



EASTERGATE ECOLOGY

ORCHARD SURVEY

Prepared for Linden Homes

by

Hankinson Duckett Associates

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HDA Document Control and Quality Assurance Record

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1 INTRODUCTION

1.1 Introduction

1.1.1 This report describes a survey of orchard habitats located within approximately 11.5ha of land at Eastergate, West Sussex, hereinafter referred to as the site. The site centre is located by National Grid Reference SU 948055. The study was commissioned by Linden Homes Ltd in July 2013.

1.1.2 The site is located on the northern edge of Eastergate and is bordered to the south by Barnham Road with residential development beyond, to the east by a public footpath with farmland beyond and to the west by residential development fronting Fontwell Avenue and Collins Close. Unmanaged orchard and farmland extends to the north. The location and boundary of the site are shown in Appendix B.

1.2 Background

1.2.1 Orchard habitats broadly fall into two categories; 'traditional' and 'intensive':

- **'Intensive orchards'** are typically of relatively low wildlife value, being heavily managed to maximise fruit production, often involving high inputs of pesticide and fertilisers, heavy pruning including removal of all dead and decaying wood, and frequent mowing and/ or herbicide application on the orchard floor. Intensive orchards are usually planted with a narrow range of short-lived commercially marketable varieties on dwarf rootstocks (NE, 2011; PTES, 2012; GOG, 2012), and generally all trees present are of similar age structure.
- **'Traditional orchards'** on the other hand are often of high value for wildlife, being subject to low (or no) inputs of agrochemicals and low intensity management of the orchard floor, which may include grazed meadow grassland of some antiquity. Deadwood habitats are often abundant due to infrequent pruning and the longevity of fruit tree varieties used. The variety of fruit trees is often more diverse than that associated with intensive orchards, and often a wider age structure is present due to replacement of lost trees. The above factors combine to provide opportunities for a wide range of wildlife including birds, invertebrates (including the Noble Chafer beetle; a species with a strong affinity to fruit tree deadwood habitats), lichens and fungi.

1.2.2 Traditional orchards may also support rare and local varieties of fruit trees and have cultural and/ or heritage value. A traditional orchard has at least five trees with crown edges less than 20m apart and may include linear plantings and plantings mixed with non-fruit bearing trees (Natural England, 2011; PTES, undated).

1.2.3 Orchard habitats often fall between the extremes of prime traditional orchard habitat and the most intensively managed orchards, and orchards should therefore be assessed on a case-by-case basis when determining nature conservation interest. In view of the above, it is important to recognise that the presence of an 'orchard' does not signify habitat of nature conservation interest in its own right, but instead it is the presence or absence of a

combination of factors which should be considered when assessing the value of any given orchard site.

- 1.2.4 Traditional orchards have undergone considerable declines over recent years, with Natural England estimating a 63% loss of this habitat in England since 1959. The remaining traditional orchard resource of England is estimated at 35,378 traditional orchards covering approximately 16,990ha land. Of these, 45% are considered to be in poor condition, 46% in good condition and 9% in excellent condition (PTES, undated).
- 1.2.5 The inventory for West Sussex (PTES, undated) lists 668 traditional orchard sites in West Sussex covering an area of around 179.6ha. It is estimated that around 40% of these orchards are currently in a poor condition. The most significant factors in loss of orchard habitats in West Sussex are thought to be a decline in income from traditional orchard produce, a decline in the skills and knowledge to manage traditional orchards, non-replacement of dying old fruit trees and a lack of protection under the planning system (SBP, undated).
- 1.2.6 In view of the above, since 2007 traditional orchards have been regarded as a Biodiversity Action Plan (BAP) Priority Habitat for the UK (Appendix C). The traditional orchard BAP includes a number of aims and objectives to protect and enhance traditional orchard habitats. Traditional orchards are also included on the list of habitats and species of principal importance identified under Section 41 of the 2006 NERC Act. Under Section 40 of the NERC Act local authorities are required to consider habitats and species of principal importance as a material consideration in the planning process.

1.3 Purpose of study

1.3.1 The aims of this study are:

- i. To identify the presence and, if appropriate, extent of traditional orchard habitats within the site;
- ii. To assess the nature conservation interest of the orchard habitat resource within the site;
- iii. To identify constraints to development due to the above; and
- iv. To identify appropriate measures to avoid or minimise the ecological effects of development on orchard habitats of nature conservation interest, and where effects are unavoidable, provide outline proposals to mitigate or compensate for these effects.

1.3.2 In addition to the orchard survey, a separate BS5837 tree survey is being conducted in order to assess the effects of the proposed development on other trees at the site. This is the subject of a separate report (HDA, 2014).

2 METHODOLOGY

2.1 Desk Study

2.1.1 Existing ecological and nature conservation data relevant to the site was collated from various sources including the Magic online database and the Sussex Biodiversity Record Centre (SxBRC). Information received during the desk study directly relevant to orchard habitat within the site is provided in Appendix A.

2.2 Field Survey

2.2.1 The field survey comprised a walkover survey of the site to identify and map areas supporting 5 or more fruit trees with crown edges less than 20m apart, reflecting the minimum size for consideration as 'orchard' according to the UKBAP habitat description (BRIG, 2011).

2.2.2 For each area of orchard mapped, the following attributes were recorded:

- Extent
- Altitude and Aspect
- Drainage
- Species and number present*
- Condition (disease, age, deadwood/ decay)
- Ground layer characteristics (e.g. evidence of grazing, mowing etc)
- Management
- Community value

* Although some species were identified to variety level it was beyond the scope of the current assessment to provide a full inventory of varieties present. Any requirement for further identification of varieties present is made in Section 5 below.

2.2.3 The field survey was carried out by Adrian Meurer MCIEEM of Hankinson Duckett Associates on 30th August 2013. A total of 6.25 hours was spent carrying out the field survey. Weather conditions were warm, dry and sunny. The findings of the field survey are summarised in Section 3 below and Appendix B.

2.3 Limitations

2.3.1 Several of the surveyed areas of fruit trees, in particular Area D, and to a lesser extent parts of Areas A and C, contained extremely dense scrub which restricted access for survey to the edges of these areas. The condition of the habitats throughout the entirety of these areas could therefore not be confirmed however a review of aerial photographs suggests that the areas comprise generally continuous areas of habitat with the general character and condition being evident at the edge. This limitation is therefore not considered to present a significant constraint to the robustness of the survey.

- 2.3.2 No further limitations were encountered during the survey and the survey was carried out at an appropriate time of year to inform an assessment of the likely value of orchard habitats present within the site.

3 RESULTS

3.1 Desk Study

- 3.1.1 Information downloaded from the Magic online database shows that three areas of the site, totalling approximately 5.8ha¹, are included on the PTES Traditional Orchard Inventory (Appendix A). These are located widely throughout the site with the exception of the far western extremity.

- 3.1.2 It should be noted that the much of the PTES Traditional Orchard Inventory was prepared on the basis of assessment of aerial photographs and OS mapping data and should therefore be regarded as provisional. These areas are discussed further in Section 3.2 below in the context of the findings of the field survey. Photographs of orchard habitats within the site are provided in Appendix D.

3.2 Field Survey

- 3.2.1 The field survey identified 4 distinct areas containing fruit trees and former orchard habitat within the site. The extent of each area is shown on the Orchard Survey Results Plan in Appendix B and a description of each area is given below.

Area A

- 3.2.2 Area A comprises a habitat mosaic of trees, scrub and rough grassland within the western central part of the site. The majority of the area is located within a block of land mapped as Traditional Orchard on the PTES Inventory (see Section 3.1), however in reality the 'block' comprises several distinct areas of fruit trees, described as separate compartments below, separated by rides of scrub and grassland of over 20m in width. This mosaic extends northwards out of the site.

Compartment A1 (Photograph 1)

- 3.2.3 Compartment A1 comprises a group of approximately 23 fruit trees within the western central part of the site. The area is flat and apparently well drained. The orchard does not show any evidence of having been managed in recent years and deadwood habitats are frequent, with no new generation fruit trees present. The compartment is extremely

¹ Area measurements taken from www.magic.gov.uk

overgrown with scrub including Elder, Hawthorn and Bramble, and consequently many of the fruit trees are being smothered. The ground layer throughout Compartment A1 is dominated by tall ruderals and coarse grasses such as Common Nettle, Creeping Thistle, Hogweed, Ground-ivy, Creeping Buttercup, Stinking Iris, Ivy, Lesser Burdock, Yorkshire Fog and Hedge Bindweed.

- 3.2.4 Compartment A1a (approx 0.16ha) forms the eastern part of Compartment A1 and contains no living fruit trees with the exception of two Pear trees at the north-eastern corner. This area is distinct from Compartment A1b (approx 0.07ha) to the west which contains a group of Apple (6 no.), Damson (13 no.) and Plum (4 no.) trees, the majority of which are nearing the end of their life and in poor condition, with many of the trees showing signs of disease.

Compartment A2

- 3.2.5 A group of 4-5 Apple trees plus further dead trees forming a link between Compartments A1 and A3 and covering approximately 0.02ha of land. As in Compartment A1, the trees are smothered with Ivy and Bramble due to a lack of recent management, and the ground layer is similarly composed of tall ruderals and coarse grasses. Due to the low number of trees present and the distance of these from other areas of orchard habitat, the compartment does not meet the criteria as defined for 'traditional orchard' by Natural England (2011) and PTES (undated).

Compartment A3

- 3.2.6 An area of former orchard now extremely overgrown with scrub and ruderal vegetation and covering approximately 0.30ha. The only fruit tree present within the area is a single dead Apple tree and other trees and scrub, such as Bramble, Elder, Oak and Hawthorn, are dominant. As such the compartment does not meet the criteria as defined for 'traditional orchard' by Natural England (2011) and PTES (undated).

Compartment A4

- 3.2.7 Approximately 0.03ha area of land comprising a total of 2 Apple trees, located immediately to the east of Compartment A3. The trees are extremely overgrown with Bramble, Elder and Hawthorn scrub and the ground layer contains ruderal species such as Common Nettle, Creeping Thistle, Spear Thistle, Ground-ivy, Field Forget-me-not and Thyme-leaved Speedwell. Due to the low number of trees present the compartment does not meet the criteria as defined for 'traditional orchard' by Natural England (2011) and PTES (undated).

Compartment A5 (Photograph 2)

- 3.2.8 A group of approximately 9 Apple trees located to the south of Compartment A5. The orchard does not show any evidence of having been managed in recent years and no young fruit trees are present, however the fruit trees recorded appeared to be in relatively good health. The orchard is extremely overgrown with Bramble, Elder and Blackthorn scrub which restricted access and made thorough survey of the area difficult. The ground layer is heavily shaded and comprises a sparse cover of tall ruderal vegetation including Common Nettle, Creeping Thistle and Hedge Bindweed.

Compartment A6

- 3.2.9 Two Apple trees located within a small area of scrub. One of the trees is dead and both are smothered with Bramble scrub and Common Nettle. Due to the low number of trees present and their distance from other areas of orchard, the compartment does not meet the criteria as defined for 'traditional orchard' by Natural England (2011) and PTES (undated).

Compartment A7 (Photograph 3)

- 3.2.10 An area measuring approximately 0.22ha, containing 14 Apple trees and 3 Plum trees. The majority of the fruit trees are nearing the end of their life, several are heavily Ivy-clad and 3 are dead. The area has not been subject to recent management and no new generation trees are present. The area is extremely overgrown with scrub, dominated by Elder and Bramble and also includes some Hawthorn and Ash along with tall ruderal species such as Common Nettle, Creeping Thistle, Lesser Burdock, Hedge Bindweed and Broad-leaved Dock.

Compartment A8 (Photograph 3 and Photograph 4)

- 3.2.11 An area of orchard containing 10 Apple trees and covering approximately 0.15ha to the south-west of Compartment A7. The Apple trees are all mature and nearing the end of their life, with no younger generation trees present. The orchard is unmanaged and extremely overgrown with scrub including Elder, Bramble and Ash, with some heavy Ivy cover present. No true ground flora is present, with the ground instead being encroached by tall ruderals as in Compartment A7.

Compartment A9

- 3.2.12 A series of four fruit trees (3 Apple and 1 Sloe) set within an area of managed species-poor semi-improved grassland. The grassland is largely dominated by Yorkshire Fog and contains a low diversity of forbs including Creeping Thistle, Common Nettle, Common Ragwort, Ground-ivy, Creeping Buttercup, Common Sorrel, Dandelion, Autumn Hawkbit, Lesser Burdock and Speedwell sp. Due to the low number of fruit trees present and its

isolation the compartment does not meet the criteria as defined for 'traditional orchard' by Natural England (2011) and PTES (undated).

- 3.2.13 Compartment A9 is the only area of the site containing fruit trees which is located outside of the land identified as Traditional Orchard by PTES.

Area B (Photograph 5 and Photograph 6)

- 3.2.14 A 0.39ha block of orchard containing approximately 122 trees including 2 Damson, 48 Pear and 72 Apple. The orchard trees are closely spaced and unmanaged, and the majority are nearing the end of their life. Approximately 10% of the fruit trees are already dead and many are heavily Ivy-clad.

- 3.2.15 A tall Hornbeam treeline runs alongside the western boundary of Area B, creating heavy shading over much of the orchard and inhibiting the growth of complementary scrub habitat at the orchard edge. In addition, an enclosed canopy throughout much of the orchard results in bare ground and very sparse Common Nettle growth within the ground layer. Open areas which have been created where trees have died are colonised by scrub such as Elder, Dog-rose and Bramble.

Area C (Photograph 7)

- 3.2.16 A block of Apple orchard containing approximately 190 trees and covering an area of around 0.77ha. All trees within the orchard are mature and of a similar age, and no younger generation trees are present, with several of the trees already dead. Dense scrub, including Elder, Bramble, Hawthorn and Ivy, is present throughout much of the orchard which restricted access and made thorough survey of the area difficult.

- 3.2.17 Towards the eastern end of Area C the ground flora beneath the trees is extremely limited due to heavy shading, with bare earth dominating alongside sparse tall ruderal vegetation including Common Nettle and Ground-ivy. In more open areas towards the western end Common Nettle again dominates but a variety of other species are present including Creeping Thistle, Ground-ivy, Hedge Bindweed, Lesser Burdock, Male Fern, Selfheal, Creeping Buttercup, Broad-leaved Dock, Ivy and Agrimony.

Area D (Photograph 8 and Photograph 9)

- 3.2.18 An extensive Apple orchard covering approximately 2.40ha in the south-eastern corner of the site. There is no evidence of recent management within the orchard and the fruit trees present are generally at a low density due to many having died, and several large gaps are present in the canopy where trees have been lost. The remaining trees are all mature and frequently in good health, however no new generation trees are present. Many of the fruit trees are heavily Ivy-clad and, as in Area C, the ground flora is generally limited due

to overshadowing from the fruit tree canopy. The frequent gaps between the fruit trees are infilled with scrub including Elder, Hawthorn and Bramble. A small number of standard Oak trees are located within the centre of the orchard area and a group of Ash is present along the eastern edge.

4 EVALUATION

4.1 When reviewed in the field the areas of land within the site included on the PTES Traditional Orchard Inventory do not represent areas of high quality orchard habitat, and in the case of Area A, substantial parts contain no fruit trees at all. Of the areas of the site identified as 'traditional orchard' on the inventory, Areas B, C and D fall within Natural England's description of orchard habitats (i.e. at least five trees with crown edges less than 20m apart). In the case of Area A, this definition only applies to selected parts of the area as the majority of the area supports no fruit trees at all, and the area would be better described as a scrub/ grassland habitat mosaic containing areas of orchard.

4.2 The orchard type habitats within the site were in no instance considered to comprise areas of prime quality traditional orchard habitat. This is due to a combination of:

- Age/ Age structure: All the areas of planted fruit trees surveyed were dominated by fruit trees of a single age structure with no subsequent planting for future replacement. The majority of fruit trees present were old and generally considered to be declining, particularly within Area A.
- Management: None of the surveyed fruit trees have been subject to recent management. Not only has this resulted in lack of a forthcoming replacement generation (discussed above), but is evidently decreasing the longevity of the existing fruit tree stock present within the site as many areas are becoming smothered by scrub.
- Ground layer/ physiognomy: In all cases the ground layer of orchard habitats was considered to be of limited nature conservation interest in its own right owing to a selection of:
 - Low species diversity;
 - Under management allowing establishment of dense scrub;
 - Presence of similar or better quality habitat in the wider area; and
 - Heavy shading causing absence of vegetation cover.
- Adjacent habitat: In the absence of a high quality ground layer the ecological interest of an orchard may be considered greater if there are associated habitats of high nature conservation interest in close proximity such as species-rich meadow grasslands. Such habitats are absent from the site although some complementary habitat is provided by adjacent hedgerow, treeline, rough grassland and scrub habitats, particularly within and around Area A.

4.3 In view of the above, the nature conservation interest of orchard type habitats across the site has been evaluated as follows:

Table 1: Orchard Habitat Evaluation

Importance	Habitat Present
International	None
National	None
Regional	None
County	None
District	Low: All areas in combination
Local	Moderate: Area A Area C Area D Low: Area B
Negligible	None

- 4.4 No orchard habitats of International, National, Regional or County nature conservation interest are present within the site.
- 4.5 The cumulative value of orchard type habitat within the site is regarded as being of low district importance as, in combination, the areas currently comprise a significant amount of this habitat type in a district context. However, in isolation, the individual areas are considered to be of no more than moderate local interest, with Area B being of low local interest due to its poor understorey and relative absence of complementary scrub edge habitat. Areas A, C and D are regarded as being of moderate local interest in their own right owing to a selection of tree health, quality of ground layer, availability of deadwood habitats and overall physiognomy. The long-term nature conservation interest of all of these areas is evidently in decline however due to a lack of management of encroaching scrub and the absence of the next generation of fruit trees.
- 4.6 In addition to the nature conservation interest of the orchard type habitats, consideration should also be given to their cultural value through the provision of social, material and nutritional benefits to the local community. In this regard the fruit tree resource of the site is regarded as being of low cultural value due to trees being located on private land with no public footpaths crossing the site. Incidental observations suggest that the vast majority of fruit is not picked and left to fall to the ground.
- 4.7 It should be noted that the above assessments relate to the nature conservation and cultural values of the site's fruit tree resource, and do not consider the heritage value potentially provided through the presence of rare, declining or local fruit tree varieties. An assessment of the heritage value of the fruit tree resource is beyond the scope of this report and appropriate recommendations as to this regard are given in Section 5 below.

5 CONCLUSION & RECOMMENDATIONS

- 5.1 Four areas of the site support '*at least five [fruit/ nut] trees with crown edges less than 20m apart*' and have subsequently had their nature conservation interest assessed in the context of the 'Traditional Orchard' UK BAP priority habitat (BRIG, 2011). In the case of Area A, this definition only applies to parts of the area as much of the area supports no fruit trees at all.
- 5.2 The orchard areas of highest nature conservation interest within the site are Areas A, C and D which are found in the central and eastern parts of the site and are individually considered to be of moderate local interest in their own right. Area B in the north of the site is regarded as being of low local interest in its own right. All surveyed areas do however contribute toward the overall cumulative value of orchard type habitat within the site, which is regarded as being of low district importance. The long-term value of the site's orchard resource is however considered overall to be in decline due to a lack of management and absence of new plantings to replace existing trees.
- 5.3 Any development proposals for the site should seek to retain the identified areas of orchard habitat within Areas A, B, C and D. However where retention of all areas is not possible, priority should be given to the retention and management of the areas currently of highest nature conservation interest, namely Areas A, C and D.
- 5.4 In their current condition however, the long term nature conservation interest of the orchard areas are compromised for the following reasons:
- A lack of management leading to smothering and shading from encroaching scrub (Area A)
 - The absence of the next generation of fruit trees (all areas);
 - Highly shaded and sparse ground flora (all areas)
 - Lack of quality of complementary habitat (Area B)
 - Low occurrence of deadwood habitats (all areas).
- 5.5 Where it is not possible to retain existing areas of orchard habitat, where appropriate new areas of orchard should be created in conjunction with other habitat of high nature conservation interest such as meadow grassland.
- 5.6 Under current land management practices the nature conservation interest of the site's orchard resource is expected to continue to decline. Any retained or newly created orchard habitats within the site should therefore seek to include the following restoration/ management measures to maximise their value for wildlife in the long-term.

- Planting/ infilling using a diverse range of fruit trees selected to provide fruit and blossom for as much of the year as possible;
- Use of heritage fruit tree varieties appropriate to the local area for additional plantings (see Section 5.9 below for identification of any key species);
- Management to encourage a diverse age structure of fruit trees;
- Retention of standing and fallen deadwood habitats (where safe to do so);
- Creation or enhancement of the ground layer to provide complementary habitats such as species-rich meadow grassland;
- Provision of features such as bat and bird boxes and habitat piles within or in close proximity to orchard areas;
- Provision or retention of complementary habitats in vicinity of retained and newly created orchard areas including hedgerows, scrub, woodland, wetland and grassland habitats; and
- Avoidance of herbicide, fungicide, fertiliser and pesticide use except where required to spot treating pernicious weeds and/ or establish new fruit tree plantings.

5.7 It is also recommended that development proposals for the site seek to enhance the currently limited cultural value of the orchard resource present at the site. This could be achieved through:

- Provision of public access to the retained areas of orchard habitat to encourage amenity use including fruit picking and general recreation such as picnicking.
- Management to facilitate access and encourage use including provision of paths, benches and signage. Information provided by signage should include details of the fruit trees present such as types, varieties, and times of harvest in addition to the wildlife associated with the orchard habitats.

5.8 Photographs of a community orchard created in 1995 in association with new development at Larks Hill, Bracknell, are provide in Appendix E (BFC, 2011). These photographs provide a good indication of the wildlife and cultural value that well designed newly created orchard habitats can provide within a relatively short period of time.

5.9 In addition to the above measures, prior to any loss of fruit trees from the site or preparation of detailed fruit tree planting/ orchard creation proposals, it is recommended that the fruit tree resource is surveyed by an appropriate expert to identify the heritage value of fruit trees present and the presence of any rare, declining or local fruit tree varieties. Where appropriate, the findings of this work should be used to inform planting proposals for the site to ensure that the current heritage value of the fruit tree resource is maintained and enhanced.

5.10 Subject to the implementation of the above measures, it is considered that no significant reduction in the long-term ecological interest of orchard habitats is likely to arise as a result of the site's development. Indeed, development of the site would provide

opportunity to maintain and enhance the current nature conservation interest and cultural value of the site's orchard resource.

6

REFERENCES

BFC (2012) *Larks Hill site description*. Bracknell Forest Council, Bracknell. Available from: [REDACTED]

BRIG (2011). *UK Biodiversity Action Plan; Priority Habitat Descriptions*. Available from: [REDACTED]

Department for Communities and Local Government (2012). *National Planning Policy Framework (NPPF)*.

HDA (2013). *Eastergate Ecology: Ecological Appraisal* (2013). Hankinson Duckett Associates, Wallingford.

HDA (2014). *Eastergate Trees: Tree Survey Report And Arboricultural Impact Assessment*. Hankinson Duckett Associates, Wallingford.

IEEM Management (2006). *Guidelines for Ecological Impact Assessment in the United Kingdom*. Institute of Ecology and Environmental, July 2006.

ODPM (2005) *Government Circular: Biodiversity and Geological Conservation – Statutory obligations and their impact within the planning system*. Office of the Deputy Prime Minister, August 2005.

Natural England (2007) *Traditional Orchards: A summary*. Available from: [REDACTED]

PTES (undated). *The Traditional Orchards of West Sussex*. Peoples Trust for Endangered Species. London. Available from: [REDACTED]

SBP (undated) *Traditional Orchards*. Sussex Biodiversity Partnership, Henfield. Available from: [REDACTED]

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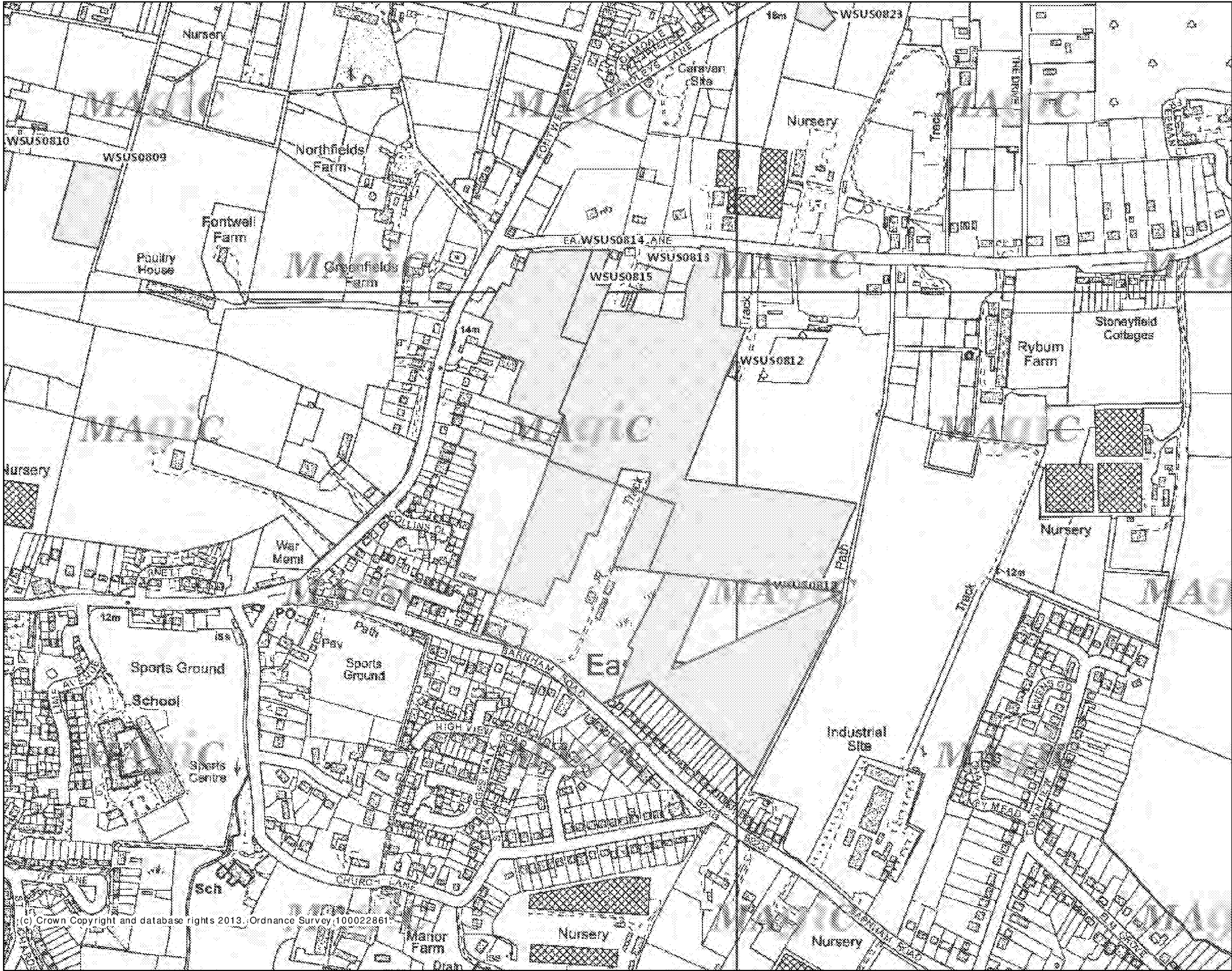
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APPENDIX A
Desk Study Results



Legend

- Traditional Orchard BAP Priority Habitat (England)

Projection = OSGB36
xmin = 493800
ymin = 105100
xmax = 495800
ymax = 106400
Map produced by MAGIC on 5 December, 2013.
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APPENDIX B

Orchard Survey Results Plan



KEY

- Site boundary
- On-site areas including fruit trees
- Land listed on PTES Traditional Orchard Inventory
- Areas of fruit tree planting not meeting 'Traditional Orchard' criteria

CLIENT:
Linden Homes

PROJECT:
Eastergate Ecology

TITLE:
Orchard Survey Results Plan

SCALE AT A3:
1:2,500

DATE:
December 2013

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Landscape Architecture
Masterplanning
Ecology

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UK BAP Priority Habitat Description: Traditional Orchards

- *Water pollution.* Although the currents in rapids may quickly disperse one-off sources of pollution, chronic continuing pollution could affect sensitive marine life.

References

<http://www.ukbap.org.uk/habitats.aspx>

Edited by Nikki Chapman, JNCC

Traditional Orchards

Correspondence with existing habitat/s

- UK BAP broad habitat: Broadleaved, mixed and yew woodland (the proposed habitat is a habitat complex like lowland wood-pasture and parkland, which is in this broad habitat)
- Phase 1: A. Woodland and scrub, A 1.1.2. Broadleaved plantation, orchard, to be identified by existing/added symbols (England Field Unit 1990).
- NVC: Incorporates several types as part of the orchard habitat complex e.g. MG5, MG6, W24.
- Annex I: Incorporates parts of several Annex I types, for example lowland calcareous grassland in some sites within the Annex I type H6210 semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*).

Description

Habitat structure rather than vegetation type, topography or soils, is the defining feature of the habitat. Traditional orchards are structurally and ecologically similar to wood-pasture and parkland, with open-grown trees set in herbaceous vegetation, but are generally distinguished from these priority habitat complexes by the following characteristics: the species composition of the trees, these being primarily in the family Rosaceae; the usually denser arrangement of the trees; the small scale of individual habitat patches; the wider dispersion and greater frequency of occurrence of habitat patches in the countryside. Traditional orchards include plantings for nuts, principally hazel nuts, but also walnuts.

Management of the trees is the other main feature distinguishing traditional orchards and wood-pasture and parkland. Trees in traditional orchards are, or were, grown for fruit and nut production, usually achieved through activities such as grafting and pruning, whereas timber has been the main product from trees in wood-pastures and parkland, mostly derived from pollarding or selective felling. Grazing or cutting of herbaceous vegetation are integral to orchard management, as they are in wood-pastures and parkland. The presence of scrub, mostly the form of hedgerows on the site boundaries, or sometimes, especially in unmanaged orchards, among the orchard trees, is analogous to the frequent occurrence of scrub in wood pastures and parkland and plays a similar ecological role (see under biodiversity characteristics described below). Ponds and other wetland features are often present, being used now, or in the past, for watering livestock.

Orchards are hotspots for biodiversity in the countryside, supporting a wide range of wildlife and containing UK BAP priority habitats and species, as well as an array of Nationally Rare and Nationally Scarce species. The wildlife of orchard sites depends on the mosaic of habitats they encompass, including fruit trees, scrub, hedgerows, hedgerow trees, non-fruit trees within the orchard, the orchard floor habitats, fallen dead wood and associated features such as ponds and streams. A feature of the biodiversity of traditional orchards is the great variety of fruit cultivars that they contain, for example Luckwill and Pollard (1963) list 101 varieties of perry pear distributed across the parishes of Gloucestershire. This agricultural biological diversity is not an explicit part of the current UK BAP, although the UK Government is a signatory to the Global Strategy for Plant Conservation 2001. The Government response (Cheffings and others 2004) includes a target for conserving crop diversity.

Traditional orchards are defined for priority habitat purposes as orchards managed in a low intensity way, in contrast with orchards managed intensively for fruit production by the input of chemicals such as pesticides and inorganic fertilisers, frequent mowing of the orchard floor rather than grazing or cutting for hay, and planting of short-lived, high-density, dwarf or bush fruit trees. Spacing of trees in traditional orchard can vary quite widely (from c.3 m in some plum orchards and traditional cobnut plats to over 20 m in some large perry pear and cherry orchards. There is some overlap of density of

planting with intensive orchards, but these orchards often have densities at least twice the density of the most closely-spaced traditional orchard.

Like wood-pastures and parklands, traditional orchards can occur on a wide range of soil types from slightly acid, relatively infertile soils to fertile river floodplain soils and lime-rich soils. Orchards can be found on slopes ranging from steep to level, and with any aspect. Generally, sites do not have badly impeded drainage, although locally, within sites, there may be wetter areas. Orchards are found in the lowland landscape in the UK, defined as the land below the altitudinal limit of enclosure (i.e. below the 'moor wall').

Traditional orchards are found in all countries of the UK although England has the bulk of the resource. Areas digitally mapped by the Ordnance Survey have been found to provide a relatively accurate estimate of total orchard area, through testing by ground-truthing and aerial photograph interpretation (English Nature in prep). Together with country information on extent of commercial orchards in agricultural census returns, digital Master Map polygons can be used to make initial estimates of the extent of the resource (see table below).

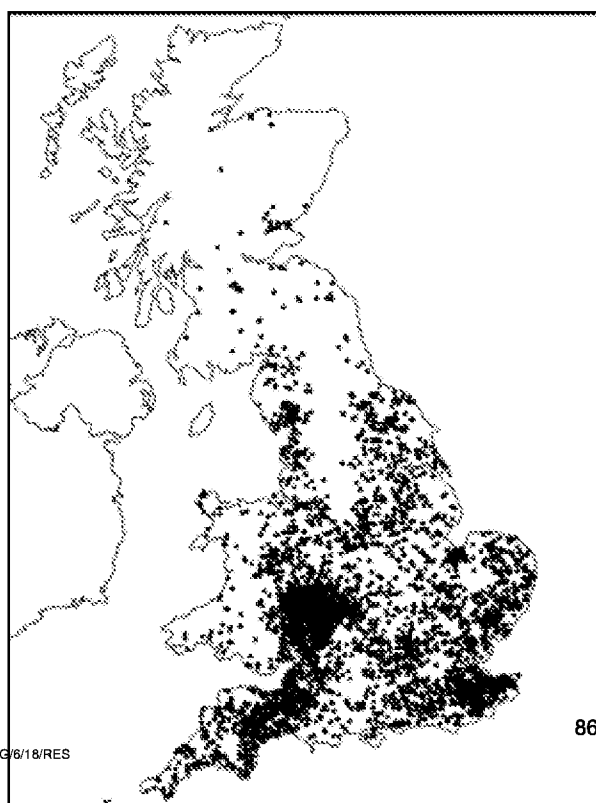
The estimated extent of traditional orchards in the UK (28,750ha), puts the habitat at the rarer end of the scale compared to existing priority habitats. These range from Upland hay meadows 1,100ha, Lowland wood-pasture and parkland 35,000ha, Lowland heathland over 60,000ha, Upland oakwood 85,000 ha to Upland heath 2,109,400ha).

Table: Estimated extent of traditional orchards in UK

Country	*Orchard area (ha)	**Traditional orchard area (ha)
England	47,000	28,000
Scotland	290	250
Wales	840	440
Northern Ireland	(1600)	60

*Ordnance Survey area except in Northern Ireland where area under fruit (top and soft) is given from the agricultural census 2004.

** England = Ordnance Survey area minus area of commercial orchards in census of 2000 defined as intensive (84%) by lack of fully grassed orchard floor (Central Science Laboratory data). Scotland and Wales = Ordnance Survey area minus area of commercial orchards in agricultural censuses of 2003 and 2002 respectively. Note that some of the commercial orchards in Scotland and Wales may be traditional orchards, thus the estimate of traditional orchard area may be an underestimate. Northern Ireland estimate from figure given in the Environmentally Sensitive Areas scheme booklet, traditional orchards option.



The Ordnance Survey data, which do not distinguish traditional and intensive orchards, show that orchards are dispersed throughout the lowlands of Britain (see Map 2), though there are concentrations in some areas particularly Kent, Cambridgeshire, Somerset and the Three Counties of Herefordshire, Worcestershire and Gloucestershire. The bulk (78%) of the commercial fruit production occurs in these concentrations in England, which implies that traditional orchards comprise the majority of the orchards elsewhere, as well as being known to occur in the orchard concentration areas.

Traditional orchards can easily be distinguished from other wooded habitats based on the preponderance of domestic fruit and nut

species: apple, plum, pear, damson, cherry, walnut and cobnut. Only in a very few cases will there be a significant number of other tree species in a traditional orchard, unless the orchard is becoming woodland through neglect. An arbitrary distinction of, say, 50% of trees should be domestic fruit or nut species in an orchard, is rarely likely to be invoked for distinguishing orchards from wood-pasture/parkland.

Map 2: Orchard distribution in England, Scotland and Wales. Reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationary Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceeding. English Nature 100017954 [2005].

A simple mappable definition is under discussion in 2008 and may be based on the rules adopted for the Natural England orchard project which refer to the distance between crown edges and number of trees (for this project, crown edges of trees must be within 20m of each other to be included in the orchard patch, and there must be more than 5 trees within 20m of each other's crown edges).

Traditional orchards, as distinct from non-traditional orchards are defined for priority habitat purposes as orchards managed in a low intensity way. They contrast with orchards managed intensively for fruit production, where there are inputs of chemicals such as pesticides and inorganic fertilisers, frequent mowing of the orchard floor rather than grazing or cutting for hay, and planting of short-lived, high-density, dwarf or bush fruit trees (stems generally 75 cms or less). The simplest visual indicator of intensive management is the presence of herbicided strips along the tree rows, where the ground is generally bare or with some annual plant regrowth, contrasting with the permanent grassland of the between-row spaces. Such strips are readily observable on aerial photographs. According to orchard pesticide usage surveys by the Central Science Laboratory, use of herbicide is associated with other pesticide use and intensive mowing between tree-rows, while in contrast, orchards with fully grassed floors can be considered traditional (Dr Joe Crocker, CSL, pers comm.). There may potentially be cases where other pesticides or inorganic fertilisers or other intensive management practices are used without herbicide. As a consequence, there may be occasionally instances for limited ground-truthing, for instance, where herbicide strips are not evident but the trees appear small and closely-spaced, by checking density / spacing (see below) and stature of trees on the ground. Spacing of trees in traditional orchard can vary quite widely from around 3 m to over 20 m between trees (see above). There is some overlap of density of planting with intensive orchards, so a density distinction is not useful on its own. However, non-traditional orchards often have densities at least twice the density of the most closely-spaced traditional orchard, and density/planting distance (< 3m in many intensive orchards) can help in the distinction of intensive orchards as described above.

Upland Birchwoods

Upland Birchwoods in Scotland are dominated by a series of stands of downy and/or silver birch with constituents such as rowan, willow, juniper and aspen (Hall and Kirby, 1998). Boundaries are often diffuse and liable to change as woodlands expand and contract in response to fires and changes in grazing pressure (Kirby, 1984). Refuges, such as those occurring on cliffs or rocky patches, may develop permanent tree cover that can contain richer, less mobile species (Kirby, *pers. comm.*). On more acidic soils, rowan is a prominent component, and juniper can form the underwood in the eastern highlands. Aspen grows on a variety of site types where mineral soil is present (Worrell, 1996), occurring frequently within upland birchwoods as small groups and rarely as extensive stands. Only 12 stands greater than 5 hectares are known to exist within Scotland.

On all but the most acidic sites, birch influences the soil to allow development of a grass-herb flora on sites previously dominated by dwarf shrub heath. This successional development appears to be cyclical in nature with the ground flora of many senescent birchwoods eventually returning to heath as tree cover is lost (Miles, 1988). Heavily grazed woodlands tend to develop a grass and moss dominated flora (McVean and Ratcliffe, 1962; Patterson, 1993) and, where the sward has been changed due to heavy stocking of sheep or cattle, the return to heath may not happen so readily.

APPENDIX D
Site Photographs

Photograph 1: Area A1a looking from species-poor semi-improved grassland to the east:



Photograph 2: Area A5a from the east showing dominance of tall ruderal and scrub vegetation:



Photograph 3: Looking southwards along the eastern edge of Area A7/ A8 showing poor condition of trees and dominance of tall ruderal and scrub:



Photograph 4: Area A8 from the south:



Photograph 5: Area B from the south showing mature pear trees:



Photograph 6: Area B from within:



Photograph 7: Eastern edge of Area C showing dense growth of apple trees:



Photograph 8: Western edge of Area D:



Photograph 9: Looking eastward into Area D from west showing dominance of tall ruderal and scrub vegetation:



APPENDIX E

Larks Hill Community Orchard

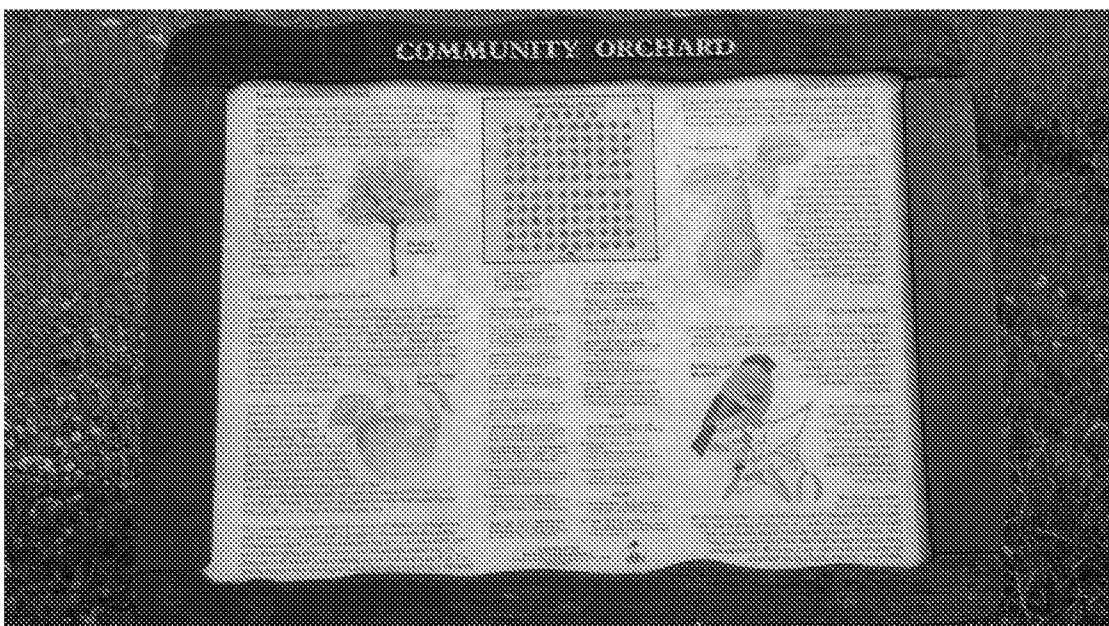
Larks Hill Community Orchard

The photographs below show the Community Orchard at Larks Hill, Bracknell. The orchard was created in 1995 in association with an application for residential development to the south. The orchard trees have established well and in combination with the ground layer, which comprises a species rich meadow grassland understood to have become established through natural regeneration, provides valuable habitat for wildlife. The orchard appears to be well used by the local community both for fruit picking and other recreational activities in combination with adjacent areas of public open space.

Larks Hill Community Orchard (Photo 1):



Larks Hill Community Orchard (Photo 2):



Larks Hill Community Orchard (Photo 3):



Larks Hill Community Orchard (Photo 4):

