ROTHAMSTED RESEARCH

The Gardens of Rothamsted Manor - Management Plan

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Part a Survey

Rothamsted Research

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PART A SURVEY

A1 History

The following is a brief summary of the development of the Manor site. For more detailed sources, see Appendix B. Unless otherwise stated, all references can be found in the author's '*The Gardens and Landscape of Rothamsted Manor - Historical Report*' of May 2001.

Roman

Evidence has been found of pre-Roman occupation on the Rothamsted estate. The excavated footings of a Roman temple are visible near the experimental farm to the north of the Manor House, and other finds in that area suggest that the temple was associated with a walled burial site [Figs.44,45]. It is known that chalk was dug to marl the soil in Roman times.

Early manor

The earliest reference to the name and the manor of Rothamsted dates from 1212. Over the course of the following four centuries the manor passed through the hands of four families: Gubion, Nowell, Cressy and Bardolph. It is likely that the Manor House has been located on its present site since it was first established.

1623 - Sale to Wittewronges

The Bardolphs sold the property to Anne Wittewronge in 1623. The earliest documentary evidence that reveals anything of the physical form of the estate is provided by three items prepared this sale: an estate map, a sketch of the front elevation of the house, and an inventory description of the house and its immediate surroundings.

The 1623 Estate Map

The 1623 sale map [Maps 2,3] is principally a survey of the fields and woods on the estate. Names and acreages are given for each field or enclosure. The Manor House is shown set in an irregular network of fields, pastures and woods whose boundaries had probably changed little since the earliest enclosures. The house and immediate environs are left blank, but the adjacent forecourt, moat and orchard are shown. The forecourt flanks the approach to the south front, while the orchard is shown north of the house in the area of the existing walled garden. To the west of the house on the site of the current Manor Wood is the rabbit warren ('Conygre'), shown with only a scattering of trees. The principal approach to the manor is from the east, along a tree-lined route through 'The Parke' and 'The Green'.

From the 1623 Sale Description:

A prettie Courte before the house at the goeing in on the South being 30 yds square, and is paled about. Two little garden plotts lying on each side the Courte, one behind the house, on the North there is a dayrie house, a verie faire Pigeon or dovehouse, and a Well house, that goeth with a Wheele, wherein a dogg is putt, and draweth up the water. There is also a Moate that compasseth the back parte of the house, which Moate hath been verie badly used and is dryed upp and stopped in one or two places. On the North parte of the said Moate there is a prettie orchard, that is planted with young trees, and hath verie pleasant walks about the said orchard if they were well looked unto and ordered. There is a[lso] a yard on the East parte of the house whereon standeth two faire Barnes, two Stables, and a Shedd for two Horse.

Sir John Wittewronge's changes to the estate [Map 4]

Sir John Wittewronge (1616-93) was active in the Parliamentarian cause during the Civil War, and was later a Member of Parliament during the Commonwealth. He took up residence at Rothamsted in 1639, and carried out major changes to the estate. He greatly extended the house in the late 1640's, widening the south elevation and adding a new west elevation, both of which he adorned with Dutch gables. The house as it stands today is predominantly his creation. At about the same time he extended and rationalised the existing gardens and orchard and built new garden walls to a rectilinear plan. Evidence suggests that he also walled the front court and placed gate piers at the entrance. He undertook major tree-planting including the creation of a 'New Orchard and Plantation' in the pre-existing Warren ('Conygre') west of the gardens. This incorporated many evergreen trees as was fashionable at the time. In the wider estate he established an orthogonal field pattern around the house and created a new straight avenue approach from the west.

Sir John Wittewronge's 'Diary of Weather'

During the 1680's Sir John kept a unique 'Diary of Weather' in which he recorded daily weather conditions and wind direction. This proto-scientific account provides rare meteorological information from a period before formal records were kept, and appears to prophetically prefigure the experimental work begun by his descendant and namesake 160 years later. The weather entries are accompanied with brief but fascinating commentary on aspects of estate management including crops, harvests, hay-making, brewing, livestock and gardening. There are many entries concerning the gardens, most of which are preoccupied with the cultivation of fruit and vegetables for the table, describing their flowering, fruiting and harvesting, the varieties grown, their diseases and pests, and commenting on their consumption. The 'Diary of Weather' is a valuable document on historical, cultural and scientific grounds. It was published in 1997.

Early 18th Century

Changes to the gardens were carried out in the 1720's by Jacob Wittewronge The Younger (1693-1728). In 1721 an elm avenue was planted running south from the house, apparently for 'show' rather than to mark a roadway. The existing gardens were enhanced and updated. Many new fruit trees were planted, as were a large quantity of trees for topiary. Sir John's Wittewronge's 'Plantation' on the former warren to the west of the gardens was now referred to as the 'Ffurr Grove' as a result of his evergreen plantings, and was the subject of a great deal of work. 'Wood Walks' were cleared and were lined with hornbeam hedges. It is likely that the avenue running west of the house that remains today as the 'Dirce Avenue' was cut through the wood at this time.

Later 18th Century / Early 19th Century

Little documentary evidence survives from this period. The walled front court was removed [Fig. 1], and the fields to the south and east were opened up as parkland and planted with clumps of trees. It appears that little had changed within the walled garden; the 1838 Tithe Map [Map 5] shows the house with walled enclosures to the north and extending to the west, probably as built by Sir John Wittewronge in the mid-17th Century.

Sir John Bennet Lawes

Sir John Bennet Lawes (1814-1900) took residence in 1834. He set up a laboratory in the house and began investigations on the manuring of agricultural plants, first in pots, and then in the kitchen garden and on the home farm. In 1842 he took out a patent for super-phosphate fertiliser - possibly the first ever artificial chemical fertiliser. In 1843 Sir John was joined by the distinguished scientist Sir Henry Gilbert. The Experimental Station was established and the systematic 'classical' field experiments began. By 1847 super-

phosphate was producing good returns and providing funds to expand the experiments. For the rest of the 19th Century Lawes, Gilbert and Rothamsted's experiments were at the forefront of plant and agricultural science and enjoyed an international reputation. The nitrogen cycle and the role of the key chemical plant nutrients were first established at Rothamsted, and many other scientific breakthroughs and new agricultural techniques have arisen in the institute's work up to the present day.

Changes to the manor 1839 -1900

In the 1840's Lady Caroline Lawes, the wife of Sir John, painted views of the house from the south-west and from across the pond [Figs.2,3], showing that little had changed since the previous century. It was in the 1860's that some of the proceeds from the super-phosphate were channelled into changes to the house and gardens. In 1863, in celebration of the coming-of-age of their son Charles, the Great Drawing Room was added north of the 17th Century west front in a matching style. This necessitated parallel changes to the gardens, including demolition of the southern garden walls [compare Figs.1,2,5 with Fig.7]. The walled area was reduced by half, with formal parterres laid out in the newly opened western area. These were separated from the Manor Wood by a ha-ha. The 1st edition OS maps (surveyed 1878) [Maps 6,7] show the new form of the gardens, and paths laid out through an ornamental woodland of mixed planting. The ornamental ha-ha walls date from this period. The gardens featured in an article in the Gardeners' Chronicle in 1875, which made particular reference to a notable 'lime walk' in which overhead layering formed arched walkways between older and younger trees [Fig.6].

1900-1911 Sir Charles Lawes-Wittewronge

On his death, Sir John Bennet Lawes passed the ownership and upkeep of the experimental station to the Lawes Agricultural Trust. His son, Sir Charles Lawes Wittewronge (1843-1911), inherited the manor and gardens. He did not share his father's scientific leanings but tended towards the arts, and was an accomplished athlete and sculptor. He was interested in genealogy and heraldry, and undertook changes to the gardens in accordance with his desire to see Rothamsted as a country seat worthy of the Wittewronge pedigree. He added a large number of ornamental garden features; urns, seats, two of his own sculptures, and other embellishments, including Dutch gables to the west wall of the walled garden. The eastern and western approaches to the house were realigned, and farm buildings cleared to form the yard as it exists today [Map 8]. The avenue through the Manor Wood was formalised and replanted, and the wood extended to the west to close the avenue vista. The avenue was terminated in a circular lawn set in the extended wood, which provided the setting for Sir Charles' most ambitious sculptural group; 'The Death of Dirce' [Fig.33]. To the north of the gardens he created a formal orchard with another extension to the wood beyond it. This enclosed another circular clearing, possibly intended for another sculpture. Both these wood extensions appear to have been designed to cut off the sight of his late father's experimental fields and all reminders of worldly concerns. The resulting quality of seclusion is suggested by a contemporary account:

'*... it is delightful to walk on the velvety lawns of Rothamsted, and study the creeper-covered gables that rise along its front. The gay flower-beds, neatly inlaid in a huge carpet of green turf and sheltered by a belt of massive trees, appeal to the artistic senses and carry the imagination away from the hurly-burly of commercial life into a land where all is peace, rest, and beauty.*' (Advertiser & Times, c. 1905).

The house and garden featured in Country Life in 1906.

1911-2002

After Sir Charles' death in 1911 the Manor House and gardens were let until 1939. The manor was requisitioned by the army during the 1939-45 war. The Rothamsted estate was bought by the Lawes Agricultural Trust in 1934 with the help of public subscription, and the house was converted into halls of residence in 1951-52.

The layout of the gardens has changed little since 1911 [Map 9], although the character of the surrounding parkland has been significantly altered as more land has been taken up for experiments. Many trees have been lost, including the scattered parkland trees and clumps. As a result, the original landscape intentions are no longer clearly discernible. The 1721 elm avenue was lost to Dutch Elm disease in the 1970's, and the last of the older limes along the western approach were lost in the storms of 1987.

A2 Site Description

Location

- Rothamsted is situated on the south-western edge of the town of Harpenden in Hertfordshire, c.2km east of the village of Redbourn and some 6km north-west of St Albans [Map 1]. To the west of the estate the A5183 (Roman Watling Street) runs north-west from St Albans, and to the east the estate extends to Harpenden Common, which is crossed by the A1081 between St Albans and Luton. The southern boundary follows the B487 between Hatching Green and Redbourn.
- The Manor House is situated at the centre of the estate. The gardens lie to the north, west and south of the house, with the Manor Wood to the west and north.
- The research campus is on the east side of the estate, and the 'experimental farm' is located north-west of the Manor House [Map 10].

Size and physical factors

- The Manor House, outbuildings, gardens, and neighbouring Manor Wood occupy c. 13ha.
- The Rothamsted estate as a whole is c. 330ha.
- Geology and soil - The soil is a flinty loam on clay-with-flints and/or chalk.
- The Manor House site and surrounding fields occupy a slight plateau at the centre of the site, from which the land gently slopes away to east and west. The valleys to east and west are obscured from view because of the gentle gradients and peripheral trees. It is unlikely that there were ever very distant views. The principal prospect from the Manor House is to the south (across parkland in 18th & 19th Centuries, and now across fields).
- The gardens experience heavy frosts, and are exposed to north-easterly winds.
- Experimental fields cover most of the estate.
- The principal concentrations of trees are in the Manor Wood adjacent to the formal gardens, and in Knott Wood further to the west. There are mature trees along some site roads and field boundaries.

Entrances & Approaches

The main entrances to the site are from Harpenden via the research campus to the north-east and from Hatching Green to the south-east. At Hatching End the driveway is marked by a 19th Century lodge. From these entrances roads follow lime avenues and then join to approach the house along a single road from the east, which forks at the entrance to the Manor site. The southern fork leads through a shrubbery to the main entrance in the south front of the house. The northern fork passes through a yard to the east of the Manor House on its way to the experimental fields to the north. The yard is bounded to the north by barns and storage buildings [Fig.38], to the east by a 19th Century cottage, and to the south by a wall screening the principal driveway. On the west of the yard, access to the central courtyard of the Manor House is through a two-storey gateway building [Fig.40]. The western approach to the house, which is no longer used, arrives at the south front along a straight drive from a 19th Century lodge on the B487.

The Manor House

As far as is known, the house stands on the site of the earliest Manor House, and its core dates back to the 16th Century or earlier. The majority of the external fabric (red brick) dates from changes made in the mid-17th Century when the house was re-fronted and substantially altered and extended. It was further extended in a similar style in the mid-19th Century. The principal architectural fronts to the south and west incorporate Dutch-style gables. The main entrance is in the centre of the south front. There is a central courtyard, enclosed by south, west and north wings, with the gateway to the yard on its eastern side.

Description of the Gardens by area

See Map 11 (Plan as Existing) for the management areas referred to in this document.

Area 1 - Approach and Front Lawn

The eastern approach drive enters the gardens through a wrought iron gate (Grade II) [Fig.9]. The line of this approach was established between 1900 and 1911, having previously followed a more southerly route. The drive passes along a short avenue of flowering cherries and then divides. To the north of the drive is an area of mature yews and sycamores. To the south is the shrubbery (Area 2). The two branches of the drive emerge from the shrubbery to form a turning circle on either side of the well-kept lawn [Fig.10] in front of the house's main entrance. The line of a walled forecourt (17th Century) can be traced in the lawn in times of drought.

A section of ha-ha extends along the south of the front lawn, overlooking the fields beyond. This is the principal view from the house, but retains little of its former parkland character [Fig.10]. A 19th Century ornamental ha-ha wall formed the foreground to the view until it collapsed in the 1990's. Only the lower section up to lawn level was rebuilt [Fig.12], and a rudimentary wire fence on the far side of the ha-ha is now necessary to restrain livestock. Part of the original ha-ha wall survives overlooking the pond to the east. A stone sundial was located near the ha-ha on the axis of the house but was stolen in 2001.

A stone seat is located to the east of the front lawn on the axis of the former western avenue, backed by clipped hedging and shrubbery. An area of lawn extends west of the turning circle and is ornamented with 5 clipped yews on the axis of the formal gardens to the north, from which it is separated by a low wall. The rarely used western approach drive joins the turning circle at its south-west corner, where a group of lime trees appear to be a remnant of the former avenue planting.

Area 2 - Shrubbery and Pond

The principal area of shrubbery lies to the south of the eastern approach drive. The planting is in need of renewal, and is dominated by overgrown laurels. There are no kept paths. A young memorial oak tree stands in a grassed clearing in the shrubbery. This and the other memorial trees nearby are subject to considerable encroachment by the laurels and surrounding mature trees. The pond on the western side of the shrubbery dates back at least to the 17th Century, and a few trees dating from the 18th Century or earlier stand on its banks. The pond lies at a lower level than the driveway which overlooks its northern edge. In between are two or three terraces for planting, now largely overgrown. The view across the pond towards the house is one of the classic views of Rothamsted and is the subject of several historic illustrations and photographs [Figs.3,13,14]. It was becoming obscured by young sycamores in 2002. The abandoned wooded area south of the pond has uneven ground as the result of earlier rubbish tipping.

Area 3 - Formal Gardens

To the west of the house and walled gardens lie well-kept formal grassed parterres [Figs15,16]. This area was formed out of the former walled garden enclosure when it was reduced in size in the 1860's. A ha-ha separates the parterres from the woodland beyond. The west front of the house gives onto the upper parterre (the 'croquet lawn'), which is flanked by two pairs of clipped yews and enclosed by a gravel path. This was laid out with bedding and later as a croquet lawn during the 20th Century, and is reputed to have been a bowling green in the 17th Century. The 'Rose Lawn' to the north is a larger parterre set c.400mm below the level of the croquet lawn, to which it is linked by steps at both sides. It extends along the west wall of the walled garden, which is lined with a herbaceous border [Figs.17,18]. Flower beds, urns and clipped yews are symmetrically arranged around an ornamental stone 'fountain' feature [Fig.16], which appears to have been intended for planting rather than water. The topiary yew 'balls' are currently

undergoing a process of restoration. A 19th Century low ornamental terracotta ha-ha wall with brick piers runs along the western edge. Other features of the parterres include a reclining white marble nymph by Sir Charles Lawes-Wittewronge (Grade II) [Fig.24], which was set on a pedestal in a pool at the south end of the lawn in the early 20th Century. The 17th Century 'stone boy' was stolen in 1997 from under the arched arbour at the southern end of the upper lawn [Fig.23]. A rose arch walk along the western side of the lawn dates from the 1990's [Figs.21,22]. Its flanking beds are planted with a collection of hostas that is approaching 100 varieties. Set within the lawn towards its northern end is the Red Clover Bed [Frontispiece]. This is the smallest of the 'classical experiments' and has been continuous since 1854. When the former walled garden was halved in size in the 1860's the clover bed was left 'stranded' in the newly created parterre.

Area 4 - Walled Garden

The walled garden lies to the north of the house. It occupies an area that is approximately the eastern half of the 17th Century walled orchard. The walls are red brick and are listed Grade II. The lower part of the east wall is the oldest section in the garden and dates from the 17th Century or possibly earlier. The north wall and the upper part of the east wall are later and are probably 17th Century, although they may have been altered later when a lean-to building was constructed outside the walled garden to the north. The west wall is mid-19th Century with early 20th Century ornamental additions echoing the Dutch gables of the house [Fig.17]. An arched walk of decrepit apple trees [Figs.29,30] runs across the walled garden and is aligned with an ironwork gate leading west into the formal garden [Fig.19]. The area to the north of the central path is uncultivated, and the southern area is used as a gardeners' yard [Figs.27,28]. (See Appendix C for content of walled garden in December 1941.)

Area 5 - Orchard

North of the Rose Lawn is a rectangular area that was planted as an orchard in the early 20th Century. It extends from the walled garden wall westwards and projects into the Manor Wood. Within the wood, its southern boundary is defined by a continuation of the ornamental terracotta walling that runs along the western edge of the parterre. The section flanking the orchard is now largely ruinous. A line of overgrown shrubbery defines the orchard's northern edge and closes off the northern extension and yew circle (Area 6c). At the western edge overgrown laurels now obscure the former semi-circular termination. There are no orchard trees remaining in the area. The section that forms the northern continuation of the formal parterres was planted with ornamental trees in the early 1990's, and is managed as a wild flower meadow. The western projection into the wood was planted with native species in the late 1980's and is intended to become natural woodland [Fig.37].

Area 6 - Manor Wood and 'Dirce' Avenue

The Manor Wood lies to the west of the ha-ha and also extends to the north of the parterre lawns, providing a backdrop and a shelter for the house and formal gardens. The woodland has formed an essential and integral part of the gardens for as long as records exist, although it has passed through a number of changes in character. For the purposes of this document it is divided into the following areas:

Area 6a - The 'Warren'

This is the historic area of woodland dating back to the 17th Century and earlier. In 1623 it was called the 'Conygre'. Sir John Wittewronge and his 18th Century descendants referred to it as the Warren, and also, as it developed, as the Plantation, the Wood and the 'Pfurr Grove'. In the main body of the woodland the trees include oak, ash, sweet chestnut, birch, maple, beech, sycamore, California redwood, spruce, Lawson cypress, yew and larch. Recent planting has been of native trees intended to enhance wildlife value, but this

has not been intended or maintained to uphold or enhance the designed landscape value. In the northern part of the Warren are the remains of unique collections of as yet uncatalogued varieties of daffodils and rhododendrons bred by the late Leslie Scowen, who worked at Rothamsted from 1946 to 1974. A decaying octagonal brick and timber summerhouse with a clay-tiled roof overlooks the Rose Lawn at the wood's eastern edge [Figs.22,35], and a brick icehouse is located further to the west. The roof of the icehouse has been broken by a falling tree, but the rest of the brickwork appears to be in reasonable condition. The eastern edge of the Warren overlooks the ha-ha adjoining the formal parterres and presents a generally wild and unkempt appearance.

The principal designed feature in the woodland is a formal avenue ('Dirce avenue') [Figs.31,32] laid out in its present form in the first decade of the 20th Century by Sir Charles Lawes-Wittewronge on the line of an earlier avenue. Its axis is slightly north of the line perpendicular to the house, and aligns with the Great Drawing Room added to the west front by Sir John Bennet Lawes in 1863. At the east end, facing the house, the avenue starts from an exedral (semi-circular) grassed area with a pair of two stone 'rococo' urns and a large copper beech. Around the exedra the yew hedging forms a double layer to enclose narrow curved compartments. The avenue culminates in a circular clearing ('Dirce circle') at the west end, where a large sculpture by Sir Charles Lawes-Wittewronge - 'The Death of Dirce' (Grade II) - was set up according to his wishes after his death in 1911 [Figs33,34]. The entire composition is lined with laurel behind clipped yew hedging. Away from the house the hedging is backed in the main by mature conifers, with several Wellingtonias at the Dirce circle, and Lawsons cypresses along much of the avenue. The hedging and shrubbery is maintained appropriately to be viewed from across the ha-ha, but is gappy and unkempt in areas towards the opposite end. Access to the avenue from the croquet lawn is by way of two narrow steel bridges across the ha-ha which appear to be subsequent to Sir Charles' design.

The age of the existing paths in the wood is unclear.

Area 6b - Western Avenue ('West Lawn')

The western avenue approaches the house along the southern edge of the wood. In 1875, the flanking lime trees were admired by the Gardeners Chronicle:

"*... a glorious row of Limes, whose arching branches rooting in the soil, and then arising in a dense tangle of young shoots, form leafy corridors, the charm of which is best appreciated on a hot and sunny summer day when the air is heavy with the perfume of the blossoms.*" [Fig.6]

This was called 'Unter den Linden' by the scientists, who used the route when walking between the Park Grass and Garden Clover experiments. By the early 20th Century the arched walkways had disappeared, but limes still remained. Sir Charles Lawes-Wittewronge realigned the final part of the approach road further to the south, allowing the lime avenue to be grassed, and it was illustrated in Country Life in 1906 as the 'West Lawn'.

The last of the older limes was lost in the storms of 1987/90. Replacement lime trees were planted, but not to a regular layout. The ground was not re-levelled after the upheavals and remains uneven The new trees have not been maintained, and the area is generally overgrown.

Some yews and redwoods remain lining the approach road further to the west.

Area 6c - Northern extension

The largely abandoned section of woodland to the north of the orchard was added by Sir Charles Lawes-Wittewronge in the early 20th Century in the triangular area of the former Dredge Field. As with the tree planting enclosing the Dirce circle (above), the motive appears in part to have been to close off the view of his late father's experimental fields, in this case from the north of the formal parterres. Closing the axis of the formal gardens he planted a circle of yews (probably intended as a hedge), surrounded by woodland trees. Most of the yews remain and are now mature, but they are obscured from the formal garden by later

conifers, rhododendrons and overgrown laurels, and self-seeded and planted natives are now beginning to fill up the centre of the circle. The connecting paths into this area have largely disappeared, and it would be easy to miss it entirely. The surrounding area is mainly planted with conifers with an open understorey. Concrete foundations in the northern extension date from the period of army requisition during the 1939-1945 war.

Area 6d - Dirce extension

This was added at approximately the same time as the northern extension, and for similar reasons. It provided an encircling backdrop to the Dirce sculpture, offered additional shelter from wind, and closed off the western axis and the view to the surrounding fields. Outside the original boundary of the Warren a double line of mature yews remains to the south of the Dirce circle, presumably marking an earlier boundary walk. A broken single line of yews continues to the north. Further west, beyond the site track, there are few remaining mature trees, and there is therefore very little shelter for the mature Wellingtonias to the rear of the Dirce circle. Much of this area has been planted with native trees in recent years.

Area 6e - Western extension

The western extension was planted in the mid-19th Century and formed a wooded link with Knott Wood to the west. It was almost completely clear felled in 1938, but small stands of Grand Fir, Western Hemlock, Douglas Spruce and Sweet Chestnuts remained. The rest was replanted in the 1970's as a timber plantation, with native forest trees, and cherries along the central track.

Area 7 - Yard and Outbuildings

The yard to the east of the house [Figs.38,40] is laid out with two central grass areas surrounded by vehicle access routes, including the through-route from the research campus to the experimental farm. A large pond was shown in this area on the Tithe Map of 1838. The yard was laid out in its current form at the beginning of the 20th Century when Sir Charles Lawes-Wittewronge removed several barns and outbuildings.

The main parking area for the manor runs along the southern side of the yard, backed by a walled area of shrubs and trees that screens the driveway to the front of the house. On the west side a C17 two-storey gateway gives access to the house courtyard, and north of this is a C17 cottage. Two 19th Century cottages are located on the east side of the yard, with a third on the north side. All the cottages are occupied by staff, present or retired. The timber-boarded farm buildings on the north of the yard include some 17th Century timber frame construction and are used for storage. Further north is a brick barn that houses the soil store [Fig.39].

North of the walled garden is a row of largely derelict mid-19th Century lean-to outbuildings used for vehicle and garden storage [Figs.41,42].

Wildlife

- The Herts and Middlesex Wildlife Trust identified Rothamsted as of importance for Hertfordshire's wildlife during their habitat survey of 1994-1997, and identified it as a 'Wildlife Site'. This is the description given in their citation (March 2002):

  A world-renowned site for agricultural experiments. A large proportion of the area is arable but there is a mix of semi-natural habitats still remaining on the site including woodland, hedgerows and water bodies. Two areas of grassland are particularly important. The Broadbalk field supports several uncommon and declining species including the nationally rare Corn Bedstraw. Park Grass is an area of permanent grassland divided into experimental plots to determine the effects of fertilisers and liming. Part of the grassland is unimproved with 17

grassland indicators and includes an expanding colony of Snakes-head Fritillary that is at least as old as the experiment (c.150 years). The site includes Knott Wood, a small area of ancient semi-natural woodland mainly composed of planted Beech with a few coppiced species. Rothamsted Manor also includes a pond, an icehouse and an established area of ornamental woodland with a range of fungi and colony of Violet Helloborine [not seen in recent years]. *Continuous moth recording over a long period of time has produced an extensive list of invertebrates including many that are rare or uncommon.*

- No part of the estate has a statutory designation on wildlife grounds.
- Professor Roger Plumb has been co-ordinating a biodiversity study on the estate. This is an attempt to bring all the existing information together, to update it, and to fill in the gaps as necessary.
- Woodland: The two principal woods on the estate are both important for wildlife, but have different qualities:
  - Knott Wood is considered to be semi-ancient woodland (records of established woodland management date back to at least 1623) with a diverse flora including several ancient woodland indicator species. It was almost entirely clear felled in 1938 but has regenerated with areas of replanting. It is managed principally for wildlife, with some timber production.
  - The Manor Wood is mainly planted trees, including many introduced species. Its flora is not as rich as Knott Wood and includes fewer ancient woodland indicator species. It is a better habitat for birds, probably due to the number of older trees. In some areas of the wood rampant laurel dominates the understorey at the expense of native species.
- Classical field experiments: The classical field experiments contain areas where management has been consistent and well recorded over long periods. This continuity of management has allowed a number of distinct ecological communities to become established. Some areas where 'artificial' inputs have been restricted have communities that may have changed little since the early C19 (pre-scientific agriculture), while others have come about as the result of specific inputs or techniques (eg. different manuring, fertilising, pesticide regimes). The resultant flora and fauna has been the subject of detailed observation and recording over a long period. These different communities therefore have wider scientific and cultural interest as well as local wildlife significance.

Archaeology

- St Albans City and District Council list the Manor House site as amongst 'archaeological sites which may be subject to a recording condition'.
- At the time of writing there is no established procedure for dealing with archaeological remains on site. The recent excavation of a trench across the front lawn for electrical cable illustrated the possible implications of this; the footings of the 17th Century forecourt walls were revealed and disturbed by contractors but were not protected. The opportunity to photograph and record what was revealed was not taken.
- There are a number of questions about the garden's history that might be answered by garden archaeology. These include details of the layout both at the time of the 1623 sale and after Sir John Wittewronge's changes (1647-93), and the arrangement and surfacing of paths in the Manor Wood dating from the 18th to early 20th Centuries.
- The most significant archaeological site on the estate is the Roman Temple to the north-west of the manor, which is a Scheduled Ancient Monument.

A3 Current Management

Ownership

The estate is owned and administered by the Lawes Agricultural Trust for the use of the research institute, originally called the Rothamsted Experimental Station. The official name of the Institute was changed from IACR Rothamsted (Institute of Arable Crops Research) to Rothamsted Research in June 2002.

Site Management

Responsibilities for different aspects of the site fall to separate managers and teams as follows:

- Field experiments - 'Crop Management' (formerly 'Farm Management').
- Grounds maintenance, gardening, tree work (& greenhouse experiments) - 'Horticultural and Controlled Environmental Services' (HCES).
- Fencing, walls, structures, repairs and small building works - 'Facilities'.
- Until the mid-1990's the gardeners and 'Facilities' were together in an Engineering Maintenance Department.

Gardens management - general

- The management objectives for the gardens were stated by the responsible staff to be 'to maintain the status quo', and to fulfil the garden's functions as 'a setting for the house and for the enjoyment of staff and visitors'.
- The Head Gardener is responsible for grounds maintenance and gardening.
- Basic tree work is carried out by the garden staff. When work requiring specialised licenses (climbing etc.) is required, arboricultural contractors are brought in.
- The Gardens must compete with other needs across the site for time and funds. In the past they have tended to receive most attention prior to special occasions. In 2002 they took a back seat due to landscaping works associated with a new building on the research campus. The maintenance of this new planting will be a new demand to be fitted in with existing work.
- The 'Woodland Advisory Group' (WAG) advises the Head Gardener, Farm Manager and Lawes Agricultural Trust on woodland management. This is principally for Knott Wood and the Manor Wood, but covers tree work elsewhere on the site, such as the lime avenues. WAG is made up of interested staff of the institute.

Garden staff

- The gardening staff are responsible for gardening and grounds maintenance spread across the site: Manor House grounds; research campus; conference centre; cottages and outlying buildings. There is no gardener devoted solely to the Manor Gardens.
- There is a head gardener, 2 full-time staff, and 2 half-time garden staff.
- The garden staff are based on the research campus (offices, mess-room etc).
- Until the summer of 2002 there were 2 volunteers doing useful 'bits and pieces' in the Manor gardens and wood, one of whom was a retired member of staff occupying one of the cottages on the Manor site. For different reasons they have had to stop, and no volunteers remain at the time of writing.
- Until recent years casual / student labour was taken on in the summer months up to an equivalent of 40 weeks total. This was very helpful and cost-effective at the busiest time of the year, but has now ended through lack of funds.
- The Woodland Advisory Group organises working parties of about 10 volunteers working on clearance and basic woodland management in the Manor Wood for two weekends in the spring.

House management

- The house is owned by the Lawes Agricultural Trust and run for Rothamsted Research by the 'Accommodation, Conference & Property Manager'.
- The primary use of the house is as Halls of Residence, with accommodation for 48 residents in 35 rooms. The residents are usually students working with research scientists, or PhD students. The maximum stay is 3 years, but many stay for less. The ability to house this number on site is of great value in such a high-cost area. The historic fabric is somewhat compromised by this use, and English Heritage have expressed concern.
- Common facilities for residents are on the ground floor (kitchen, dining area and TV room). The principal rooms downstairs (eg. Drawing Room) are used for conferences, meetings, and other functions. There are about 100 such events per year, and also about 50 small concerts.
- The house is very costly to maintain compared with a modern building, especially when major repair (eg. roof or clocktower) or any modifications are required.
- Since 1993, the House has been trying to generate more revenue in order to pay basic running costs. Major repairs must still be paid for from elsewhere.
- English Heritage grants (for conservation of Spanish Leather Room, wall paintings etc) have not yet led to enforced public access. Charity concerts, open days and other occasional events have been judged to satisfy the public access requirements, but the conditions attached to any future grant may be more demanding.
- The implications of full public access even for 1 day a year are considerable given the current level of facilities. Portaloos, special health & safety provisions and other requirements make such events disproportionately expensive to organise.
- In October 2001 'Rothamsted Manor Ltd' was set up to run the staff restaurant and conference centre on the research campus, and to integrate this with the services provided by the Manor House.
- The gardens provide a valuable and pleasant resource for residents and are useful for functions. They add greatly to the attractiveness and quality of the 'product' for potential hirers of the house.

Finance

- No external funds or grants have been sought for work to the gardens.
- Maintenance of the gardens and Manor House is not part of the core activities of the Lawes Agricultural Trust or IACR Rothamsted. It is therefore possible to see their upkeep as a drain on resources, and they must compete with other needs across the site. There is no ring-fenced budget. Funding for the gardens has been gradually reduced over many years.
- There is a Countryside Stewardship grant scheme for the estate that includes support for hedgerow reinstatement, establishment of grass headlands in fields and the establishment of a woodland link between the Manor Wood and Knott Wood to the west.

Use

- The Manor gardens function as a setting for the house and for the enjoyment of staff and visitors.
- The formal gardens act as a spill-over from events in the house but only very rarely act as a venue in their own right, eg. for major garden parties or performances. More typically they have been used for events such as cream teas for limited numbers of staff.
- The southern half of the walled garden is an ad-hoc gardeners' yard, with some greenhouses and storage. The northern half is now uncultivated but was previously used for allotments.

- The Manor Wood is comparatively little used, although the paths are kept clear for those who wish to walk there. It is somewhat disconnected from the formal areas and cannot easily be used as an integral part of the gardens.
- The cottages are used as staff accommodation, and the barns for storage. The northern and western barns contain the 'soil archive' of samples from the field experiments, including those dating back to the mid-19th Century.
- North of the walled garden is a range of largely derelict and disused lean-to outbuildings. Some are used as garages for the cottages.
- The surrounding fields are mainly used for the field experiments. Occasionally they are visited by quite large scientific parties.
- The field directly in front of the house is out of scientific use and is grazed by sheep.

Access & Parking

- Access to the Manor House and Gardens is for staff, or visitors and guests of the institute. For others it is by appointment only. The gardens are principally used by visitors and residents of the house. The distance from the research campus means that staff must make quite a lengthy trip if they wish to visit. It is over 1½ miles to walk from the campus, around the gardens and back. There are few if any facilities on arrival to encourage such visits.
- The house can be rented for events, or visited for concerts etc. The gardens will sometimes be used on these occasions. Public access is occasionally extended for special 'one-off' events, such as open days, openings under the National Gardens Scheme, or the Golden Jubilee Walk allowed through the estate along paths off the rights of way from 1st-3rd June 2002.
- There is no right of way through the Manor House grounds.
- The site road from the research campus to the farm and principal area of experimental fields runs through the yard immediately to the east of the Manor House and walled garden.
- There is limited car parking in front of the house and in the yard to the east. It is only just sufficient for regular staff and residents. For events, parking extends onto grass verges. Until quite recently only dropping-off was allowed in front of the house. Parking there is still discouraged, but has become more frequent.
- There is very restricted access possible for site vehicles to the formal parterres and within the Manor Wood.
- Public access to the house is a condition of the funding received from English Heritage for conservation work to the building. This condition is currently addressed through public access to events such as concerts, but it is likely that the requirement will rise above this minimum in future.

Security

- The Rothamsted Estate is essentially a farm, and has a very long boundary. It has no more security than a typical farm. Within the estate, the Manor House grounds have rudimentary perimeter security to the east, but little or nothing to the west and north. Only the walled garden can be fully secured.
- There is very limited security provision across most of the site. There is, for example, no access control for vehicles, although there are 'Private' signs.
- Public footpaths (rights of way) pass through the estate to the east and south of the Manor site. The path to the south passes close by and has a clear view of the front of the house.
- In recent years three important garden ornaments have been stolen: the sundial from the front lawn; the sundial that stood at the north end of the herbaceous border outside the library [Fig.18]; and the stone boy from the western parterre [Fig.23].
- There have been incidents of vandalism at the experimental farm, and protests against GM trials.

- It would be expensive, impractical, and poor public relations to attempt to secure the whole site. However, it is likely that some additional measures will be required to meet specific issues.
- The perimeter of the Manor House site can only be partially secured: the walled garden can be locked as can the main gate at the southern entrance, but there are plenty of alternative routes. Unknown visitors may be challenged if spotted, but there is little in the way of organised surveillance. Although it would be difficult, expensive and probably unnecessary to render the gardens significantly more secure, security could certainly be increased to an extent by comparatively simple means.

A4 Legal and Institutional Constraints

Listed features

Manor House	Grade I
Kitchen Garden walls and outbuilding on SE side	Grade II
Sir Charles Lawes-Wittewronge's sculptures (Death of Dirce & reclining nude)	Grade II
Storage Barn to east of walled garden	Grade II
Gates and screen at east entrance (wrought iron)	Grade II

Other designations

- The Roman Temple to the north-west of the Manor site is a scheduled ancient monument.
- The gardens and landscape are not included on the English Heritage Register of Parks and Gardens. Their only statutory protection is therefore as the setting or 'historic curtilage' of the listed structures.

Institutional constraints

The Lawes Agricultural Trust was set up by Sir John Bennet Lawes to maintain the experimental fields and the scientific work.

A5 Recent development proposals

This section sets out some recent and/or current development ideas. They show the sorts of issues and opportunities that are already on the agenda.

House

There are no firm proposals for development to alter its use. The following have been discussed:

- Upmarket hotel - It is likely that the structure would not be well-suited to this use, or would require more alteration than the Grade I listing would allow. A hotel may generate revenue, but the Manor House and its surroundings would be effectively lost to the institute. All existing accommodation would have to be relocated at a cost.
- Museum/Library/Conference Centre - a high quality environment and resource for researchers, with possibly an educational and public role. The Manor House site would make an ideal setting for presenting the history of the site and the experiments, especially in combination with parallel development in the outbuildings and walled garden. Bennet Lawes' earliest experiments were, after all, carried out in the walled garden and in a laboratory in the house, and the manor is located close to the most celebrated classical experiments. Some or all of the existing accommodation would have to be relocated. There is already a conference centre on the site, so it would be important for any new facility to have a very clearly defined and different character.
- Extend and improve existing residential accommodation - this provision on site is extremely valuable to the institute. It would be possible to create extra rooms in the outbuildings, and generally provisions could be enhanced.

Soil Store

The 'soil archive' is located in an outbuilding adjacent to the Manor House. It contains soil samples, records and scientific material, methodically collected from the mid-19th Century onwards, and is of unique international significance. However, it has no public profile. It is accommodated in a basic and un-staffed storeroom, with little security. It is occasionally visited by researchers, but is generally inaccessible and 'hidden away'. Various possibilities to make more of it have been discussed:

- Relocation to the lower floor of the conference centre on the main research campus. This would greatly increase accessibility, visibility and recognition. Potential drawbacks would be that the proposed accommodation was not designed for this purpose, that it might encourage public access to a working area of the institute not geared up to deal with it, and that the Manor House would lose one of the key assets that might supply the key to its future use. This proposal was the subject of an unsuccessful Heritage Lottery Fund bid.
- Consolidate and improve facilities on the Manor House site, and integrate the future of the soil store with a new use for the house.

Walled garden

Proposals have been made to re-establish horticultural use:

- A local councillor suggested the recreation of a 'Victorian Kitchen Garden'. This would be historically appropriate, but it is unclear what purpose it would serve in the existing context. It would be costly to maintain, but may have potential to attract considerable voluntary interest.
- An outline scheme has been drawn up to create a garden of herbs, medicinal plants, dye-plants, and other chemically useful or interesting plants. This would be used as a resource for research purposes, supplying a richer variety of 'raw materials' on site. It would also make an attractive garden that could

be integrated with the other development proposals discussed above. A commercial company would operate it, with Lawes Agricultural Trust funding the initial hard landscaping costs.

- The future of the walled garden (and the gardens in general) is intimately tied up with the future of both the House and Soil Store.

Ornamental Gardens

There are no plans for development or for alteration of existing management. This area is already well kept and fulfils its role of serving the needs of the house in its current condition. As things stand there appears to be no pressing reason for major changes in management.

Surrounding Landscape

- Replanting of Front Avenue - until recently Professor Roger Plumb (a senior fellow of Rothamsted) was co-ordinating a project to replant an avenue in front of the house to replace the 1721 elm avenue. The favoured tree (in July 2002) was horse chestnut (Aesculus hippocastanum). The spacing and extent of the replanting was still to be decided. It was hoped that the cost could be met through sponsorship. The project has been temporarily suspended because the trees would interfere with a radar-tracking experiment on the flight paths of bees.
- Experimental Fields - there are long-running but unresolved ideas about having some level of public access to the classical field experiments (Broadbalk, Park Grass etc). The fields lack glamour at first sight, and there are few if any similar sites to learn from. Public access would require some imagination and careful thought, particularly in establishing appropriate methods of presentation and interpretation. Suggestions have included raised viewing platforms to enable visitors (and scientists) to appreciate the differences in the plots. Security would need to be addressed if public access was increased.
- Manor Wood - following a period in which this formerly ornamental woodland received comparatively low levels of management, a new approach put forward by the Woodland Advisory Group was adopted, and has been followed for a number of years. This is to manage as native woodland, with natural regeneration and the planting and encouragement of native species. This approach is gradually transforming the Manor Wood.