



FLITWICK MANOR PARK

Parkland Management Plan

Chris Burnett Associates

DRAFT report 9 09 22



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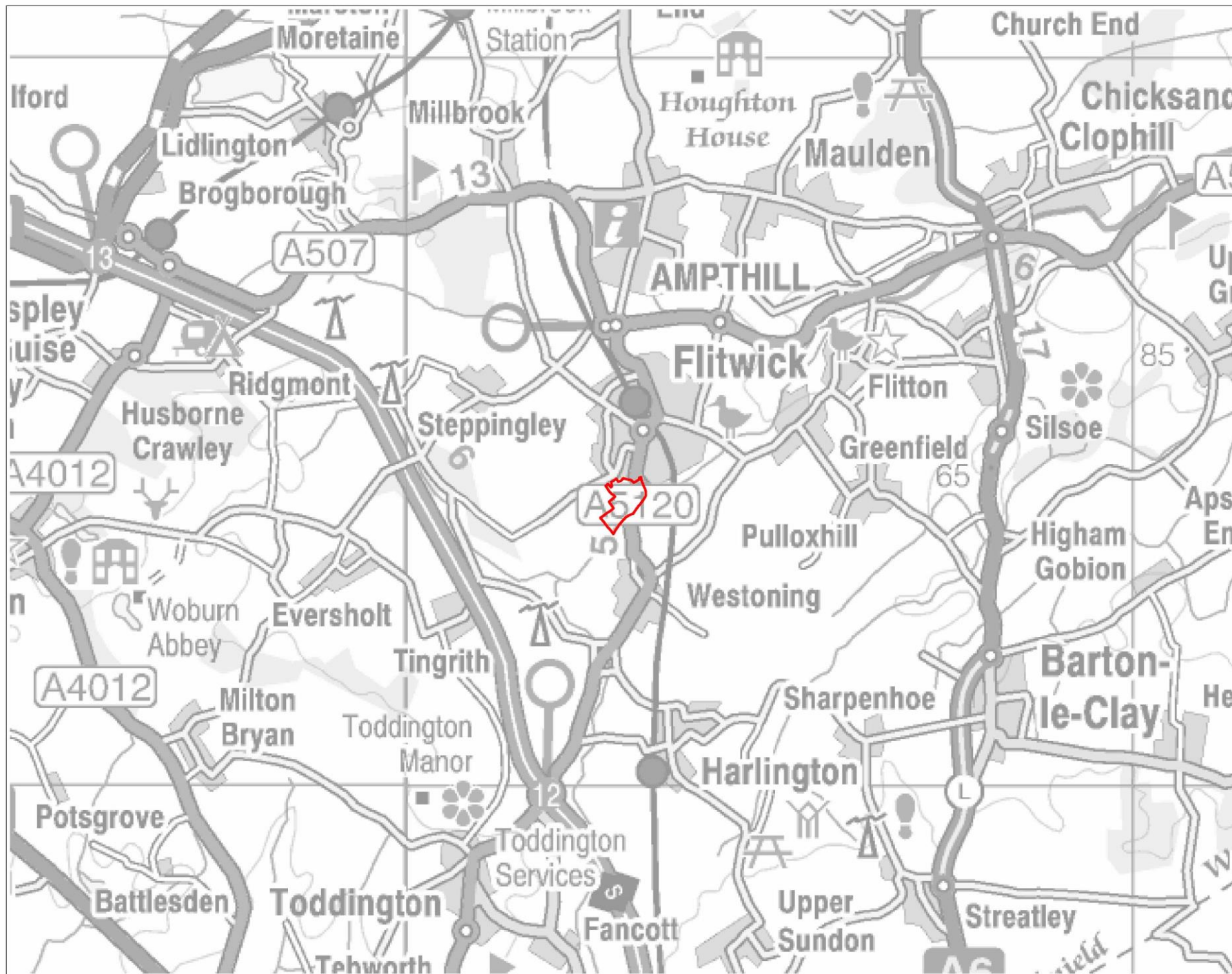
Fig 13.1 Arboretum features and proposals

1.0 Introduction

- 1.1 Flitwick Manor Park is a Grade II parkland on Historic England's Register of Parks and Gardens (RPG) and comprises approximately 22 Ha of woodland and parkland across 2 ownerships. Flitwick Town Council own c. 16.5ha, corresponding to the southern two thirds of the RPG. This is managed as amenity grassland, woodland, and a watercourse, with recreational enrichment through provision of walking routes and information. Flitwick Manor Hotel (LGH Hotel Management) own c 3.8ha of the RPG to the north including the original house and adjacent garden features. This is managed as a hotel and wedding venue with associated parking etc
- 1.2 It is situated on the outskirts of Flitwick some 16km from Bedford (See **Fig 1.1 Location plan**) The main entrance with a small carpark for disabled parking, is located adjacent to the junction of Church Rd and A5120 and is relatively well shielded once within the park itself. There is a separate entrance for the Hotel (original entrance to the Flitwick Manor) with original iron gates and brick piers and a tree avenue. Car parking is provided on-site for the hotel.

Background and brief

- 1.3 Chris Burnett Associates (CBA) were commissioned in March 2022 to prepare a Parkland Management Plan (PMP) for Flitwick Manor Park by Flitwick Town Council. The principal objectives were concerned with establishing and conserving the historic integrity and legibility, recreation, education and wildlife interests of the park and also integrating the views and vistas across the site between the formal gardens in ownership of the hotel and the land in ownership of the Flitwick Town Council. Various features within the park have fallen into neglect, such as the lake known as Flit Water, the ha-ha and Lower Lodge gateway. Examining options to restore them are a priority of the plan. Some areas of the park also appear to suffer from over-use (in particular the northwest of the lake) whilst the area to the southeast is less utilised and the 'story' that the park tells is in danger of becoming fragmented even within the area of Town Council ownership. The 'loss' of the formal gardens and house amplifies this fragmentation, although the house can still be viewed from the park. The study boundary is marked on **Fig 1.2.**



Key
 Study Boundary

DRAFT



Date	Details	Revision
05/09/22	Revised Study Boundary.	-01

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Client Flitwick Town Council

Project Flitwick Manor Park,
Bedfordshire

Title Figure 1.1
Location Map

Scale 1:50,000 @ A3

Date	Drawn	Checked
05/09/22	JHD	CB

Reference FMPBPP22.09
Revision -01





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Date	Details	Revision
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Client Flitwick Town Council

Project Flitwick Manor Park, Bedfordshire

Title Figure 1.2 Study Boundary

Scale 1:3,250 @ A3

Date	Drawn	Checked
05/09/22	JHD	CB

Reference	Revision
FMPBPP22.01	-01



- 1.4 This report is supported by field surveys of trees, land-use and habitat surveys and also by detailed historic research which builds on earlier reports into the development of the landscape at Flitwick Manor Park. The report considers how the landscape has developed over time, using relevant maps and overlays. It is accompanied by a summary of the principal threats and issues, a statement of significance and finally a statement on an approach to future management, underpinned by conservation and restoration principles, which will be supported by a Landscape Masterplan and an outline schedule of works. Additional appendices support specific sections of the report at A3.

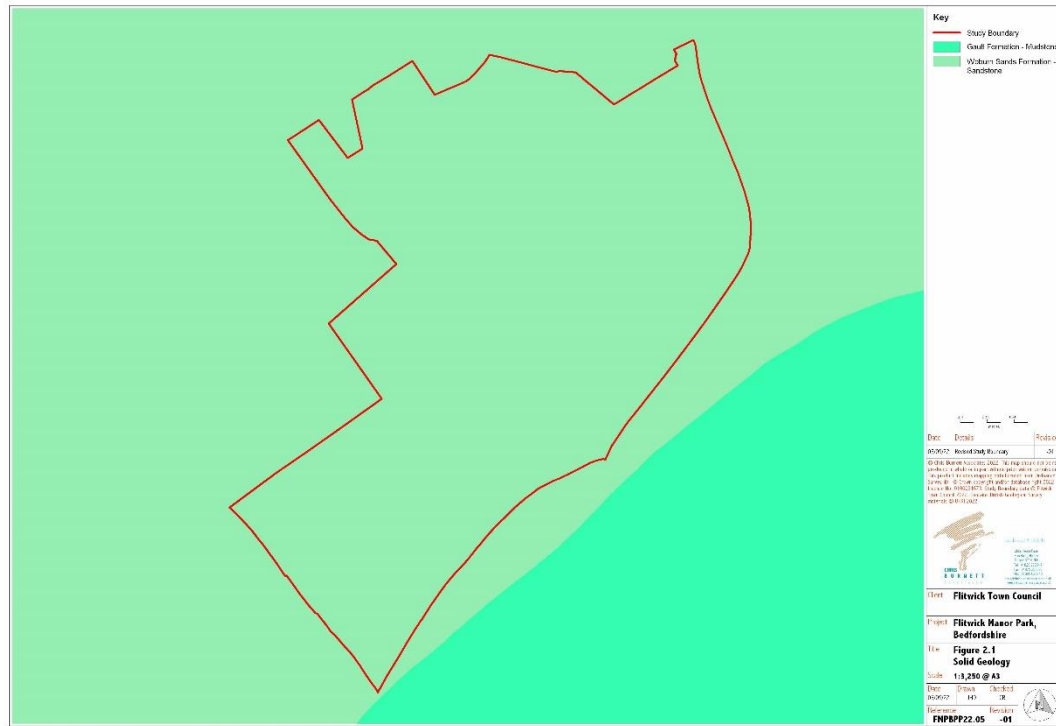
Consultant Team and Acknowledgements

- 1.5 We are indebted to help received from members of Flitwick Town Council during the preparation of this report and to Flitwick Manor Hotel for facilitating access to their property.

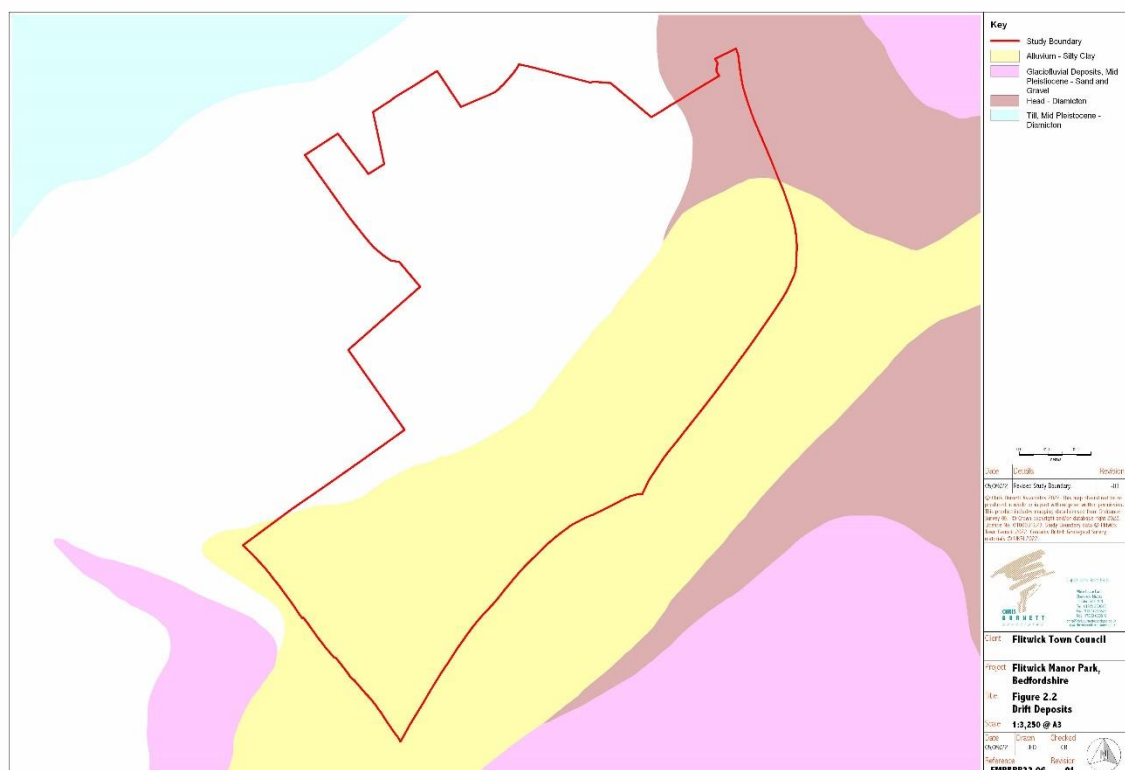
The team who compiled this report consisted of Chris Burnett, Landscape Architect, Project Manager and Report Editor, and Janette Ray, Landscape Historian and Jon Delf landscape technician and mapping support, Pete Worrall, hydrologists at Penny Anderson Associates, Paul Barton, Barton Hyett Arboriculture and Steve Halton ecologist

2.0 Geology, Soils, Landscape Character and Setting

2.1 The underlying geology of the site is represented by the solid geology map below (Fig 2.1):

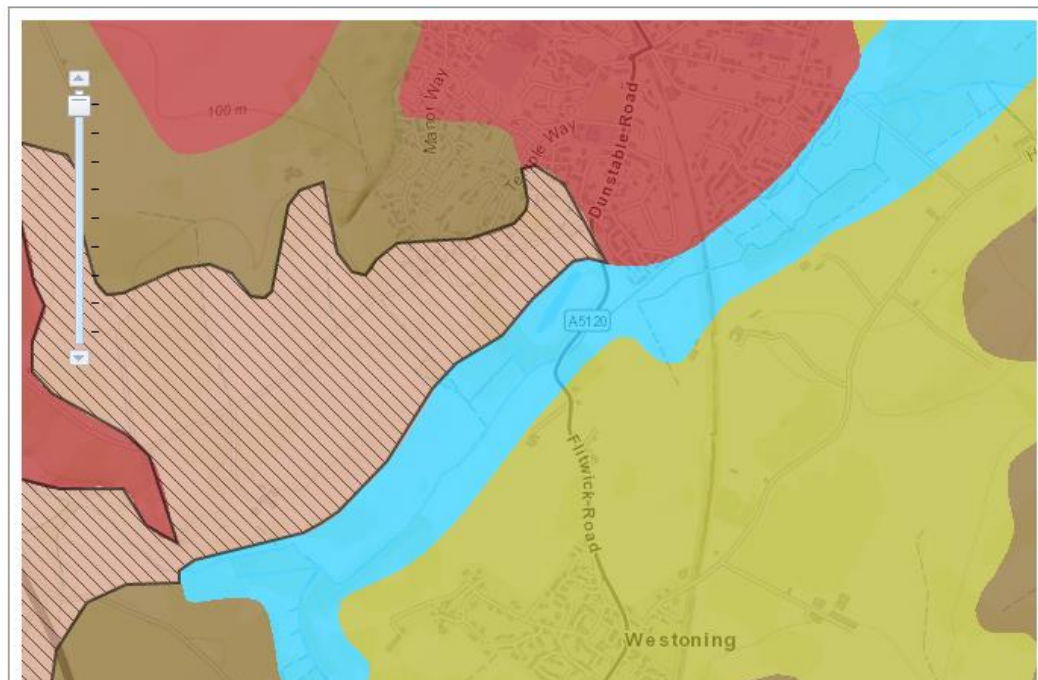


2.2 The park lies entirely on the Woburn Sands formation which is a sandstone. In terms of superficial deposits (Fig. 2.2) the park lies on a mixture of alluvium silty clay deposits, (the lake sits on this deposit) and a small area of the Head , a diamicton deposit. The bulk of the park however has no superficial geology deposits



Soils

- 2.3 Soils comprise 2 types taken from the Soilsmap map¹. The primary soil is **Soil Type 6** a free draining slightly acidic loam with an inherently low fertility. Much of the park is occupied by this type of soil. See Fig 2.3 below:



- 2.4 The second soil is **Soil Type 20** a loamy clayey floodplain soil type with naturally high groundwater.



¹ Soilsmap Map by Cranfield Soil and Agrifood Institute. Cranfield University

- 2.5 A recent Landscape Character study undertaken on behalf of Central Bedfordshire Council is informative in providing the context for Flitwick Manor park in relation to the surrounding landscape. Relevant excerpts from this Landscape Character Assessment are set out below. Flitwick Manor Park sits within:

Type 6B Mid Greensand Ridge

Location and boundaries

This large scale, elevated landscape forms the central section of the band of Greensand that stretches SW - NE across Central Bedfordshire. The steep slopes defining the northern edge of the ridge form a prominent backdrop to the North Marston Vale and East Marston Vale Clay Vales (5d and 5e) and provide commanding views across these adjacent low-lying, open landscapes. Cut by the Flit Greensand Valley (7a), the ridge is divided into two sections, with a southern outlying area abutting the contrasting Barton-le-Clay Clay Vale (5b) and the Harlington-Pulloxhill Clay Hills (8c) with which there is a subtle character transition. The northernmost part of the character area (part of the north-facing escarpment) falls within Bedford Borough – refer to the companion LCA for Bedford Borough.

Summary of landscape character: Key characteristics

- *A large scale ridge with a gently undulating ridge top; forming part of the prominent band of Greensand that extends SW- NE across Central Bedfordshire.*
- *Dramatic northwest facing slope forming a distinct backdrop to the North Marston Vale and East Marston Vale Clay Vales (5d and 5e), as well as far-reaching, clear views across these adjacent open landscapes.*
- *Divided by the course of the River Flit which has carved a valley through the Greensand and created a small outlying section of the ridge to the south of the valley.*
- *Agricultural land is primarily in arable cultivation but with some variation of land use i.e pockets of pasture and free-range pig farming that bring localised variation. There is greater proportion of pasture on the northwest facing slope.*
- *Strong underlying heathland character with fine examples of remnant heathland and neutral/acid grassland.*
- *High ecological value - the area supports several nationally important sites for nature conservation including Kings Wood, Glebe Meadows, and Copper's Hill- all SSSI. Cooper's Hill is the largest heathland site remaining in Bedfordshire.*
- *Strong wooded context with extensive areas of deciduous woodland (a large proportion of which is ancient), mixed woodland and coniferous plantations e.g. Exeter Wood, Maulden Wood and Rowney Warren Wood. Woodland located along the northwest facing slope and northern half of the ridge top forms part of The Forest of Marston Vale Community Forest.*
- *The contrast of arable land and densely wooded areas creates contrasting perspectives from open and exposed to enclosed and sheltered.*
- *A large number of historic parks and gardens impart a designed character - including the Grade II* listed Southill Park and Old Warden Park and the Grade II listed Moggerhanger Park, Ickwell Bury and Ampthill Park.*
- *Parkland is a dominant land use, influencing not just the land within the park boundary but also the wider landscape for example through the creation or retention of tree clumps as part of significant vistas.*

- *Variable fields and roadside boundaries - ranging from mature shelterbelts to gappy, short flailed boundaries to intact holly hedges (surrounding Southill Park).*
- *A dismantled railway runs north-south through the area with railway bridges and tunnels in local views.*
- *Primary transport routes including the M1, A507 and A6 and Midland Mainline railway cross north-south through the ridge and reduce tranquillity although large areas of the ridge have a remote character.*
- *Settlements comprise medium to small villages and hamlets (predominantly linear). Some have a varied character (due to modern expansion) e.g. Maulden and Silsoe with others (including estate villages) being consistent in terms of material and style such as Haynes (red bricks, clay tiles and timber-framed houses).*
- *The John Bunyan Trail and Greensand Ridge Walk cross significant tracts - connecting the ridge with the adjacent area.*
- *Bordered by the Georgian town of Ampthill that brings some urban edge characteristics to the landscape*

Landscape Strategy

*This is a high quality biodiversity-rich historic landscape. The overall strategy is to **conserve and enhance** the landscape of the Mid Greensand Ridge (6b). The area should continue to provide a strong wooded backdrop and undeveloped skyline in the view from much of Bedfordshire. Conservation should focus upon positive features and especially those identified as being sensitive, notably the ancient woodland, estate parkland and areas of pasture. Landscape enhancement opportunities predominantly relate to improving overall condition of the ridge and reinforcing landscape elements so as to strengthen landscape pattern and overall character. There are also key opportunities to restore elements that have been lost such as the areas of heathland.*

Landscape Management Guidelines

Further heathland restoration, creation and extension of existing sites – particularly through diversification of existing coniferous plantation by select tree felling - ensure the effects of felling on long views to the ridge are taken into consideration. Extension or recreation of heathland should have regard to the historic pattern.

Extend and connect existing woodland and heathland resource, particularly through the creation of additional broadleaved woodland and heathland mosaics. Extension or recreation of woodland should have regard to the historic pattern.

- *Ensure the existing ancient woodland resource is brought into management, including reintroduction of coppice management where appropriate.*
- *Conserve the remaining areas of pasture and consider opportunities for restoration of pasture to create a mixed landscape mosaic. In particular retain and enhance areas of small irregular fields.*
- *Conserve and enhance the historic parkland landscapes with their associated woodland in order to retain the design qualities they bring to overall landscape character. Replace historic planting schemes in and around parks and safeguard the setting of historic parks.*
- *Conserve the recreational value of the landscape by continuing to maintain open access opportunities and rights of way including the Greensand Ridge Walk, John Bunyan Trail and woodland/forestry access.*
- *Enhance the condition and structure of hedgerow boundaries - reinstating sections so as to strengthen landscape pattern and ecological value.*

- *Monitor the growth of nurseries and their impact on landscape character.*

2.6 Clearly, the objectives of this Parkland Management Plan for Flitwick are recognized and supported by both the Landscape Strategy and Landscape Management Guidelines which pinpoint the need to ‘*Conserve and enhance the historic parkland landscapes with their associated woodland in order to retain the design qualities they bring to overall landscape character. Replace historic planting schemes in and around parks and safeguard the setting of historic parks.*

Setting

2.7 Flitwick Manor park is situated on the immediate outskirts of Flitwick which lies to the north east. The town, however, is largely screened from view due the presence of perimeter belts of mature woodland and the Arboretum. A self enclosed green space results. The Park is easily identifiable from a distance as the mature conifers, which make such a contribution to its character, become a notable feature of the skyline see photograph below:



2.8 In the 19th century the park extended northwards to encompass land know as the Mount. (see 4.3 1881 First edn 6inch map). This has now all been built on with residential housing occupying much of this land and is now an integral part of Flitwick, apart from Mount Hill a motte and bailey which remains as a circular green space.

3.0 Ownership, PROW, Access, Designations, Current Management, Archaeology

Ownership

- 3.1 The Project Area is owned by two landowners: Flitwick Town Council (FTC) and Best Western Hotels. Best Western Hotels own Flitwick Manor House and retain the gardens, walled garden around the house including the bridge/grotto and, the avenue leading from the east entrance (with brick piers and ironwork gate). A further small part of this Registered Parks and Gardens (RPG) area including end of avenue in separate private residence 'The Old Farmhouse'. There is a restrictive agreement over use of the triangle of land at the north entrance adjacent to the bungalows. This remains fenced.

Total Parkland Extent (RPG) 22.46 Ha

Extent of Parkland Owned/Managed by FTC: c16.5Ha

Extent of land owned by Best Western Hotels: 5.96 Ha

Historic Designations across the RPG

- 3.2 National Heritage List for England (NHLE) designations in this ownership (see **Fig 3.1 Designations**)
- Flitwick Manor Park Grade II List Entry Number (LEN): 1000383
- 3.3 National Heritage List for England (NHLE) designations in project boundary
- Flitwick Manor House Grade II* LEN: 1137690
 - Grotto approx. 50m south west of Flitwick Manor Grade II LEN:1321732
 - Old Farmhouse Grade II LEN: 1113912
- 3.4 NHLE designations outside project boundary
- Church of St Peter and St Paul Grade I LEN: 1137705. The church lies immediately adjacent to but not within the RPG and contributes to the parkland aesthetic.
- 3.5 Selected Heritage Inventory for Natural England (SHINE) sites (of High Priority) (see Designations map)
- Flitwick Manor Landscape Grounds Ref: DBD5940

Environmental Designations across the RPG:

- 3.6 County Wildlife Site
- Flitwick Manor County Wildlife Site was notified in 2007 and extends over 22.4ha encompassing the entirety of the RPG area owned by the Town Council and includes two meadows to the south west, outside of the

RPG. The site is described as a '*Habitat mosaic containing semi-improved grassland, mature trees, secondary woodland, marshy grassland, swamp and open water including a river, streams, ditches, a pond and lake*'. The full citation and map is held by the Bedfordshire and Luton Biodiversity Recording and Monitoring Centre <https://www.bedscape.org.uk/BRMC/newsite/index.php>

- River Flit County Wildlife Site includes the section of river forming the south eastern boundary of the RPG. Notified in 1990 with clarification of boundaries in 2007, overall, this CWS extends over 39.2ha. The citation covers '*River and adjacent habitats, including ponds, leat, ditches, rough grassland, ruderal vegetation, scrub, copses, plantations, wet woodland, mature trees and pollards*'.

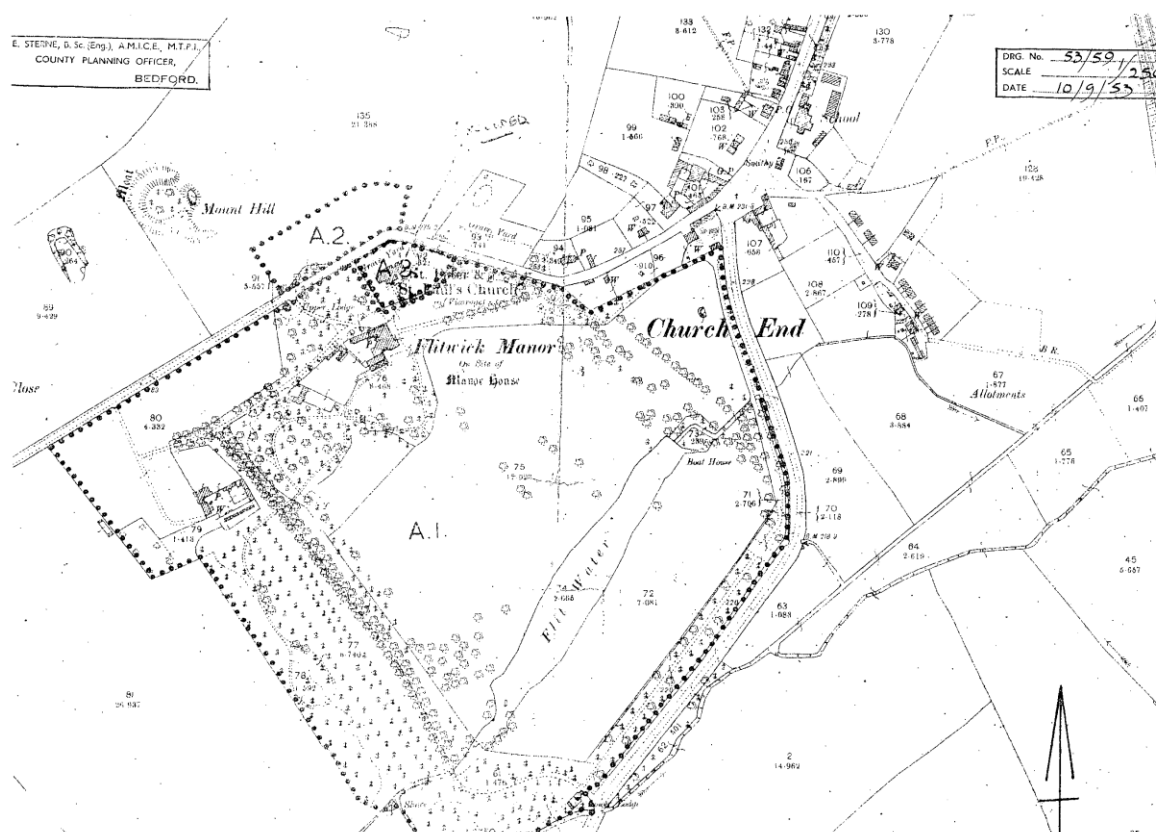
- 3.7 The full citation and map is also held by the Bedfordshire and Luton Biodiversity Recording and Monitoring Centre <https://www.bedscape.org.uk/BRMC/newsite/index.php>

European Protected & Biodiversity Action Plan Priority Species

- 3.8 Great Crested Newt a European Protected species were recorded under a garden log at Flitwick Manor in 2013.

Tree Preservation Order

- 3.9 There is a blanket TPO across the site designated in 1954. whole site has a Tree Preservation Order [TPO] designated in 1954. (see plan below and also in Appendix 10B). The site contains a Champion Alder Tree and several Champion Oaks and several veteran trees — see Veteran Tree Survey Appendix 10B and Detailed Tree Assessment Appendix 10C.



Bedfordshire Wildlife Priority Area

- 3.10 The wetlands of the Flit Valley, of which the Manor Park is a part, are identified as one of Bedfordshire's seven Wildlife Priority Areas in "A Nature Conservation Strategy for Bedfordshire" published by Beds County Council and English Nature 1994.

Nature Improvement Area (NIA):

- 3.11 Nature Improvement Areas (NIAs) are large scale initiatives set up in England and operated by local partnerships where there are the greatest opportunities and benefits for biodiversity. There are 12 nationally designated areas. An area of 27,300ha corresponding to the Natural Character 90 The Greensand Ridge has been locally designated as a NIA.

Biodiversity Opportunity Network

- 3.12 Ickwell Bury lies within an area identified in 2006 by the Bedfordshire Luton Biodiversity Forum as having the potential to expand and link existing priority habitats such as woodland, wetland and grasslands to expand ecological networks and give space for populations to expand and move through the landscape.

Current Agri-Environment Schemes

- 3.13 The Town Council land is in a Higher-Level only Stewardship scheme (Ref: AG00321776). This is due to expire 30/11/2022.

Access

- 3.14 The park is a public open space that is fully accessible by the public on foot with no restrictions. (See **Fig 3.1 Designations and Access**) There is a small disabled space car park that is operated by a pass system at the south east corner and this also doubles as the main pedestrian access. From this point a circular path is routed around the perimeter of the park running close to the north side of the lake, running through the Arboretum before emerging below Flitwick manor and then re-joining the entrance on a small section of tarmacked path. Apart from the tarmac section all paths are unsurfaced and, as they are heavily used, form unsightly desire lines through the parkland sward. Part of the path is also on the Flit trail and 7.5 mile trail promoted by Flitwick Town Council which runs from Westoning to Silsoe.



Key

- Study Boundary
 - Registered Park & Garden
 - Flitwick Town Council
 - Flitwick Manor Hotel
 - path
 - C car park
 - listed building/notable structure
- 1 - lake retaining / wall cascade
 - 2 - Flitwick Manor (Grade II)
 - 3 - grotto (Grade II)
 - 4 - old farmhouse (Grade II)
 - 5 - Church of St Peter & St Paul (Grade I)
 - 6 - lower lodge gate
 - 7 - historic bridge

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Date	Details	Revision
05/09/22	Revised Study Boundary.	-01

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Client **Flitwick Town Council**

Project **Flitwick Manor Park, Bedfordshire**

Title **Figure 3.1**
Designations, Ownership and Access

Scale **1:3,250 @ A3**

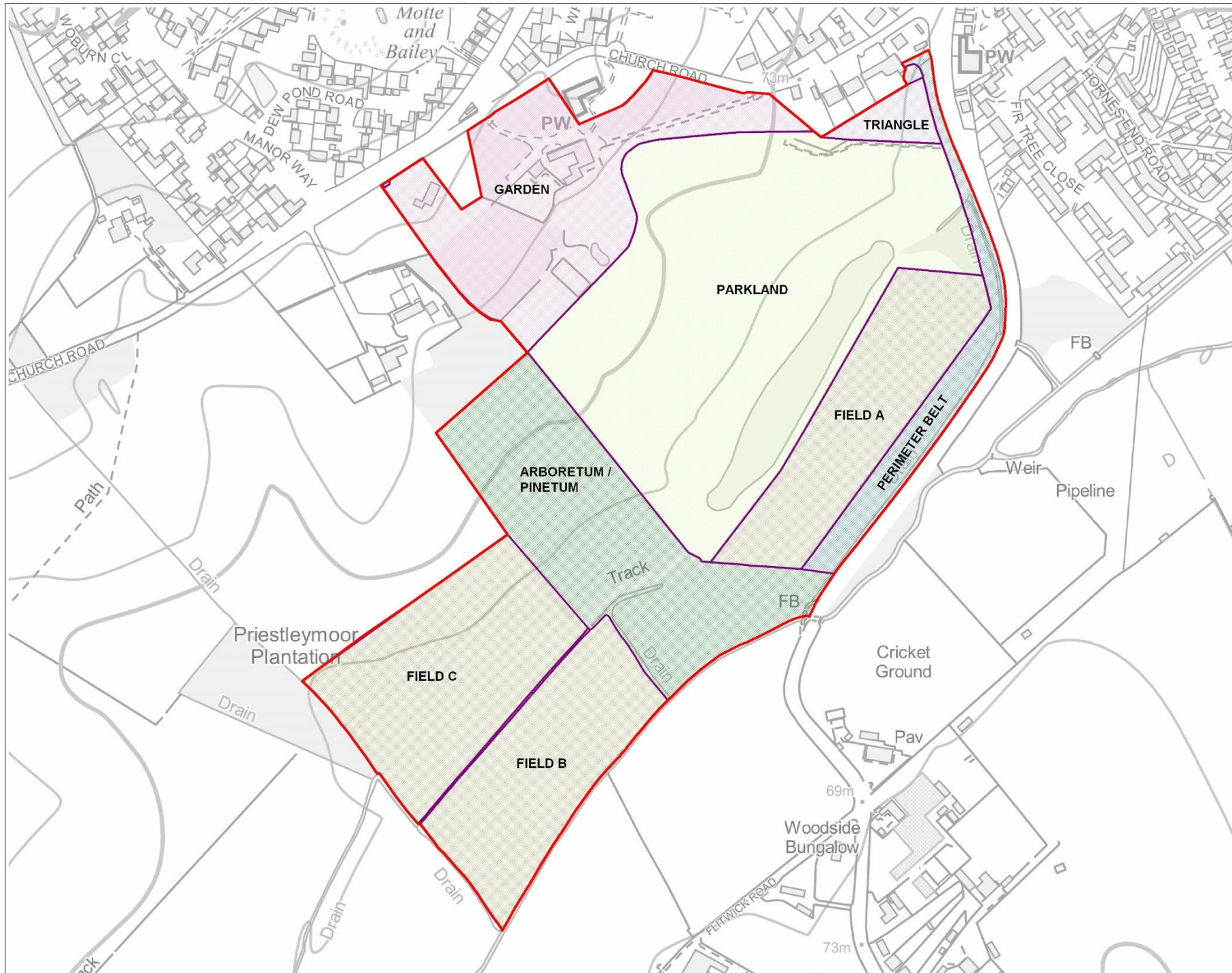
Date	Drawn	Checked
05/09/22	JHD	CB
Reference	Revision	
FMPBP22.10	-01	



- 3.15 Apart from the unsightly nature of eroded path surfaces in the park there is also an issue where the circuit path enters the Arboretum at its most northerly point. Here the path, which has no formal surface at this point, has to navigate a steep earth bank and is surrounded by dense vegetation. This access point does not meet Countryside for All standards in terms of minimum path width, surfacing or minimum gradients and should be reviewed.
- 3.16 The main path through the Arboretum , which historically was used to access the house and is now lined with Sweet Chestnut, still connects with the A5120 road to Westoning via a gateway which is the subject of a structural survey. (See Section 6.0). The Lodge which used to exist at this point has long since disappeared.
- 3.17 There is also an informal, short circular section of path that runs through the 2 fields in the SW corner.
- 3.18 There is no formal access from Manor Park hotel into the park

Management

- 3.19 The park is managed as grassland using two management techniques: cutting with forage harvester and grazing with cattle from June to October. (**see Fig 3.2 Land use**) The bulk of the park, marked as Parkland on Fig 3.2 which runs from the lake to the ha-ha is managed with a late cut in July August with arisings removed. The field to the south of the lake (A) and the marshy field to the north of the river Flit (B) are grazed by cattle in the summer months but there are proposals to extend this management regime to embrace the field to the north (C) as part of a rotational management system. The breed of cattle is Limousin. The numbers vary depending on graziers and the quality of grazing in each paddock but usually numbers are around 3 and 10 head per paddock and never exceeds 15 in the largest paddock to avoid over grazing. Grazing is carried out between 1st June and October 31st each year. One of the principal objectives of using cattle is to control areas of soft rush (*Juncus effusus*) and this is having some success. A small triangular area of land north of the parkland remains fenced and unmanaged at this time. The woodland , defined by the Arboretum / Pinetum and perimeter belt marked on **Fig 3.2 Land use** is subject to various interventions which arise due to health and safety considerations or in relation to the protection of structures. However, there is a plan which is being forward at the present time to control the growth of holly and rhododendron in specific areas.



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Client Flitwick Town Council

Project Flitwick Manor Park, Bedfordshire

Title Figure 3.2 Land Use

Scale 1:3,250 @ A3

Date	Drawn	Checked	Revision
05/09/22	JHD	CB	-01

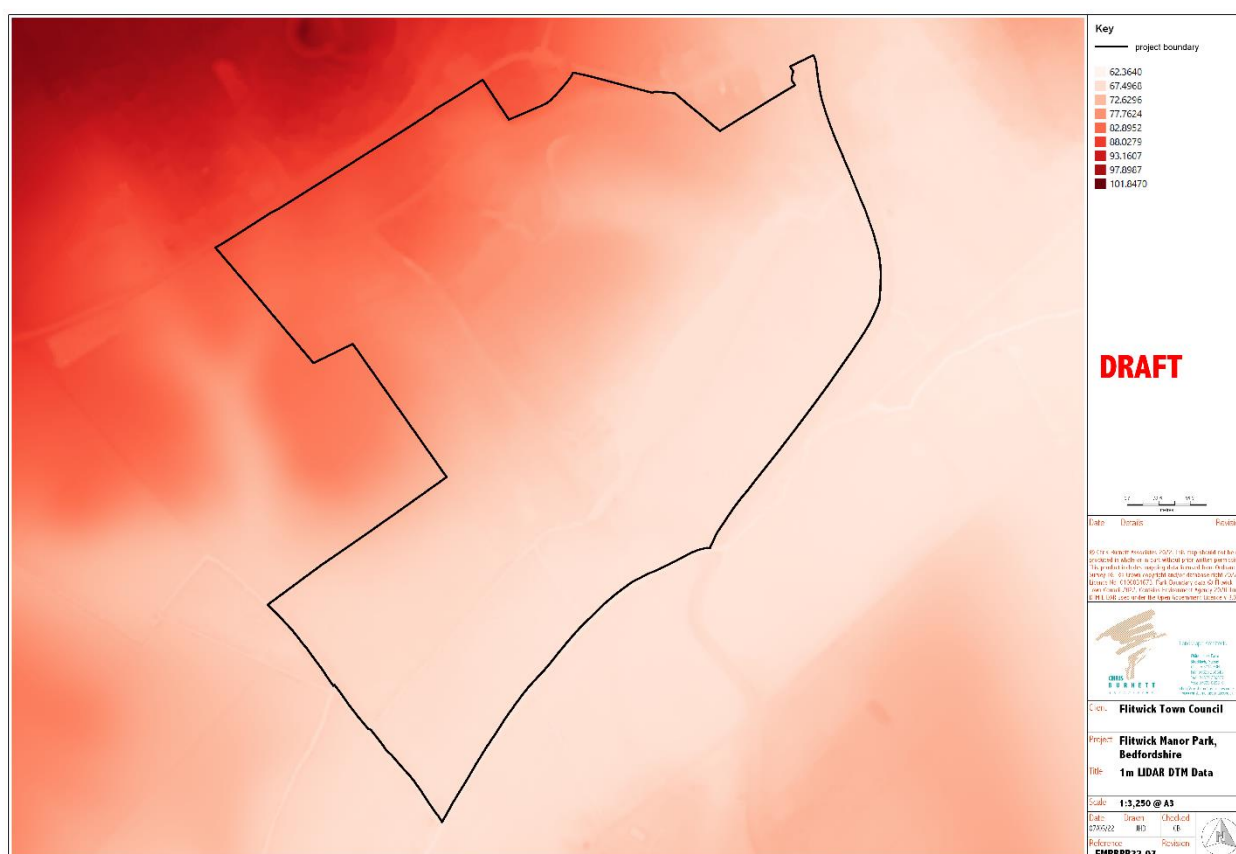
Reference FMPBP22.11



- 3.20 Ragwort (*Senecio jacobea*) is becoming increasingly endemic in the principal parkland area and causing a management issue.

Archaeology

- 3.21 The Historic Environment Record for Bedfordshire was consulted (HER No. 726). The monument type recorded was Landscape Park, which is listed as Grade II on English Heritage's Register of Parks and Gardens and the history of which is set out in more detail in Section 4.0 There were no Associated Finds or Events recorded. No fresh archaeological walkover survey was commissioned as a result of this study and the Lidar (**Fig 3.3 below**) appears to be too crude to yield any useful information other than defining the line of the ha -ha, watercourses and waterbodies.



Boundaries Structures

- 3.22 Evidence of boundary walls, gates and railings are absent with limited exceptions. The formal gates to the Manor House remain at the end of the lime avenue as does the ha- ha which defines the boundary between park and garden and is discussed in more detail in Section 6.0 Historic Structures. Other above ground structures which also can be covered as archaeological items of interest are the Cascade, the Bridge in the Arboretum and the Gate pillars. These are also discussed in more detail in Section 6.0.

4.0 Historical Development

Introduction

- 4.1 The aim of this part of the report is to trace how the landscape of Flitwick Manor Park has evolved up until the present day as a basis for proposals to conserve its significant elements into the future. It should be read in association with a chronology of landscape events compiled as **Appendix 2.0**. The historical analysis has reviewed the history of the whole estate landscape of Flitwick Manor, in the past, in order to put into context, the area now managed by Flitwick Town Council, which is a fragment of its former extent. Furthermore, the analysis seeks to understand the links between this estate landscape and others situated along the Greensand Ridge.

Sources

- 4.2 A number of short narrative histories, associated with earlier studies of the estate landscape have already been undertaken to explain how the estate landscape has evolved up to its present form. These have been our starting point.² Material in the Bedfordshire Archives, particularly the Lyall papers have also been reviewed to establish the extent of information held on the estate construction, particularly the areas currently managed by Flitwick Town Council. There is an uncommonly good range of map evidence from 1717³ to the present day showing the form of the estate. For the John Thomas Brooks period of ownership, 1817-1858, there are, furthermore, exceptional records of the plants introduced into the gardens and park, as well as the overall arrangement, design features and layout. Particularly notable is a manuscript book describing the estate elements, (1838), (LL 17/284), and J. T. Brooks, *Hortus Botanicus Flitwickensis* (c 1838-42), (LL 19/1), (both held in Bedfordshire Archives and Record Office). Brooks also kept a detailed diary which is also in the Bedfordshire Record Office but which has been, in the main, reprinted by the Bedfordshire Historical Record Society⁴ and which provides a time frame for his projects. Later history is less comprehensive but nonetheless good enough to chart the changes in the extent and layout of the estate up to date.

² These include <https://historicengland.org.uk/listing/the-list/list-entry/1000383?section=official-list-entry> [accessed 6 June 2022, Wells and Way history in Flitwick Manor Park Management Plan 2018-2022 of November 2018 prepared by the Greensand Trust. pp 4-8.

³ A True Mapp and Plott of Several Closes, Orchards & Gardens etc, belonging to the Homestead and Mansion House situate and being in the parish of Fleetwick, in the County of Bedford, being the Estate of Benjamin Rhodes, measured September 1717 by George. Lettin (LL17/38). George Lettin was a surveyor and had already in 1712 measured Woodhall Farm Meppershall belonging to the Duke of Kent. Bedfordshire Archives X1/97/38

⁴ The Diary of a Bedfordshire Squire: John Thomas Brooks of Flitwick 1794-1858, edited by Richard Morgan (BHRS Volume 66, 1987)

Stages of development

Before 1717

- 4.3 The earliest surviving part of the Manor House today dates from the early 1600s. Little is known about this house and whether or not it was on the site of an even earlier property and nothing is known about its surroundings from contemporary records however, a map of 1717 created from a measured survey, at the end of that period,⁵ shows precisely the manor house and its setting before latter reworking. The house, and a group of associated buildings, is shown separated from the Church by a road, which ran quite close to it. This is tree lined showing a formal double avenue of trees on the approximate line of the current Lime Avenue. A second routeway or lane followed the line of the current Sweet Chestnut Avenue. Three small gardens existed on the east and south sides of the house, one of them walled and immediately beyond was an orchard. Beyond the yard on the to the west of the house, a wooded area the Elms, was located and the land to the north of the Church was occupied by Orchard Close and Mount Hill. Warren (near a Brick Kiln), Little Warren Close and a Hopp Ground were located to the south east of the house. Church End Mead, a name that implied water meadows was situated adjacent to the Flit, a small stream, at this date. The Closes including the Hopp Ground later became the Park, associated variously with names such as "The Paddock," "Home Grounds" and "Park" in various documents relating to Flitwick.

⁵ Op. cit. 2

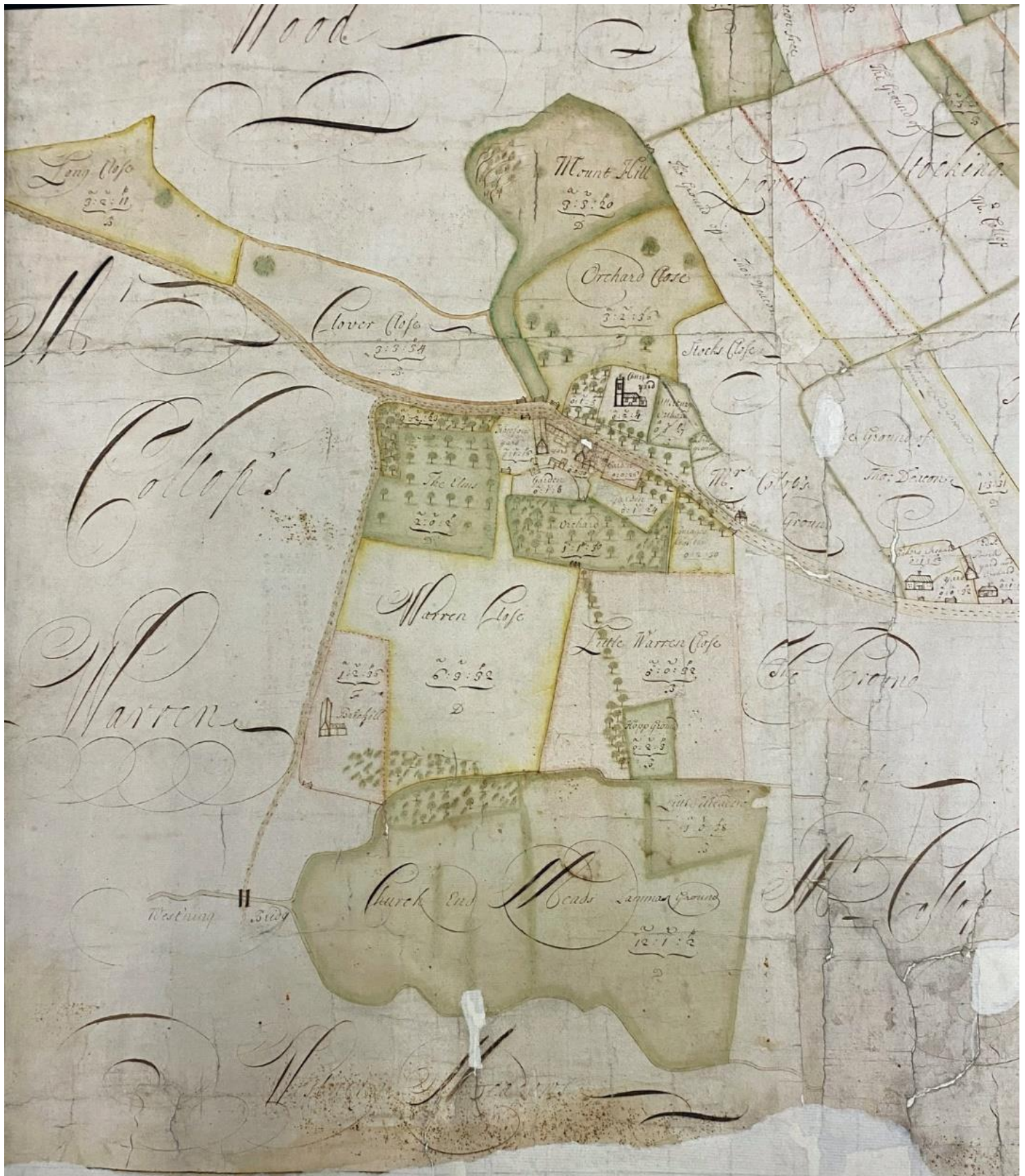


Fig 4.1. A True Mapp and Plott of Several Closes, Orchards & Gardens etc, belonging to the Homestead and Mansion House situate and being in the parish of Fleetwick, in the County of Bedford, being the Estate of Benjamin Rhodes, measured September 1717 by George. Letti

The 18th Century before the Brooks ownership

- 4.4 The house was reworked in the early 18th century reputedly about 1736. This probably took place after it came into the ownership of Humphrey Dell of Maulden. It is almost certain that during the first half of the 18th century, the park which now is the core area of Manor Park, was laid out in some naturalised form with clumps of trees and Flit Water. The Flit had been stopped up to form two inter-connecting ponds in the park and this was recorded on Jeffrey's County Map of 1765⁶. In a note in John T Brook's descriptions of the same area made in 1838 he records that the area, which he calls "The Home Grounds" featured "fine old timber trees especially Beech and Scotch Pine. Specimens of both of these kinds have attained a very large size⁷." So possibly date from the period of Dell.
- 4.5 Dell died in 1765 and Ann Fisher, his god daughter, inherited the estate. There is no information about changes in the landscape during the period of her ownership. She was still a minor when she inherited. [born 1757] so management fell to her father. A single image of the house and relationship to the church and its immediate setting survives for 1776 revealing that the property was of sufficient status at that date to appear in a publication⁸ as well as, in part, the layout around the house. (see Fig 4.2)



Fig 4.2 A View of Flitwick Church in Bedfordshire taken from the Garden of J Fisher Esq., Building on right possibly a ruin?

⁶ Jeffrey's map of Bedfordshire

⁷ Bedfordshire Archive. Flitwick House and Grounds Mss. LL 17/284 p25.

⁸ Bedfordshire Archives LL18/26

The Brooks Years

- 4.6 Three generations of the Brooks' owned Flitwick Manor and estate lands surrounding the house between 1789 and 1934.

George Brooks and Anne Fisher Period

- 4.7 The Brooks family acquired Flitwick through marriage in 1789 when George Brooks became second husband of Ann Fisher. The 1793 Map of Parish of Flitwick, principally belonging to George Brooks, Esq. (R1/250) ⁹shows that there had been considerable changes since 1717. The area east of the house is shown as having been formed into one large park called the Paddock, bisected by the Canal, fed by a local stream. A line on the approximate line of the ha-ha, which still exists today, suggests this was in place by this time. Also, the map shows groups of trees in the paddock in an informal arrangement. All these elements suggest there had been a scheme to 'naturalise' the landscape before George Brooks acquired the land. An amalgamation of Closes also occurred west of the church where Orchard Close and The Mount Hill area are shown merged. Additionally, Flitwick Wood is shown with a series of rides cut through it, possibly for hunting. This is part of the estate which George Brook's son subsequently ornamented with a series of shelters and garden buildings.
- 4.8 The extent of the land holdings of the estate are even more clearly shown on Fig 4.3 map of 1810¹⁰ showing Land holdings extended on all sides of the Manor House The land holdings are delineated with a red line and supported by a terrier of lands and tenants holding particular areas.

⁹ Bedfordshire Archives R1/250 Permission to reproduce needed from Woburn Estates via Beds. Archives.

¹⁰ Bedfordshire Archives LL 17/341 A map or plan of an estate belonging to George Brooks esq. (except 229 acres 3 roods 13 poles of which he has only a lease) in the parish of Flitwick in the County of Bedford. Surveyed by Mr Thorpe



Fig 4.3 Map showing most of the holdings of George Brooks c 1810. Pencil lines show lines of roads diverted after 1828

- 4.9 George Brooks never lived at Flitwick Manor and from 1802 leased it to Robert Trevor who occupied the house 1802-1816.¹¹ During the tenancy some alterations to the house were made¹² and it is reported they had plans to alter the property further but subsequently purchased Tingrith Manor Estate. Trevor also was tenant of the gardens, paddock, water, meadow, “part of the old road” and other fields and closed contiguous to the house and gardens. No evidence of works that might have been carried out to the grounds during his occupation has been located. On George Brook’s death the estate passed to his son, John Thomas Brooks.

John Thomas Brooks Period c1817-1858

- 4.10 It is during the period of ownership by John Thomas Brooks that most is known about the estate landscape at Flitwick, largely through his own assiduous record keeping on the landscape, and it is the information about Flitwick during his occupation which makes the estate particularly important as a designed landscape. The landscape at Flitwick was his passion which he recorded in detail. Additionally, he had a wide circle of horticultural and botanical friends and acquaintances including J C Loudon, W J Hooker, R H Webb, W H Coleman, John Ansell and John Lindley, James Forbes, some of whom he knew, and some of whom published comments on Flitwick. More is known, therefore, about this estate landscape during this period than many others dating from the early 19th century.
- 4.11 Brooks only permanently moved to Flitwick Manor after the end of the tenancy of Robert Trevor and further noted in his diary that he left Montpelier House in Twickenham on the death of his mother in 1834,¹³ presumably living between Flitwick and Twickenham until that date.
- 4.12 He describes the estate’s extent in 1838 in his comprehensive manuscript description of the estate as comprising, “about 1000 acres, 186 acres in occupation of the proprietor, 13 devoted to the gardens, 60 to the wood and plantations and the remaining 113 occupied as pasture for the deer and Home Farm... The Home Farm is for the most part excellent land... not only for pleasure but for profit also¹⁴.” The contents of this manuscript are key to understanding the layout of the whole estate and also the area now managed by Flitwick Town Council.
- 4.13 Over the 186 acres referred to in the manuscript he made about Flitwick, he developed the gardens, an arboretum, pinetum, orchards, domestic gardens for each season of the year, parkland and woodland all as a

¹¹ Bedfordshire Archives article on the Trevor family’s projects etc. On moving out of the house the family purchased Tigrith Manor Estate close by. the Manor was demolished in the late 50s. The houses of Saint Nicholas Close were built upon the site.

<https://bedsarchives.bedford.gov.uk/CommunityHistories/Tingrith/The-Trevor-Family-of-Tingrith.aspx> accessed 12 June 2022.

¹² Trevor used Mr Salmon to draw up the plans. This could be Robert Salmon who was estate surveyor at Wobun and also who assisted Henry Holland at Southill as Clerk of Works. He designed the model farm at Woburn. It seem this is the same Mr Salmon and if so, shows the connections between the great estate of Bedfordshire.

¹³ The Diary of a Bedfordshire Squire edited by Richard Morgan, Bedfordshire Historical Record Society pp 3

¹⁴ Bedfordshire Record Office LL/17/284 Mss. “Flitwick House & Its Grounds etc.,” p 1

setting to the house. Further, he ornamented a detached pleasure ground at Flitwick Wood and made a prospect tower on Mount Hill from which the park or home grounds could be viewed across the house rooftops¹⁵. Knowledge of the project is augmented by consulting his diaries¹⁶ and Hortus Botanicus Flitwickensis c.1838-1842ⁱ, which lists plants in his collection, organised by sections of the estate landscape and annotated with plant sources and thus indicating his network within the horticultural world.

- 4.14 Moreover, Mary Ann Brooks (1822- 1848) kept a diary, which is useful for monitoring the progress in her father's garden at Flitwick. If she made any design or other contributions to the gardens, other than making a record of it, is yet to be properly assessed.¹⁷
- 4.15 Critical to enabling the development of Brooks' landscape projects at Flitwick was the diversion of the public roads away from the immediate area of the house and its immediate setting. This was undertaken in 1829 after an appeal had been made by Brooks to the Quarter Sessions Court and approved. The public roads were transformed into private approaches and two lodges built in 1831 named the Upper and Lower lodges which controlled private access to the grounds and extended the private area of the grounds. A tunnel under the road near the church was created to link Mount Hill Flitwick Wood and parkland north of the house. Following these actions, within two years, wire fencing had been erected around the park¹⁸, presumably for stock control, and glass houses constructed.¹⁹ See plan of the layout for the estate on **Fig. 4.4 1838 map** below.

¹⁵ Flitwick Wood is now detached from the inner estate. It is now a local nature reserve managed by Central Bedfordshire Council and the Woodland Trust. See https://magic.defra.gov.uk/MagicMap.aspx?startTopic=Designations&activelayer=lnrIndex&query=REF_CODE%3D%271009516%27 [accessed 6 June 2022

¹⁶ Op cit 10

¹⁷ Bedfordshire Record Office LL19/2

¹⁸ The Flitwick Management Plan 2018-20 notes remnant wire fencing exists on the eastern boundary should reference to style be needed.

¹⁹ Op cit 11 p 2. Recorded in J T Brooks' diary.

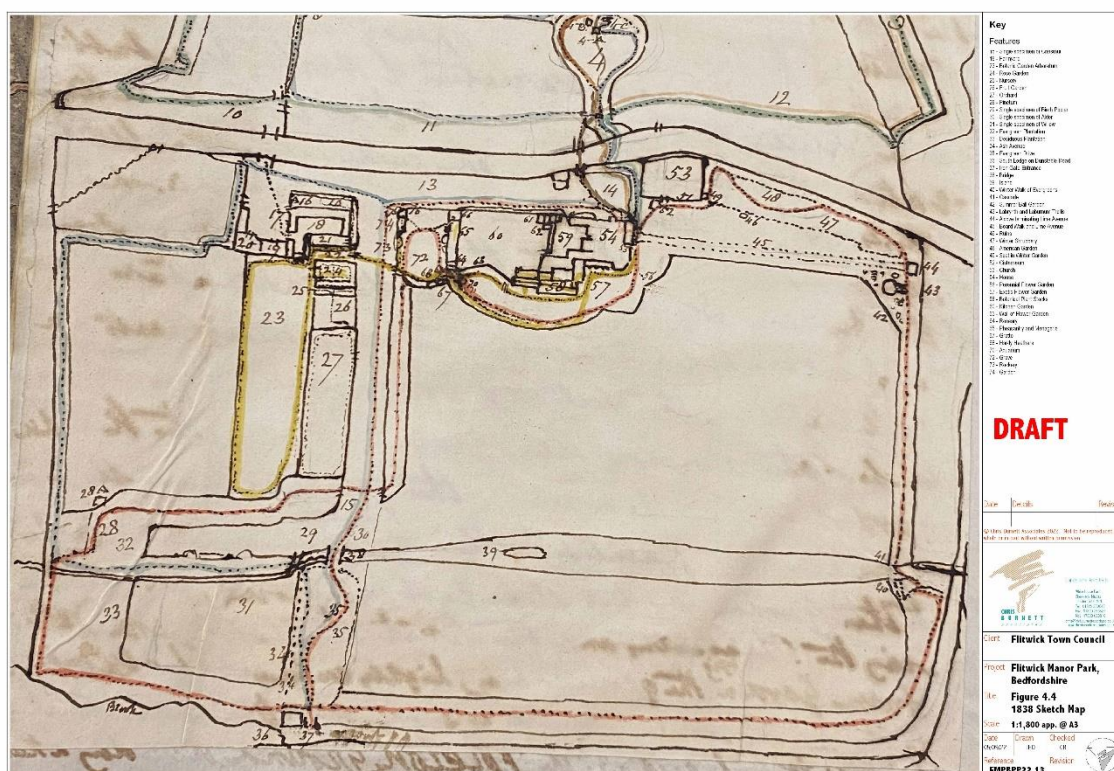


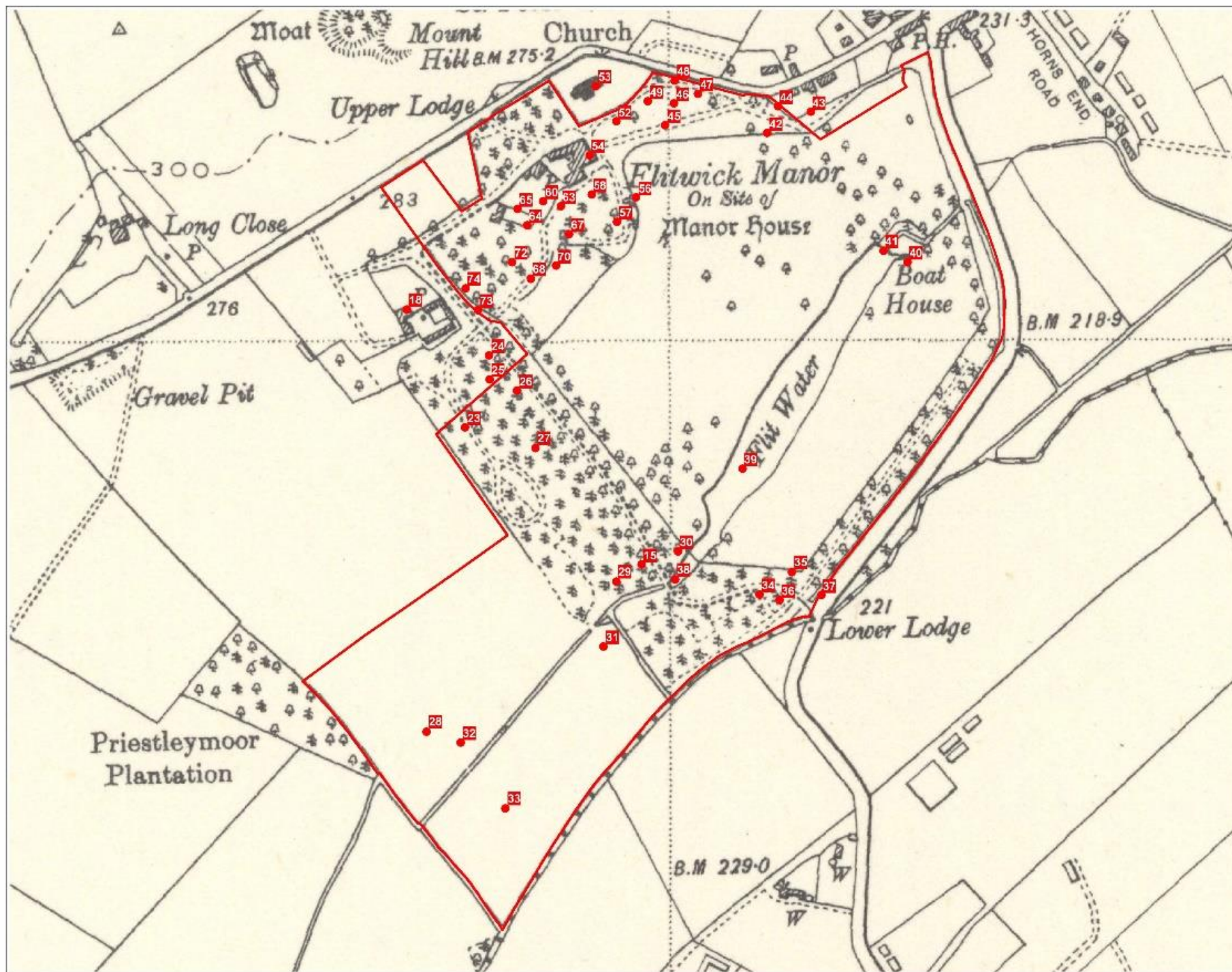
Fig 4.4 1838 map showing layout of entire park with Mount Hill to the north.

- 4.16 John Claudius Loudon visited in 1829 and one can only speculate that this was an incentive to Brooks to begin his landscape projects. He visited twice in that year, once in June and again on November 18th when it is noted that “Mr Loudon arranging as to planting an arboretum.”²⁰
- 4.17 Using these two key documents, the Flitwick House and Gardens manuscript²¹ and the botanical record of the plants in Hortus Botanicus Flitwickensis²² the layout of the estate and plants within any compartment of the estate landscape can be pieced together. In the manuscript book is a hand drawn diagrammatic map (Fig 4.4) which notes all the compartments of the estate landscape, locates ornamental buildings and structures introduced by J T Brooks into the landscape. It also included a series of walks marked on the map in variant colours denoting differing routes one might take to explore the landscape to discover different elements at different seasons of the year. The Hortus Botanicus Flitwickensis is arranged by compartment thus allowing one to understand the planting of each area reputedly, using De Jussieu's system of system of plant classification. (See **Fig 4.5 1838 overlaid on 1881 map** overleaf, showing compartments, boundaries with walks marked in colours)

²⁰ Op cit p 1 Recorded in J T Brooks' diary.

²¹ Bedfordshire Record Office LL/17/284

²² Bedfordshire Record Office LL19/1



Key

Study Boundary

1838 Features

- 15 - Single room of Church
- 16 - Church
- 22 - Before Garden Abandon
- 24 - Flower Garden
- 25 - Garden
- 26 - Flower
- 27 - Flower
- 28 - Flower
- 29 - Single room of Church
- 30 - Single room of Church
- 31 - Single room of Church
- 32 - Flower
- 33 - Flower
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- 35 - Flower
- 36 - Flower
- 37 - Flower
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Date	Details	Revision
05/05/22	Revised Study Boundary	01

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Client Flitwick Town Council

Project Flitwick Manor Park, Bedfordshire

Title Figure 4.5 Location of Features indicated on 1838 Sketch Map

Scale 1:3,250 @ A3

Date	Drawn	Checked
05/05/22	HD	CR

Reference FMPBPP22.14

Revision -01

4.18 Within the area now managed by Flitwick Town Council, Brooks planted the following compartments:

- 15 Single Specimens Chestnut
- 23 Botanic Garden Arboretum
- 25 Nursery
- 26 Fruit Garden
- 27 Orchard
- 28 Pinetum
- 29 Single Specimens of Birch and Poplar
- 30 Single Specimens of Alder
- 31 Single Specimens of Willow
- 32 Evergreen Plantation
- 33 Deciduous Plantation
- 34 Ash Avenue
- 35 Evergreen Drive
- 36 South Lodge of Dunstable Road
- 37 Iron Gate Entrance et al
- 38 Bridge
- 39 Flit Water
- 40 Winter Walk of Evergreens
- 41 Cascade

- 4.19 The diagrammatic plan, Fig 4.4, shows that Brook's scheme extended south west towards the current Priestley Moor Plantation and between a field boundary and Flit Brook through this field he laid out his Pinetum. [28]. The pinetum comprised pines, firs, cedars and larches with a walk to it passing a summer seat marked as 28a . Adjacent was an area of specimens of birch and poplar, [29] next to this were single specimens of alder, [30] single specimens of willow [31] and towards the south, or Lower Lodge, an evergreen and deciduous plantation. [32 and 33]. The planting of most of this area has now gone reverting to meadow with the exception of the evergreens which formed the immediate setting of the south or Lower Lodge and its gates.

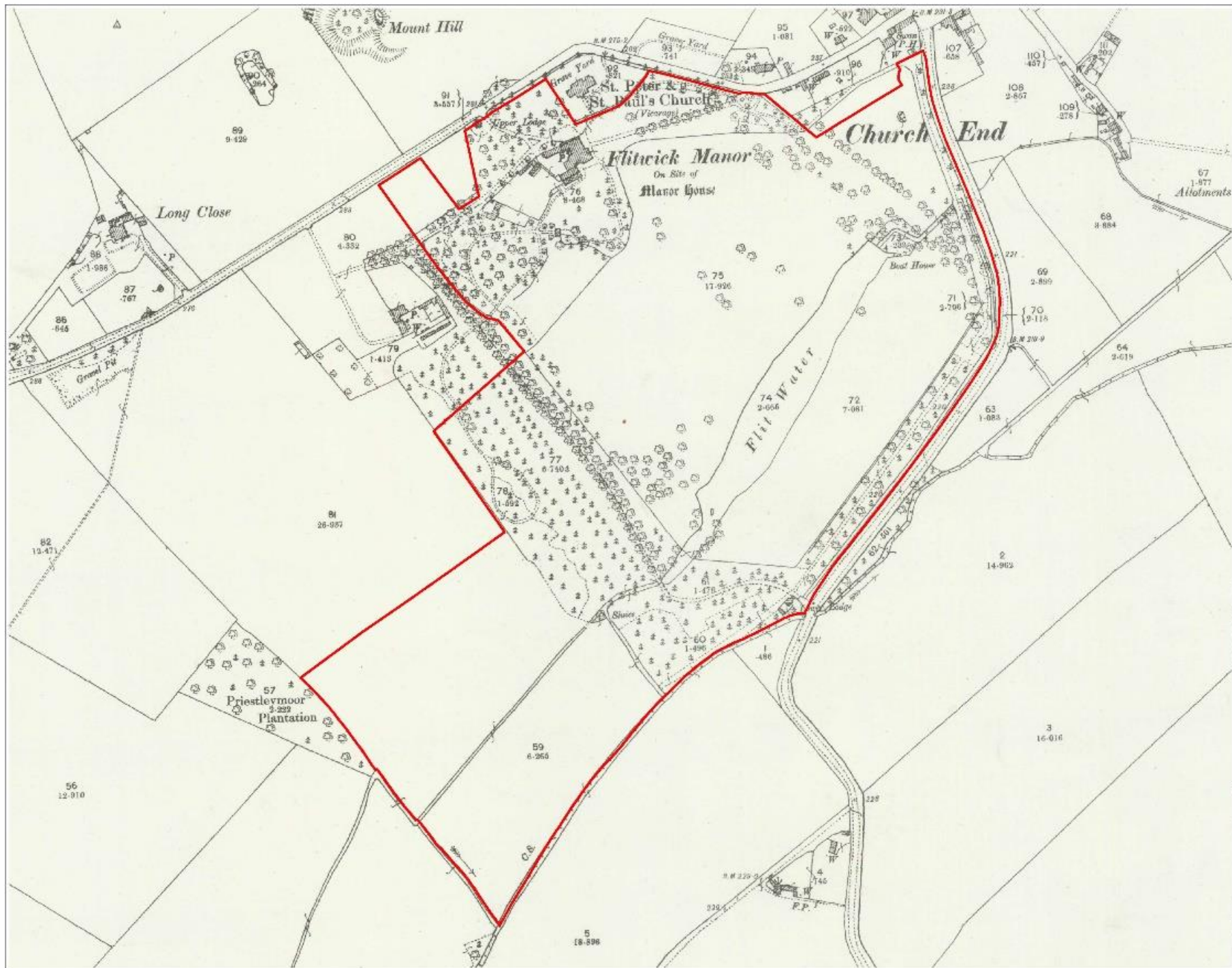
(Figs 4.6 Lower Lodge and gates)



Figure 4.6 Lower Lodge and gates

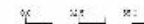
- 4.20 The area of the Pinetum may never have worked well because of the wet nature of the ground²³. It is not shown as a wooded area of any kind by the time of the survey for first edition Ordnance Survey in 1881. See **Fig 4.7 1881 map** also in Appendix 1.

²³ Op cit 3. pp50-51 in J T Thomas's diary describes the Pinetum planting in detail in 1843. Further west from the area was Priestley Farm where in 1806 The Duke of Bedford had been conducting experiments relating to water meadows., Joseph Elkington and William Smith, undertook then pioneering work to improve the land of the Duke of Bedford at Priestley Farm. Two drained fields sketched by William Smith in his 1806 publication are reproduced in Historic England's own study of water meadows. The fields are significant in the agricultural history of England because experimental irrigation and drainage conducted there was undertaken. <https://historicengland.org.uk/images-books/publications/iha-water-meadows/>



Key
 Study Boundary

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Client Flitwick Town Council

Project Flitwick Manor Park, Bedfordshire

Title Figure 4.7
1881 First Edition OS Map
(25"=1 mile)

Scale 1:3,250 @ A3

Date	Drawn	Checked
06/06/22	FD	CR

Reference FMPBP22.15
Revision -01





Fig 4.8 Page from the manuscript book about the estate showing bridge [above] and seat in Pinetum [below]

- 4.21 The drive to Lower Lodge and Gates passed through 34 and 35 to reach the Sweet Chestnut Avenue [15] over the bridge [38]. (See **Fig 4.8 bridge and seat** above). The description indicates that as well as an interest in the compartmented planting Brooks was also interested in the view and mentions the view into the Park / Home ground from a gap in the planting indicating this was contrived view point.
- 4.22 The Lower Lodge appears to have survived into the early 20th century when it featured on a number of postcards. These documentary cards are useful in indicating the back drop to the lodge too as show that the tree cover was considerably more open than it is today.
- 4.23 South west of the drive lined with Sweet Chestnut, but north west of the Pinetum and associated evergreen plantings was the Arboretum [23] and to its east the Orchard. [27] The Arboretum, whilst it included specimen trees, also included a very large range of shrubs. Using Hortus Botanicus Flitwickensis as the guide in

the Arboretum the range of plants are itemised²⁴ by genus and would provide a good guide should any replanting be contemplated in the future.

- 4.24 As all these areas of planting discussed here were newly planted during the lifetime of Brooks on land previously used for agriculture so the tree cover would have been less dense and more open than today. Now the arboretum trees are situated in a matrix of naturally regenerating woodland.
- 4.25 There is no record of John Thomas Brooks making alterations to the park which he refers to as the Home Grounds and Park as interchangeable terms, although he does illustrate it in his manuscript with images to and from the house . See **Fig 4.9 Views across the park from the house** below.

²⁴ Op cit p 38-107 cover planting in the arboretum which comprised a huge range of shrubs as understorey[?] and some specimen trees which could be used to guide any new planting.

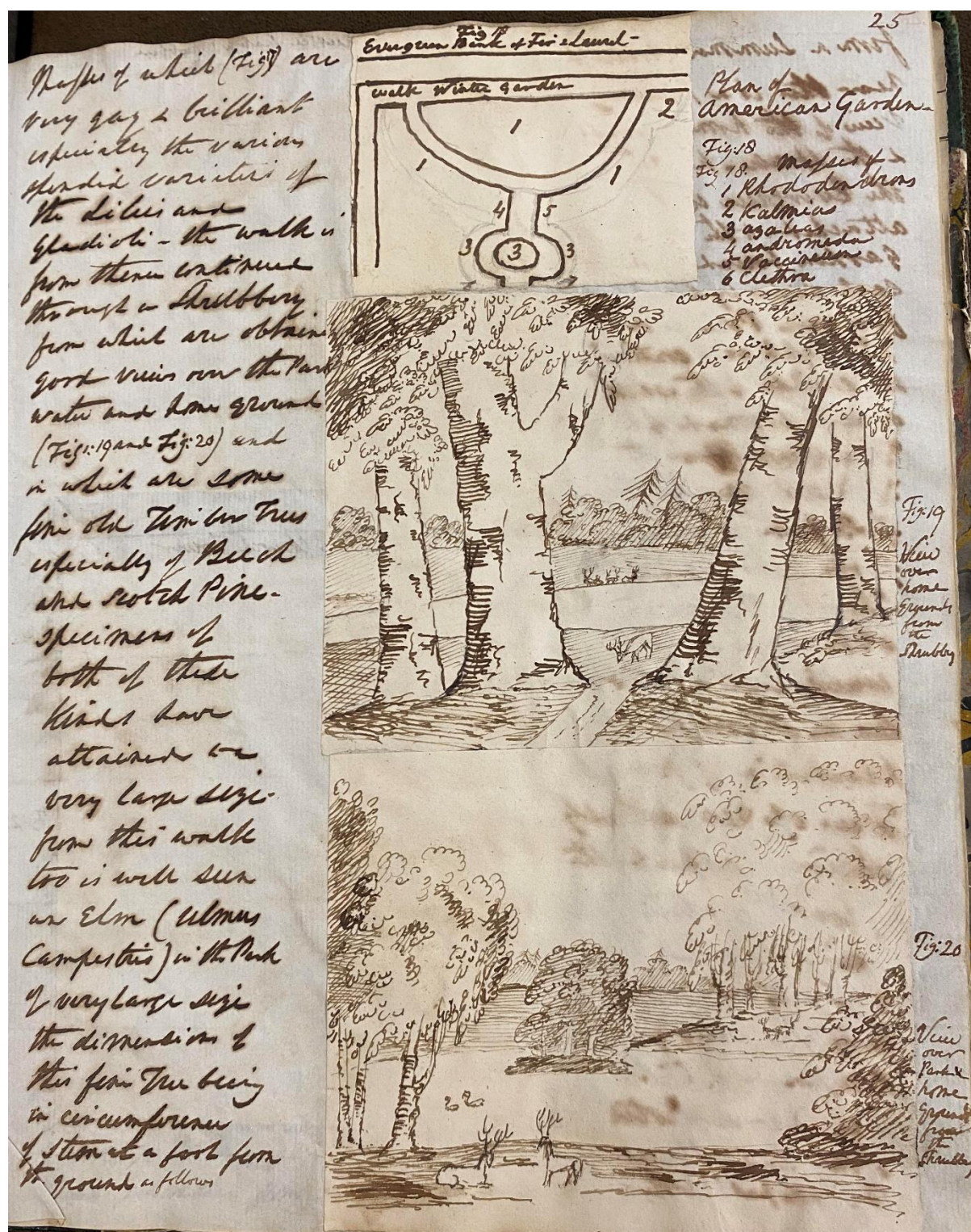


Fig 4.9 Views across the park from the house.

- 4.26 These two images above (Fig 4.9) indicate that the park was established with mature trees, deer and that the island in Flit water was tree covered. Although not referred to in the text, the plan indicates the cascade at the north east end of Flit Water [40] which was a feature on one of the marked walks around the park, reached by

a treelined path called Winter Walk [41] through the park which connected to a another known as the evergreen walk which now falls within the landscape area managed by Flitwick Manor Hotel.

- 4.27 The degree to which Flitwick's landscape projects might be considered innovative in the history of small estates during John Thomas Brooks' Day is conjectural. Brooks knew for instance James Forbes at Woburn. His massive record of Woburn Abbey's plant collection in *Hortus woburnensis*; a descriptive catalogue of upwards of six thousand ornamental plants cultivated at Woburn Abbey predates Brook's Hortus Botanicus Flitwickensis by five years and was a published book to which Brooks may have referred when considering his making own botanical record. He would have known Woburn Abbey which is close by to Flitwick and it is recorded that he visited that estate along with Wrest Park, Old Warden and Southill, all which had recently completed gardens and landscapes of a large scale and great stature which may have influenced Brooks. Moreover, he was a visitor to Kew on a regular basis and knew Hooker who had relatives in Bedfordshire. He was however clearly highly regarded as entries made in Hortus Botanicus Flitwickensis records gifts of plants from Forbes, Paxton and Loudon other well-known horticulturalists as well as purchases from major nurseries. If these places and people influenced Brooks, equally the estate was held in high regard and visits to Flitwick were made and the place praised in period publications including by both Forbes who said that Flitwick included "the most complete Arboretum containing the best private collection of hardy trees and shrubs..."²⁵ and Loudon who visited on route to Woburn Abbey during his first tour of gardens in England in July and August 1829.²⁶ In the case of Loudon he possibly offered advice on the layout of arboretum later in the same year.

John Hatfield Brooks

- 4.28 John Hatfield Brooks inherited the estate on the death of his father and retired to it in 1863. There is no evidence that he inherited the zeal of his father for all things related to the landscape and it seems likely that the landscape settled into a period of careful maintenance until his death. Information on management is scant.
- 4.29 In 1867 Shirley's Deer Parks book mentions there is still a small park with Deer and it is reported that the house was altered in 1872 and in the same year the Journal of Horticulture reveals that it was one of a number of Bedfordshire sites with "gardens worth seeing"²⁷. Head gardeners are noted in horticultural journals.
- 4.30 The 1881 Ordnance Survey 6 inch Plan, (**Fig 4.10 6 inch first edition**), is good evidence for the extent of the park, pleasure grounds and gardens as it shows this, by use of stippling. This plan reveals that the area north of Church Lane, including Mount Hill and north from it as parkland as well as the area to the south of the Paddock, gardens and pleasure ground. Concentrating on the area to the south of the house, the area stippled

²⁵ Forbes, J. Hortus Woburnensis: A Descriptive Catalogue of Upwards of Six Thousand Ornamental Plants Cultivated at Woburn Abbey 1833. pp239. Forbes went on to produce other catalogues for Woburn of the Pinetum, Willow collections etc.

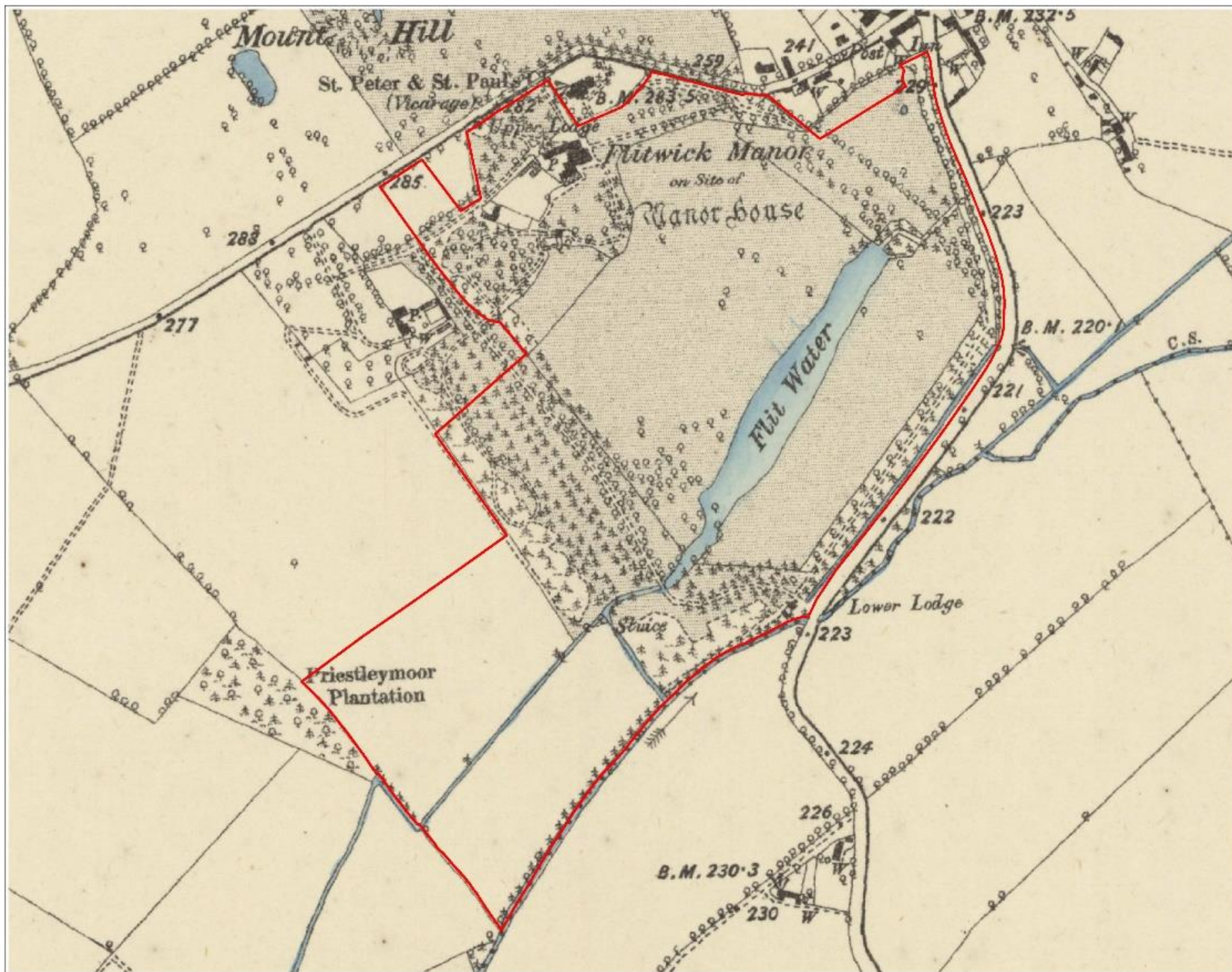
²⁶ Reprinted in In search of English Gardens. Lennard Publishing 1987 pp22

²⁷ Journal of Horticulture and Cottage Gardener October 13 1863 p 293

on the west side extends into the original Arboretum area and is either side of the Sweet Chestnut Avenue suggesting that the floor of this was a grass sward into which the systematically displayed trees and shrubs planted by John Thomas Brooks were set. The very western extent is shown as a belt of trees similar to that on the southern edge against the Westoning Road. The area occupied by the Pinetum on his father's map in the manuscript on Flitwick House and Grounds as gone suggesting that part of the project had failed.

- 4.31 Details of the organisation of planting is more clearly shown on the 25-inch Ordnance Survey Plan of the same date.²⁸
- 4.32 Undoubtedly, in the second half of the 19th century the planting at Flitwick would have had a more open character than it has today as the trees could only have been some 30 to 40 years old. Period post cards from the beginning of the 20th century suggest a more open framework of trees than at present is the case. Fig 4.13 shows the South Lodge and back drop to it c 1907.

²⁸ Bedfordshire 1881 Ordnance Survey 6 inch Plan, (Fig 4.10re Ordnance Survey Map xxv.7 25 inch series available from Bedfordshire Archives. Sheet xxv.3 shows the area of the estate north east of the Manor House.



Key

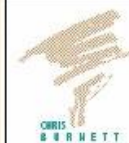
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Date	Details	Revision
05/06/22	Revised Study Boundary	01

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Client **Flitwick Town Council**

Project **Flitwick Manor Park, Bedfordshire**

Title **Figure 4.10**
1881 First Edition OS Map
(6"=1 mile)

Scale **1:3,250 @ A3**

Date 04/06/22 Drawn I.D. Checked C.R.

Reference FMPBPP22.16 Revision -01





Fig 4.11 Lower Lodge and setting c 1907 showing open nature of tree canopy

- 4.33 John Hatfield Brooks generously opened the estate to the public for various events, such as local bazaars and it is clear that there was a head gardener [H W Nutt] at least until 1893 who maintained the estate's gardens and pleasure grounds²⁹. The Flit was used for ice skating in 1895 when frozen over³⁰. Theatrical events were also held using the grotto as a back drop for performances.³¹ A Horticultural Show was held in the grounds in 1904³². No new innovations in terms of development appear to have occurred in his lifetime. He died in 1907.

The early 20th century

- 4.34 Catherine Mary Frances Brooks (1853–1934) inherited the house on the death of John Hatfield Brooks and she lived there until her death in 1934. During her occupation there is equally little information about the maintenance of the grounds but in the period of her tenure, the condition of the estate may well have begun to decline. In 1909 she unsuccessfully tried to sell 8.5 acres of land for building land at East End, heralding the

²⁹ Quality of the grounds praised in Bedfordshire Mercury 5 August 1893

³⁰ Bedfordshire Mercury 2 February 1895

³¹ For instance, reported 1899 Sir Alfred and lady Lyall used grotto as backdrop to play "Passing Clouds" Bedfordshire Mercury August 9th

³² Bedfordshire Mercury 23rd August 1904

beginning of a series of sales of the outer reaches of the estate for housing. In 1927 a rating valuation for property in Bedfordshire described the Manor House and Old Farm and their condition, both of which were described as being very old and in poor condition³³. Whilst the rating survey does not refer to the parkland or pleasure grounds, the valuer did in his report, describe the kitchen gardens and associated buildings in poor condition and the greenhouses as derelict.³⁴

- 4.35 The estate was inherited in 1934 by Robert Adolphus Lyall (1876–1948). His first actions relating to the estate were to improve the house and he called in, the well-known classicist architect, Albert Richardson, who lived at Ampthill.³⁵ If any works to ensure maintenance of the landscape elements of Flitwick during his period have not come to light.

The post war period

- 4.36 The heart of Flitwick Manor Estate continued as one unit until 1953 when there was a major sale of the house and associated land, conducted by Messrs Knight Frank and Rutley in conjunction with Messrs Swaffield and Son³⁶. The sale followed John Comyn Lyall having inherited it in 1948. The map of the lots is shown in Fig 4.14

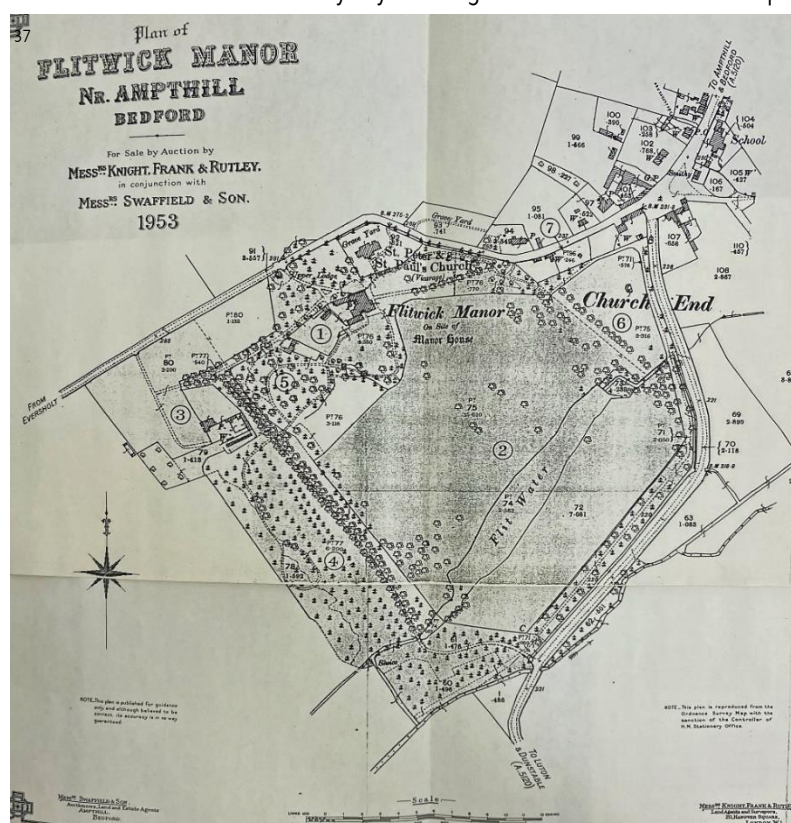


Fig 4.12 Map of lots 1953

³³ Bedfordshire Record Office DVI/C272/18

³⁴ <https://bedsarchives.bedford.gov.uk/CommunityHistories/Flitwick/Flitwick-Manor.aspx> gives a full description. Accessed 9 June 2022

³⁵ Houfe Simon. Sir Albert Richardson: The Professor. 1980 p78 The Richardson drawings for Flitwick are at Bedfordshire Archives.

³⁶ The residual contents of the house were sold the following year.

³⁷ Bedfordshire Archives CRT130FLITW/16 Sale Catalogue.

- 4.37 The house and immediate grounds, north lodge and kitchen gardens were sold as Lot 1. The park area and lake, described as Timbered Park and Lake formed Lot 2, The half-timbered cottage and land off Church Lane formed Lot 3, ie Old Farm and its surrounding land, Lot 4 comprised the Pinetum, Lot 5 was garden adjacent to the Manor House's Kitchen Garden now in private hands and Lot 6 the triangle of land on the north-eastern edge of the park now occupied by houses with entrances on Church Lane. Lot 7 was opposite the entrance to the house from Church Lane. The areas forming Lot 2 and 4 are now the areas managed by Flitwick Town Council. At the point of sale, the parkland and Flit Water comprising just over 28 acres, were let under a tenancy to Mr W Abbiss whilst the woodland area was managed in hand. The Tenancy of Abbiss appears to have continued after the sale but it has not been possible to substantiate for how long. It would appear that the park area did not sell at the time³⁸. There was possibly some concern about the future of the landscape as early as 1953 when Bedfordshire County Council put tree preservation orders on some of the major trees on the estate although the details of the exact trees were not specified.³⁹
- 4.38 Sales of the outer areas of the estate lands for housing occurred but have not been documented for this plan. The population of the area increased four-fold at least to its present level in the post war period which may have influenced the town council to purchase Manor Park lands as a community resource.

Conclusions

- 4.39 Flitwick Manor landscape history mirrors the development of many small estates in England where the early 18th century saw a rebuilding of the house, followed by a reworking of the landscape according to the fashions of the day, ornamentation in the early 19th century followed by a settled period until the interwar period when the land area was reduced and changes in ownership frequently led to fragmentation of former cohesive character. What is special about Flitwick is that there is an exceptional record of the 19th century period of ornamentation of the landscape under John Thomas Brook's custodianship and that at least some of those areas where he undertook his projects are now owned and managed by Flitwick Town Council who are committed to its conservation. Manor Park is a small remnant of an area which, for some thirty years, attracted the attention and interest of some of the horticultural titans of Britain. During the ownership of John T Brooks, the estate landscape was transformed from a fairly typical small parkland with gardens close to the house with narrow, canalised lake, into a complex compartmentalised pleasure ground with an arboretum and pinetum, gardens for all seasons, greenhouses and garden buildings, all conceived from one man's enthusiasm and dedication to horticulture, landscape design and botany. Not only did J T Brooks establish the landscape at the time but he recorded it in detail. Alongside him the work of his daughter *Mary Ann Brooks* (1822–1848), who died aged 26, in 1848 in recording the estate is significant as she was clearly an eminent botanist and diarist

³⁸ Morgan. R. *Life Runneth as The Brooks: The Brooks Family in Bedfordshire*, Bath 2012

³⁹ Luton News and Bedfordshire Chronicle October 1 1953

in her own right, if largely overlooked. Her diaries and sketches are important to the record of Flitwick Manor. Arguably, the work of John Thomas Brooks and his daughter created the structural framework which survives today, a remnant fragment of a much bigger estate. Unfortunately, after that brief moment in time, no subsequent owner carried projects forward. Up until 1907 the estate was visited and maintained but from then on it began to deteriorate in condition. The J T Brooks project must have been highly labour intensive and there is nothing to suggest subsequent owners maintained it with the same degree of enthusiasm with the result that the landscape of today is difficult to read and in rather a neglectful state in parts. The historical record for the years when J T Brooks lived at Flitwick Manor is outstanding and is an excellent guide for efforts aimed at construction of the key elements such as circuit walks, areas of planting for both new trees and planting and even garden shelters.

¹ 1843 revisions to this took place as noted in diary – see The Diary of a Bedfordshire Squire in The Bedfordshire Historical Record Society vol. 66 1987 various entries for 1843.

5.0 Character Areas and condition assessment

5.1 The Study area has been separated into 4 areas of more or less homogenous landscape character. The 4 areas are defined on **Fig 5.1 Character Areas** as follows :

- 1. House and gardens**
- 2. Parkland**
- 3. Arboretum and perimeter woodland**
- 4. Agricultural fields**



Key

Study Boundary

DRAFT



Date	Details	Revision
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Client **Flitwick Town Council**

Project **Flitwick Manor Park, Bedfordshire**

Title **Figure 5.1
Character Areas**

Scale **1:3,250 @ A3**

Date **05/09/22** Drawn **JHD** Checked **CB**

Reference **FMPBPP22.23** Revision



5.2 The current condition of each character area is described and illustrated below:



House and gardens

- 5.3 In the ownership of Flitwick Manor Hotel this character area consists of formal tightly mown lawns, specimen mature trees, shrubbery, a formal lime avenue, a gravel parking area and garden buildings most of which are in good condition. Certain elements are, however in poor condition . These include the ha – ha (detailed assessment of which is found in section 8.0) and which is subject to sporadic growth of naturally regenerating trees, the Grotto, (outside the scope of this study) and the post and wire boundary fence which separates the gardens from the park.



Parkland

- 5.4 An open area of grassland which is cut once a year, apart from the field behind the lake which is grazed, this area is largely in good condition however it is under threat at the present time from a ragwort infestation which will need to be managed if it is not to get out of control. Generally, this area is in good condition but various elements are in poor condition. These include the state of some of the informal paths which are showing signs of erosion to bare earth, the margins or interface between the arboretum and parkland which looks to be unmanaged at present, the lake which is silted up and entirely vegetated and there are few young or recently planted parkland trees.



Arboretum and perimeter woodland (photo below)

- 5.5 The centrepiece of the landscape at Flitwick, this area has developed into unmanaged woodland and its character has suffered as a result with natural regeneration of trees such as sycamore commonplace throughout. Most of the exotic conifers however are in good condition (see tree survey Appendix 9A, B and C) Visibility and legibility are poor and there is no formal path network. The paths at the moment are bare soil. Overall therefore this feature is judged to be in poor condition and in need of restoration.
- 5.6 The same cannot be said for the belt of perimeter woodland which has fewer exotics and is more akin to a well structured, multi layered woodland with evidence of a vigorous shrub, understorey layers and a better age structure to the trees within it. It provides an important screening function in relation to Westoning road.



Agricultural fields

- 5.7 Two small fields exist to the south west of the Arboretum managed by grazing cattle. From a biodiversity point of view these fields are in reasonable condition with areas of rush which are surviving in wetter conditions along with naturally regenerating alder, willow and birch. From a productive agricultural stand point however these fields are in poor condition as they are poorly drained. However in the context of the objectives of this plan which seeks to improve biodiversity where possible this criteria is not a priority.

6.0 Historic Buildings and Structures

Introduction

- 6.1 Capstone Consulting Engineers Ltd has been instructed by Chris Burnett Associates on behalf of Flitwick Town Council to undertake a Structural Report on the structures/ built features at Flitwick Manor Park. A plan of the parkland was made available prior to the site visit. It is noted that the park is listed grade II on the Register of Historic Parks and Gardens maintained by Historic England, and that the park is owned and managed by Flitwick Town Council.
- 6.2 A site visit was made on the 21st May 2022. The report is based on observations made on site from safely accessible areas and has been undertaken in accordance with the appointment. This report is based on observations made on site from safely accessible areas and is for the sole benefit of the client. The inspection did not include any 'opening up' work or removal of finishes/dense vegetation.
- 6.3 Figure 01 illustrates those features inspected and reported on.

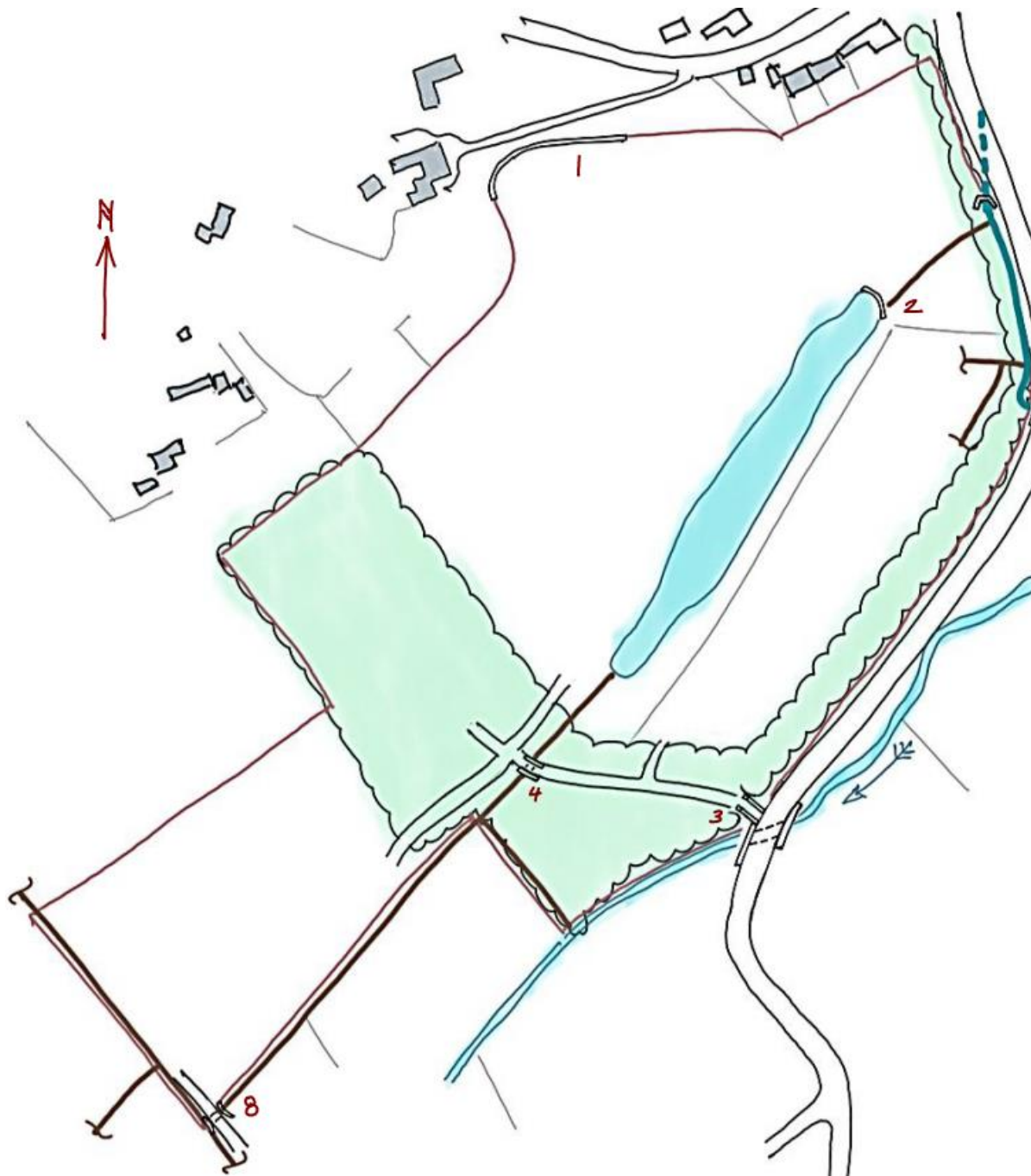


Fig 01 - Plan

- (1), the Ha Ha,
- (2) the Cascade,
- (3) the Eastern Gateway,
- (4) the Culvert in the Woods.

The Ha-Ha

Description

- 6.4 The Ha-Ha is associated with the development of Flitwick Manor, which is a Georgian house/estate. Ownership of the house and wider park has been split. The house, which is grade II* listed, is run as a hotel, and the wider parkland, which is listed grade II on the Register of Historic Parks and Gardens, is owned and managed by Flitwick Town Council.
- 6.5 It is noted that the Ha-Ha is likely to be considered part of fabric protected by the the grade II* house listing, being in effect the structure forming the boundary between the curtilage of the listed building and its garden with the wider parkland. It is considered likely that the Ha-Ha dates from the Georgian era, being similar to many other Ha-Ha walls of that period, although it may be Victorian, possibly added when the new Gothic Revival extension was added.
- 6.6 The Ha-Ha is curved in plan, sitting to the south of the House. It is a brickwork earth retaining wall, separating the higher formal Manor House gardens from the wider parkland to the south. It fronts a ditch on the south side, followed by a short upward slope back to the original ground level.
- 6.7 Where visible between the sections covered in vegetation, it is formed with a coping of soldier course brickwork, with an English Garden bond variant to the brickwork below (rows of stretchers between a row of headers). At the west end, it starts close to a young oak tree, tapering up as the ground levels diverge until it reaches its full height, 1.35m. This initial length is covered in dense vegetation including ivy and young trees. The Ha-Ha continues to the east at a constant height, and includes a short section that has been either rebuilt or heavily consolidated in the past, and ends in an area of dense vegetation adjacent to a mature lime tree growing out of the upper ground level.



Fig 02 The Ha-ha

Observations

6.8 Overall, where visible, there were no signs of ongoing overall structural instability such as a significant outward rotational lean. Other structural issues noted were as follows:

- Vegetation, including ivy and self-seeding trees growing close to and out of the structure. This both limits observation of the condition, and will also be causing deterioration.
- Open joints. Joints were open to up to 50mm in many places. Behind this, earth rather than mortar was seen.



Fig 03 - Ha-Ha, showing section that has been rebuilt/consolidated

It is likely that the action of vegetation and the free draining of water through the wall will have caused the mortar loss over time.

- Cavities to the brickwork and spalling of the outer face of bricks. These areas were typically seen low down, and are likely to have been caused by the action of vegetation and the free draining of water through the wall, with the mortar loss leading on to loss of bricks. Also, low down, these areas are more susceptible to the action of rain water splash back, and subsequent frost attack to the more saturated masonry.



Fig 04 - Ha-Ha, showing a cavity which is half a brick width deep



Fig 05 - Ha-Ha, showing cavities and open joints



Fig 06 - Ha-Ha, eastern end

The Cascade

Description

- 6.9 The cascade is situated at the north end of the lake. What can be seen is a run of low brickwork wall, a brick thick (c.225mm) with a bullnose brick coping (having rounded edges to the top).

Observations

- 6.10 Much of the wall is hidden by vegetation. There are young, semi mature and mature trees growing on, or out of the Cascade wall which in time could lead to distortions and collapse. Hidden distortions and collapses are likely. It is assumed that there would have been an opening through, or on top of this structure connecting the lake with the outflow channel, but this is no longer evident. Many of the bullnose coping bricks visible have spalled/eroded as a result of frost action.



Fig 07 – Detail of the Cascade viewed from the lake side



Fig 08 - The Cascade viewed from the park. Note the presence of semi mature and mature trees on cascade wall

Eastern Gateway

Description

- 6.11 The Eastern Gateway was originally the main entrance off the road to the Flitwick Manor, and is located off the Dunstable Road, close to the River Flit, as shown on Fig 01. The track crosses over a dry ditch/watercourse here via an arch bridge/culvert. The bridge has London stock bricks forming the north and south abutments, with an arched opening to each side, presumably with a corresponding brick vault beyond (not seen).
- 6.12 A wrought iron railing parapet sits on top of the north and south abutments, and fixes into the pair of brickwork piers on the west side. These piers, square in plan, have a decorative recess panel on their outer/east side, and are topped with pyramidal sandstone caps. Both piers fix to remnants of the wrought iron gate sets. It is noted that trees growing close to these structures have recently been cut down to stumps.



Fig 09 - The eastern gateway

Observations

6.13 This structure is in very poor condition. It seems this is mostly due to the long-term damage caused by vegetation, and trees growing out of and close to the culvert and gate piers. Also, the railings and abutment on the north side appear to have been badly damaged by a recent vehicle collision. Significant structural issues noted were as follows:

- Vegetation, including ivy and self-seeding trees growing close to and out of the structures, leading to distortions.
- The north abutment has open joints and the upper courses of brickwork are collapsing/rotating outwards. There is an outward bulge on the east side adjacent to a large cavity which appears recent and was likely caused by vehicle impact damage. Bricks from this impact lie on the ground. The wrought iron railing above is distorted and corroded, noting the east end is in very poor condition.
- The south abutment has a large outward bulge, in addition to cracking and open joints.

- The north pier is in a state of collapse, and has rotated significantly. Inbuilt wrought iron ties etc associated with the abutment railings and main gate set have corroded with the resultant rust expansion pulling the brickwork apart. This has opened cracks and distortions.
- The south pier is in a state of collapse, and has rotated significantly. Inbuilt wrought iron ties etc associated with the abutment railings and main gate set have corroded with the resultant rust expansion pulling the brickwork apart. This has opened cracks and distortions and has in effect separated the top part of the pier from the lower. It is likely that the ivy propping this pier is preventing it from falling. **As such this is a dangerous structure.**
- The water course here is very silted up, with only the top of the arches visible either side. As a result, this ditch no longer free drains into the adjacent River Flit.



Fig 10 -The north side



Fig 11 - The north side



Fig 12 - The south side



Fig 13 - The south side

Culvert in the Woods

Description

- 6.14 This structure carries a track, originally the route from the east entrance of the park to the Manor House, across a ditch. The ditch, currently dry, connects the south end of Flitwater to the River Flit, as shown on Fig 01. This structure has been consolidated/repared relatively recently, with the upper courses of brickwork to the abutments either side having been recently rebuilt.



Fig 14 - The brick culvert in the woods



Fig 15 - The brick vaulted culvert

Observations

- 6.15 This structure has been repaired recently. The debris ought to be removed from the ditch either side. It was noted that within the culvert itself, just inside the entrance at either end, there are some small cavities in the brickwork and some open joints. It is recommended these be infilled in mortar and new brickwork.

7.0 Ecology

Background

- 7.1 Flitwick Manor Park consists of c. 22ha of land on the southern edge of the town of Flitwick. It includes parkland, a lake, marshy grassland, veteran and specimen trees and woodland. The site is on the Register of Historic Parks & Gardens, listed as Grade II. Lowland wood pasture and parkland is a National Priority habitat in the UK Biodiversity Action Plan.
- 7.2 The site consists of c. 7 ha of parkland containing a 1 ha lake (Flit Water) and an area of marshy grassland; c. 5 ha of mature woodland; and two fields containing further areas of semi-improved marshy grassland. The total area of marshy grassland is c. 7 ha.
- 7.3 A habitat survey was carried out in May 2022 and notes made below which are linked to See **Fig 7.1 Habitat Map** and to a series of observations and recommendations on management which follow.



Key

- Study Boundary
- semi-natural broadleaved woodland
- planted coniferous trees
- semi-improved acid grassland
- semi-improved neutral grassland
- improved grassland
- swamp
- standing water
- amenity grassland
- buildings
- bare ground
- scattered tree
- scattered scrub
- tree group
- target note

DRAFT



Date	Details	Revision
05/09/22	Revised Study Boundary.	-01

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Client **Flitwick Town Council**

Project **Flitwick Manor Park, Bedfordshire**

Title **Figure 7.1
Phase 1 Habitat Survey**

Scale **1:3,250 @ A3**

Date 05/09/22 Drawn JHD Checked CB

Reference FMPBPP22.17 Revision -01



7.4 Survey

1: Secondary woodland with some mature trees.

A mixed woodland consisting of Pedunculate oak (*Quercus robur*), Sycamore (*Acer pseudoplatanus*), Common lime (*Tilia x europaea*), Horse chestnut (*Aesculus hippocastanum*), Scots and Corsican pine (*Pinus nigra* var. *maritima*), Beech (*Fagus sylvatica*), birch sp. (*Betula sp.*), Norway maple (*Acer pseudoplatanus* and *A. platanoides*), Evergreen oak (*Quercus sp.*), Giant sequoia (*Sequoiadendron giganteum*), cedar sp. (*Cedrus sp.*), Norway spruce (*Picea abies*) and Douglas fir (*Pseudotsuga menziesii*). A double avenue of mature Sweet chestnut (*Castanea sativa*) runs along a ride near the northeast edge of the wood. Yew (*Taxus baccata*) dominates the understorey on the southwest side of the wood, with Rhododendron (*Rhododendron ponticum*) abundant in the southeast of the wood. Other species include Holly (*Ilex aquifolium*), Elm (*Ulmus sp.*), Elder (*Sambucus nigra*), Hawthorn (*Crataegus monogyna*), Field maple (*Acer campestre*), Spindle (*Eunonymus europaeus*), Box (*Buxus sempervirens*) and Lilac (*Syringa vulgaris*).

2: Individual Giant Sequoia trees.

3: Small marsh habitat in east corner of southern fields.

A small wet marsh consisting of soft rush (*Juncus effusus*), cuckooflower (*Cardamine pratensis*), lesser stitchwort (*Stellaria graminea*), hairy rush (*Carex hirta*), marsh thistle (*Cirsium palustre*) etc.

4: Damp rush area in middle of southwestern field.

Consisting of areas of mainly a soft rush and some cuckooflower,

5: Damp area in middle of southern field.

Areas of soft rush, hairy sedge, marsh foxtail (*Alopecurus geniculatus*), creeping buttercup (*Ranunculus repens*) and marsh horsetail (*Equisetum palustre*) are all present. Around the edges are small clumps and scatterings of small trees; mainly birch sp and alder (*Alnus glutinosa*).

6: Seasonal pond in southern field.

A small, dug-out pond, only just damp at the time of the survey. Nearby are large areas of bare peat containing occasional floating sweet grass (*Glyceria fluitans*).

7: Area of semi-improved acid/neutral grassland on ex-tennis court area.

An area of very short grassland with bare areas consisting of mainly extensive growth of field wood-rush (*Luzula campestris*) and interesting lichen communities on bare areas and where the tennis court used to exist (concrete still present).

8: Continuation of (1) above.

A mix of deciduous and conifer trees, some very mature with small glades and clearings with mown edges. Extensive growth of green alkanet (*Pentaglottis sempervirens*) and cow parsley (*Anthriscus sylvestris*) in open glades, clearings and edges.

9: Open parkland grassland with scattered trees and shrubs.

The grassland is most typical of an MG6-Lolium-Cynosurus community, being dominated by perennial rye-grass (*Lolium perenne*) with frequent meadow foxtail (*Alopecurus pratensis*). The grassland does not appear particularly diverse, the main species recorded including yarrow (*Achillea millefolium*), dovesfoot cranesbill (*Geranium molle*), dandelion (*Taraxacum vulgaris*), white and red clover (*Trifolium repens* and *T. pratense*), common and sticky mouse-ear (*Cerastium fontanum* and *C. glomeratum*), ribwort plantain (*Plantago lanceolata*), germander and thyme-leaved speedwell (*Veronica chamaedrys* and *V. serpyllifolia*), pignut (*Conopodium majus*), common sorrel (*Rumex acetosa*) and bulbous buttercup (*Ranunculus bulbosus*). Some areas of grassland are very coarse with frequent nettle (*Urtica dioica*), broad-leaved dock (*Rumex obtusifolius*) and creeping thistle (*Cirsium arvense*). Bluebell (*Hyacinthoides non-scripta*) is occasional and usually found beneath groups of mature trees. The trees present are dominated by pedunculate oak, horse chestnut (*Aesculus hippocastanum*) and common lime (*Tilia vulgaris*) with occasional Scots pine (*Pinus sylvestris*) and beech (*Fagus sylvatica*).

10: Common lime avenue to entrance of Flitwick Manor.**11: Northern 'pond'; head of Flit Water.**

An area of damp grassland amongst mature pedunculate oak, sycamore and lime. The area was only slightly wet/damp at the time of the survey. Some common reed (*Phragmites australis*) was recorded in the damper areas.

12: Area of rough grassland in eastern meadow.

Mainly comprising coarse tussocks of cock's foot (*Dactylis glomerata*) and false oat-grass (*Arrhenatherum elatius*) but interspersed with wetter areas of more interest (13) below.

13: Areas of wetter grassland in eastern meadow.

There are areas and mosaics of much wetter grassland in places and typical of an MG10-Holcus-Juncus rush pasture. The sward is dominated by soft rush (*Juncus effusus*), with a grassy sward between the rushes dominated by Yorkshire fog and creeping soft grass (*Holcus lanatus* and *H. mollis*) and finer grasses such as creeping bent (*Agrostis stolonifera*) and sweet vernal grass (*Anthoxanthum odoratum*). Herb species present include frequent cuckooflower (*Cardamine pratensis*), marsh thistle (*Cirsium palustre*), creeping buttercup (*Ranunculus repens*) and hairy sedge (*Carex hirta*), with occasional common sorrel, silverweed (*Potentilla*

anserina), carnation sedge (*Carex panicea*), bog stitchwort (*Stellaria alsine*), marsh horsetail (*Equisetum palustre*) and lesser stitchwort (*Stellaria graminea*).

14 and 15: 'Flit Water' – the main aquatic habitat in the site.

Flit Water is a shallow lake created by damming a stream and consists of a mixture of open water and mixed swamp vegetation; at the time of the current survey it was only slightly wet in places. It can become completely dry in the summer. Reed sweet grass (*Glyceria maxima*) dominates the southeast margin of the lake, while the northwest margin and northeast end of the lake contains a mix of species including reed sweet grass, greater pond sedge sp. (*Carex riparia*), reedmace (*Typha latifolia*), common reed (*Phragmites australis*), floating sweet grass (*Glyceria fluitans*), water pepper (*Persicaria hydropiper*), gipsywort (*Lycopus europaeus*) and celery-leaved buttercup (*Ranunculus sceleratus*). Soft rush dominates the southern half of the lake. The narrow inlet of the lake starts in the woodland to the southwest and is dominated by common reed swamp. Due to the condition of the lake no obvious aquatic vegetation was present in the lake apart from occasional water starwort (*Callitriche* sp.) though marsh cudweed (*Gnaphalium uliginosum*) and redshank (*Persicaria maculosa*) were present on the lake bed where drier. A group of alders (*Alnus glutinosa*) are present on an island near the inlet to the lake, with further alders and a single London plane (*Platanus x acerifolia*) on the dam at the northeast end of the lake.

16: An area of common reed at the south end of Flit Water.

Small but dense stand of common reed with small examples of alder and birch scrub.

17: Parkland trees scattered across the areas of parkland.

See (9) above. Mainly scattered, mature trees consisting of stands of pedunculate oak, horse chestnut and common lime.

18: Short grassland around Flitwick Manor.

Areas of very close-mown grassland lawns in the immediate vicinity of the Manor. Poor species diversity as very frequently mown.

19: Semi-improved neutral grassland in the two southern agricultural meadows.

Grasslands of relatively low diversity with species such as hairy sedge, marsh thistle, common sorrel (*Rumex acetosa*), lesser stitchwort (*Stellaria graminea*), marsh foxtail (*Alopecurus geniculatus*), creeping buttercup and marsh horsetail are all present at low frequencies.

20: Chalybeate ditch between the two southern meadows.

The chalybeate ditch dividing the two fields contains numerous downy birch (*Betula pubescens*) along it as well as occasional alder, hawthorn, holly and Scots pine. Emergent vegetation in the ditch includes abundant

branched bur-reed (*Sparganium erectum*), with soft and hard rush (*Juncus inflexus*), sweet grass sp., water figwort (*Scrophularia auriculata*), purple loosestrife and celery-leaved buttercup *Ranunculus sceleratus*), while the banks support occasional broom (*Cytisus scoparius*), bramble (*Rubus fruticosus*) and greater stitchwort (*Stellaria holostea*). Scattered trees of oak, crack willow (*Salix fragilis*), alder, sycamore, birch and Scots pine are present along the ditch and River Flit along the southwest and southeast edges of the southeast field. Common reed is abundant in the ditch along the northeast edge of this field.

Conservation management recommendations and observations (based on Phase 1 target notes on Fig 7.1)

- 7.5 The following observations on specific areas were made following the survey and are carried forward into Section 13.0 Management Approach and recommendations.

4. Small marsh habitat in east corner of southern fields.

Interesting area which needs conserving. Establish hydrology and ensure the area stays wet. Removal of some nearby alder, willow, and birch. Retain and enlarge existing structure and size with mosaics of tussocks, boggy/damp areas and create one or two small pools. Aim to extend marsh through damming and allow seasonal fluctuations in water levels. Creation of small scrapes and bare areas see hydrology Section 8.0.

5. Damp rush area in middle of southwestern field.

Retain area as is and keep open through removal of most trees and shrubs, leave one or two as habitat mosaics and song posts.

6. Damp area in middle of southern field.

Maintain current condition and assess hydrology to maintain as damp habitat. Removal of any new seedling trees and retain current alder and birch clumps but not allowing them to expand in area. Could try experimental light winter cutting of damp open areas every 3-4 years.

8. Area of semi-improved acid/neutral grassland on ex-tennis court area.

Maintain by mowing once per annum and removing arisings. Remove and scrub/trees that may be invading by hand-pulling. Encourage edge habitats and mosaics by leaving scrubby edge of short/long grasses and young scrub – cut/pollard this edge every 5-6 years to avoid over-mature scrub forming and causing loss of structure and diversity. Create small, bare, warm areas by scraping away vegetation to provide habitat for invertebrates.

9. Open parkland grassland with scattered trees and shrubs.

Forms the majority of the Park and is of high quality cultural and visual appearance. Several veteran oaks can be found in the centre of the parkland. Consider putting up owl (barn/tawny) and kestrel boxes on some mature trees.

The grassland habitats are variable being poor in species in some areas and slightly more varied in others, but none are outstanding biologically. It may be beneficial to introduce grazing by sheep/cattle in some areas which could be managed through the use of temporary or rotational fencing allowing access for varying lengths of time and density around the parkland grasslands. This however, is highly unlikely in view of the levels of public access, especially dog walkers, therefore examine the possibility of cutting some areas on a rotational basis and at varying heights to increase vegetation diversity. All arisings would need to be removed off site after cutting.

Some grassland areas could be scraped and reseeded with local, native species and managed appropriately to improve/encourage biodiversity, but many areas would probably benefit just from annual cutting with removal of arisings.

12. Area of rough grassland in eastern meadow.

Maintain as it is currently, with cutting on an occasional basis (every 2-3 years) to maintain the openness of the area and to prevent scrub and trees from invading. It may be beneficial to leave one or two areas uncut for 5-6 years to allow some scrub growth as this may encourage species such as grasshopper warbler; if they do breed then rotational cutting would ensure that there would always be areas of rough grass/scrub present.

13. Areas of wetter grassland in eastern meadow.

Maintain as mosaics of tussocky grassland and wetter areas through occasional cutting/disturbance of ground (during cutting) to ensure that the mix of habitats remain.

14. Flit Water (see also Hydrological recommendations)

This area is probably one of the most important on the site, from a biodiversity perspective. The main aim would be to keep the areas of water open and as a mosaic of habitats consisting of water and marsh with areas of reed, rush, and other marginal species around the edges. Although it is useful to have one or two small areas of scrub (for birds such as grasshopper and sedge warbler) and even one or two trees they should not be allowed to become too big or too extensive and threaten to dry up or overshadow the more fragile wetter areas.

Emergent plants from the open water and edges are good for emerging larval invertebrates and any native, flowering plants, should be encouraged. Any areas of reed or bulrush should be controlled as they will rapidly invade, dominate, and turn wetter areas into dry habitats – they should be pulled out by hand where possible on a regular basis.

18. Short grasslands around Flitwick Manor buildings.

Areas of very close-mown grassland lawns in the immediate vicinity of the Flitwick Manor Hotel. Open, mown areas can be useful for birds as feeding areas and for invertebrate and plant populations. Reduce, if possible the cutting frequency in specific areas or the cut height raised slightly as this will allow grasses and flowers to flower and set seed and is of benefit to pollinators and other invertebrate species.

8.0 Hydrology

8.1 Much has already been written about the environmental character and ecological status of Flitwick Manor Park and Flit Water. Many of the sources cited below provide supporting background information on the park, its lake and surrounding areas. Considering this, the primary objective in this section of the Park Management Plan is to present restoration options for Flit Water based on these past data sources together with more recent assessments of the site and the feasibility of restoring the lake towards its original state as an open water feature providing landscape, nature conservation and amenity services.

8.2 A preliminary desk study was undertaken for Flitwick Manor Park prior to site walkovers on Wednesday 27th and 28th April 2022. This desk study involved reviewing the following data sources:

- Flitwick Manor Park Wetland Survey and Management Proposals. Prepared on behalf of Flitwick Town Council by the Greensand Trust, May 2009, Philip Irving.
- Flitwick Manor Park Ecological Survey. Carried out on behalf of Flitwick Town Council by the Greensand Trust, July 2019
- Great Crested Newt Survey of Flit Water, Flitwick Manor, Bedfordshire. Carried out on behalf of Flitwick Town Council by the Greensand Trust, May 2012, Philip Irving.
- Flitwick Manor Park Management Plan 2018-2022. Prepared for Flitwick Town Council by the Greensand Trust, November 2018.
- Historic Parkland Project HP1 2020. Flitwick Manor Park RPG (LEN: 1000383). Landowner Report prepared for Flitwick Town Council.
- Maydencroft. Flitwick Manor Report February 2020. Greensand Country Landscape Partnership.

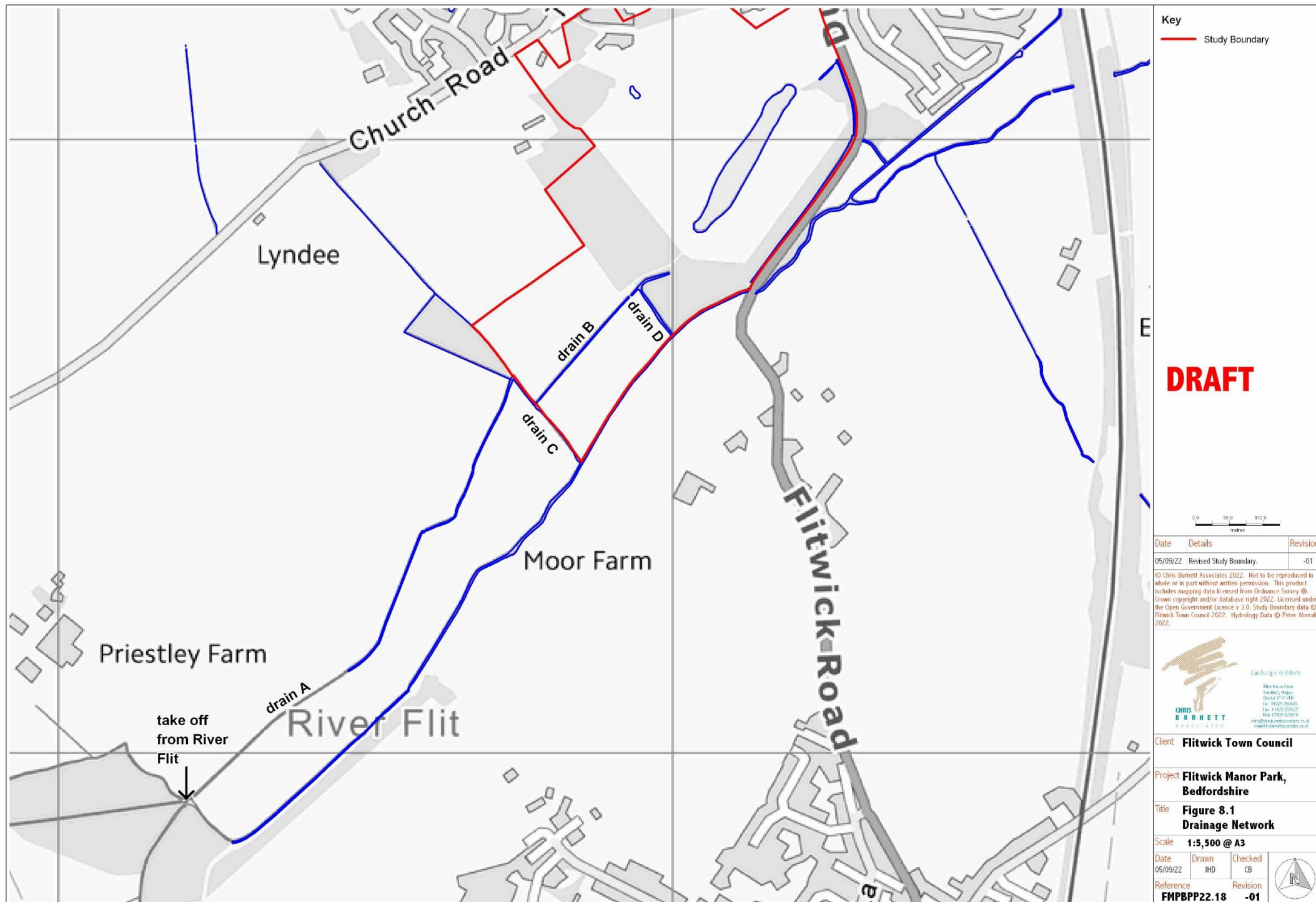
8.3 In addition, several other data sources related to the site were reviewed together with the modelling of relevant hydrological features, these included:

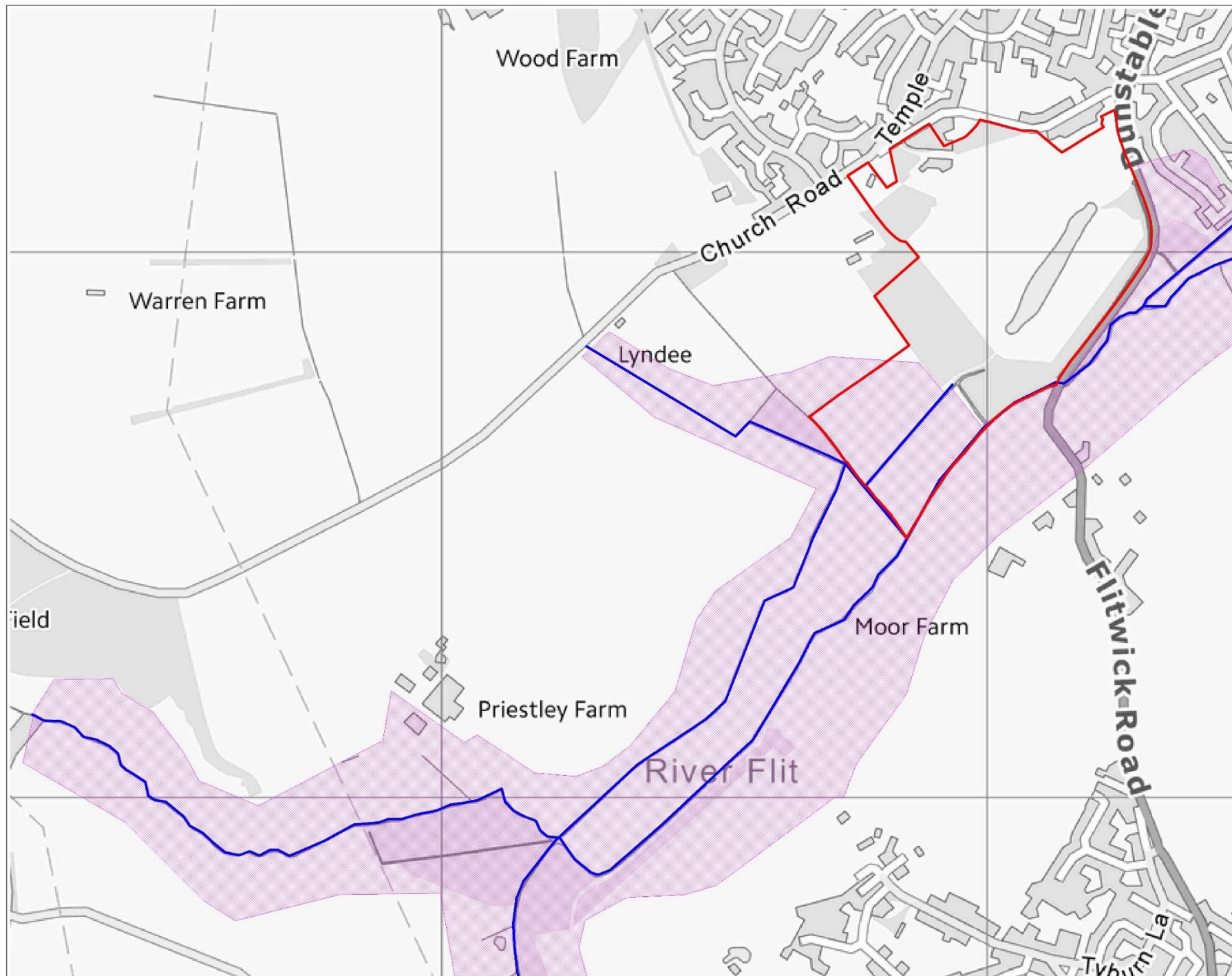
- The physical properties of major aquifers in England and Wales. Hydrogeology Group Technical Report WD/97/34, Environment Agency R&D, Publication 8.
- Environment Agency Monthly Situation Report, East of England, February 2022
- Internal Drainage Board Bedford Group, Board Area Map.
- my.SCIMAP – a web based tool which allows for the simple creation and export of sediment and water accumulation risk maps.
- Water Balance modelling for Flit Water. PAA 2022.

Hydrological and Geological Context of Flit Water

- 8.4 Flitwick Manor Park sits on the Woburn Sand Formation giving rise to free draining sand to sandy loam soils. However, Flit Water sits on alluvium deposits comprising clay, sand, silt and gravels and generating clay to sandy loam soils (British Geological Survey Geology and Soil Maps). Whether such soils and underlying deposits could support a lake without significant additional inputs of water is questionable. A water mass balance model of the lake, assuming an area of some 8,864m² and no seepage into the underlying substrates shows a neutral balance of rainfall inputs and evapotranspiration outputs (see Appendix A)⁴⁰.
- 8.5 However, the lake will lose some water through its base and even if it were a solid clay lining there could be at least an 11m³ loss per day to ground. If the lakebed were formed in clayey loam soils then the loss of water could be as much as 132m³ per day. Whatever the lake is formed in there would be a demand for supplementary water to sustain the levels and for the outlet cascade to have operated.
- 8.6 The archive for the lake provides no information about whether or not the lake was lined with a puddled clay, which was the case for many landscape lakes created during the 18th Century. However, it may be that the lake was constructed in a natural clay layer. Close to Flitwick Manor is Old Farm and a record in the British Geological Survey archive registers the site as having a borehole (now filled in). The farm lies some 12.5m above the level of the lake and the borehole data shows that at 10.3m down Ampthill blue clay was found, so the lake could well have been created within an in-situ clay strata.
- As a first requirement of any feasibility assessment of restoring the lake an investigation of how the lake was constructed would be critical.*
- 8.7 From the walkover survey there was no evidence that the lake is in receipt of spring water arising from the Woburn Sands formation, and that surface runoff from the rising land to the west would contribute little to the overall water balance of the lake. Therefore, the primary source of input to the lake are the drainage systems to the south-west of the park.
- 8.8 It appears that as water levels rise in the River Flit flow is taken off the river at a point south-east of Priestly Farm (see **Fig 8.1 Drainage Network**). This flow is then directed through the drainage network to Flit Water (via Drains A and B) where it would either return to the River Flit over the outlet cascade of the lake or be diverted away from the lake via Drain D. Responsibility for most of the drainage systems lies with the Bedfordshire and River Ivel Internal Drainage Board (see **Fig 8.2**). It is important to note that the IDB is responsible for the drain that feeds Flit Water (Drain B on Fig 8.1).

⁴⁰ ⁴⁰ Should the lake not be restored to its 'original' footprint and for example 20% of the lake area remained vegetated with wetland species then there would be a small additional evapotranspiration loss – please see Appendix A¹.





- Key**
- Study Boundary
 - arterial watercourses subject to Board's statutory and byelaw control

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Date	Details	Revision
05/09/22	Revised Study Boundary.	-01

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Client **Flitwick Town Council**

Project **Flitwick Manor Park, Bedfordshire**

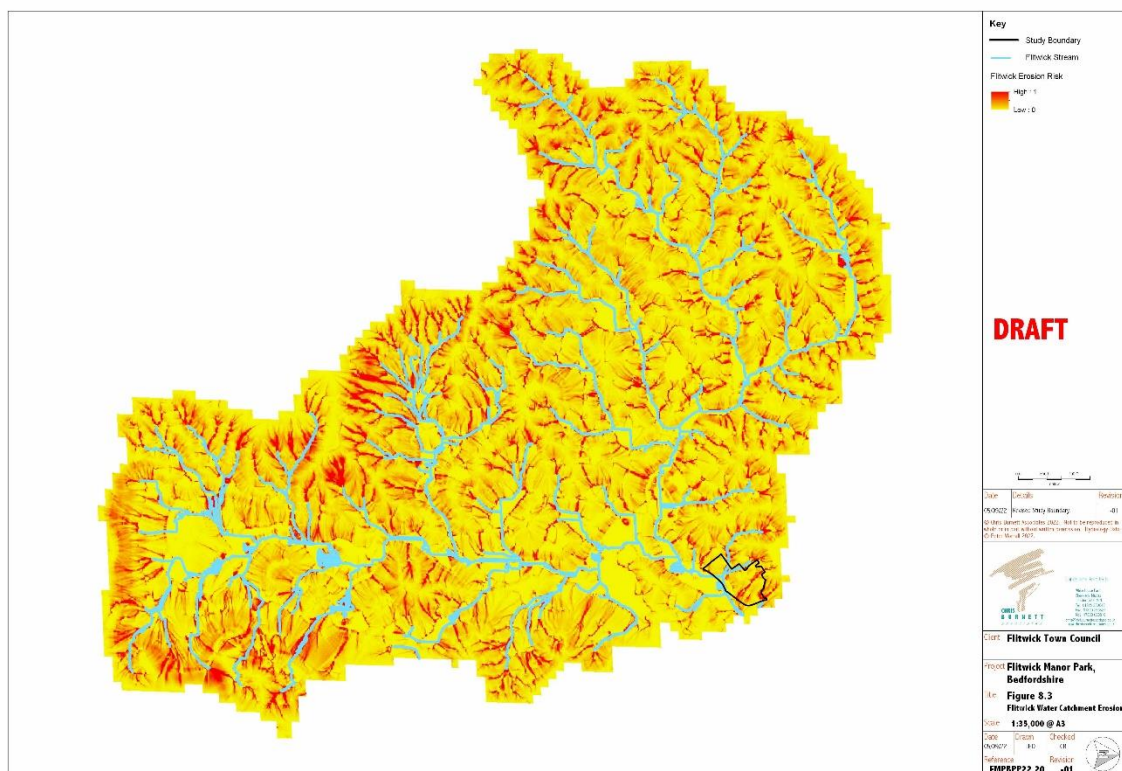
Title **Figure 8.2 Bedford & R. Ivel Internal Drainage Board**

Scale **1:6,700 @ A3**

Date	Drawn	Checked	Reference	Revision
05/09/22	JHD	CB		
FMPBP22.19				-01



- 8.9 From the walkover survey it is also apparent that supply of water to the lake seems compromised by the relative levels of the drains. The 1887 OS First Edition Map Fig .7, shows that the original system took water from the River Flit via drain A to Drain B where it entered the lake or was diverted via Drain D back into the River Flit. Today the situation appears that Drain B is stranded above Drain A and a 'new' drain (C) is taking the flow on a shorter route to the river, bypassing the feeder drain to the lake. Whether the more recent return drain (C) has accelerated the rates of flow to the river and therefore cut down the drain bed levels stranding Drain B from all but extreme flows or that the de-silting of Drain A and C has led to bed level lowering is hard to determine. Whichever is the case, the re-establishment of this supply of water to the lake may be a primary objective in the restoration of the lake.
- 8.10 At present the lake is silted up and vegetation has filled in the lake except for a few temporary small open water areas. Even if the lake's original system of guiding flow from upstream on the River Flit to the lake was re-established the problem of silt entering the lake would continue. The scale of this problem is illustrated using a simple computer model (my.SCIMAP) which takes land use data, topography and drainage networks to generate the areas of risk of sediment and channel erosion and it is apparent from running this model for Flit Water that the network of streams, rivers and drains in the catchment of the lake present a high risk of significant volumes of sediment runoff (see **Fig 8.3 Catchment Erosion**). Those areas marked in red on Figure 8.3 indicate where the potential for sediment runoff is highest and would suggest that desilting of Flit Water would only have a relatively short-lived impact on the restoration of an open water lake system without developing an approach to manage sediments before they enter the lake.



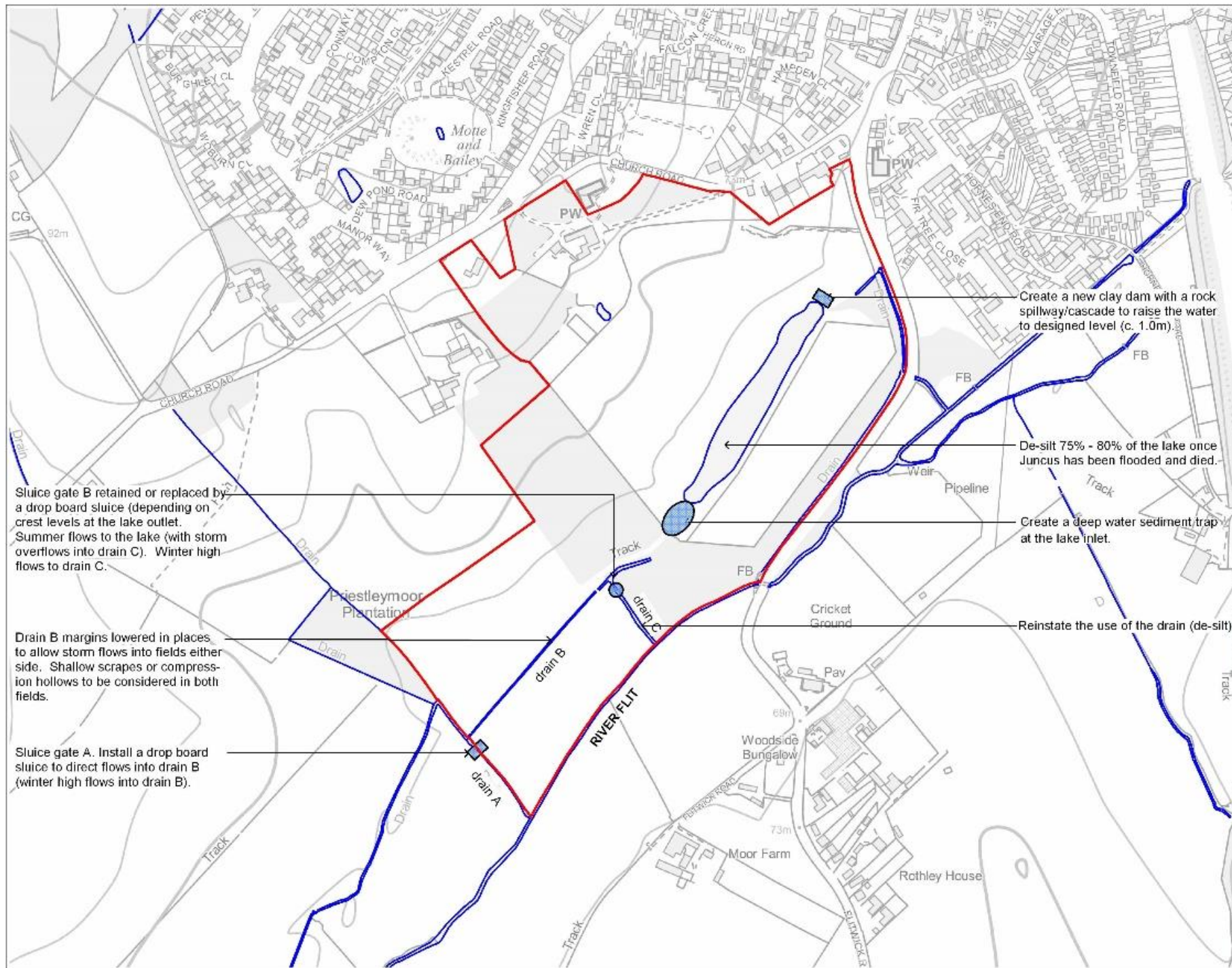
- 8.11 The management of sediment is therefore a fundamental consideration in developing a sustainable strategy for restoring Flit Water and there are two broad approaches that might be adopted. Firstly, to create a sediment trap within the park boundary which would need regular maintenance and management. A second and perhaps complementary approach would be to encourage land management change towards reducing soil loss and surface soil erosion within the catchment of the lake. Such an 'at source' approach could only be achieved through a strategic plan to encourage land managers upstream of Flitwick Manor Park to adopt techniques to limit sediment runoff. This could be driven through 'environmental payment schemes', possibly within the Government's developing Environmental Land Management Scheme (ELMS). However, such an approach is very much a long-term process and would require the Council to coordinate and support environmental land management across the whole catchment.

Internal Drainage Board and Topographic Survey

- 8.12 If restoration Option 1 is to be pursued consultation with the IDB would be a critical consideration. In this report we are assuming that there has been a disconnection between the drain which appears to feed Flit Water and the drainage network managed by the IDB to the south-west of the site. Information on how or why this might have happened has not been found but if our assumptions are correct that a relative new drain to the River Flit and/or continuous desilting operations have deepened the drainage network to the south-west then it would be necessary to consult with the IDB on whether there might be a joint resolution to this situation that would reinstate the linkage between the IDB drainage network and Flit Water. To further develop the details of restoration Option1 and support the IDB consultation process a topographic survey of Flit Water, its associated drainage features, structures and adjacent land would be highly recommended. Such a survey would enable the volumes of a restored lake to be estimated together with crest levels of water control features such as those identified in Option 1. Such data would be required by the IDB to evaluate the restoration proposals.

Biodiversity Net Gain

- 8.13 The previous ecology reports on the lake and its environs have emphasised the high biodiversity that is currently associated with the mosaic of habitats that the vegetated lake supports. Maintaining the current ecological status of the lake area would require significant management inputs given the rapid rate of plant succession that is occurring. Woodland is certainly encroaching from the south and this is altering not only the nature of habitat opportunities but also the water balance on the site and the continued existence of any open water habitats. From archaeological, historical and landscape perspectives there is a significant drive towards restoration of an open water lake and it would be appropriate to adopt a Biodiversity Net Gain appraisal of the current site against that which would evolve from the implementation of an Option 1 type restoration scheme. Given the habitat creation and restoration proposals embraced in Option 1 there would likely be a significant net gain in biodiversity by pursuing this option.



Key

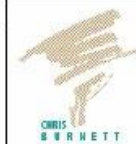
Study Boundary

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0 10 20 30 40

Date	Details	Revision
05/06/22	Revised: Study Boundary	01

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Client: **Flitwick Town Council**

Project: **Flitwick Manor Park, Bedfordshire**

Title: **Figure 3.4
Flitwick Water Restoration Options**

Scale: **1:4,321 @ A3**

Date: **06/06/22**

Drawn: **FD**

Checked: **CH**

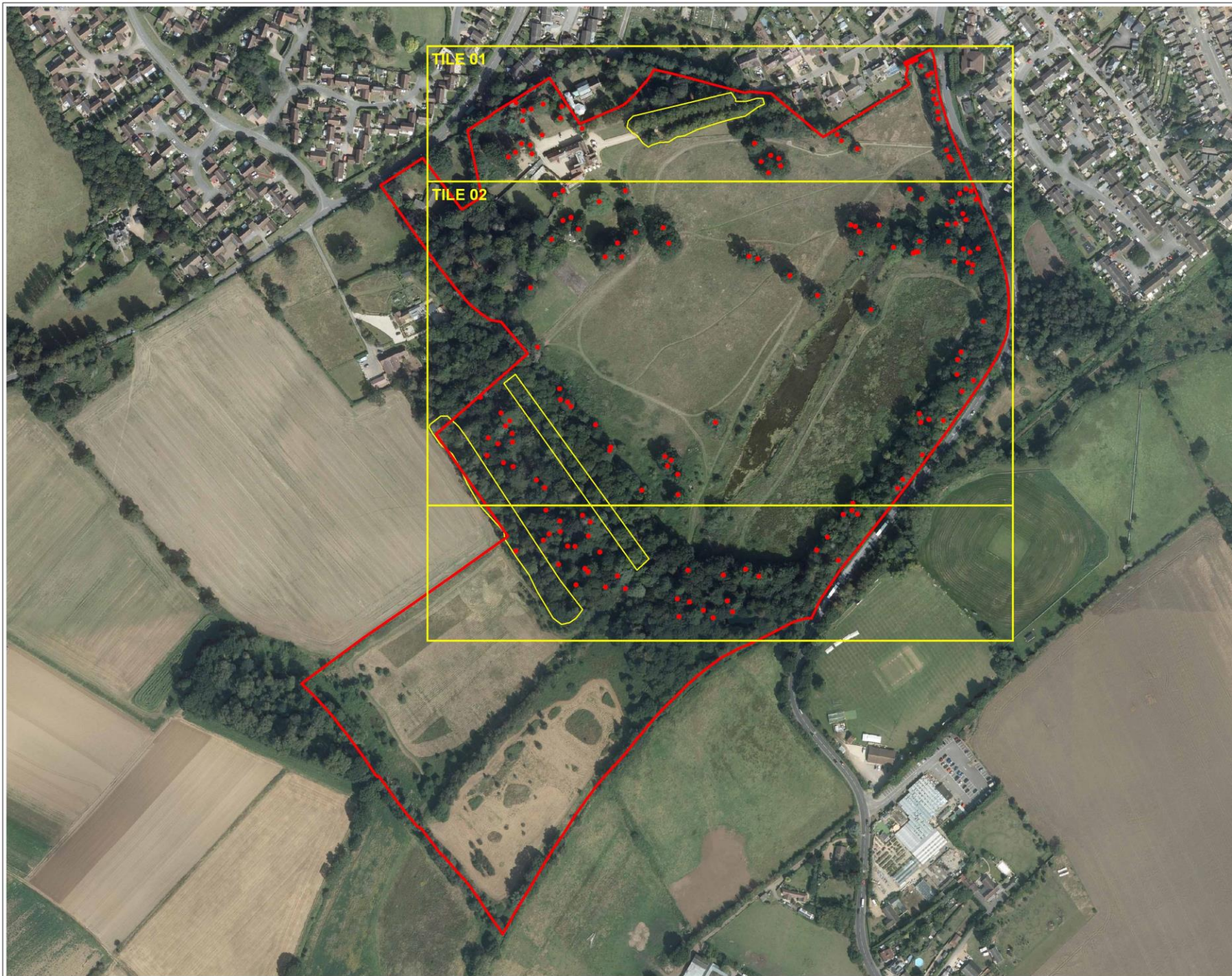
Reference: **FMPBPP22.03**

Revision: **-01**



9.0 Tree and Woodland Survey

- 9.1 The contribution made by trees both individually and as part of woodland, to the character of Flitwick Manor park is significant. Noted for its Arboretum established in the 19th century by J T. Brooks the park has some notable coniferous specimens.
- 9.2 A survey of historically significant trees was carried out as part of this study building on a town wide tree survey carried out by the MPL Tree Consultancy. The individual trees in the Arboretum were not surveyed by MPL however. The results of the tree survey are found in **Appendix 9A. Tree Survey** and on **Fig 9.1., 9.1a and 9.1b Tree survey plans.**



Key

- Study Boundary
- surveyed parkland tree
- tree group

DRAFT



Date	Details	Revision
05/09/22	Revised Study Boundary.	-01

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Client **Flitwick Town Council**

Project **Flitwick Manor Park, Bedfordshire**

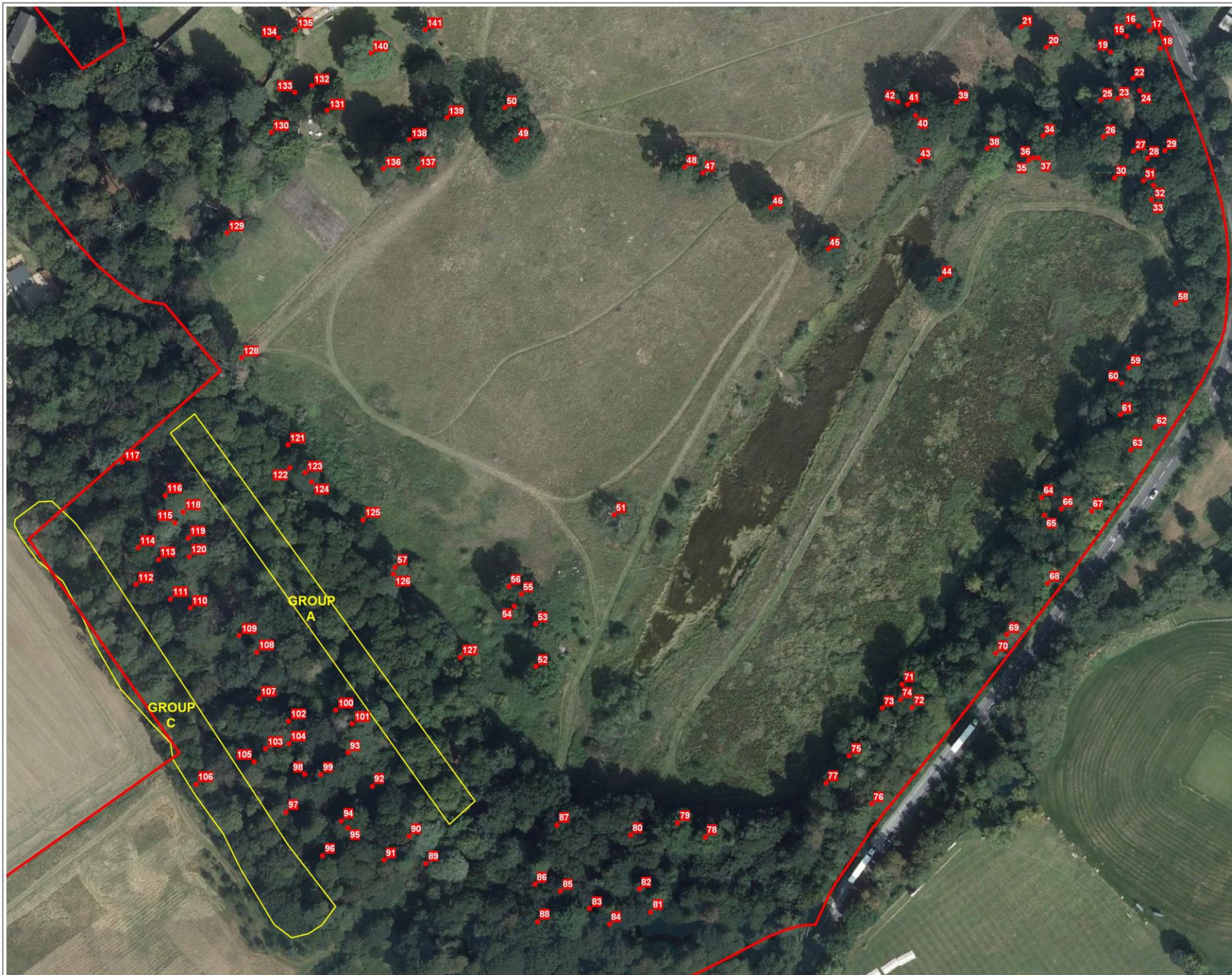
Title **Figure 9.1
Tree Survey: Tile Locator**

Scale **1:3,250 @ A3**

Date	Drawn	Checked
05/09/22	JHD	CB

Reference	Revision
FMPBPP22.04	-01





Key
Study Boundary
surveyed parkland tree
tree group

DRAFT

0 15 30
metres

Date	Details	Revision
05/09/22	Revised Study Boundary.	-01

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Client Flitwick Town Council

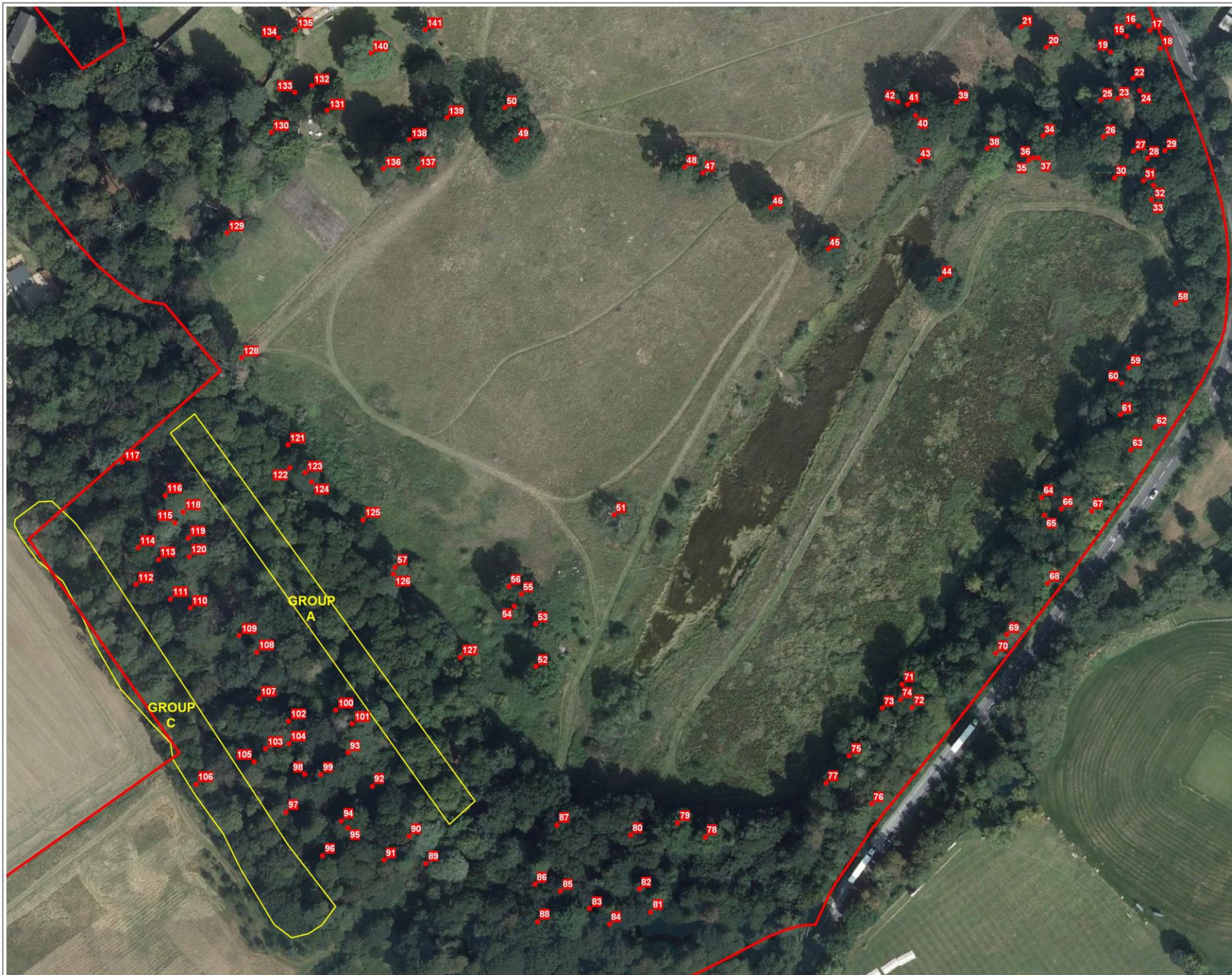
Project Flitwick Manor Park,
Bedfordshire

Title Figure 9.1b
Tree Survey: Tile 02

Scale 1:1,550 @ A3

Date	Drawn	Checked
05/09/22	JHD	CB

Reference	Revision
FMPBPP22.04b	-01



- Key**
- Study Boundary
 - surveyed parkland tree
 - tree group

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Date	Details	Revision
05/09/22	Revised Study Boundary.	-01

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Client Flitwick Town Council

Project Flitwick Manor Park,
Bedfordshire

Title Figure 9.1b
Tree Survey: Tile 02

Scale 1:1,550 @ A3

Date	Drawn	Checked
05/09/22	JHD	CB
Reference	Revision	
FMPBPP22.04b	-01	



- 9.3 Veteran Trees were also surveyed and identified using the Veteran Tree Specialist Survey Initiative (VTSSI) guidance which uses signs such as tree maturity or decay and key attributes such as crown loss, loose bark, rot and deadwood etc. to identify veteran trees. This is an important distinction because Flitwick Manor Park contains a number of ancient trees which, on visual inspection, appear to be in good condition but are not yet in the senescent or over mature phase at the present time. Such trees may, however, become classified as veteran trees in the fullness of time as they decay and senesce naturally. Trees that fell into the Veteran Tree Category were identified in a separate appendix, **Appendix 9B Veteran Tree Survey** with accompanying photograph.
- 9.4 The VTSSI states: *'Veteran status is associated with late maturity. However, trees of different species approach late maturity at different ages. Although there is no precise definition of veteran status for the purposes of field work, knowledge of species longevity, size typically associated with old age and local conditions affecting tree growth contributes to the recognition of veteran trees in the field. Their special quality in the landscape is reflected in the view that these trees "are of interest biologically, aesthetically, or culturally because of their age" Apart from obvious veteran candidates of massive scale and known antiquity, the surveyor is often likely to encounter uncertainty in the field as to the veteran status of certain trees. In such instances, reference should be made to the range of veteran attributes indicating habitat and associated flora and fauna addressed on the recording form, rather than tree size alone.'*
- 9.5 Significant and ancient trees and those trees exhibiting signs of decay or disease which were identified as part of the original survey were then subsequently surveyed in more detail by Arboricultural Consultants Barton Hyett as part of a detailed tree assessment. The results of this survey are contained in **Appendix 9C Detailed tree assessment**. Barton Hyett also made recommendations, as necessary, for subsequent management of specific trees which are carried forward to the Schedule of Works.

Tree planting phases

- 9.6 Trees were categorized into estimated age categories as part of the tree survey. The categories are as follows
- A = 1930-2022;
B = 1860-1930;
C = 1800-1860;
D = 1700-1800;
E = Pre 1700

Four main phases of tree planting emerge from these categories:

Phase 1 (which includes Categories D and E). Trees in this phase are largely confined to the ancient and veteran oak trees in the parkland and may predate the park as they probably relate to old field boundaries

Phase 2 (this includes Category C). This is the most significant phase in the development of Flitwick Park as it embraces all the mature trees, especially, but not exclusively, conifers that were planted in the arboretum and pinetum by J T Brooks between 1816 and his death in 1858.

Phase 3 (this includes Category B). This is a subsequent phase of tree planting originating during the ownership of JH Brooks and his wife from 1858 to 1934 and includes those trees planted in the belt on the southern boundary of the park adjacent to the A 5120 Flitwick to Westoning Road.

Phase 4 (this includes category A) This includes all remaining trees which have been planted by a variety of owners , including the Town Council , to the present day.

9.7 Examples of trees from these various phases are illustrated below.



- 9.8 This is an example, a veteran oak tree (*Quercus robur*) (Tree No 45) from the first phase of the history of Flitwick park, **Phase 1**, and is probably an old hedgerow tree.



- 9.9 This is an example, a Monterey pine (*Pinus radiata*), (Tree No 106) from the second phase of development of, **Phase 2**, of the park and is one of many exotic conifers probably planted by JT Brooks between 1816 and 1858 as he developed the arboretum.



- 9.10 This is an example of planting from the third phase of development of, **Phase 3**, of the park and consists of a series of broadleaves and conifers, notably Scot's Pine which have been planted as a perimeter belt which encloses the park along the Westoning road.

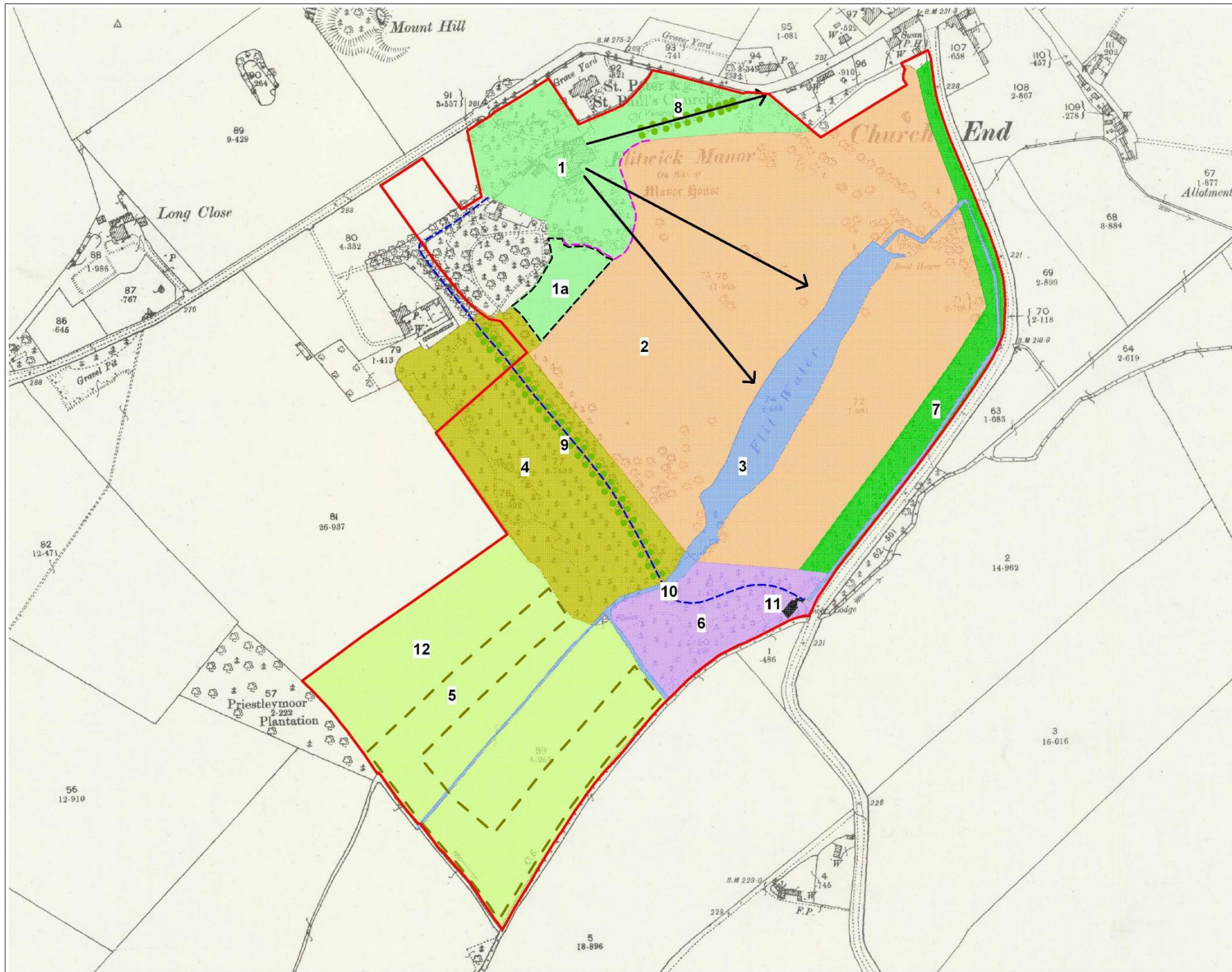
Woodland

The arboretum and the perimeter roadside belt has now developed into woodland and this is the subject of a Small Woodland Management Plan , which incorporates proposals for restoring the Arboretum, which currently in preparation and which will be set out in **Appendix 9D (IN PROGRESS)** The findings of this will also be carried forwards into a Schedule of Works.

10.0 Landscape Design Evaluation and analysis

Introduction

- 10.1 The historic landscape of Flitwick has changed considerably since it was conceived by John Thomas Brooks in the mid 19thC. but the structure of the designed layout remains largely intact. There is little doubt that the JT Brooks phase of development was the key phase in the development of Flitwick Park and a significant number of features remain today. This section summarized the key changes that have occurred over that time, noting the features and elements that survive and those that have been lost. Key views are also described. The main historic elements and features are set out on **Fig 10.1 Landscape Design and Evaluation.**



- Key**
- Study Boundary
 - 1/1a - House & Garden
 - 2 - Parkland
 - 3 - Flit Water
 - 4 - Arboretum
 - 5 - Pinetum (lost)
 - 6 - Evergreen Drive
 - 7 - Perimeter Belt
 - 8 - Avenue (Lime)
 - 9 - Avenue (Sw. Chestnut)
 - 10 - Historic Drive
 - 11 - South Lodge & Gate
 - 12 - Meadows
 - Ha-ha
 - Principal View

DRAFT

0 32.5 65.0
metres

Date	Details	Revision

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Client	Flitwick Town Council		
Project	Flitwick Manor Park, Bedfordshire		
Title	Figure 10.1 Landscape Design & Evaluation		
Scale	1:3,250 @ A3		
Date	05/09/22	Drawn	JHD
		Checked	CB
Reference	FMPBPP22.22		



1) House and Grounds

10.2 The House occupies an elevated location on higher ground overlooking the park. The gardens occupy broadly the same extent as they did in the mid 19thC and are contained by a sinuous ha-ha along the southern perimeter. A small westerly extension has been added however, **1a** on Fig 10.1 associated with the development of a tennis court. The historic access route from South Lodge (10) is also not operational as the farmhouse is now in private ownership. Access to the house can now only be obtained from the east.

10.3 **Views.** There is little doubt that key views of the lake, Flit Water, would have been a central feature of the property at the time, not only from the house but from a walk shown on Fig 4.5 above the ha-ha and on sketches of the time Fig 4.9. Trees and vegetation have now grown up in the interim and the view of the lake has now been obscured as the view today (below) illustrates.



2) Parkland

10.4 The parkland also occupies much the same area as it did in the mid 18th and consists of grassland with parkland trees.

10.5 Subtle changes are occurring today. The edge against the arboretum is much less crisp and has developed into an uneven area of rank, unmanaged grassland and tall herbs. The field to the southwest of the lake has now developed into a more marshy field dominated by soft rush as a result of poor drainage. However, those

parkland trees that existed at the time, principally oaks, also appear today as they did then, as relicts of previous field boundaries. A number have been lost however in the south west corner of the park and some of conifers shown on the eastern margins of the Arboretum (Fig 4.10) have also been lost. No new trees have been planted since then with a few notable exceptions and there are clumps of naturally regenerating oak.

3) Flit water

- 10.6 The biggest change in Flit water since it was conceived is the change from an open water body to one that is almost entirely silted up and vegetated. The reasons that lie behind this transformation have been described in Section 8 but, aesthetically, there is no doubt that the appeal of the park has been diminished by this transformation. Naturally regenerating trees, mainly oak and alder are becoming established on the margins and a semi mature plane tree has become established on the cascade. The island noted on the 1838 map (Fig 4.5) and the accompanying sketches, has been lost.

4) Arboretum

- 10.7 This was the centre piece of John Brooks' design and was laid out with a mixture of exotic conifers, broadleaves, orchard trees and a fruit garden. With the exception of the exotic conifers, many of which remain today and also a few mature broadleaves, the orchard, shrubs and fruit garden have all disappeared. **Fig 10.2** shows the approximate position of the principal surviving trees of the arboretum today which are a variety of mature conifers including Monterey pine, Western Yellow pine and Atlas cedar. The area has now developed into dense, unmanaged secondary woodland with dense patches naturally regenerating sycamore and ash dominant at various stages of maturity. The grass sward that would have prevailed at the time of establishment has been replaced with dense carpet of green alkanet and bramble over much of the woodland floor. A dense stand of yew and Scot's pine, younger than the original arboretum trees, populate the western margin and interestingly this appears to be separate from the main body of the Arboretum in the first edition 6 inch OS plan Fig 4.10. This planting may be designed to improve the shelter and reduce exposure for the main Arboretum. A double line of mature sweet chestnut marks the line of the old drive to the house and runs through the centre of the arboretum and a circular unsurfaced walk allows visitors to navigate through it.



- | | | | |
|---------------------|---------------------------------|-------------------------|---------------------------------|
| 78 Deodar Cedar | <i>Cedrus deodara</i> | 100 Black Pine | <i>Pinus nigra</i> |
| 79 Deodar Cedar | <i>Cedrus deodara</i> | 101 Douglas Fir | <i>Pseudotsuga menziesii</i> |
| 80 Douglas Fir | <i>Pseudotsuga menziesii</i> | 102 Black Pine | <i>Pinus nigra</i> |
| 81 Giant Sequoia | <i>Sequoiadendron giganteum</i> | 103 Black Pine | <i>Pinus nigra</i> |
| 82 Incense Cedar | <i>Calocedrus decurrens</i> | 104 Plane | <i>Platanus x hispanica</i> |
| 83 Incense Cedar | <i>Calocedrus decurrens</i> | 105 Black Pine | <i>Pinus nigra</i> |
| 84 Sitka Spruce | <i>Picea sitchensis</i> | 106 Monterey Pine | <i>Pinus radiata</i> |
| 85 Sitka Spruce | <i>Picea sitchensis</i> | 107 Maple | <i>Acer campestre</i> |
| 86 Deodar Cedar | <i>Cedrus deodara</i> | 108 Black Pine | <i>Pinus nigra</i> |
| 87 Giant Sequoia | <i>Sequoiadendron giganteum</i> | 109 Sitka Spruce | <i>Picea sitchensis</i> |
| 88 Oak | <i>Quercus robur</i> | 110 Black Pine | <i>Pinus nigra</i> |
| 89 Blue Atlas Cedar | <i>Cedrus atlantica Glauca</i> | 111 Black Pine | <i>Pinus nigra</i> |
| 90 Blue Atlas Cedar | <i>Cedrus atlantica Glauca</i> | 112 Douglas Fir | <i>Pseudotsuga menziesii</i> |
| 91 Coast Redwood | <i>Sequoia sempervirens</i> | 113 Oak sp. | <i>Quercus sp.</i> |
| 92 Cedar of Lebanon | <i>Cedrus libani</i> | 114 Deodar Cedar | <i>Cedrus deodara</i> |
| 93 Cedar of Lebanon | <i>Cedrus libani</i> | 115 Silver Fir | <i>Abies alba</i> |
| 94 Black Pine | <i>Pinus nigra</i> | 116 Maritime Pine | <i>Pinus pinaster</i> |
| 95 Evergreen Oak | <i>Quercus ilex</i> | 117 Western Yellow Pine | <i>Pinus ponderosa</i> |
| 96 Black Pine | <i>Pinus nigra</i> | 118 Oriental Spruce | <i>Picea orientalis</i> |
| 97 Scots Pine | <i>Pinus sylvestris</i> | 119 Giant Sequoia | <i>Sequoiadendron giganteum</i> |
| 98 Fir sp. | <i>Abies sp.</i> | 120 Douglas Fir | <i>Pseudotsuga menziesii</i> |
| 99 Red Oak | <i>Quercus rubra</i> | 121 Scots Pine | <i>Pinus sylvestris</i> |
| | | 122 Scots Pine | <i>Pinus sylvestris</i> |
| | | 123 Scots Pine | <i>Pinus sylvestris</i> |
| | | 124 Beech | <i>Fagus sylvatica</i> |
| | | 125 Scots Pine | <i>Pinus sylvestris</i> |
| | | 126 Scots Pine | <i>Pinus sylvestris</i> |
| | | 127 Horse Chestnut | <i>Aesculus hippocastanum</i> |

Key
Study Boundary

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0 0 0 0 0 0
metres

Date	Details	Revision
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Client **Flitwick Town Council**

Project **Flitwick Manor Park, Bedfordshire**

Title **Figure 10.2 Surviving Arboretum Trees**

Scale **1:900 @ A3**

Date	Drawn	Checked	
05/09/22	JHD	CB	
Reference	Revision		
FMPBPP22.21			

5) Pinetum

- 10.8 This feature has now disappeared and is no longer traceable. This was all laid out as zoned tree planting areas based on species. Willow near the stream which fed the lake, and other zones as shown on the Brooks map Fig 4.4. It is probable that the ground conditions, wet land exacerbated by a layer of peat close to the surface, were not conducive to tree growth. The area is now pasture with rushes and grazed by cattle.

6) Evergreen Drive

- 10.9 Interestingly, this feature is more intact than other areas with a selection of original arboretum trees remaining such as Incense Cedar, Blue Atlas cedar and Giant Sequoia but dense patches of naturally regenerating holly and sycamore close in on the route of the drive and detract from these large exotic conifers. These trees are likely to have been planted to embellish the approach drive from Lower Lodge. Natural regeneration of sycamore however, at various stages of maturity is also diluting the impact and character of this feature of Flitwick Manor park.

7) Perimeter belt

- 10.10 A narrow belt of mixed woodland that runs adjacent to the Westoning road survives intact. The trees in this belt of woodland appear to be much younger than the principal trees in the main body of the arboretum. It was identified by JT Brooks on the 1838 plan, Fig 4.4 but it is without a number so its design intent is speculative. It does have a walk running through the centre of it, however. The woodland belt is dense with a mixture of broadleaves and conifers, principally Scot's Pine, and abundant stands of holly as understorey. Today it performs an important function in enclosing the park and screening the road.

8) Lime avenue

- 10.11 This feature remains intact as single avenue of mature limes marked on the 1838 plan as number 45: Board Walk and Lime Avenue. The avenue is in good condition and frames the view of the house successfully from the main entrance gates. See photo below.



9) Sweet chestnut avenue

- 10.12 Once again this feature has survived the changes to the property over time although the drive from Lower Lodge which it flanks, has fallen into disrepair. It is generally in good condition.

10) Drive from Lower Lodge

- 10.13 The drive from Lower Lodge, through 6 Evergreen Drive, was previously the route of a public road before it was successfully diverted by John Brookes in 1829. The route is still traceable as an earthwork (see photo below) although the surface has long since disappeared. Significantly, there are no regenerating trees which have been allowed to develop on the line of the drive.

**11) Lower Lodge**

- 10.14 The Lodge that existed to mark the entrance to the park via Lower Lodge Drive has long since gone. Exact dates for its demolition are unclear but it was demolished some time after the second world war. The gates, and gate pillars, that mark the drive's entrance have been subject to a detailed assessment in Section 6 and survive but are in poor condition.

12) Agricultural grassland

- 10.15 This was agricultural land into which the Pinetum was planted. This feature failed but the environment into which it was planted remains now as it was then, a simple field of grassland grazed in all probability with cattle.

Walks

- 10.16 There are numerous walks shown on the sketch plan of 1838 many of them circular in origin. Most of them have been lost but a few remain today, the most notable of which is the circular walk inside the arboretum. The route of the Lower Drive from entrance through arboretum also remains but it has been truncated abruptly by an ownership change. The spirit of exploration of the park through circular walks has been replicated to some extent by some of the new walks in the parkland and fields which have been established in modern times although many are not formally surfaced.

11.0 Significance

- 11.1 Flitwick Manor Park is recognised as of national significance as an historical landscape. It has been added to the Register of Historic Parks and Gardens and is listed Grade II. This recognises its value as a coherent remnant of a larger estate landscape which survives and the very specific contribution of J T Brooks and his family to horticultural practice in the first half of the 19th century, one which combined science with recreation and pleasure and furthermore one which has exceptional documentation for its key period of development. The listing further recognises the significance of the whole site that, although in split ownership vis a vis the Manor House, park and associated land, work together as unit allowing Flitwick's story to be understood.

Introduction

- 11.2 Decisions on significance are based upon both statutory designation and professional judgement, tested against four broad values set out in Historic England's Conservation Principles. These are:

Evidential value: Evidential value derives from the potential of a place to yield evidence about past human activity. It includes physical remains, above and below ground (archaeology) as well as geology, landform, species and habitats. Evidential value relates to the potential to contribute to people's understanding of the past.

Historical value: Historical value derives from the ways in which past people, events and aspects of life can be connected through a place to the present. It tends to be illustrative (visual) or associative.

Aesthetic value: This is related to quality of design, innovation, influence, role of architects, artists and craft workers; essentially, design in accordance with landscape theories, materials and planting and form.

Communal value: Communal value derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory.

Levels of significance have been assessed and attributed to discrete aspects of the Flitwick estate. The approach to this Statement of Significance, as well as the definition of these levels, are derived from Semple Kerr's 'The Conservation Plan' and are categorised as follows:

The level of a heritage asset's significance can be assessed using a hierarchy:

- A: Exceptional (international)
- B: Considerable (national/regional)
- C: Some (local/county)
- D: Little or neutral
- E: Intrusive/damaging or negative

Evidential Value

- 11.3 The elements of the original estate landscape managed by Flitwick Town Council, namely the inner park centred on the mid-18th century sinuous Flit Water in the middle ground, the experimental arboretum, woodlands, avenues of trees and former site of the pinetum developed in the early 19th century, are contiguous with the surviving garden features around the manor house and linked to the now detached areas of Mount Hill and Flitwick Wood, managed separately, give Flitwick Manor Park **considerable value** in terms of significance as a designed landscape area within the settlement of Flitwick. Evidence is provided by 2 key documents: the Flitwick House and Gardens manuscript⁴¹ and the botanical record of the plants in Hortus Botanicus Flitwickensis.

Historical Value

- 11.4 Whilst estate landscapes from late 18th century and early 19th century that exhibit a variety of related component parts are not uncommon; Flitwick has particular significance because alongside the elements that survive is detailed contemporary documentation by the J T Brooks and his daughter. This documentation is exceptional in its own right but also is a source upon which the general principles of any restoration scheme can be based. When J T Brooks owned the estate, it paralleled a period of huge experimentation in planting an arboretum, ornamental woodlands and gardens spurred by new interest in tree and planting collecting by the amateur alongside systematic approaches to growing and recording plants. J T Brooks made it his mission to discover these and apply them to his gardening.
- 11.5 Flitwick was also fortunate to be located near Woburn, where the head gardener in the early 19th century, Alexander Forbes, was a pioneer in his own right in systematic planting and indeed wrote two publications on which Brooks possibly modelled his own botanical records. Furthermore, Brooks knew Hooker, Loudon and Paxton suggesting his own personal status as a gardener was exceptional in his own time. His work was particularly praised by Loudon. These connections add to the **exceptional** historical significance of Flitwick as a site of horticultural importance.

Aesthetic Value

- 11.6 The poor condition of the surviving elements of the woodland elements of Flitwick Manor Park and similarly poor condition and loss of form of Flit Water, its associated dam and cascade and that the original area of the Pinetum west of the site, now managed as meadow is divorced from the main park area have compromised the current aesthetic value of the area as a coherent landscape. However, the structure of all these elements are still legible and could be restored to form a more unified whole. Whilst the potential is exceptional its current aesthetic state is judged to be **low**.

⁴¹ Bedfordshire Record Office LL/17/284

Communal Value

- 11.7 Flitwick Manor Park is a well-used and valued resource by the local community helped by its proximity to dense areas of residential settlement. Additionally, it is part of the Flit Valley and Greensand Ridge networks of walks. the path network are poorly surfaced at points and there is little in the way of interpretation. Although the park can be accessed at two points only one of them is signposted at the moment. Communal value is judged to be **considerable** but capable of improvement.

12.0 Issues

- 12.1 This section deals with some of the issues that have emerged from the survey and evaluation work that has been undertaken as part of this study. Identification of these issues links the survey and analysis phases and helps to establish the Management Approach and recommendations outlined in Section 13.0. and ensures that those assets in need of conservation, repair or enhancement are prioritized accordingly

Woodland, trees and arboretum

- 12.2 There is little age variation in the parkland trees with most in mature or veteran category with young cohort being supplied by natural regeneration of oaks.
- 12.3 There has been little in the way of positive woodland management in recent years such that the Arboretum is being swamped by natural regeneration of trees and shrubs which are obscuring some of the fine specimens of exotic conifer planted by JT Brooks
- 12.4 The grass sward typically a feature of Arboretums has been replaced by woodland groundflora and patches of bramble
- 12.5 Many of the historic species planted by JT Brooks have been lost as has the Pinetum.
- 12.6 The principal constraint in any new woodland planting is that there must be sufficient light reaching the woodland floor otherwise any new planting is in danger of failing to produce vigorous specimens

Views

- 12.7 The principal views of the lake from the House have been lost, apart from the Lime avenue view, primarily due to Natural Regeneration of trees and shrubs along the ha- ha. Views of the house are still obtained however from the park.

Hydrology and Pools

- 12.8 The lake has completely silted up and vegetated over. The water supply is non existent and recent drainage works have ensured that loss of supply is likely to be permanent without future restoration work. Most of the interconnecting ditches are clogged with vegetation.

Buildings and structures

- 12.9 Most of the buildings and structures are in a state of disrepair or neglect. This includes the lake cascade, the ha-ha and gate pillars and gate at Lower Lodge.

Grassland

- 12.10 The parkland grassland is cut once annually but there is difficulty in identifying suitable contractors who will undertake this task, especially in the context of a rising population of ragwort. The grassland has a rank unmanaged quality as a result and the extensive rabbit population frequently disturbs the ground. There might also be a conflict between dog walkers and cattle in terms of any future management proposals.

Access and interpretation

- 12.11 Paths are often poorly surfaced or showing signs of erosion. The ramped path into the Arboretum is too steep to be safely used by all. The interpretation provision across the site is limited and there is no digital provision. Waymarking and tree identification in the Arboretum could be improved.

13.0 Management Approach

Introduction

- 13.1 One of the primary objectives of this Parkland Management Plan is to establish sound foundations for future management that will ensure that the resources, themes and features discovered as part of this survey can be protected, conserved and enhanced for the benefit of future generations. Although the conservation philosophy acknowledges the importance of one phase in the development of the landscape at Flitwick in particular, the JT Brooks Phase, there is an acceptance that all phases are relevant including its latest manifestation as a local public park.

Conservation philosophy

The philosophy that guides the restoration, conservation and management of the landscape at Flitwick should be focussed on the outstanding contribution made by John Thomas Brooks whose work in laying out the gardens and arboretum is chronicled in detail in Hortus Botanicus Flitwickensis and on his 1838 sketch map. Principal elements of his scheme survive today notably:

- ***The House and Gardens including lime avenue***
- ***Arboretum***
- ***Lake***
- ***Parkland***

J T Brooks phase of landscape development has been identified as the most significant of all phases of development at Flitwick and although the aesthetic value has been compromised over time due, primarily, to a decline in management resources, there is no reason to suggest that this landscape could not be restored in part or in full given the necessary funds and resources.

The Management Approach and recommendations set out below, however, offers a balanced approach to restoration acknowledging the existing ecological and communal value of the site and the split responsibilities of shared ownership.

Management Approach: Arboretum and Evergreen drive

- 13.2 **Objectives:** Improve legibility of arboretum, ensure long term survival of this significant historic feature, improve access, connectivity and interpretation.

The principal structure of an Arboretum allows mature specimen trees planted at wide spacing to stand in a uniform sward with maximum visibility. This should be the overarching principle guiding the restoration of the Arboretum rather than the restoration to mixed woodland with shrub and understorey layers. The sward in this case can be replicated to some extent by green alkanet but substantial clearance of sycamore and bramble and woody shrubs should be a priority in the core area. Replanting of exotic specimens should also occur where sufficient light permits and consideration should be given to replanting the eastern margin and evergreen drive with exotic conifers. The Pinetum, now lost due to poor ground conditions should be referred to in interpretation.

Photographs 1 -8 below highlight some of the ongoing issues and potential solutions and Fig 13.1 illustrates the principal proposals and features.

The approach to managing and restoring the arboretum should focus on:

- 1) Enhance the visibility of significant trees on Fig 10.2 by undertaking extensive thinning work to remove most of the naturally regenerating and mature sycamores together with the shrub layer of elder and hawthorn. In this way the visibility of the existing mature trees would be increased and the permeability would improve markedly. All trees should be tagged and named.
- 2) Large areas or glades consisting of mature or semi mature and young sycamore, ash and elder should be clear felled to produce areas with sufficient light to promote sustainable tree growth. Any dead trees should be cut down and removed. New arboretum trees, based on existing species recorded on Fig 10.2 and / or the list of genus found in Hortus Botanicus Flitwickensis. should be planted in these areas at wide spacing (8.0m) + and protected against browsing damage by deer
- 3) Urgent Consideration should be given to improving the parkland / arboretum interface by firstly levelling the ground on the parkland side and re-establishing a grass sward then crown raising the existing mature trees along the eastern fringe of the Arboretum and thinning unwanted species such as sycamore heavily. In this way visibility into the Arboretum from the park and vice versa should be radically improved. Exotic conifers should also be established at wide spacing along this eastern perimeter.
- 4) Work should be carried out to any trees identified for management in the detailed tree assessment

Appendix 9C.

- 5) Improve footpath access and connectivity with other routes and entrances. Waymark key routes.

- 6) Thin areas of dense holly and rhododendron.
- 7) **Gate piers at Lower Lodge. It is recommended that this area be cordoned off from the public, and the south pier in particular, which is considered unsafe at present, in a state of ongoing collapse (NB These structures are now part of a restoration construction contract coordinated by Weal Architects).**
- Significant parts of the north and south abutments will need to be rebuilt, with more work required to the south abutment.
 - Repair and reinstate the wrought iron railing either side, splicing in new to match as required.
 - Rebuild the south side pier off a new foundation.
 - Repair/consolidate the north side pier, infilling cavities in matching brickwork and removing inbuilt iron work that is leading to crevice corrosion.
 - Consider replacing all wrought iron fixings into the piers and abutments with like for like fixings/straps etc in stainless steel.
 - Desilt the ditch, allowing better access to the culvert, and to allow the ditch to drain into the river once again. Some repairs to the brick vault might be need, to be assessed once safe access available.
 - Once the work is back in good condition, introduce an ongoing maintenance regime.
- 7) Improve interpretation with new panel and manage woodland to improve setting of drive as it runs through
- 8) **Culvert bridge. (NB** This structure has been repaired recently but is now also part of the restoration construction contract coordinated by Weal Architects that will restore the original balustrade in Clipsham stone.) The debris ought to be removed from the ditch either side. It was noted that within the culvert itself, just inside the entrance at either end, there are some small cavities in the brickwork and some open joints. It is recommended these be infilled in mortar and new brickwork.
- 9) Manage perimeter belt by thinning understorey, promoting naturally regenerating trees and carrying management recommendations noted for individual trees in the tree survey.



Photo 1, 2, 3 and 4. Impermeable arboretum edge could be improved by managing sward, crown raising and thinning and replanting with new conifers . Photos 3 and 4 below show the nature of the view looking out with dense stands of sycamore.



Photos 5 and 6 below illustrate how existing clearings could be enlarged through clearance of shrubs, bramble and sycamore to create large open areas for replanting of exotic conifers at wide spacing. Existing arboretum trees would be seen more clearly





Photos 7 and 8 illustrate the need for thinning. In the case of Photo 7 the dense evergreen screen of yews and evergreen oak is encroaching onto the path and Photo 8 illustrates the suffocating nature of unlimited sycamore regeneration

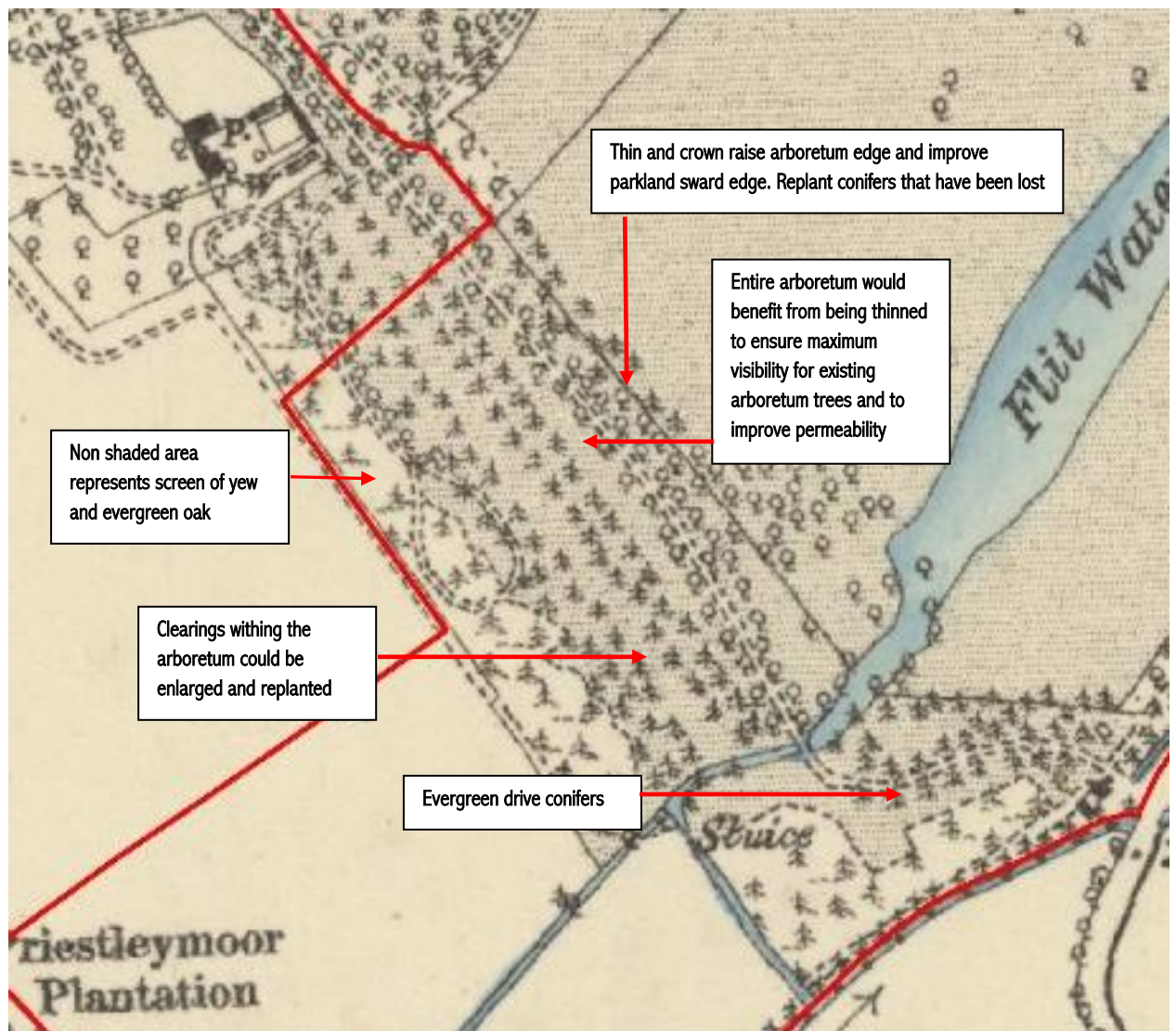


Fig 13.1 Sketch plan of the Arboretum showing principal features and restoration proposals

Management Approach: **Perimeter woodland**

Objectives: Maintain this woodland as mixed woodland with groundflora, shrub and understory layers.

- 13.3 This woodland is an important screen for the road and helps to enclose the park. Ensure that the mixed structure of the wood is maintained and allow for continued tree planting when and where sufficient light exists.

Management Approach: **Parkland**

- 13.4 **Objectives:** Maintain parkland as open area of grassland with individual trees, ensure succession planting of parkland trees, improve diversity of sward if possible, improve path surfaces, restore ha- ha, replace fencing.

The management of the parkland should continue in the same manner as it is today, for the larger area north of the lake. This involves a late cut in August and removal of all arisings. Selected areas should be identified for diversification using locally sourced wildflower rich green hay in areas that are scraped beforehand to improve/encourage biodiversity and improved floristic interest. The eastern interface between the arboretum and the parkland should be made crisper and more permeable so that managed grassland is allowed to come up to the edge of the arboretum and views into the arboretum are possible. Work should be carried out to any existing parkland or veteran trees identified for management in the detailed tree assessment **Appendix 9C**. The field to the south of the lake should continue to be grazed as it is today with cattle and cutting on an occasional basis (every 2-3 years) to maintain the openness of the area and to prevent scrub and trees from invading. Consideration should be given to formalizing the surface of all existing paths in the parkland and to creating a new path adjacent to the southern perimeter belt.

The **Ha-ha** should be restored as follows:

- 1) Further investigations: fully remove all vegetation off the face of the wall, and remove young self-seeding trees from the top, face and base of the wall, to allow a further inspection. This will also allow any impact from the lime tree to be assessed.
- 2) Undertake a trial pit investigation, including localised opening up of the structure from behind to (i) assess the form of the structure - ie its width etc in cross section and (ii) assess its condition back away from the visible front.

3) Consolidate the brickwork by infilling the cavities and repointing all the open joints in a lime-based mortar (that will allow the free passage of moisture). Note this should only be done after (1) is complete. It may be considered advisable to introduce grout into the wall, depending on the findings of (1).

4) Once the Ha-Ha is back in good condition, introduce an ongoing maintenance regime.

A new metal bar rail estate type fence should be replace the post and wire fencing that separates Flitwick Manor Hotel land from Flitwick Town Council land adjacent to the lime avenue and at the disused tennis court boundary.

Management Approach: **Flit Water and hydrology**

13.5 **Objectives:** Restore lake as an open body of water with marginal aquatic planting, remove most naturally occurring trees along margins, ensure connection to existing ditch system to obtain consistent supply of water, conserve existing brick cascade in situ but create new clay dam.

13.6 The principal objective should be restore open water to this feature to improve the aesthetic appeal of the parkland and simultaneously improve habitat diversity. A series of Options are offered below. See **Fig 8.4 Restoration Options** for details.

Flit Water Restoration Options

13.7 Previous reports and management plans for Flitwick Manor Park have presented the aspiration to restore the lake to its original size and form as an open water feature in the park. To pursue this there are several critical factors that must be addressed, including:

- The original size of the lake has been measured from the OS and archive maps as c.8864m². The depth of the lake would need to be between 1.5m to 2m at the deepest which would mean that the volume of the lake would be above 10,000m³. This threshold volume may mean that the restored lake would have to be considered under the Reservoirs Act 1975 (as amended). This decision would be partially based on whether the lake is deemed as being above the “natural level of the surrounding land”. This evaluation would be something that would be pursued as part of the feasibility assessment of the selected restoration option which at this stage do not take account of lake volume thresholds. However, the scheme options have been presented such that should the lake be deemed as being above the surrounding land the proposals could be easily amended to account and address this possible constraint.
- The outlet structure for the lake would be difficult to restore given its state of repair and the fact that it now supports a mature tree which is significant in the landscape of the park. The intention in the restoration options

below is to retain as much of the outlet structure as possible but construct a new structure upstream of the original.

- Several recent reports and Section 7.0 have highlighted the value of the current ecological status of the lake as a mosaic of rapidly colonising wetland plants. In the proposals outlined below some of this diversity of emergent aquatic plants would be retained within the lake footprint and these would be supplemented by the creation of additional wetland and other habitat features within the park.

Option 1

- 13.8 This option relies on the reinstatement (with some necessary alterations) of the original process and structures of supplying water to the lake via the drainage system. The elements of the restoration option comprise:
1. The construction of a new outlet structure. This would be a puddled clay bund with a rock cascade to take normal and flood over-flows from the lake. The bund may also require some form of outlet pipe to enable the lake water level to be drawn down for maintenance purposes. The new outlet would be several metres upstream from the present degraded brick structure, which will remain in place with the possible addition of an 'armoured' spillway and a through pipe for normal flows. Downstream of the new and original outlet structures there would be a requirement to desilt and possibly reform the outlet channel.
 2. The lake would be desilted to a level determined by ground investigation as to the nature of the lake liner. This desilting process would reduce the vegetative cover currently in the lake by between 70% and 80%. Target depth of the lake should average at least 1m with deep areas up to 2.5/3m.
 3. At the inlet end of the lake a deep water (>2m) area would be excavated to act as a sediment trap. If the lake cannot be restored to its original footprint this sediment trap feature could be moved into the body of the lake.
 4. The sluice gate which controls the excess or return flow of water to the River Flit would be maintained or possibly replaced by a drop board sluice, depending on the agreed method of controlling and maintaining water levels in the lake. Depending on detailed topographic surveys it may be that the majority of winter flows are directed via Drain D but that summer flows up to an agreed storm flow level would enter the lake, the level of which will be controlled by the crest height of the new cascade.
 5. In order that Drain B can be re-established as a primary source of water to the lake it would be necessary to reconnect the drain with Drain A. One approach to achieve this would be to install a drop board sluice just below the junction of Drain A and B with Drain C. This would have the effect of lifting the water levels in Drain A so that water would be directed into Drain B and then into the lake. Drain B would also need to be maintained to enable easy passage of the water towards the lake. There are other means of achieving this 're-connection' of the flow

to Drain B but these would be presented as part of a future detailed feasibility study. However, in order to pursue the viability of this option it would be necessary to enter into detailed discussions with the Bedfordshire and River Ivel Internal Drainage Board.

6. Drain B would need to be cleared of vegetation for operational purposes and to achieve some further biodiversity gain. This option also recommends that sections of the banks to the drain are lowered to enable a proportion of higher flows to enter the fields on either side of the drain. This rewetting process would help sustain a more diverse wet grassland and marsh mosaic across these fields. There may be an opportunity to create scrapes or depression hollows within these fields to enhance habitat creation. Some parts of these fields show zones of high organic-matter soils and rewetting these areas would reduce carbon loss and further the sequestration of carbon across the site.

Option 2

- 13.9 Should reliance on the delivery of flow via the drainage network to the south-west of Flitwick Manor Park not be possible a second option based on sustaining turnover of flow in the lake could focus on the use of an on-site borehole supply of water. Within this option there are two broad approaches considered:
 1. Develop a scheme to restore the lake to its former size and function partially along the lines of Option 1 above. This would need to include the appropriate investigations to determine and clarify a total water mass balance for this scale of lake restoration which would include the mass balance calculations indicated in Appendix A, together with seepage losses through the ground and operational demands from the re-instatement of a cascade at the outlet of the lake. Depending on the losses generated by ground seepage and the desire to retain the operation of an outlet cascade, a water demand figure would be derived which if greater than 20m³ per day would require an abstraction licence and possibly other requirements such a groundwater investigation consent. Depending on the current groundwater status in this area there is no guarantee that licences and consents would be given, even if the capital and long-term costs were acceptable.
 2. It is probable that the investigations identified in 1 above would lead to a demand of greater than 20m³/day, and if the costs of this approach are deemed too high then a modified restoration scheme could be evolved that would enable the lake to be sustained within the 20m³/day.
- 13.10 The capacity to develop a restoration scheme that would limit the demand for water to 20m³/day would rely primarily on determining the nature of the lining of the current lake. If presently the lake is not retaining water because of the state of the outlet structure, and it is discovered that the lake lining is sufficiently impermeable, then an open water lake with a small cascade may be feasible. Topping-up evapotranspiration losses from the lake surface plus limited seepage could be feasible but it would rely on active management to limit the

encroachment of vegetation into the lake as this would increase the water losses from the system and generate higher demand for water to sustain the lake.

Option 3

- 13.11 Restoring the original processes that were involved in maintaining the lake, i.e. the diversion of flow from the River Flit to the lake via the south-west drainage network seems the most appropriate approach. However, should the Internal Drainage Board (IDB) not be able to fully meet the demands that are implied in Option 1 above, then there may be a compromise to have a partial re-instatement of the original drainage system, as it is presently understood, combined with an on-site borehole supply up to 20m³/day.

Key Considerations

Lake Lining

- 13.12 Understanding the nature of the lake lining is a paramount investigation in the feasibility of any restoration option for Flit Water. A simple first step towards this would be to excavate a temporary trench parallel to the lake margin (possibly some 5m from the lake edge). This would then provide some indication of whether the lake is based on alluvium deposits comprising clay, sand, silt and gravels as indicated by the British Geological Survey maps or Ampthill Clay (Blue Clay) as indicated on the BGS archive (see Appendix B). If such investigations remain inconclusive then lakebed cores might be required.

Desilting Operations

- 13.13 To restore the lake to a former footprint, and to instigate other proposals outlined in Option 1 would involve the removal a significant quantities of infill material, amounting to more than 10,000m³. A sizeable proportion of this material would be organic in nature derived from decades of leaf litter and the gradual colonisation of aquatic plants and trees together with silt from the River Flit catchment. The excavation and management of these materials represent significant cost issues to the restoration scheme. In previous desilting operations it has been confirmed that the materials were stored and partially composted on site, in area with limited visual access or habitat value. Management of the materials on site is always preferable if possible. With the current state of the lake having such a considerable organic as well as mineral content it would be worth investigating the possibility of separating the organic from the mineral matter. This would enable the possibility of composting the organics on site and removal off-site of the mineral matter. On-site composting does come with not insignificant environmental management issues, not least leachate generation and odour. Mineral matter storage, drying etc also requires dedicated management, and in both cases the eventual restoration of the storage and processing areas.
- 13.14 From the above it is clear that a further, more detailed feasibility study is recommended to examine and confirm the options. This should determine a) whether, following desilting, the lake falls within the limitations of the

Reservoirs act b) to hold discussions with the Internal Drainage board to determine as to whether the feasibility of restoring a new sluice and diverting water along historical channels to the lake is viable d) on site ground investigations to investigate the nature of the lake liner e) design considerations for the new puddled clay dam and overflow feature upstream of the existing brick cascade .f) receptor site for the silt to be excavated from the lake or viability and cost of removing silt off site) the nature and design of the silt trap and methods of emptying.

Management Approach: Agricultural grassland west of arboretum

- 13.15 **Objectives:** Maintain as permanent pasture and diversify grassland habitat. Manage perimeter mixed species hedge, expand arboretum along perimeter.

These two fields should continue as permanent pasture grazed by cattle on a seasonal basis. No attempt should be made to restore the Pinetum which probably failed due to poor ground conditions. Diversity could be improved by lowering the banks of the lake connecting drain to enable a proportion of higher flows to enter the fields on either side of the drain. There may be an opportunity to create scrapes or depression hollows within these fields to enhance habitat creation. Some parts of these fields show zones of high organic-matter soils and rewetting these areas would reduce carbon loss and further the sequestration of carbon across the site. Create some small areas of bare ground for invertebrates such as solitary bees and wasps, particularly where the soil is sandy and/or south facing

Management Approach: Access and Interpretation.

Objectives: Improve access across the site with new path surfacing in park, new path, waymarking and interpretation at 2 entrances: Lower Lodge and Church Lane.

- 13.16 Access could be improved radically across the site with an emphasis on circuits and the creation of a new path along the perimeter woodland belt. This should be accompanied by waymarking and improved interpretation. Circuit paths should be created in the arboretum and also in the southern field with a new crossing over the ditch at the sluice into the Arboretum. Consideration should be given to permanent path surfacing in the parkland. The path gradient issue at the northern entrance into the arboretum should be resolved with a gentle ramped path. The Pinetum, which is now lost, should be part of the interpretive story on how the site was developed by the Brooks family. The manuscripts and maps authored by J T Brooks could be useful reference material in any interpretation.

14.0 Masterplan and Schedule of Works

TBC following approval of Draft Report

ⁱ 1843 revisions to this took place as noted in diary – see The Diary of a Bedfordshire Squire in The Bedfordshire Historical Record Society vol. 66 1987 various entries for 1843.