Archaeology South-East

ASE

COMBERS GLASSHOUSES, NYMANS, WEST SUSSEX

HISTORIC BUILDINGS RECORD
(HISTORIC ENGLAND LEVEL 3)

(NGR 526793 129137)

Commissioned by
The National Trust

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NATIONAL TRUST HISTORIC BUILDINGS SURVEY:

Summary Sheet One

Property Name Combers Glasshouses	**Address** Nymans Estate, Handcross, Haywards Heath, Sussex RH17 6EB	**Building Name** Combers Glasshouses
Property/ Building Reference	**OS Grid Reference** TQ 26793 29137	**Surveyor/Date of Survey** SP/KH May 2015
Category Horticultural	**Original Use** Horticultural	**Current Use** Derelict
Date(s) of Construction Late 19th century, early 20th century. Primarily 1895-1910.	**Statutory Designation (s)** Nymans Estate Historic Park and Garden	**NT SMR Reference**
Walling Materials Glasshouses: brick, some stone. Outbuildings: brick	**Roofing Materials** Glasshouses: timber, glass (not intact) Outbuildings: slate	**Flooring Materials** Glasshouses: earth, concrete Outbuildings: brick, tile.

Description:
The Combers Glasshouses site comprises of four former glasshouses and two outbuildings. The site is laid out with the largest glasshouse to the north of the site, with a low cold-frame running parallel to its south. Along the north wall of the kitchen garden is a long lean-to outbuilding leading west to a greenhouse formed of two lean-to sections with a shared spine-wall. South of Building 1 is a second lean-to outbuilding abutting the west wall of the kitchen garden. Each of the glasshouses, excepting the cold-frame, feature heating pipes. The heating pipes are of uniform design and size, likely reflecting a singular installation date. The pipes are formed of sections with moulded collar designs every 0.90m and moulded socket and spigot joints. The pipes have a diameter of *c*.0.11m. Presumably the pipeworks were installed post-1895 – the use of thermo-cycling heating systems for glasshouses is typically Edwardian. Timber elements within the glasshouses appear to be of a softwood.

Architectural/Historic Significance:	**Landscape Significance:**
The site reflects the development of a kitchen garden glasshouse complex associated with the famous Nymans Estate. The site also demonstrates the development of glasshouse technology, especially in Building 1 where there is a later insertion of pipework for heating. The adoption of a thermo-cycling system powered by a segmental cast iron boiler suggests an Edwardian date for the installation of the heating pipes, likely under the ministrations of James Comber. Glasshouses also pertain to significant societal developments and trends – the glasshouses at Nymans being constructed a the highpoint of the fashion, and towards the end of an era of technical innovation that followed the industrial revolution. Glasshouses were a means for the rich, and later the rising middle class, to produce and show ostentatious and exotic plants at home – a statement of wealth and status.	The building sits in relative isolation, masked by mature treelines to north and west, and the walls of the kitchen garden to east and south. However it does form a significant part of the Nymans estate and gardens, with historic import.

Notes/Qualifications Regarding Survey: N/A
Additional Information Sources for this Building (s):
Copies & CDs of this report held at: o NT Regional Archaeologist o NT Regional Curator o NT Nymans Property Manager o West Sussex County Council HER o NMR o Property Manager's archive; ASE Office, Portslade.

NATIONAL TRUST HISTORIC BUILDINGS SURVEY:

Summary Sheet Two

Property Name Combers Glasshouses	**Address** Nymans Estate, Handcross, Haywards Heath, Sussex RH17 6EB	
Property/Group Reference	**OS Grid Reference** TQ 26793 29137	**Surveyor/Date of Survey** SP/KH May 2015
Local Planning Authority West Sussex County Council	**Local Authority (Building Regs. etc.)** West Sussex County Council	

Area Designations
Nymans Estate Historic Park and Garden

Description of Group (and any related buildings):
The Combers Glasshouses site comprises four former glasshouses and two outbuildings

History and Development
The Combers Glasshouses form a part of the kitchen garden and Combers cottage. By the time of the first OS 25-inch survey of 1875 a formal walled kitchen garden appears to have developed to the north of the cottage, with a glasshouse adjacent to the garden's eastern wall as well as three possible glass structures shown in addition to three outbuildings. Evidence recovered during the field review suggests that the glasshouses were, at least in part, constructed by Messenger & Company Limited, Loughborough. The first head gardener, James Comber, was appointed in 1895. Up to this time Combers and the kitchen garden had changed little, however by 1897 a large glasshouse and an additional lean-to glasshouse had been added to the earlier two, and an additional outbuilding was added. An additional glasshouse had been added to the collection of glasshouses at Combers kitchen garden by 1910. By 1947, aerial photography shows an additional two glasshouses at Combers east of the larger glasshouse. Both Leonard Messel and James Comber died in 1953, and the garden was granted to the National Trust, being formally opened to the public in March 1954.

Information Sources
Messenger & Co. Ltd., 1920. *Messenger & Co.Ltd. Loughborough and London Horticultural Section Fifth Edition.*
Jameson, R., 2013. *History and Conservation of Victorian and Edwardian Greenhouses and Cold Frames*. Building Conservation Directory.
Nicholson, S., 1992., *Nymans: The Story of a Sussex Garden*. Alan Sutton Publishing Ltd, in association with the National Trust, Stroud.

Written Records
N/A

NT Records
N/A

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Plate 46: Looking north from the south of the site, with treeline beyond (Photo #95)
Plate 47: Looking south across the site, with treeline beyond, note the copper beech (Photo #101)
Plate 48: Brick-bordered pathway between glasshouses, looking east (Photo #96)

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1.0 INTRODUCTION

1.1 In May 2015 Archaeology South-East (a division of the Centre for Applied Archaeology, UCL) carried out a programme of historic building recording (Historic England Level 3) at the former glasshouses at Nymans, West Sussex (526793 129137). The buildings include four former glasshouses and two outhouses. The work was commissioned by the National Trust to understand the historic development of the site in order to inform future management of the site and proposals for conservation or restoration.

1.2 A brief for this work was issued by the West Sussex & South Downs archaeologist (Dommett 2015) recommending that the building be recorded at Historic England Level 3.

2.0 SCOPE & METHODOLOGY

2.1 The building was recorded to Historic England Level 3 as defined in Understanding Historic Buildings: A guide to good recording practice (English Heritage 2006b). A Level 3 record is essentially an analytical record.

2.2 Unless noted to the contrary, the assessment involves a visual inspection of the buildings' fabric, both internally and externally, including any accessible roof voids and basement areas. The boiler house (Building 4) was not accessed due to the suspected presence of asbestos.

2.3 Plans of the structures were produced on site. These have been reproduced as figures within the report (Figures 14-17). For further illustration, a selection of the digital photographs of the building has been reproduced as plates within the report. A full index of the photography has been included as Appendix 3.

2.4 The site was visited by Seth Price and Katya Harrow on 22nd May 2015 in order to carry out the recording work. This entailed the compilation of written notes, the production of measured survey drawings and the production of a photographic record.

2.5 Historical background information has been derived largely from the earlier Archaeological and Historic Landscape Survey (James 2008) and relevant cartographic sources. An online search of the holdings of the West Sussex Record Office was made, but no additional sources relevant to the site were identified. A request made to the National Trust for additional archive material also yielded no results. All sources consulted are listed in Section 10.

3.0 SITE LOCATION (FIGURES 1 & 2)

3.1 Combers Glasshouses are situated *c.*100m south-east of the Nymans Estate gardens, north-west of the kitchen garden (Combers Cottage), and north-east of the B2114 (centred at NGR 526780 129140). Nymans Estate, comprising *c.*243 hectares of gardens, parkland, ancient woodland and farmland, is located to the south-east of Handcross, and is of national importance. Combers Glasshouses fall within the original bounds of the Nymans Estate. Much of the Nymans Estate has been recorded as a part of the Nymans Archaeological and Historic Landscape Survey (James 2008), and the Nymans Estate Vernacular Building Survey (Peats

2000); however as they had become significantly overgrown, the glasshouses were not previously documented.

3.1 The site consists of four former glasshouses and two outbuildings, which have largely fallen into disrepair.

4.0 STATUTORY DESIGNATIONS

Historic Parks and Gardens

4.1 Combers Glasshouses fall within the Nymans Estate Gardens which are of national importance and are listed as Grade II* on the Historic England National Register of Historic Parks and Gardens (List Entry No. 1000160). The kitchen garden and glasshouses are included in the list description for Nymans and are described as follows:

The kitchen garden lies at the extreme south-east end of the site and forms a c 40 x 50m stone- and brick-walled enclosure, with a gardener's cottage built into the south-west wall and with remnants of a glasshouse on the outer side of the south-east wall. Shown established in 1874 (OS 1st edition), it is now (1997) leased as separate, domestic accommodation.

Listed Buildings

4.2 Combers Cottage (Combers) is listed as Grade II on the Historic England National Register (List Entry No. 1025708). It is currently leased as separate domestic accommodation. The entry in the list description is as follows:

Early C19. Two storeys. Three windows. Faced with Roman cement. Slate roof. Glazing bars intact. Gabled wooden porch.

5.0 HISTORICAL BACKGROUND AND MAP EVIDENCE

5.1 The historical background for Nymans Estate has been covered in the Nymans Archaeological and Historic Landscape Survey (James 2008), thus only information particularly relevant to the development of the glasshouses is addressed below. Early mapping (not reproduced) demonstrates the early development of the estate, though it is not until 1842 that Combers cottage, the gardeners cottage associated with Combers Glasshouses, is first depicted (Figure 3).

5.2 It is a reasonable assumption that the earlier houses at Nymans (wherever they were located) would have had gardens of some description, even if only enclosed crofts. No evidence for any early layouts has been located, and the earliest reference to garden planting at Nymans occurs in 1839, when George Harrington began planting evergreen trees.

5.3 The Combers Glasshouses form a part of the kitchen garden and Combers cottage. The cottage was constructed between 1825 (map not reproduced) and 1842, first appearing on the 1842 tithe map (Figure 3). The cottage was likely constructed to house Nyman's head gardener, having immediate access to the kitchen garden – a head gardener's chief task was to ensure a constant supply of fruit and vegetables for the mansion (Nicholson 1992: 25).

5.4 By the time of the first OS 25-inch survey of 1875 (Figure 6), a formal walled kitchen garden appears to have developed to the north of the cottage, with a glasshouse adjacent to the garden's eastern wall. To the north-west of the garden, in the location of Combers Glasshouses, three possible glass structures are shown as well as three outbuildings. The widespread introduction of the glasshouse to the gentrified estates of Britain, following the repeal of the glass tax in 1845 and the technical innovations of the industrial revolution, allowed for the growing of increasingly exotic and unseasonal plants and produce, to wow guests and visitors.

5.4 Evidence recovered during the field review suggests that the glasshouses were, at least in part, constructed by Messenger & Company Limited, Loughborough (see below). Messenger & Company Limited was established in 1858, being listed in 1877 as 'horticultural builders and hot water apparatus manufacturers' (National Archives 2015). The firm was famous for the making of glasshouses, verandahs, summer houses, cucumber frames, melon pits, mushroom beds, orchid stages, vineries and peach-houses (*ibid.*). A brochure for the company dated to 1920 was used to inform on the analysis of the buildings below (Messenger & Co. Ltd. 1920).

5.5 The estate was bought by Ludwig Messel, a wealthy German stockbroker, in 1890. The first known head gardener, James Comber, was appointed in 1895. Up to this time the site and the kitchen garden had changed little, however by 1897 a large glasshouse and an additional lean-to glasshouse had been added to the earlier two, and an additional outbuilding had been constructed (Figure 8). Nicholson (1992: 25) notes how the overhaul of the kitchen garden was the one of the first tasks undertaken by James Comber. Within the main estate grounds Comber set to work in a garden that was still primarily a lawn, with banks of azaleas and rhododendrons. Tubs and topiary were positioned along the south front of the house, with rose beds and evergreens alongside the gravel drive. His first major task was the creation of the Pinetum, a wide horseshoe curve of evergreens planted to the north of the house in a former field, and designed to provide an important windbreak for the rest of the garden.

5.6 An additional glasshouse had been added to the collection of glasshouses at Combers kitchen garden by 1910 (Figure 9). The 1910 mapping demonstrates that one of the outhouses abutting the north wall of the kitchen garden featured an open front to its north.

5.7 Leonard Messel inherited the garden in 1915, when it was at a low ebb – in 1914, Comber had ten undergardeners working for him, but most of these were called up during the First World War. James Comber's eldest son, the noted horticulturalist Harold Comber, aged only 17 at the outbreak of the war, was purportedly charged with the care of the glasshouses and botanical collections at this time. James Comber retired as head gardener in 1930, to be replaced by Cecil Nice (though he carried on working until 1953). The 1930s saw the garden at its zenith, with the early plantings now reaching maturity. By 1947, aerial photography (Figure 10) shows an additional two glasshouses at Combers east of the larger glasshouse. It suffered again, however, in 1939 when most of the staff were again called up by the military – Comber, still active in retirement, and two other old men were left to run the garden, assisted by two members of the Womens' Land Army. Nymans escaped being requisitioned by the War Office, thereby sparing it from the possible fate of houses such as Stanmer, near Brighton, which was so badly damaged by billeted Canadian troops that an entire wing was demolished. It was, however, used to house an evacuated school from London (Buckingham Gate Central School).

5.8 Both Leonard Messel and James Comber died in 1953, and the garden was granted to the National Trust, being formally opened to the public in March 1954. An aerial photograph likely dating to the 1960s shows the glasshouses in a poor state of repair, being heavily overgrown, but largely intact (Figure 12).

6.0 DESCRIPTION OF THE BUILDINGS (FIGURES 2 - 5)

6.0.1 The site comprises four former glasshouses and two outbuildings (Figure 2). The buildings are numbered as shown in the Archaeological Recording Brief produced for the work (Dommett 2015). The site is laid out with the largest glasshouse (Building 2) to the north of the site, with a low cold-frame (Building 3) running parallel to its south. Along the north wall of the kitchen garden is a long lean-to outbuilding (Building 4 – the boiler house) leading west to a greenhouse formed of two lean-to sections with a shared spine-wall (Building 1). South of Building 1 is a second lean-to outbuilding (Building 5) abutting the west wall of the kitchen garden. Each of the glasshouses, excepting the cold-frame (Building 3), feature heating pipes. The heating pipes are of uniform design and size, likely reflecting a singular installation date. The pipes are formed of sections with moulded collar designs every 0.90m and moulded socket and spigot joints. The pipes have a diameter of *c.*0.11m. Presumably the pipeworks were installed post-1895 – the use of thermo-cycling heating systems for glasshouses is typically Edwardian (Jameson 2013). Timber elements within the glasshouses appear to be of a softwood. Mortaring appears to primarily be lime-based. The interior of Building 4 is not described as it was not considered safe to enter due to suspected asbestos-containing materials around the boiler. Select examples of glasshouse designs from Messenger and Company Ltd's 1920 brochure are included below for illustrative purposes as an appendix (Appendix 1).

6.1 *Building 1 (Figure 14)*

6.1.1 Building 1 consists of a brick spine-wall, with south- and north-facing lean-to greenhouses to either side (Plate 1). The northern half of the building extends west from Building 4. A south-facing greenhouse appears on the Ordnance Survey mapping as early as 1875, suggesting that the southern element may be the earliest extant glass structure in the complex (Figure 6).

6.1.2 The spine-wall of the structure consists of a mid-orange stock clinker brick in Flemish garden wall bond, with darkened headers. Parts of the wall to either side are plastered and painted. The wall is set with a coping of a differing brown-orange stock brick consisting of a row of bricks in Flemish garden wall bond surmounted by a coping of half-round bricks. The wall is one brick thick (0.24m). To both south and north remnant lean-to roofs attach to timber ridge-boards below the coping. The ridge-boards are fixed in places with ties running through the wall.

6.1.3 The southern lean-to is south-facing (Plate 2). The exterior walls of the building are constructed of a mid-orange brick in stretcher bond, with a wall width of 0.12m; 0.24m for the east wall. The building consists of two rooms, divided north-south by a central brick wall (0.12m thick) constructed in stretcher bond (Plates 3 and 4). It appears that the doorway within the dividing wall has been inserted, as with the heating pipes (see Figure 3), likely reflecting a later modernisation of the structure. Interior walls are, at least in part, painted white. The building is accessed via a set of three brick steps to its west down to a timber door with strap hinges and seemingly

original hardware (Plate 5). A similar door leads north through the spine-wall to the northern lean-to at the east end of the building (Plate 6).

6.1.4 The southern lean-to retains only partial sections of intact roofing. The extant roof consists of a timber ridge-board attached to principal rafters every 1.65m braced by iron tension rods. The tension rods are set with regular holes, likely to support a trellis for trailing melons or cucumbers (Messenger & Co Ltd 1920: 6). The principal rafters create a low-angled roof of *c*.30° connecting at their base to short vertical posts above the south wall of the building (Plate 7). The short posts support a wall-plate. Each bay featured five panes of glass divided by chamfered glazing bars and supported by a T-girder iron purlin (Plate 8) – it is not clear whether glass panes were affixed with putty. At the top of the roof, a series of top-hung sashes of five panes opened by lever tackles provided ventilation (Plate 9). A timber purlin, evidenced by void mortising in the principal rafters, would have held glazing bars from purlin to wall-plate (Plate 9). Extant glazing found within the building is straight-sided, measuring 0.29m x 0.45m. The roof apex is protected by a leaded flashing.

6.1.5 Within the east side of the lean-to are two raised beds constructed of brick in stretcher bond (Plate 4). The northern bed abuts the north wall, though it does not appear to have been used for growing trailing plants, as the wall lacks pegs or wires expected for such plants. The south bed has a cavity beneath to accommodate two heating pipes. The base of the bed appears to be constructed of a mix of slate and metal (Plate 10). It is possible that the west side of the lean-to originally featured a similar bed on its south side, though it has since been removed baring the pipes below. An improvised table has been constructed to the north using corrugated iron sheeting above two brick piers.

6.1.6 In addition to the two heating pipes running beneath the south bed, two top heating pipes run along the top of the south wall and three pipes run along the centre of the building. The piping is orientated east-west along the long axis of the building. An iron water tank is situated at the east end of the building – rainwater tanks were often contained within glasshouses so as to ensure the ambient temperature of the water.

6.1.7 The northern lean-to (Plate 11) is similar in construction to the southern, albeit with fittings of an apparently better quality and better state of preservation, as well as a steeper pitch to the roof. Wall widths for the external walls are 0.24m. The lean-to is accessed to its west via a doorway leading to a flight of three steps down (Plate 12). The building abuts Building 4 to its east, with a timber door leading through. Additionally the roof lacks the iron tension rods on the principal rafters, and sits directly on the northern wall at its base. The principal rafters are situated every 1.50m, with glazing bars every 0.32m between. Glazing bars are mortised into a timber purlin (Plate 13). Again, it is not clear whether glazing was attached with putty, or not, to the bars.

6.1.8 The spine-wall features a number of iron pegs and wires for trailing plants. An extant lever tackle on the wall bares the following text (Plate 14):

MESSENGER & COMPANY LIMITED LOUGHBOROUGH

The lean-to contains two beds, one along its southern wall, and one to the north. The southern bed is a shallow iron trough-like construction – possibly a forcing bed (Messenger & Co Ltd 1920) – which may have originally been situated higher up the wall on some metal brackets projecting from the wall (Plate 15). The northern bed appears to be a later insertion, being constructed of kiss-marked Fletton bricks in

stretcher bond. The bed features a void beneath through which a set of four heating pipes run (Plate 16). The bed contains gaps in the brickwork for drainage and ventilation. Within the west of the lean-to is a slate-lined tank of unknown purpose, situated beneath the pipes.

6.1.9 It should be noted that a moderately large tree, recently cut down, has damaged and displaced a fair amount of the west end of the north side of Building 1.

6.2 *Building 2 (Figure 15)*

6.2.1 Building 2 retains very little of its original frame and glasswork, and much of the following analysis is based on the aerial photograph dated to *c.*1960s (Figure 12). The building was constructed between 1890 and 1897, likely dating to 1895-7 when the gardens fell under the ministrations of James Comber.

6.2.2 The building as existing consists of a south-facing back wall, divided into four bays (numbered 1-4 west to east) – with the end bays being approximately half the height of the centre two (Plates 17 and 18). The back wall is constructed with stone lower walls surmounted by brickwork, and a coping of half-round bricks for the higher wall and parged concrete for the lower, with regular brick bracketing on its north elevation (Plate 19). The back wall serves as a partial retaining wall, undercutting the ground to its north. Low walls form the footings for the no longer extant frame and glasswork to the south of the back wall. The end bays are roughly square in plan and extend beyond the centre two bays, which are more rectilinear in plan (see Figures 15 and 12). Bay 4 is slightly larger than Bay 1. South of the centre bays is a plant bed, delineated by a low brick wall with a coping of half-round bricks (Plate 20).The stonework of the back wall is of cut stone in regular courses. The brickwork is a mid-orange brick in Flemish garden wall bond. The structure's walls are a uniform 0.24m in width, with the brick brackets projecting an additional 0.15m. The south walls of Bays 2 and 3 feature a regular series of eight arches within the brickwork (Plate 21). Supposedly the arches are for decorative purposes alone. The south, internal, face of the back wall is painted white, and has regular courses of iron pegs and wires for trailing plants (Plate 22). Pegs and wires would typically be spaced c.0.15m apart (Messenger & Co Ltd 1920: 51). Water taps were set in the back wall within Bays 1 and 4 (Plate 23). Additionally, screw-operated window opening devices are also set on the back wall (Plate 24). A slender timber element on the back wall marks the division between Bays 2 and 3. An intact original cast iron downpipe with a flared hopper head descends from the east end of the back wall (Plate 25).

6.2.3 The building was accessed to the west via a doorway within the north end of the west wall of Bay 1. Presumably a similar entrance was situated within Bay 4, however due to the thickness of vegetation it was not possible to ascertain. Low brick walls, likely with glazing above, divided Bays 1 and 4 from Bays 2 and 3 (Plate 23). Each wall contains a doorway providing access to the central bays. Likewise a doorway, evidenced in a concrete doorsill, provided access between Bays 2 and 3.

6.2.4 The form of the back wall allowed for the centre two bays to be constructed as lean-to structures with sufficient height for trailing plants (possibly peaches) of some height, while the end bays formed clear-span glasshouses with north-south aligned ridges. The clear-span glasshouse roofs rose from the end walls to an apex at height with the centre walls (Figure 20). The roof of the lean-to bays was supported at its apex by a ridge-board set upon a series of plain brick brackets (Plate 26). A leaded flashing protected the roof apex. A cast iron spandrel bracket, with a simple

decorative motif, was found in Bay 1 pertaining to the clear-span roof (Plate 27). A number of extant window frames with intact glazing were stacked in Bay 1 (Plate 28). The window frames were of mortised timber elements set with five glass panes, each pane measuring 0.29m x 0.45m, appearing to be affixed with putty beneath the glass panes. It is likely the extant frames were from the lower walls, and do not pertain to the removed roof, considering their form and preservation. Windows were opened for ventilation using the screw operated devices previously mentioned which drove a horizontal shaft attached by arms to the window sashes.

6.2.5 A number of heating pipes run through the building, supported on brick plinths measuring 0.24m x 0.24m x 0.35m on average. Within Bay 1 the pipes run in a double course along the west, south and east walls (Plate 29). The same appears true for Bay 4, though its vegetated state made observations difficult. Bays 2 and 3 both feature single pipes along their south walls, with a free-standing four-tier pipe stack to the north side, with a gap of 0.65m before the back wall to allow for plantings (Plate 30). Tap valves on the pipe stacks allowed for direct control of temperature. A concrete path *c.*1m wide runs parallel to the heating pipes in Bays 2 and 3.

6.3 *Building 3 – Cold-Frame (Figure 16)*

6.3.1 Building 3 is a low cold-frame structure with a south sloping profile (Plate 31). The structure was constructed between 1897 and 1910. The structure is constructed of a mid-orange stock brick with burnt inclusions in Flemish garden wall bond. Occasional clay tiles and concrete-parging create an even coping on which a timber and glass frame would have been positioned. No elements of the glass covering remain. The brickwork shows patches of white paint. The walls have a width of 0.24m, while the internal divisions are 0.12m.

6.4 *Building 4 – Boiler House (Figure 14)*

6.4.1 Building 4 consists of two keyed in lean-to structures alongside the north wall of the kitchen garden, abutting Building 1 to its west (Plate 32). The kitchen garden wall is constructed of roughly-coursed stone, with a later extension of large bricks in stretcher bond and a brick coping above. The interior of the building will not be described as it was deemed unsafe to survey after a potentially dangerous substance was identified in the area of the boiler during a safety check at the west end of the structure. The building as a whole features a lean-to tiled roof, with a timber fascia running the length of the building's front. Where the building meets the garden wall is features a straight joint, and is not keyed in.

6.4.2 The east end of the structure, possibly dating to between 1864 and 1875 with later alterations, is constructed of a mid-orange clinker brick in Flemish bond. The building is accessed via a timber door with strap hinges and possibly original hardware set within a doorway with a soldier-course lintel in the east elevation of the building (Plate 33). The angle of the roof cuts across the soldier coursing above the doorway suggesting that the roof was originally of a shallower pitch, its current calibration being a later alteration.

6.4.3 The 1910 Ordnance Survey mapping (Figure 17) shows an outbuilding in the same location as the eastern end of Building 4 with an open front. There is evidence of this in its east elevation where the butt-end of a timber element is visible, though the north elevation of the structure is presently of brick construction similar to that used

elsewhere in the building. The north elevation of the east end of the lean-to is set with three paired top-hung three-pane timber windows with concrete sills.

6.4.4 The west end of Building 4 was constructed between 1875 and 1890. The two ends of Building 4 are keyed in with a ragged joint (Plate 34). The west end is constructed of a brown-orange brick of varying size, in an irregular Flemish bond. The north elevation is set with two paired top-hung two-pane timber windows with concrete-covered tile sills (Plate 35). A chimney stack constructed of a similar brick rises from the south side of the kitchen garden wall, adjacent to the west end of the building (Plate 36).

6.4.5 During the preliminary site safety check it was noted that a boiler was situated within a subterranean area at the west end of the building. The boiler appeared to be a cast iron sectional boiler. Such an observation is consistent with the heating pipe system observed elsewhere. The boiler would be situated below ground to facilitate the thermo-cycling of water within the system. An example of sectional boilers from Messenger and Company Ltd's brochure is included in Appendix 1.

6.5 *Building 5 (Figure 17)*

6.5.1 Building 5 is a lean-to storage structure abutting the west wall of the kitchen garden (Plate 37). As on its north, the kitchen garden wall has been heightened in brick. In addition the garden wall has an third extension of brick, with a brick coping and curved brackets adding strength and aesthetic value, to accommodate the roof of the lean-to (Plate 38).

6.5.2 The building is formed of two parts, a likely original mid-orange clinker brick south end dating to *c.*1864-1875, and a later northern end in a brown-orange brick. The brickwork is in Flemish garden wall bond. The brickwork has been keyed in where it joins, and two additional rows of bricks have been added to the south side to increase in in height (Plate 39). The building has a continuous timber fascia and lean-to slate roof, pertaining to the later northern section of the building. A timber-frame top-hung three-pane window is set within the west elevation of the later section. The building is accessed via a likely reused four-panel timber door in its north elevation (Plate 40). Within the south elevation is a blocked timber door, overlying an earlier bricked-up doorway (Plate 41).

6.5.3 The interior of the structure is split into two rooms, aligned with the two sections, and divided by a brick wall in stretcher bond (Plates 42 and 43). The walls are painted white. The floor level within the older southern section is lower than the northern section. Likewise, the flooring differs by section, with simple brick paving in the older section (Plate 44), and hexagonal tiling in the northern (Plate 45). The roof is a uniform timber common-rafter roof with nailed on purlins throughout. The structure is currently used for storage.

6.6 *Landscape*

6.6.1 The Combers Glasshouse complex is situated within an area bounded to north and west by mature plantings, providing some aesthetic merit and a valuable wind break for plantings within the complex and the adjacent kitchen garden (Plate 46). Plantings include a spectacular copper beech which forms a significant backdrop to the group (Plate 47). A brick-bordered pathway runs east-west between the glasshouses, connecting to a gate leading south to the kitchen garden (Plate 48).

Originally the site had three additional glasshouses, however traces of these structures were not visible at the time of the site visit.

7.0 DISCUSSION

7.1 The site represents the development of a late 19th/early 20th century kitchen garden glasshouse complex associated with the famous Nymans Estate. The glasshouse complex served primarily, as far as discernible, as a source of fruit and vegetables for the main house – with the smaller glasshouse likely serving as seed houses, forcing houses, or melon houses (Building 1), and the larger serving for larger trailing fruit trees and plants. The site also demonstrates the development of glasshouse technology, especially in Building 1 where we see a later insertion of pipework for heating. It is not clear what source heated the structure beforehand, whether a system of decomposing bark or dung, or an alternative furnace system. The adoption of a thermo-cycling system powered by a segmental cast iron boiler suggests an Edwardian date for the installation of the heating pipes, likely under the ministrations of James Comber.

7.2 Glasshouses also pertain to significant societal developments and trends – the glasshouses at Nymans being constructed at the highpoint of the fashion, and towards the end of an era of technical innovation that followed the industrial revolution. Glasshouses were a means for the rich, and later the rising middle class, to produce and show the ostentatious and exotic at home – a statement of wealth and status.

7.3 The decline of the glasshouse towards the middle of the 20th century is in turn a reflection of a change in attitudes, with a preference for growing plants naturally in the outdoors, and the decline of the country house. Additionally the influx of exotic fruits by importation severely undermined the showmanship of growing such plants at home.

8.0 MANAGEMENT RECOMENDATIONS

8.0.1 The Government's National Planning Policy Framework states that 'heritage assets are an irreplaceable resource and [that we should] conserve them in a manner appropriate to their significance', and that 'when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation'. The Combers Glasshouses are a difficult case due to their state of disrepair, and in places due to the degree of plant penetration. Despite this, the structures retain a reasonable amount of their original structural fabric. Additionally, the landscape within which they are set has been little altered since the date of their construction.

8.1 *General Conservation Guidelines*

8.1.1 The Combers Glasshouses fall within the Grade II* Nymans Estate Historic Park and Garden which means that it has been judged to be of architectural and/or historical importance at a regional level. As a result, the relevant permissions should be sought for any works to the property. In general terms repair work or redevelopment of the buildings should seek to retain original materials or elements where possible, and extensive removal of material should be prevented. All repair materials and the techniques employed should seek to be as per the original as far

as is viable. All proposals for works should follow the procedure laid down in any leasehold agreement with the National Trust. All work requires National Trust permission (which should not be assumed) before other consents are sought. National Trust internal procedure should include agreement from the Territory Archaeologist, Curator, and where necessary the National Trust Architectural Panel. All proposals should be prepared in conjunction with a recognised qualified conservation surveyor, architect or builder so that the conservation objectives can be integrated at the outset. All works on site should be undertaken by an experienced conservation builder.

8.2 *Specific Conservation Guidelines*

8.2.1 At the time of the survey no plans were available regarding the future proposals for the buildings: the following guidelines are therefore limited in that respect. If future proposals for the buildings involve interventions into their fabric or excavations into surrounding land it is suggested that consideration is given to such works being undertaken in association with a buildings archaeologist in the form of a watching brief as such work may potentially reveal additional information that would contribute to the understanding of the buildings. Areas that were not accessible at the time of the survey and which may repay more detailed investigation are the interior of Building 4, particularly the boiler room, and the vegetated east end of Building 2. Additionally it is likely that buried remains of three additional glasshouses may be encountered during further works.

8.2.2 The appearance of the glasshouses should be preserved as existing where possible, with reference to available images and similar examples of Edwardian glasshouses.

Glazing: Should the glasshouses be reinstated, appropriate glazing as fitting to the design and period of the original structures should be selected for as appropriate.

Masonry: Repairs and repointing of brickwork dressing, chimneys and flint walling should be carried out using a mortar as originally used in the construction of the buildings. This is a breathable material and does not allow moisture to become trapped within the fabric.

Roof: Should the glasshouses be reinstated, efforts should be made to construct a roof in a manner fitting the original appearance of the buildings – using a mix of iron and softwood members, reinstating decorative bracket purlins and lever tackles as identified on site.

Pipes: The extant piping and boiler form a significant element of the extant structures. If possible they should be retained, or replaced in kind, as reflective of the technologies and historic practices at the site.

Rainwater goods: These should be checked regularly to ensure that they are functioning correctly. Repair should be the first option and replacement if this is not reasonably practicable. Replacement should be on a like for like basis.

Drainage: If there are areas of damp, the exterior of these walls should be examined first to ensure that materials have not built up against the wall and that there is adequate drainage. The external walls should also be checked for cracks etc. where moisture may be entering and repaired using a lime mortar. Repairs

previously undertaken in sand and cement should be assessed for their performance and removed and replaced with lime mortar.

Doors: The site retains a number of surviving historic doors, particularly those in Building 1. These should be retained and repaired, as appropriate. Repairs are to be carried out by suitably qualified / experienced personnel.

9.0 ACKNOWLEDGEMENTS

9.1 Archaeology South-East would like to thank the Tom Dommett of the National Trust for commissioning this Historic Buildings Record.

10.0 REFERENCES

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Accessed: 1st June 2015

Promap
http://www.promap.co.uk
Accessed: 1st June 2015

PLATES

Plate 1: West elevation of Building 1, looking east (Photo #61)

Plate 2: South elevation of Building 1, southern lean-to, looking north (Photo #62)

Plate 3: West side of the southern lean-to, Building 1, looking east (Photo #68)

Plate 4: East side of the southern lean-to, Building 1, looking west (Photo #76)

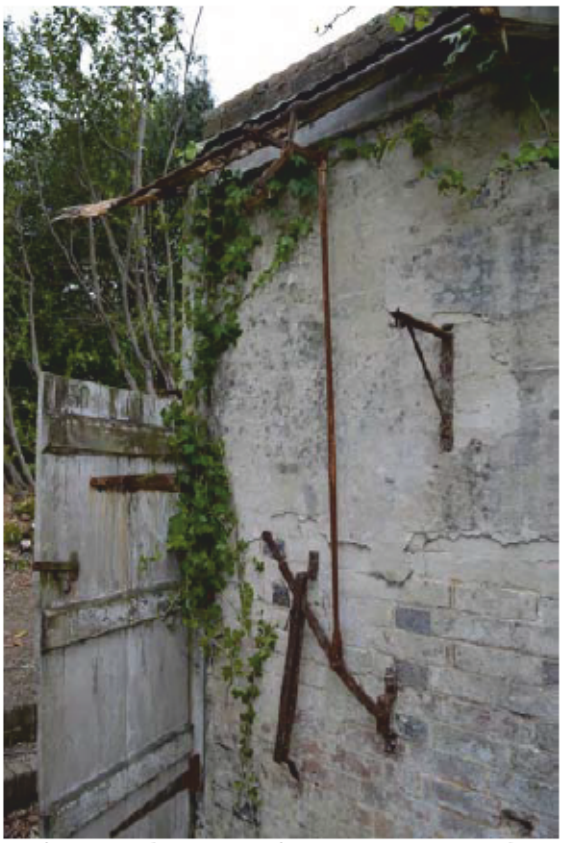


Plate 5: Southern lean-to, Building 1, door to west and lever tackle, looking west (Photo #66)

Plate 6: Southern lean-to, Building 1, door to northern lean-to, looking north (Photo #75)

Plate 7: Southern lean-to, Building 1, roof construction, looking north-east (Photo #63)

Plate 8: Southern lean-to, Building 1, extant window framing on south wall. Note the top-heating pipes. Looking south (Photo #78)

Plate 9: Southern lean-to, Building 1, lever tackle and roof construction. Note void mortise for timber purlin. Looking east (Photo #72)

Plate 10: Southern lean-to, Building 1, void beneath the southern bed, looking west (Photo #74)

Plate 11: Northern lean-to, Building 1, looking south-east(Photo #47)

Plate 12: Northern lean-to, Building 1, doorway and steps down, looking west (Photo #58)

Plate 13: Northern lean-to, Building 1, Looking south (Photo #48)

Plate 14: Northern lean-to, Building 1, lever tackle, looking south (Photo #53)

Plate 15: Northern lean-to, Building 1, interior overview. Note metal bed to south and possible brackets above. Also note ventilation and drainage holes in the northern bed. Looking west (Photo #57)

Plate 16: Northern lean-to, Building 1, pipes running below the northern bed, looking east (Photo #59)

Plate 17: Building 2 overview, looking north-east (Photo #1)

Plate 18: Building 2 overview, looking north-west (Photo #2)

Plate 19: Building 2, view of the bracketing to the rear of the back wall, looking south-east (Photo #3)

Plate 20: Building 2, plant bed, looking north-east (Photo #26)

Plate 21: Building 2 arches along the south wall of Bays 2 and 3, looking south-east (Photo #18)

Plate 22: Building 2, pegs and wires in the back wall Bay 2, looking north-east (Photo #17)

Plate 23: Building 2, tap in Bay 1 and doorway to Bay 2, looking east (Photo #15)

Plate 24: Building 2, screw operated window opening device, looking north-east (Photo #12)

Plate 25: Building 2, downpipe and hopper head, looking south (Photo #102)

Plate 26: Building 2, ridge board on brick brackets, looking north-east (Photo #20)

Plate 27: Building 2, spandrel in Bay 1, looking south (Photo #9)

Plate 28: Building 2, window frames, looking west (Photo #8)

Plate 29: Building 2, heating pipes in Bay 1, looking south-east (Photo #13)

Plate 30: Building 2, four-tier pipe stack in Bay 2, looking north (Photo #19)

Plate 31: Building 3 overview, looking north-east (Photo #29)

Plate 32: Building 4 overview, looking west (Photo #39)

Plate 33: Building 4, east entrance, looking south-west (Photo #34)

Plate 34: Building 4, joint in brickwork, looking south (Photo #41)

Plate 35: Building 4, windows in west end of building, looking south (Photo #42)

Plate 36: Building 4, chimney stack, looking south-east (Photo #39)

Plate 37: Building 5 overview, looking east (Photo #80)

Plate 38: Building 5, kitchen garden wall, looking northeast (Photo #82)

Plate 39: Building 5, west elevation, looking east (Photo #84)

Plate 40: Building 5, panel door in north elevation, looking south (Photo #86)

Plate 41: Building 5, blocked timber door in south elevation, looking north (Photo #81)

Plate 42: Building 5, north room, looking south (Photo #88)

Plate 43: Building 5, south room, looking north (Photo #92)

Plate 44: Building 5, brick floor in south room, looking north (Photo #93)

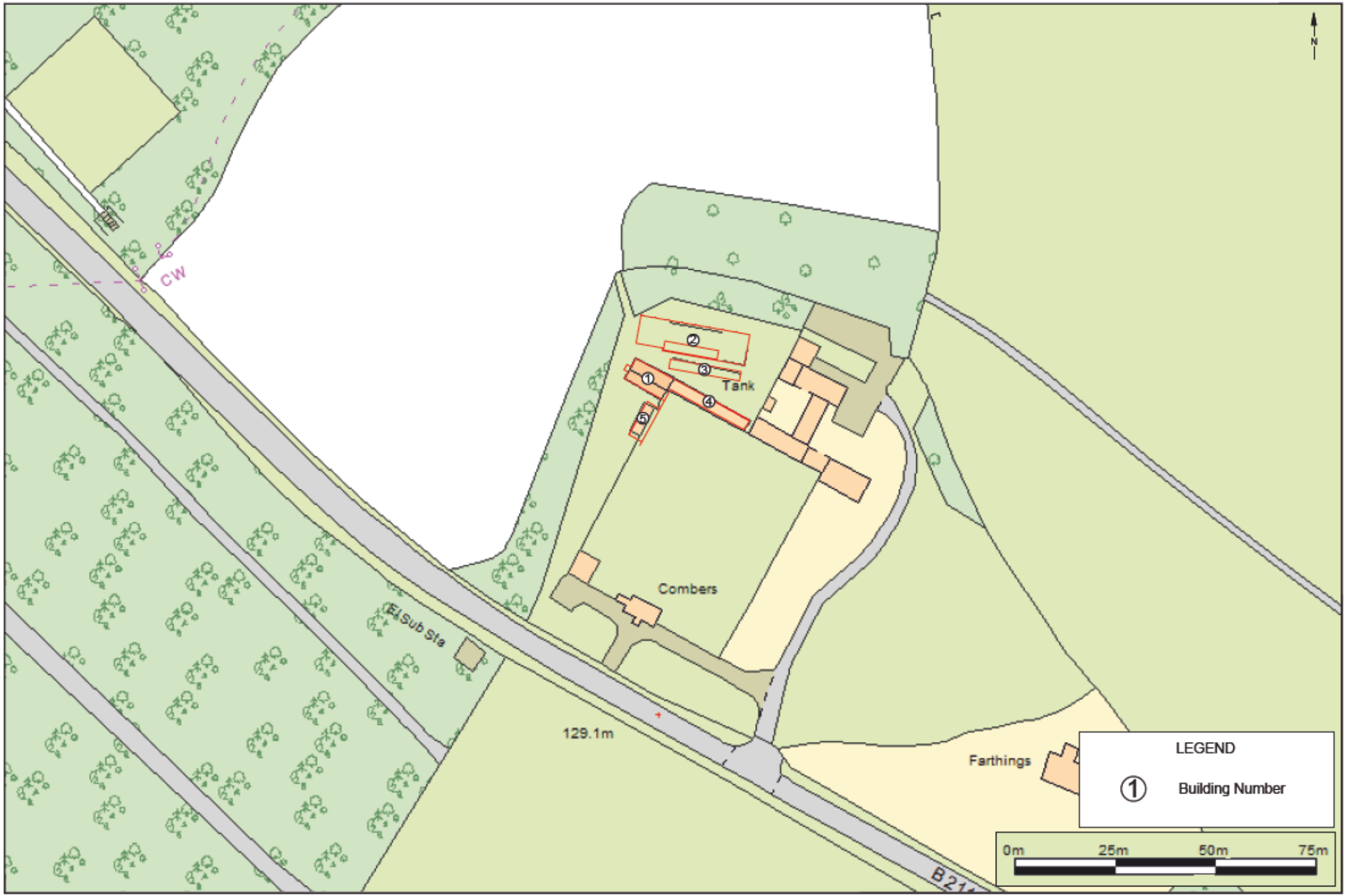
Plate 45: Building 5, tile floor in north room, looking south (Photo #90)

Plate 46: Looking north from the south of the site, with treeline beyond (Photo #95)

Plate 47: Looking south across the site, with treeline beyond, note the copper beech (Photo #101)

Plate 48: Brick-bordered pathway between glasshouses, looking east (Photo #96)

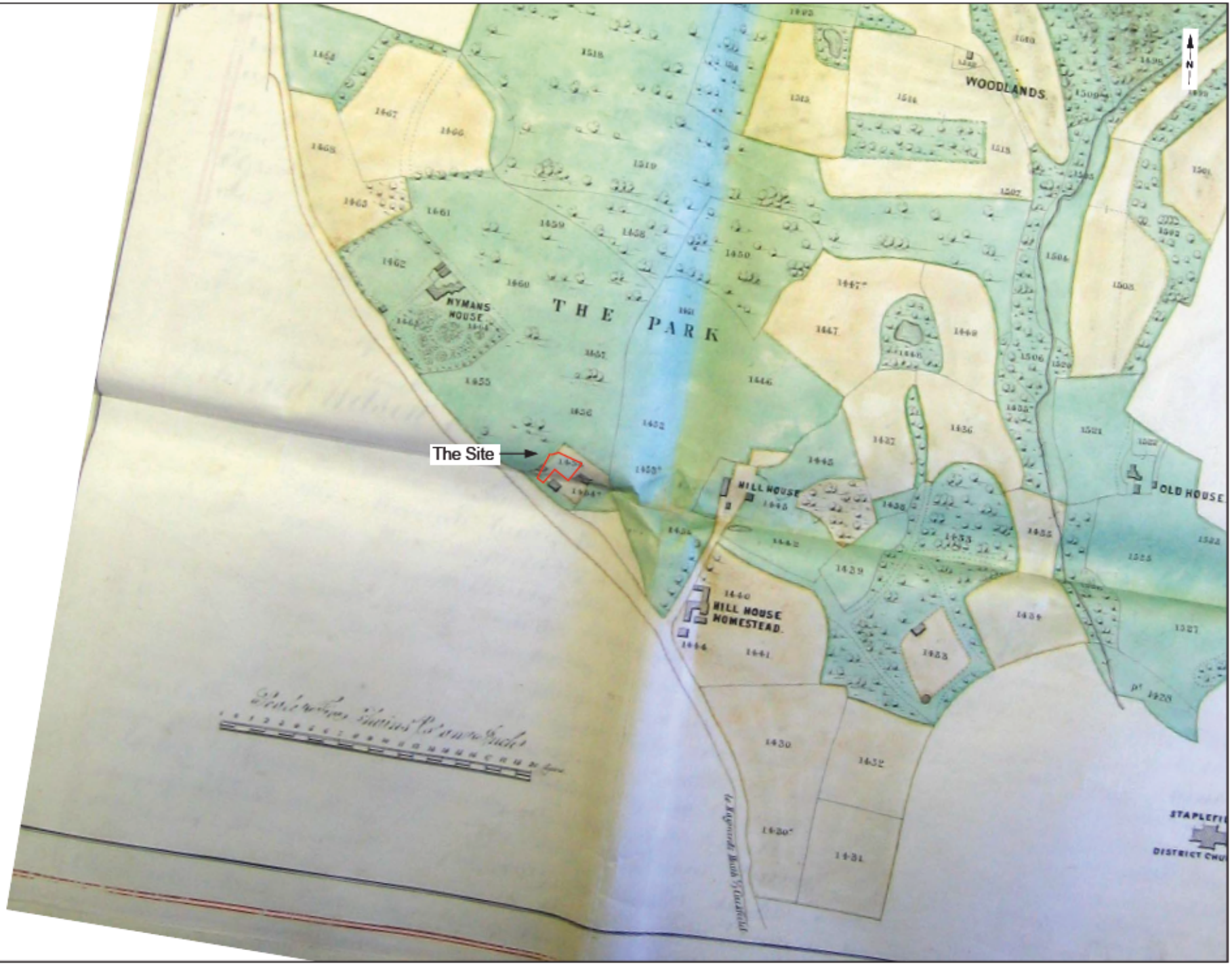
© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 1
Project Ref: 7494	June 2015	Site location	
Report Ref: 2015184	Drawn by: SP		



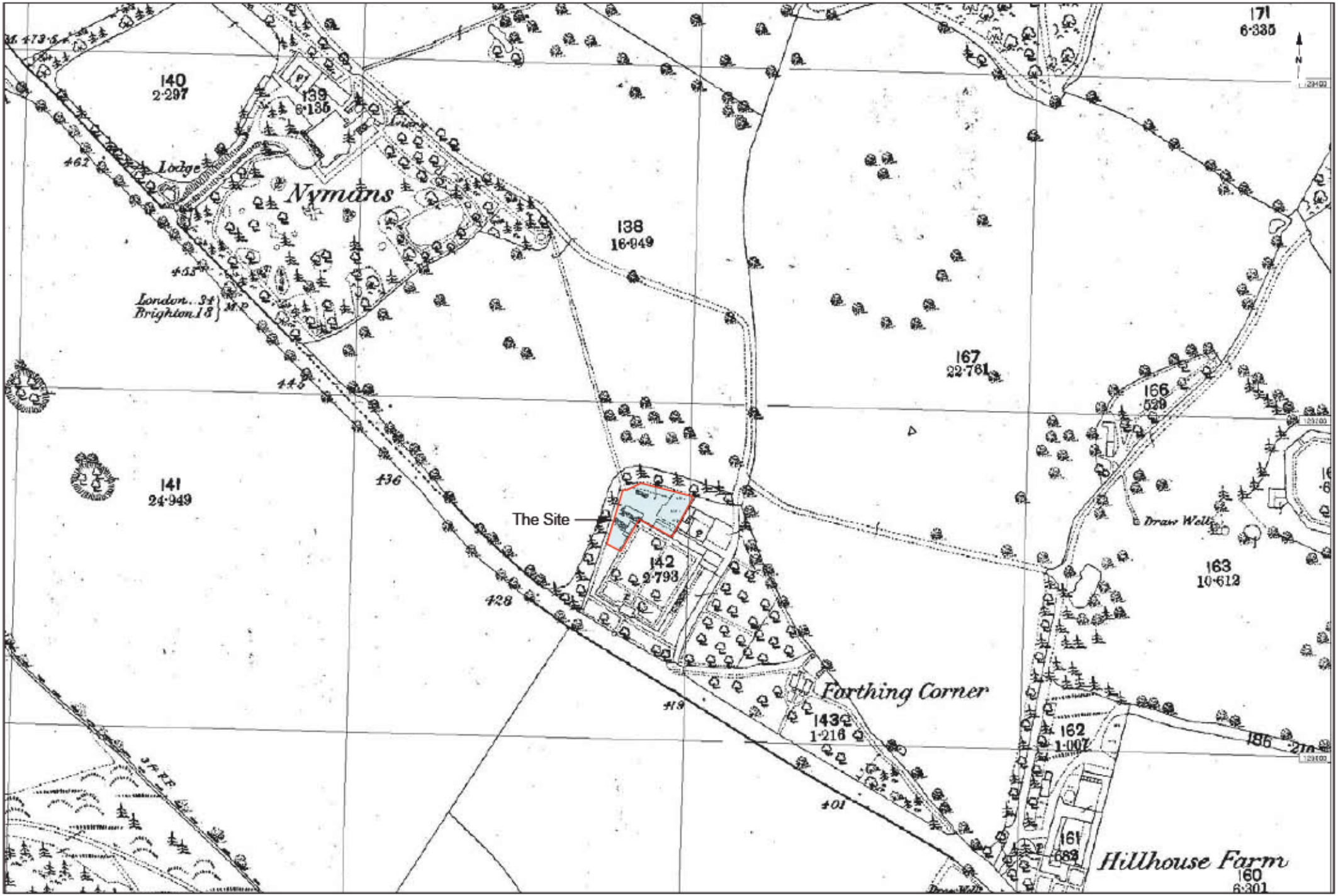
© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 2
Project Ref: 7494	May 2015	Site Plan overlain on 2015 Ordnance Survey Map	
Report Ref: 2015184	Drawn by: SP		

© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 3
Project Ref: 7494	May 2015	Cuckfield Tithe Map, 1843 (WSRO TD/E 91)1)	
Report Ref: 2015184	Drawn by: SP		

© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 4
Project Ref: 7494	May 2015	Nymans Estate, 1863	
Report Ref: 2015184	Drawn by: SP		

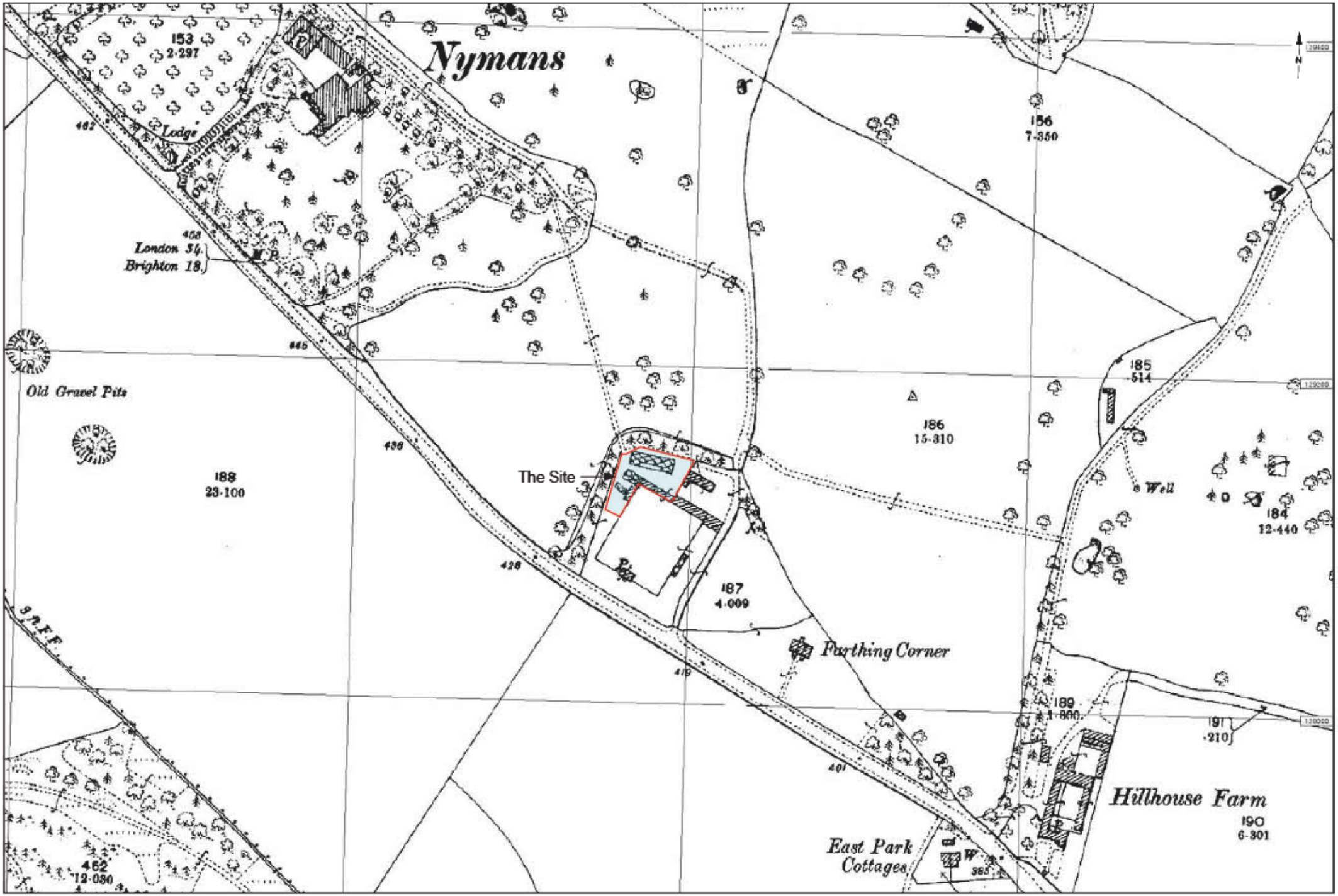


© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 5
Project Ref: 7494	May 2015	Nymans Estate, 1864 (WSRO Add MS 27108)	
Report Ref: 2015184	Drawn by: SP		

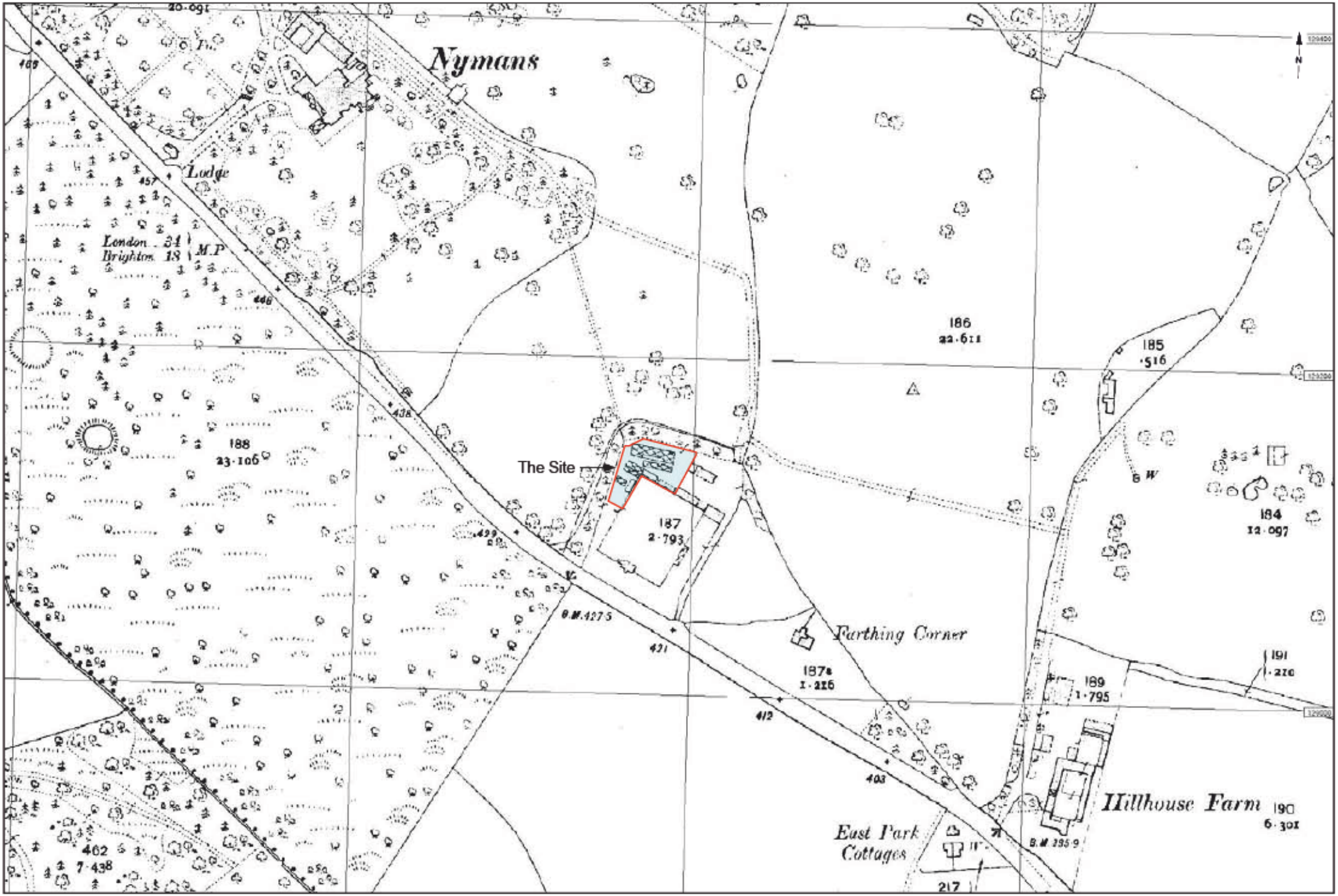


© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 6
Project Ref: 7494	May 2015	Ordnance Survey Map, 1875	
Report Ref: 2015184	Drawn by: SP		

© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 7
Project Ref: 7494	May 2015	Nymans Estate, 1890 (WSRO Add MS 27111)	
Report Ref: 2015184	Drawn by: SP		

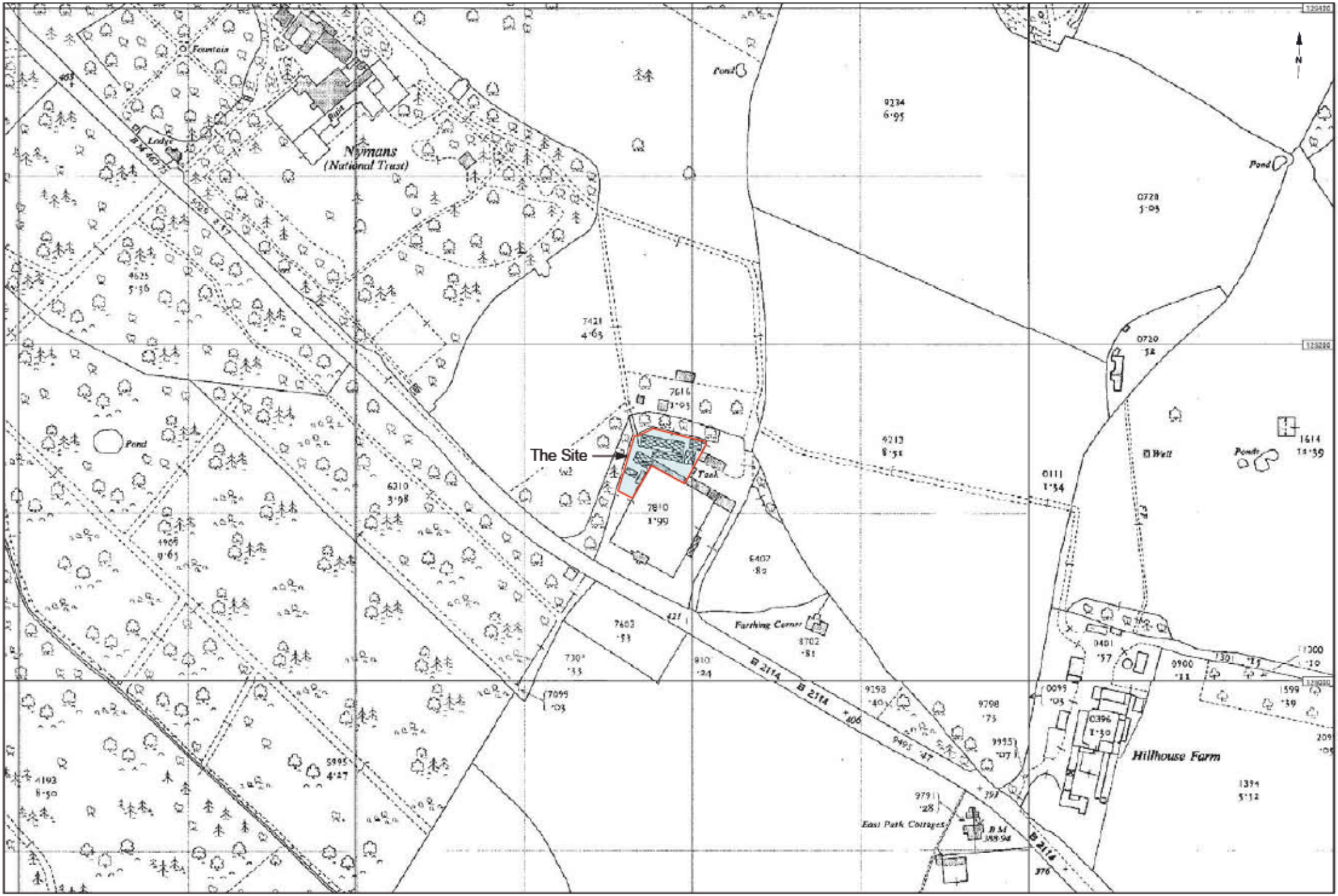


© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 8
Project Ref: 7494	May 2015	Ordnance Survey Map, 1897	
Report Ref: 2015184	Drawn by: SP		



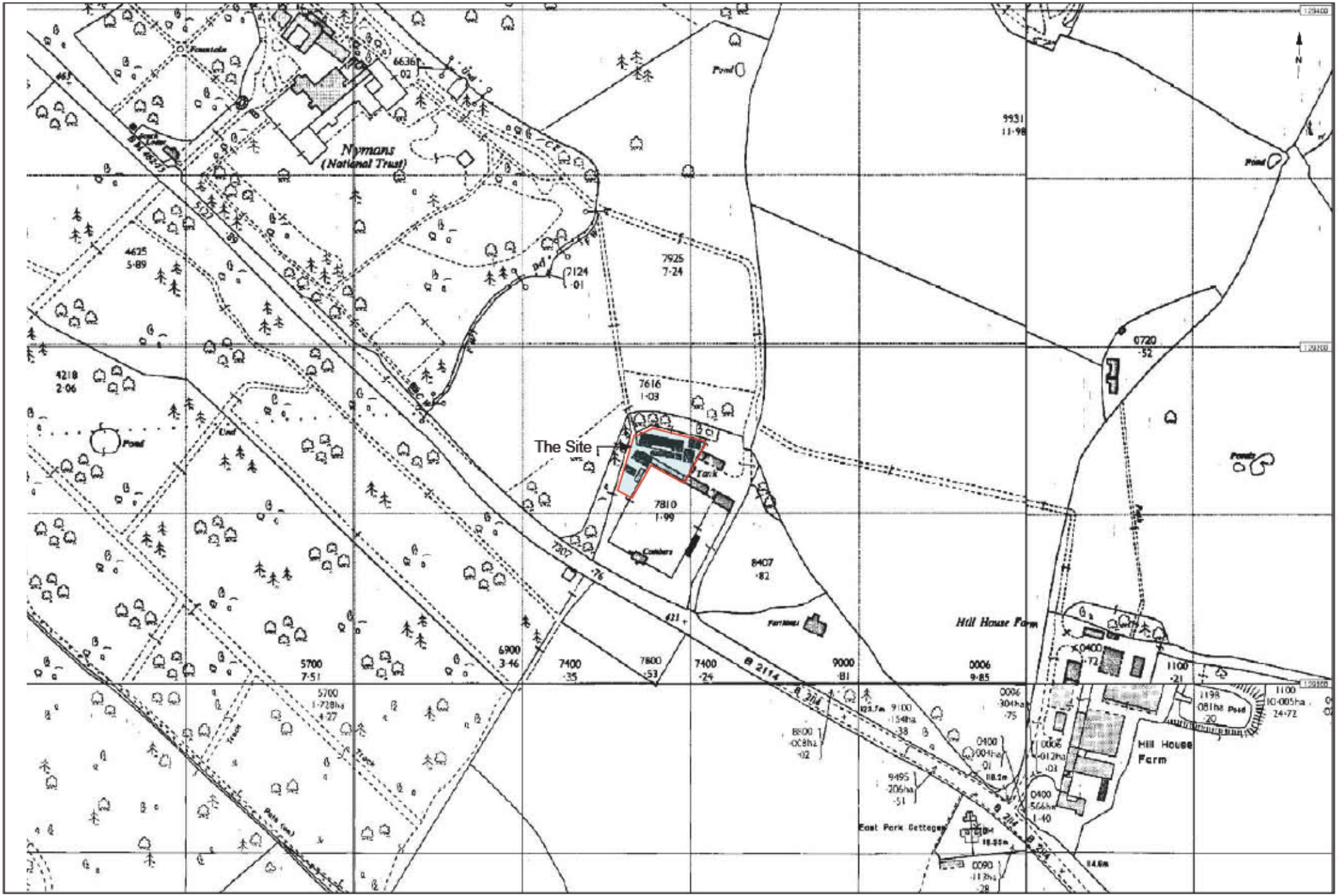
© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 9
Project Ref: 7494	May 2015	Ordnance Survey Map, 1910-11	
Report Ref: 2015184	Drawn by: SP		

© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 10
Project Ref: 7494	May 2015	Aerial Photo, 1947	
Report Ref: 2015184	Drawn by: SP		



© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 11
Project Ref: 7494	May 2015	Ordnance Survey Map, 1957	
Report Ref: 2015184	Drawn by: SP		

© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 12
Project Ref: 7494	May 2015	Aerial Photo, 1960s	
Report Ref: 2015184	Drawn by: SP		



© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 13
Project Ref: 7494	May 2015	Ordnance Survey Map, 1968-77	
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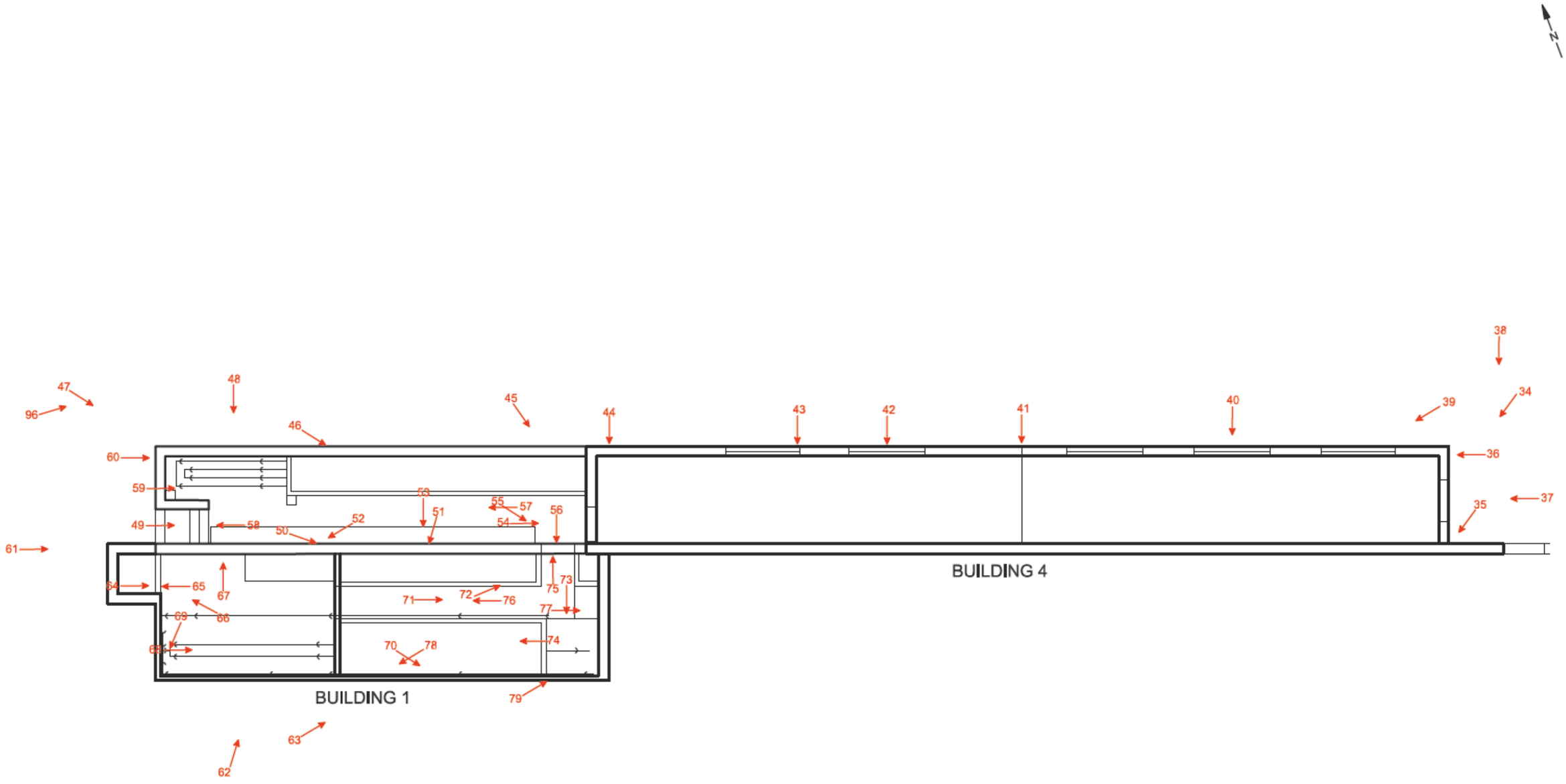
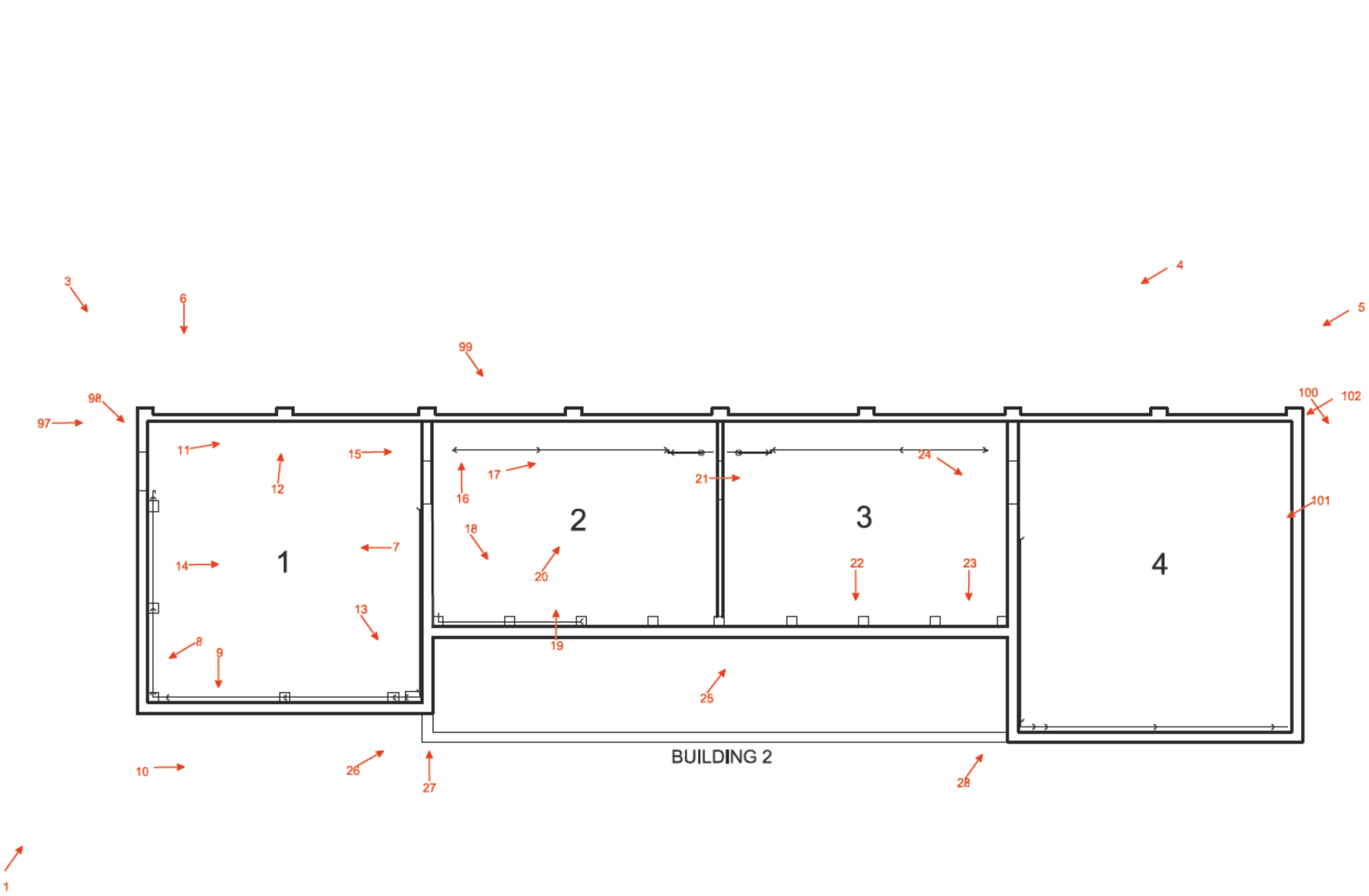
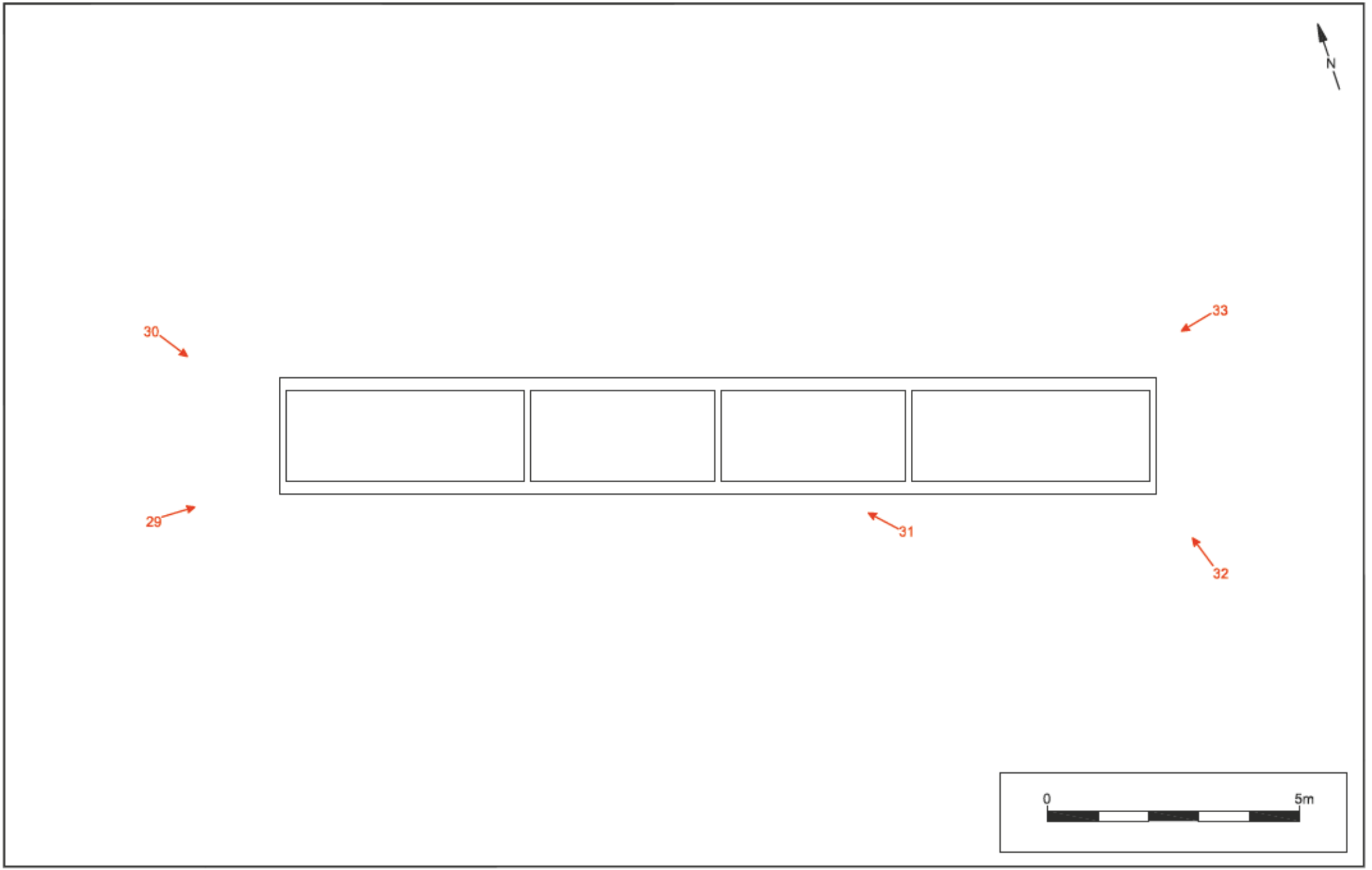


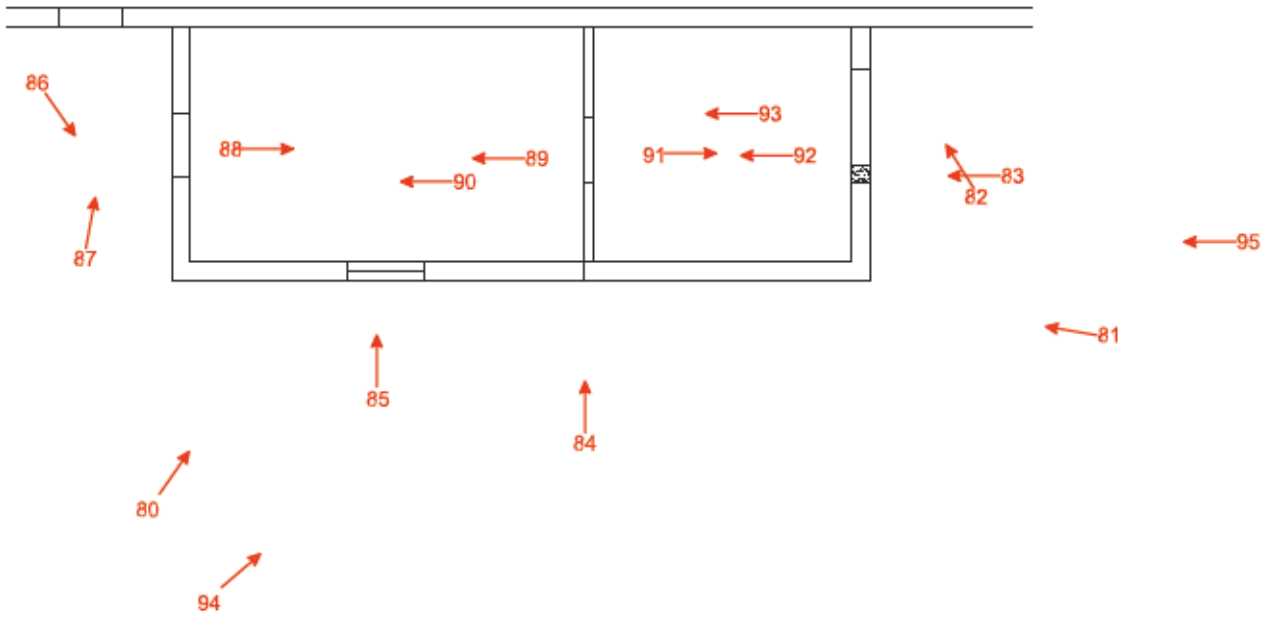
© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 14
Project Ref: 7494	May 2015	Buildings 1 and 4 Plan and Photo Locations	
Report Ref: 2015184	Drawn by: SP		



© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 15
Project Ref: 7494	May 2015	Building 2 Plan and Photo Locations	
Report Ref: 2015184	Drawn by: SP		

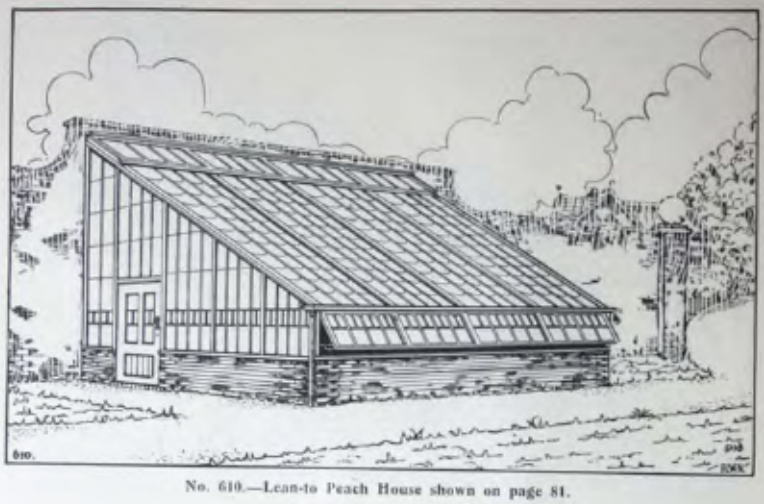


© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 16
Project Ref: 7494	May 2015	Building 3 Plan and Photo Locations	
Report Ref: 2015184	Drawn by: SP		

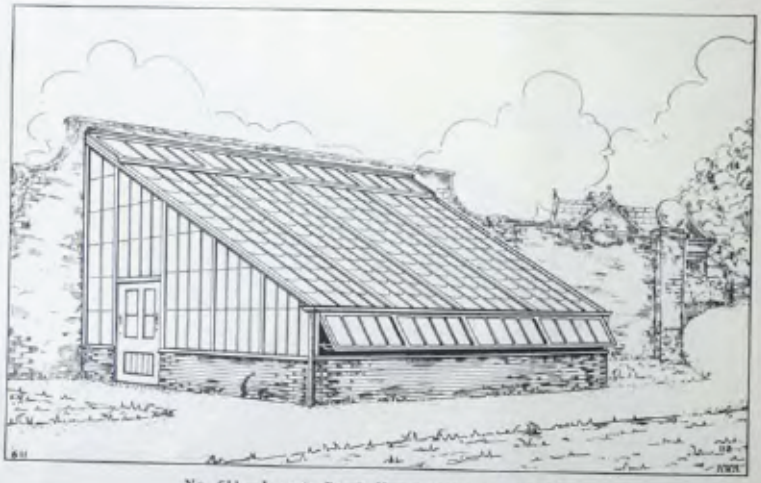


© Archaeology South-East		Combers Glasshouses, Nymans	Fig. 17
Project Ref: 7494	May 2015	Building 5 Plan and Photo Locations	
Report Ref: 2015184	Drawn by: SP		

APPENDIX 1: MESSENGER AND COMPANY LTD BROCHURE EXTRACTS (1920)



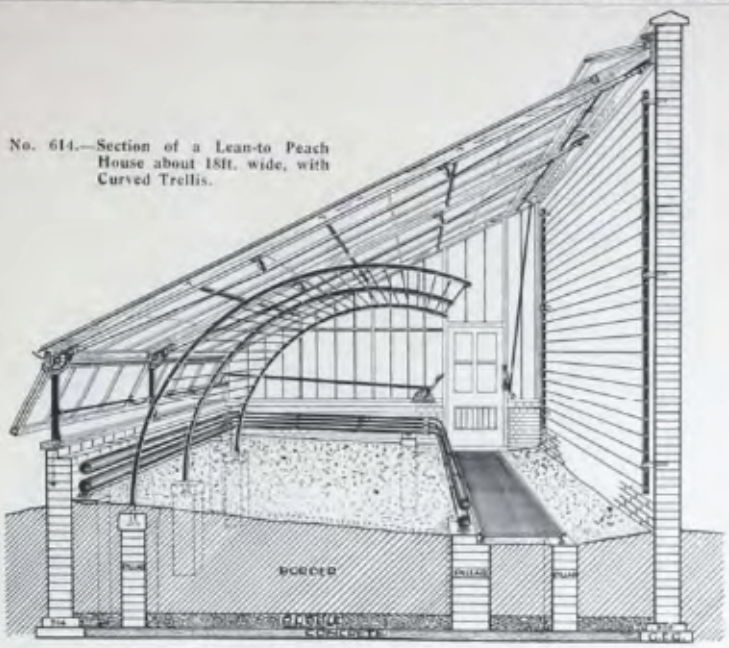
No. 610.—Lean-to Peach House shown on page 81.



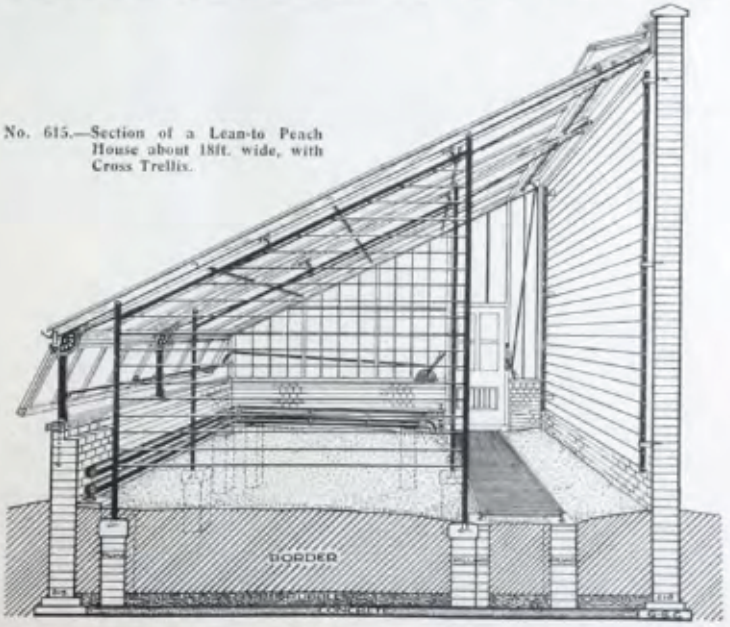
No. 611.—Lean-to Peach House shown on page 81.

FOR PRICES SEE SCHEDULE AT END OF CATALOGUE.

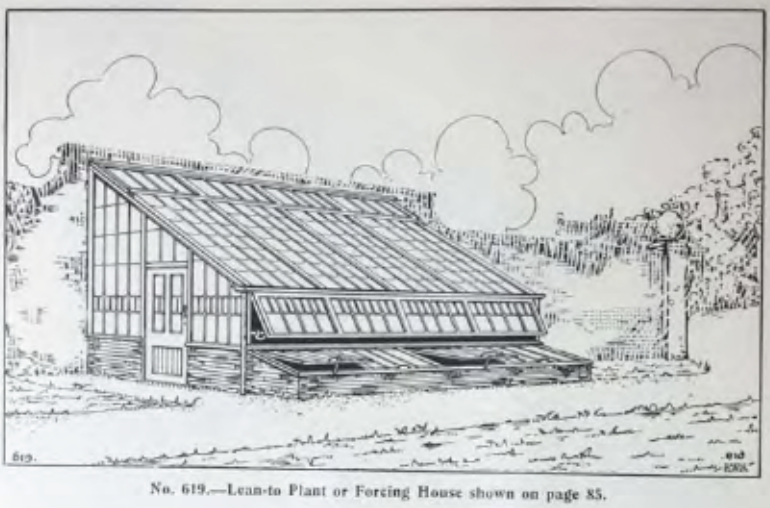
No. 614.—Section of a Lean-to Peach House about 18ft. wide, with Curved Trellis.



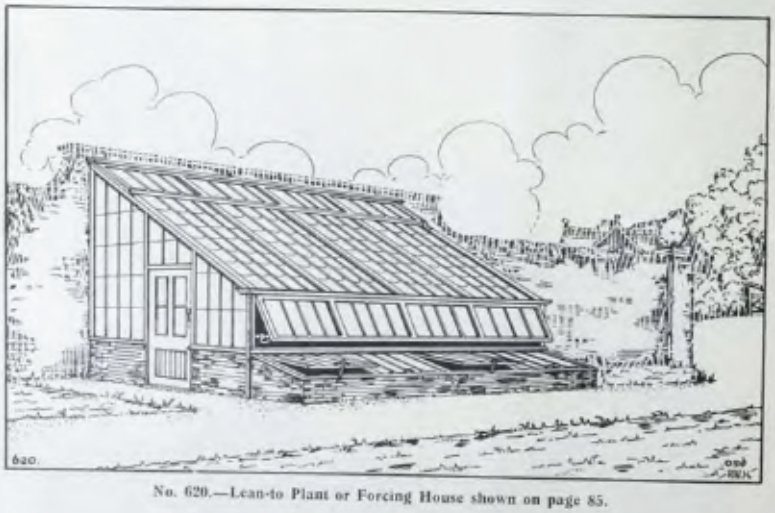
No. 615.—Section of a Lean-to Peach House about 18ft. wide, with Cross Trellis.



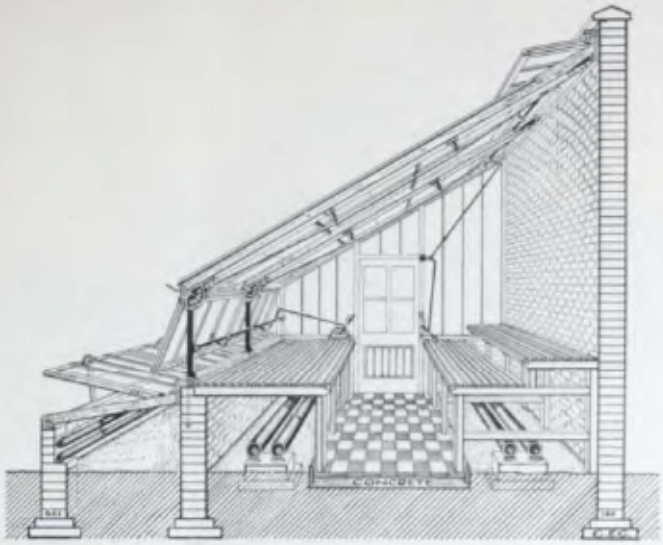
FOR PRICES SEE SCHEDULE AT END OF CATALOGUE.



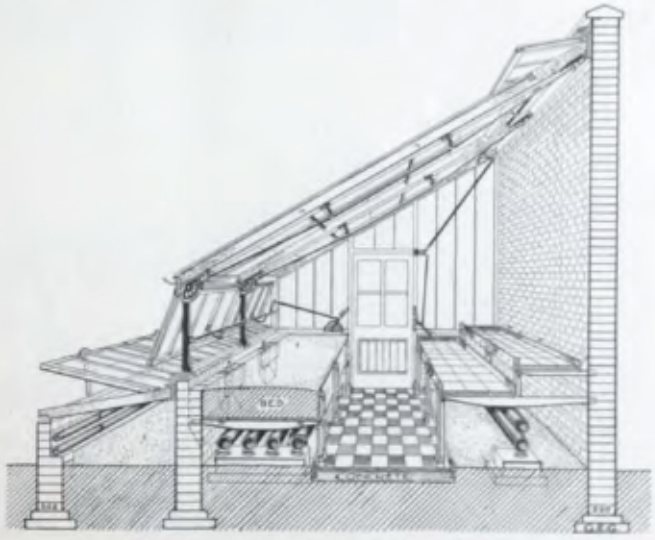
No. 619.—Lean-to Plant or Forcing House shown on page 85.



No. 620.—Lean-to Plant or Forcing House shown on page 85.



No. 621.—Section of a Lean-to Plant House about 12ft. wide.
If used as an Intermediate Plant House or Stove House, Iron Stages as shown on page 112 are recommended, and more heating pipes are necessary.



No. 622.—Section of a Lean-to Forcing House about 12ft. wide.
Melons or Cucumbers can be grown in this type of House with success.

FOR PRICES SEE SCHEDULE AT END OF CATALOGUE.

MESSENGER & COMPANY, LIMITED, LOUGHBOROUGH, & 122, VICTORIA STREET, LONDON, S.W.

QUORN CAST IRON SECTIONAL BOILERS.

Fig. A.
Fig. B has flue at front.

Fig. C.

Fig. D.

The Quorn Sectional Boilers are the cheapest, most economical, and simplest on the market. The sections are interchangeable, and are put together with Cast Iron Taper Nipples and short bolts and nuts. These Boilers are eminently suitable for heating Conservatories or ranges of Greenhouses, because they are so easy to manage, as well as being economical.

TABLE OF SIZES AND DIMENSIONS OF QUORN BOILERS.

No.	No. of Sections.	Heating Power of 4 in. Pipe.	Square Feet of Radiation.	Capacity B.T.U. per hour.	Reference to Illustration.	DIMENSIONS OF BOILERS. Size of Smoke Pipe.	Length of Base.	Height of Base.	Exclusive of Sockets. Height to top of Boiler from floor.	Exclusive of Sockets. Width of Boiler.
		Feet.				Inches.	Inches.	Inches.	Inches.	Inches.
23	3	300	360	54,000	Fig. A. Flue at back of Boiler.	6	18	9	39	21
24	4	400	480	72,000			24			
25	5	500	600	90,000			30			
26	6	600	720	108,000			36			
27	7	700	840	126,000			42			
33	3	300	360	54,000	Fig. B. Flue at front of Boiler.	6	18	9	39	21
34	4	400	480	72,800			24			
35	5	500	600	90,000			30			
36	6	600	720	108,000			36			
37	7	700	840	126,000			42			
44	4	640	768	115,200	Fig. C.	8	24	12	50	24
45	5	820	984	147,600			30			
46	6	1,000	1,200	180,000			36			
47	7	1,180	1,416	212,400			42			
48	8	1,360	1,632	244,800			48			
49	9	1,540	1,848	277,200		9	54			
410	10	1,720	2,064	309,600			60			
55	5	1,700	2,040	306,000	Fig. D.	12	40	12	56½	36
56	6	2,100	2,520	378,000			42			
57	7	2,500	3,000	450,000			54			
58	8	2,900	3,480	522,000			61			
59	9	3,300	3,960	594,000			68			
510	10	3,700	4,440	666,000			75			
511	11	4,100	4,920	738,000			82			
512	12	4,500	5,420	810,000			89			

THESE BOILERS ARE SENT CARRIAGE PAID IN ENGLAND AND WALES.

FOR PRICES SEE SCHEDULE AT END OF CATALOGUE.

COMPLETE CATALOGUE OF QUORN BOILERS ON APPLICATION.

APPENDIX 2: OASIS DATA COLLECTION FORM

OASIS ID: ARCHAEOL6-212602

Project details	
Project name	**COMBERS GLASSHOUSES, NYMANS, WEST SUSSEX**
Short description of the project	**In May 2015 Archaeology South-East carried out a programme of historic building recording (English Heritage Level 3) at the former glasshouses at Nymans, West Sussex (526793 129137). The buildings include four former glasshouses and two outhouses. The work was commissioned by The National Trust to understand the historic development of the site in order to inform future management of the site and proposals for conservation or restoration.**
Project dates	**Start: 01-05-2015 End: 30-06-2015**
Previous/future work	**Yes / Not known**
Any associated project reference codes	**7494 - Contracting Unit No.**
Type of project	**Building Recording**
Site status	**English Heritage List of Parks and Gardens of Special Historic Interest**
Current Land use	**Other 5 - Garden**
Monument type	**GLASSHOUSES Post Medieval**
Monument type	**OUTBUILDINGS Post Medieval**
Significant Finds	**NONE None**
Methods & techniques	**"Measured Survey","Photographic Survey","Survey/Recording Of Fabric/Structure"**
Prompt	**Conservation/ restoration**
Project location	
Country	**England**
Site location	**WEST SUSSEX MID SUSSEX HAYWARDS HEATH Combers Glasshouses, Nymans**
Postcode	**RH17 6EB**
Study area	**0.18 Hectares**
Site coordinates	**TQ 26793 29137 51.0470231332 -0.190983306433 51 02 49 N 000 11 27 W Point**
Lat/Long Datum	**Unknown**
Project creators	
Name of Organisation	**Archaeology South-East**
Project brief originator	**National Trust**
Project design originator	**National Trust**

Project director/manager	**Amy Williamson**
Project supervisor	**Seth Price**
Type of sponsor/funding body	**National Trust**

Project archives

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Digital Archive recipient	**National Trust**
Digital Contents	**"none"**
Digital Media available	**"Images raster / digital photography","Survey","Text"**
Paper Archive recipient	**National Trust**
Paper Contents	**"none"**
Paper Media available	**"Notebook - Excavation',' Research',' General Notes","Photograph","Plan","Report"**

Project bibliography 1

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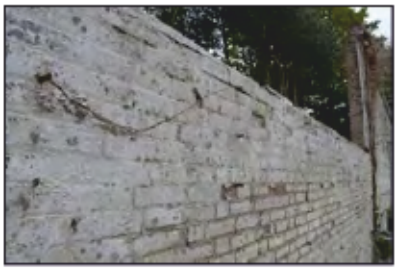

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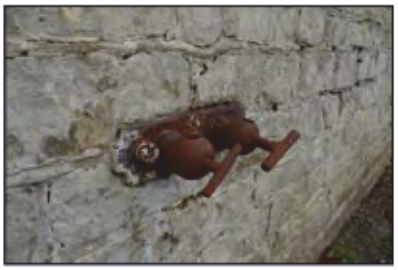

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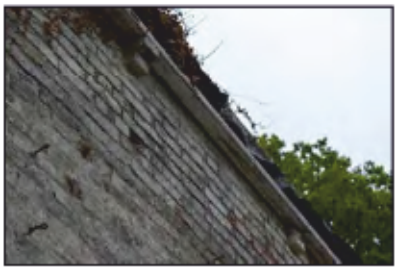

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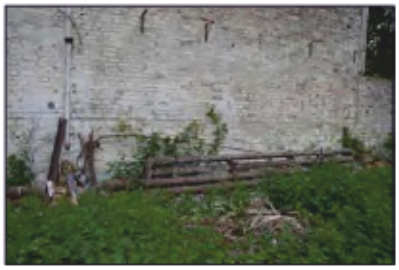

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