the Arlington community historically and traditional values as custodians of the land for future generations remain. The ELC proposals for sustainable livelihoods for several smallholders living from the land on site would seem to be in keeping with this.
- It is likely that the site's ecological health would be increased by the proposed land use. The potential to enhance biodiversity, natural capital and ecosystem service provision is significant through the proposed use of the land for low-impact, ecologically sensitive livelihoods. If the proposed development does provide such benefits, the Local Landscape Character will also be enhanced, potentially significantly.
- The beneficiaries of this enhanced biodiversity, natural capital, ecosystem service provision will be not only the incoming smallholders, but also local individual

residents nearby, the local community and (to a decreasing degree) the District and beyond.

- The ELC proposals appear to meet the highest environmental requirements of the National Planning Policy Framework (NPPF) and also to directly assist Wealden DC policies on Green Infrastructure and biodiversity, as expressed in the WDC Local Plan.

Introduction

Dr. Tingle & Ms. Holloway were contracted by the Ecological Land Co-operative (ELC) to make a preliminary Ecological Appraisal of the land directly to the south of Copyhold Cottages purchased by ELC in 2016. The site was previously under the ownership and management of Wilbees Farm, Arlington and had been used for conventional arable agriculture in preceding years, cropping maize for about 10 years and used as pasture before that.

ELC seeks planning permission for three temporary dwellings on 18.54 acres of existing farmland to create three residential smallholdings.

> "Farming has always been important to the Arlington community and today's local farmers, whilst more mechanised and intense than in times past, still feel they hold true to traditional values as custodians of the land for future generations".
>
> "Fields around the village will regularly support sheep and cattle alongside arable crops, managed woodland and lifestyle plots."
> (Arlington Village website, 2016 http://arlingtonvillage.co.uk/farming-community/).

Both these statements from the village website appear highly consistent with the aims of the ELC for enabling viable, smallholder farming livelihoods on their site.

This report aims to provide an assessment to assist with information on some basic elements of the ecology of the site to inform ideas for producing a plan for the rural enterprises there which are "ecologically beneficial", to meet the ELC mission (ELC, 2016).

Planning Policy Background

The ecology of a given site is highly dependent not only on the land use and management of the particular site, but also by the environmental health, land use and land management of surrounding areas over a fairly wide area.

The natural environment provides a wide range of benefits to people. These include, for example, production of clean water and many raw materials used in economic activities, regulation of climate and flooding, soil formation and crop pollination, and cultural benefits such as aesthetic value and recreational opportunities. These multiple benefits that people derive from ecosystems are known as 'ecosystem services'. Ecosystem services underpin our health, economy and quality of life, albeit that many have been overlooked over many decades and up until very recently. For this reason, ecosystem services will increasingly frame the way that we assess the impacts and implications of how we interact with the natural environment, and they will also shape the ways in which we manage both the environment and human activities impinging upon it (Everard & Waters, 2013).

National Planning Policy Framework

The National Planning Policy Framework (NPPF) states under para 109 that "The planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, geological conservation interests and soils;
- recognising the wider benefits of ecosystem services;
- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures; and
- remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate (DCLG, undated).

The site falls under the jurisdiction of the Wealden District Council. The Wealden District Core Strategy Local Plan was adopted in 2013 and contains local policies relating to nature conservation. The main policies drawn from these, which are relevant to the site, are indicated below (Wealden District Council, 2013):

Policy WCS12: Biodiversity

"In order to contribute to the biodiversity targets provided in the Sussex Biodiversity Action Plan, the Council will prevent a net loss of biodiversity, ensure a comprehensive network of habitats, and work with partners to maximise opportunities to ensure habitats, biodiversity features and ecological networks are maintained, restored, enhanced and where possible created to achieve a net gain in biodiversity and sustain wildlife in both rural and urban areas. This will be achieved through the development and implementation of an integrated green network strategy."

Policy WCS13: Green Infrastructure

"The District's existing network of green infrastructure will be protected, improved and enhanced by the implementation of a Green Infrastructure Strategy, ensuring a multifunctional, accessible network which maintains and improves biodiversity and landscape character, increases opportunities for healthy living and contributes to healthy ecosystems and climate change objectives."

When set beside the aims and vision of the Ecological Land Co-operative:

> "Sustainable rural livelihoods – such as small- scale ecological food production – protect the environment and reduce greenhouse gas emissions by reducing fossil fuel use ... help build a vibrant, living countryside in which people flourish alongside our cherished landscapes and natural biodiversity, and have a important role to play in ensuring food and energy security".
> and
> " … our vision is one where land is valued and used as a means to enhance our collective good …. our model champions a collective, ecological and co-operative vision of land ownership and land use." (Ecological Land Co-operative, undated)

The objectives of both National & Wealden DC Planning Policy and ELC appear closely aligned.

This report aims to provide the ELC with the information and adequate data to demonstrate to what extent its proposals will perform in relation to these requirements of the NPPF, as well as to aspects of the Local Plan dealing with environmental health and wellbeing.

Local Landscape Character Assessment

The Low Wealden Landscape[1]

The Low Weald National Character Area

- Broad, low-lying, gently undulating clay vales with outcrops of limestone or sandstone providing local variation.
- The underlying geology has provided materials for industries including iron working, brick and glass making, leaving pits, lime kilns and quarries. Many of the resulting exposures are critical to our understanding of the Wealden environment.
- A generally pastoral landscape with arable farming associated with lighter soils on higher ground. Land use is predominantly agricultural.
- Field boundaries of hedgerows and shaws (remnant strips of cleared woodland) enclosing small, irregular fields and linking into small and scattered linear settlements along roadsides or centred on greens or commons. Rural lanes and tracks with wide grass verges and ditches.
- Small towns and villages are scattered among areas of woodland, permanent grassland and hedgerows on the heavy clay soils where larger 20th-century villages have grown around major transport routes.

Physical Landscape Character

This predominantly low-lying Local Landscape Character Type (LLCT) is characterised by a lower level of tree cover than much of the study area, and very gently rolling topography. The landscape is largely rural, comprising a mixture of small pastoral fields, and larger fields managed as arable land. The lowest lying areas also have a presence of some floodplain grazing marsh. This lowest-lying land frequently encompasses a network of man-made drainage ditches, which add to the existing naturally occurring small watercourses that criss-cross the landscape, many of which flow into the main drainage channel that crosses this LLCT, the River Cuckmere. Field boundaries are predominantly hedgerows, with occasional hedgerow trees and shaws, usually associated with smaller pastoral fields. Settlements are small and scattered, and include a number of farmsteads.

[1] taken from www.wealden.gov.uk/nmsruntime/saveasdialog.aspx?lID=16778&sID=2131

Landscape Sensitivity

Overall, the Open Clay Vales LLCT is assessed as having High Landscape Sensitivity. There is a strong strength of place as a result of open views southwards to the ridges of the South Downs and a recognisable landscape pattern of arable/pastoral fields and stream corridors. The landscape also has a strong landscape structure, resulting from the networks of mature hedgerows and trees lining road corridors. There is strong historic continuity throughout the LLCT, with many ancient field patterns apparent. Overall visibility is considered to be moderate. Landform is predominantly flat and is considered to be visually insignificant. There is also a strong sense of openness throughout much of the LLCT.

Arlington

The large expanse of Arlington reservoir is the key landscape feature within this LLCA. Open views across the water from locations in close proximity to the reservoir are a key feature. In addition, views southwards to the ridges of the South Downs contribute to recognisable sense of place. The reservoir is a nature reserve and is designated as a Site of Special Scientific Interest for its ecological interest. The northern and western edges of the reservoir are fringed with mature woodland. The River Cuckmere valley runs north-south through the eastern part of the area, to the east of the reservoir. This is lined with a patchwork of arable and pastoral fields. Settlements include the small village of Arlington, to the east of the reservoir and the small hamlet of Berwick to the southwest, which has developed in conjunction with the railway corridor. The railway corridor crosses the southern part of the area and the A22 main road corridor forms the southern boundary. Both of these transport corridors introduce a source of noise and movement to this otherwise predominantly tranquil landscape.

Site Description

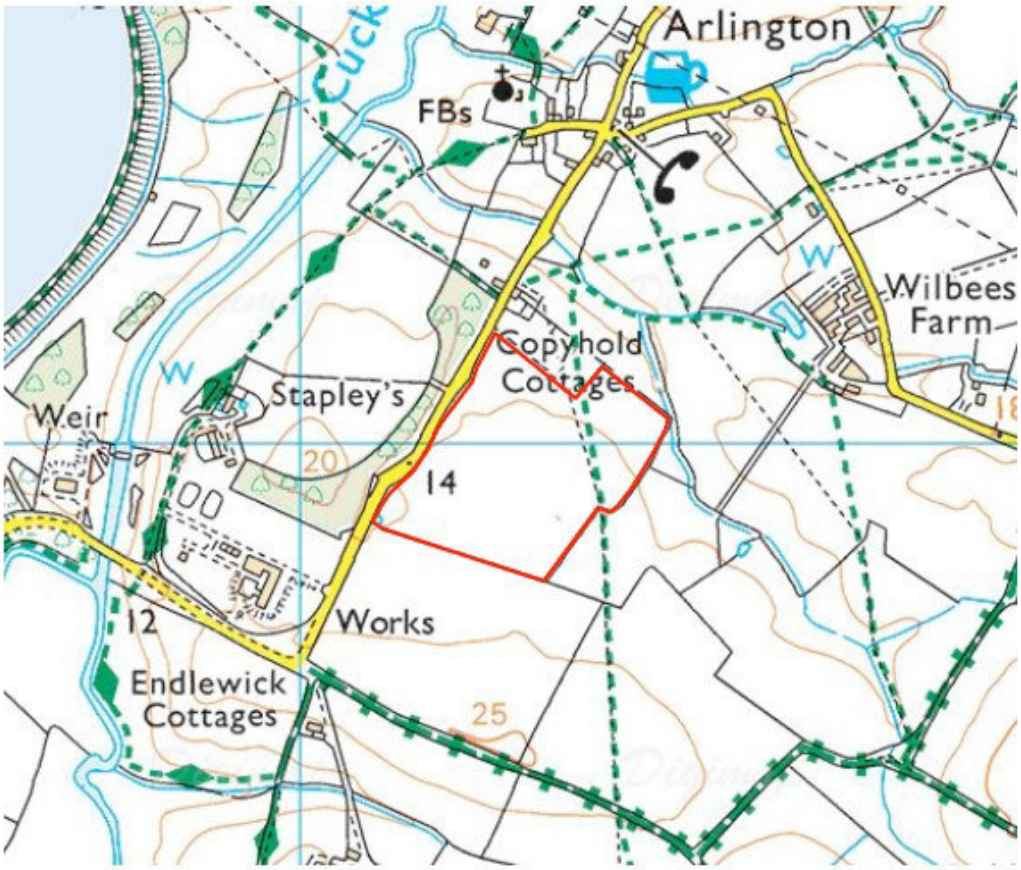


Fig. 1 The site – outlined in red

Wilbees Farmland is located in the Weald of Sussex with views towards the South Downs. It is about 10 miles from Lewes and 9 miles from the South Coast and lies on the immediate outskirts of the village of Arlington.

The 7.5ha site is located on farmland in the southern part of the Low Weald. The site is situated adjacent to the 15 ha site on which Wilbees Solar Farm is under construction.

The field in question is a level block of Grade III arable land extending to some 18.54 Acres (7.5 Hectares), with long frontage to the lane on its western boundary (Fig. 1). The field had been down to maize for about 10 years and was pasture prior to that (Rodker, pers. Comm., 2016). An underground cable has now been installed leading from the Solar Scheme on land to the south of the field (Lambert & Foster, 2016) which crosses the whole site leading in a north-easterly direction (Fig. 2). The highest part of the Site is located on the south side

at approximately 25m aOD (Fig. 3). The lowest part of the Site is at the north-west corner at approximately 15m aOD (Fig. 4).



Fig. 2 Hedge boundary to land field



Fig. 3 Route of underground cable across field



Fig. 4 Southern hedge



Fig. 5 View towards Northwestern corner

There is a footpath that crosses the land, cutting from the western side and running north-north-eastward and leaving to the northern side of the site. The Site is bounded on its east side by woodland and an extensive area of woodland, Abbots Wood, is located approximately 900m to the north-east.

The solid geology within the Site comprises Mudstone of the Weald Clay Formation. This sedimentary bedrock was formed approximately 121-132 million years ago in the Cretaceous Period within a local environment dominated by swamps, estuaries and deltas (BGS, 2014 quoted in Cotswold Archeology, 2015).

Methodology

This appraisal entails several different elements, with different methodologies.

Biodiversity: This section is based largely on a desk-top review of data for the site and the surrounding 2 km (radius) area provided by Sussex Biodiversity Records Centre (Appendix 1). Their data is specifically designed to be well suited to applications for planning permission on the site in question (Sussex Biodiversity Records Centre, 2016). The data specific to the grid squares in which the field lies at site specific locations is in Appendix 2.

A visit to the site in August 2016 and another in September 2016 allowed additional field observations to be provided. These are for a snapshot in time and not comprehensive, but provide some supporting field-based evidence. The field was traversed 3 times in different directions and the entire field boundary was walked.

Natural capital: There is, as yet, no single, agreed, standardized method for the assessment of natural capital, despite widespread agreement across government of the importance of taking account of natural capital in decision-making, the establishment of the National Natural Capital Committee and a good deal of academic research on methodologies..
The key components of the Natural Capital of a given site are determined by its:

- underlying geology
- soil type & soil health
- Water resources and flows (hydrology)
- The vegetation/habitat type/s and the health of those
- The biodiversity

The preliminary natural capital assessment here is based mainly on field observation of soils and water on site, with a little input from desk study using the data provided by SBRC on habitats and on soil analysis carried out by Brogdale for ELC.

Underlying geology comes from the desk study, as do basics of soil type, habitats, vegetation and biodiversity. Soil type and habitats have been verified by field observation with vegetation and biodiversity records also backed up by field visits.

Soil: 20 cm x 20 cm samples of soil were dug to 15 cm deep at 5 sites across the field. The soil-type was assessed by hand (Grant, 2002a). The soil profile was also examined and the soil from the sample checked visually for humic matter and living plant biomass (roots, etc.) (IBERS, undated).

At each sample site, the soil from this area was dug out and sorted by hand (AHDB, 2016). Any living, macro-invertebrate soil fauna was identified (to Order or ecological niche) and recorded.

Water: Water and water flow was assessed visually.

Vegetation Cover: This was assessed in the field using the Braun-Blanquet technique (Grant, 2002b)

Vegetation/habitat type/s and their health: Assessed visually

Biodiversity: Covered in the sections on biodiversity

Ecosystem services: As with natural capital assessment, no standardized method has yet been agreed for ecosystem service assessment at site-specific level. The guidance outlined in Everard & Waters (2013) is more detailed and comprehensive than is required for this preliminary Ecological Appraisal. This section is thus based on appropriate elements of that guidance and one of the templates provided is used along with expert knowledge and experience supplemented by limited field verification of the habitats, their size and their health, so as to arrive at a list of ecosystem services being provided and a ranking of the amounts likely to be produced (-ve; 0; minimal; low; moderate; high – see Appendix 3).

Current Status of Site

The biodiversity of the field portion of the site itself is of low value, but the biodiversity value of the hedgerows – particularly those that contain mature trees – is much higher (see biodiversity section) and demonstrates the potential to rehabilitate the field through working with the surrounding natural ecosystems.

Biodiversity is an important element in an area's natural capital and underpins the ecosystem services provided from any given area of land or water, thus biodiversity, natural capital and ecosystem services are all inter-dependant. However, a given site is also not existing in isolation and there is a constant potential for exchange between any given site and its surrounding area. Just as an area can have its biodiversity and natural capital reduced through certain types of intensive management, it can also see enhancement of both these vital natural elements given appropriate management. Below, each of these issues is treated independently, but the reader needs to know the importance of the inter-relationship between these issues and their dependence on land-use and management. Management of one site will impact on others, directly or indirectly, which means that management practices that recognise this can be very positive in terms of building the health of ecological processes and functioning, so benefitting overall levels of biodiversity and natural capital. This, in turn, benefits the people living nearby and (potentially) further afield.

Biodiversity

Habitats

The site is composed of 2 basic habitats

i) Fallow arable agricultural land with ruderal weed species

ii) Mature hedgerows

Species from Protected Species Register

There are none recorded from the site.

There is a record of Great Crested Newt from Wilbees Farm garden nearby (record from 2002), but at present no suitable habitat on the site for this animal to inhabit.

Rare Species Inventory

There are no species from the rare species inventory recorded from the site and none were seen during the site visits in August and September.

BAP species

No BAP species were recorded from the site itself.

Bats

No bats have been recorded from the site. Dusk observations (visual and with a bat detector) at the site on 15th September revealed no sign of bats. However the hedgerows bordering the field consist of a good number of old, large trees with splits, cracks, loose bark, holes and crevices that are especially attractive to bats.

Notable birds

Notable birds: Only one of the notable bird species was seen (or heard) during site visits – a small feeding group of house martins. Fifteen species have been recorded from Wilbees farm (but none from the site itself). These are considered in the section on the surrounding area.

Other birds

An additional 63 species of birds have been recorded from Wilbees Farm (though not necessarily from the site); these are mostly common, widespread species but do include Woodcock and nightingale amongst others (see Appendix 2). Very few species were seen on site (either in the field or in the surrounding hedgerows) during field visits – only 10 species during 5 hours.

Alien Invasive species

One species of insect, the Harlequin ladybird, has been recorded at Copyhold Cottages bordering the site – see Appendix 2. None of the alien invasive species were seen on site during the field visits, except for one – a single individual Harlequin Ladybird *NB*. This is a highly mobile insect that can turn up almost anywhere, regardless of the nature of the site.

Some of the ruderal “weed” plants currently observed in the field (post arable cultivation) are also characteristic of neutral grassland communities in the locality. Species include Marsh Cudweed, Fleabane, Red and White clovers and Birdsfoot trefoil. These are providing some biodiversity value.

Natural Capital

Geology

Sedimentary – mudstone

Soil

Wealden Clay. A brown clay, flecked with patches of grey (in some places, not others). Very even consistency with no large stones and very little gravel within it.
pH 6.2-6.5 (depending on position in field)

Soil profile

The soil has a very even profile to a depth of approx. 30-40 cm with just one visible horizon. There is very little or no sign of organic/humic matter in the soil (Fig. 6 a & b).

Evidence of compaction – there is clear surface evidence of soil compaction from the recent passage of heavy vehicles. However, deeper in the soil there is little evidence of air holes or holes caused by animal movement and the soil appears fairly compact to at least 30-40 cm.

Fig. 6 Soil profile – a) a sample removed b) profile elsewhere after soil removal





Soil health

deficient

pH: deficient - normal
pH 6.2-6.5 (depending on position in field)

Nutrients:

P – 16-24 - low
K - 74-155 - deficient
Mg – 52-87 – deficient-nr. optimum (depending on site)

N_2 - unknown

The abundance and distribution of nettles (*Urtica dioicea*) across the site does not suggest high levels of nitrogen in the soil. Nettles are present in low densities, they are relatively small plants and not very vigorous; the opposite would be characteristic of soils with high N_2 content.

Organic/humic matter

Little or no organic matter can be seen within the soil. The soil has poor structure.

Soil functioning (health of soil processes)

There is low abundance of life in the soil. No worm casts were seen whilst walking across the field (several transects were walked – 3 entire widths/lengths of the field). From the 5 soil sampling areas it is estimated that worms occur at about 115/m^2, which is low for an ecologically healthy, self-sustaining soil. It is also low by comparison with, for example, grassland soils, but not unusual for intensive arable fields (where numbers may drop as low as 62/m^2). Density of the 4 other macro-invertebrate groups (slugs, enchitraeid worms, beetle larvae and centipedes) found in the samples was very low, as is characteristic of soils with low organic matter content. Larger meso-fauna - collembola (springtails) and soil mites - seen were also counted and again densities were low or very low (although clearly the smaller meso-fauna in these groups would not have been seen in the field due to their small size).

Soil samples taken from areas with clover cover showed higher densities and diversity of all the soil fauna that was seen.

Soil-Water

Soil moisture – The soil varied from moist to dry across the field – moist
near the hedgerows and dry anywhere from 20 m in from the hedges and across the open part of the field. No quantitative measure was made.

Water holding capacity – This has not been assessed, but is likely to be high.

Field capacity – as above.

Water (hydrology)

The site was very dry on the day of the main field visit and no water was visible on site, including in the hedgerow ditch along the length of the western hedge-line.

The small pond at the south-western corner of the site is fenced off and dry – i.e. no standing water, although the soil/silt at its base was very wet immediately below the surface and to at least 20 cm depth.

During the first site visit in August, there was standing water in the bottom of the deep channel cut by mechanical diggers to sink the electric cable from the solar farm in the neighbouring field. The water was at approx. 50-60 cm below the soil surface at that time (*NB*. There had been relatively recent rainfall across the area in the previous days).

The water table was not assessed, but this information should be available via the Environment Agency

Water flows

No surface water was flowing on site on the days of the site visits. The small watercourse that clips the north-east corner of the site was heavily overgrown and completely dry. There was little evidence that the northern corner of the site, despite being the lowest point in the field, is any damper than across the rest of the field apart from a slight change in the ruderal vegetation in this area – there were no particular indicators of moist soil within this change in vegetation.

Vegetation/Habitat Type and Health

Semi-natural, highly anthropogenic, a 'fallow'/uncultivated conventional arable field with mature hedges on three sides. The field may be an assart created many centuries ago (Bannister, 2010), with the hedgerow on two sides indicating that it was previously mature woodland. The hedgerow on the third side has been coppiced and shows evidence of current coppice hedgerow management on the road side. The field itself comprises typical arable, roadside and waste area ruderal 'weeds', low in species richness.

Field Vegetation

This is low in biodiversity and devoid of anything other than common, ruderal annuals/perennials (see biodiversity section). The average number of species seen per m^2 across the whole field was 6.2 (with the range 3-9/m^2).

Vegetation cover

Vegetation cover is varied across the site. There was bare soil along the line of the electric cable, over a width of 4-5 m. Also, there was bare soil over the area of the 'drainage pit' recently dug near to the site entrance and in limited areas near the West hedge-line where there had been heavy vehicle movement. Over the rest of the field the cover was either abundant or dominant (according to the Braun-Blanquet scale (Grant, 2002b).

A number of the ruderal annuals present are recognised as having 'biodiversity value' (Clarke *et al*., undated).

Hedge vegetation – Varies between the hedgerows and within each hedge, but is reasonably biodiverse for its small area and mostly well structured. Key large, mature trees comprise English Oak (*Quercus robur*), Ash (*Fraxinus excelsior*) and a few very large Willows (*Salix* sp.), whilst there are also Field Maple, Holly, Hazel, Hawthorn, Elder, Crab apple and Blackthorn mixed amidst them. Notably, along the roadside, the hedge is principally hazel that has been maintained as coppice in recent times, on stools that appear reasonably old (and large).

Ecosystem Service Provision

The site is relatively low in ecosystem service provision, both quantitatively and in variety provided. We consider the field itself separately from the hedgerows to show the distinction in benefit provision.

The field would have produced food whilst under conventional agriculture, though indirectly when it was an arable field – it was used for growing maize, presumably for cattle feed – hence part of the food chain to provide meat for the butcher or supermarket. The field itself currently supplies little in the way of ecosystem services – no provisioning services (except potentially a minimal medicinal herb provision via dock plants and camomile), a minimal to low amount of regulating services (pollination from flowering weeds, soil erosion control from vegetation cover, carbon sequestration (to a minimal degree) from plant metabolism and carbon storage in roots, etc.) and provision of cultural services is also low-minimal. There is low primary production on site and nutrient cycling due to the nitrogen fixing ability of the clovers that appear within the ruderal vegetation, thus there are small amounts of supporting services in action.

Of the 27 groups of ecosystem services listed in Waters & Everard (2013), only 5 are provided by the field at low levels. Fifteen of these ecosystem services are provided at minimal levels by the field; the other 7 are not provided at all.

The hedgerows provide multiple ecosystem services, but in relatively small quantity due to their limited area. Of the 27 ecosystem services tabled in Everard & Waters, 21 are provided by the hedgerows at low or moderate levels. Only 2 are not provided at all.
Specifically, the hedgerows offer low levels of provisioning services such as wild food, materials (e.g. hazel for hurdles, bean poles, willow for basket making, etc.) and fuel wood; regulating services such as soil erosion control, pest regulation, pollination; cultural services such as aesthetic value, recreation/leisure (e.g. bird watching); supporting services such as primary production, soil formation, nutrient cycling and habitat.

To sum up, the current status of much of the site is poor with regard to biodiversity value, Natural Capital and Ecosystem service provision, these being provided very largely by the surrounding mature hedgerows. These biodiverse hedgerows demonstrate the Natural Capital potential to integrate wildlife conservation with production of goods for people (e.g. hazel coppice, a particularly delicious variety of blackberry, etc.) and many other services too. They also provide an example of effective use of space to maximise yields of a range of “crops”.

Current Status of Surrounds (extending to 2 Km)

Current biodiversity and ecosystem service values of the site itself are low, but potential values are high given the bio-climate of the area and that the site was once (almost certainly) species rich, broadleaved woodland. Reference to the surrounding hedgerows and adjacent (managed) woodland indicate the potential to achieve structurally diverse functional ecosystems or agro-ecosystems on this site.

Biodiversity

Habitats:

The surrounding 2 km contains a variety of habitats:

i) Open water
ii) Reed beds (a small area)
iii) Woodland (including ancient woodland)
iv) Traditional Orchard (a small area)

v) Flood plain grazing marsh

vi) Agricultural land

Specific different habitats are considered in more detail under the Natural Capital heading, below.

The environment surrounding the field comprises a diversity of habitats of varying biodiversity value. Much of the biodiversity, especially rare and notable species are concentrated in a few key specific sites that have been well recorded. The mature hedgerows and network of watercourses provide reasonable spatial connectivity, not only enhancing the viability of individual sites and species but also potentially increasing resilience and adaptation to environmental change, especially climate change.

Although some is arable, much of the agricultural land in close vicinity to the field is pasture with cattle or sheep grazing. A large proportion of agricultural land slightly further afield (though some within half a kilometre) is under Environmental Stewardship Agreements, both Entry Level Stewardship (ELS) and Higher Level Stewardship (HLS), some of which is also organic. This level of sensitive management provides some continuity through the landscape with regard to conservation of wildlife and biodiversity.

Species from Protected Species Register

There are 7 species recorded from the 2 km around the ELC site – 1 flowering plant, 1 amphibian, 3 reptiles and 2 mammals:

Spiked Rampion (*Phyteuma spicatum*)
Great Crested Newt (*Triturus cristatus*)
Slow-worm (Anguis fragilis)
Common Lizard (*Zootoca vivipara*)
Grass Snake (*Natrix natrix*)
European Water Vole (*Arvicola amphibius*)
Hazel Dormouse (Muscardinus avellanarius)

All of these were recorded in areas of known high biodiversity value and most records were from Abbots Wood or Arlington Reservoir SSSI. Some species may be more widespread in the area than records indicate. An example is the Hazel Dormouse, a protected species that has been recorded from both Arlington Reservoir and Abbots Wood.

Rare Species Inventory

There are 107 species from the Rare Species Inventory recorded from the 2 km area surrounding the ELC site, indicating the rich and important biodiversity in particular habitats around the site. One of these species is a Bryophyte (liverwort), 17 are flowering plants, 8 fungi, 78 insects and 2 species of fish.

There is 1 liverwort species (Large-celled Flapwort (*Lophozia capitata*)) and one aquatic flowering plant (Frogbit (*Hydrocharis morsus-ranae*)), recorded near to the ELC site. Records are not particularly recent - 2006, or old - (in the case of the liverwort) from 5 decades ago, 1961.

Three additional species are recorded from the same grid-squares, but from further afield. All these are highly unlikely to appear on-site under current conditions as no suitable habitat exists for them - 2 species of dragonfly (Small red-eyed damselfly (*Erythromma viridulum*); Scarce chaser (*Libellula fulva*)) generally found near on around standing or flowing water and 1 beetle species (a rove beetle – Staphylinidae - (*Gyrohypnus atratus*)) that appears to be a woodland species.

BAP species

Fifty BAP species have been recorded from the 2 km area around the ELC field, again demonstrating the rich biodiversity of the surroundings. Of these, one is a Bryophyte, 3 are flowering plants, one is a lichen, 34 are insects, 2 fish, 2 amphibians, 3 reptiles and 4 are mammals.

Five BAP species have been recorded from the same grid reference as the ELC site, but none from the site:

Lophozia capitata	Large-celled Flapwort
Tyria jacobaeae	Cinnabar moth
Coenonympha pamphilus	Small Heath butterfly
Lasiommata megera	Wall butterfly
Triturus cristatus	Great Crested Newt

Bats

Seven types of bats have been recorded in the 2km surround the site. Of these, only 4 have been identified to species: Brown Long-eared bat (*Plecotus auritus*), Common Pipistrelle (*Pipistrellus pipistrellus*), Saprano Pipistrelle (*P. pygmaeus*) and Serotine (*Eptesicus serotinus*). Two have been identified just to genus (*Plectotus* sp. And *Pipistrellus* sp.) and

the other 2 records are just for bats (Chiroptera). All of those recorded to species level are common and widespread.

The range of suitable habitats for bats is good with the pattern of woodland, diverse hedgerows, pasture, open and flowing water. It is likely that bats have been under-recorded within the area because it holds records of only five of the 18 bat species resident in the UK (all of which have been recorded in Sussex).

There are records of 2 species (possibly more) from near the site though not actually recorded from the hedgerows around the field site: Common pipistrelle and Brown Long-eared Bat. The pipistrelle was recorded in 2015, but the Brown long-eared bat in 1989 (although an unidentified species of *Plecotus* – very likely the same species – was recorded in Arlington in 2011).

Birds

251 species of birds have been recorded in the 2 km area surrounding our site of interest, which amounts to getting on for ½ the UK species list.

Notable birds

Immediately abutting the field, to the west, is Arlington Reservoir Local Nature Reserve and SSSI, managed under Higher Level Stewardship (HLS). A significant proportion of this comprises open water which is important for bird passage migrants as well as resident species, with over 170 species of bird recorded, some species at times gathering in vast abundance. Thirty-seven of the Notable bird species recorded within 2km radius of the field that are associated with wetlands, occur adjacent, in the Reserve. Interestingly, other notable bird species, not normally associated with open water, such as Grey Partridge and Quail, have been recorded from Arlington Nature Reserve. This may perhaps partly reflect sample effort (public access, bird watchers) but is likely that it also reflects the level of protection and appropriate management the reserve affords. This could indicate the potential of other sites in the area to support these species, given appropriate management.

A number of notable birds of prey are also predominantly recorded from Arlington Reservoir Reserve (some only as passage migrants), including Red Kite, Marsh Harrier, Honey Buzzard, Osprey, Hobby, Peregrine, indicating sufficient abundance of prey species.

The status of some species recorded for the locality may currently be in decline or even lost. An example is notable birds recorded in the locality such as Lapwing last recorded in 2010

though not recorded as breeding since 2004 and Snipe last recorded in 2012, though not recorded as breeding since 1985. It is unclear if breeding birds of these species continue to inhabit the area unrecorded, or if recent environmental change has rendered former sites unsuitable.

Fifteen species have been recorded from Wilbees farm (but none from the site itself). These are: Black Redstart; House martin; swallow; swift; long-eared Owl; barn owl; Turtle Dove; Snipe; Lapwing; Hobby; Red kite; Heron; Little Egret; any of which may have been seen in or flying over the site.

There are also 3 additional species – Widgeon, Garganey and Kingfisher – seen at the same grid reference, but almost certainly all at the pond at Wilbees Farm.

Many of the records are not recent, the most recent for Wilbees Farm being in 2012 for swallow, turtle dove, snipe, little egret and grey heron, in 2011 for swift and barn owl, in 2010 for Lapwing and in 2009 for Black redstart (see Appendix 2).

Within one kilometre of the field site is another important site for biodiversity, Abbots Wood, managed by the Forestry Commission. Many rare species recorded in the area are predominantly recorded from Abbots wood (51 rare invertebrate species) whereas only three rare invertebrate species are primarily recorded from Arlington Reservoir and environs. However, there are also many species common to both sites. Other woodlands of high biodiversity value such as Beaton's Wood, a Site of Nature Conservation Interest and ancient semi-natural woodland site. Beaton's Wood lies close to Abbots Wood and is tenuously connected to Abbots Wood for species able to navigate hedgerows.

Natural Capital

Geology

Sedimentary rock – mudstone

Soil

Wealden Clay. This has not been sampled across the whole area, but a few samples taken in grassland near the Cuckmere river near Arlington and in woodland soils on both sides of the Wilbees Farm field indicate a brown clay, mostly of even consistency with few stones and little gravel.

pH – untested.

Soil profile

The soil profile has not been investigated across the 2 km area, but the small samples taken (all within 1 km of the centre of the field, see above – Soil) showed an even profile in the surface soil, with just two visible horizons to a depth of 10-15 cm: the top horizon comprising darker, humic matter (2-5 mm, depending on habitat within which soil taken); the second being even, brown clay.

There is very little or no sign of organic/humic matter in the second horizon within in the soil.

Evidence of compaction – Not widely assessed. Little or no evidence of soil compaction in any of the samples taken (see above), but particularly the woodland soils, showed better soil structure than all the samples taken in the field.

Soil health

Moderate-good
pH: untested
Nutrients - unknown
Organic/humic matter – not widely assessed across area.
Soils examined surrounding the field had a more crumbly texture and better aeration than that from samples taken in the field, indicating better water infiltration and root penetration.

Soil functioning (health of soil processes)*:* unassessed over the wider area. There is, however, good reason to assume that the soils in the pasture grasslands will have healthier ecological functioning than the intensive arable soils; pasture grasslands will vary in health of ecological functioning depending on their degree of 'improvement' (i.e. pesticide and artificial fertilizer input, length of 'ley' period, etc.), with unimproved, seasonally grazed grasslands/meadows being of higher biodiversity and with semi-sustainable, functioning soil ecology – albeit a functioning that is transitional, given that were natural processes to prevail, the ecology would shift to scrub and then woodland via ecological succession. Woodland is the natural vegetation/habitat for this area and the longer the woodland has been established, the healthier the soil functioning is likely to be.

The wetlands and wet woodlands will have their own soil ecology and, again, the more 'natural' and unmanaged they have been (over long periods) the healthier is likely to be their soil functioning.

Soil-Water

Soil moisture – Not examined

Water holding capacity – This has not been assessed, but is likely to be variable across the area.

Field capacity – as above.

Water (hydrology)

Water resources and flows (hydrology)

There are significant water resources across the 2 km area surrounding the site.
Arlington Reservoir is an artificial lake of approx. 35 ha and holding approx. 750M l water at capacity (BBC, 2016).

The whole area is crossed with an extensive range of small streams, rivulets and by the Cuckmere river which exceeds 5 km of flowing water across the area (Appendix 1, Habitat & Natural Features Map (SxBRC/16/414)). The river flows, slowly during its passage through this area, from North to South (approx.) and is fed by numerous small tributaries – originating from a large number of small springs via both natural brooks, streams and other watercourses and via man-made ditches – running mostly westerly from the eastern side of the area, with a few short tracts from the westerly side towards the east and into the river.

There are quite a number of small or very small ponds & other areas of standing water scattered across the area, including several on Wilbees Farm land and patches of its land that have been recently sold. It has not been possible within the scope of this appraisal to examine these to assess their value as Natural Capital, nor their ecological health.

Milton Gate Marsh consists of two wetland depressions forming a valley fen on alluvial soils created by the River Cuckmere and one of its tributaries. Agriculturally unimproved and marshy grasslands dominated by rushes and sedges make up much of these depressions, but there are also areas of reed bed, sallow carr

and open water. This mosaic of habitats supports a rich assemblage of invertebrates including one proposed Red Data Book+ species, and numerous nationally rare and scarce species. The site is also of local importance for the breeding bird community it supports (Natural England, undated).

There is also an area of floodplain grazing marsh along the Cuckmere river towards the southern border of the 2 km area, some of which falls within Milton Gate Marsh SSSI, but not all. This area will provide a different (and increasing rare) type of natural capital from the other wetland areas.

Water is an important element in the natural capital across the area.

Vegetation/habitat type/s and their health

The area is predominantly agricultural land, the majority of which is arable although there is a swath of pasture relatively close to the site itself. Visual assessment of the 2 km radius area around the site indicates approximately:
55% Arable
20% pasture/grassland
10% woodland (the majority of which is ancient woodland ±6-7%)
7% wetland/watercourses
5% built environment
1-2% hedgerows

Most of the habitats that are not farmland are protected in some way and/or managed for wildlife to some degree and thus their ecological health is likely to be moderate to good. There are 2 SSSI's within the area, Arlington Reservoir SSSI and Milton Gate Marsh SSSI. There are also 4 Local Wildlife Sites within the 2 km radius Abbot's wood, Beaton's Wood (SNCI CW28), Monken/Monkyn Pyn – (SNCI CW21), Ludlay Coppice (SNCI CW94) and Abbot's Wood (SNCI CW92).

The surrounding 2 km also abut the South Downs National Park, who's border passes between Wilmington and Wilmington Green.

Ludlay Coppice CW94 is a small woodland, situated on the opposite side of the road from, and directly opposite to, Arlington Reservoir, a designated Local Nature Reserve. It is marked on the Ancient Woodland Inventory as a semi-natural ancient woodland, that is, continuous woodland cover has been present since at least 1600 AD.

Monken/Monkyn Pyn – (SNCI CW21)
Small but diverse area of predominantly neutral, species-rich, unimproved grassland with small areas of scrub, bisected by a minor road.

Beaton's Wood – (SNCI CW28 TQ554080) An ancient wood of Oak-Bracken-Bramble type. There is also some Hornbeam coppice. This site is of high conservation value as it is a good example of typical Wealden Bluebell wood. It is one of the most southern blocks of ancient, semi-natural woodland on the Weald and is a typical example of a Wealden Bluebell wood. There are also 3 small areas of traditional orchard (see Appendix 1 SBRC report Habitat & Natural Features Map (SxBRC/16/414)).
The agricultural land also has a significant proportion under Entry Level plus Higher Level Stewardship agreements (Appendix 1 Ownership & Management Map (SxBRC/16/414)), indicating both higher biodiversity and higher natural capital in these areas as a result.

Vegetation cover
Varies with habitat-type across the area. It was not possible to assess this over the entire area as part of this preliminary ecological assessment.

Biodiversity
This has already been examined in some detail above (see pg. 23)

Ecosystem Service provision

Since the area is rich in Natural Capital and biodiversity which underpins ecosystem service provision, provision of these services is good. Of the 27 ecosystem services from Everard & Waters, all 27 are provided within the 2 km^2 surrounding the ELC site. By way of example, Table 1 describes just the provisioning services.

Table 1. Provisioning services provided over the 2 km radius area surrounding the ELC site south of Copyhold Cottages, Arlington.

Category	Type	Nat Cap source	Status
Provisioning	Fresh water	Arlington reservoir, Cuckmere river, groundwater	Arlington Reservoir is the source of drinking water for households over a wide area

	Food - Wild food	Arable & pasture land Abotts Wood, hedgerows, Cuckmere river, Arlington Reservoir	Large quantities from both arable farming and from pasture (providing milk & meat) Abbotts wood is seasonally rich source of mushrooms and fungi; it also has nut trees and brambles, rosehips, etc.; The Cuckmere river is used by anglers, as is Arlington reservoir; the whole area is well supplied with hedgerows that provide a variety of wild food
	Medicinal herb/products	Wetlands, woodland, grassland	A range of medicinal herbs and other plants are found in the habitats mentioned
	Fibre and fuel (e.g. timber, wool, etc.)	Woodlands, hedgerows, Osier beds, grasslands	Some coppice woodland locally is used for firewood production, some for fencing materials; Osier beds provide willow for basket-making and the hedgerows also provide a wide variety of materials for basket-making and other hand crafts; there is sheep production locally, providing some wool

Clearly, regulating services such as water regulation by ponds, ditches, streams, river, lake, trees, woodland, hedgerows are of high importance in the area. The interconnected mosaic of habitats and patterns of land use ensure that provision of cultural services such as recreation, health and livelihoods is good. Supporting services are also strong, particularly primary production, nutrient cycling, habitat provision, the water cycle, etc. Importantly, since there are interactions and interdependencies between ecosystem processes (as there are between species), the services from a healthy landscape are greater than those from its individual habitats alone.

Scope for Ecological Restoration and Rehabilitation

As suggested in above sections, in part due to its strategic location, there is opportunity for the ELC site to be enriched by ecological restoration for the benefit of livelihoods of on-site smallholders and also for targeted species as well as biodiversity in general, extending to contributing to the living landscape.

Of primary value, will be strengthening woodland continuity in various parts of the site and especially along the southern margin where a fine band of wooded connectivity currently exists.

The small pond at the south-western corner, although overshadowed by Sallow and currently dry, is perhaps seasonally wet and until recently connected to a drainage ditch. It may be of value to consider enhancing the biodiversity value of this pond and perhaps also creating a small wetland area at the extreme north eastern corner associated with the small stream tributary of the River Cuckmere that clips this corner of the site.

There will be benefits from some ecological rehabilitation of the field site if it is to supply sustained livelihoods for future smallholders. Rehabilitation will entail a focus both on recovering a functional soil ecosystem and on ameliorating hydrological flows.

Currently, as above sections indicate, the field has been depleted of ecological resources and the soil has been exhausted through intensive arable production to the extent that the soil ecosystem is very low on organic material that will help it function sustainably. It is important to recover a functional soil ecosystem so as not to be reliant upon high inputs to increase short-term fertility. Aside from specific measures to stimulate soil aeration and structure, and accumulation of organic matter, advantage can be taken of surrounding more intact ecosystems to repair the soil ecosystem. Examples include seed sources and important soil organisms such as mycorrhizal fungi. Vessicular Arbuscular Mycorrhyzae (VAM) have been found to increase health and yields of many fruit and vegetables including aubergine and cucumber. Adjacent areas are likely to support VAM as part of a functional soil ecosystem and there are ways of cultivating VAM on site and inoculating the soil appropriately. Mycorrhizal fungi will help make more use of what little potassium there is.

Since, clay soils of this type are always ‘heavy’ and prone to waterlogging and that hydrology has been compromised due to past intensive management and compaction from heavy machinery, it will be important to recover more natural hydrological flows within the site. This

might include specific measures to collect and store rainwater, perhaps on the slightly higher ground that would offer the option of then directing the flow of water across and through the site. This would also reduce the likelihood of runoff and erosion resulting from storm water, promote water infiltration through the soil and increase availability of water over an extended period of time. Plantings of species with varying root structures and water uptake, that are adapted to clay soils, will also help improve hydrology.

Reference (via careful observation) can be made to the specific ecological processes enabling healthy functioning of the natural ecosystems surrounding the site for both ecological restoration and for site rehabilitation.

Qualitative Evaluation of Natural Capital Potential of the Site

However, appropriate future management of the site may bring the potential for the site as a whole to support very much greater biodiversity, including some of the protected, rare, notable and BAP species found within the vicinity. Although the site is not suitable for any more than the occasional visit from most of the notable bird species recorded close to the site (i.e. on other parts of Wilbees Farm or on Arlington Reservoir SSSI), there is potential to manage the site to benefit a number of the 15 species mentioned in the Biodiversity Section, since they either currently or previously inhabited the locality e.g. Swallow, Housemartin and possibly Lapwing & Snipe that may be in decline in the area.

There also exists the possibility of habitat connectivity for some species between Arlington Reservoir Nature Reserve and Abbots Wood via the hedgerow running along the south side of the field side. There would be high value in strengthening this linkage within the field site, whilst it could also support livelihood benefits for resident smallholders.

The Hazel dormouse may be using connecting hedgerows, particularly for dispersal. It would be of value to actively promote suitable hedgerow networks to secure the viability of this species. There is potential to enhance connectivity for the Hazel Dormouse at the field site. *NB.* The site field boundaries containing mature trees within species-rich and wide hedgerows, is likely to provide roosting as well as foraging habitat for bats. Again maintaining, enhancing and extending such tree-dominated areas on the site is likely to be highly favourable to bats.

It is not possible, at this stage in the process of ELC meeting its aims for the site, to know who will apply to live on the site, what types of activities they can demonstrate will allow them to make sustainable livelihoods from the land. Evaluation of the future natural capital

potential for the site is thus necessarily speculative, cannot be overly prescriptive and needs to be made in general terms.

However, based on the livelihood examples and the positive changes to the ELC site in Devon (ELC, 2016) the outlook for the Arlington site is good with respect to biodiversity, natural capital and ecosystem services, particularly given that the Greenham Reach site had considerably higher biodiversity value at the start than does the Arlington site.

Small, sustainable, farm-based livelihoods here would improve ecology, for example through planting of fruit trees - which increase opportunities for pollinators and other invertebrates; fruit and shelter trees for their water interception, plus carbon sequestration and storage; a mixture of crop plants means additional biodiversity – insects and invertebrates in particular, on site composting and leaf litter means more organic matter in soil, as do animal manures when well managed. The additional organic matter contributes to soil care and well managed planting design and care over water management means less erosion. All of these elements will increase the natural capital of the site and also the provision of ecosystem services from it. We estimate that the ecosystem service provision from the field alone could increase from 2 to as much as 20 ecosystem services, thus providing multiple benefits (even if at relatively low levels in some cases) to the smallholders and the surrounding community.

If the ELC also follow their model in Devon for this site and involve school visits as part of their programme, then the cultural ecosystem service of education from the site will increase.

It would be of value to consider the merits of two options with regard to site management by small holders. One scenario could be each of the three smallholders working on their plots as discrete units and the other with all three small-holders working in collaboration to achieve site wide improvements, particularly with regard to rehabilitation measures but also other measures that will enhance the Natural Capital, promoting more sustainable, assured livelihoods.

It is not difficult to deduce that the optimal way forward will be collaboration over site wide improvement measures, especially those described in the section on Scope for Ecological Restoration and Rehabilitation and earlier in this section. This would provide benefits to the small holders in the immediate and longer term, some benefits almost certainly extending to the wider community and to the health of the surrounding ecosystems and enhancing the overall Landscape Character.

An important consideration with regard to the viability of the proposed land management is that the field will be divided amongst three smallholders, each of whom will necessarily be highly motivated to manage the land in order to make a viable living within a few years and thereafter to make a sustainable living without expensive external inputs. This demands thoroughly considered business plans and investment in the site and its potential to offer ecosystem services (free and sustainable under appropriate management) – something the ELC model offers. This field is therefore likely to be managed more intensively from the perspective of natural capital, ecosystem health and biodiversity than previously and with a longer term plan than was previously possible under an annual tenancy in the context of a conventional market-driven business model. The ELC approach provides a different opportunity for livelihoods from this land, unavailable to the previous farmer.

Resilience and adaptation to external environmental change such as climate change will be an inevitable consequence.

The ELC proposals appear to meet the highest environmental requirements of the NPPF and also to directly assist Wealden DC policies on Green Infrastructure and biodiversity, as expressed in the WDC local plan.

Glossary

Assart: a piece of land converted from forest to arable use.

Ecological restoration: an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity and sustainability.

Ecosystem services: the benefits people obtain from ecosystems, categorised as supporting services (e.g. nutrient recycling), provisioning services (e.g. food), regulating services (e.g. carbon sequestration), and cultural services (including sports).

Landscape Character: A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.

Low-impact: development which through its low negative environmental impact either enhances or does not significantly diminish environmental quality.

Natural capital: the world's stock of natural resources, which includes geology, soils, air, water and all living organisms.

Ruderal: A ruderal species is a plant species that is first to colonize disturbed lands.

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Appendix 9. Alternative Business Plans - Ecological Land Cooperative

1. Options for Holdings "A" and "B"

The following "options" study considers alternative systems and enterprise mix for Holdings A and B, which may be appropriate depending on the skills and interests of the grower involved and any planning constraints.

This study is based on the systems proposed and the costings undertaken in the main report "A Business Plan for the Arlington site, the Ecological Land Cooperative" prepared by Iain Tolhurst and Mark Measures. It provides an alternative crop rotation, annual cropping and crop sales. The infrastructure proposed includes a smaller area of polytunnels, just sufficient for the Holdings to supply their own raised plant requirements. The crop sales proposed are consistent with the market demand reviewed in the Business Plan. The financial budgets are calculated by undertaking a partial budget based on the full budgets undertaken in the Business Plan.

2. Holding "A" 1.21 ha

The following option for Holding "A" is proposed:

- An area of 2,650 m^2 of tunnels is removed.
- The value of cropping from the tunnel area is removed i.e. £37,630, this being flowers, herbs and ornamentals.
- The remaining 350 m^2 of tunnel would grow transplants for other holdings "B+C" as well as a reduced area of flowers.
- The area of existing outdoor cropping is extended by 2,650 m^2 which is an additional crop sales of £11,183 (£4.22/m^2) this to be a mix of outdoor vegetables on a 5 year rotation.
- General crop costs are reduced due to less repairs and maintenance.
- Overheads are reduced for labour, transport and bank charges.
- Depreciation is reduced due to less tunnels area.
- Capital investment is reduced accordingly.
- The partial budget in Table 1. for this option compared to the Business Plan proposal for Holding A involves significantly lower capital investment, lower sales and savings in overheads, general crop costs and depreciation. There is an operating profit of £8,140 per annum for the proprietors, who it is assumed are working the equivalent of 1.5 full time hours. A small 0.3 salary overhead has been left for a paid seasonal worker, as well as volunteer costs.

Table 1. Option for Holding " A": Budget

Capital investment

Existing capital investments from Business Plan budget £52,900
Remove 2,650 m^2 tunnels @ £12.66/ m^2 * £32,489

Revised investment £20,411

Crop Sales

Existing crop sales from Business Plan budget* £76,351
Deduct reduced tunnel area 2,650 m^2 @ £14.20/* m^2 £37,630
Add new outdoor cropping area 2,650 m^2 @ £4.22/ m^{2**} £11,183
Revised crop sales £49,904

Crop Costs
General crop costs from Business Plan budget £7,200*
Deduct pest control £1,000
Deduct liquid feed £350
Deduct-growing media £1,500
Additional crop covers £1,000
Revised crop costs £5,350

Overheads
Overheads from Business Plan £55,640*
Labour: reduce from 1 person full time paid staff to 0.3 person paid staff, retain volunteer labour Deduct £13,500
General repairs and maintenance:
Reduce existing figure from £800* (£0.26/m_2) Deduct £637
Maint. buildgs & site, reduce £3,500.00* to £800.00 Deduct £2,700
Transport costs: reduce from £1,800 Deduct £600
Electricity usage reduce from £3,500.00 to £800.00 Deduct £2,700
Revised overheads £35,503

Depreciation
Annual Depreciation from Business Plan budget £4,850
Tunnels, reduce area 2,650 m_2 x £1.26/ m_2 £3,339
Bank charges, reduce from £900 to £300 £600
Revised depreciation £911

Total annual margin £8,140
*denotes figures taken from ELC Farm budget for Holding "A"
** average returns per meter square taken from Holding "B" budget

3. Holding "B" 1.97 ha

The following option for Holding "B" is proposed:

- An area of 1,400 m^2 of tunnels is removed, leaving 100 m^2 of tunnels.
- The value of cropping from the tunnel area is removed 1,400 m^2 @ £16.25 per m^2.
- The area of existing outdoor cropping is extended by 1,400 m^2 valued at £4.22/m^2.
- Overheads are reduced due to lower labour, repairs and maintenance costs.
- Depreciation is reduced due to less tunnels area.
- Capital investment is reduced accordingly.
- The partial budget in Table 2. for this option involves significantly lower capital investment, lower sales and savings in overheads including labour, general crop costs and depreciation. There is an operating profit of £11,274 per annum for the proprietors, who it is assumed are working the equivalent of 1.5 full time hours. A small 0.3 salary overhead has been left for a paid seasonal worker, as well as volunteer costs.

Table 2. Option for Holding " B": Budget

Capital investment
Existing capital investment from Business Plan budget £38,850
Remove 1,400 m^2 tunnels @ £12.66/ m^2 *** £17,724
Add additional crop covers 1000m at £0.50/m £500
Revised investment £20,626

Crop Sales
Existing crop sales from Business Plan budget * ** £76,748
Deduct sales from reduced tunnel area 1,400 m^2 @ £16.25/ m^2*** £22,750
Add sales from new outdoor cropping area 1,400 m^2 @ £4.22/ m^2 *** £5,908
Revised crop sales £59,906

Crop Costs

General crop costs: Business Plan budget remains unchanged £5,506***

Overheads
Overheads: Business Plan budget £55,190***
Labour: reduce from 1 person full time paid staff to 0.3 person paid staff, retain volunteer labour Deduct £13,500
Repairs & maint.: Reduce existing figure from £400*** (0.26/m^2) £150
Revised overheads £41,540

Depreciation
Depreciation from Business Plan £3,400
Tunnels, reduce area 1,400 m^2 x £1.26/ m^2 £1,764
Add additional depreciation for crop covers 1,000m £50
Revised depreciation £1,586

Total annual margin £11,274
***denotes figures taken from ELC Business Plan budget for holding "B"

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DISCLAIMER

In undertaking this work, Mark Measures Associates and Tolhurst Organic Partnership have based their advice on the figures and information provided by the client or its representatives, the responsibility for which rests with the Client. Mark Measures Associates and Tolhurst Organic Partnership have taken reasonable steps to ensure that the advice offered is accurate and applicable to the client's circumstances.

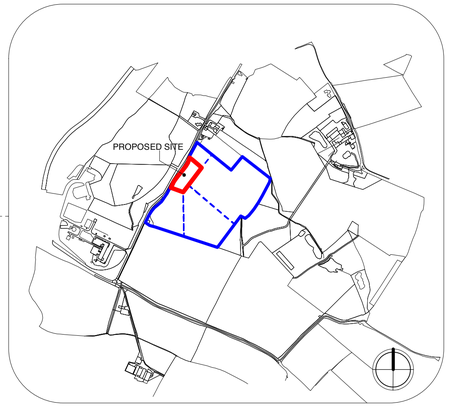
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It should be noted that the client is responsible for contacting where appropriate any relevant Government departments (e.g. DEFRA and the Intervention Board) to ensure that its individual situation in respect of points of law or procedure is ascertained and it is advisable that written replies are obtained to all queries.

FIELD TO SOUTH OF COPYHOLD COTTAGES, ARLINGTON



EXISTING AERIAL PHOTOGRAPH SHOWING SITE LOCATION
Not to scale



SCALE @ 1:10,000
0 100 200 300 400 500 600 700 800 900 1000 M

SITE LOCATION PLAN
Scale 1:10,000



PHOTOGRAPH SHOWING SIMILAR TREE SCREENING

Proposed new tree line to reduce visual impact on neighbouring farms and dwellings

Proposed new tree line to reduce visual impact on neighbouring farms and dwellings

215m visibility

THE STREET

PLOT RETAINED BY ELC
0.3 Ha

Uncultivated grassland

Proposd barn (see drawings L-002)

Proposed hardstanding (0.15 ha) or (1500m2)

ex. tree

New entrance gate - see drawing L-003

Proposed new tree group

Proposed area for new temporary dwellings (0.2 ha) or (2020m2)

EAST PLOT
3.45 Ha

Existing footpath

215m visibility

EXISTING ENTRANCE GATE

WEST PLOT
1.21 Ha

SOUTH PLOT
1.97 Ha

EXISTING GATE TO SOLAR FIELD

BLOCK PLAN
Scale 1:1000

SCALE @ 1:1000
0 10 20 30 40 50 60 70 80 90 100 M


EXISTING SITE PHOTOGRAPH - A


EXISTING SITE PHOTOGRAPH - B


EXISTING SITE PHOTOGRAPH - C


EXISTING SITE PHOTOGRAPH - D


EXISTING SITE PHOTOGRAPH -E

dh:design_ architectural design consultancy

Job Name: FIELD TO SOUTH OF COPYHOLD COTTAGES, ARLINGTON	
Status: PLANNING	Drawing Title: PROPOSED SITE PLAN
Date: 08.01.17	Scale: 1:10,000 & 1000 @ A1
Job Ref: 152	
Drawing Number: L-001 revision B	

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All dimensions to be checked on site

Estimated Living Expenses for ELC Smallholders	Annual £
Monitoring fees	£400.00
Gas	£360.00
Electricity	£0.00
Water	£0.00
Telephone	£0.00
Mobile Phone	£240.00
Other	
Home Insurance	
Car Insurance	£300.00
Other Insurance	
Transport	
Car	£500.00
Fuel	£600.00
Miscellaneous Expenses	£1,000.00
Groceries	£2,400.00
Clothing	£300.00
TOTAL:	£6,100.00

Notes

Electricity and water will be supplied through off grid facilities provided as part of the infrastructure of the site.

Rent has been included in the business plan costings for the businesses.

It is expected that up to 50% of food requirements will be grown on site. This could be more and grocery expenses would reduce accordingly.

Transport costs will be shared as transport is shared across the holdings

Timeline for the Occupation of smallholdings at ELC's site in Arlington, East Sussex		
Activities	Year 1 Summer (eg. June to mid September)	Autumn
Ecological Land Co-operative	ELC installs access, barn,hardstanding, water etc.	
ALL PLOTS	moving on domestic arrangements soil preparation eg. plough/harrow/mulch/weed removal marking out grow areas, paths, shelter belts buying machinery/tools observation of site natural processes/ecosystems	adding compost/manure planting green manures sowing winter and spring crops where possible further domestic arrangements market and sales preparation
Plot A		erect first polytunnels and propagation unit
Plot B		erect first polytunnels and propagation unit
Plot C	marking out/protecting footpath route	mulching later planting areas, smallscale planting out

Year 2				
Winter	Spring	Summer	Autumn	Winter
	further ground/soil prep	water system adaptions		tree plantings
	planting green manures		adding compost/manure	tool and machinery care and repair
	sowing crops	sowing and harvesting	sowing and harvesting	
admin/paperwork/certification	positioning toolsheds		clearing planting beds	compost/manure addition
seed buying	sourcing any poultry requirements			
tree plantings and shelterbelts	purchase shared vehicle	develop market opportunity		
observation of drainage issues and water and remediation where possible				
site design				site design
perennial plantings		second stage polytunnels		perennial plantings
perennial plantings	planting on 6 bed rotation	second stage polytunnels		planting fruit bushes
	Full 5 bed rotation planting			perennial plantings

Year 3

Spring	Summer	Autumn	Winter
sowing crops	sowing and harvesting	sowing and harvesting	Tree plantings and perennial fruit etc.
		clearing beds	compost/manure addition
develop market opportunity			



Ecological Land Co-operative:
Addressing the Crisis for New Entrants to Farming in East Sussex

There is no dispute that there is a crisis for new entrants to farming where the cost and availability of land are one of the biggest barriers a new farmer faces when they are seeking to build a farm business.

This shortage of supply of farms is reflected in the age of current farmers: in DEFRA's most recent *Agriculture in the UK*[1], just 13% of farmers are under the age of 45, and just 38% are under the age of 55. Further, the number of farmers under the age of 45 has fallen each year during this last decade from 18% in 2003[2].

There has been a marked increase in the number of young people hoping to have a career in farming. In 2015-16 there were 19,025 students studying agriculture, up from 15,685 in 2006-7[3], yet between 2000 and 2010 only 4% of farm purchases can be attributed to new entrants[4]. In 2016 just 2% of farm purchases were attributed to new entrants[5]. Alongside this shortfall, the total number of 'county farms' available for rent in England has fallen, from 12,882 in 1966[6] to just 2,583 in 2016[7]. Also in 2016, DEFRA reports that only 115 new tenancies were made available by councils in the whole of England[8].

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[1] Defra, 2016, Agriculture in the UK
[2] ibid
[3] Universities UK & Higher Education Statistics Agency, 2017, Patterns and Trends in UK Higher Education
[4] Lobley (et al.), 2012, Making Land Available for Woodland Creation, CRPR Research Paper No 35, Centre for Rural Policy Research, University of Exeter.
[5] Savills, 2016, Market Survey UK Agricultural Land 2016
[6] DEFRA, 2012, Sixty-First Annual Report to Parliament on Local Authority Smallholdings in England 1 April 2010 – 31 March 2011
[7] DEFRA, 2017, Sixty-Sixth Annual Report to Parliament on Local Authority Smallholdings in England 1 April 2015 – 31 March 2016
[8] abid

East Sussex County Council retains one of the smallest number of county holdings in the UK, with a total of just two. In the last decade, neither of these farms has been let to a new entrant to farming[9]. There are no government or third sector organisations providing starter farms to new entrants to farming in East Sussex. In the last 5 years Wealden District Council (WDC) has approved only three applications for agricultural worker accommodation by new entrants to farming, and all of these were made by new entrants over the age of 45. The three permissions were not for market gardens, nor for organic or biodynamic farms. In the last five years there have been no permissions granted by WDC for agricultural worker accommodation for any organic or biodynamic farms, or horticultural holdings, despite applications being made for at least five.

New entrants to farming in East Sussex are left with the choice of either buying or renting an existing farm, or buying or renting bare land and separate housing.

According to the Royal Institute of Chartered Surveyors *Farmland Market Directory of Land Prices*, in the last three years (July 2014 to June 2017 inclusive), 5 farms with a dwelling sold in East Sussex **at an average price of £1,145,000[10].** This compares with average earnings for farmers, as reported by DEFRA, at below £20,000 per year[11].

According to the same survey, bare agricultural land in East Sussex sold on average for c. £13,600 per acre and land with farm buildings (but no residence) sold, on average, for c. £26,900 per acre. Aspiring farmers also have to add the cost of renting or buying their housing on top of the cost of buying land. The average price for the 29 properties sold within one mile of Arlington in the seven years up to 13/1/2017 was £478,931[12].

[9] Ralph Smart of East Sussex County Council Estates Department, 18th September 2017
[10] This figure does not include farm estates sold during this period which would raise the average to over £2 million.
[11] The Prince's Countryside Fund, July 2017, *Who'd be a farmer today?*
[12] Rightmove 13/01/2017

Evidence of Demand: England and East Sussex

Demand from new entrants based in East Sussex is very high due to the small number of farm business tenancies available[13] and extremely rare opportunities for new entrants to purchase a working farm.

Here we have profiled three prospective smallholders based in East Sussex from our own list of 125[14] individuals or families who are seeking an affordable holding in East Sussex.



Marie Buss (Ree) and **William Del Trufo** (pictured above) are both from East Sussex and currently farm just over an acre on three small plots that they've been cultivating for just over a year. They produce fruit and vegetables for their box scheme under the name Wildroots Veg and deliver to Hailsham, Heathfield, Battle and Horam as well as Brighton. They also sell at Middle Farm. Despite growing on such a small acreage, and for just over a year, they already meet the majority of their living costs from their farm income.

[13] Nustra Ghani MP quoted in House of Commons debate on Tenant Farming – 10 May 2016

[14] Expressions of interest in smallholding received during an on-line Survey Monkey survey conducted by the Ecological Land Co-operative, July – October 2016, completed by 277 participants.

Will and Ree have no tenancy agreement and therefore no security on the land that they farm and are looking for a secure land holding. Their land is also spread over three separate sites and they would like a single, larger, site to reduce the time travelling between their holdings and to increase their vegetable production respectively.

Age entered farming: Ree started growing vegetables at Hankham Organics at 21; and William started managing woodland at 18.

Land management and farming qualifications: Ree has a BSc in Zoology. William has: NVQ Level 2 in Forestry and Woodland Management.

Land management and farming experience: Ree worked at Hankham Organics for four years, going on to set up the now well established and regarded organically certified business *Court Lodge Organics* producing yoghurt drinks. She did this as a tenant farmer at Court Lodge Farm where she also cultivated ¾ acre of vegetables. Before this Ree worked for 4 years for Earth Restoration Service growing native wildflowers and taking the plants into schools over England and Wales to plant, creating meadow areas with children. Ree has also taken on ad-hoc work since 2008 using horses for log removal on behalf of local conservation organisations and private estates.

Will went straight to Plumpton College from school to obtain his NVQ Level 2 in Forestry and Woodland Management. Will worked briefly as a specialist agricultural worker and, for four years, as a woodland worker for Clive Collins, a Christmas tree farmer based between Lindfield and Catfield. He then moved to work for woodsman Richard Cope in Battle, initially primarily coppicing the woodland's chestnut and then operating his own business as a green wood worker, and developing tools based on historical woodworking.

Current enterprise type: fruit and vegetable community supported agriculture (CSA) using work horses.

Proposed enterprise type: larger fruit and vegetable CSA using work horses. Ideally, they would also manage woodland as Will is a wood craftsman.

Farm income accounts as a majority of household income: yes.



Pictured above: Haskel Adamson teaching primary school children from Wallands School how to make rosehip cough spirit

Haskel Adamson was born in West Yorkshire but has lived in East Sussex for 17 years. Haskel is an experienced commercial gardener and a qualified medical herbalist. He would now like to take the step of growing medicinal, organically certified herbs to use in his herbal remedies and products.

Age entered farming: started gardening professionally at 16.

Qualifications: BSc Honours, Herbal Medicine.

Farming and land management experience: Haskel has worked as a gardener for private clients for over twenty years and as a commercial vegetable grower (Wales and France) for two years. He was also responsible for managing four acres of grounds at Loudwater Farm for three years including its old apple orchard. Haskel ran two market stalls in Lewes at the farmers' markets which he also helped to establish. He now works as a herbalist and sells his herbal products in shops and by mail order.

Current housing: rented rural housing.

Current enterprise type: professional herbalist.

Proposed enterprise type: commercial medicinal herb production, including on-site preparation of herbal remedies and products for wholesale and retail. Ideally he would also incorporate a (small) private herbal practice seeing individual clients.

Metske van de Laan is the sole operator of Pannel Farm, Hastings, a 6.5 acre certified organic holding, including 1,600m² of polytunnels, where he's been a tenant for 13 years. He supplies box schemes, farmers markets and food retailers including Infinity Foods in Brighton. Pannel Farm employs three seasonal workers. Metske's tenancy agreement will come to an end in 2018 leaving Infinity Foods, amongst others, without the produce that Metske has been supplying and his staff in need of finding new employment. Metske is looking for 3-10 acres to continue his business.



Age entered farming: Metske started his course in Biodynamic Agriculture in 1999, and began farming in the same year.

Qualifications: Two-years under-graduate education in Biodynamic Agriculture.

Experience: 12 years running Pannel Farm, and previously Head Grower at Scrag Oak Farm and Perry Court Farm. Before farming, Metske worked as a market trader in organic fruit and vegetables in the Netherlands.

Current housing: on his existing holding, but due to be lost with the tenancy.

Current enterprise type: market garden: open field and polytunnel organically certified vegetables.

Proposed enterprise type: as current.

Farm income accounts as a majority of household income: yes.

Further details of these potential smallholders, and information on others can be provided upon request to zoe@ecologicalland.coop.

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