



A Traditional Orchard Assessment Matfield House Orchard, The Green, Matfield, Kent



Prepared by KWT Consultancy Services for Tunbridge Wells Borough
Council

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Introduction

Kent Wildlife Trust Consultancy Services have been asked to make an assessment of the site, Matfield House Orchard, The Green, Matfield, Kent to determine whether it meets relevant criteria to be deemed Traditional Orchard Habitat as defined in Section 41 of the Natural Environment and Rural Communities Act 2006.

This report has been prepared on behalf of Kent Wildlife Trust Consultancy Services (KWTC) by Neil Coombs CEnv MCIEEM TechArborA, an Ecologist and Land Management Advisor.

The report consists of two parts:

- An Executive Summary of our conclusions regarding the status of the site with regard to Section 41, Priority Habitat Status, with outline recommendations for orchard management and restoration
- A technical report detailing the criteria used in our assessment together with details of the desktop study and field surveys.

Executive Summary

Traditional orchards are sites where standard and half standard fruit or nut trees occur over grassland in a density of 150 trees per hectare or less and are managed in an extensive rather than intensive fashion.

Traditional orchards are defined in the following document:

UK Biodiversity Action Plan Priority Habitat Description: Traditional Orchards: JNCC 2010

Traditional orchards may be assessed in the field by reference to:

The Orchard Condition Assessment published in: Biodiversity Metric 2.0-Technical Supplement published 24/10/2019- Defra and the Farm Environment Plan Manual 3rd edition- Natural England- March 2010

The site is an apple orchard to the north of a property referred to as Matfield Oast and to the south of Chestnut Lane, Matfield, Kent, TN12 7JJ. In general terms the local and wider area has a long tradition of fruit growing.

The site is accessed by an unmade track which divides it into two grass-fields with scattered apple trees and some probably self-seeded and establishing trees, such as common oak and sycamore. There is little, if any, scrub present and few undesirable or invasive species such as thistles within the grass sward.

The fruit trees appear to be nearly all half standard trees of one variety, possibly Cox's, except for the line of standard apple trees which are thought to be a cooking variety and possibly belong to the house and garden to the south.

A standard tree is defined as one which has a straight stem clear of branches for a height of 1.8 metres. A half standard is one that has a clear stem height of between 1.2 and 1.5 metres.

The trees on site are bearing fruit and most, if not all, are holding a canopy of foliage above 1.5 metres that would broadly accord to being in the region of 90% as required.

It is obvious that many trees have been removed in the past from the gaps in planting and occasional stumps. Taking these into account the planting distance would have been approximately 8 metres which accords well with traditional orchard plantings of apple varieties.

The north western part of the site has in all desk top study sources consulted, been identified as orchard habitat and is recorded in all available surveys as Traditional orchard.

This section of the site is shown as orchard trees¹ in all re-iterations of the 1st Edition Ordnance Survey maps.

In all available Google Images from 1940 onwards trees representative of orchard plants of a density of approximately 150 are apparent.

The site is interpreted from all aerial images as trees with grassland meeting the permanent grassland criteria.

The remaining trees within the site appear to have been planted in the manner of a Traditional orchard with tree centres at approximately 20-24 feet.

The south eastern section of the site has been recorded in all available habitat surveys as Traditional orchard.

It has had a more varied land use history than the north western section but appears to have been orchard from at least 1960 with a planting density that would be within the qualifying range of 150 fruit trees per hectare for Traditional orchards.

The site has, from at least 1960, been continuous and therefore permanent grassland according to Google images. The presence of permanent grassland is a qualifying feature of Traditional orchards.

Considering all of the above criteria the site meets the definition of a Traditional orchard and achieves a score of good in the condition assessments of Traditional orchard supplied by Defra and Natural England.

A number of the trees show features associated with increased biodiversity and veteran tree features. These features include presence of lichens, bracket fungi fruiting bodies and hollowing of trunk and branches.

There is one area of both the Defra Biodiversity Metric and the Natural England Farm Environment Plan T15 Traditional Orchard criteria are not met.

This is as follows, both criteria state that trunks that are either at least 1 m in circumference at the base or form their first major fork at least 1.5 m above ground level.

The girth of the trees within this study (except for the four trees to the southern boundary of the south east field), rarely exceeds 0.85 metres and the height to the first fork rarely meets the 1.5 metre threshold. Details are provided in the technical report section.

¹¹ Natural England does draw attention to the fact that hop gardens may also be represented as Orchards on some Ordnance Survey maps.

However no rationale for these measurements can be ascertained from any of the documents referred to. It is assumed that they refer to standard fruit trees rather than half standards. Half standard fruit trees have a clear trunk height of 90-140cms which accords well with the measurements of these trees which also meet the description for half standard apple trees of a 1 metre trunk and a three metre high crown giving a height of around 12 feet or 4 metres. The size of mature fruit trees, both standard and half standard, is dependent on the rootstock chosen, the type of tree planted and the subsequent initial pruning and maintenance.

Further guidance is given in the JNCC document:

“Tree form will usually be standards or half standards, but will vary according to species and local practice.”

It is possible that the references to height of trunk and fork concerns the grazing of sites and refers to livestock needs rather than a feature of orchard trees.

Trunk formation is important as it allows for livestock grazing. The height of the trunk (i.e. the point where the first branches start) depends on the type of stock grazing the field. Normally between 1.5-2 m high is sufficient for sheep and cattle. On half-standard trees the framework branches arch upwards in place of the trunk to create a multi-stemmed tree.

Natural England Technical Information Note TIN012 Traditional Orchards- a summary: Second edition 19 October 2010

From the above it would seem reasonable that the trees reflect both the tree selection practice at the time of planting and intended grassland management regime.

Conclusions

From the desktop study the conclusion can be drawn that the site meets the majority of the definitions and criteria of a Traditional orchard with parts of the site having been continuously an orchard since before 1900.

At some time, perhaps from 1960 onwards, the site was planted with half standard apple trees at a density that accords with traditional planting.

From the field survey we would conclude that for most of the relevant condition assessments derived from the guidance used, the site would qualify as in good condition.

The orchard is neglected and under pruned but the trees appear healthy and cropping.

Some of the trees are supporting veteran features such as hollowing, which increases the biodiversity value.

Outline Recommendations

The site would benefit from having a Traditional orchard management plan in place.

Management should include grassland management of an annual cut and collect, with ideally aftermath grazing by sheep.

Restoration pruning would be necessary to maintain the trees and support setting of fruit and cropping.

Tree planting of traditional varieties would be encouraged and if necessary some trees might be considered for translocation using a tree spade.

Some control of self-seeding trees is necessary, but a few oaks allowed to go on to maturity would increase the biodiversity of the site. To prevent them achieving canopy dominance they could be maintained as pollards.

The hedge line of trees to Chestnut Lane could be improved to increase biodiversity by planting with native species in places to be managed as a species rich hedgerow.

Technical Report

The study area is defined from the following map as provided by Tunbridge Wells District Council

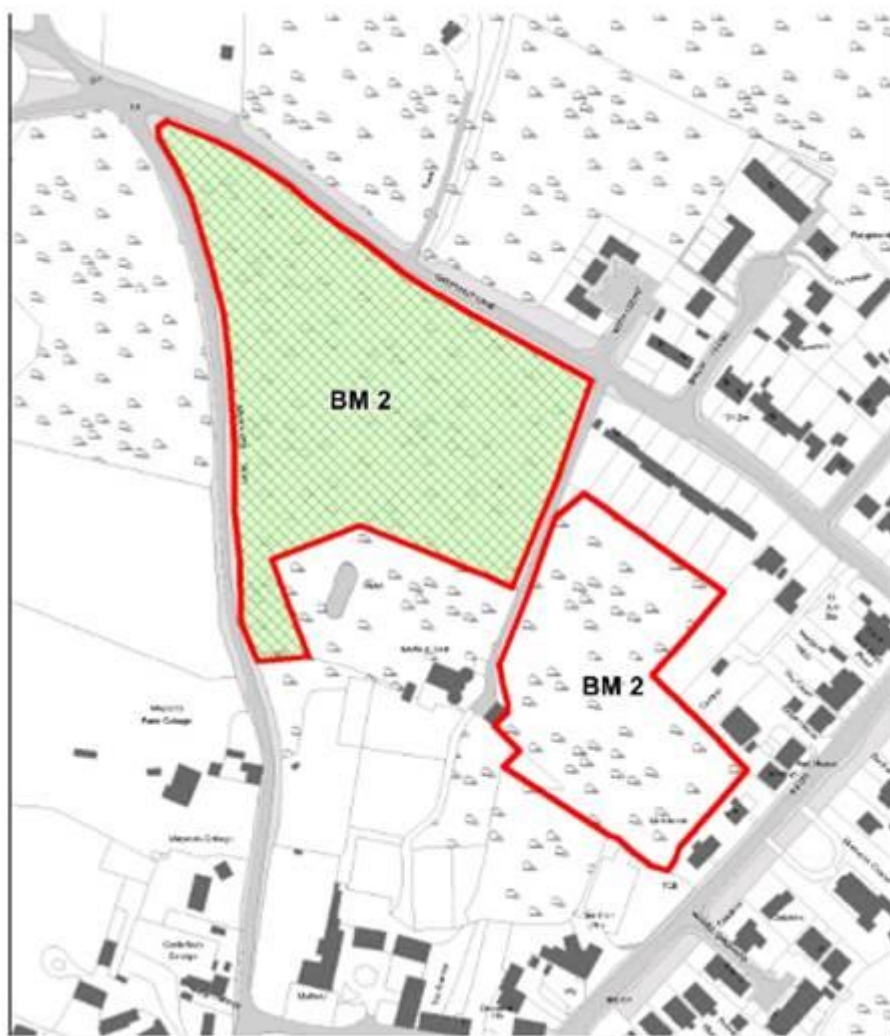


Diagram. Map of study area

The definition a Traditional orchard is used to denote the Traditional Orchard Habitat of Principal Importance.

Habitats of Principal Importance are derived from the Natural Environment and Rural Communities Act 2006 section 41, which requires the appropriate Secretary of State to publish a list of Habitats of Principle. In England this requirement is devolved to the Department of Rural Affairs (Defra) and Natural England.

Section 40 of the same act places a duty on public bodies in England to have regard to particular living organisms and types of habitat which are of the greatest conservation importance whilst carrying out their functions, whilst also having a general regard for protecting all biodiversity.

Traditional orchards are described in the UK Biodiversity Action Plan Priority Habitat Descriptions Traditional Orchards² as published by the Joint Nature Conservation Committee which is the Government's advisor on nature conservation.

Traditional orchards are found across England, both as small features attached to rural dwellings and as larger areas in traditional fruit growing areas such as Kent, Herefordshire and Worcestershire. Essentially they are areas of permanent grassland planted with trees that are cultivated for the production of fruit or nuts.

Traditional orchards are culturally significant as part of our rural heritage, of biological significance in that both the grassland and trees may have not been subjected to intensive management including hard pruning, and the application of significant amounts of pesticides, herbicides and artificial fertilisers. Largely as a result of extensive management Traditional orchards may support a variety of biodiversity including rare and endangered species.

In addition, Traditional orchards may become of increasing importance if climate change and diseases affect commercial fruit growing, as traditional varieties may have genetic properties that might be used to enhance existing varieties or develop new ones.

Traditional orchards are defined by the JNCC as a habitat structure rather than a particular vegetation type and are considered to have similar characteristics to wood-pasture and parkland with open-grown trees set in herbaceous vegetation.

They are distinguished from other forms of wood-pasture and parkland due to the presence of fruit trees or nut yielding trees such as hazel, and are usually planted in a denser arrangement in small scale habitat areas.

Whereas, in other forms of wood-pasture the trees may be managed for wood and timber production through regular lopping or selectively felling, orchard trees are managed by pruning the trees to produce fruit.

Orchard trees are also often grafted and consist of known varieties of fruit being fused with a vigorous rootstock.

In common with other forms of wood-pasture orchards may be grazed, traditionally by sheep, and the arrangement and types of trees such as whether they are standard or half standard varieties may reflect the chosen management regime.

² <https://jncc.gov.uk/our-work/uk-bap-priority-habitats/>

Some scrub and hedgerow habitats may be present, the more so in unmanaged orchards and may not be detrimental in that such additional habitats can increase biological diversity.

Other beneficial ecological features may also be included, such as ponds.

The variety of structure, long term habitat structure and features such as dead wood, all contribute to Traditional orchards providing a mosaic of habitats.

Traditional orchards are known to support other priority habitats and species as well as Nationally Rare and Nationally Scarce species.

Additionally the range of cultivars grown in Traditional orchards is recognised as contributing to agricultural and global plant diversity.

A further important feature of Traditional orchards is that, unlike intensive fruit orchards, they are less likely to be planted in dense arrangements of trees which are replaced after a few years and subject to the application of pesticides and inorganic fertilisers along with intensive grassland management.

In addition to their ecological and biological significance Traditional orchards may have historical and cultural significance, especially in a local context. They may provide a variety of local available produce including juice, as well as contributing to wellbeing by providing opportunities to access outdoor spaces.

An increasing interest in community orchards may give neglected Traditional orchards a new lease of life, whilst providing opportunities for different sections of communities to engage and explore new ways to interact with the possibility of reducing problems such as loneliness, isolation and obesity.

Traditional Orchard Definition

The JNCC document³ describing Traditional Orchards provides a detailed description for the assessment of Traditional orchards.

The key points for describing Traditional orchards are as follows. Along with other relevant sources these key points form the basis of the assessment. The full text of the description can be consulted by following the website link provided in footnote² as provided below.

1. For priority habitat purposes, groups of fruit or nut trees planted on vigorous rootstocks at low densities in permanent grassland, and managed in a low intensity way are defined as Traditional orchards.
2. Traditional orchard habitat can be recognised by the presence of grazed grassland with fruit trees of varying age structure, with an abundance of standing and fallen dead and decaying wood.
3. Young trees and newly planted orchards that are managed in a low intensity way are also included in the definition.
4. Low intensity management refers to orchards that are managed extensively, with little if any use of chemicals and inorganic fertilisers.

³ UK Biodiversity Action Plan Priority Habitat Descriptions Traditional Orchards
From: UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008.
<http://jncc.defra.gov.uk/page-5706>

5. The trees may be relatively long-lived, possibly with veteran tree features, and growing within a permanent grass sward that is usually grazed by cattle or sheep or cut for hay.
6. Traditional orchards can easily be distinguished from other wooded habitats based on the presence of domestic fruit and nut species which are a dominant feature.
7. Unless the orchard is becoming woodland through neglect, there are likely to be few other tree species present.
8. Traditional orchards are contrasted with intensively managed orchards by the presence of a closed grassland sward, usually growing up to the base of trees.
9. Intensive orchards can be distinguished from Traditional orchards by having a strip of ground along the rows of planted trees which is generally bare or colonized by annual plants as a result of herbicides being applied.
10. This feature is observable on aerial photographs and provides a simple visual indicator of whether a site is a traditional or intensively managed orchard.
11. The height of grasses and other vegetation is also an indicator of Traditional orchards, as in intensive orchards the grass between the rows is regularly mown.
12. Tree spacing in Traditional orchards can vary quite widely, from around 3m to over 20m between trees although the JNCC document does qualify this i.e. *“There is some overlap of density of planting with intensive orchards, so a density distinction is not useful on its own.”*
13. Intensive orchards may have densities at least twice that of the most closely-spaced Traditional orchard, which can be a useful distinction.
14. Planting density depends on the species of tree. For apple trees this will usually be less than 150 trees/ha. which is approximately an 8m spacing between the trees.
15. Tree form will usually be standards or half-standards, but will vary according to species and local practice. Vigorous rootstocks include trees that are grown on their own rootstock, seedling rootstocks, and named rootstocks that allow the tree to develop to its full size.
16. Where intensive management is practiced to maximise fruit production, the following indicators are usually present.
17. A dense planting of short-lived trees on dwarfing rootstocks with high chemical inputs and intensive pruning to remove dead and decaying wood.
18. The fruit trees are maintained in a restricted form i.e. they may not develop a full crown or show the traditional goblet or wine glass shape of a traditionally managed orchard tree
19. There is frequent mowing and spraying of the orchard floor.
20. The minimum size of a Traditional orchard is defined by JNCC as five trees with crown edges less than 20m apart.

Desktop Study

The above information is useful in determining whether or not the site is a Traditional orchard from information that is readily available without going to site.

For reference the following documents and sources are consulted to inform this desktop study

- Grassland Assessment Survey of Selected Sites within the High Weald AONB: A report for Tunbridge Wells Borough Council (TWBC) September 2020: Greenspace Ecological Solutions

- Kent Landscape Information Resources: habitat surveys. A number of habitat surveys have been provided for the County of Kent and are provided on a map accessed via the website
- MAGIC : The MAGIC website is managed by Natural England and provides geographic information drawn from a range of services
- Kent County Council Heritage Maps. This website provides access to 1st Edition Ordnance Survey maps
- Google Earth. Provides images derived from aerial photography including historical imagery

A discussion of the information obtained from these sources is as follows:

KLIS Shows the following layers consulted (layer in bold)

- **Priority habitats 2012:** entire site is Priority Habitat FT1 and under further information: Traditional Orchards: Derelict Trees : Corinne description: cobnut plantation
- **Historic Habitats 1990:** orchard and hops
- **Land cover 1972:** orchard and hops
- **Land cover 1961:** orchard and hops
- **Kent Habitat Survey 2003** Intensive Grassland (note range of habitats provided)
- **Kent Habitat Survey 2012** Traditional orchard

MAGIC website shows

- Habitat: Traditional orchard but not as Priority Habitat, however Traditional orchards were not included as a Priority habitat until 2007 and there may be an anomaly

Kent County Council Heritage Maps

- **1871-1890 1st edition Ordnance survey map:** shows western section as orchard trees: trees are depicted with 30m centres i.e. 100 feet approximately and probably representational. Oast House e.g. Matfield Oast not shown
- **1897- 1900 1st edition Ordnance survey map:** shows western section as orchard trees: trees are depicted with 15 metre centres i.e. 45-50 feet which may be representational. Oast House e.g. Matfield Oast shown
- **1907- 1923 1st edition Ordnance survey map:** shows as above and orchard area to north east corner in eastern field
- **1929-1952 1st edition Ordnance survey map:** as above

Google Images

- **2020 image:** shows grassland with scattered trees over both sections of site i.e. to north west and south east of track to Matfield Oast. An area of bare ground is shown roughly to centre in north west field together with a pond. The distances between tree centres is within the following range: maximum 48.15 metres: minimum 5.06 metres
- **2003 image and images in between:** shows continuous grassland with consistently less trees from image to image
- **1990 Image:** shows continuous grassland trees to both sections with tree centres with approximate ranges of 6.34 metres to 4.3 metres. The density of tree canopies counted within approximate 50 metre squares is between 74-86 and in places more open than that. This would suggest a planting density of around 150-160 trees per hectare.

- **1960 image:** shows a much more complex situation. The north western field appears to be mature trees with young trees in between. It is not possible to tell whether these are large mature fruit trees with younger trees planted in between, or other trees with self-sown trees establishing. The lower or south eastern section shows a probable orchard planting with tree centres of approximately 6.3 metres i.e. 20.66 feet, which accords well with a Traditional orchard planting. A tree density of 30 trees per hectare is indicated. To the north east is a more intensely planted area which may be fruit trees but which could equally be hops. A tree planted area remains in the very north east corner as shown on the later 1st edition Ordnance survey maps
- **1940 image:** shows the large and scattered trees to the north west, the area of trees, possibly orchard, to the north east corner and in the remainder of the south eastern field a probably orchard or perhaps cob nut plantation

Conclusion

The desktop survey concludes that the north western part of the site was continuously recorded as orchard throughout the 1st edition Ordnance survey maps i.e. 1897 onwards.

The whole site is recorded as Traditional orchard in all recent habitat surveys. Google earth imagery is almost entirely conclusive that the site has been in continuous grassland cover since at least 1960 and apart from perhaps one small strip to the south east of the track, from probably at least 1940.

The tree cover seems to consist in most images with orchard planting or cob nut plantation except for one section which may have been given over to hops for a period.

The maximum density of trees at any one time is likely to be around 160 per hectare but this distinguishes orchard trees from other trees or scrub. In addition sampling was in 50x50 metre blocks e.g. 0.5 hectares. This would mean that trees on the edge of the 0.5 sample area could be counted either inside or outside the sampling area. When counted inside this increases the density by a significant amount.

On the basis of the documents consulted the desktop survey concludes that both parts of the site would qualify as Section 41 Priority Habitat Traditional Orchard.

The site has:

- Supported trees at a density and distance consistent with Traditional orchard planting for an extensive time
- The site has been, except for the limited exceptions discussed above, a matrix of trees and grassland that meets the description within the JNCC document referenced

Field Study

Field study visits were made on two separate occasions Tuesday 13th October, weather conditions heavy rain showers and Monday 19th October when the weather was fine.

The purpose of the field visits was to determine whether the in-field characteristics of the site met the criteria of Section 41 NERC Act Traditional orchard habitat.

For the purposes of making an evaluation, reference has been made to two sources which provide guidance on deciding if a habitat meets the required definition.

These sources are:

- The Defra Biodiversity Metric 2.0 Technical Supplement Published July 2019.
- The Natural England Farm Environment Plan 3rd Edition 2010

The Defra Biodiversity Metric provides details for an assessment of Orchard types as follows

Defra Biodiversity Metric Habitats Orchard Types Includes: Intensive Orchards: Traditional Orchards: Urban Orchards
<p>Traditional orchards are defined as five or more trees, where the distance between the crown edges is 20 m or less.</p> <p>They are characterised by the presence of either standard or half-standard fruit trees, grown on vigorous rootstocks and planted at low densities (usually less than 150 trees per hectare) on permanent grassland.</p> <p>Mature trees should have 90% of their foliage above 1.5 m, with trunks that are either at least 1 m in circumference at the base or form their first major fork at least 1.5 m above ground level.</p> <p>In contrast Intensive orchards are defined as where planting is relatively recent and in full agricultural production usually with planting above 150 trees per hectare.</p>

Natural England Farm Environment Plan Guidance for the assessment of habitat T15 is almost identical but provides some additional information

T15 – Traditional orchards
<p>Traditional orchards are defined as five or more trees, where the distance between the crown edges is 20 m or less.</p> <p>They are characterised by the presence of either standard or half-standard fruit trees, grown on vigorous rootstocks and planted at low densities (usually less than 150 trees per hectare) on permanent grassland.</p> <p>Mature trees should have 90% of their foliage above 1.5 m, with trunks that are either at least 1 m in circumference at the base or form their first major fork at least 1.5 m above ground level.</p>
Additional information

The presence of old and former orchards may be indicated by old field names, evidence from current and old maps, and the HER consultation. Please note the Natural England advice that the original Ordnance Survey depiction for hop yards was the same as that for orchards.

Where less than a quarter of the original tree stations (planting positions) are occupied by mature trees, or the crowns are more than 20 m apart, record only the grassland type (see page 55 for grassland features) and add in the notes column that the field is the site of a remnant Traditional orchard.

The grassland under the orchards may also fall under one of the grassland feature definitions within the Farm Environment Manual.

Condition Assessments

Defra Biodiversity Metric and Farm Environment Plan

Defra Biodiversity Metric Condition Assessment Criteria Orchards
<ol style="list-style-type: none"> 1. There should be between 50 and 150 fruit or nut trees per hectare. 2. There should be an absence of scrub growing between or up the trees. 3. At least 80% of the trees should be free from damage caused by browsing, bark stripping or rubbing on non-adjusted ties. 4. The average height of the grass sward should be between 5 cm and 30 cm. 5. There should be less than 5% cover of bare ground, injurious weeds or scrub.
Undesirable species:
Above 10% cover below the canopy, such as; creeping thistle, spear thistle, curled dock, broad-leaved dock, common ragwort, common nettle, creeping buttercup and cow parsley etc.
The following can be recorded:
<p>Density – spacing between rows and within rows.</p> <p>Tree form – for example, standard or half-standard and the height of the trees.</p> <p>Grassland management regime – if the orchard is grazed, the type of animal being used and the grazing regime.</p> <p>If the sward is cut, details of the management regime.</p> <p>The number of surviving trees and their approximate age, and the number of young trees.</p> <p>Condition – the general state of health of the trees, the amount of dead wood, whether they have been under or over-pruned in the recent past, any disease present and the likelihood of long-term survival.</p> <p>Species/varieties of trees</p> <p>Threats – damage by pests, invasion of undesirable species, over-grazing or the presence of non-native species.</p> <p>Conservation value – the presence of any BAP species or mistletoe.</p> <p>Invasive species – any invasive and non-native invasive species.</p> <p>Undesirable species – type and how much in % cover.</p>

Condition Assessment Scoring

Both the Defra Biodiversity Metric and the Natural England Farm Environment Plan provide for scoring the condition assessments

Defra Biodiversity Metric
<p>Good Meets the majority of the criteria with only minor variation. None of the indicators of poor condition are present.</p> <p>Moderate A poorer quality Traditional orchard, missing a number of defining features or Urban orchard. Some of the condition criteria are being failed. The Orchard type has minor differences between what is described in the relevant habitat classifications and what is visible on site. Cover of undesirable species at 5% or above.</p> <p>Poor An Intensive orchard in full agricultural production. Poor quality Urban orchard with little biodiversity value.</p>
Natural England Farm Environment Plan Condition Assessment
<p>Condition assessment</p> <ol style="list-style-type: none">1. There should be between 50 and 150 fruit or nut trees per hectare.2. There should be an absence of scrub growing between or up the trees.3. At least 80% of the trees should be free from damage caused by browsing, bark stripping or rubbing on non-adjusted ties.4. The average height of the grass sward should be between 5 cm and 30 cm.5. There should be less than 5% cover of bare ground, injurious weeds or scrub.

Methodology

A total of fifteen trees were assessed in detail to record relevant features derived from the criteria and condition assessments discussed above.

Of the thirteen features considered in the field, eight were considered as good, two as moderate and three as poor.

It should be noted that the four trees to the south of the site were not included in the assessment. If these trees had been included the measurement date would have been significantly different.

Assessment feature/Criteria	Condition	Comments
There are five or more trees present on site.	Good	Approximately 90 trees over the sites
There should be between 50 and 150 fruit trees per hectare	Moderate	Present density is 33 per hectare. Probably density was 150 indicating that over 300 trees have been lost
Density	Good	Where present, indicates a planting density of 24 feet approximately between trees
There should be an absence of scrub growing between or up the trees.	Good	There is little scrub but a few trees are now growing in companionship with self-seeded oaks and sycamore
At least 80% of the trees should be free from damage caused by browsing, bark stripping or rubbing on ties.	Good	No signs of damage as described
The average height of the grass sward should be between 5cm and 30cm	Good	
There should be less than 5% cover of bare ground, injurious weeds or scrub	Good	Some damage to centre of north west section
The distance between the crown edge of the trees is less than 20 metres	Good	Where trees were present
Description of the trees	Good	The trees appear general healthy, most if not all are upright and appear disease free. Foliage is good and all have apples. Some have features such as hollowing, lichens and fungi
Average girth at base (circumference)	Poor	The average is 0.85 metres
Height of first branch	Poor	The average is 0.92 metres
Height of first fork	Poor	The average is 1.02 metres
Grassland type and condition	Moderate	Permanent grassland unmanaged

