Biodiversity in Fulbourn

Evidence Paper 6

This appendix contains evidence documents that support Policy FUL/03

Index

The constituent documents of this appendix are;

Bio-Diversity in Fulbourn – Report (362)
Including;
- Fulbourn Maps
- Designated Sites
- Habitats Maps
- Map of Fulbourn Fen Nature Reserve
- Orchid Count Data
- Swifts Survey Data
- Parish Tree Lists
- Wildlife Trust Churchyard Survey (1989)

Nest Boxes in New Developments (378)

Appropriate Trees for Fulbourn – Full Report (379)

Original individual documents can be accessed from the Fulbourn Neighbourhood Plan evidence base archive.

Biodiversity in Fulbourn

Introduction

The purpose of this Evidence document is to research what information is available on the natural assets of Fulbourn as a basis for future conservation and enhancement as the village develops. The species discussed in the specific sections are indicative of the wildlife present rather than a complete account of the flora and fauna of the village and Neighbourhood Plan area. Primary data was obtained from the Cambridgeshire and Peterborough Environmental Records Centre for Fulbourn Parish. This consisted of over 2,500 historical species records (EV362.4), a map of designated sites and habitats maps based on Phase 1 data from the 1990s and a more recent review undertaken by Natural Capital Solutions (NCS). These are reproduced, with permission, in Appendix 3.

Other primary data has been obtained from the annual orchid count in Fulbourn Fen Nature Reserve organised by the Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust (The Wildlife Trust) and the swift surveys undertaken by Fulbourn Swifts Group (FSG). Tree canopy data were obtained from the SCDC Tree Officer and tree identification was based on Tree Preservation Order records, Parish records and personal observation.

Secondary information on natural assets was obtained from web sites and leaflets produced by the Wildlife Trust and The Friends of The Roman Road and Fleam Dyke (FRRFD), as well as local walks booklets and anecdotal information from local village conservationists.

Within the Neighbourhood Plan Area and close to the village is the Fulbourn Fen SSSI, designated for the species-rich neutral grassland on calcareous loam and peat, together with remnants of 'fen' woodland. These habitats are now rare in lowland England. The old meadows have never been intensively farmed, so they have kept the high diversity of plants which traditional farming techniques produced. In East Fen Pasture, hundreds of orchids bloom in early summer – an annual community orchid count is organised by the Wildlife Trust, which manages the site as a Nature Reserve.

Also, there is a small County Wildlife Site at Fleam Dyke Pumping Station, which is designated for the presence of at least 16 calcareous grassland indicator species. On Shelford Road, near Bishop's Farm, there is a short section of Protected Road Verge of neutral/calcareous grassland.

Community Perspective

The community values a diverse environment. Developments, both in new and existing sites, need to respect protected and non-protected habitats and to reasonably mitigate any adverse effect on them.

In the questionnaire survey circulated in July 2019 residents gave their strong support for the protection of the environmental heritage and rich biodiversity of the area: of the 123 respondents, 98% said they 'agreed' or 'strongly agreed', while 0% said they 'disagreed' and 2% were 'neutral' on the matter. In the same survey, residents were asked their opinion on the statement 'Open green spaces within the village and the nature reserve are important features for recreation, relaxation, places for wildlife and contribute to the village resident's overall quality of life' (Q3). Of the 123 respondents, 98% said they 'agreed' or 'strongly agreed' with the statement while 2% were 'neutral' and none 'disagreed' or 'strongly disagreed'.

The Village Design Guide produced in 2020 was based on community workshops and discussions. People of Fulbourn from all age groups provided a coherent view of the village as a unique settlement of rural origin with a strong relationship with the countryside and farming community. Characteristics that were valued by participants included Fulbourn's mature trees, hedges, green spaces, streams, drainage ditches and the biodiversity within the village itself.

In the research done for the Parish Plan in 2008/2009 residents were asked 'How important is the quality of the countryside around Fulbourn to you?' (Q66). Of the 1144 respondents 95% said that it was 'Very important' or 'Important' to them. A further question from the Parish Plan asked residents

'What do you think could be done to improve the environment of Fulbourn?' (Q67). Residents were asked to rank a number of possible actions, which included 'Plant more hedges and trees' and 78% of respondents (722) said 'Worth doing' or 'Very important'.

In the same survey in response to the question 'What do you think could be done to protect and encourage wildlife in Fulbourn?' (Q68) residents were asked to rank a number of possible measures, which included 'Promote wildlife within the built-up areas' and 78% of respondents (777) said 'Worth doing' or 'Very important'.

The various surveys conducted over the period between 2008 and 2019 have indicated that the residents are firmly in support of maintaining and enhancing the natural features of Fulbourn. In addition, many residents are actively involved on various natural and biodiversity related activities, including planting a community orchard on St Vigor's Road (in conjunction with the SCDC Ecology Officer), or taking part in the community swift conservation group established in 2011, which has organised the installation of over 100 additional nest boxes in the village.

In recent years the 'Grow Your Own' group of Fulbourn Forum for community action has mounted several displays at quarterly Community Markets to promote the concept of 'Gardening with Wildlife' illustrated with photographs of various forms of wildlife taken in Fulbourn gardens. This information could form the basis of a new leaflet to encourage less experienced gardeners and new village residents. An example of a typical leaflet of this type is available on the Cambridgeshire County Council web site[1].

Also, the 'Grow Your Own' group has organised plant sales at Community Markets, offering plants, which are suitable for attracting bees and other insects, in return for donations. Lists of bee and butterfly friendly plants have also been made available.

Designated Natural Habitats

In addition to the designated sites within the parish noted in the Introduction, along the boundaries of Fulbourn Parish there are five SSSIs (see Designated Sites map and details in Appendix 2); to the south is the Roman Road and the Gog Magog Golf Course – both of which include fragmented areas of chalk grassland – to the east is Fleam Dyke, which has species rich chalk grassland, to the north east is Great Wilbraham Common, which has species rich grassland and to the north is Wilbraham Fen with fen habitat. Near the Fen on the edge of the Neighbourhood Plan Area, there is a County Wildlife Site on the Little Wilbraham River, which has a ditch with at least five submerged, floating and emergent vascular plant species per 20m stretch and a population of a nationally scarce plant species (Potamogeton coloratus). Notes on the flora and fauna of these sites taken from secondary sources are included under a number of headings below.

Cambridgeshire Habitats

A project to produce a detailed habitat basemap for the whole of Cambridgeshire (including Peterborough) to examine habitat change over 80 years, and to identify opportunities to enhance biodiversity, was commissioned by the Cambridgeshire Biodiversity Partnership[2]. The data used for these maps were compiled from a variety of sources and is not 'ground-truthed'. The survey showed that

> *'Cambridgeshire is dominated by cultivated land, making up 70% of the area, with much of the remaining area taken up by improved grassland (6.4%), the built environment (5.3%) and gardens (3.5%). Semi-natural and marshy grasslands make up 4.5%, while the combined cover of all woodland, scrub and tree habitat types make up just (4.8%) and water makes up 2.1% of the total area'*

High quality land for agriculture (Grade 1 or 2) makes up 64.3% of Cambridgeshire while an additional 26.5% is of moderate quality (Grade 3). Just 6.4% of the total area has some form of nature conservation designation.

The Cambridgeshire Green Infrastructure Strategy (June2011) (EV374), in Section 5.4 on South Cambridgeshire, notes the impact of intensive agriculture in the district in reducing biodiversity habitats and fragmenting the remaining links between them. The Green Infrastructure priorities for South Cambridgeshire include seeking opportunities for all new developments to incorporate and link to the green infrastructure, connecting and reinforcing habitats and landscape features.

The Government 25-year plan[3] for the environment included a commitment to develop a Nature Recovery Network to connect the 'best' wildlife sites to overcome their isolation and fragmentation.

Cambridgeshire has one of the lowest proportions of priority habitats in England (<10%), the second lowest woodland cover (4.8%) and one of the lowest percentages of accessible natural green space[4]. South Cambridgeshire District Council Biological Action Plan Priority habitats for protection and creation include woodland, hedgerows, meadows and churchyards/cemeteries, which are relevant to Fulbourn.

Fulbourn is within the area of the 'Living Landscapes: Cambridgeshire Chalk' project of the Bedfordshire, Cambridgeshire and Northamptonshire Wildlife Trust (EV375). The aim of this scheme is to protect and enhance important chalk heath and grassland sites and working with farmers to create an interconnected network of species rich grassland and other habitats south east of Cambridge City. There are remnant chalk grassland habitats on the Parish boundaries at Fleam Dyke and the Roman Road. A summary of the importance of this area to the Cambridge Green Belt was given in the Wildlife Trust document[5] objecting to the lack of emphasis on enhancement of the Green Belt in the then draft Cambridge Local Plan.

The Vision of Natural Cambridgeshire (EV376), which is a partnership of conservation organizations, local authorities, business leaders, the health sector and farming, is to double the area of rich wildlife habitat and green space in Cambridgeshire and Peterborough by 2050 to make the area a "*world class environment where nature and people thrive and businesses prosper*". This partnership has recently launched a series of initiatives designed to protect, restore and enhance key wildlife habitats. Five key landscapes have been identified with the main local one being the Gog Magog Hills area with a vision to create a natural park through land acquisition and habitat creation as well as the creation of a new 'Beacon Forest'.

A nature recovery network mapping exercise is being undertaken by the Wildlife Trust and Cambridge Past Present and Future with the aim of identifying priority landscape areas and locations for investment in the enhancement and creation of natural green space as part of a local nature network. Wildlife friendly land management in the cultivated areas between could help wildlife to find space in the wider landscape.

Their initial work suggests that there could be five areas[6], two of which are relevant to Fulbourn – Gog Magog Hills and Fulbourn Fens. The former area of chalk grasslands and woodlands includes Fulbourn Parish to the south of the Cambridge and Balsham Roads, and the latter area of wet fens and grasslands includes Fulbourn Fen, Wilbraham Fen and Great Wilbraham Common.

Fulbourn Habitats

Fulbourn Parish is located within Natural England 87 East Anglian Chalk National Character Area (EV372) where the low hills meet the edge of the fens. Historically, sheep rearing and corn production led to the creation of botanically rich grasslands, but these are now fragmented due to the intensification of agriculture. Much of the Parish landscape is characterised by large open fields where some hedgerows have been removed and others have many gaps. Accompanying field margins are generally narrow. The lower lying areas are also characterised by large fields with several small chalk streams flowing into drainage ditches running to the north of the NP Area into the Little Wilbraham River, Quy Water, and the River Cam beyond.

The habitat maps of the Fulbourn Neighbourhood Plan area produced by the CPERC are included in Appendix 3. There is a Phase 1 map, which is based on survey data from the 1990s overlaying a more recent Ordnance Survey map, and another based on the NCS data referred to above, which

has not been 'ground-truthed' However, the CPERC have checked this map against aerial photographs. It can be seen that Fulbourn reflects the Cambridgeshire data above in that the vast majority of the NP area is cultivated agricultural land with relatively little woodland. The agricultural land is mainly high quality (Grade 2) with some moderate quality (Grade 3). Not surprisingly the main location of woodland and 'grassland unimproved/semi-improved' is around Fulbourn Fen on the Fulbourn Manor Estates to the east of the village. That area links the built area via Manor parkland and the Recreation Ground with Fleam Dyke to the east and Wilbraham Common to the north. A number of habitats noted within the Development Framework on the Phase 1 map have now been taken over by housing development and two further areas of 'grassland unimproved/semi-improved' off Teversham Road (noted as semi-improved neutral grassland, probably an historic hay meadow in the ecological survey) and 'amenity grassland' on the Ida Darwin Hospital site have outline planning permission for development.

In the SCDC Biodiversity SPD (2009) within paragraphs 3.67 to 3.69 under Biodiversity Issue B5 – Protection of Wildlife Corridors, such indicative green corridors or networks are drawn on Map 2 on page 30 with two being relevant to Fulbourn. One is along the Roman Road and linking to Wandlebury and beyond, and the other is along Fleam Dyke linking into Fulbourn Fen Nature Reserve and on to Wilbraham Common and Wilbraham Fen with a branch to Hindloders (see below in 'Public Footpaths and Other Rights of Way'). Between these two 'corridors', potential Countryside Enhancement Areas are shown – to the east of Fulbourn village and within the NP area is 'Fleam Dyke to Roman Road' with target habitat of chalk grassland, and to the north and east of the village including part of the NP area is the 'Wicken Fen Vision Area to Great Wilbraham' area, which includes fen and wet grassland target habitats as well as chalk and neutral dry grassland.

The relevant local nature network mapping being undertaken by the Wildlife Trust and Cambridge Past Present and Future (CPPF) as part of the Natural Cambridgeshire Vision has been referred to above. It is anticipated that there is the potential for woodland cover and hedgerow habitats to be increased within the Neighbourhood Plan Area to help link existing islands of biodiversity, enhance 'green networks' and provide more resilient areas of biological and wildlife interest. Where possible these networks should also link into the village with its mature trees, hedges, established gardens and its open green spaces to enhance biodiversity and greenspace connectivity in the village itself.

The charity Buglife[7] has an ambitious project to create B-Lines, a series of 'insect pathways' running through our countryside, towns and villages. Over 97% of all flower rich grasslands have been lost in England since the 1930s reducing pollen and nectar sources and leading to a serious decline in wildlife depending on wildflower-rich habitat. The aim of the B-lines project is to encourage the restoration and creation of a series of wildflower-rich habitat stepping stones between existing wildlife areas creating a network across the landscape. To be successful this long-term project will require the co-operation of landowners, farmers, local authorities, wildlife organizations, businesses. One such indicative 'corridor' for potential enhancement projects runs from Wandlebury through the village towards Wilbraham.

Village Water Courses

The springs adjacent to the Nature Reserve, which arise close to the 15m contour, are often dry due to the depleted water table level, largely due to the scale of water abstraction from the underlying aquifer by the Cambridge Water Company from the Fleam Dyke Pumping Station. As a result, the area of wetland and the small chalk streams running through the site are often entirely dependent on water specially pumped from a borehole at Dungate Farm to the east of the A11 as part of the Lodes/Granta water augmentation scheme. This is not considered to be a long-term sustainable solution to protect the biodiversity of the local flora and fauna. The springs at the north western end of the village emerge at a lower level nearer the 10m contour and are usually flowing year-round into the chalk stream at Poor Well and into the drainage ditch system all flowing north towards the Caudle Ditch and beyond.

The whole Cam Valley river system, of which the Fulbourn springs and water courses are a part, has been identified as being under water stress. The general root of this has been identified as the

abstraction of water from the underlying aquifers, required to supply the needs of the expanding Cambridgeshire urban areas, lowering the water table, which has caused the chalk streams to dry and the River Cam and its tributaries to become low and sluggish. The Cam Valley Forum has produced the River Cam Manifesto, Aug 2019, (EV373) that highlights the situation and concerns. Their follow-up report 'Let it Flow'[8]provides proposals for an Integrated Resource Management Plan for the Cam Valley.

Fulbourn Managed Green Spaces

The most significant green spaces within the Fulbourn Village Development Framework have been reviewed in Evidence Document EV 361. Apart from The Victorian Garden and the Fulbourn Primary School grounds these have public access.

While the emphasis on many is for the social and amenity uses, there are significant areas of trees, shrubberies and hedgerows for example at Huntsmill Green and areas for wildflowers such as in St Vigor's Churchyard (see below). There are notes on general habitats and tree species present on those green spaces proposed for designation included in EV350 to EV356.

A few parts of the public green spaces are managed to allow wild flowers – mainly cow parsley -to flower in spring, the main examples being the areas around the mature trees at The Haven Copse and Pound Green. Otherwise grass is regularly mown and any flowers present in the sward are not usually seen, although there is some flowering of common native species of flora such as daisy, white clover and creeping buttercup just before each cut.

Apart from the small section of Protected Verge near Bishops Farm, mentioned above, no evidence has been found of a particular strategy for the management of roadside verges in the NP area, or within the village itself. The Charity Plantlife[9], which is a British conservation charity working nationally and internationally to save threatened wild flowers, plants and fungi, has campaigns to work with councils to manage roadside verges to better protect wildflowers.

Fulbourn Burial Grounds

While it needs to be recognised that the primary role of burial grounds is their role as places of commemoration and mourning, they can also form important 'green oases' in villages. The quiet nature of burial grounds and the usual lack of farming activities such as ploughing, treatment with chemical fertilizers or widespread spraying with pesticides often results in them becoming wildlife havens. They can comprise a wide range of habitat types from gravestones and church walls – ideal for lichens and mosses – to trees, shrubs and grassland.

The Cambridgeshire and Peterborough Biodiversity Group produced a Burial Grounds Local Habitat Action Plan (2009)[10], which notes that *'The importance of many burial grounds is often as ''encapsulated countryside'' in villages or urban settings, and as one of the few remnants of unimproved or semi-improved grassland left in such areas, they are increasingly valuable……..Characteristic species such as primroses, wood anemone, cowslip, oxeye daisy as well as bird species such as swifts can be encouraged through appropriate management regimes'.* One of the highlights for wild flowers within Fulbourn is St Vigor's Churchyard, which is sympathetically managed to allow a succession of wild flowers including cowslips, red clover and ox eye daisies to bloom in spring and early summer.

A survey of the churchyard was undertaken by the Wildlife Trust in 1989 (see Appendix 8). This found a good selection of spring and summer flora on 'chalk grassland', but of particular note were the good variety of lichen on walls and the headstones, with lots of moss on the ground and ferns and sedums on the west perimeter wall of the churchyard. Also, it was noted that common bird species were very abundant, and that there was lots of ground disturbance from moles and mice or voles. Perhaps a new survey would be beneficial to see how the biodiversity has fared over the last 30 years and to review the management regime in line with church requirements and current thinking

on churchyard management for biodiversity. However, that is a decision for St Vigor's Parochial Church Council.

The Charity Caring for God's Acre[11] was established in 2000 as a national charity promoting the conservation of burial sites and supporting the volunteers who look after and maintain them. Their trained and qualified ecologists and conservationists can advise on management to encourage wildlife.

The public burial ground, which is on the edge of the built area in the Green Belt off Sanders Lane, is owned and managed by the Parish Council. The grass around the gravestones is largely closely mown and there is a mix of native and specimen trees and shrubs around the boundary. In the early summer of 2020, it was noted that some areas around the headstones had not be mown so as to allow a wonderful display of ox-eye daisies to flourish. There is the potential to do more to encourage biodiversity while still respecting the primary purpose of the cemetery.

Fulbourn Gardens

With appropriate planting village gardens also make up potentially valuable habitat, which link up with managed green spaces to help form a 'green network' across the village. It has been estimated[7] that gardens cover nearly half a million hectares of the UK, which is a bigger area than all of our nature reserves! In Fulbourn the mature gardens in areas such as Cow Lane and Pierce Lane make a significant contribution to the green networks across the village with the thick hedges, shrubberies and mature trees with a developed canopy. Over time the newer estates can also contribute as well, with Huntsmill being a good example where many of the front gardens have significant hedges, shrubbery and climbers, which with the local public green space provide a good habitat for birds and other wildlife.

The mix of appropriate green cover, flowers, vegetables and wildlife such as birds, pollinators and hedgehogs provide a pleasant environment for all to enjoy, as well as providing well publicised health benefits. However, there is the potential to do more to encourage residents across the village to continue to enhance gardens for the benefit of wildlife. In recent years many front gardens have been lost to provide parking for cars and rear green areas gardens have been reduced to provide home extensions and hard landscaping for outdoor entertaining. This makes it even more important to enhance what is a reducing area of habitat year on year.

In recent years, Fulbourn Forum for community action has mounted several displays at quarterly Community Markets to promote the concept of 'Gardening with Wildlife' illustrated with photographs of various forms of wildlife taken in Fulbourn gardens. This information could form the basis of a new leaflet to encourage less experienced gardeners and new village residents. Lists of bee and butterfly friendly plants have also been made available.

As mentioned above, the charity Buglife[7] has an ambitious project to create B-Lines, a series of 'insect pathways' running through our countryside, towns and villages. One such indicative 'corridor' for potential enhancement projects runs through the village. The Charity Plantlife[9] also has campaigns to encourage householders to take steps to increase wildflowers in their lawns, and to work with councils to manage roadside verges to better protect wildflowers. Actions taken by individuals could contribute towards the aims of these projects.

Footpaths and Green Networks

In the South Cambridgeshire District Council Local Plan (2018) under Policy NH/5: Sites of Biodiversity or Geological Importance, paragraph 6.24 includes:

> '*The Cambridgeshire Green Infrastructure Strategy has identified a strategic green infrastructure network across Cambridgeshire……. These networks may link sites of biodiversity importance and provide routes or stepping stones for the migration, dispersal and genetic exchange of species in the wider environment. In South Cambridgeshire such*

networks may include public rights of way, important roadside verges which need to be protected from road improvements…'

Further paragraph 6.26 includes:

'*Public rights of way can often be green corridors in their own right, especially when in open arable countryside*. …'

A selection of walks in the countryside using footpaths around Fulbourn are detailed in an illustrated booklet, A Walking Guide to the Fulbourn Area[12], prepared by a group of residents and published by Fulbourn Village Library in collaboration with Fulbourn Forum and Fulbourn Village History Society. For some of these walks there are notes on nature and features of historic interest.

Fulbourn walking routes are a mix of public footpaths, bridleways and permissive paths, which link the built area of the village to Fulbourn Fen and on to Fleam Dyke and the Roman Road. Paths run along these two ancient features in the landscape[13] marking the southern and part of the eastern boundaries of the parish and Neighbourhood Plan area. Another route links the village with Wilbraham Common and Wilbraham Fen to the north.

An example of the variability of the 'green network' is Walk 8, in the Fulbourn Walks book mentioned above, from Stonebridge Lane via the ancient track of Hindloders and the footpath up to the Roman Road passing Valley Farm on the way. Starting in Hindloders on a relatively broad track between two hedgerows, albeit of mixed quality, in places, the continuing footpath on the south side of the Balsham Road is in part just a narrow grassy path across cultivated land but further towards the Roman Road it passes through a relatively new tree belt with a mix of beech, ash, field maple, yew and holly. At the top near the Roman Road the hedge has been improved with native species, which is often frequented by corn buntings, yellowhammers, linnets and whitethroats in summer[14].

The value of narrow footpaths with 'gappy' or no hedges as wildlife networks may be debatable, but in a landscape of intensive agriculture any small pockets of biodiversity are welcome, whether in the form of patches of native flowers for pollinators, or shrubs and trees bearing fruits and seeds for birds and small animals. As in the wider landscape there is the potential for the improvement of the hedgerows along many of the local pathways.

Within the village itself, the greens, churchyard, cemetery and Recreation Ground all form part of a series of 'green networks' comprising green spaces (public and private), hedges, hedgerows, tree canopies, gardens and grass verges that enables wildlife to traverse and thrive within the built environment of Fulbourn. Traditional garden hedges are of particular value in providing shelter, nesting opportunities and in some case food for birds, and in spring it is noticeable that there is much greater bird song and activity in areas of the village such as Haggis Gap and Huntsmill where hedges are present. There is a good tree canopy through much of the older part of the village potentially providing large numbers of invertebrates and a different type of network.

The main link from the countryside to this internal network is via the Nature Reserve through the Manor Park, the adjacent bridleway and on the other side the hedgerows of Stonebridge Lane and the Recreation Ground. There are other links between the village and the wider green networks, for example the hedgerow along Shelford Road coming down into the village and the chalk stream drainage ditch and associated hedgerows coming into Poor Well, albeit in some cases such hedgerows are thin and gappy in places. Hedgerows down from the Shelford Road towards the western end of the village and Capital Park grounds are either non-existent or very gappy, although there are some small pockets with some flora. Cutting of hedgerows is usually by flail and done soon after the end of summer depriving birds and small animals of valuable winter food. Many hedgerows are kept too thin and short to be of any real value for biodiversity, but hopefully in the future there will be agri-environmental schemes to encourage farmers to enhance biodiversity while continuing to produce the essential food. It is important that such green network links between the village and the countryside are retained and enhanced during any new development around the village.

Advice on ideal hedge structure and management is readily available. The People's Trust for Endangered Species[15] has set up 'The Great British Hedgerow Survey' and has on line information and advice on hedgerows. The English Hedgerow Trust[16] is a charity, which was established '*to make some contribution towards redressing the massive destruction of hedgerows in the British countryside'*

We are fortunate in Cambridgeshire in having two projects on farms aiming to show that it is possible to 'farm with nature'. In 1999 the RSPB purchased Hope Farm[17], at Knapwell with the aim of developing and trialling techniques for more sustainable farming – producing food cost-effectively while benefitting wildlife at the same time. The Countryside Restoration Trust[18] based at Bird's Farm, Barton, has 16 properties across the UK with over 2,000 acres and it *'promotes sensitive and sympathetic farming practices that encourage and protect wildlife and produce high quality produce'*

Fulbourn Trees

In the Fulbourn Village Design Guide SPD, the built area of Fulbourn is characterised as a village 'set among trees' – 'the tall trees of the English countryside'. However, in the wider NP area there is relatively little woodland (see habitats maps in Appendix 3) apart from Fulbourn Fen Nature Reserve and a few newer small plantations on Farms towards the Roman Road and at Queens Farm on the fen area. This is typical of the agricultural area to the east of Cambridge in which Fulbourn is situated. Tree canopy cover[19](the area of leaves, branches and tree stems that cover the ground) for the electoral ward of Fen Ditton and Fulbourn (also includes the Wilbrahams, Teversham, Horningsea and Stow-cum-Quy) is 5.67% of the land area This compares with 8.4% for South Cambridge as a whole and Cambridgeshire at 9.1%. There is no data available for just the NP area.

The details of Tree Preservation Orders (TPOs) for Fulbourn on the SCDC website were transcribed by the Parish Clerk and cross checked with parish records, and this list is included in Appendix 7. There are 57 trees and, as well as traditional native trees such as oak, ash and lime, there are specimen trees such as Scots Pine (4), walnut (5) and cedar (1). A further parish list was prepared by the Clerk with details from the archive of known woodlands in the parish, together with records of trees relating to parish green spaces and groups of trees (with O.S.P. references – Group TPOs?). This list, which has not been 'ground truthed', is included in Appendix 7 – there is additional detail on the trees present on managed green spaces in Evidence Documents EV 350 to EV 356 and EV361. There are some additional notes on the identity of trees on private land made in spring and summer 2020, which are also included in Appendix 7.

The main species of mature trees present within the longer established built-up area of the village include sycamore, horse chestnut, lime, ash, birch and beech, with some oaks towards the east end of the village. While some public green spaces such as the Recreation Ground, Pound Green and the Haven Copse have such mature native trees, the open spaces of most of the more modern estates have smaller species of mainly native trees - often these are referred to as street trees. These include rowan, hawthorn, field maple, wild cherry, whitebeam and birch, which is common to all areas.

In Poor Well the trees include willows and majestic black poplars, and in the lower lying area to the north along Teversham Road there are some specimen non-native weeping willows and Lombardy poplars.

In accordance with the Fulbourn Village Design Guide SPD, the choice of species on new developments should take account of local settings, the threat of climate change, as well as the incidence of tree disease in the area, and there should be a management plan in place to ensure that new trees become well established.

Fulbourn Orchids and Other Flora

As noted above, Fulbourn is located within Natural England 87 East Anglian Chalk National Character Area (EV372) where the low hills meet the edge of the fens, and historically, sheep rearing and corn production led to the creation of botanically rich grasslands, but these are now fragmented due to the intensification of agriculture. There are remnants along the parish boundaries on the Roman Road and Fleam Dyke SSSIs, and within the parish at Fleam Dyke pumping station (a County Wildlife Site) and the Protected Verge near Bishop's Farm on Shelford Road.

On the Roman Road along the NP southern boundary, plants typical of chalk grasslands include[20] in early summer common rock rose and horseshoe vetch while summer flowers include yarrow, purple milk vetch, salad burnett, harebell and field scabious. Species lists are available on the Friends of The Roman Road and Fleam Dyke web site[21]. On Fleam Dyke[22] along the NP eastern boundary in early spring there are violets and cowslips and later rock rose, horseshoe vetch, wild thyme, lady's bedstraw, harebell, field scabious and knapweed.

In the designation for Fleam Dyke Pumping Station, which is within the NP area and adjacent to Fleam Dyke, it is noted that '*the site supports frequent numbers of at least 16 calcareous grassland indicator species'*, but details have not been accessed.

In contrast to the northern NP boundary Wilbraham Fen SSSI is *'a large area of fen and neutral grassland with associated scrub and open water communities'* while the adjacent County Wildlife Site at The Little Wilbraham River *'contains a ditch with at least five submerged, floating and emergent vascular plant species per 20m stretch and a population of a Nationally Scarce plant species, (Potamogeton coloratus)'*

As already noted, within the Neighbourhood Plan Area and close to the village development framework is the Fulbourn Fen SSSI[23], designated for the species-rich neutral grassland on calcareous loam and peat, together with remnants of 'fen' woodland. These habitats are now rare in lowland England. A map of Fulbourn Fen Nature Reserve is included in Appendix 4. The old meadows have never been intensively farmed, so they have kept the high diversity of plants which traditional farming techniques produced and these include six species of orchid mainly in East Fen Pasture (see below). The latter is the wettest, but as noted above, this is artificially maintained by water specially pumped from a borehole at Dungate Farm to the east of the A11 as part of the Lodes/Granta water augmentation scheme.

The annual orchid count, organised by the Wildlife Trust in early to mid-June and involving villagers from Fulbourn, has recorded thousands of orchids (see Appendix 5) in recent years compared to a few hundred counted in the early 2000s. These consist mainly of early and southern marsh orchids (80 to 90% of the total) with much smaller numbers of bee and common spotted orchids and with a few pyramidal. The orchids are found mainly in the damper East Fen with some in Long Fen and just a few in Ox Meadow and Four Acre – sometimes these were not counted as the pastures had already been grazed. Common twayblade is the sixth species of orchid found at Fulbourn Fen. The driest meadow in Fulbourn Fen is Ox Meadow where the calcareous grassland has carpets of cowslips in spring and lady's bedstraw and stemless thistle in summer.

See also comments on flora in the Sections 'Fulbourn Burial Grounds' and 'Fulbourn Managed Green Spaces'.

Fulbourn Birds

Fulbourn is widely known for the large swift colony originally established in the old Windmill Estate, which survived re-development and over several summers successfully moved into the swift boxes incorporated into the new houses and flats of the appropriately named new development, The Swifts. The BBC have filmed swift related items twice on the site and the RSPB made a video and took a number of photographs of swift activity, which they have used on their web site and which appear from time to time in publicity material. A summary of the status of swifts in Fulbourn is covered in a separate section below.

Given that the majority of the area is taken up with farmland, historically many of the birds of the parish would have been those typical of hedgerows, fields and farmyards such as skylarks, yellowhammers, linnets, corn buntings and grey partridge. There has been no local survey of these birds, which are all 'Red Listed'[24] as 'Birds of Conservation Concern' and have declined dramatically in the UK in recent decades, but all have significant records on the CPERC list for Fulbourn and, anecdotally, all are still present in the Neighbourhood Plan area. Skylarks, which are a SCDC BAP Priority Species in the Biodiversity SPD (2009), can be heard and seen hovering over fields adjacent to the village in spring including those which are intensively farmed.

Another farmland bird, which has been in dramatic decline, is the Red Listed turtle dove, which is a Priority Species for Cambridgeshire – there are 25 historic records on the CPERC list for Fulbourn, mainly in the northern and eastern parts of the Neighbourhood Plan area towards the fens, but also near Fleam Dyke and the Roman Road. In 2016 it was estimated that the Cambridgeshire population was only 150 to 300 pairs[10]. Anecdotally, doves have been seen and heard in recent years around Valley Farm[25] to the north of the Roman Road, and on the edge of the village at Colbrook on the Teversham Road and near Poor Well on Cow Lane.

Another nationally declining summer visitor that can be heard and perhaps seen on the edge of the village and in the area towards the fens to the north and east of the village in the NP area is the Red Listed cuckoo – CPERC records are mainly for Fulbourn Fen to the east of the village but in 2020 there were also anecdotal reports of cuckoo heard near Poor Well and of a juvenile cuckoo being seen later in a Cow Lane garden nearby. The cuckoo is also recorded for Wilbraham Common[26] and Wilbraham Fen[12] on the northern NP boundary.

Two further Red Listed species that will be more familiar to residents in the village are the starling and the house sparrow. Starlings are present in varying numbers throughout the village and they have often been the first inhabitants of swift boxes installed by Fulbourn Swifts Group. They are also opportunist occupiers of any nooks and crannies appearing in soffits and under tiles on even newer housing areas. It has been reported that in winter there are small murmurations of starlings on Wilbraham Fen[12].

House sparrows, which are a SCDC BAP priority species, are more restricted to specific areas of the village where there are larger amounts of thick hedging or shrubbery for shelter and protection from predators, as well as access to feeding areas. Areas with noticeable populations include Huntsmill, where as well as the hedge on the green the houses have good shrubberies, Shelford Road field hedges and the garden hedges opposite, along Haggis Gap around the Health Centre and along Apthorpe Street. Both of these species have nested in the swift boxes on The Swifts (see section below).

Within the built area of the village as well as the swifts in summer there are several small colonies of house martins, for example in Huntsmill/Fromont Close area, along Caraway Road and around Church Lane/Station Road area and also on some farm buildings, for example Lodge Farm and Valley Farm near the Roman Road. In some summers, a few house martins have even nested in swift boxes (see below). Swallows nest in some barns in the Station Road area.

The more common summer visiting warblers, such as chiffchaff and blackcap are frequently heard within the village and at Fulbourn Fen where there are also willow warbler, garden warbler in the woodland and whitethroat and lesser whitethroat in the hedgerows. Blackcaps (probably migrants from central Europe) are regular winter visitors to bird feeders and patches of berry bearing ivy in the village. Breeding reed and sedge warblers are found at Wilbraham Fen[12] together with Cetti's and grasshopper warblers (an important county site for this species).

Year-round jackdaws are a common sight (with plenty of noise as well!) in the village, particularly near the old centre of the village where in summer they share the church tower with the swifts, as they build nests on the louvres on the north, west and south faces (the swift boxes are behind these louvres on the west and south faces). Other corvids such as crows and rooks are commonly seen within and over the village and the latter have built small rookeries just to the north of the village.

Jays are most commonly seen in Fulbourn Fen woodlands and are occasionally seen in the older parts of the village frequenting the gardens with plenty of shrubberies and mature trees.

There are some historical records on CPERC for Barn owls, which are a SCDC BAP priority species, mainly around Fulbourn Fen and at New Shardlowes Farm and they are resident in the Wilbraham Fen area on the parish boundary. Tawny owls are resident within the village in the areas with more extensive mature trees, and migrant short-eared owls are noted at Wilbraham Fen[12]. Other common birds of prey in the area are sparrow hawk within the village, kestrels over the farmland and buzzards and red kites have become increasingly common soaring over the village. Buzzards in particular are a common site, to the east of the village over the Recreation Ground and Nature Reserve. Out towards the fens[12] there are marsh harriers and hobbies in summer and these are also recorded on the CPERC list for Fulbourn.

The little egret, a bird that has started to colonize the UK since the 1990s, is now often seen in autumn and winter just north of the village along the Teversham Road in the pasture and arable fields by the roadside drainage ditch (usually wet from the feed from chalk streams) and the Caudle Ditch at the NP boundary.

Swifts in Fulbourn

In the UK, swift numbers have declined by over 60% in 25 years, and the Swifts Development in Fulbourn included one of the most successful nest box projects in the UK. In 2011 Rob Mungovan of SCDC received the Institute of Ecology and Environmental Management 'Tony Bradshaw Best Practice Award' on behalf of the development team. The development involved the incorporation of 276 swift nest boxes (more than 1 per household) into the new houses and flats during the re-development of the 1960s built Windmill Estate, which was home for over 150 families as well as a large colony of swifts. Within 6 years the colony of swifts that was potentially threatened by the re-development had become well established in the new housing areas with over 50% of the 168 internal boxes being used (Appendix 6).

On the other hand, less than 5% of the 54 external double boxes fitted on the houses and flats had been occupied (see Appendix 6). We have not been able to find an explanation for this preference, although perhaps the integral box entrances are more similar to the crevices used by the swifts on the old houses that were cleared in the re-development. A few pairs still nest in the one remaining block of old houses.

Swift boxes are also used by a range of smaller cavity-nesting species (EV378), and in the 2014 community survey on the above development it was noted that 17 swift boxes were being used by starlings and 9 boxes were used by house sparrows. In 2016 there were also 5 pairs of house martins recorded using the integral swift boxes.

In the older part of the village there are small colonies of swifts at the International School building (2 pairs), the Old Manor (8 pairs) and at St Vigor's Church (4 pairs), where a mitigation project to install 18 nest boxes in the tower was started in 2015. Although the swifts that had been nesting under the eaves in previous years could not access these nest sites in 2016, at least two of the new boxes were used. In subsequent years one pair have returned to nest in the eaves and in 2020 there were three pairs successfully raising eight young in the boxes – these boxes are monitored by cameras and recording equipment with live pictures shown to visitors on Swift Open Days. Also, small colonies of swifts have become established in boxes installed on private homes at three new locations in the village.

Invertebrates

The CPERC provided 1350 invertebrate records for Fulbourn of which 1050 are for moth species. The latter were mainly recorded at Lodge Farm and Whitehill Plantation to the south of the NP area near the Roman Road. There are 38 species records many of which are Section 41 Species of Principal Importance in England (NERC Act 2006) and these include beaded chestnut, brown-spot pinion, buff ermine, cinnabar, rosy rustic and white ermine.

There are over 230 butterfly records, which are mainly for the Roman Road and Fleam Dyke where the Friends of the Roman Road and Fleam Dyke carry out annual butterfly transect counts[21]. In 2020 the lockdown prevented the early season visits to Fleam Dyke, but a full set were completed for the Roman Road. A total of 25 species were recorded at both sites with the total butterfly sightings on the Roman Road being similar to those for 2019. It was said to be a mixed year for the three habitat specialists – chalkhill blue, green hairstreak and dark green fritillary – and of the wider countryside species '*the marbled white was again one of the highlights of the year…this confirms that the species is becoming established on our two sites'* Full monitoring data is available for 2007 to 2020, together with species lists, on the Friends website noted above. According to the guide[22] to the Fleam Dyke '*moths, bumblebees, solitary bees and wasps, and many other winged insects thrive on the abundance of flowers on the chalk grassland'*

The remaining 50 invertebrate records on CPERC are for a variety of grasshoppers, bugs and flies and almost exclusively relate to Fulbourn Fen. No surveys are known to be conducted in village gardens but, as noted in the above section 'Fulbourn Gardens', efforts are ongoing to encourage residents to use herbaceous plants attractive to a range of bees, butterflies, moths and other pollinators.

Fulbourn Mammals

The most common species of deer throughout the NP area, including some gardens within the village, is the muntjac. Surprisingly there are no deer records on CPERC, but there are anecdotal observations of roe deer around the Fulbourn Fen area. The fox is also common throughout including the village, and there are seven records for the badger, mainly on the higher ground near the Fleam Dyke and the area around the track of the old Chesterford to Newmarket Railway to the south east of the NP area.

There are 38 CPERC records for the brown hare, which is most often seen on the higher open farmland to the south and east of the NP area between the Roman Road and Fleam Dyke for example near New Shardelowes Farm. There are also a few records for the hare in Fulbourn Fen. Rabbits are also common in places and stoats and weasels are noted for Fulbourn Fen[23] and Fleam Dyke[22].

Mole hills can be seen in Fulbourn Fen and closer to the village moles visit the parish allotments. The occurrence of hedgehogs within the village is variable depending whether gaps are left under fences for them to move about and feed. Mice, rats, shrews and voles are common throughout, including the village gardens. It is important that new developments install fencing with ready made transit holes, suitably marked.

On CPERC there are over 30 records for bats of six different species and of these the most common are pipistrelle, soprano pipistrelle and serotine, which have been noted in Fulbourn Fen and within the village. The brown long-eared records are to the east of the village and there is just one record each for noctule (at Fulbourn Fen) and barbastelle (to the south east of the village).

At the Ida Darwin site approved for development ecological surveys[27] found the presence of common pipistrelle, soprano pipistrelle and noctule bats with a confirmed roost site in a building at the eastern end of the site nearest the village. Mitigation measures such as provision of bat roost boxes, habitat enhancements and sensitive lighting schemes are proposed.

At the Teversham Road site[28] approved for development, no active bat roosts were identified in ecological surveys but it was acknowledged that the site is highly likely to be used for foraging along the tree and hedgerow lines. Consequently, in mitigation habitat will be enhanced, bat roost boxes will be provided in houses and trees and sensitive lighting is proposed.

There are six records on CPERC for the water vole, which is a SCDC BAP Priority Species, not surprisingly in the low-lying areas to the north of the village at New Cut drain to the northeast, Caudle Ditch along the northern boundary of the NP area and in the ditch alongside Teversham Road.

Fulbourn Reptiles and Amphibians

There are 11 records for common lizard at CPERC for Fulbourn – one at Fulbourn Fen (it is mentioned as a resident species in the WT Reserves booklet[29]) and the remaining records are split between Fleam Dyke SSSI and the Roman Road SSSI. It is a Cambridgeshire Priority Species and Fleam Dyke is noted on the Priority Species Factsheet[10] as a key site – it can sometimes be seen there basking on bare soil. Their preferred habitats are open grassland, heathland, embankments and open woodland. Ecological Survey reports for the sites of the two proposed housing developments at Teversham Road[30] and Ida Darwin[31] have both found lizards to be present mainly along the northern boundaries along the railway line, which could be potentially part of a larger population using the railway embankment. For both sites, measures will be required for the conservation and enhancement of these populations.

There are four records at CPERC for the grass snake at Fulbourn Fen, Fleam Dyke SSSI and The Roman Road SSSI. They can be found on Fleam Dyke[22] near the pumping station. As with the common lizard, it is a Section 41 Species of Principal Importance in England under the Natural Environment and Rural Communities (NERC) Act 2006. The grass snake was also found on the Ecological Survey for the site of the proposed development on land east of Teversham Road[30]. Also, there is anecdotal evidence of grass snakes occurring in gardens along the north side of Cow Lane.

The common toad is recorded at CPERC for Fulbourn Fen, The Roman Road SSSI and the Little Wilbraham River County Wildlife Site to the north. This is a Section 41 Priority Species and a Cambridgeshire Priority Species. According to the Factsheet[10] this species, which spends little time in water and is usually found under logs and rocks, is common in many Cambridgeshire gardens and allotments. Anecdotal reports from Fulbourn confirms this. The common frog is recorded in the CPERC records for Fulbourn Fen and is noted in the description of Fulbourn Fen Nature Reserve[29]. Anecdotal reports confirm that anyone in Fulbourn with even a very small pond in their garden is likely to find frogs in spring. Smooth newts are similarly relatively common in Fulbourn garden ponds, but the only newt record on CPERC is an old occurrence of the much rarer protected species great crested newt. Information and advice on enhancement of garden habitat for amphibians and reptiles is available from the Charity froglife[32].

Relevant National Planning Policy

The NPPF has a requirement for development in England is to deliver 'biodiversity net gain' of 10% at least. Biodiversity net gain requires developers to ensure habitats for wildlife are enhanced and left in a measurably better state than they were pre-development. They must assess the type of habitat and its condition before submitting plans, and then demonstrate how they are improving biodiversity, through the creation of green corridors, planting more trees, or forming local nature spaces.

Green Infrastructure on New Developments

A good environment can contribute to the quality of life, health and wellbeing of residents and it is important to retain and provide connected natural green infrastructure within and around the site of new development close to the dwellings and reduce hard landscaping to a minimum. The community values the wilder spaces within and around the development framework and it is important that planned development seeks to maintain and enhance the biodiversity within the village rather than having to compensate with offsite projects.

Retention of existing natural hedgerows and trees and planting of new native trees, hedging and shrubs close to new buildings will provide a suitable environment for people, birds, animals and invertebrates. These should link to the wider green networks to encourage wildlife to live within and move through the development from adjacent habitats.

The enrichment of the habitat close to homes will attract a wider range of birds into gardens. The integration of swift bricks in all dwellings as a universal brick suitable for a range of cavity nesting birds is now good practice (see EV 378). For sparrows and other small birds, hedges and shrubs for shelter are important close to potential nest sites. Garden boundaries should be permeable and ideally planted with hedging or fences with small gaps at the base to permit the movement of hedgehogs, amphibians and small mammals. This was highlighted in Government Guidance on the NPPF in July 2019[33]:

NPPG paragraph 23 (2019) includes:

> *'Relatively small features can often achieve important benefits for wildlife, such as incorporating 'swift bricks' and bat boxes in developments and providing safe routes for hedgehogs between different areas of habitat.'*

In accordance with the Fulbourn Village Design Guide SPD, the choice of tree species on new developments should take account of local settings, the threat of climate change, as well as the incidence of tree disease in the area.

Green spaces in new developments should be managed for biodiversity benefit, as well as providing visual and social amenity, and inspire a healthy way of life for residents and visitors. Habitat and green infrastructure in new developments must have a sustainable management plan to ensure the long-term maintenance. For example, it is important that trees are regularly watered, monitored until established and replaced if necessary, as Fulbourn is in one of the driest areas of the country. The potential for wear and tear or even vandalism should be considered when deciding on the areas for wildlife habitat. For example, sustainable, integral bird boxes in buildings are highly preferable to small nest boxes located in trees.

Wildlife benefits would be increased by appropriate management and direct engagement with future occupiers, for example developing show homes with wildlife friendly gardens and providing guidance leaflets for new residents.

Conclusion

Like many villages in South Cambridgeshire, Fulbourn is surrounded mainly by intensively farmed land, which has limited biodiversity, so it is very fortunate to have the adjacent Fulbourn Fen SSSI Nature Reserve and the five designated sites with a variety of habitats on the parish and NP boundary. The village itself has some interesting biodiversity, but there is potential to enhance it, and any new developments will be required to do this in addition to either maintaining existing biodiversity or mitigating for any losses. There must be sustainable management plans agreed that will ensure the biodiversity benefits are there for the long term.

The natural world in the Greater Cambridge area will face many challenges as the demand for continued development and expansion of settlements will put greater pressure on the Green Belt around Cambridge and the nearby villages, as well as the underground water supplies and the chalk streams feeding the River Cam including those at Fulbourn, some of which rarely flow now even in winter. Footfall at Nature Reserves and special sites is likely to greatly increase which may threaten their value for biodiversity as the quality of those habitats may decrease.

There is hope in the Vision of Natural Cambridgeshire to double the area of rich wildlife habitat and green space in Cambridgeshire and Peterborough by 2050. Hopefully the relevant local nature network mapping being undertaken by the Wildlife Trust and Cambridge Past Present and Future (CPPF) as part of this Vision may identify the potential for chalk grassland, woodland cover and hedgerow habitats to be increased within the Neighbourhood Plan Area to help link existing islands of biodiversity, enhance 'green networks' and provide more resilient areas of biological and wildlife interest. Hopefully with the co-operation of landowners and with appropriate incentives these can be implemented.

Meanwhile the Parish Council has the opportunity to enhance the public green spaces within the village for the benefit of residents and wildlife, and residents can contribute by enhancing the wildlife benefit of their own plots with the support and encouragement of the community.

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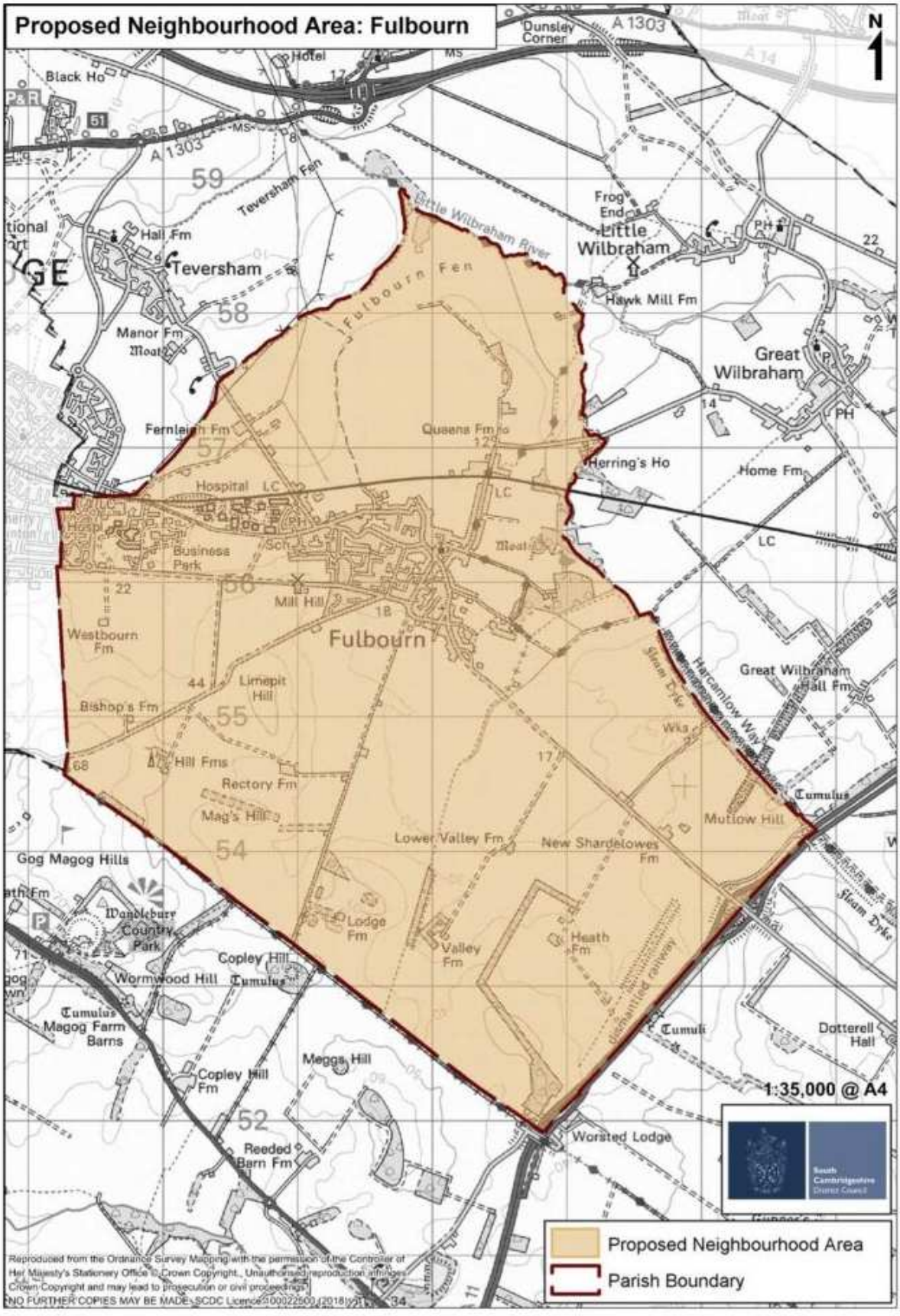
Appendix Index

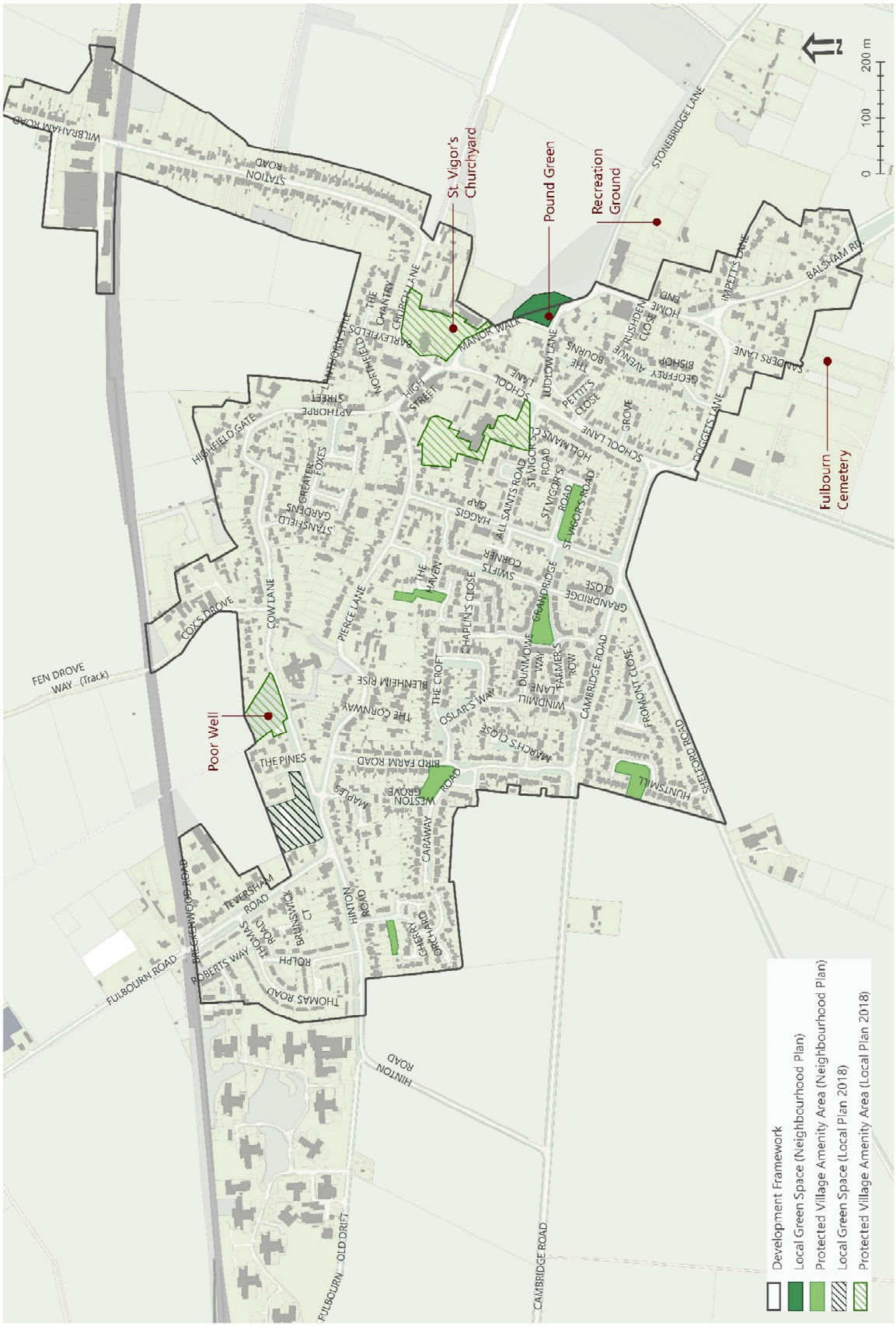
To ensure the self-contained completeness of this document low resolution images of the maps and diagrams referenced within the Appendix are included within the following pages.

Original resolution maps and diagrams are provided as separate files with the references 362.1, 362.2 & 362.3

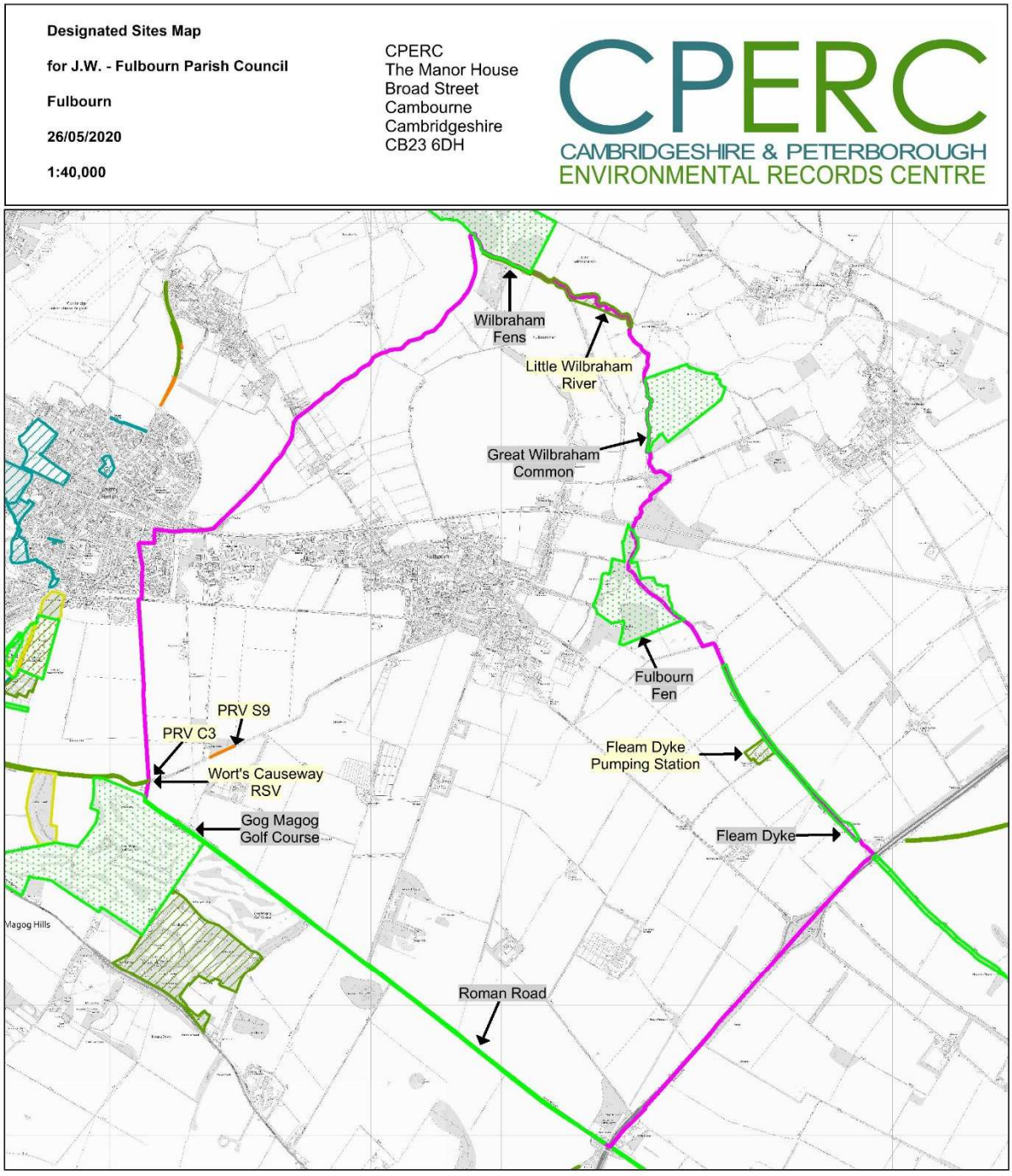
Appendix 1: Fulbourn Maps



Street Map of Fulbourn showing key Biodiversity Sites



Appendix 2: Designated Sites (CPERC)



Designated Sites Table (CPERC)

Cambridgeshire and Peterborough Environmental Records Centre

Designated Sites Search Report

CPERC
CAMBRIDGESHIRE & PETERBOROUGH ENVIRONMENTAL RECORDS CENTRE

Designated Sites intersecting Fulbourn parish

Date: 26/05/2020 Site Reference: JW_Fulbourn

SSSIs

Site Name	Grid Ref	Area (ha)	Reasons for designation
Fleam Dyke	TL542548	11.77	Holds chalk scrub and species-rich chalk grassland communities which are of a very limited distribution in south, central and eastern England and especially rare in Cambridgeshire. Of prime importance is the species-rich chalk grassland.
Fulbourn Fen	TL530560	27.34	The site holds species-rich neutral grassland on calcareous loam and peat, together with remnants of 'fen' woodland. These habitats are now rare in lowland England where only small fragments are known to persist.
Great Wilbraham Common	TL534576	23.51	Great Wilbraham Common supports neutral grassland communities of the calcareous loam grassland type, which is now rare in Britain. It is one of the largest remaining species-rich grasslands in Cambridgeshire.
Roman Road	TL510532	12.94	The site supports species-rich calcareous grassland communities of a type which is now scarce. Thick hedgerows and small copses along this 'green lane' enhance the value of the grassland for invertebrates.
Wilbraham Fens	TL517591	61.99	The site is a large area of fen and neutral grassland with associated scrub and open water communities. Similar fens are now rare in Britain and occur only in a few scattered inland localities, mainly in East Anglia.

County Wildlife Sites

Site Name	Grid Ref	Area (ha)	Reasons for Designation
Fleam Dyke Pumping Station	TL539549	2.3	Supports frequent numbers of at least sixteen calcareous grassland indicator species, of which at least six are strong indicators.
Little Wilbraham River	TL5258	4.74	The site contains a ditch with at least 5 submerged, floating and emergent vascular plant species per 20m stretch and a population of a Nationally Scarce plant species (*Potamogeton coloratus*).
Wort's Causeway RSV	TL488547	1.66	Supports frequent numbers of at least 6 strong calcareous grassland indicator species. Northern road verge qualifies because it has supported a population of a Nationally Scarce vascular plant species in the recent past.

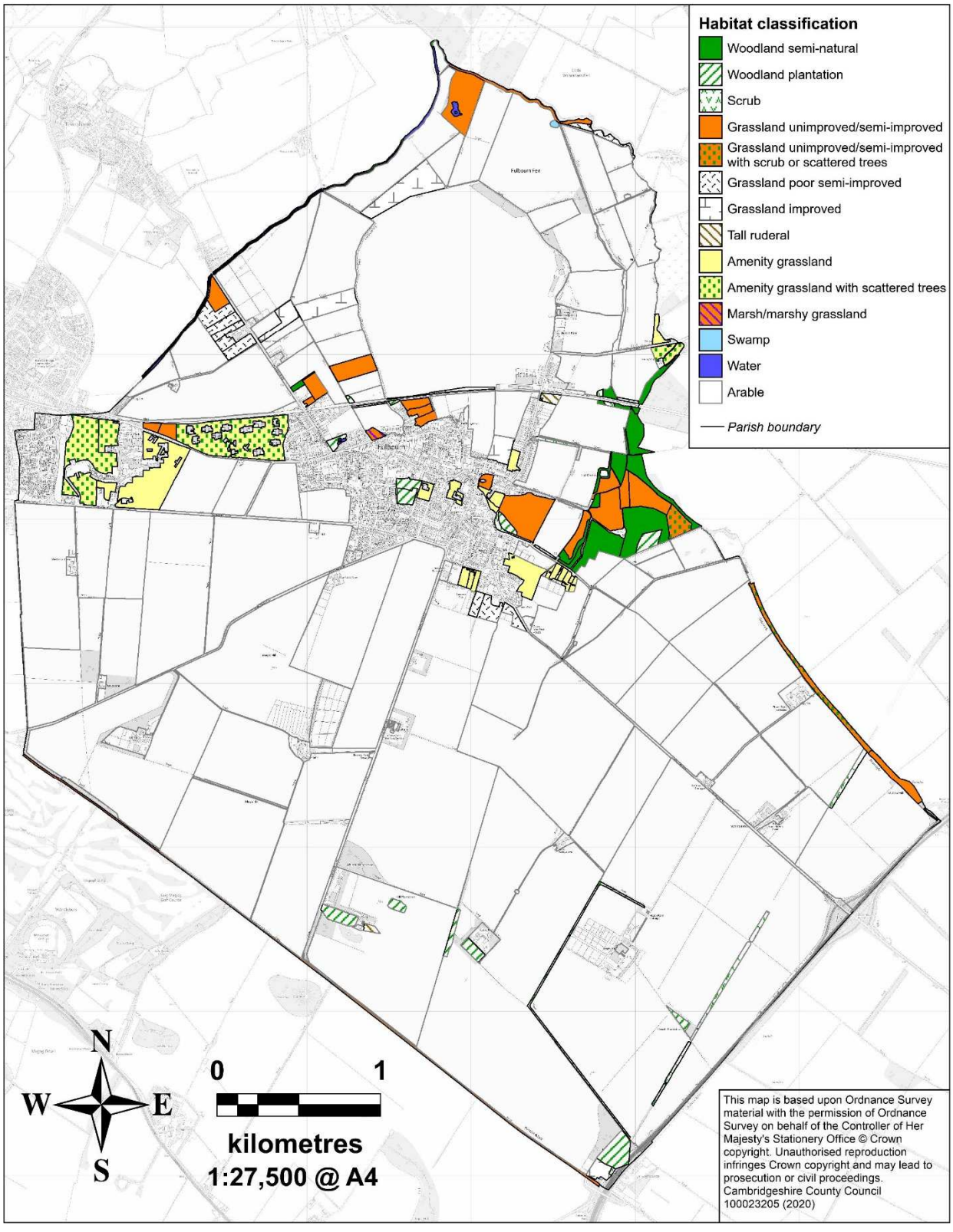
Protected Road Verges

PRV Code	PRV Name	Location or Road	Grid Ref	Wildlife Interest
C3	Cherry Hinton	Wort's Causeway	TL491 547	Species rich neutral/calcareous grassland
S9	Fulbourn (near Bishops Farm)	Shelford Road	TL497 548	Neutral/calcareous grassland

Appendix 3: Habitats Maps

Fulbourn parish
Phase 1 habitat map (1990s)

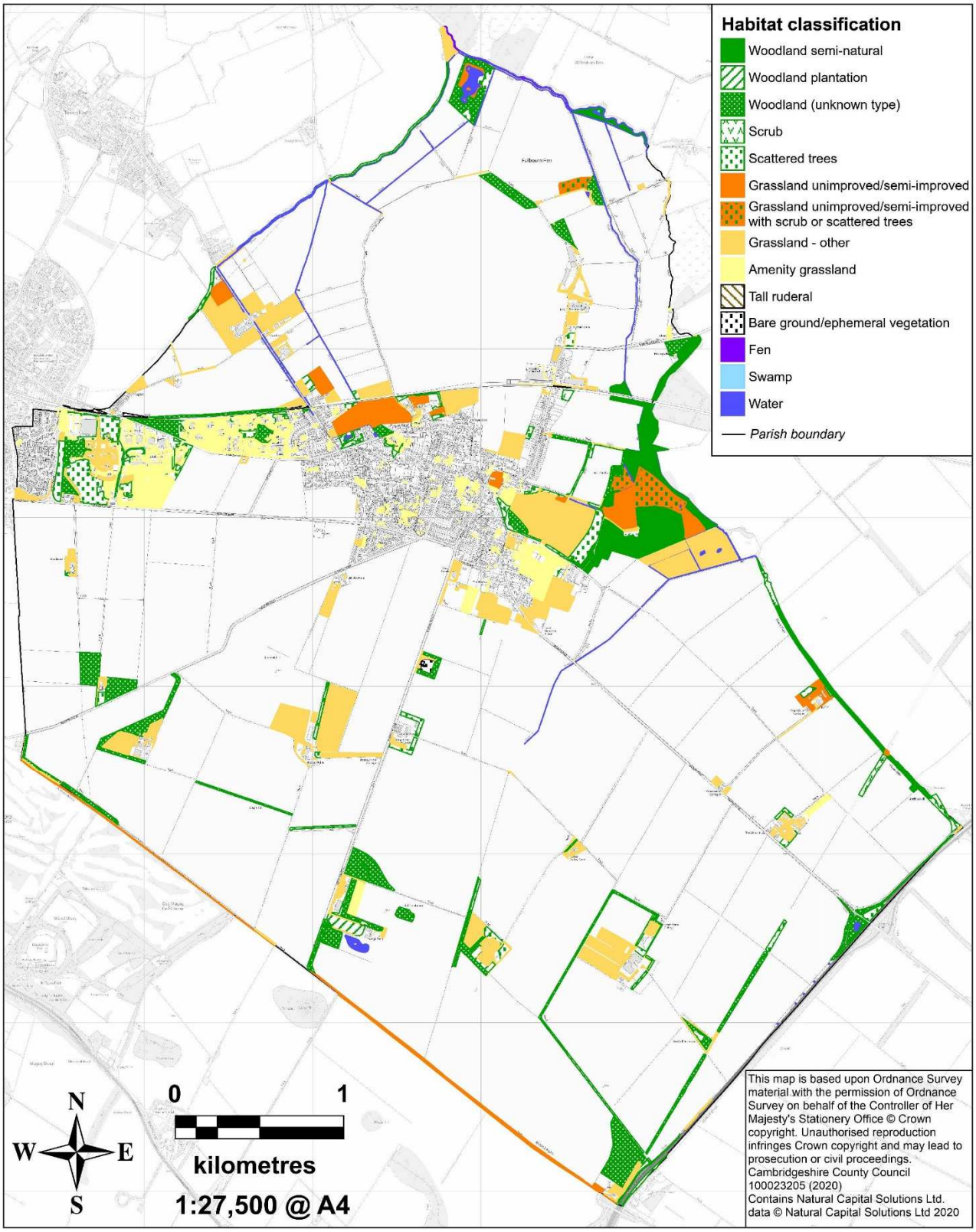
CPERC
CAMBRIDGESHIRE & PETERBOROUGH ENVIRONMENTAL RECORDS CENTRE



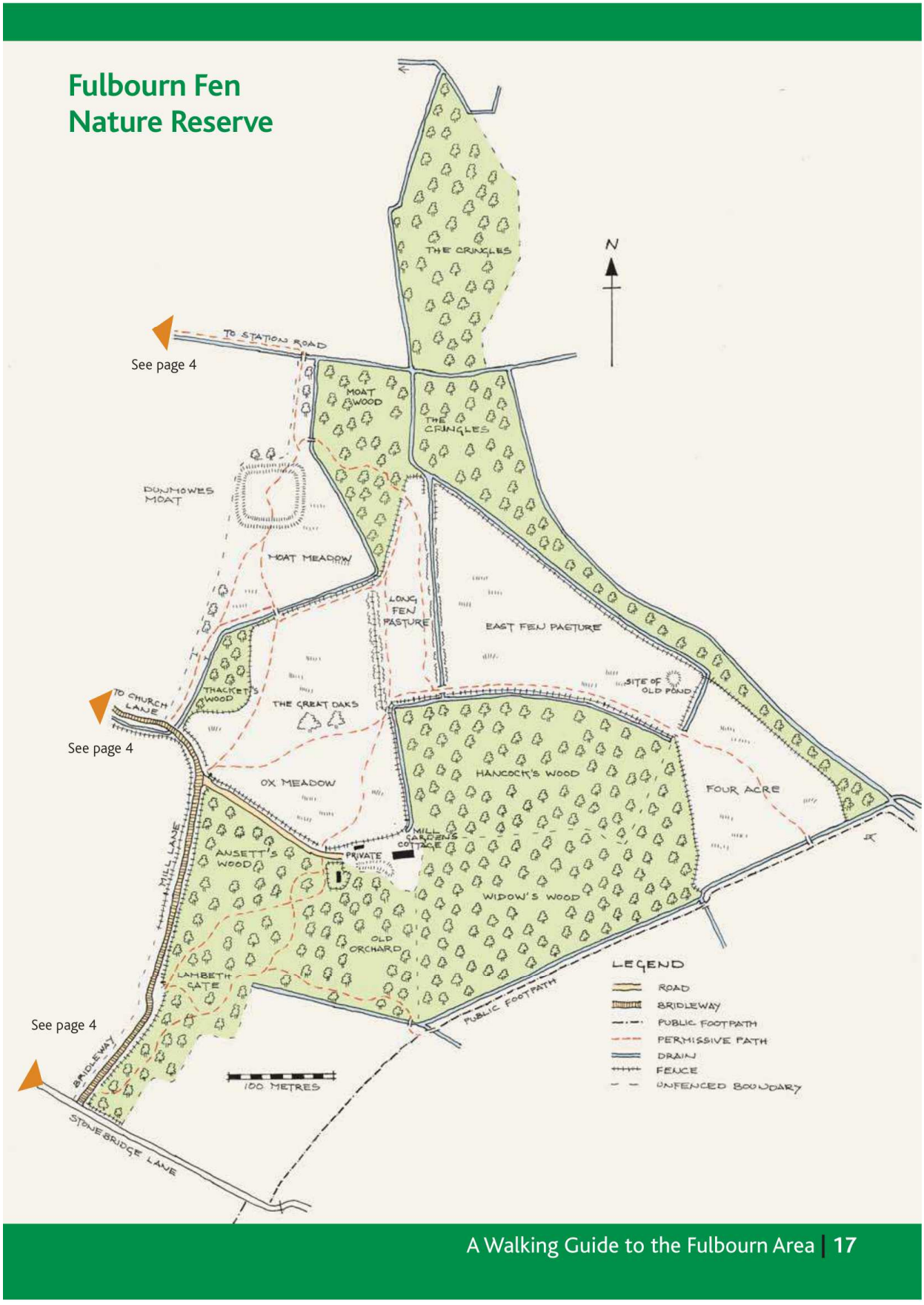
Fulbourn parish - Habitat Map

Information modified from data produced by Natural Capital Solutions Ltd. for the Cambridgeshire and Peterborough Biodiversity Group in 2019

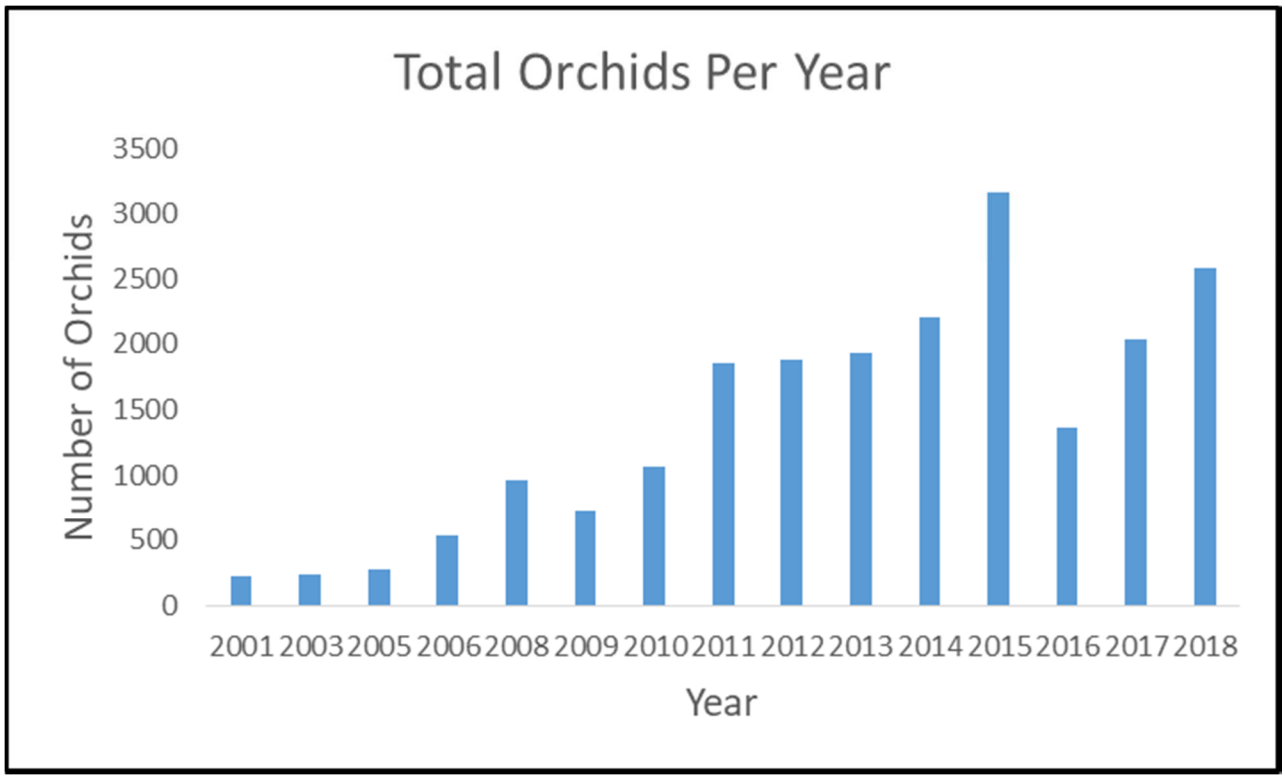
CPERC
CAMBRIDGESHIRE & PETERBOROUGH ENVIRONMENTAL RECORDS CENTRE

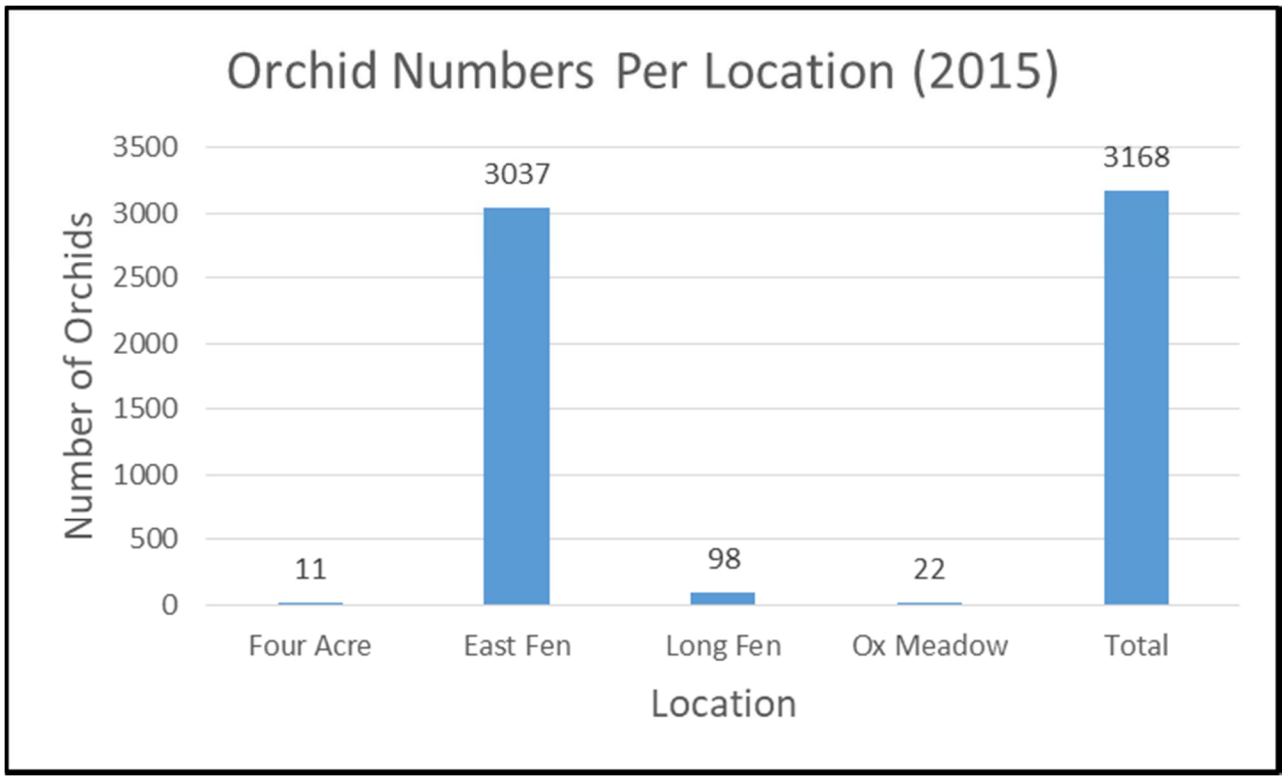


Appendix 4: Map of Fulbourn Fen Nature Reserve

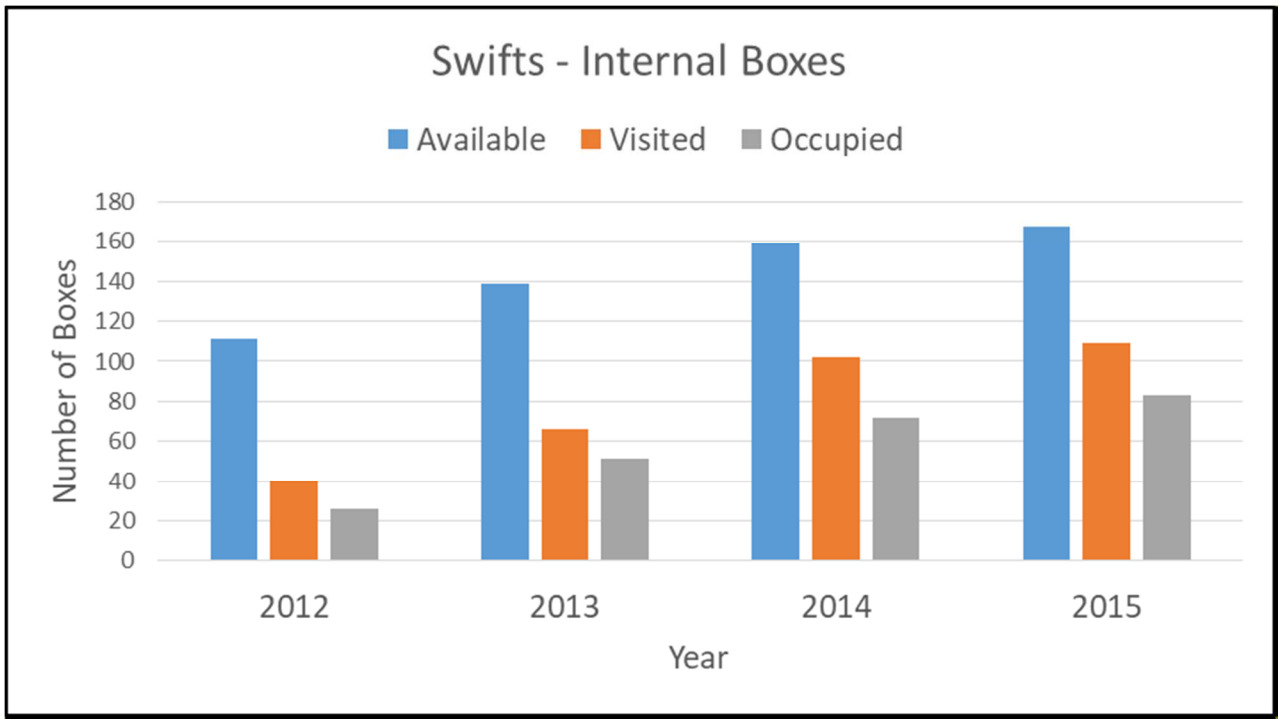


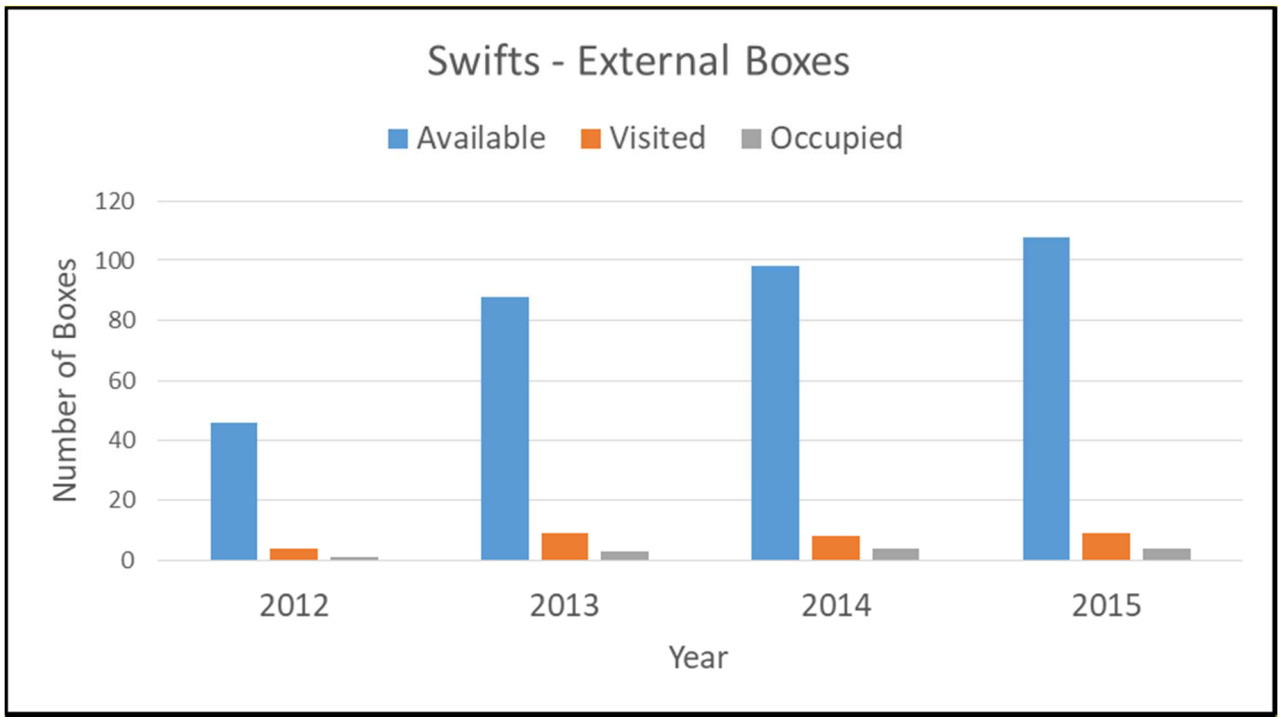
Appendix 5: Orchid Count Data





Appendix 6: Swifts Survey Data





Appendix 7: Parish Tree Lists

Tree Preservation Orders in Fulbourn

Tree Reference	Description	Location
T1*	Cedar	20m SE of Field House, The Haven
T1*	Sycamore	Adjacent 8 Cow Lane
T1*	Horse Chestnut	35 Pierce Lane
T1*	Sycamore	75 Pierce Lane
T1*	Ash	West Boundary. 2 Brunswick Court
T1	Elm	North boundary Wilbraham Road O.S.P. 219
T2	Horse Chestnut	Road front, Westley, 10 Wilbraham Road
T2*	Ash	West Boundary. 2 Brunswick Court
T3*	Sycamore	8 Bird Farm Road
T3	Horse Chestnut	Road front, 8 Wilbraham Road
T4	Horse Chestnut	Road front, 6 Wilbraham Road
T5	Lime	South corner, Fulbourn Silo
T6	Horse Chestnut	Road front, Fulbourn Silo
T8	Plane	Road front, Old Rectory
T9	Walnut	Garden, Old Rectory
T10	Walnut	SW Corner 5 Cow Lane
T11	Horse Chestnut	Front garden, 31 Cow Lane
T12	Sycamore	Front garden, 31 Cow Lane
T13	Sycamore	Garden, 27 Cow Lane
T14	Horse Chestnut	St Osyth, Apthorpe Street
T15	Sycamore	Highfields Farm, Apthorpe Street
T16	Sycamore	Garden of 23 Pierce Lane
T17	Walnut	Garden of 61 Cow Lane
T18	Lime	Front of Llangurn, 39 Pierce Lane
T19	Sycamore	Front 31 Pierce Lane
T20	Ash	Road front, 23 Pierce Lane
T21	Walnut	Garden, 21 Pierce Lane
T22	Sycamore	Garden of 25 Pierce Lane
T23	Sycamore	Home Farm, 6 School Lane
T24	Scots Pine	Garden, 7 School Lane
T25	Poplar	Garden, 4 Ludlow Lane
T26	Scots Pine	Garden, 4 Ludlow Lane
T27	Scots Pine	Garden, 4 Ludlow Lane
T28	Walnut	Garden of Hall Farm, School Lane
T29	Sycamore	Boundary of 5 Ludlow Lane
T30	Elm	NW Corner O.S.P. 111, Wilbraham Road
T31	Elm	NE Corner O.S.P. 79, Fronting Dogget Lane
T32	Elm	NW Corner O.S.P. 75, Fronting Dogget Lane
T34	Sycamore	College Farm, East side to Sanders Lane
T35	Elm	College Farm, East side to Sanders Lane
T36	Copper Beech	Garden of 25 Home End
T38	Elm	Garden, 3 Impett's Lane
T41	Ash	Road front O.S.P. 91, 26 Impett's Lane

Tree Reference	Description	Location
T42	Ash	Road front O.S.P. 91, 26 Impett's Lane
T43	Ash	Road front, Villette, Teversham Road
T45	Horse Chestnut	Road front O.S.P. 53 with Stonebridge Lane
T46	Horse Chestnut	Road front O.S.P. 53 with Stonebridge Lane
T47	Oak	Centre of O.S.P 33, Fulbourn Manor
T48	Oak	Centre of O.S.P 33, Fulbourn Manor
T49	Elm	Mill Gardens, Nature Reserve
T51	Horse Chestnut	Road front, 6 Stonebridge Lane
T52	Horse Chestnut	Road front, Woodside, Stonebridge Lane
T53	Horse Chestnut	Road front, 16 Stonebridge Lane
T54	Sycamore	Road front 33 Haggis Gap
T55	Elm	Road front Recreation Area, Haggis Gap
T56	Sycamore	Road front 23 Haggis Gap
T57	Scots Pine	Front garden, 2 Stonebridge Lane

Parish List, prepared by P. Newman, Parish Clerk

This is a listing of those trees specified individually on the map of Fulbourn, on the SCDC website. It is not clear why some trees have the same reference numbers, which are highlighted with an asterisk *. These are not all on the archived parish list.

Groups of Trees in Fulbourn

Responsibility and maintenance for groups of trees in the parish, as listed, is for guidance and is not an exhaustive list. Responsibility at some locations is self- explanatory whilst roadside groups are maintained by the County Council.

Abbreviations:
CCC – Cambs County Council
DC – District Council
PC – Parish Council

Description	Location	
Limes trees	School entrance, School Lane	CCC
Various	Impett's Lane	CCC
Various planted for Silver Jubilee in 1977	Hinton Road	CCC
Various	Balsham Road lay-by	CCC
Small Orchard	St Vigor's Road	DC
Various	All Saints Road	DC
Willows, Thorns, Horse Chestnuts, Sycamore, Elms and Oaks. The PC has planted additional Willows and an Ornamental Cherry	East of Poorwell Water	PC
Lime Trees	Greater Foxes	PC
Sycamore, Horse Chestnuts, Planes & Oaks	Ludlow Green, Manor Walk	PC
Various	Huntsmill	PC
Limes, Sycamores, Elms, Yews and Horse Chestnuts	The Haven	PC

Description	Location	
Beech and recently planted Ornamental Pear	School Lane opposite church	CCC PC
Various on Swifts Estate	Currently maintained by Accent Group*	*
Various on Thomas Road Estate	Maintained by Metropolitan Housing*	*
Horse Chestnuts and Ailanthus	Almshouses*, Church Lane	*
Elm & Ash	O.S.P. 220 East, Wilbraham Road	
Elm, Ash and Poplar	South boundary O.S.P 222 Fulbourn Silo	
Ash, Oak, Elm, Walnut and Maple	Parts O.S.P's 280 and 281 South of Railway, Station Road	
Lime, Horse Chestnut, Black Poplars, Ilex, Beech, Copper Beech, Walnut, Ash and Elms	Parts O.S.P's 247 and 249 Holly Lodge, Cox's Drove	
Black Poplars, Scots Pine, Lime, Beech, Sycamore, Cypress and Ash	Grounds of Pumping Station, Cow Lane	
Ash, Sycamore, Yew, Birch, Irish Yew and Macrocarps	Grounds of Home Close, Cow Lane (Healthcare Homes)*	*
Elms, Thorns and Willows	S.E. Boundary O.S.P. 57, Stonebridge Lane (Recreation Ground)	PC
Ash, Thorns, Sycamore, Elms and Oaks	O.S.P. 93 East of Impett's Lane (Recreation Ground)	PC
Sycamores	Humphreys Green (Cox's Drove)	
Horse Chestnuts and Limes	South side of Holly Lodge, Cox's Drove	
Copper Beech, Lime and Horse Chestnut	Barnsbury House, Cox's Drove	
Ash, Elm, Sycamore, Limes and Italian Black Poplars	O.S.P. 233 Poorwell Water, Cow Lane	PC
Ash and Elm	East of O.S.P. 228 Cox's Drove	

From Archives Woodlands

Woodland Composition	Location
Mixed hardwoods consisting mainly of Oak, Ash, Elm and Poplar	O.S.P. 216, North of railway
Mixed hardwoods and Conifers consisting mainly of Poplar, Elm, Ash, Sycamore, Larch and Austrian Pine	O.S.P. 287, Fulbourn Manor
Mixed hardwoods consisting mainly of Maple, Ash, Alder, Lime, Sycamore, Willows and Oak	The Cringles, Fulbourn Manor

Woodland Composition	Location
Mixed hardwoods and Conifers consisting mainly of Elm, Larch and Austrian Pine	The Moat, O.S.P. 285, Fulbourn Manor
Hardwoods mainly Elms	O.S.P. 21, Fulbourn Manor
Mixed hardwoods consisting mainly of Oak, Beech, Birch, Elm and Ash	O.S.P's 35 NS 35, Fulbourn Manor
Mixed hardwoods consisting mainly of, Oak, Beech, Sycamore, Elm and Ash	O.S.P's 43 and 48 and part O.S.P's 44, 46 and 52, Fulbourn Manor
Mixed hardwoods consisting mainly of and Horse Chestnut and Elm	Part O.S.P. 58 Ludlow Green Stonebridge Lane
Mixed hardwoods consisting mainly of Elm and Beech	Monks Barn (Churchyard), Manor Walk

Some Notes on Village Trees on Private Land Spring and Summer 2020

This is not an exhaustive survey, but noteworthy individual trees and tree groups.

High Street

There is a mature oak tree in the garden of a house.

Cow Lane

At the village end where it meets Apthorpe Street there is an oak tree and the only other one identified to the west of the village centre is a newly planted replacement tree in the front garden of a house towards Cox's Drove.

The frontage of Home Close has eight sycamore trees and within the grounds further trees include a horse chestnut (seen in flower).

Just beyond Poor Well at the entrance to The Pines there is a large beech tree and there are further more recently planted birches within the small development.

Trees in the grounds of the Old Pumping Station include a large horse chestnut.

The frontage of the Victorian Garden has a lot of sycamore trees and the odd beech.

Cox's Drove

Trees on the corner plot on the west side of the junction with Cow Lane include four sycamores.

On the east side in the grounds of private residences before the industrial units there are six horse chestnuts.

Pierce Lane

There are large sycamores with the canopy over the road on the bend by Home Close.

The frontage of the Haven houses on Pierce Lane has a large horse chestnut and a lime and there are two further limes fronting Field House.

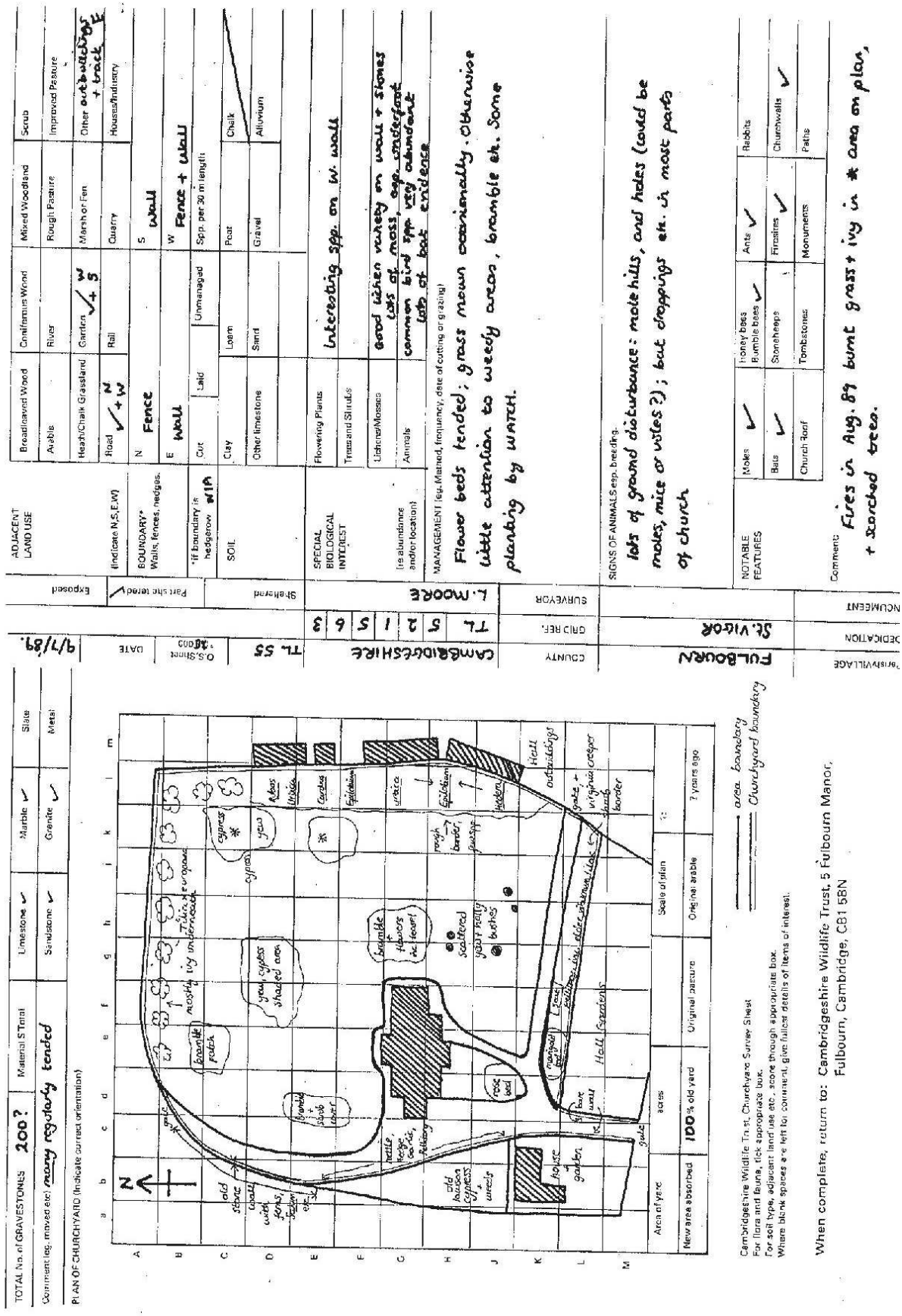
Haggis Gap

Heading south from the piano shop on the west side starting just before the junction with Swifts Corner there is a sycamore and two ash trees.

Then along by The Swifts Meeting Rooms the trees include six sycamore, two ash and two field maple and then along by the Health Centre there are an additional five sycamores. Further along on the same side there is an ash.

Towards the junction with Cambridge Road there are four cherry trees and a whitebeam.

Appendix 8: Wildlife Trust Churchyard Survey (1989)



TREES & SHRUBS

1	Acer	cam	Field Maple	41	Rham	cat	Buckthorn
2		pse	Sycamore	42	Rhod	pon	Rhododendron
3	Aesc	hip	Horse Chestnut	43	Ribe	nig	Blackcurrant
4	Alnu	glu	Alder	44		rub	Redcurrant
5	Betu	pub	Downy Birch	45		uva	Gooseberry
6		pen	Silver Birch	46	Rosa	spp	Rose
7	Chan	law	Lawson's Cypress	47	Sali	alb	White Willow
8	Cast	sat	Sweet Chestnut	48		cap	Goat Willow
9	Clem	vit	Travellers Joy	49		fra	Crack Willow
10	Cotoneaster	spp.		50		spp	
11	Cory	ave	Hazel	51	Rub	fru	Blackberry
12	Crat	mon	Hawthorn	52			
13		oxy	Midland Hawthorn	53	Samb	nig	Elder
14				54	Sara	sco	Broom
15	Euon	eur	Spindle	55	Sorb	auc	Rowan
16	Fagu	syl	Beech	56		spp	
17				57	Symp	riv	Snowberry
18	Frax	exc	Ash "weeping"	58	Lilac		
19	Hede	hel	Ivy	59	Taxu	bac	Yew
20	Ilex	aqu	Holly	60	Tili	cor	Small leaved Lime
21				61		vul	Common Lime
22	Lari	spp	Larch	62	Ulex	eur	Gorse
23	Ligu	vul	Privet	63			
24	Loni	per	Honeysuckle	64	Ulmu	spp	Elm
25	Maho	aqu	Oregon Grape	65	Laurel		
26	Malu	syl	Crab Apple	66			
27	Pice	spp	Spruce	67	Vibu	lan	Wayfaring Tree
28	Pinu	syl	Scots Pine	68		opu	Guelder Rose
29		spp		69	Visc	alb	Mistletoe
30	Popu	tre	Aspen	70			
31		spp		71	aloe - Kerria japonica Virginia creeper Box		
32	Prun	avi	Wild Cherry	72			
33		pad	Bird Cherry	73			
34		spi	Blackthorn	74			
35		lau	Cherry Laurel	75			
36		spp		76			
37	Quer	cer	Turkey Oak	77			
38		rob	Pedunculate Oak	78			
39				79			
40				80			

GRASSES & SEDGES

1	Agrostis stolonifera	Creeping Bent	19	Phleum	nodosum
2	Alopecurus	Meadow Fox-tail	20		pratense
3			21	Poa	annua Annual Meadow Grass
4	Anthoxanthum	odoratum Sweet Vernal Grass	22		pratensis Smooth Meadow Grass
5	Arrhenatherum	elatius Oat grass	23		trivialis Rough Meadow Grass
6	elatium		24		
7	Brachypodium	sylvaticum False Brome	25		
8	Bromus	mollis Soft Brome	26	Luzula	cam Field Woodrush
9	Bromus	sterilis Barren Brome	27		
10	Cynosaurus	cristatus Crested Dog's tail	28		
11	Dactylis	glomerata Cocks foot	29		
12	Festuca	rubra Red Fescue	30		
13			31		
14	Holcus	lanatus Yorkshire Fog	32		
15	Hordeum	murinum Wall Barley	33		
16			34		
17	Lolium	perenne Common Rye Grass	35		
18			36		

HERBS

1	Achi	mil	Yarrow	61			121		
2	Aego	pod	Ground Elder	62	Iris	foe	Stinking Iris	122	Tamu com Black Bryony
3	Agri	eup	Agrimony	63				123	Tara off Dandelion
4	Ajug	rep	Bugle	64				124	Trag pra Goats Beard
5	Alli	pet	Garlic Mustard	65	Lami	alb	White Dead Nettle	125	Trif cam Hop Trefoil
6	Anth	syl	Cow Parsley	66		pur	Red D Nettle	126	dub Yellow Trefoil
7	Aeth	cyn.	Fool's Parsley ?	67	Laps	com	Nipplewort	127	pra Red Clover
8	Arct	spp	Burdock	68	Lath	pra	Meadow Vetchling	128	rep White Clover
9	Arum	mac	Lords & Ladies	69	Leuc	vul	Oxeye Daisy	129	
10				70	Lotu	cor	Birdsft Trefl	130	
11				71				131	Urti dio Stinging Nettle
12	Ballota	nigra	Black Horehound	72				132	
13				73				133	Verb tha White Mullein
14	Bell	per	Daisy	74	Malv	syl	Common Mallow	134	Verb nig Dark Mullein
15	Bryo	dio	White Bryony	75	Medi	ara	Spotted Medick	135	
16				76		lup	Black Medick	136	cha Germander Speedl
17	Campanula	spp.	Bellflower	77	Merc	per	Dogs Mercury	137	hed Ivyleafed Speedl
18	Cnly	sep	Hedge Bindweed	78	Moch	tri	3-nerved Sandwt	138	per Common Field Spl
19	Caps	bur	Shepherds Purse	79	Mont	per	Springbeauty	139	Vici cracca Tufted Vetch
20				80	Myos	arv	Field Forgetmot	140	Vici Sat Common Vetch
21		pra	Cuckooflower	81		syl	Wood Forgetmot	141	sep Bush Vetch
22	Carduus	vulg	Spear thistle	82				142	Viac min Lesser Periwinkle
23				83	Papaver	som.	Opium Poppy ?	143	Vinc maj Gt Periwinkle
24	Cirs	nig	Common Knapweed	84	Pimp	sax	Burnet Saxifrag	144	
25				85	Plan	lan	Ribwort Plantan	145	
26	Cera	hol	Common MouseEar	86		maj	Gt Plantain	146	
27	Cirs	vul	Creeping Thistle	87		med	Hoary Plantain	147	Viola ado Sweet Violet
28	Conv	arv	Smaller Bindweed	88	Pote	rep	Creeping Cinqf	148	V riv Common Wood V
29	Conyza	can.	Canadian Fleabane	89		ste	Barren Strwbery	149	V reich Pale Wood V
30	Crep	spp	Hawksbeard	90	Poter	san	Salad Burnet	150	
31	Cruc	lae	Crosswort	91	Prim	ver	Cowslip	151	
32	Cymb	mur	Ivyleafed Tdflx	92		vul	Primrose	152	
33	Endy	his	Garden Bluebell	93			Hybrid	153	
34	Endy	non	wild Bluebell	94	Pam.	vul	Self heal	154	HERNS WALLS
35	Epil	mon	Bdleafed Wlwhb	95				155	(GRAVEL PATHS)
36	Equi	arv	Fld Horsetail	96	Ranu	ac	Meadow Bcrcup	156	
37	Euph	pep	Petty Spurge	97		aur	Goldilocks Btcp	157	Aspl tr Maid. Spleenwrt
38	Dips	ful	Teasel	98		bul	Bulbous Btercup	158	adi Black Spleenwrt
39				99		fic	Lesser Celandine	159	ruta Wall Rue
40	Frag	ves	Wild Strberry	100		rep	Creeping Btcp	160	Dryop fmas Male Fern
41				101	Rume	ace	Common Sorrel	161	Frioph verna Whitlow Grass
42				102		acetosella	Sheeps Sorrel	162	Polyp. vulg Common Polypody
43	Gali	apa	Cleavers	103		cri	Curled Dock	163	
44		mol	Hedge Bdstraw	104		san	Red Dock	164	Arab tha Thale Cress
45		ver	Ladys Bdstraw	105		obt	Bd-lvd Dock	165	
46	Gera	dis	Cfivd Crnsbill	106				166	Card hir Hairy Bittercrs
47				107				167	Cent rub Red Valerian
48		mol	Dvsft Crnstlll	108				168	Cory lut Yellow Corydalis
49		dus	Smlflwd Crnsbl	109	Senc	jac	Common Ragwort	169	
50		rob	Herb Robert	110		vul	Groundsel	170	Perl dif PellitoryoWall
51	Geum	urb	Wood Avens	111	Sile	alb	White Campion	171	
52	Glec	hed	Ground Ivy	112				172	Sagi pro Procumbent Plwt
53				113	Sisy	off	Hedge Mustard	173	Sedum acre Yellow Stonecrop
54				114	Sonc	asp	Prickly Sowths	174	S. anglicum English Stonecrp
55	Hera	sph	Hogweed	115		ole	Smooth Sowthst	175	
56	Hier	pil	Mouse Hwkwd	116	Stac	syl	Hedge Woundwt	176	
57		spp	Hawkweed	117	Stel	hol	Gt Stitchwort	177	
58	Hype	spp	St Johns Wort	118		med	Common Chickwd	178	
59	Hypo	rad	Cats Ear	119	Sola	nig	Black Nightshade	179	
60				120				180	

Bird Nest Box Provision in New Developments

Executive summary

The provision of integral swift boxes can achieve biodiversity gain at low cost. Swift boxes are the nearest there is to a general-purpose bird box for small cavity-nesting species including house sparrows, starlings, bluetits, great tits and occasionally other species such as house martins and tree sparrows.

While measurable biodiversity net gain relates to the provision of green habitat, the birds attracted to such habitat need somewhere to breed in urban, suburban and rural environments alike.

Swifts, in particular, need help; they have declined at an average rate of 5.4% per annum over the last 10 years and by 60% in the last 25 years.

Integral swift boxes also provide roosting space in winter for small birds, insects such as butterflies and the occasional bat.

The Royal Institute of British Architects (RIBA) recommends a 1:1 ratio between bird nest/roost boxes and dwellings in new development. Surveys show that 75% of householders think that integral bird boxes are a good idea, 25% are neutral and <1% are not in favour.

Birds in the urban environment are good for people's mental health and well-being.

Background

National Planning Policy requires new developments to achieve biodiversity net gain. This process will include mitigation measures where wildlife would be impacted, enhancement of existing habitats such as native hedgerows and where possible the introduction of habitats and features to encourage additional wildlife such as birds, bats or bees.

The health benefits of bringing nature and green spaces close to homes is well known. This can take the form of small open spaces, trees, hedgerows of native species, shrubberies and climbing plants to provide nectar for bees and other invertebrates and food for birds. It is also to provide nesting sites for birds close to the dwellings and ensure that there are ‘corridors’ for hedgehogs, small mammals and amphibians under garden fences.

This is highlighted in Government Guidance on the NPPF issued on 21 July 2019 (see below):

https://www.gov.uk/government/news/brokenshire-orders-house-builders-to-protect-wildlife

https://www.gov.uk/guidance/natural-environment

Paragraph 23 of this Guidance headed 'How can biodiversity net gain be achieved?' includes at the end of the first sub paragraph 'Relatively small features can often achieve important benefits for wildlife, such as incorporating 'swift bricks' and bat boxes in developments and providing safe routes for hedgehogs between different areas of habitat.'

Swifts

Swifts migrate to the UK from Africa every summer and they spend their life almost entirely on the wing and only come into land when nesting. They feed, sleep, collect nesting material and mate in flight. They hunt for insects over meadows, woods and open water and can travel many kilometres to do so. In typical nesting behaviour, small groups of birds fly very fast along the roof tops at the level of the eaves, screaming as they go – one of the iconic sights and sounds of summer.

Decline of Cavity Nesting Birds

Cavity nesting birds include swifts (largely building dependent in the UK), sparrows and starlings (urban birds). These species have nested for generations in older houses in holes and cavities under the eaves and in walls. However, they are in dramatic decline – sparrows and starlings are Red Listed and although swifts are only Amber Listed this is on a technicality, as data is required over 25 years and at the time of the last assessment this data was not available for swifts.

Swifts have declined at an average rate of 5.4% per annum over the last 10 years and by 60% in the last 25 years, so the swift may well move from the Amber to the Red list at the next BoCC revision in 2021. The most recent estimate is that in 2016 there were around 59,000 pairs of swifts in the UK. In addition, according to the International Union for Conservation of Nature (IUCN) criteria the swift is classified as 'endangered' in the UK.

Although sparrows suffered a big decline some years ago, the population has been more stable in recent years and it is estimated that there are over 5 million pairs – almost 100 pairs of house sparrows to every pair of swifts.

One big factor in the decline of all three is likely to be the loss of nesting sites through building renovation and insulation and more rigorous standards in new build homes. The inclusion of special nest bricks in new houses is therefore an important step in helping to halt this decline.

For further information on the plight of the swift see Day et al (2019) (reference 1) and:

https://actionforswifts.com

https://swift-conservation.org

Proposed Choice of Box Size and Type

Swift boxes are frequently used by other cavity-nesting small birds such as house sparrows, starlings, great tits and bluetits and occasionally tree sparrows and house martins. A local example is at Edgecombe Flats in Cambridge. In 2010 Cambridge City Council, with help from Action for Swifts, installed 71 external swift boxes on their properties at Edgecombe Flats. In the first year, two pairs of swifts moved into boxes and small increasing numbers were observed in subsequent seasons. When a survey was carried out by the RSPB in 2016 it was found that the boxes had been occupied by 12 pairs of swifts, with evidence of many pairs of house sparrows and a few great tits!

http://actionforswifts.com/2016/08/edgecombe-flats.html

At Fulbourn (see Case Study) starlings and sparrows regularly use the swift boxes and in 2016 there were also 5 pairs of house martins recorded.

At a Duchy of Cornwall development at Tregunnell Hill in Newquay, where an average of 1 swift box per residential home was installed, within a couple of years one third of the boxes were occupied by sparrows together with a pair of swifts:

https://www.rspb.org.uk/our-work/rspb-news/news/stories/the-duchy-of-cornwall-giving-swifts-a-home/

Sparrow boxes are smaller and usually produced as three nest chambers in one unit (sparrow terrace) – these are too small to be used by swifts or starlings – and there is evidence that they are rarely used by more than one pair of sparrows. Occupation by a single pair of great tits or bluetits is more common. While they are colonial breeders, single boxes at least a metre apart may be preferable for both sparrows and swifts.

Nest cups for swallows and house martins may be best left to new residents to provide, as many people may be put off by the level of fouling from these species. The most popular nest box likely to be purchased by families would be a tit box and given that tits will use swift bricks there seems little point in making specific provision within a scheme.

In general, it is not considered a sustainable practice to place boxes in trees on new housing developments because of the problems of long-term maintenance and the potential for vandalism. Boxes within the building structure are strongly to be preferred rather than those fixed externally to the walls, as these would need longer term maintenance and their appearance can deteriorate relatively quickly. Exceptions could be for specialist species such as owls where boxes made of durable materials should be securely fixed into healthy mature trees in wooded areas.

Swift boxes are the nearest there is to a general-purpose bird box for small cavity-nesting species including house sparrows, starlings, blue tits, great tits and occasionally other species such as house martins and tree sparrows.

Case Study - The Swifts Development, Fulbourn

This project involved the incorporation of 276 swift nest boxes (more than 1 per household) into the new houses during the re-development of the 1960s built Windmill Estate, which was home for over 150 families, as well as a large colony of swifts. Phased re-development over a number of years enabled the swifts to start to colonise the new boxes while some of the old nest sites were still available and being used.

Within 6 years (to 2014) a colony of swifts that was potentially threatened by the re-development had become well established in the new housing areas with over 50% of the 168 internal boxes being used (reference 2). It is interesting to note that of the 108 external boxes less than 5% were in use. It is estimated that this project now houses over 100 pairs of Swifts.

Overall it is one of the most successful nest box projects in the UK and in 2011 Rob Mungovan of SCDC received the Institute of Ecology and Environmental Management 'Tony Bradshaw Best Practice Award' for the project.

In the 2014 survey it was also noted that 17 swift boxes (15 external and 2 internal) were being used by starlings and 9 internal boxes were used by house sparrows. In 2016 a survey by the RSPB surprisingly recorded 5 pairs of house martins in the internal swift boxes.

Proposed Level of Nest Box Provision in New Developments

At least a 1:1 ratio of nest bricks per dwelling is generally accepted now as good practice – a level of provision outlined in the award-winning Exeter City Council Residential Design Guide SPD (2010). Stephen Fitt of the RSPB South West Regional Office has been working with Exeter Planners over a period of 10 years on the implementation of the biodiversity requirements of this guide and there is acceptance that in many cases the most suitable box type for all cavity nesting birds is the swift brick.

A similar standard was adopted by the Town and Country Planning Association and the Wildlife Trusts in 2012 (reference 3) and The Royal Institute of British Architects (RIBA) in 2013 (reference 4).

The Duchy of Cornwall adopted the same principles in 2015, and a good example of the provision of a general type of integral box for all cavity nesting birds is the Nansleden development by The Duchy of Cornwall in Newquay:

https://www.rspb.org.uk/our-work/rspb-news/news/stories/the-duchy-of-cornwall-giving-swifts-a-home/

The Cornwall Council Biodiversity Guide (2018) (reference 5) gives prescriptive measures for the provision of bat and bird boxes, again at the rate of 1 nest place per new dwelling. This document also includes a case study on Nansleden mentioned above.

https://www.cornwall.gov.uk/media/38341273/biodiversity-guide.pdf

The recent Oxford City Council Technical Advice Note on Biodiversity (reference 6) gives an 'expected provision' of bird nest sites for building dependent birds (i.e. swifts) at a rate of 1 per house

and 1 per 2 flats, with separate provision for bats at a rate of 1 per 5 houses. Provision of such nest boxes in schools, student accommodation and hotels is addressed by a ratio of 1 per 250 m^2 floor space.

https://www.oxford.gov.uk/info/20067/planning_policy/745/planning_policy_-_technical_advice_notes_tan

The provision of integral boxes, such as swift boxes, at a ratio of at least 1:1 per dwelling is the modern standard to accommodate a range of cavity nesting birds in new developments.

Choice and Location of Swift Bricks

There is now a good range of swift bricks on the market and developers can choose models best suited to blend in with their external finishes. It should be noted that for ease of installation those swift bricks compatible with UK brick sizes would be ideal. Also, there are types available, which are designed to be more easily retro-fitted to existing structures for projects where there is an element of refurbishment as well as new build.

A useful Guide sponsored by Action for Swifts, Swift Conservation and the RSPB lists the models of swift bricks available in the UK (reference 7), and there is also Guidance for the placement of swift bricks in residential developments (reference 8).

Green Infrastructure

In order to provide a pleasant environment to support the health and wellbeing of residents it is important to retain and provide green infrastructure in the area immediately around new houses rather than houses being marooned in an area of hard landscaping separated from islands of higher value green space around the edges.

Retention of existing natural hedgerows and trees and planting of new native trees, hedging and shrubs close to the dwellings will provide a suitable environment for people, birds, animals and invertebrates. These should link to the wider green corridors to encourage wildlife to live within and move through the development and to and from adjacent habitats.

While swifts will travel far, if necessary, to find food, the enrichment of the habitat close to homes will attract a wider range of birds into gardens. For sparrows in particular hedges and shrubs for shelter are important close to potential nest sites.

Boundaries should be permeable and ideally planted with hedging or fences with small gaps at the base to permit the movement of hedgehogs, amphibians and small mammals. Suitable shrubs and herbaceous planting can be used to encourage insects and bees.

Community engagement

An MSc study (reference 9), which involved interviewing residents of housing developments with integral swift bricks installed, found that 75% of the people thought that the bricks were a good thing and 85% said that their decision to buy a house would be unlikely to be negatively influenced by the presence of such a brick.

From the start of the re-building of The Swifts Development, Fulbourn, the community – householders and villagers – were kept aware of plans for installation of swift boxes and Fulbourn Swifts Group was formed. Members of this group, including some residents of The Swifts estate, have monitored the progress of the swift colony and are involved in swift conservation projects locally. Such groups contribute to community cohesion and help to promote social wellbeing.

Conclusions

The inclusion of versatile swift bricks, which can be used by a range of species, in all new developments (including small infill) in line with current best practice (at least 1:1 ratio) is a

sustainable and cost-effective way of contributing to gains in biodiversity and bringing nature close to people. This should be part of a wider environmental plan which includes the provision of green infrastructure near to the houses so that species such as sparrows can benefit from shelter (hedges and shrubbery) and foraging areas.

The need to incorporate just one box type across the whole site could also provide advantages for the builders and help to address compliance issues.

Developments of flats, offices, hotels and other commercial premises should also be required to make provision for these boxes to encourage a variety of species on those sites.

There should be separate provision for special birds such as owls, and bats and solitary bees according to the nature and location of the site being developed.

References

This paper is based on an earlier document prepared by Dick Newell of Action for Swifts and John Willis of Fulbourn Swifts Group, which was submitted to the 'Issues and Options' Consultation of the Greater Cambridge Local Plan process in March 2020.

1. Day, J., Mayer, E., Newell, R., (2019), 'inpractice' – Bulletin of the Chartered Institute of Ecology and Environmental Management, Issue 104 June, p.38
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5. Cornwall Council Biodiversity Guide (2018) available here: https://www.cornwall.gov.uk/media/38341273/biodiversity-guide.pdf
6. Oxford City Council Technical Advice Note: Biodiversity – Planning Application Guidance available at: https://www.oxford.gov.uk/info/20067/planning_policy/745/planning_policy_-_technical_advice_notes_tan
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9. Roberts, S. (2017) 'The attitudes of housing occupants to integral bird and bat boxes.' Unpublished MSc thesis, University of Gloucestershire. Summary available here: actionforswifts.com/2018/06/the-attitudes-of-housing-occupants-to.html

1. Introduction

A key contributory factor to the distinctive character of the village of Fulbourn is the wealth of tree cover that extends through-out the area and gives the impression of a community set amongst trees. This has been described as an important feature within the Village Design Guide SPD (2020) and also as comments received as part of the Neighbourhood Plan consultation.

Policy FUL/04 specifically discusses tree types and this paper seeks to clarify the options.

Fulbourn residents value the scale and variety of the trees that grow through-out the village and the way they enhance the vistas. Many of the Important Countryside Frontages, key views and green spaces are characterised by stands of mature trees.

It is considered important that this natural heritage is preserved and enhanced for the future and key to this is the choice of tree species planted as replacements for aged specimens and also as planting on new developments. Trees have a powerful visual effect but most importantly they make significant contributions to the quality of the environment by improving air quality, providing shade and by encouraging bird, animal and insect life.

The type of trees that naturally grow within the UK has varied since the ice-age as climatic conditions have changed and species have been introduced from other areas. Many trees that are considered a stable part of the English countryside such as horse-chestnut and sycamore have been artificially introduced. Commonly planted non-natives include European species such as Austrian pine, Norway maple, Swedish whitebeam and Turkey oak and cultivars such as copper beech and various fastigiate forms. Other more ornamental species from other continents, such as N American maples and Japanese flowering cherry, are popular in city parks and open spaces.

The species of tree chosen for a particular site needs to be a function of the surroundings and the environmental 'service' that it can provide through its long lifetime. Consequently, choice is more than just being a suitable species it also needs to consider the context of the planting location.

The following lists provide recommendations as to tree species that would be appropriate for planting around the Fulbourn area and also identifies those that should be avoided.

2. The Fulbourn Tree Species Mix

The main species of mature trees present within the built-up area of the village include sycamore, horse chestnut, lime, ash, birch, elm and beech, with some oaks towards the east end of the village. In Poor Well, the trees include willows and hybrid poplars, and in the lower lying area to the north along Teversham Road there are some willows. Street trees in the estates built since the 1960s include rowan, hawthorn, hazel, field maple, wild cherry, crab apple, whitebeam and birch.'

Non-native 'specimen trees', found occasionally in the village are some of those commonly introduced into UK parks and large gardens and include copper beech, walnut, Norway maple, cedar of Lebanon and holm oak. There are some ornamental (probably oriental) rowans on Cambridge Road, an ornamental cherry at Poor Well and Swedish whitebeam as street trees on Cherry Orchard.

So, the vast majority of trees in Fulbourn green spaces and are native and naturalised trees (see below) with a number of specimen trees largely from Europe

A recently published report[1] from NHBC Foundation entitled 'Biodiversity in New Housing Developments', which was produced from a collaboration between the RSPB and Barratt Developments, addresses the issue of tree and shrub planting on new developments. In Section 6 it is stated that….

'*Native plants offer the best outcomes for wildlife. However, it is rarely realistic to adopt a purist approach to this in the built environment. Those non-native plants that pose little current threat to the environment can be used to benefit wildlife e.g., by prolonging the availability of nectar to insects'*

In the NHBC Report it is suggested that decisions on the mix of native and non-native species should be based on a zoning of the site and for the Fulbourn Neighbourhood Plan we are adopting a similar approach. The following lists take note of the tree species already present within Fulbourn and making a contribution to its natural environment and the practicalities of new planting on development sites.

3. Acceptability Criteria: Status & Origin

Within the list of tree species appropriate for Fulbourn several features have been listed; these include;

Status: describing the position the species has in the UK environment and, if a recent import, its global origin.

The categories are;

Status	Description
Native	Those trees which colonised the land when the glaciers melted after the last Ice Age and before the UK was cut off from mainland Europe by rising sea levels
Naturalised	Commonly introduced trees that may be found naturalised and growing wild in the UK.
European	Species normally found in Europe and especially with climate change may be a good fit for the UK environment. Includes several ornamental cultivars of UK native and European species
N. American	Species normally found on the North American continent and introduced to UK city streets, parks and large gardens
Asian	Species normally found in the Asian region and introduced to the UK mainly as ornamentals for gardens and city streets and parks

Context: indicates the type of Fulbourn setting to which a species is best suited and can make the most significant contribution in the context of the village character as described in the Fulbourn Village Design Guide (2020)

The categories are;

Context Code	Description
A	**Naturalistic areas:** 100% native trees, shrubs and herbaceous plants of UK provenance, characteristic of the area. These should be used to enhance existing green infrastructure, to create new copses and groups of trees with understory shrubs and new hedgerow corridors across sites.
B	**Informal areas:** A mix of largely native trees with European specimen trees and cultivars. Target: at least 70% native species and no more than 30% non-native trees and shrubs. Non-native specimen trees can add interest in central green spaces near community facilities, play areas etc away from natural green infrastructure.

Context Code	Description
C	**Areas close to dwellings:** A mix of native, native cultivars and non-native trees & shrubs of high wildlife value. Target at least 50% native and no more than 50% ornamentals. For use as street trees in secondary streets, front gardens, rear courtyards and parking areas away from green infrastructure.

Those species designated as 'Native' are from the complete list of native trees and shrubs that can be found on The Woodland Trust web site[2]. Not all are found in the Fulbourn area and selection will depend on factors such as soil type and drought tolerance. These might be used in Context Areas A and B and the smaller species could also be used in Context Area C.

Those species designated 'European' (or in one case 'Middle Eastern') are selected for use as specimen trees in Context Area B. A range of 'European' cultivars and ornamentals are also included for use in Context Areas B and C.

A small number of North American and Asian ornamentals are included to provide some additional variety and where space is limited. These non-natives may also be of benefit to wildlife[1].

4. Appropriate Trees Species for Fulbourn

This is a guidance list from which appropriate trees for Fulbourn public spaces should be selected taking into account soil type, annual rainfall, climate change etc.

Origin	Context	Species
Native	A, B	Alder
Native	A, B	Alder buckthorn
Native	A, B	Ash
Native	A, B	Aspen
Native	A, B	Beech
Native	A, B	Downy birch
Native	A, B, C	Silver birch
Native	A, B, C	Blackthorn
Native	A, B	Common box
Native	A, B	Buckthorn
Native	A, B	Bird cherry
Native	A, B	Wild cherry
Native	A, B, C	Crab apple
Native	A, B	Dogwood
Native	A, B	Elder
Native	A, B	English Elm
Native	A, B	Wych Elm
Native	A, B	Guelder rose
Native	A, B, C	Hawthorn
Native	A, B, C	Midland Hawthorn
Native	A, B, C	Hazel
Native	A, B	Holly
Native	A, B	Hornbeam
Native	A, B	Juniper
Native	A, B	Common Lime
Native	A, B	Large-leaved lime

Origin	Context	Species
Native	A, B	Small-leaved Lime
Native	A, B, C	Field Maple
Native	A, B	English Oak
Native	A, B	Sessile Oak
Native	A, B	Plymouth Pear
Native	A, B	Scot's Pine
Native	A, B	Black Poplar
Native	A, B, C	Rowan
Native	A, B, C	Spindle
Native	A, B, C	Whitebeam
Native	A, B	Arran Whitebeam
Native	A, B	Rock Whitebeam
Native	A, B	Wild Service Tree
Native	A, B	Bay Willow
Native	A, B	Crack Willow
Native	A, B	Goat Willow
Native	A, B	Grey Willow
Native	A, B	Osier Willow
Native	A, B	White Willow
Native	A, B	Yew
Naturalised	A, B	Sycamore
Naturalised	A, B	Horse chestnut
European	B	Copper Beech
European	B, C	Fastigiate Beech, Fagus sylvatica 'Dawyck'
European	B, C	Fastigiate Beech, gold and purple forms
European	B, C	Weeping Birch, Betula pendula cultivar
European	B, C	Fastigiate Birch, 'Fastigiata Joes'
European	B, C	Fastigiate Hornbeam, Carpinus betulus 'Frans Fontainer'
European	B, C	Ornamental Field Maple 'Elegant'
European	B, C	Ornamental Hawthorn 'Splendens'
European	B, C	Ornamental Hawthorn 'Paul's Scarlet'
European	B, C	Ornamental Rowan 'Cardinal Royal'
European	B, C	Ornamental Rowan 'Sheerwater Seedling'
European	B, C	Spindle 'Red Cascade'
European	B, C	Malus Sylvestris 'John Downie'
European	B, C	Double Gean, Prunus Avium 'Plena'
European	B, C	Whitebeam, Sorbus aria 'Lutescens'
European	B, C	Swedish Whitebeam
European	B	Walnut
European	B	Cedar of Lebanon
European	B	Turkey Oak
European	B	Holm Oak
European	B	Austrian Pine (Black pine)
European	B	Norway Maple
European	B	Ornamental Norway Maple 'Crimson Sentry'
European	C	Morello Cherry, Prunus cerasus
N. American	C	Snowy mespilus, Amelanchier lamarckii
Asian	C	Chonosuki Crab Apple, Malus tschonoskii
Asian	C	Ornamental Pear 'Chanticleer'
Asian	C	Flowering cherry, Prunus 'Spire'0

This is an indicative list and there may be other suitable cultivars of native species. Note that the small number of ornamentals from continents beyond Europe are included for use in setting context C only to allow some additional choice.

5. Inappropriate Trees Species for Fulbourn

This list is provided for guidance on the type of tree considered inappropriate for use in Fulbourn. The trees listed below are those from other continents typically planted in city parks, streets and in arboretums. The smaller ornamental types are sometimes used in gardens. Planting of these in public spaces is not considered to be in keeping with the village character of Fulbourn.

Group	Context	Species
N. American	None	Acer freemanii 'Autumn Blaze'
N. American	None	Paper bark birch, Betula papyrifera
N. American	None	Sweet gum, 'Worplesdon' (liquidambar)
N. American	None	Black gum Tree
N. American	None	London plane
N. American	None	Swamp cypress
N. American	None	Pin oak
N. American	None	Red oak
N. American	None	Redbird forest pansy
Asian	None	Japanese larch
Asian	None	Chinese white birch, Betula albo sinensis 'Fascination'
Asian	None	Himalayan birch
Asian	None	Hupeh crab apple, Malus hupehensis (Chinese)
Asian	None	Flowering cherry 'Sunset Boulevard'
Asian	None	Flowering cherry, Prunus 'Pandora'
Asian	None	Flowering cherry, Prunus sargentii 'Rancho' Tibetan cherry
Asian	None	Flowering cherry, Prunus 'Spire'
Asian	None	Flowering cherry, Prunus subhirtella 'Autumnalis'
Asian	None	Flowering cherry, Prunus umineko
Asian	None	Great white cherry, Prunus 'Tai-Haku'
Asian	None	Ornamental rowan 'Joseph Rock'
Asian	None	Ornamental rowan, Sorbus vilmorinii
Asian	None	Japanese rowan 'Embley'
Asian	None	Ornamental rowan, Sorbus hupehensis
Asian	None	Chinese dogwood
Asian	None	Chinese witch hazel, Hamamelis mollis

This is an indicative list and there will be other unsuitable species and cultivars from N.America and Asia.

6. References

1. NHBC Foundation Report NF89, Biodiversity in new housing developments: creating wildlife-friendly communities (April 2021)
2. The Woodland Trust web site www.woodlandtrust.org.uk