

Archaeological Investigations at the Kitchen Garden

Preston Park

Stockton –on-Tees

2011



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Introduction (Figs 1 & 2)

Preston Hall, Stockton-on-Tees (NZ 430 159) was built between 1820 and 1825 by David Burton Fowler and sited on land that was previously farmland. Later in the 19th century it changed hands and passed to Sir Robert Ropner. As initially constructed the hall faced across the river, to the south, but in 1882 it was re-fronted to become north facing. At the same time a Winter garden was added to the west end of the hall. The landscaping of the grounds of the hall does not seem to have been carried out to any grand scheme, and was perhaps more influenced by the desire to shield the hall from views of the Stockton & Darlington Railway to the north and the Whinsill quarry to the west.

The walled Kitchen Garden is laid out on a gentle south-facing slope and was probably established at the same time as the hall was built and is certainly shown on the first edition Ordnance Survey map of 1856 (Fig 1). The successive Ordnance Survey maps allow the plotting of changes in the basic appearance of the walled garden, but there is no recorded information on the detailed appearance and produce of the garden (Fig 2). In general terms it would of course have been used for growing vegetables, fruit and flowers for use in the house and would have been intensively cultivated.

Preston Hall and Park are owned by Stockton Borough Council and the Heritage Lottery has provided funding for a project to re-establish the garden.

Previous Work

As part of the pre-application work on the Kitchen Garden, a Geophysical Survey was carried out on the garden and Tees Archaeology ran a two week volunteer based excavation to investigate a range of features revealed by the Geophysical Survey. A full report was produced on these investigations (Archaeological Investigations at the Kitchen Garden, Preston Park, Stockton-on-Tees 2009, TA10/04).

Purpose and Methodology of the Project

The purpose of the present project was to build on the information recovered in 2009 by investigating parts of the garden not previously examined and to provide further opportunities for volunteer and school involvement in the project.

The investigations took the form of a number of trenches opened across the garden.

Excavation Descriptions (Fig 3)

The excavations took place over two weeks from the 16th May to the 27th May 2011 and an Open Day was held on Sunday 22nd May. Seven trenches were opened; F, G, H, K, L, and M were started with a mechanical excavator, while N was opened by hand. The excavations were directed by Robin Daniels and supervised by Dave Errickson and Kevin Horsley with eighteen volunteers providing 147 days of work.

Trench F (Figs 3 and 4)

Trench F was situated in the south east quadrant in the garden and ran for 22.5m from east to west and was 1.58m wide. This area of the garden had not been extensively explored the previous year and the Geophysical Survey showed little evidence of activity.

The trench demonstrated that there were no formal footpaths in the south-east quadrant of the garden nor was there any evidence of other ways in which this part of the garden might have been subdivided. The archaeological evidence suggests that this part of the site was gardened as a single large area.

First Phase of Activity

Cultivation of the area created a light brown clayey soil (F72) up to 0.26m deep.

At least one and possibly a second field drain were cut through F72 there may have been others, but the extremely dry conditions made it difficult to identify the ditches they were laid in and it was only when parts of the trench were lowered that they became clear.

Field Drains

Field Drain (F97) was placed in a trench (F95) 0.18m wide and 0.76m deep. The drain was 0.33m long and 0.07m in diameter externally (Fig 4).

Trench F98 may have been intended for a field drain but none was found in it (Fig 4). As with F97 it ran from north to south across the trench and was 0.3m wide and 0.40m deep.

Both of these trenches lay c.0.85m beneath the current top surface.

Other Features

Two other features were seen beneath F72; F76 was a sub-rectangular feature with a 'U' shaped base (Fig 4). It ran from north to south but was only seen at the southern side of the trench and continued into the section. It was 0.4m long and 0.30m wide with a fill of red/gray clay (F77).

F78 was also sited against the south side of the trench and comprised a sub-rectangular feature running from east to west, measuring 0.9m long, 0.18m wide and up to 0.15m deep (Fig 4). It contained a dark brown clayey soil, F79.

The purpose of these features is not known, although they probably represent disturbance of the subsoil by the cultivation of F72.

Second Phase of Activity

Topsoil (F71) was a silty mid-brown soil c. 0.33m deep, and this overlay the earlier cultivation horizon (F72).

Trench G (Figs 3, 5-8)

Trench G was sited in the south-western quadrant of the garden, immediately adjacent to the west wall. The purpose of this trench was to explore a range of deposits that had been seen in a much smaller area in 2009.

This trench demonstrated that quite extraordinary measures were taken in parts of the garden to prepare it for cultivation. This must relate to the particular plants it was intended to grow in this location. The trench also demonstrated re-organisation of the path system in the twentieth century.

First Phase of Activity

Construction of the Garden Wall

The natural subsoil comprises a grey/white clay (G37) which was cut by a shallow construction trench (G68) for the Kitchen Garden Wall (G61). The trench was 0.24m wide and 0.21m deep on the garden side of the wall and presumably had similar dimensions outside the garden. Beneath the wall was a thin layer of mortar (G69) and the bottom course of bricks were set on edge. Filling the construction trench and up against the wall was a blue clay (G62).

Insertion of Field Drains

The trench (G63) for a field drain was 0.28m wide and 0.17m deep and contained a circular section clay field drain (Fig 5). Following the laying of the drain the trench had been filled with yellow clay (G64).

Improving Drainage

A spread of broken brick, tile and field drains (G24) overlay the natural clay (G37) and sealed the Field Drain (G63) and the construction trench for the wall (G68). This extended from the wall 3.7m to the east and beyond the north and south limits of the trench; covering an area in excess of 25.9 square metres and was 0.17m deep (Figs 5-7).

This represents a significant effort, presumably to improve drainage in this location and must have involved digging out the surrounding topsoil and then replacing it. It is probable that this activity took place shortly after the construction of the wall and the material included hand made brick and tile which certainly date from the first half of the 19th century.

Beginning Cultivation

A deposit of mixed soil (G67) containing clay and fragments of brick represents the material placed back onto the spread of broken tile and this had a maximum depth of 0.17m. This soil showed clear evidence of digging marks with an east – west ridge 70mm wide which had been dug out to either side (Figs 5, 8).

This deposit was overlain by a brown clayey soil (G66) which represents the first cultivation horizon associated with the creation of the garden.

Second Phase of Activity

Cultivation Horizons

A new cultivation horizon was represented by G31 which was a dark brown clayey soil that overlay G66. A layer of ash (G23, 27, 30) was spread across the top of G31, probably to add nutrients to the soil and a further garden soil (G03) then developed across the site (Fig 6).

It should be noted that all the soil contained flecks of coal and charcoal and clearly the spreading of ash from household fires was a common occurrence in the garden.

Third Phase of Activity.

Re-organisation(?) of the garden

A footpath was created, this cut into the garden soil G03. The path ran from north to south and was set 2.4m in from the garden wall. It ran the whole length of the trench and beyond (Figs 5 and 6).

The footpath was created by digging a trench (G65) 1m wide and 0.1m deep, the bottom of the trench was filled with a crushed light brown dolomite (G22) and this was topped with a light grey mortar (G21) with a curved top to throw off water (Fig 6).

This footpath is very different to what appears to be the original footpaths (see below Trench L) and must relate to a much later re-organisation of the paths in the garden. This path was also seen in the excavations in 2009 and was associated with scoria blocks and concrete edging and these help date it to the 20th century.

The footpath and the soil through which it was cut were overlain by the final cultivation horizon G02 which was a mid brown loose soil.

Trench H (Figs 3 and 9)

Trench H was sited in the north-east quadrant of the garden and measured 13.5m x 3.5m (Fig 3). This area had been re-organised with a series of brick walled raised beds in the 1980's and this had meant that there was no opportunity to carry out Geophysical Survey over the area. This area was not examined in 2009; therefore this was an opportunity to examine an area of the garden not previously investigated.

The excavation demonstrated that there was no evidence of any formal organisation of the garden in this area. The only significant find was that of the articulated skeleton of a sheep/goat, the head of this was missing but this may have been the result of later disturbance (Appendix 1; Fig 9).

First Phase of Activity.

Garden Cultivation and Sheep/Goat Burial

The subsoil comprised a clean dark blue/grey clay (H54) this was overlain by H53 a dirty yellow/brown clay that contained pieces of coal, brick, clay pipe and pottery. The latter was probably the result of cultivating the overlying soil H05 which was a dark brown clayey soil.

Cut into H05 was a pit (H33) with poorly defined edged that contained the articulated skeleton of a sheep/goat with only its head missing (Fig 9). This was probably used as fertiliser, placed at the base of a planting pit (Appendix 1).

Second Phase of Activity

Raised Beds

The next discernible phase of activity is the creation of the raised beds that took place in the 1980s. An area of dolomite (H52) was laid down and this served as pathways between the beds as well as a base for the raised beds. The raised beds were bounded by low brick walls; within the walls there was a base layer (H51) that comprised a mix of soil, stone and slate, presumably a drainage

horizon. Overlying this was a clayey brown garden soil (H04) which represents the cultivation horizon in the beds.

Trench K (Figs 1, 2, 3, 10 – 16)

Trench K was sited adjacent to the north wall of the garden (Figs 1, 2 and 3). This is the area previously occupied by the greenhouse and the intention was to obtain details about its size, construction and internal arrangements. The north wall of the garden provided one wall of the greenhouse; it is referred to here as the north wall.

The excavation recovered the width of the greenhouse and demonstrated that different parts were laid out very differently. It also identified a previously unknown earliest phase of construction characterised by low arches in the southern wall.

First Phase of Activity (Figs 10 - 12)

Building the Greenhouse

The original greenhouse was c.4.48m wide internally and over 4.7m wide externally from the inside of the north wall to the outside of the greenhouse. The south wall had as its base a series of low brick arches set on brick piers; it is presumed that glass in a frame of either wood or cast iron sat on the top of this low arcade. The arches had been formed by setting bricks on mortar beds of different thickness. Five piers were excavated (K94, 101-104), each pier measured 0.5m by 0.11 based on the distance between the piers each arch had a radius of c.0.38m. Only one pier still retained the point at which the arch sprung and this suggested that the built height of the arch was c.0.72m.

The piers seem to have been built on the natural clay and as far as can be determined the whole area of the greenhouse had been dug out to the natural clay prior to construction taking place. One internal dividing wall, one brick wide, was identified (K14) running north to south. This would probably have supported a timber and glass partition.

A short wall (K100) was built at an offset to this on the western side towards the north wall. In addition, a rectangular brick setting (K107) was sited adjacent to the north wall and the partition. This might have been a stand for a water barrel.

It is not clear what the floor surface comprised at this time but it was probably just an earth floor.

The purpose of the low arcade may have been to provide access to cool soil in a heated greenhouse. This is a requirement of growing vines and the south wall of the greenhouse might have had vines planted along it.

The lack of evidence for plant beds within this phase of the greenhouse probably means that plants were grown in trays and pots on trestles and in pots on the ground.

Outside the Greenhouse

A large deposit of animal bone was encountered at the eastern end of the trench (Figs 10 and 12). This comprised a number of different species and while there

appeared to be a central concentration, the material was scattered over an area of 0.5 square metres and continued beneath the south section. The material appeared to be in the soil (K18) rather than buried in a pit, and it is probable that this was a rot dump to provide fertiliser (Appendix 1).

This cannot be linked to any phase of activity in the greenhouse, but has been placed with the first phase for convenience.

Second Phase of Activity (Figs 11 and 13)

Raising the Floor

A new concrete floor was inserted into the west room and a planting bed was created against the north wall, there was no observed change in the eastern room.

The two rooms created by the dividing wall K100 changed in very different ways. The western room was infilled with c. 0.3m of brick rubble (K106 and K108) and at least one north-south drain was established with ceramic drain pipes. An ash and cement floor (K105) was laid on top of the hard core but did not extend the full width of the room, finishing c. 1m short of the north wall of the greenhouse. A new wall, later replaced by K39, provided a northern edge to the floor and the area between this wall and north wall of the greenhouse was filled with soil K47/73 creating an area of bedding.

The new floor was laid at a height where the springing started for the low arches of the south wall and it would have left most of the head of the arches exposed.

There appears to have been no change in the eastern room, although it would now be necessary to climb a step up into the western room.

It is not clear what purpose the two projecting walls K100 and K87 served, although they may have provided supports for a trestle top of some kind. If this was the case then the doorway between the two rooms must have been adjacent to the north wall.

Wall K88, may have made a small store room or similar if twinned with K87, alternatively it may have been a trestle support with a partner to the west along the south wall, beyond the excavated area.

Third Phase of Activity (Figs 11, 14, 15)

Re-building the Greenhouse

A large scale re-building of the greenhouse took place, the original south wall was demolished and re-built 0.5m to the south; and new floor surfaces were introduced.

The existing south wall, with its low arches was demolished and a new, solid wall was built c.0.5m to the south. This must presumably have involved the re-building of the whole greenhouse, although the absence of broken glass from deposits suggests that this was done extremely carefully to minimise any losses. The partition wall K14 was extended to the south to meet the new south wall.

Western Room

The re-building was accompanied by the installation of new drainage. A ceramic pipe drain (K92) was laid alongside the new south wall, while two runs of drain pipes (K90, K91) were laid on the concrete and ash floor in a bed of hard core (K56/74). A layer of soil, K07, was deposited on top of the hard core to create a surface.

Walls K88, 87, and 100 continued in use, although the general ground level had risen by c.0.4m. In addition a plinth K16 was placed on the soil surface (K07). This comprised a single course of bricks and may have acted as a stand, for instance for a barrel of water.

At the northern end of the room the original wall was replaced with one of concrete and ash (K39), damaging the easternmost drain (K90) in the process. To the north of K39 there was a 0.4m wide band of soil, K43, which probably represents the continuation of the use of this area as bedding.

Eastern Room

The ground level in the eastern room was raised by dumping soil into it (K58, 59 and 80) and lead water pipes were laid within this dumped material. These ran generally north to south across the room and went through the south wall of the greenhouse.

Two narrow brick walls K85 and K86 were built in the south-west corner of the eastern room, possibly providing the base for the timber structure of a small room, perhaps for storage.

Fourth Phase of Activity (Figs 11, 16)

Alterations to the New Greenhouse

A new heating system was installed in the greenhouse while changes were made to the layout of the eastern room.

Western Room

The Ordnance Survey maps and the remains visible in the remaining garden wall clearly indicate that the greenhouse was heated, however there was little evidence of this heating system in earlier phases of activity. The surviving cast iron piping from a system inserted after the greenhouse was re-built did however survive to the rear of the western room. This presumably replaced earlier systems.

At the northern end of the western room a band of brick rubble (K44) 0.66m wide and 0.15m thick was immediately adjacent to the garden wall. This lay in a trench cut into soil K43 and may have occupied the space of previous heating pipes.

A hole was knocked through the north wall and a trench (K45) cut into the surrounding material; the eastern side of the trench was lined with bricks. Two small diameter cast iron pipes were run through from the other side of the wall. It is known that the boiler house was on the other side of the wall, and indeed is still present, and these pipes must have carried hot water for heating purposes. The ash and cement wall K39 was cut into to allow the pipes to make a right angle and to rise to run along the top of the ash and cement wall.

Eastern Room

A layer of soil, K06, covered walls K85 and 86, indicating that this structure had gone out of use and been dismantled. A new single thickness wall K15 was built, running from north to south across the southern part of the room. This demarcated a 1.5m wide band at the southern side of the room that may have acted as a bedding area. This wall stops 0.8m short of the main partition wall and also lines up with K87 in the western room. The significance of these is not clear.

Stone plinths (K29 and K55) were set into the soil, against the south wall of the greenhouse and spaced c1m apart. The setting for a timber post c.0.15m in diameter was recovered on K29. These plinths were clearly pads for a timber framework of some kind. There was no evidence of a similar arrangement in the western room and the structure was therefore probably restricted to this room and it is possible that there were comparable plinths against the north wall, but this area was not excavated.

Outside the Greenhouse

A topsoil (K01) of a brown-grey clayey soil developed containing pieces of pottery brick and tile. This was cut by the trenches for the piping set out below.

Final Changes and Demolition

Two black plastic pipes were laid in a trench along the outside of the south wall of the green house. These comprised sections of drain pipes and had been sealed at the joints. There was a T joint mid way along the wall where the pipe ran to the south into the garden. The function of these is not known, however given the fact that they were sealed it is possible that they acted as conduits for electric cables.

A north-south blue plastic pipe, presumably for water was laid to the immediate east of the partition and was broken through the south wall of the greenhouse. This may well have been installed after the Greenhouse was demolished.

The greenhouse was demolished in the 1980's and material was removed from site, the main walls were lowered and the whole area was sealed with a layer of dolomite with stone paving laid on top of this.

Trench L (Figs 3 and 17)

Trench L was sited near to the western wall of the garden, just to the north of the access into the garden through the west wall. It measured 3.4m east – west and 5.9m north – south.

This trench only located one feature, a substantially constructed north-south footpath. This is presumed to date from the establishment of the garden in c.1825.

The topsoil L10 overlay the north-south path. The path was constructed by digging a trench (L40) 1.9m wide and 0.5m deep and this ran the whole length of the trench continuing beyond the edge at both ends. The trench was filled with loose

brick rubble (L12) containing hand made bricks and this was then sealed with a mortar layer (L11), creating a curved surface to allow water to drain off to both sides.

In addition to the path a small deposit of brick and mortar (L17) lay at the eastern side of the trench and was also sealed by the topsoil.

Trench M (Fig 3)

Trench M was sited to the immediate east of Trench L and measured 4.75 x 5m. It was used as an educational trench for school parties and others and was not otherwise recorded or excavated.

Trench N (Figs 3 and 18)

Trench N lay close to the west wall and to the south of Trench G. It was opened to identify if the rubble spread seen in G continued significantly to the south. No trace of the rubble spread was found, but the deposits here indicated a very different topography to that seen elsewhere on the site. This bottom part of the garden seems to occupy a small silted up stream valley and the trench was constantly wet, with a flowing field drain discovered. This suggests that it lies below the water table.

Trench N measured c. 1.7m north-south and 2.05m east-west. The topsoil, N42, was dark grey-brown in colour and contained a range of finds of 19th century date and later. Underlying this was a light brown silty soil with some charcoal and again containing finds related to the use of the garden. N75 comprised a brown clay layer 0.55m deep and there was only one find and little evidence of inclusions, water began to be encountered at this horizon, from 0.45m down.

N75 overlay a layer of grey clay N83. No finds were made in either N75 or N83. Neither of these clays comprised the glacial natural; both appeared to have been water deposited. Cutting through N83 and presumably N75 was a field drain of round ceramic pipes. The cut for this was extremely difficult to see and it is not clear which horizon it was cut from. The type of drain was the same as that seen elsewhere and probably dated from the original establishment of the garden.

Archaeological Finds

Introduction

The range of finds from the 2011 excavation was much the same as that from the work in 2009. The finds are almost wholly 19th century and later in date and reflect the use of the area as a kitchen garden and as a location where rubbish from the hall was disposed off. The quantity and nature of deposition of the animal bone was particularly noticeable however and for this reason full reports were commissioned from Louisa Gidney at Archaeological Services University of Durham and this is set out below (Appendix 1).

The work on the animal bone has shed particular light on horticultural practices and breeding programmes in the nineteenth century and has probably been of regional importance in doing so.

All of the finds have been catalogued on a spreadsheet and this has been placed in the archive for the project. The finds and the archive are held by Tees Archaeology at Sir Wm Gray House, Clarence Road, Hartlepool.

Animal Bone by Louisa Gidney

This note is taken from the summary of the full report which is attached as Appendix 1.

The composition of the faunal remains appears to divide into two parts. Firstly those bodies and body parts deliberately acquired and buried as fertilizer and secondly smaller fragments deriving from household food consumption and subsequently incorporated in garden soils. The concentration of animal bone in Trench K may represent a rot heap for the provision of compost. The bones are in good condition, reflecting the recent origin of the assemblage.

A large concentration of cattle horn cores is present in many contexts. The cattle horn cores have been hacked from the skull, and may represent the use of keratinous horn sheaths as a slow-release fertilizer in the kitchen garden. The horn types reflect a range of cattle, rather than solely the improved Shorthorn breed which was rising to prominence locally in the 19th century. A congenital non-metrical trait is noted on two of the cattle cranium fragments and this may be reflecting cattle importation and/or a local reservoir for the transmission of this character.

Two sheep skeletons were also recovered from the garden. These may have been brought in to be used as fertilizer for special planting projects.

Metalwork

Brass

A brass deadlock key was found during educational work in trench M, this may have been used to lock the doors giving access to the garden or to buildings within the garden (Fig 19).

Iron

The majority of the ironwork comprised nails and these were found in trenches G (5), K (14), L (4) and N (8). It is not surprising that most were found in K, this being the greenhouse and the only structure excavated. Out of the 31 nails, 19 were of square section, representing the method of manufacture used in the 19th century and earlier, the remainder were the more modern round nail still in use today.

Two other pieces of ironwork are worth noting, a section of cast iron greenhouse framing found in Trench K (Context 7). This indicates that at some point the greenhouse had a cast iron rather than wooden frame. The second piece was the head of a hoe (Trench L, Context 17), this had a narrow blade and a socket for the wooden shaft (Fig 20).

Glass

A significant amount of glass was found, comprising both glass bottles and window glass. The window glass came from trenches K, L, M and N with the majority (36 pieces) coming from the greenhouse (Trench K), there was however a significant deposit (21 pieces) in Trench N and this may indicate the use of cold frames around the garden. The majority of the glass was clear but a few examples of opaque and tinted glass were found.

Pieces of glass bottles were found in trenches K, L, M and N with the majority coming from K (21), but a significant number (11) came from N. The bottles were all moulded and the majority dated from the 19th century and were tinted either blue or brown. There were five instances where part of a name was visible on the bottle, but there was not sufficient of the name to be sure of identification.

The majority of the bottle probably held a drink of some kind, although some may have had chemicals. In one instance (K, Context 59) a deep 'omphalos' base was found suggesting a wine bottle.

Fragments of three finer quality glass vessels were recovered in trenches K, L and M and parts of three glass ornaments were found in trenches F, H and K; these must all derive from the Hall.

Pottery

Pottery of different types was found in all the trenches, virtually all of it fits into a 19th - 20th century date range and must date from the construction of the hall and garden onwards.

Medieval

Two sherds of 13th century Tees Valley Ware were found, one each in trenches H and M, while three sherds of 14th/15th century pottery were found in trenches F (two pieces) and G and two sherds of 15/16th century were found, one each in trenches G and H. This small range of medieval pottery is probably derived from manuring of fields by the medieval farmers at Preston.

Stoneware

Stoneware is a hard, well fired fabric, usually a light grey or blue-grey colour. It was glazed and could display moulded decoration or transfers. Stonewares were made from the 17th century onwards and were originally highly ornamental and desirable, by the 19th century they had fallen out of favour and were used for storage purposes.

Stoneware was found in trenches K (20 sherds) and N (5). Where identifiable they had come from a jar or a jug. Most had an external brown or mottled light brown glaze and a number had decorative grooves on the body. They were all of 19th or early 20th century date.

Red Earthenware

Red Earthenwares are a hard fired coarse fabric, varying in colour between different shades of red/brown, but the main distinction is the presence or absence of slips and glazes.

The most basic addition to the fabric is an external reddish slip to which clear glazes may or may not be applied. Internal white slips could also be applied and these were usually sealed with a cream glaze giving a yellowish colour to the interior.

Red Earthenwares were found in all trenches on the site (F-7, G-9, H-5, K-16, L-1, M-3, and N-10). Fifty one sherds were recovered, of which most (30) had an internal white slip usually with a cream glaze, while the external finish varied between no glaze, a clear glaze and a brown or speckled brown glaze. There were six instances of unglazed items; the remainder either had clear glaze or more commonly a brown or speckled brown glaze. Where glazed this was always applied internally and sometimes externally.

Glazing a vessel helps prevent absorption of liquids by the body of the pot which is desirable if they are used for storage. Red Earthenwares usually comprised jars and jugs and was used for storage and food preparation and would typically be associated with a kitchen.

White Earthenwares

These comprise a hard white or off white fabric that usually has a clear glaze or applied transfers which has then been glazed. The transfers are usually blue, although brown and grey transfers are present. Unfortunately it is often difficult to identify the design due to the small size of surviving pieces.

The main forms are dishes and plates and this material would have represented the everyday dining services of the hall.

This type of pottery was found in trenches G (3 sherds), H (1), K (52), L (3), N (14). All of it had a clear glaze and only 14 sherds had no other form of decoration. In ten instances the decoration comprised plain mouldings, but the vast majority had some kind of transfer decoration. In six instances the transfer was black, in two, brown and in one a grey/green colour, the remainder (50) being various shades of blue. The transfers comprise foliage and geometric patterns and in some cases they are clearly derived from Chinese patterns. The majority of this pottery dates from the 19th century but a few pieces may be of 20th century date.

One piece of a commemorative mug is present in the collection and this has a transfer of a peri-wigged individual in regal robes and a partial text of '...reign'. This is presumably intended to represent a monarch but it has not been possible to identify who it is.

Bone China

Bone china is a very hard, fine white fabric, with a typical composition of 50% ash of cattle bone, 25% china clay and 25% feldspathic stone. It was first produced in the mid 18th century in imitation of Chinese porcelain and represents a higher quality product than the more common white earthenware.

Bone china was seen in all trenches and the sherds came mainly from bowls and cups. The greatest quantity of sherds (46/122) came from trench K but a significant number (24) came from trench G. Twenty eight sherds had no

decoration, but as with the earthenware the principal decoration comprised transfers, again usually blue and comprising both foliage and oriental scenes. The date range is 19th to 20th century.

Porcelain

Porcelain is a translucent, hard fired ceramic, which first occurred in the UK as a Chinese import and was then copied. It was costly and highly valued and will have been only used at the hall.

Only two pieces of porcelain were recovered, both plain and from trench N, one was a piece of a plate; the form of the other could not be identified.

Plant Pots

A large number of plant pot fragments were found and these fell into two fabrics, a softer orange material and a harder red firing material.

Pieces of plant pot were found in trenches F (16), G (15), H (3), K (43), L (4), M (8) and N (109), providing a total of 198 sherds. Over 60% of this material (124 sherds) had an orange or orange-brown fabric which may be associated with an earlier 19th century date as compared to the harder and later red fabric.

The quantity of plant pots in trench N, particularly compared to trench K which covered the greenhouse, is particularly noticeable and will be discussed further below.

Discussion

The range of pottery types is the same as that found in 2009 and as in 2009 largely represents discard from the hall and kitchens, with the exception that is of the plant pots. The distribution across the trenches is however worthy of note.

The larger number of finds from the greenhouse (trench K) may indicate the use of broken pottery for drainage in plant pots and raised beds, while elsewhere it is more likely to have been part of general rubbish / manuring deposits.

Trench N is particularly interesting; it was the smallest trench excavated and was located at the south –west corner of the garden towards the bottom of the slope and close to the Hall. The large quantity of material found here must suggest that the area was being used as a general rubbish dump; there was certainly no evidence of cultivation beds here.

Clay Pipes

The use of clay pipes began in the 16th century with the arrival of tobacco and they continued in widespread use until the beginning of the 20th century. They can still be obtained today. They are moulded from hard white clay and parts of the stem are a frequent find on sites of the 17th -20th centuries.

Pieces of clay pipe were found in all the trenches and were mostly pieces of stem; trench F had one bowl, while G had 20 pieces, H had 4, K had 19, L had 4, M had 2 and N had 8.

One of the examples from H included a relatively rare black pipe while the bowl from F had the moulded text 'The Gladstone Pipe' on the bowl. This was of course named after the English Prime Minister who held office four times between 1868 and 1894. Gladstone was particularly associated with the movement for Irish Home Rule and it has been suggested that possession of these pipes could be seen as support for that movement (Reckner, P 2004).

Ceramic Building Material

This category covers material such as brick, roof tile and field drains. Only representative examples of this material were retained. An extensive deposit of broken brick and tile, including wasters was encountered in trench G, laid as drainage for a fire bed. This must clearly have been bought in from a manufactory for this purpose.

Field Drain (Fig 21)

Field drains were found in trenches F, G and K. Intact and operating drains were seen in nearly all of the trenches and these were left in place. The field drains were of two types, a self contained piece of piping which was slightly oval, with a flatter top and a plinth on the bottom for it to stand on. This type of drain constituted the '*in situ*' drains seen in the garden. These are of an early 19th century date.

The second type of drain comprises a hollow segment of a curve, with a groove on one long edge and a fillet on the other to allow them to fit together. This was intended to create a large culvert and a number of the drains were stamped with 'T. Lambert'. These pieces were mainly encountered in trench G where they had been used as a drainage layer. No structures built with them were seen. These pieces of segmented drain included wasters and must have been bought in to use as rubble.

Brick

Brick of all periods from 19th century handmade brick to modern machine-made brick was encountered. Only one was retained; an unusual hand made quarter round brick found in trench K (Context 108). This was probably part of a decorative scheme which has not survived (Fig 21).

Stone

Roofing slate was found in Trench K and a number of pieces had nail holes for securing them to roof timbers. Slate was used as a general roofing material from the mid 19th century when the railway system allowed the shipment of large quantities of slate from the welsh quarries.

These slates may have come from the boiler house for the greenhouse or may have been broken pieces used to assist with drainage for plant pots or raised beds.

General Discussion

The excavations in 2011 have shed important light on some of the practical aspects of the kitchen garden such as manuring and drainage regimes. The use of both cattle horn and sheep carcasses as a means of fertiliser is of particular interest as is the light that has been thrown on the range of cattle breeds used in the first part of the 19th century.

It had always been hoped to recover the south wall of the greenhouse, however the definition of two major building phases is of particular significance. This demonstrated that the greenhouse was originally narrower and of a very different appearance to the later version and to anything previously envisaged. The arches of the south wall of the greenhouse bring to mind Joseph Paxton's great greenhouse at Chatsworth which had a similar design and was built between 1836 and 1841. Its foundations with the distinctive arches can still be seen today.

The major re-build of the greenhouse had been previously unsuspected and this may have accompanied a lengthening of the greenhouse that can be seen in the Ordnance Survey map of 1898 (cf Figs 1 and 2). As well as increasing the size of the greenhouse this reconstruction increased the drainage within the building significantly, suggesting a very humid atmosphere.

In conclusion the project has thrown significant new light on the early development of the garden and provided a significant insight into early 19th century horticultural practices.

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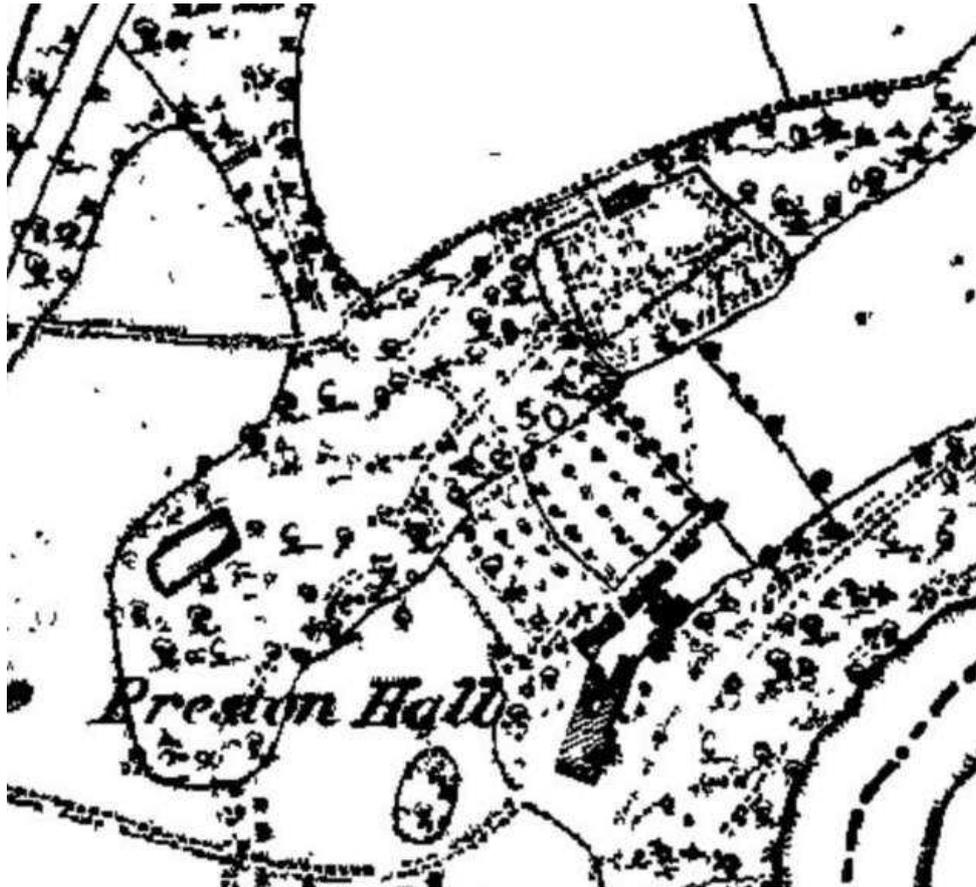


Fig 1: Ordnance Survey Map of 1856 (Crown Copyright. All rights reserved. Licence 100023390.2008)

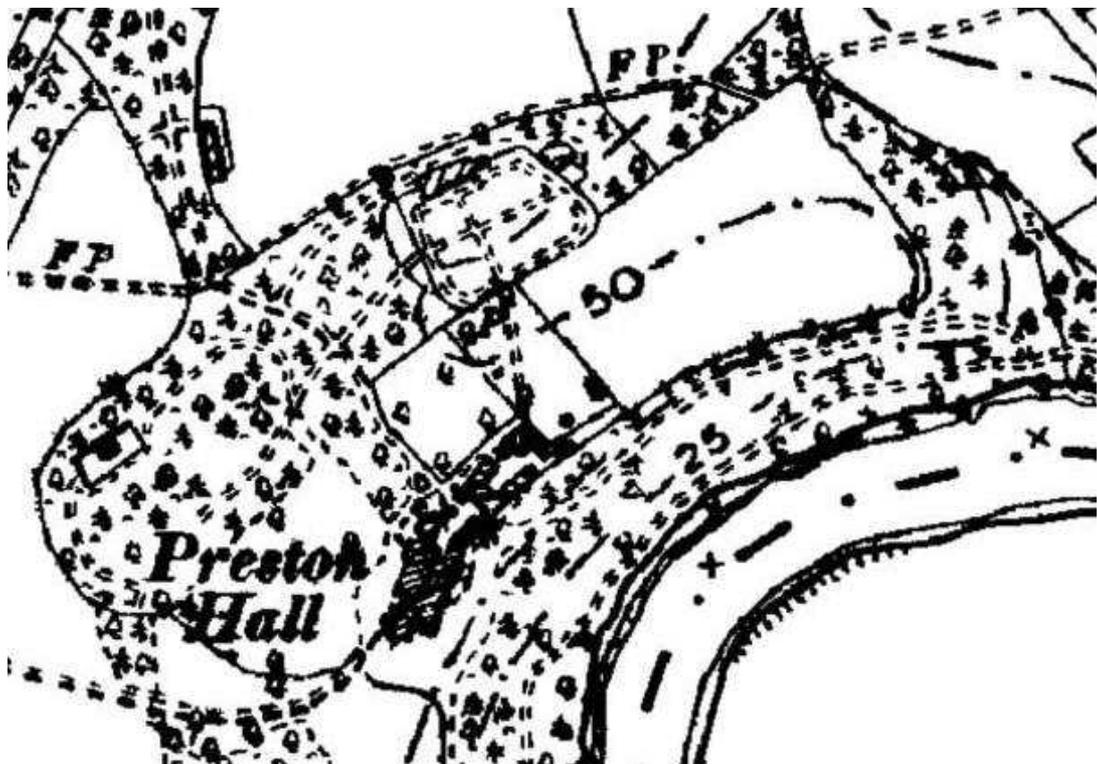


Fig 2: Ordnance Survey Map of 1898 (Crown Copyright. All rights reserved. Licence 100023390.2008)

Fig 3: Archaeological Excavations 2011, trench location plan

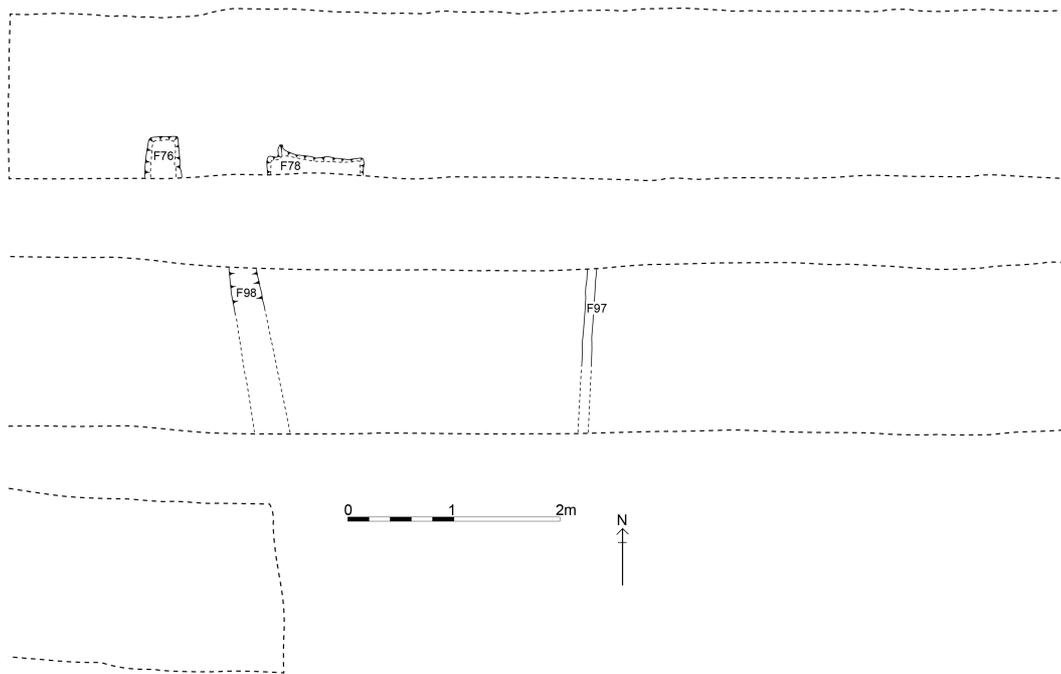


Fig 4: Trench F plan showing excavated features

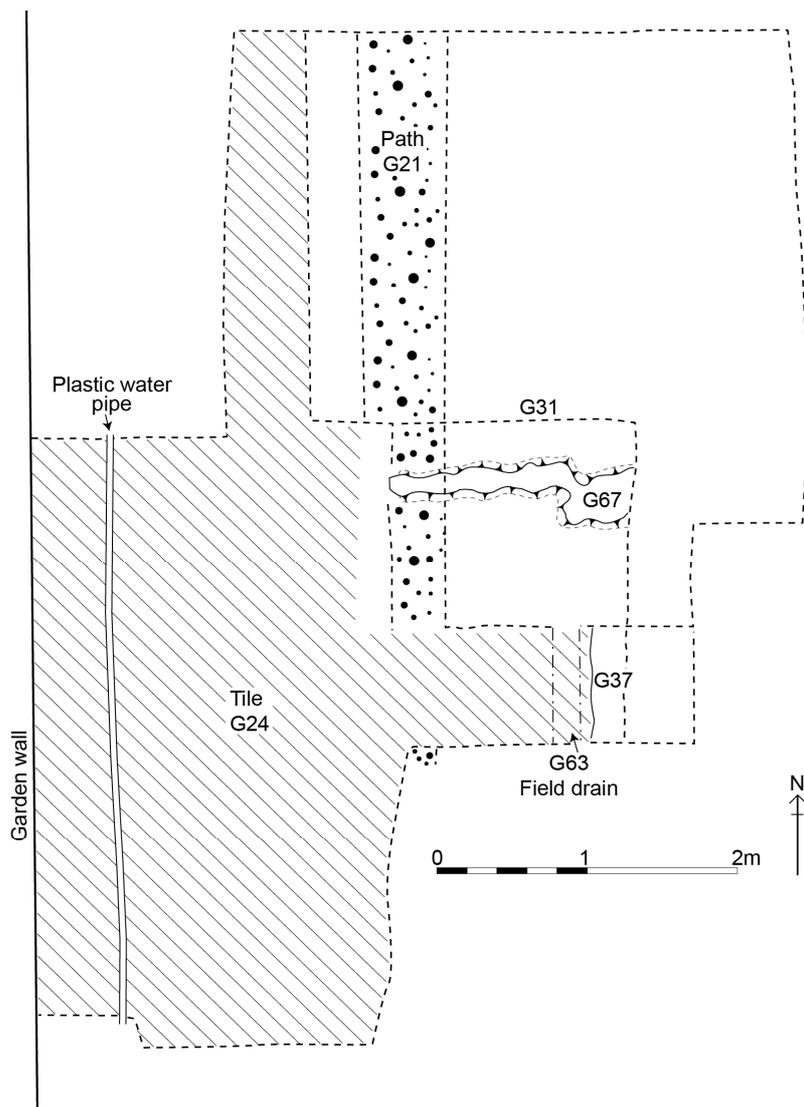


Fig 5: Trench G plan showing excavated features

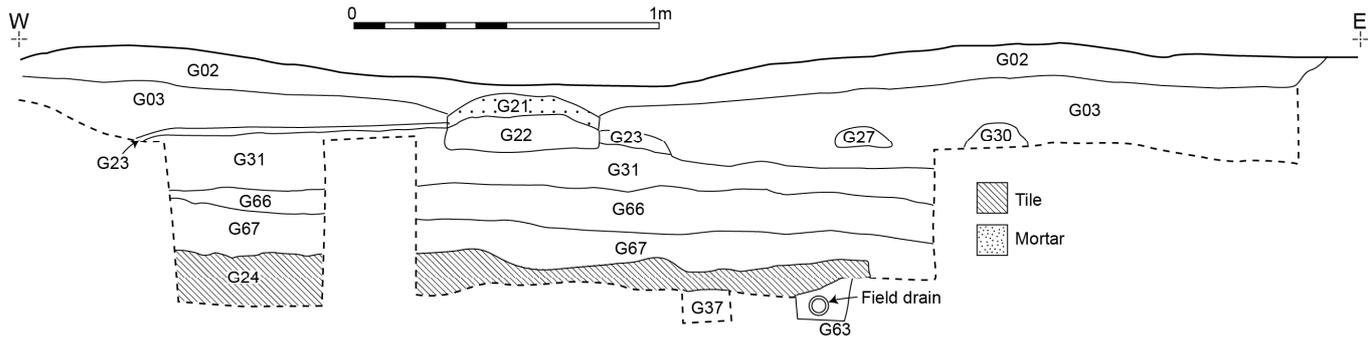


Fig 6: Trench G, east-west section across trench



Fig 7: Trench G, general site photograph from the south showing the spread of dumped brick and tile



Fig 8: Trench G, photograph from the south showing cultivation marks G67



Fig 9: Trench H, photograph from the south-west showing the sheep burial

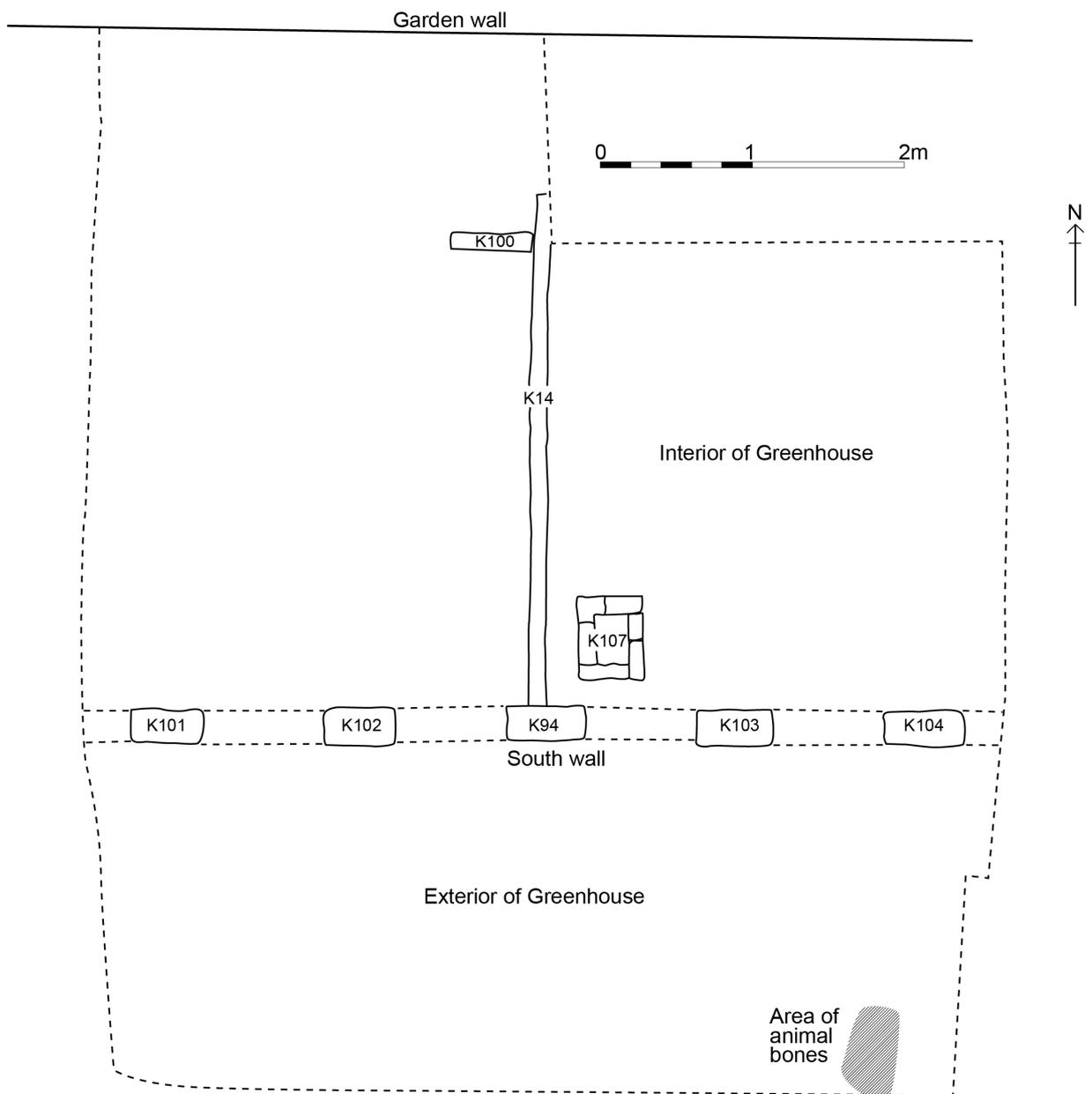


Fig 10: Trench K, showing Phase 1 of the greenhouse and the external deposit of animal bone



Fig 11: Trench K, photograph from the west showing the position of the piers of the first south wall, the later south wall, the main internal partition and the concrete and ash floor in the western room



Fig 12: Trench K, photograph from the west showing the external deposit of the animal bone

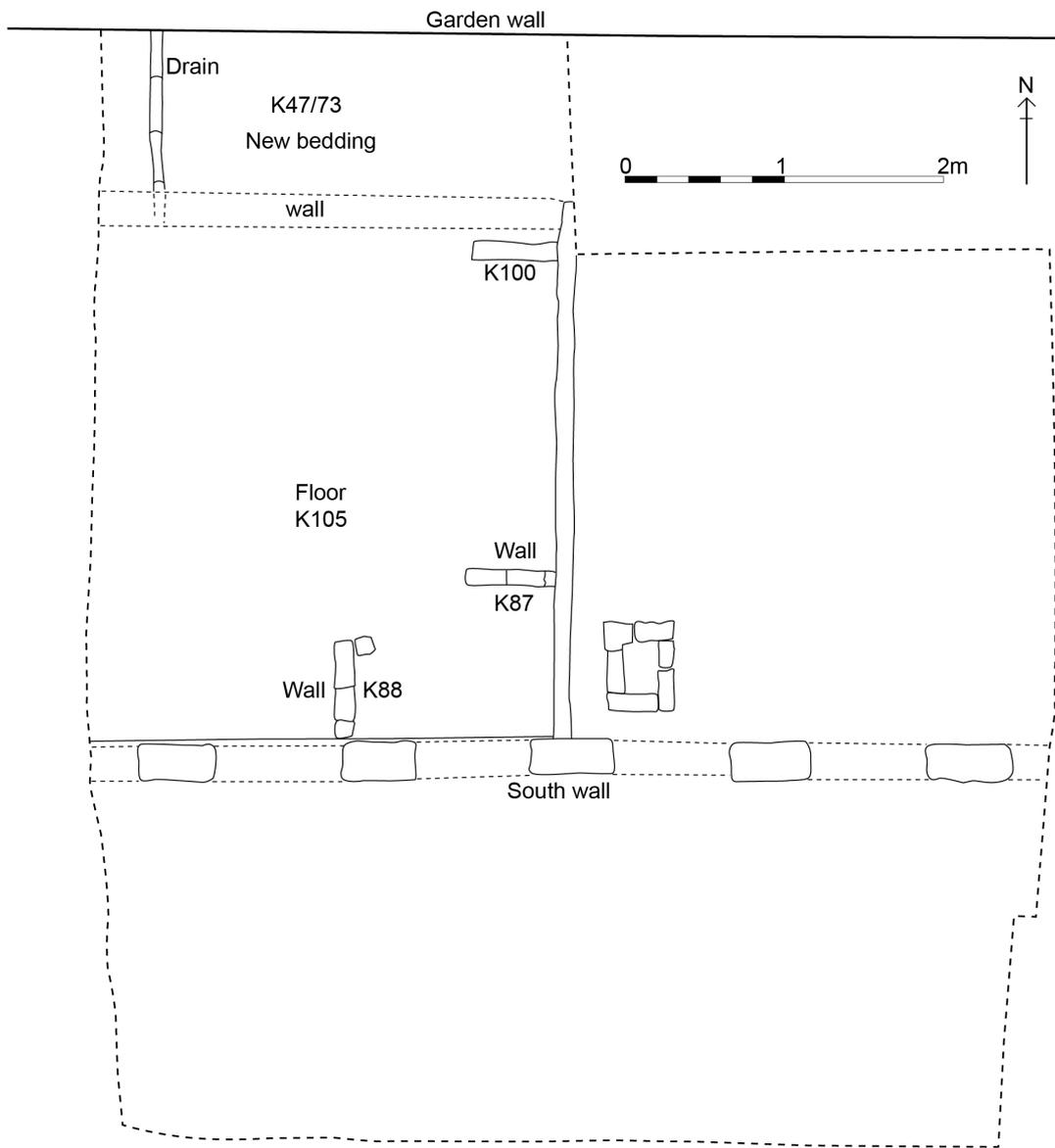


Fig 13: Trench K, plan showing Phase II of the greenhouse

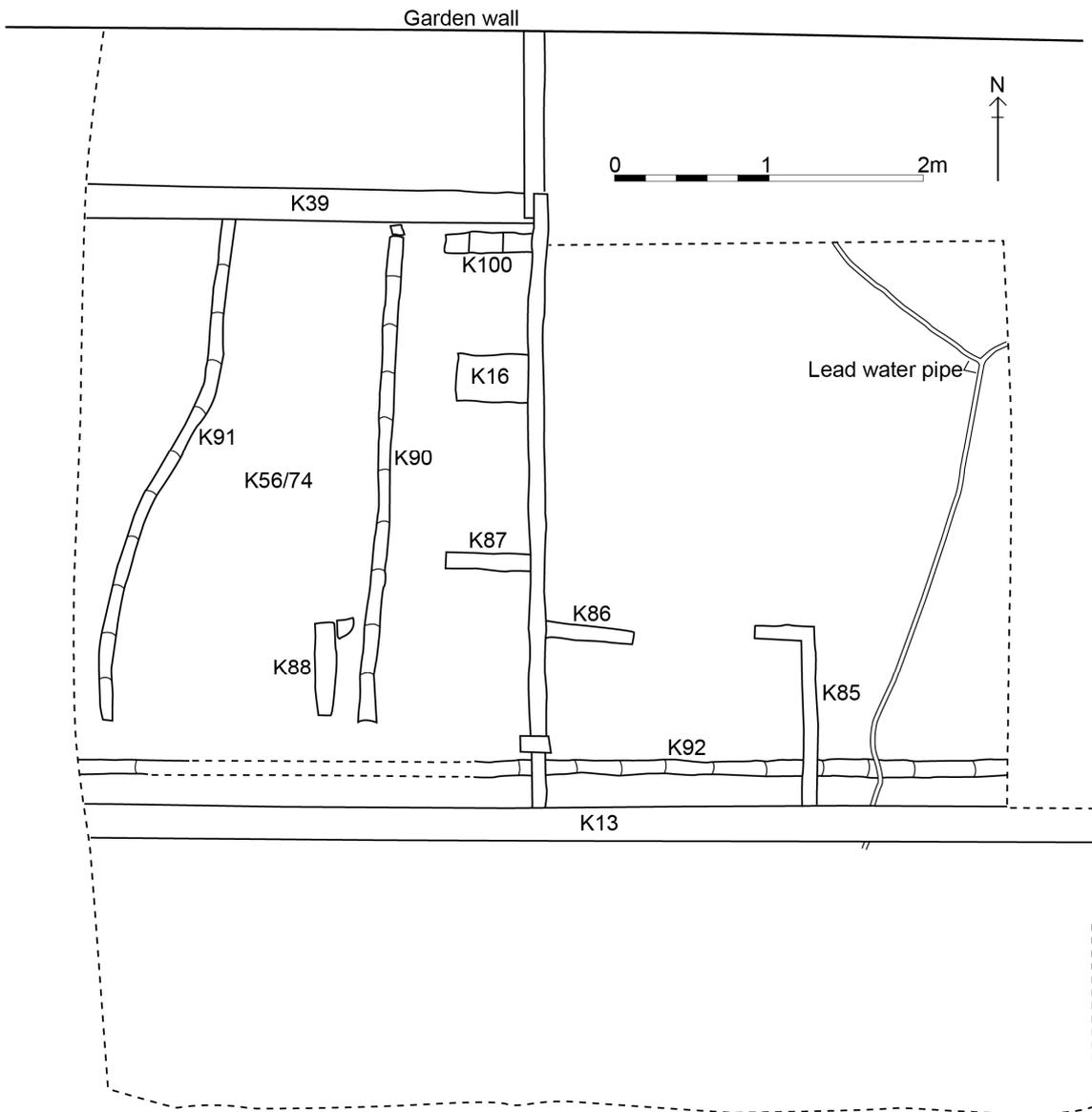


Fig 14: Trench K, showing phase III of the greenhouse



Fig 15: Trench K, photograph from the south showing ash and concrete floor and overlying rubble with drain, broken by insertion of ash and concrete wall

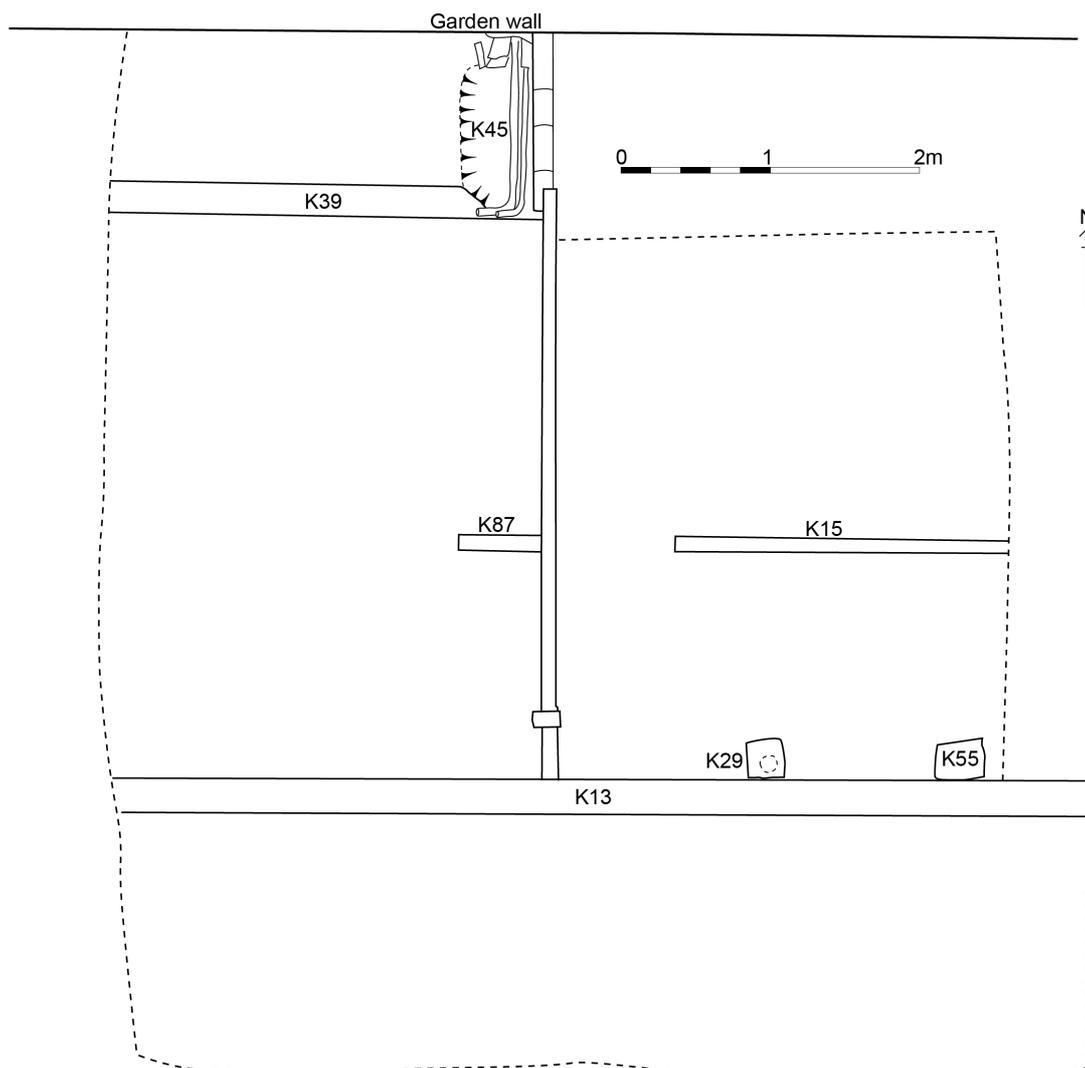


Fig 16: Trench K, plan showing Phase IV of the greenhouse



Fig 17: Trench L, photograph from the south showing trench and brick rubble base for footpath

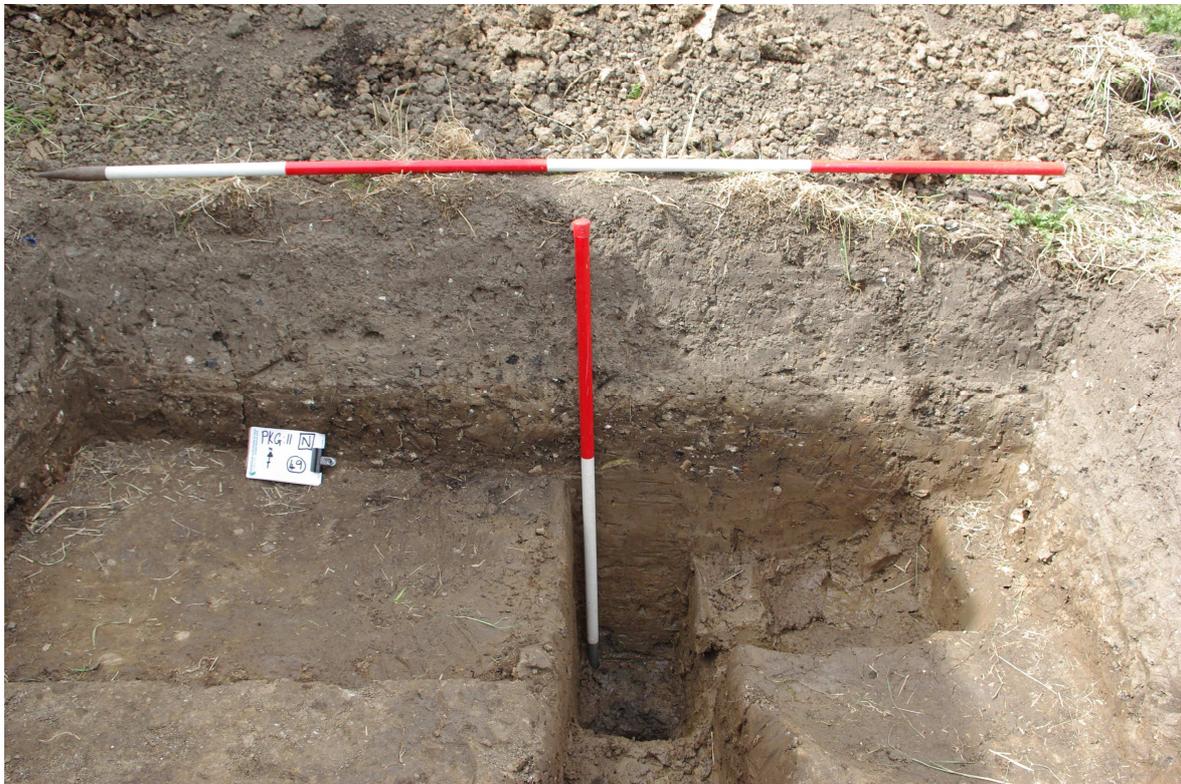


Fig 18: Trench N, photograph showing the trench and section



Fig 19: Brass key, Trench M



Fig 20: Garden Hoe from trench L



Fig 21: Segmental and Oval Field Drains and Quarter Round Brick

APPENDIX 1:

FAUNAL ANALYSIS

By

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