WALLED KITCHEN GARDEN, WINSTANLEY HALL, WINSTANLEY, WIGAN

Historic Building Recording

Matrix Archaeology

September 2001

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Report No. 2001-07

Client: Mr & Mrs T. Banks

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September 2001

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1. INTRODUCTION

1.1 Historic building recording of the walled kitchen garden and related structures within Winstanley Park, Wigan, was undertaken by Matrix Archaeology during June/July 2001, on behalf of the clients, Mr and Mrs T. Banks; in advance of a proposed private development. The work was undertaken in accordance with PPG15, and was commissioned by Mr Alan Jolley of Alan Jolley Design Services Ltd, architect to the clients.

1.2 Winstanley Park is centred upon Winstanley Hall (listed grade II*), a great house of Elizabethan origin located *circa* 350m to the south-east of the kitchen garden, which was occupied until the mid. 20th century. A rectangular moat adjacent to the kitchen garden is believed to have been the site of an earlier medieval hall; whilst the kitchen garden itself functioned to serve the estate, probably from the late 18th century until the early 20th century.

1.3 The historic building recording comprised field survey and photography, as well as consultation of a number of primary and secondary documentary sources, including all easily available historic cartographic sources. A number of other local walled gardens were visited in order to provide a historical and architectural context.

1.4 None of the buildings at the kitchen garden are listed, but the moat comprises part of a Scheduled Ancient Monument (SM 22481/01), along with a group of fishponds (SM 22481/02) located *circa* 200m to the north-east.

1.5 The portion of the Winstanley estate centred upon the kitchen garden has been the subject of a separate *Archaeological Assessment* report by Matrix Archaeology (Fletcher 2001).

Acknowledgements
The following individuals and organisations are to be thanked for their assistance during the work:
Alan Jolley of Alan Jolley Design Services Ltd; Local History Shop, Wigan; Alan Davies of Wigan Archive Service, Leigh; Fiona Green, Archaeological Consultant; Jeremy Milne, National Trust Archaeologist.

2. LOCATION

2.1 Winstanley Park is located *circa* 4km to the south-west of Wigan, and is now approximately defined by the M.6 motorway on the west, the A.571 Wigan-Billinge road on the east, and the Wigan-Liverpool railway line on the north. The Park comprises an area of *circa* 2 square kilometres, most of which is open farmland, with the valleys and low-lying areas being wooded (**Figure 1**). The walled kitchen garden was located within the northern central portion of the park, adjacent to the medieval moated site.

2.2 There is no sharp divide where the West Lancashire Plain meets with the West Pennine Uplands; instead there is a series of low rounded hills in the vicinity of Wigan. One of these is Billinge Hill, which rises to a maximum altitude of 179m O.D. The gentle north-western slopes of Billinge Hill are incised by a number of small tributary streams of the river Douglas, creating a well drained and fairly undulating landscape. Winstanley Park sits within this landscape; the maximum altitude of the park being *circa* 110m O.D. at Camp Hill in the south-west, whilst the minimum being *circa* 55m O.D. at Rylands Mill Bridge to the east. The walled garden was located at *circa* 75m O.D., immediately to the south of one of the minor tributary streams, on the gentle south-west to north-east valley slope.

2.3 Geologically, Winstanley Park lies within the westernmost portion of the exposed Lancashire Coalfield. The solid geology comprises Carboniferous Middle Coal Measures, and the park itself represents the southern part of the Orrell – Winstanley Coalfield. Exploitation of this particular coalfield over several centuries (by the Bankes family and other groups) has resulted in fairly detailed knowledge of the stratigraphy. Locally, the coal measures comprise largely mudstones and shales which dip gently towards the east. However, the Variscan orogeny has produced a number of great faults which trend from south-west to north-east across the coalfield, which have resulted in stratigraphic complications. One of these is the Tinker Hole Fault which runs between Winstanley Hall and the study area; this fault has a downthrow on the east of 185 yards.

2.4 The line of the Tinker Hole Fault also demarcates the exposure of the rockhead – to the east of the fault the coal measures are not obsured by drift deposits; whilst to the west of the fault there is superficial cover of englacial boulder clays of Northern Drift origin, which underlies most of the northern half of the park, including the study area itself.

2.5 The derived soils within the park sharply reflect the underlying geology – that within the southern part of the park is of the Salop Association, comprising gley soils and peaty gley soils; whilst that within the northern part of the park, including the study area, is of the Newport Association, with brown earths on the valley slopes and ground-water gley soils within poorly-drained hollows.

3. HISTORICAL BACKGROUND

3.1 For the purposes of this report, the periods discussed are as follows:

Medieval:	AD 1066 - AD 1540
Early Post Medieval:	AD 1540 - AD 1750
Late Post Medieval:	AD 1750 - present

3.2 The walled garden

The walled garden is not shown on the estate plan of 1770. The earliest evidence for its existence is the estate plan of 1792 (DDBa) (**Figure 2**), which shows the garden as being divided into eight plots, with walkways between. Occupying the central third of the north wall was a single large building, which straddled the wall, probably a glasshouse. To either side of this, and built against the northern side of the north wall, was a pair of small rectangular structures, probably furnace sheds to contain the fires, which were used to heat the wall. Three similar structures were shown against the west side of the west wall, probably furnace sheds again. The head gardener's cottage comprised a single rectangular structure, presumably the core of the existing building.

The earliest historical reference to the walled garden was probably in 1798, as the Bankes Account Book for that date states:

> *Paid James Foster and Co. for getting slutch out of mote behind the garden £2-0-0d.*

The word 'slutch' is local dialect for mud, and it can be taken that this was a de-silting operation, with the organically rich material being probably left to dry out before being spread upon beds within the walled garden, and upon fields within the estate.

The 1820 estate plan (DDBa) (**Figure 3**) shows the garden as being divided into two unequal portions, with a north-south walkway dividing the smaller eastern plot from the much larger western one. This plan may have been related to a phase of reconstruction (Lewis Wyatt undertook work at Winstanley Hall in 1819), because the 1838 Tithe plan shows that the area had by then been divided into three large plots, as opposed to the eight small ones on the 1792 plan. The 1820 plan also shows a large structure, possibly a glasshouse, having been erected against the south face of the north wall, between the earlier large glasshouse and the head gardener's house.

The 1838 Tithe plan (**Figure 4**) shows a number of small structures against the north wall, apart from the large glasshouse, but these do not seem to tally with the First Edition O.S. plan of 1849 (**Figure 5**), which is probably the first accurate representation of the garden. This shows the two large glasshouses, the head gardener's house extended westwards along the back of the wall, and a small structure at the west end of the north side of the north wall, possibly

one of the earlier furnace sheds. Additionally, within the north-west and the north-east portions of the garden were two small free-standing buildings.

By 1893 (O.S. 1:2,500 plan, **Figure 6**) the north wall of the garden appears to have been almost completely obscured by glasshouses against the south face, and outbuildings to the north. Between 1908 and 1928 (O.S. 1:2,500 plans, **Figures 7** and **8**), the glasshouses located in the western third of the garden had been demolished, being partially replaced by a new north-south aligned free-standing glasshouse within this area.

Apart from a few additional minor changes, including the demolition of the latter structure, the garden appeared to have remained little altered until 1960 (O.S. 1:2,500 plan, **Figure 10**). Since then, the remaining glasshouses have fallen into dereliction.

Ray Winstanley (Winstanley, 1998) claims that the north wall (and presumably the other walls) were built by William Bankes in the late 18th century as a flued wall. His description of the garden appears to relate to the early 20th century (between 1918 and 1928), but much of this could be extrapolated back into the Victorian period with a degree of confidence:

> *During Mr Fouracre's early days all of the produce from the gardens was used at the Hall. Before Bankes's came back from Scotland, generally in November, Robert Harris had to see that plants and flowers were taken up to the Hall from the gardens. He also had to see to the watering of them. When the family left the Hall for London, or anywhere else, the plants were taken back to the gardens.*
>
> *In the gardens there were three greenhouses at the west end of the north wall and in these were grown nectarines and peaches - four trees in each house. The next house (going east towards the gardeners house) was a fernery. After that were four vineries. In these vineries was a lemon tree, a citron tree and an orange tree. There were approximately 12 vines. The middle vinery produced Muscat grapes; camellias and other beautiful flowers grew on the walls. Some of the vines were known as "Alencons". The fourth vinery had a fig tree growing on the wall.*
>
> *Near the head gardener's house stood the apricot house. Apricots must have been grown in it earlier but in Mr Fouracre's time it was mainly used for the production of tomatoes. The carnation house was in two parts – one for mature plants and one for propagation and growing tomatoes.*
>
> *Another greenhouse was known as "the pit". It was always kept very hot – over 70 degrees F. The principal fruit grown in this house was pineapple – one part young ones coming up and the other part fully grown. The pineapple plants were in big pots*

and were set in tannery waste. Melons were also grown in this house. A small area was sown with mustard and cress each week – about 3ft by 1 ft. The stoking arrangement for this house was very awkward. The fire hole was down six steps and the gardener had to hold the flap door open with one hand whilst he stoked up with the other.

Mrs Bankes' greenhouse. Orchids and other flowers, palms, etc, were grown in this. It was heated by a separate fire. The chief source of heating was by means of two large Robin Hood boilers. These heated all the greenhouses except "the pit" and Mrs Bankes's. Coal was carted from the mineral railway sidings, near the weighbridge north of Baxter's Pit, to the gardens and the Hall by Tom Moore or Bob Bamber, the estate carters.

Near the head gardener's house and along the east side of the gardens there was a beautiful herbaceous border. From here a path led through a shrubbery to the "Lady's Garden" in Mossy Croft. The main part of the garden was divided by paths into six separate plots. There were many apple, pear and logan berry trees. Strawberries, raspberries, black currants, gooseberries and other kinds of fruit were grown. Sea-kale was grown in pots – in the mushroom place, to force it. New potatoes were produced for the Grand National house party every year by growing them in the greenhouse – one in each pot. Strawberries were also produced for the Grand National (Winstanley, 1998).

Regarding the staff, Winstanley states:

***Robert Harris** was the head gardener. He died in the early 1920's and was succeeded by **Mr Kydd**, a small man with a beard, and when he left **Mr Daw** came from Haigh Hall to take up the position. Before he went to Haigh Hall Mr Daw had worked for a considerable time as gardener at the Elms, Wigan Lane, the home of Mr Woodcock, the banker.*

Besides Mr Harris there were the following employees in the gardens:
***Sam Fouracre**. Mr Fouracre took the place of old Jem Whittle who left after 52 years service. He must have worked there in old Meyrick Bankes' days.*
***George Humphries**.*
***Charlie Hughes** joined the staff after being demobbed at the end of the last war (World War I). Charlie had also fought in the Boer War and was awarded the Africa Star.*
***Alice Fouracre**. Daughter of William of Birch Tree Farm.*
***Sarah Heaton** from the cottage near the "old school" (Winstanley Road)*
***Maggie Pennington**.*

Hilda Gaskell.
Some time after Mr Fouracre started at the gardens ***Harold Humphries****, son of William Humphries of Woodbine Cottage (Winstanley Road) started work there.*

This is the only known account of the walled garden, and it is not likely that there are surviving estate workers with any detailed knowledge of the garden. One striking point about this list is the presence of four local women working in the garden. This was not a common practice before 1914, and it is possible that some of the men who had worked in the garden before the First World War had been killed during that conflict, and their places taken by local women, possibly first employed during the War. The gardens at Heligan in Cornwall first fell into disuse when more than half of the men who worked there were killed in Flanders. This aspect of the Winstanley estate surely deserves further research.

4. BUILDINGS DESCRIPTION

4.1 Methodology

A suite of 1:50 scale plans and elevations had been prepared by Alan Jolley Design Services Ltd. Additionally, a new digital survey of the site had been produced by Peter Houston Surveying. The 1:50 scale plans were amended and added to in the field, with the results being used to amend the digital survey in AutoCAD. Evidence derived from historic cartographic sources was also integrated (**Figures 11, 12 & 13**). Also, three new cross-sections were produced, to indicate how the heated wall related to the adjacent buildings (**Figures 15, 16 & 17**). The visible portions of the heated wall were recorded by rectified photography, using a Mamiya 6x7cm medium format camera, fitted with a 75mm shift lens. These were enlarged to 1:50 scale for archive purposes, and the camera and target locations are indicated upon **Figures 12, 13** and **14**. Conventional medium format photography was also used, a selection of these photographs are reproduced within this report (**Plates 1-18**).

4.2 General

The walled garden measured 111.20m from east to west, by 73.60m from north to south, which equated to an area of 0.82ha. Somewhat unusually, the wall extended only around three sides, with the south side being defined by the ha-ha. The wall was constructed of handmade brick, and varied in height between 3.75m and 4.0m. The north and west walls were somewhat thicker than that to the east, indicating that they had been originally constructed as flued (or heated) walls. As it would catch the sun for most of the day, the north wall formed a structural 'spine' for most of the garden structures, and hence was of more interest than the other walls. The length of this north wall was divided into three equal portions by two doorways, which may themselves have been secondary insertions. A group of buildings developed within each of these three portions, with lean-to glasshouses against the south side of the wall, and brick-built outbuildings to the north. The head gardener's house was located at the east end of the north wall.

Within the northern portion of the garden were three other buildings, numbered 13, 14 and 22; these were probably glasshouses with independent heating systems. Against the west face of the west wall were two other brick outbuildings, numbered 20 and 21.

4.2 The Buildings

Each identified building was allocated a number, regardless of whether or not the structure was intact, or was identified only from the cartographic evidence. Where there was either structural or cartographic evidence to suggest that one building may have had more than one phase of construction, each element of the building was defined by a separate number. Where definitive dates are supplied, these are derived from the cartographic sources as follows:

1792 – Winstanley estate plan (Figure 2)
1820 – Winstanley estate plan (Figure 3)
1838 – Winstanley tithe plan (Figure 4)

1849 – 1:10, 560 O.S. plan (Figure 5)
1893 – 1:2,500 O.S. plan (Figure 6)
1908 – 1:2,500 O.S. plan (Figure 7)
1928 – 1:2,500 O.S. plan (Figure 8)
1938 – 1:2,500 O.S. plan (Figure 9)
1960 – 1:2,500 O.S. plan (Figure 10)

Heated Wall

The heated (or flued) brick wall defined the northern edge of the garden, and most of the garden-related structures were erected against this, as lean-to buildings. In height, it averaged around 3.75m to 4.0m above ground level, although it did not accord with any level datum, but appeared to have been raised to this height above the original ground level. The wall was 0.60m in thickness, of which the internal heated cavity comprised 0.22m, and the single leaf on the south face was 0.10m thick. The tie across the cavity comprised rows of very long headers. On the south (or heated) face, the bond comprised English garden wall bond of six or seven rows of stretchers to one row of headers, with the stretchers delineating the height of the cavity. Above this level (i.e. above the heated lower section), the proportion of stretchers to headers was less. On the north (or unheated) face, the bond was more difficult to describe, as it contained unpredictably intermediate rows of mixed headers and stretchers.

The heated cavity, in common with such walls elsewhere, would have comprised a 'serpentine' arrangement whereby the hot fumes from fires set in the base of the wall were forced to travel horizontally through the wall, to a point where they rose vertically into the next chamber, where they then ran back through the wall, until they were vented through the wall top by a small chimney. Although at Winstanley it was possible to see into the cavity at various points, it was not possible to determine the internal structure because there was no means of estimating the lateral extent of the cavities.

On the north side, the wall was punctuated at intervals by bricked up cleaning holes. All of these had been bricked up, probably during the 19th century when the heated wall would have become redundant. There were 2 types of these, defined for this purpose at 'Type A' and 'Type B'. Type A were larger, and occurred in vertically aligned groups of three or four. Type B were smaller, and occurred either singly, or as part of a tall, narrow infilled intervention, which may have originally represented several such features. One of the Type A was noted on the south side of the wall, at ground level at the west end of Building 9. There were, however, no indications of any fireplaces where fires would have been stoked to heat the wall, and it is assumed that these will lie below present ground level on the north side of the wall. Neither was there any evidence for chimneys on the top of the wall, which would suggest that the wall has capped off with the existing sandstone slabs when the heating function ceased.

There were three openings in the wall. Two of these were pedestrian doorways, which were located at a distance of about one-third and two-thirds

of the length of the wall; whilst the third was a modern double-gate near to the west end, inserted after 1960.

Building 1 - Glasshouse (Figure 13; Plates 1 - 4)
Although Buildings 1, 2, and 3 appear to constitute a single structure, as shown on all of the cartographic sources, the field evidence implies that this constitutes three separate glasshouses, at least by the early or mid. nineteenth century. However, the three buildings were probably erected as a single entity either when the walled garden was first erected, or shortly afterwards. At the time of the survey, only the cast-iron frame of Building 2 survived, and Buildings 1 and 3 were represented only by brick footings and some internal features.

The west and south walls of Building 1 were of handmade brick within a white lime mortar, and the south wall was punctuated by ten segmental brick 'vine arches', which allowed vines growing within the building to be rooted outside (**Plate 2**). The eastern limit of the building was defined by a broad footing of handmade brick with a white lime mortar, which coincided with the westernmost element of the cast-iron frame of Building 2.

Internal features included a large tank of Welsh slate slabs, and just to the west of this was a gritstone bed on a brick footing, which supported part of a ratchet mechanism presumably used for regulating ventilation of the glasshouse (**Plate 3**). Displaced wrought iron rods, connected to a worm drive and mitred cog mechanism, originally bracketed to a wall, lay on the floor (**Plate 4**). Immediately to the north of these features was a low wall of handmade brick, with a sandstone coping; between this and the heated wall was presumably a passage accessed from the steps at the north-western corner of the building. The only evidence for a roof structure was a row of large joist sockets at a high level in the heated wall, at horizontal intervals of *circa* 2m. There is no evidence to suggest whether the joists or beams were of timber or cast iron, although it is most likely that their pitch matched those of Building 2.

Building 2 – Glasshouse (Figures 13, 16; Plates 5 – 12)
The cast-iron framework of this structure was the most impressive survival of the whole walled garden, and it was located centrally to the south face of the north wall. It was contiguous with Buildings 1 and 3, and yet the superstructure had survived, unlike the other two, possibly because it is difficult to reuse cast iron.

The roof comprised twelve cast iron beams, which spanned between the heated wall and the south wall of the structure. The profile of these beams was that of an I-section, with an additional flange located halfway up the web (**elevation D-D1, Figure 16**). This latter feature still carried patches of putty, suggesting that it's purpose was to support both the glazing, and the timber glazing bars, one of which still survived *in situ* at a high level. The easternmost beam had evidently been cut towards its south end, and was partially displaced (**Plate 7**). The section of this was differentiated from the other beams by the addition of a thin web on the eastern (external) portion of the soffit (**inset, Figure 16**), to which a series of thin cast iron transoms were

bolted, at horizontal intervals of 0.18m. These had a T-section, and had been cut away to within *circa* 75mm of the beam soffit, and if the beam had been *in situ* they would evidently have extended vertically towards ground level, strongly suggesting that glazing extended between these transoms, to form the east end of this building.

About halfway along the beams were a series of wrought iron tie-rods, which would have prevented any lateral extension, or 'spreading' of the structure (**Plate 11**). Additionally, and standing off the 'passage wall', a series of slender, circular-section cast-iron columns rose to meet the beam soffits (**Plate 7**). These were not substantial enough to retain a structural capacity, and were more likely to be decorative. The upper end of the beams were sat upon a continuous series of sandstone ashlar bearing blocks, whilst the lower beam ends were carried upon vertical cast iron T-sections which were themselves set within a sandstone coping which capped off the southern wall of the building (**Plate 9**). At eaves level, the flanged and bolted ends of a cast iron L-section was affixed between the T-sections, and this carried a cast iron gutter on the exterior (**Plate 10**). The southern wall was comprised of handmade brickwork piers, 0.35m in width, between which were rectangular apertures, which must have functioned as the 'vine arches' described within Building 1.

The 'passage wall' mentioned above comprised a single thickness of handmade brick with white lime mortar, capped by a sandstone coping. This ran parallel to, and 1.3m from, the heated wall, and near to the east and west ends of the building, it returned southwards for a short distance, presumably to allow access through the building. Within the eastern return angle was another slate-built tank, similar to that within Building 1. Against the inside of the southern wall was a 100mm cast iron pipe, which extended east to west, and fed two evaporating pans within Building 3.

Building 3 – Glasshouse (Figures 13, 15; Plates 12-14)
This building comprised the easternmost component of the earliest glasshouse and, as for Building 1, the roof structure did not survive. The south and east walls were of machine-made brick, with rectangular cavities in the south wall to provide for the 'vine arch' function as described above (**Plate 12**). At the east end of the building, a slate tank survived intact, contained within the remains of a handmade brickwork 'frame' structure (**Figure 15**). The tank measured internally 1.37m (4ft 6in), by 1.06m (3ft 6in), with a depth in excess of 0.85m. The shorter sides were tenoned with cement into trenches cut into the longer sides, and it was evident that the tanks were prefabricated offsite because the joints were matched by duplicating numbers of small holes drilled into the upper edges of the slabs, similar to the carpenters' marks which have been recorded for assembly of roof trusses. The slabs were bound together by wrought iron tie-rods, bolted between the longer faces. On the east face of the tank, at a depth of 0.65m, was a circular outlet hole, which could only be seen on the inside.

As mentioned above, a 100mm cast-iron pipe extended along the inside of the south wall, this carried two rectangular 'evaporating pans', although the pipe was fractured at both ends, and it was not possible to determine where the

water supply had originated. The heated wall face within this building still held cast iron brackets for fixing of wires along the wall face at 0.2m vertical intervals, presumably for training of fruit trees. As drawn wire was a mid. nineteenth century development, these features must post-date that period.

With regard to evidence for the roof structure, only a single beam socket could be identified in the heated wall, presumably the remainder being obscured. This beam-end had been mortared in place, and following demolition of the roof, the profile of the east face of the beam end was retained as an imprint in the mortar within the socket (**inset, Figure 15**). This suggested that it comprised a cast-iron T-section, with an extravagantly moulded fillet integral to the angle between web and flange. Such a form was certainly of early 19th century date, and was very different from the 'functional' profile of the roof beams recorded in Building 2. Also related to the roof was a cast iron mechanism which had been bolted to the heated wall, comprising a winding handle which turned a worm drive, which itself engaged and rotated a segment of a cogged wheel, which in turn must have created a reciprocal motion on a rod which activated ventilation of roof panels (**Plate 14**).

Buildings 4, 5, 6, 7 & 8 – Outbuildings (Figures 13, 15 & 16; Plate 17)
Buildings 4, 5, 6, 7 and 8 constituted a single contiguous 'lean-to' structure which mirrored Buildings 1, 2, and 3 to the north side of the heated wall. Although the 'footprint' of these buildings was established in 1792, and may therefore have been integral to the construction of the heated wall, it is likely that the structures existing at the time of the survey had been largely rebuilt.

The west and north walls of Building 4 had been demolished sometime after 1960, although the stub of the west wall remained, and was clearly bonded into the heated wall. Where bonded bricks had been removed, the wall cavity could be seen. In the face of the heated wall here could be seen a vertical set of three blocked 'type A' cleaning holes. Adjacent to the west wall stub, at a height of *circa* 2m, was a 0.165m diameter cast iron pipe, probably from a boiler located within this building. Adjacent to this, the brickwork on the face of the heated wall had spalled badly, presumably due to heating and cooling. Brick corbels indicated the positions of former ?timber roof trusses.

Buildings 5, 6 and 7 were not bonded in to the heated wall, and comprised machine-made brickwork in an English garden wall bond of 6 stretcher courses to one header course. The window lintels were of sandstone, crudely cut, whilst the lintels were segmental arches of brickwork voisseurs.

The heated wall within Building 5 was stepped back at a level of *circa* 3m above the floor, with two piers above this level which retained the lower thickness. This step may have been intended to reduce the wall thickness *above* the flued lower portion of the wall, and hence may have represented the ***original*** appearance of the heated wall. The two piers would coincide with the positions of glasshouse roof beams in Buildings 1 and 2 on the south side of the wall. Also within Building 5 could be seen three bricked-up cleaning holes, all of Type B.

Buildings 6 and 7 appeared to form a single, interconnected unit. Building 6 had a fireplace with an *in situ* cast iron range (**Figure 16**; **Plate 17**). This would suggest that this building had functioned as the head gardener's office. The adjacent Building 7 had no access other than through Building 6, and the only window was an inserted one, probably of 20th century date. This would suggest that this was either a fruit store, or a forcing shed, with no natural lighting. Building 6 had a single set of 'Type A' bricked-up cleaning holes, arranged vertically within the heated wall.

The east and north walls of Building 8 were demolished after 1960, and replaced with an open-sided shed comprising timber posts carrying a corrugated metal roof. At the south end of the west wall of this building was the remains of a small fireplace. Within the heated wall here was a feature which may be unique to the walled garden, which comprised two courses of grey firebrick, built into the wall as a pair of mirrored diagonal courses. These seemed to indicate the position of a former pitched 'roofline', but they were flush with the wall face, and evidently integral to the construction of the wall. It is not known whether they extend into or through the cavity, and it is suggested that they were intended to reduce the transmission of heat through the wall. Alternatively, they may have represented the limits of two (or three) separate flue channel systems within the wall. Between these was a single set of 'Type A' bricked-up cleaning holes, arranged vertically, one above the other (**Figure 15**).

Building 9 – Glasshouse (Figure 14; Plate 15)
This building was probably in existence before 1820, and formed part of a group with Buildings 10 and 11. It was demolished sometime between 1928 and 1938, and the only physical evidence for this structure comprises a reduction in height of the heated wall, from 3.75m to 3.0m, at the projected eastern end of the building, and a short section of a masonry footing immediately beneath here. At the north-west corner of the building 'footprint', there were holes cut into the heated wall indicative of where the west wall had been tied in. Also at this corner, at the base of the heated wall, could be seen the segmental brick arch of what appeared to be a cleaning hole (Type A?), or alternatively a furnace. The low level, and occurrence on the south face of the wall, may suggest the latter explanation.

Buildings 10 and 11 - Outbuildings
This range of lean-to sheds were slightly offset from Building 9, and existed before 1849. They were constructed of handmade brick set in an English garden wall bond of three stretchers to one header. The window sills were of machine-cut sandstone, whilst the lintels comprised segmented brickwork arches. The roof appeared to be an original one, of Welsh slate. Within the heated wall were two sets of bricked-up cleaning holes – the western set comprised four apertures vertically aligned (Type A); whilst the eastern set comprised three apertures vertically aligned (Type B). It is suggested that these buildings may have been intended as potting sheds.

Buildings 12, 18 and 19 - Outbuildings (Figure 12)
These buildings comprised a contiguous range on the north side of the heated wall, at the west end of the garden. Only Building 19 was intact at the time of the survey, the other two buildings having been demolished, between 1908 and 1928. Building 12 was in existence in 1849, and possibly as early as 1792; whilst Buildings 18 and 19 were erected between 1849 and 1893.

The only site evidence for Buildings 12 and 18 was a series of three sandstone corbels built into the upper part of the heated wall here, with *ovolo* profiles (**see inset, Figure 12**). These must have supported rafters within the lean-to roof structure. Within the heated wall, there were two sets of bricked-up cleaning holes; both comprised four apertures aligned vertically, all of Type A. In both cases, the second aperture from the bottom had been partially obscured by remedial work which involved insertion of two courses of machine-made 'NORI' brickwork. Also, at the eastern end of Building 18, the lower portion of the heated wall had been thickened by construction of a new section of walling, probably during the 20th century. At the west end of Building 12, a section of the heated wall had been demolished to allow a double gate to be inserted, again probably during the 20th century.

Building 19 comprised an open-fronted shed of three bays, with a continuous timber lintel supported upon two cast iron columns (**Figure 17**). Roof trusses were supported above each column. The east and north walls were of machine-made brick in an English garden wall bond of three stretchers to one header. The east wall was not bonded in to the heated wall. The west wall was evidently earlier, being bonded into the heated wall, being of handmade brick, and having a very irregular bond. The north wall of the building was butt-jointed to the north end of the west wall.

The continuous timber lintel was of Baltic pine, with a string of inscribed Cyrillic characters on the inside face (**Figure 17**). Such characters are commonly found within industrial buildings of late 18th or early 19th century date. Similar characters were also found on a section of displaced timber which lay on the ground, and had formerly been used as part of a gatepost on the gate at the west end of the heated wall (**Plate 18**). The circular section cast iron columns each had four moulded webs below the flange, but were otherwise of limited interest, and were probably of mid-19th century date.

At the east end of this building was a single corbel, inserted into the heated wall, which suggested an earlier (lower) roof arrangement. This was of sandstone, with a *cyma recta* profile (**see inset, Figure 12**). Within the heated wall here were two sets of bricked-up cleaning holes (Type A), each set comprising four apertures aligned vertically.

Building 13 – Glasshouse (Figure 12)
This building was free-standing, and was located within the north-western corner of the walled garden. It was in existence by 1849, and had disappeared between 1908 and 1928, presumably being replaced by Building 22.

Building 14 – Glasshouse (Figure 14)
This building was also a free-standing glasshouse, located in the north-eastern corner of the garden, near to the head gardener's house. This too was in existence by 1849, and appeared to have been enlarged eastwards between 1908 and 1928, and was demolished after 1960.

Building 15 – Glasshouse (Figure 14; Plate 15 and 16)
This building was located against the heated wall, contiguous with the head gardener's house. It was constructed between 1849 and 1893, and the section closest to the house was demolished between 1908 and 1928; with the remainder being demolished after 1960. The only surviving evidence for a glasshouse here was a cast iron bracket in situ on the heated wall, which contained a worm drive, presumably to operate a ventilation system (**Plate 16**).

Buildings 16 and 17 – Glasshouses
These two glasshouses were located at the west end of the heated wall, and had disappeared entirely at the time of the survey. They were constructed sometime between 1849 and 1893, and were demolished between 1908 and 1928.

Buildings 20 and 21 - outbuildings
These lean-to structures were located against the west face of the west garden wall, and were constructed between 1849 and 1893, but were not surveyed within the context of this project.

Building 22 – Glasshouse
Located in the north-western corner of the garden, this building was constructed between 1908 and 1928, probably replacing Building 13. It was demolished between 1938 and 1960. There are no surviving structures.

5. INTERPRETATION

A possible precursor for the walled garden at Winstanley may have existed within the moated site, where cartographic evidence has suggested that a garden may have existed within the post-medieval period. Such a scenario would help to explain why the walled garden is located in such close proximity to the medieval moated site, and this matter is discussed in more detail in the report on the *Archaeological Assessment* (Fletcher, 2001).

The original construction of the walled garden, with heated walls, at Winstanley sometime between 1770 and 1792 is entirely in keeping with developments at other gentry and nobility houses in the north of England during this period. The 'productive' garden was intended to compliment the 'pleasure' garden, as a source of exotic fruits, vegetables, and plants, with the heated wall (or hot-wall) providing a localised micro-climate to protect the plants from frost. This was done by constructing a flued-wall with a cavity, which was normally south-facing in order to benefit from the sun. Coal or wood fires were set within hearths at the base of the wall, and John Louden (1783-1843) stated that one fire would heat a 40ft section of wall between 10 and 15ft high (Green, 2000).

The form of the original structures appended to the wall at Winstanley, as indicated on the 1792 estate plan, is uncertain. However, the large central structure was probably on the same 'footprint' as Buildings 1-3 & 4-8. It is probable that the south and west walls of Building 1 were part of this original glasshouse. The roof structure of this building would comprised timber members, as cast iron beams were not employed until 1796 in textile mills (Fitzgerald, 1988), and it is unlikely that they would have found applications within country estates for a number of years thereafter. The small structures appended to the backs of the north and west walls on the 1792 plan are suggested as furnace- or fire-houses, erected to protect the fireplaces (and the gardener tending the fire) from the weather, and presumably to store dry fuel for future use. The remains of one such structure have been excavated recently by the National Trust at Tatton Park, and it would seem likely that similar structures lie beneath the existing ground surface at Winstanley.

Much of the structural evidence retained within the remains of Buildings 1, 2 and 3 suggests that this range of buildings was rebuilt as a 'pinery' for growing of pineapples, possibly with the three separate structures reflecting divisions for differences in seasonal maturity of the fruit. A pinery designed by John Loudon in 1806 has a cross-sectional profile almost identical to that of Buildings 2 and 3 (**Figures 15 & 16**), although there have been later alterations within these buildings also. The pinery was commonly combined with a vinery, with the roots being planted externally and the vine stem trailing in through an arched opening in the outer wall, from where it was tied to the soffit of the roof beam. Such 'vine arches' are also present at Winstanley, which would confirm the combined function of Buildings 1-3. The 'pinery-vinery' was not a great success, and the buildings seem to have contained only vines by the early 20th century (see below).

By the mid. 19th century, the heated wall arrangement was becoming obsolete within walled gardens, and boilers were frequently installed for heating. The boilers provided either steam, or hot water (or both) for heating and raising humidity. Cast-iron pipes carried hot water to cast evaporating pans, and two such features were recorded in Building 3 at Winstanley. The two 'Robin Hood' boilers described by Winstanley (*3. Historical Background* above) would have been located on the north side of the north wall, below ground. One was probably within Building 4, as a large-diameter cast-iron pipe can be seen here, extending into the heated wall. It is suggested that the other boiler was within Building 8, and it is likely that one or both will still be intact.

Some heated walls were apparently fired using timber, but many of those located in Lancashire and Yorkshire used coal derived from mines within the estate. Winstanley states that the coal for the boilers was carted from nearby mineral railway sidings in the early 20th century. However, there was an old coal shaft located on the medieval moat platform, less than 50m to the north of the walled garden. This shaft was evidently disused by 1908 (O.S. 1:2,500 scale plan), and could have been sunk by the Bankes family during the late 18th or early 19th century as a fuel supply for the garden, initially being used for the heated wall, then later for the boilers. Extraction from such a small scale pit could not have been economically viable during the later 19th century, which would accommodate the coal being won from elsewhere. This aspect of the site is dealt with more fully within the Archaeological Assessment report (Fletcher, 2001).

The boilers would need a constant supply of clean water, whilst large volumes of water would be needed on a daily basis for the garden, especially during summer. At Worsley New Hall, near Salford, the walled garden was supplied from a vast spring-fed underground tank, holding thousands of gallons. Sometime between 1838 (Tithe plan) and 1849 (O.S. 1:10,560 plan), the southern limb of the medieval moat was partially infilled, to leave one short section isolated as a rectangular pond, *circa* 20m to the north of Buildings 4-8 (**Figure 11**). A culvert or pipe may have been installed to divert water beneath the walled garden, and a cast-iron rising main is still visible at the east end of Building 1. There is also believed to be a well within the north-east corner of the garden. Another source of water would be the run-off from the glasshouse roofs. At other walled gardens, this was collected from the gutter by pipes and fed into tanks, and this would seem to have been the function of the tanks within Buildings 1, 2 and 3.

Comparison of Winstanley's account of the early 20th century garden description with the buildings numbered on the composite plan (**Figure 11**) would suggest the following interpretation:

Building 17 - *Within the walled garden were three greenhouses at the west end of the north wall* (nectarines and peaches).

Building 16 - *The next house was a fernery.*

Buildings 1, 2, 3 & 9 - *After that were four vineries.*

Building 2 - *The middle vinery produced Muscat grapes.*

Building 9 - *The fourth vinery had a fig tree growing on the wall*

Building 15 - *Near the head gardener's house stood the apricot house... The carnation house was in two parts – one for mature plants and one for propagation and growing tomatoes.*

Building 13 - *Another greenhouse was known as "the pit"...The principle fruit grown in this house was pineapple.*

Building 14 - *Mrs Bankes' greenhouse* (orchids and other flowers).

Buildings 4 & 8 - *The chief source of heating was by means of two large Robin Hood boilers.*

Building 7 - *Sea-kale was grown in pots – in the mushroom place, to force it.*

Mrs Bankes' greenhouse and "the pit" were heated by separate fires, which strongly suggests that these buildings were freestanding structures, away from the north wall of the garden. That Mrs Bankes' greenhouse was probably Building 14 is suggested by the proximity to the head gardener's house – he would presumably have taken a closer interest in a greenhouse linked directly to his employer.

Pineapple 'pits' were common features of walled gardens, and during the late 18th and early 19th centuries these were heated by use of animal manure, and the temperature had to be carefully managed to prevent the 'pit' from bursting into flames, as many did. Although Winstanley states that "the pit" was heated from a stoke-hole, it may have been converted from a manure-type. These structures were commonly of great complexity, involving separate growing chambers, cavity walls, and honeycombed walls (Smit, 2000).

Building 19 was interpreted as an open-fronted equipment store, ideal for keeping long ladders, wheelbarrows, carts, etc. The timber lintel, of Baltic pine, deserves further comment. The timber marks visible on the back face of this lintel (**Figure 17**), as well as those on the displaced timber adjacent to the gate at the west end of the north wall (**Plate 18**), are typical of those found on pine imported from the Baltic countries to Britain between the late 18th and early 19th centuries. A great number of these marks were recorded in the 1830 Railway Warehouse in Manchester (Green, 1995), and they tend to occur mainly within industrial buildings, although they are also found within domestic contexts. The presence of such a group of timbers at Winstanley would suggest a major construction episode within the estate, in either the late 18th or the early 19th centuries.

Within such a timespan, it is tempting to consider the local activities of the architect Lewis Wyatt, who in 1818-19 was employed at Winstanley Hall. He also undertook alterations to the roof of nearby Hawkley Hall, and the timber used in the latter building contained a timber mark similar to those seen in the walled garden (Arrowsmith and Fletcher, 1993). Lewis Wyatt was also known to have constructed the Great Orangery within the gardens at Tatton Park, Cheshire in 1818 (Jeremy Milne, pers comm).

It remains to discuss the other building materials. The roof of the surviving glasshouse (Building 2) was a substantial cast iron structure, and it is likely that the roofs of the adjacent glasshouses (Buildings 1 and 3) were also of cast-iron. The columns supporting the lintel in Building 19 were of the same material, and it was probably utilised within some or all of the remaining buildings, which have now been demolished. All of this material was probably of local manufacture, some of it possibly originating at the foundries of the Wigan Coal & Iron Company, owned by the Balcarres of Haigh Hall (Anderson, 1991).

The bricks used to construct the walled garden and associated buildings would have been produced on the Winstanley estate, at least during the late 18th and early 19th centuries. Both George's Pit, located to the north-west of the walled garden; and the 'Fishponds' in Workshop Wood, located to the north-east of the walled garden, probably originated as pits where clay was extracted, and, as for the coal pit discussed above, both of these were located within wooded copses, ensuring that such unsightly activities were not visible from Winstanley Hall. These matters were discussed in greater detail within the *Archaeological Assessment* report (Fletcher 2001).

The walled garden is not entirely enclosed by walls, since the ha-ha forms the southern boundary. This is very unusual because a ha-ha was normally employed to define the boundary of the 'pleasure'garden, rather than the 'productive' garden. There were two possible benefits to the arrangement at Winstanley. Firstly, the whole of the walled garden would receive more sunlight, especially during summer. Secondly, the garden interior could be easily viewed from Winstanley Hall, although at a distance which would still retain privacy for the house occupants. The only similar situation locally is at Lathom House, near Ormskirk, where the double walled garden is appended to the north side of the 'pleasure' garden, obviating the need for a ha-ha on this side. However, the southern boundary of the southern walled garden comprises a low earthen bank, which although allowing sunlight to enter the 'productive' garden, ensures the privacy of the 'pleasure' garden. The ha-ha at Winstanley is discussed in more detail within the Archaeological Assessment report (Fletcher 2001).

6. RECOMMENDATIONS

6.1 The survival of the walled garden and related buildings at Winstanley is somewhat unusual. In most cases, walled gardens were constructed in close proximity to the great house which they served, and as the 'productive' garden went out of use, in most cases within the first few decades of the 20th century, then the space was put to other uses, and the buildings destroyed. At Tatton, Haigh, Lathom, and Worsley none of the internal buildings have survived. The situation at Winstanley has probably arisen because of the relative isolation of the garden, within a somewhat remote part of the estate, and well away from Winstanley Hall. The continued survival of the walled garden and buildings can only be guaranteed within the context of the proposed development.

6.2 The development of the walled garden over time was of an 'organic' nature, as technology evolved to further enhance the production of fresh fruit and vegetables. Equally, as the benefits of better transport and food processing were felt during the late 19th and early 20th centuries, the dependence of large estates upon their 'productive' gardens declined, and the gardens themselves either found other uses, or went into disuse and dilapidation. Although developed upon the same basic plan, each garden was different to accommodate the desires of the owners and the demands of the estate. Much of the evidence for the use and development of the garden at Winstanley will be contained within the buried structures, and the proposed development would afford the opportunity to address many questions as to how this garden functioned. A programme of ongoing archaeological evaluation and watching briefs on any structural intervention, or on construction groundworks, would provide the means by which to further understand this 'lost' garden.

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1792 'A Plan of Lands in the Townships of Winstanley & Orrell belonging to William Bankes, Esq – A Scale of Chains being thirty two Yards each' [plan overlaid with geological information for lease of three lots for coal exploitation]

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File Ref. AA 100926/1 Schedule Entry Copy related to Winstanley moated site and five fishponds (SAM Nos. SM22481/01 and SM22481/02)

National Monuments Record Unique Identifiers:

42086:	Winstanley Hall
42083:	Waterlogged medieval moat and five fishponds
890834:	AP site: cropmarks of burned walls? (SD 53500235)
942929:	Programme of field investigation by LUAU for North West Wetland Survey at Greenslate Farm (SD 530030)
1328272:	Architectural survey of Winstanley Hall by UMAU for developer

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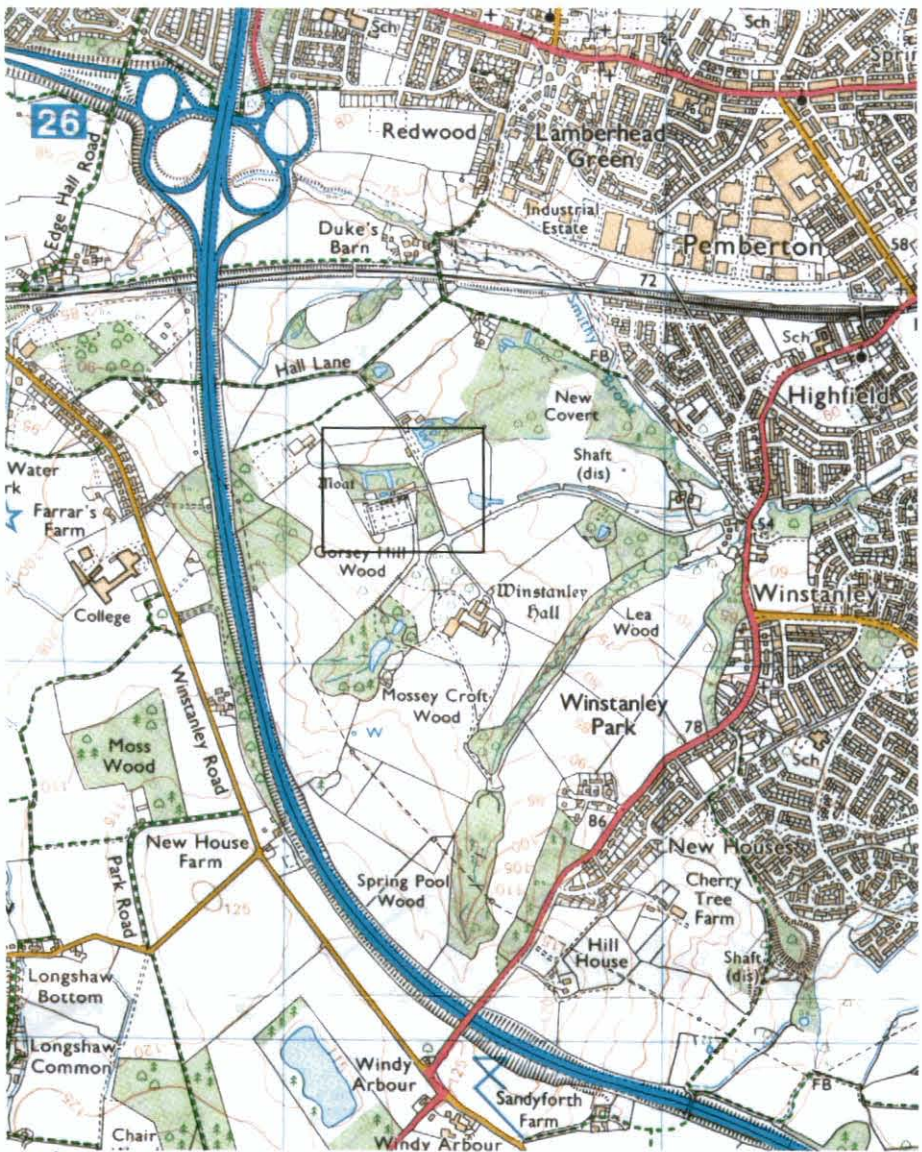


Ordnance Survey 1:25,000 scale
Crown Copyright

Figure 1. Site Location

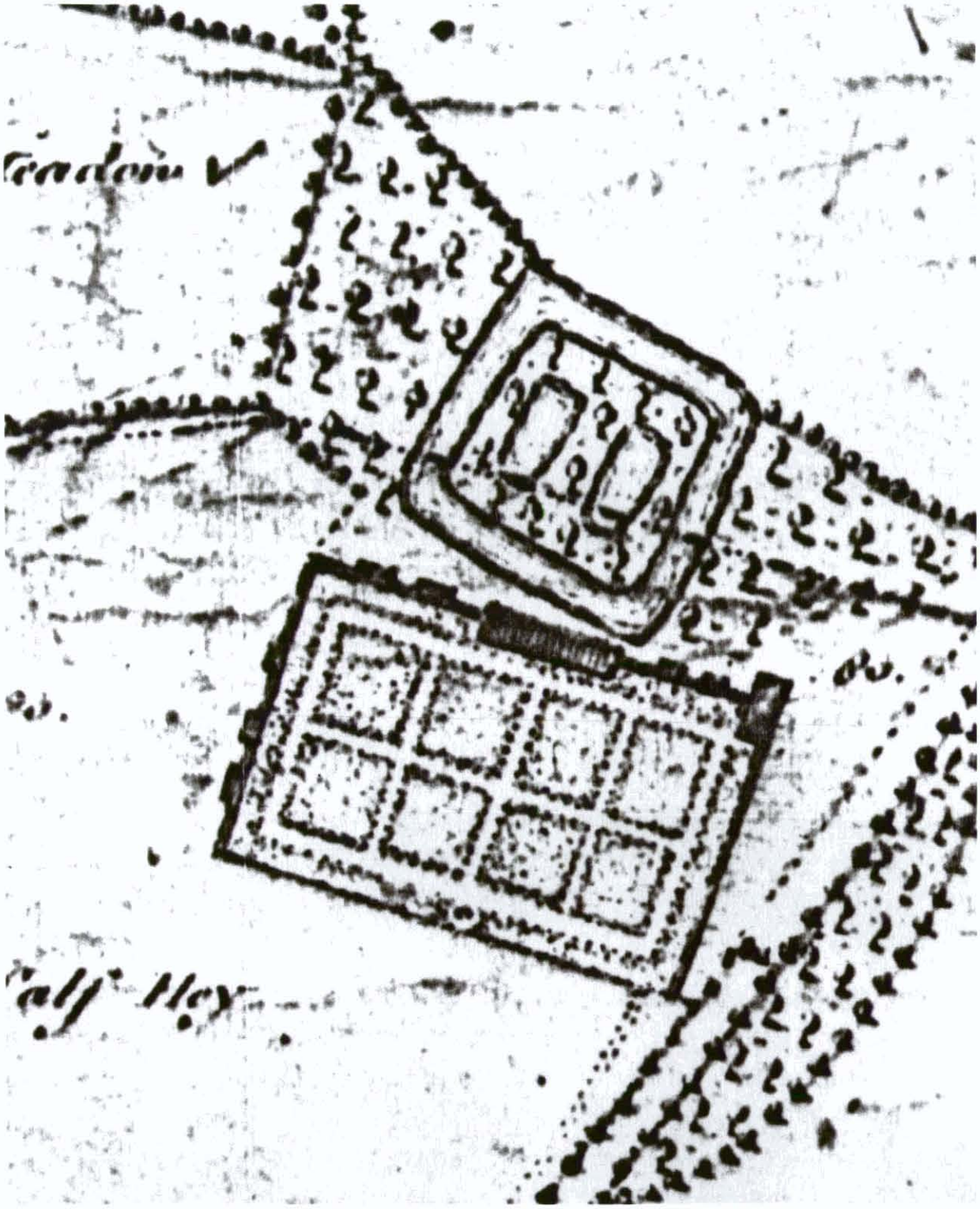


Figure 2. 1792 estate plan

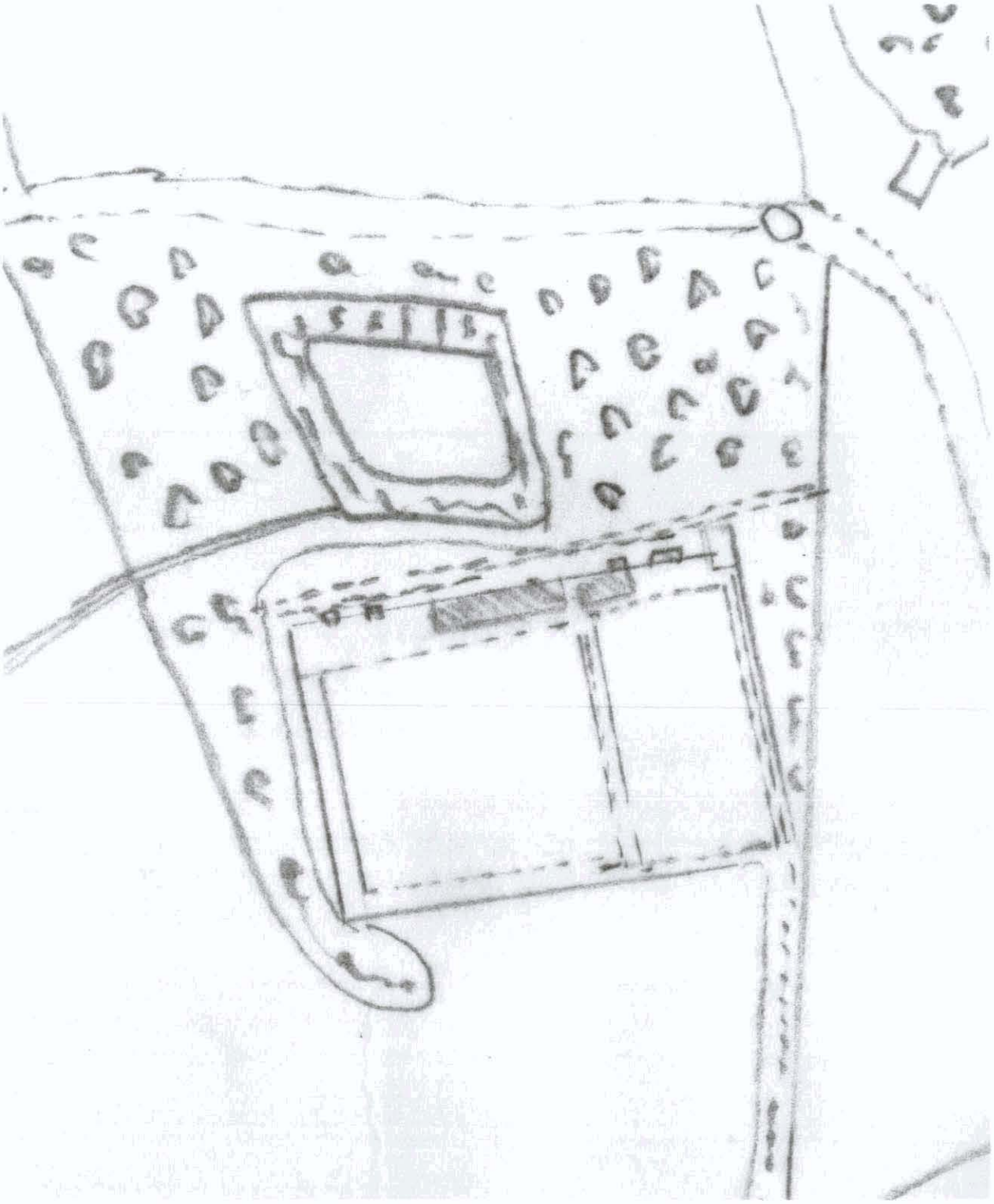


Figure 3. 1820 estate plan

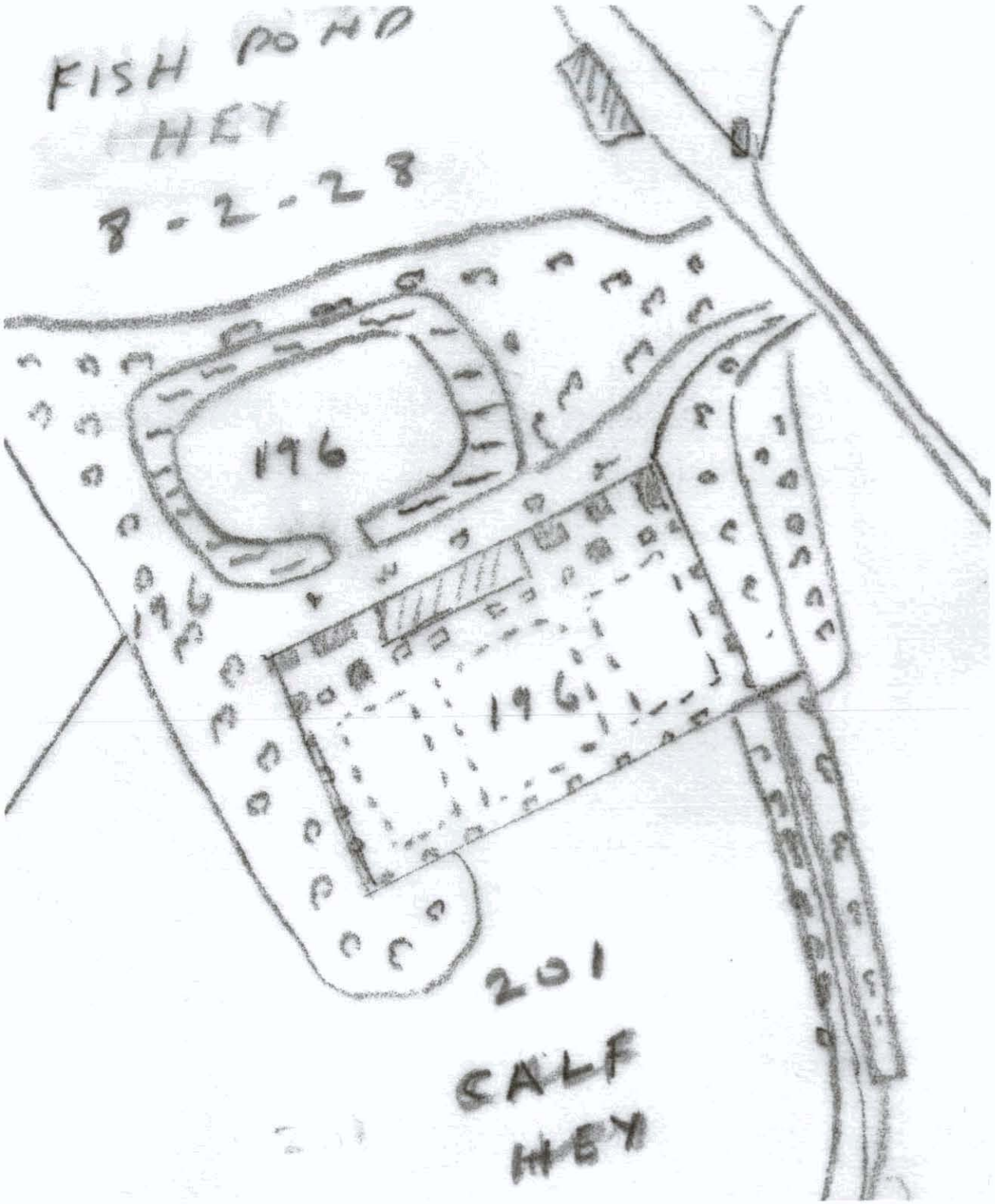


Figure 4. 1838 tithe plan

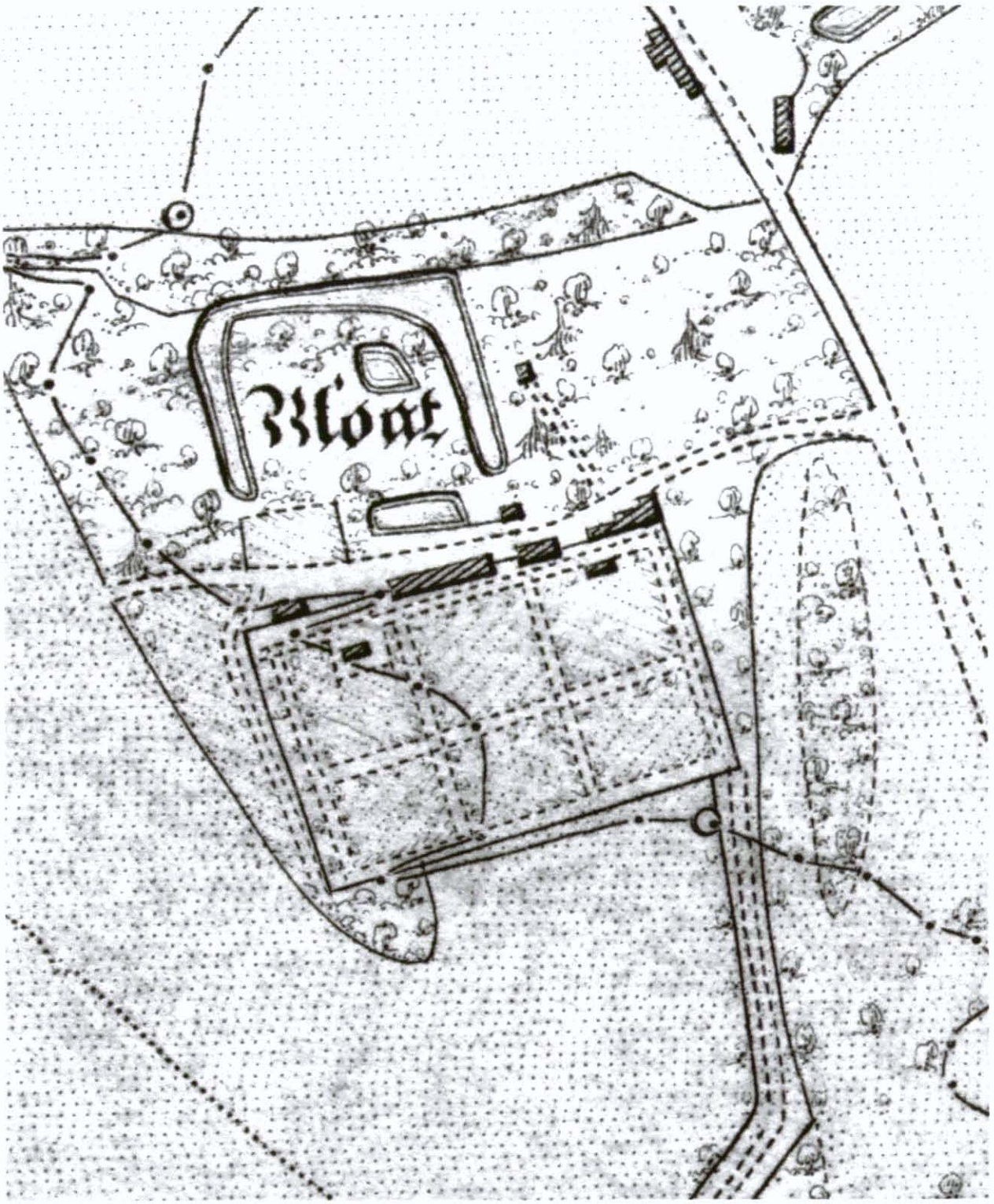


Figure 5. OS 1849 plan

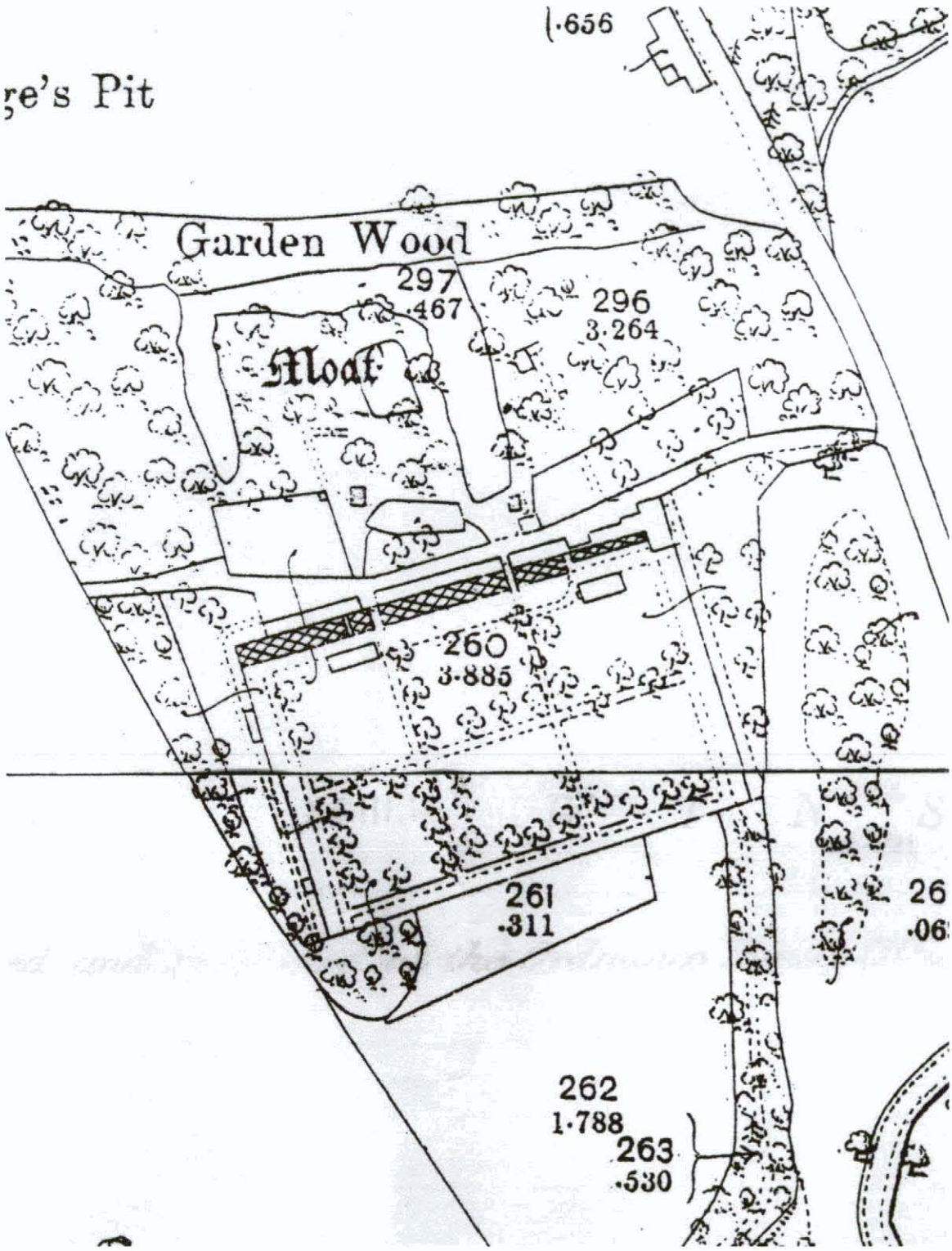


Figure 6. OS 1893 plan

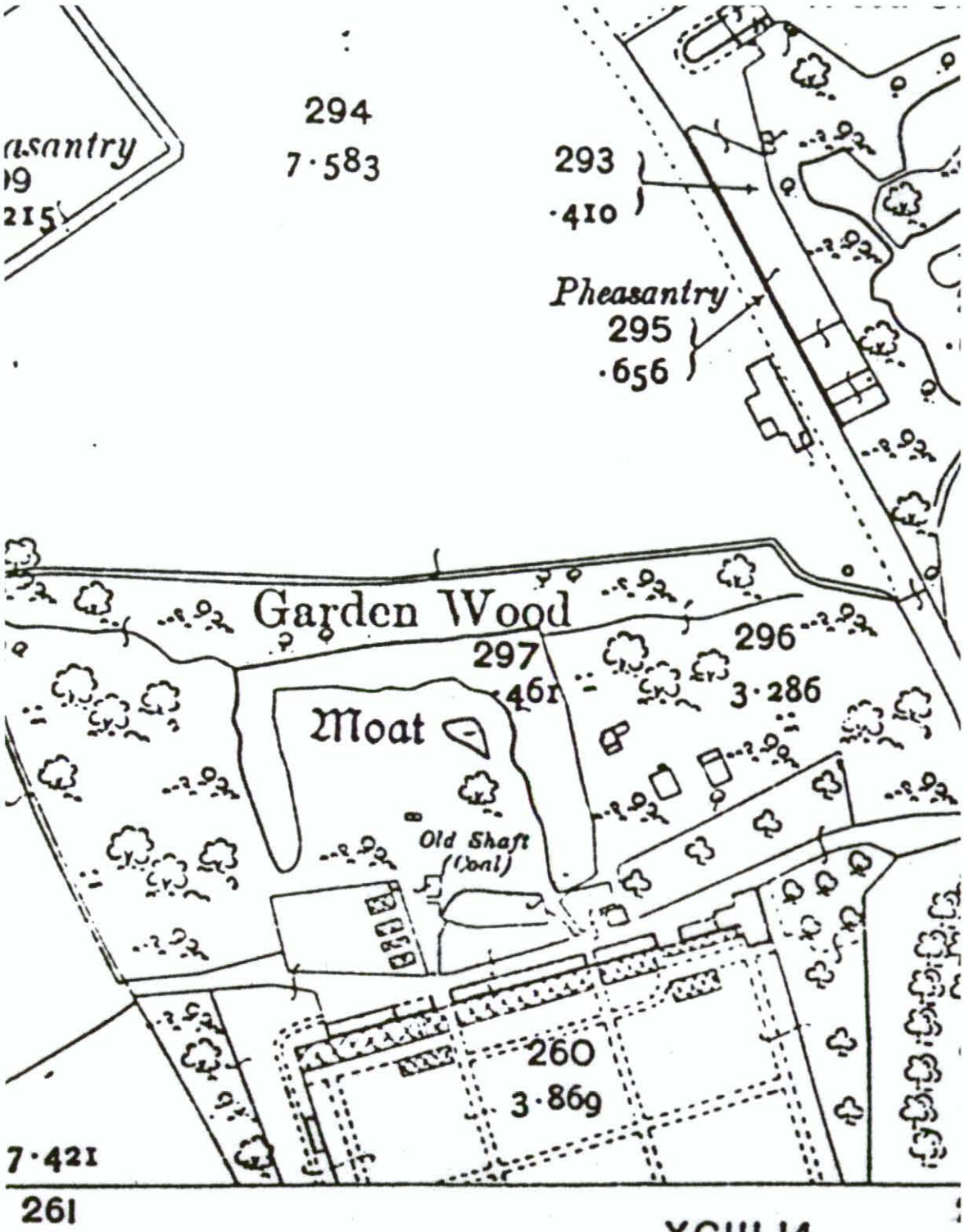


Figure 7. OS 1908 plan

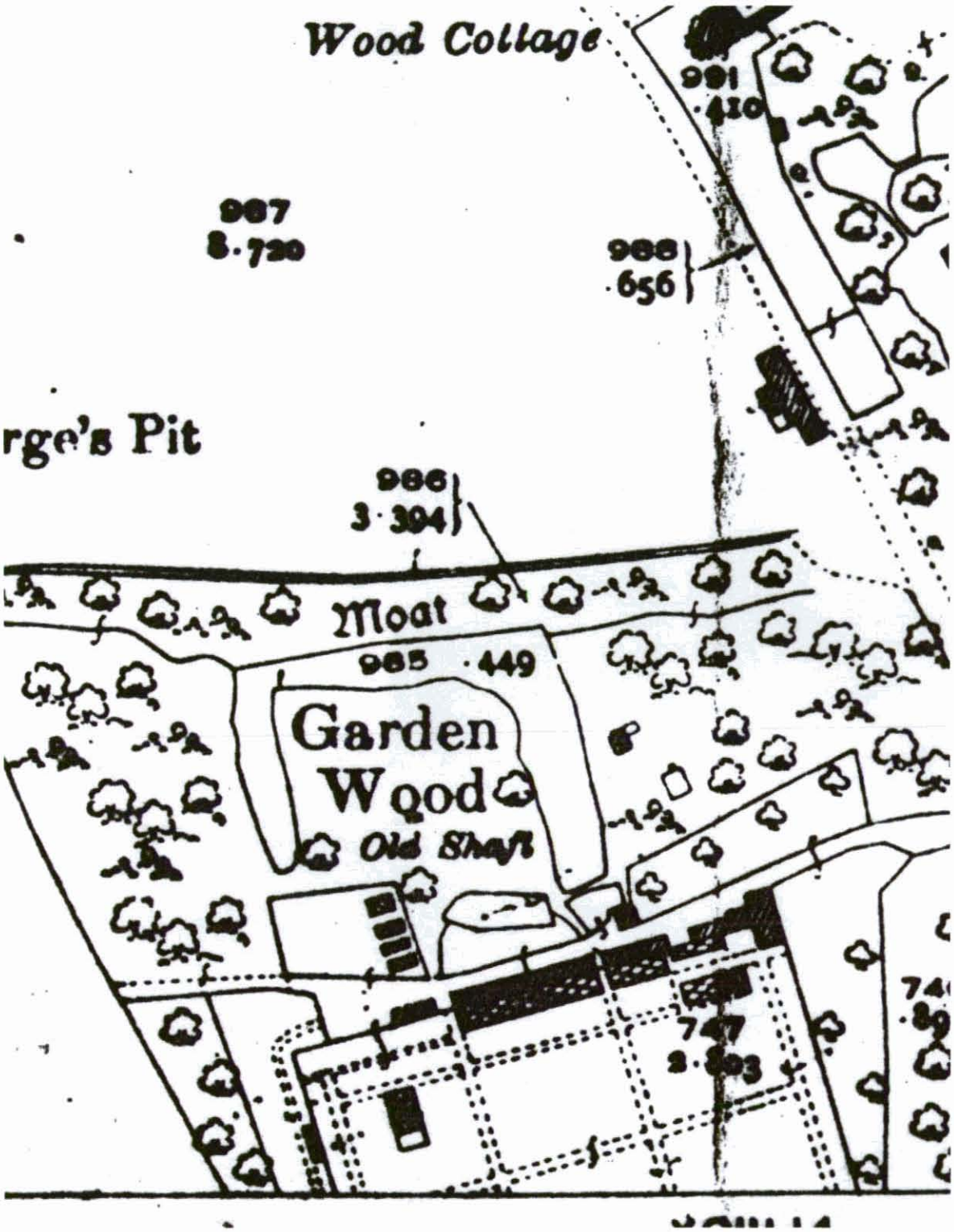


Figure 8.OS 1928 plan

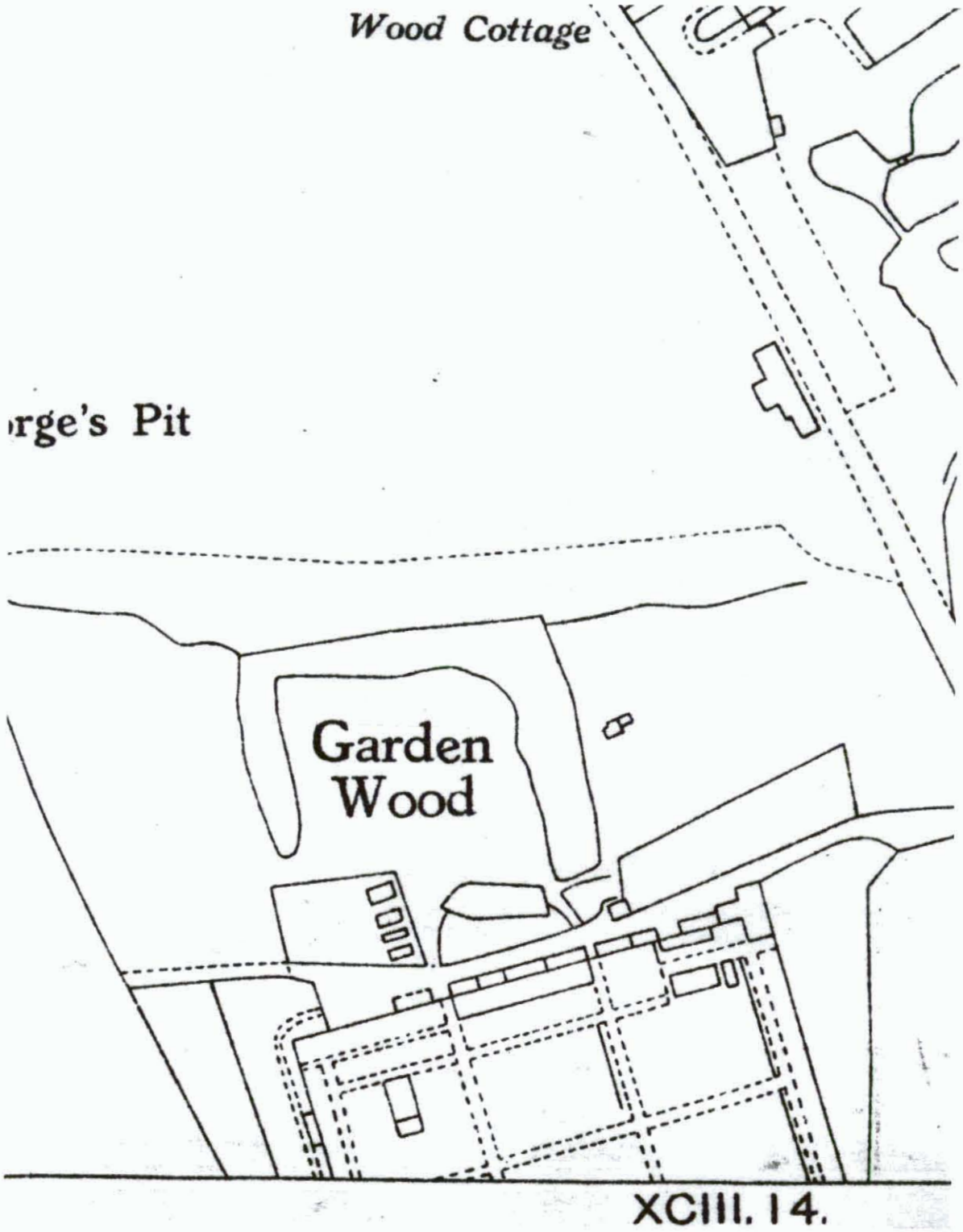


Figure 9. OS 1938 plan

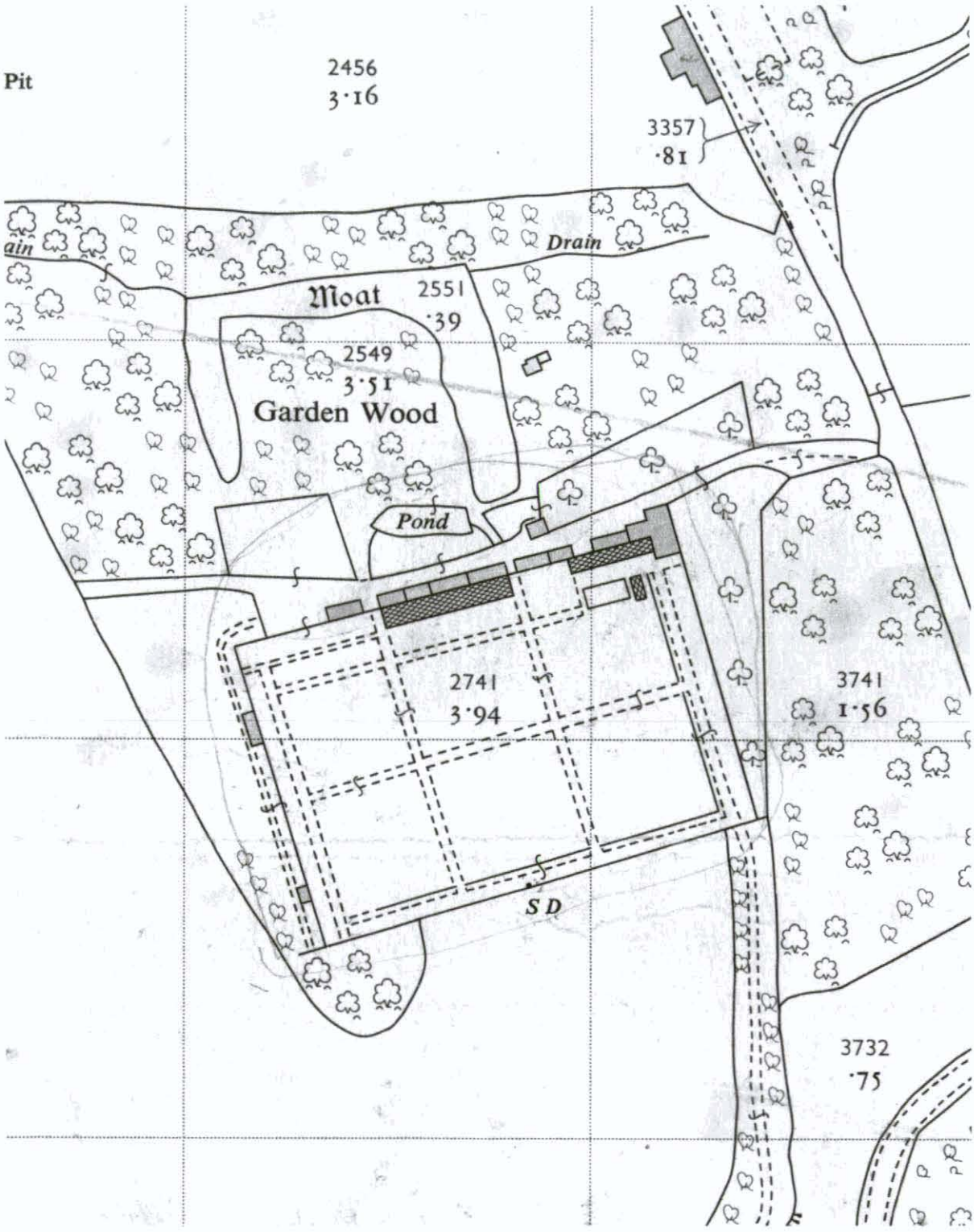


Figure 10. OS 1960 plan

POND - PART OF MOAT

HOUSE

KITCHEN GARDEN

HA-HA

Figure 12

Figure 13

Figure 14

- LATE 18TH C.
- EARLY 19TH C.
- LATE 19TH C.
- 20TH C.

RP 8 - RECTIFIED PHOTOGRAPH

T - TARGET

EP - EVAPORATING PAN

FP - FIREPLACE

J - JOIST HOLE

N

0 50 Metres

WINSTANLEY HALL KITCHEN GARDEN, Winstanley, Wigan

KEY PLAN

M. F. 2001

Figure 11

CORBEL PROFILE
AT C1, C2, & C3

CORBEL PROFILE
AT C4

0 200mm

RP 15

RP 16

RP 17

CUT LINE

CAST IRON COLUMNS

SECTION C - C1

12

18

19

16

17

13

22

20

T

C1

C2

C3

C4

RP 14

RP 13

RP 12

RP 11

RECENT
SHED

N

0 20 Metres

0 60 Feet

M. F. 2001

WINSTANLEY HALL KITCHEN GARDEN, Winstanley, Wigan

NORTH WALL, WEST SECTION

Figure 12

CUT LINE

RP 18

CUT LINE

B

4

5

FP

6

7

FP

8

SPAN OF FIREBRICK 'ROOFLINE'

C

T

T

T

T

T

T

T

T

J

J

J

J

J

PASSAGE

PASSAGE

PASSAGE

WD

1

TANK

TANK

2

TANK

3

TANK

16

EP

EP

C

B

RP 10

RP 9

RP 8

RP 7

RP 6

RP

CUT LINE

N

0

0

20 Metres

60 Feet

CUT LINE

WINSTANLEY HALL KITCHEN GARDEN, Winstanley, Wigan

NORTH WALL, CENTRE SECTION

M. F. 2001

CUT LINE

HOUSE

10

11

15

9

14

C1

C

T

T

T

T

T

WD

RP 5

RP 4

RP 3

RP 2

RP 1

N

CUT LINE

0

0

20 Metres

60 Feet

M. F. 2001

WINSTANLEY HALL KITCHEN GARDEN, Winstanley, Wigan

NORTH WALL, EAST SECTION

WINSTANLEY HALL
KITCHEN GARDEN

Winstanley

Wigan

SECTION A - A1

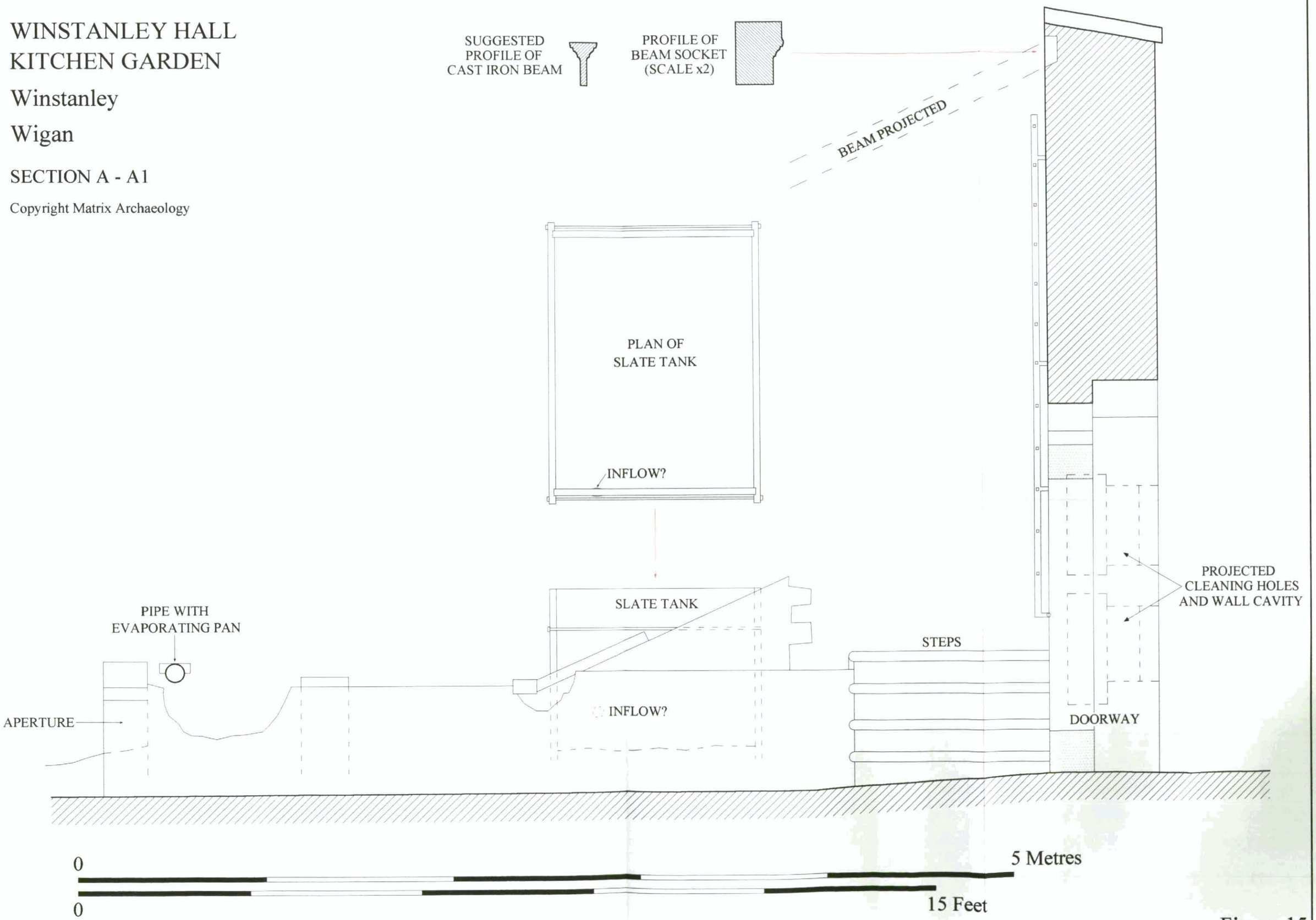


Figure 15

M. F. 2001

WINSTANLEY HALL KITCHEN GARDEN

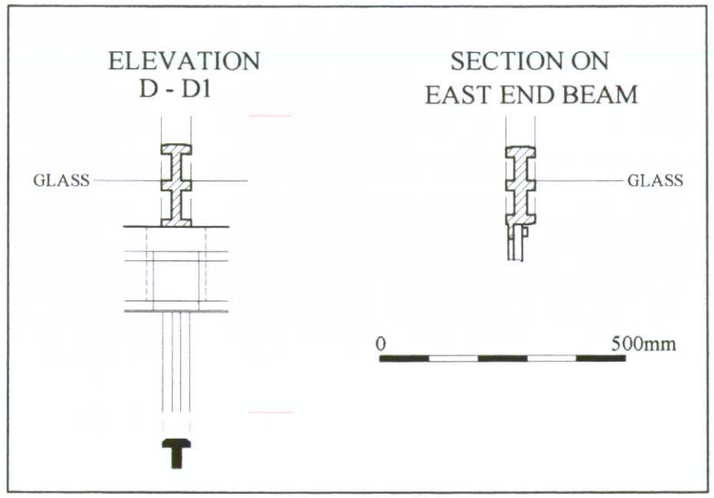
Winstanley

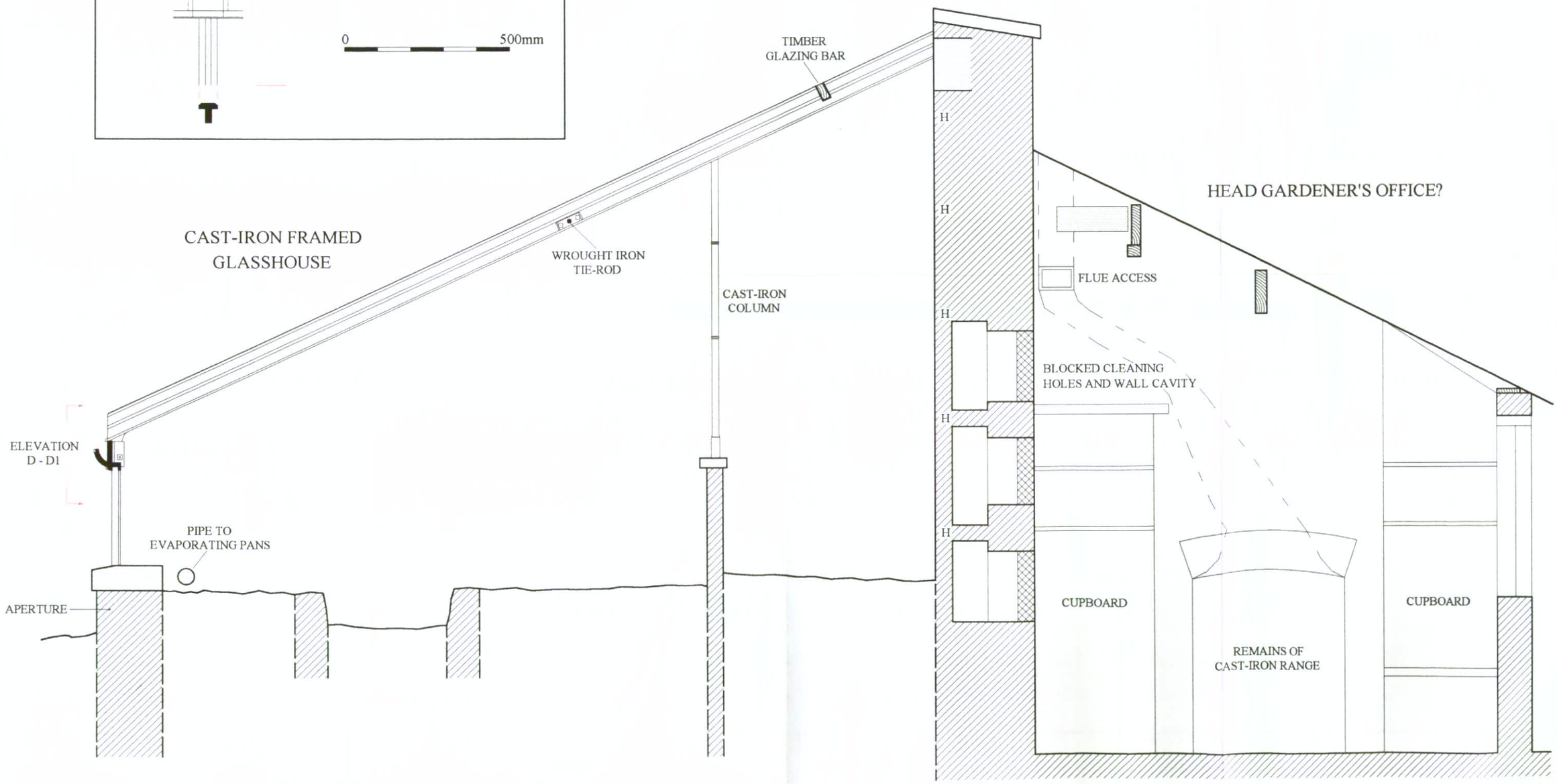
Wigan

SECTION B - B1

0 5 Metres

0 15 Feet





M. F. 2001

Figure 16

TIE-BEAM

TIE-BEAM

BALTIC TIMBER MARKS

CAST-IRON
COLUMN

CAST-IRON
COLUMN

0 1 Metre

0 3 Feet

WINSTANLEY HALL
KITCHEN GARDEN

Winstanley

Wigan

ELEVATION C - C1

Figure 17

M. F. 2001

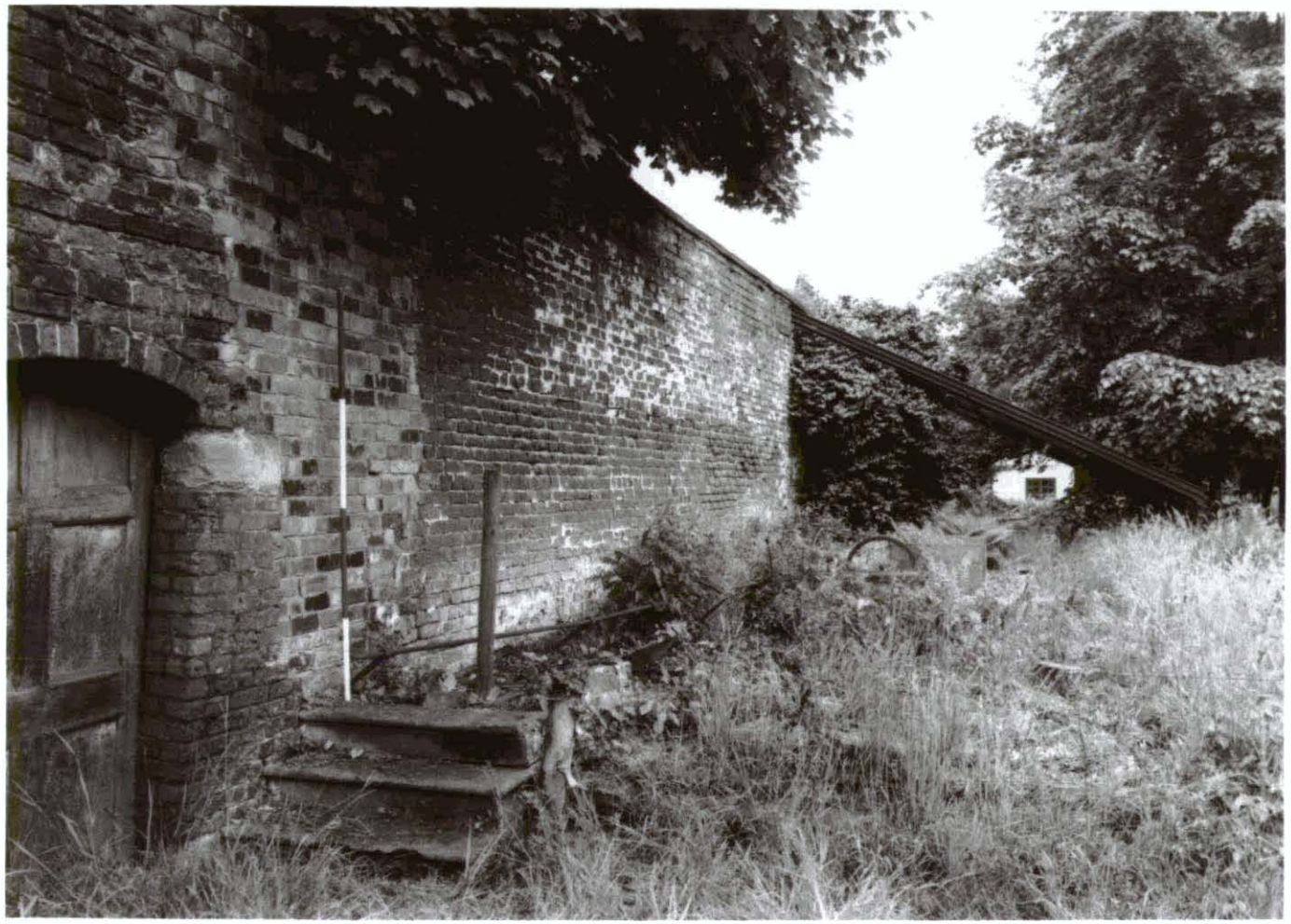


Plate 1. Glasshouses 1 & 2 from west

Plate 2. Glasshouse 1, vine arch from south

Plate 3. Glasshouse 1, internal features from south-west

Plate 4. Glasshouse 1, displaced ventilation mechanism

Plate 5. Glasshouse 2, from south-east

Plate 6. Glasshouse 2, from south-west

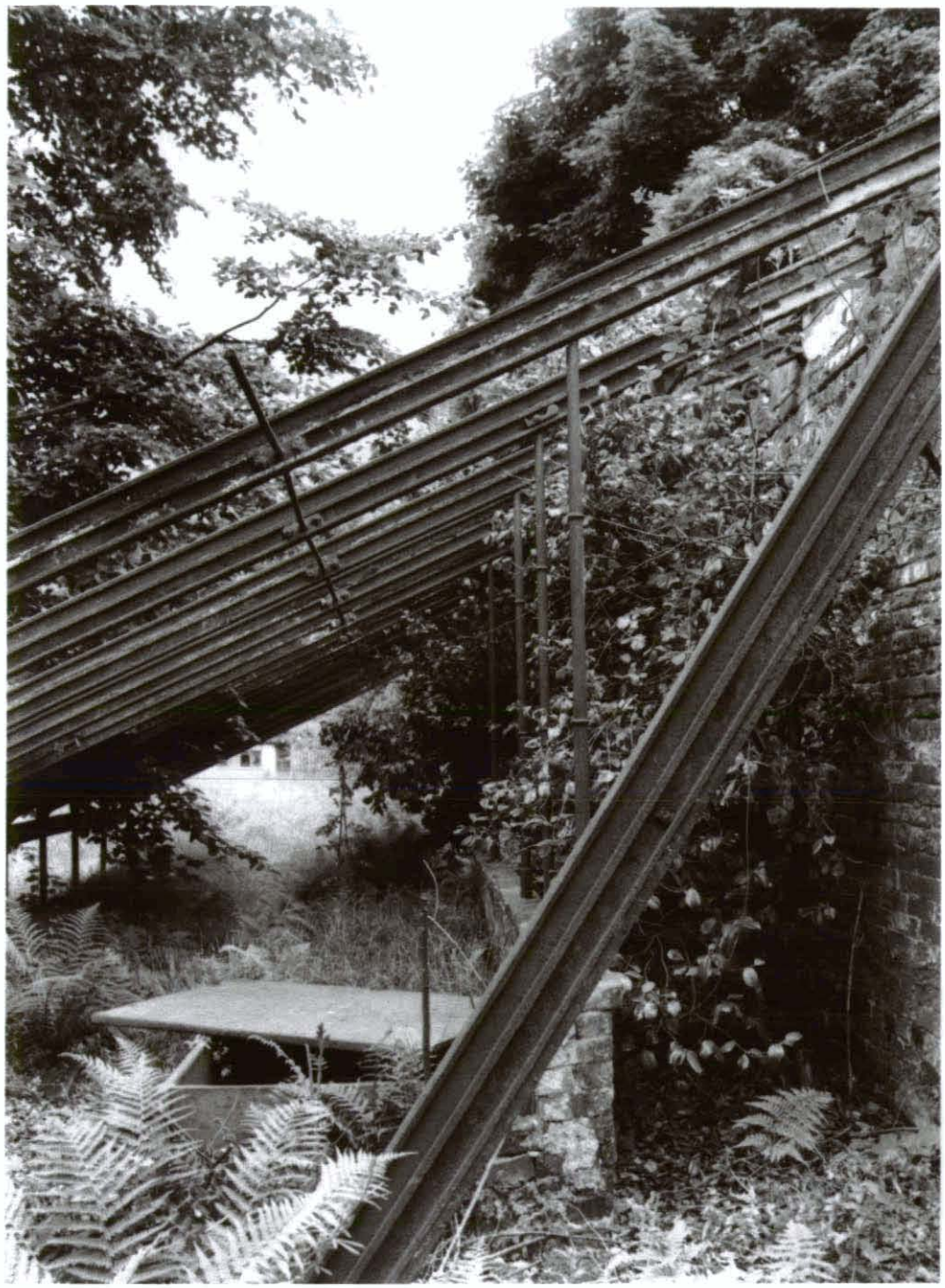


Plate 7. Glasshouse 2, detail from east

Plate 8. Glasshouse 2, cast-iron beam detail from east

Plate 9. Glasshouse 2, cast-iron frame detail from east

Plate 10. Glasshouse 2, cast-iron frame detail from south

Plate 11. Glasshouse 2, roof detail from south

Plate 12. Glasshouse 3 from south-east

Plate 13. Glasshouse 3, detail from south-east

Plate 14. Glasshouse 3, worm drive for ventilation

Plate 15. Site of glasshouses 9 & 15, and head gardener's house

Plate 16. Glasshouse 15, worm drive for ventilation

Plate 17. Outbuilding 6, west internal elevation

Plate 18. Re-used timber at outbuilding 12