

LEVENS HALL, LEVENS, KENDAL, CUMBRIA

Archaeological Watching Brief



Client:
Mr and Mrs Richard Bagot

NGR: 349497 485099

Planning application no.
SL/2016/1144

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Non-Technical Summary

Prior to the submission of a planning application for the construction of a new café at Levens Hall, Kendal, Cumbria, an archaeological watching brief was carried out on the 20th December 2016 during the excavation of a series of trial pits and boreholes. These were located within an area of the gardens to the west of the hall, although the available map evidence suggests that it was originally just an area adjoining the entrance drive where it led to the outbuildings and stables. Following the subsequent submission of a planning application for the construction of the café, a condition was placed requiring an archaeological watching brief during the associated ground works in order to record and better understand the deposits that were known to be present.

The upper deposit across the site comprised a mixture of material comprising garden soils and gravel from the paths, below which were a number of deposits and structures including an extensive deposit of dumped stoney material containing large quantities of pottery, tile, and animal bone and a deposit of stoney orange clay that may have formed a surface, perhaps for a track or driveway leading to the outbuildings to the south. Associated with this were earlier wall lines, some of which at least probably delineate part of a driveway leading to the stables, below which was a large stone-filled ditch that may have acted as a soakaway, which cut into an earlier buried soil horizon.

The finds recovered from the earliest deposits were consistently dated to the 18th century and demonstrate that a rapid period of development took place at this time, corresponding with the period of ownership of the estate by James Grahme, who is known to have made a number of other alterations. The large number of tile fragments recovered probably relate to the recorded rebuilding of the south wing in 1692 and its subsequent repair after a fire in 1703, while the other finds represent a mixture of high quality household items including some relatively exotic pottery but also evidence for bone working or tanning, which suggests that some of the material was probably brought into the site at some point.

It is likely that the rapid phase of development of probable 18th century date resulted in a new area of designed gardens in this area as well as improving the access to the stables and outbuildings, which were retained until recently but saw some substantial development in the later 19th century.

Acknowledgements

Greenlane Archaeology would like to thank Mr and Mrs Richard Bagot for commissioning the project, and their agents Haigh Architects, in particular Nicola Foot, for their assistance during the project. Further thanks are also due to the groundworks team from NJC Yorkshire, in particular Barry Ryde and Adam Hollingworth, Russell Calvert at Penningtons, and the staff at Levens Hall for their assistance on site, especially given the very poor weather.

The watching brief was carried out by Dan Elsworth and Tom Mace, the former of whom also wrote the report, while the latter produced the illustrations. The post-medieval finds were assessed by Jo Dawson, with the exception of the clay tobacco pipes, which were assessed by Peter Davey. The animal bone and medieval pottery was assessed by Tom Mace and the ceramic building material and metal finds by Dan Elsworth, who also managed the project. The report was edited by Jo Dawson.

1. Introduction

1.1 Circumstances of the Project

1.1.1 Following the submission of a planning application (Ref. SL/2016/1144) for the construction of a café to the west of Levens Hall, Levens, Cumbria (NGR 349497 485099), a condition (No. 7) was placed on the decision notice by South Lakeland District Council, following advice from the Historic Environment Service at Cumbria County Council, requiring an archaeological watching brief during the associated ground works. An initial watching brief which monitored the excavation of a series of investigative test pits and boreholes at the site as preliminary work relating to the new café was carried out on the 20th December 2016, and the report on this was submitted thereafter (Greenlane Archaeology 2017). The current watching brief involved the monitoring of a further series of groundworks, and Greenlane Archaeology was again commissioned by Mr and Mrs Richard Bagot (hereafter 'the client') to fulfil the archaeological component of the work and produced a project design in response (Appendix 1), which outlined the methodology that would be used during the archaeological work, and following its acceptance by the Historic Environment Service at Cumbria County Council the onsite work was carried out in November 2017.

1.1.2 Levens Hall is a Grade I Listed building with at least medieval origins (Historic England 2017). The present hall probably began as a 14th century peel tower to which other sections were later added (Perriam and Robinson 1998, 354). Two previous archaeological watching briefs at the hall have revealed deposits of dumped material of later medieval and post-medieval date across much of the area to the west of the hall, so there is some archaeological potential in this area (Greenlane Archaeology 2011; 2017). Other archaeological remains are known from the local area, including prehistoric and later material found during excavations carried out in the 1960s in the park associated with the hall (Sturdy 1972; Turnbull 1994; Turnbull and Walsh 1996, Cherry and Cherry 2000).

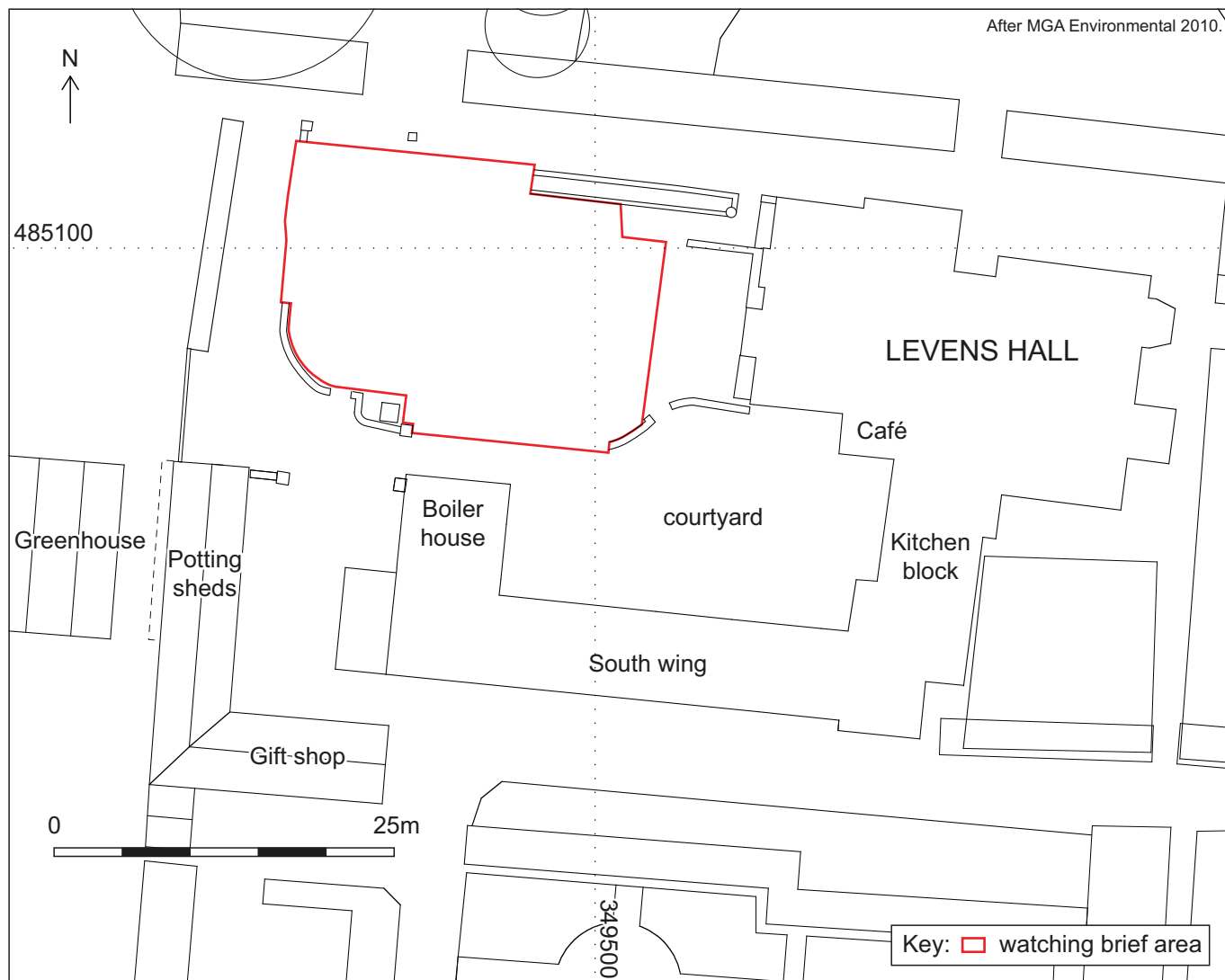
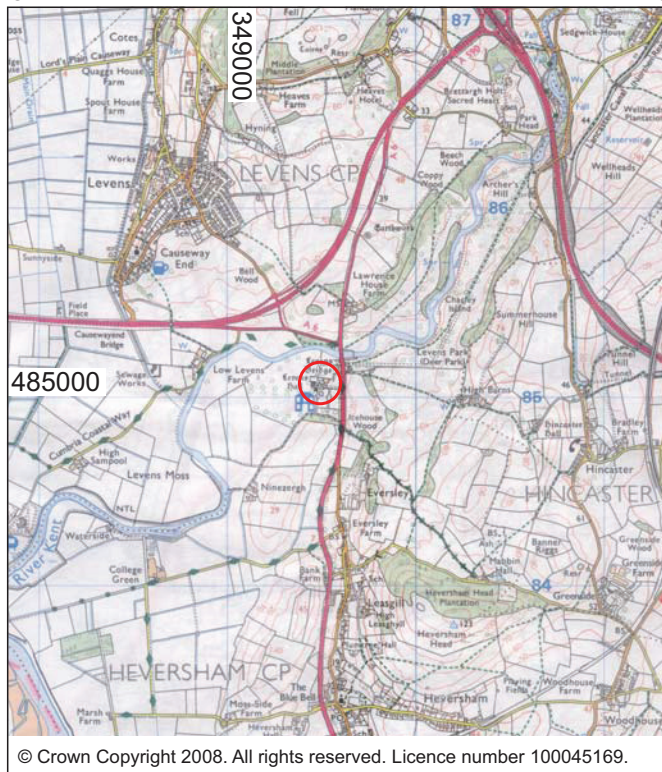
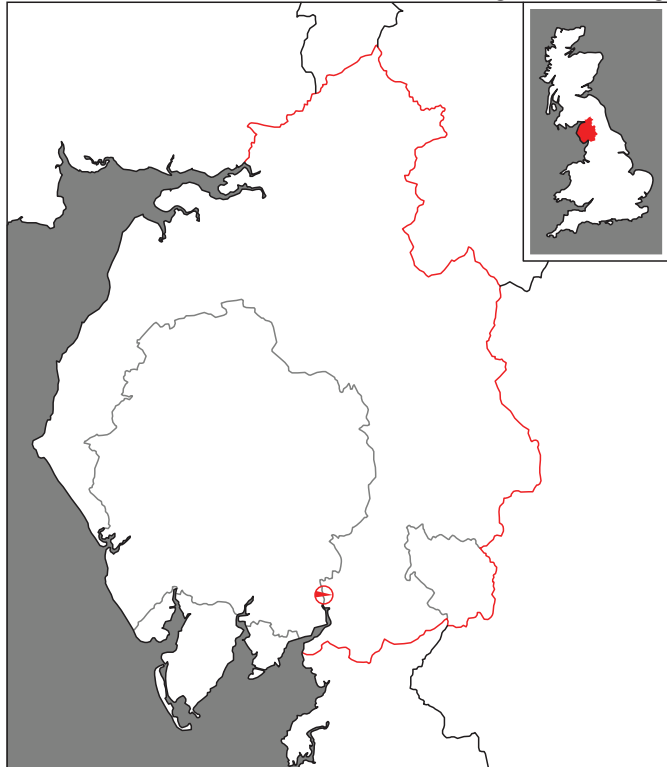
1.2 Location, Geology, and Topography

1.2.1 Levens Hall (Plate 1) is located in the Lake District on the south bank of the River Kent approximately 10 kilometres south-south-west of Kendal (Ordnance Survey 2008; see Figure 1). The area in which the watching brief took place comprises formal gardens, with slightly raised beds divided by gravel paths, although there is an area of paving along the east side.

1.2.2 The underlying geology of the area comprises Dinantian Carboniferous limestone which outcrops in places but is covered by glacial tills (Moseley 1978, plate 1) in the vicinity of the site. The landscape is characterised by gently undulating pasture and conspicuous limestone hills and outcrops (Countryside Commission 1998, 64).



Plate 1: The north elevation of Levens Hall in 2011 (the gardens in which the watching brief took place are located immediately to the right of the hall)



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Figure 1: Site location

2. Methodology

2.1 Desk-Based Assessment

2.1.1 A rapid desk-based assessment was carried out in accordance with the guidelines of the Chartered Institute for Archaeologists (CIfA 2014a) for a previous project carried out at the site (Greenlane Archaeology 2011) and relevant information gathered as part of that is utilised in this report.

2.2 Watching Brief

2.2.1 The watching brief monitored the excavation in the area of a former garden to the west of the north front of Levens Hall. All aspects of the archaeological recording were carried out according to the standards and guidance of the Chartered Institute for Archaeologists (CIfA 2014b). The excavated area comprised approximately 500m²; see Figure 1 to Figure 3), which was excavated using a tracked mechanical excavator. Any features of interest were subsequently cleaned by hand using a trowel and the position of any archaeological features were recorded relative to the known location of nearby buildings and other structures that were evident on the site plans and Ordnance Survey maps. The underlying deposits and features were recorded in the following manner:

- **Written record:** descriptive records were made using Greenlane Archaeology *pro forma* record sheets (summarised in *Appendix 2*);
- **Photographs:** photographs in both colour print and colour digital format were taken of all archaeological features uncovered during the groundworks, as well as general views of the site, the surrounding landscape, and working shots. A selection of the colour digital photographs is included in this report. A written record of all of the photographs was also made using Greenlane Archaeology *pro forma* record sheets;
- **Drawings:** drawings were produced on site as follows:
 - i. plans showing the extent of the area that was excavated and the location of any features of archaeological interest were produced at a scale of 1:100 and 1:200.

2.3 Environmental Samples

2.3.1 No environmental samples were taken as no appropriate deposits were encountered.

2.4 Finds

2.4.1 **Processing:** all of the artefacts recovered from the watching brief were washed, with the exception of metal and glass, which were dry-brushed. They were then naturally dried in a drying oven and packaged appropriately in self-seal bags with white write-on panels.

2.4.2 **Assessment and recording:** the finds were assessed and identified in the first instance by Jo Dawson. The finds were recorded directly into the catalogue in this report (*Appendix 3*).

2.4.3 **Medieval pottery:** the medieval pottery finds were analysed following guidelines provided by the *Medieval Pottery Research Group* (2001) and fabric types were identified and described using the *Guidelines for the Processing and Publication of Medieval Pottery from Excavations* (Blake and Davey 1983) and *Pottery in Archaeology* (Orton *et al* 2008).

2.4.4 **Animal bone:** all of the animal bone fragments were rapidly scanned and assigned to taxa wherever possible, although lower-order categories were also used (e.g. sheep- and cattle-size). Epiphyseal fusion and dental eruption and wear data were assessed. Bone condition, erosion and fragment size were noted in order to assess bone preservation, while gnawing, burning and butchery marks were recorded to determine bone treatment. Biometrical data were not recovered at this assessment stage, although a few measureable bones are present in the assemblage.

2.4.5 **Clay tobacco pipe:** the pipe fragments were given individual numbers, by context, written in pencil, to make them easier to handle and compare with each other. All the windways were cleaned of

soil and the stem-bores measured using the butt end of imperial drill bits calibrated from 5 to 8 64^{ths} of an inch (Harrington 1954). Each piece was examined to see whether it had been burnished (B) and if there were smoking residues present (S). The length of each stem (L) was recorded in millimetres; and the maximum (Max/d) and minimum (Min/d) diameters of each end of the stems and available ends of the bowls and mouthpieces was measured using callipers with an accuracy of 0.05mm. The fabric (F) of each item was examined using a binocular microscope at a magnification of x 45. Four different fabrics were identified (1-4). Fresh breaks and weathered breaks were recorded where possible. The presence of post-depositional residues (eg MOR – mineralised organic residue) was also recorded. Each exposed break was tested against every other available section to find any joining pieces that might be present. Joining pieces were separately bagged within each context.

2.5 Archive

2.5.1 A comprehensive archive of the project has been produced in accordance with the project design and current ClfA guidelines (ClfA 2014c). The paper and digital archive and a copy of this report will be deposited in the Cumbria Record Office in Kendal on completion of the project. A digital copy of this report will be provided for Cumbria County Council Historic Environment Service, one for the client, a digital copy with the client's agent, and one will be retained by Greenlane Archaeology. In addition a digital record of the project will be made on the *Online Access to the Index of Archaeological Investigations* (OASIS) scheme.

3. Desk-Based Assessment

3.1 Background History

3.1.1 **Prehistory and Early History** there is a considerable amount of evidence for activity in the area, from at least 6,000 years ago. Archaeological excavations in Levens Park to the south revealed a number of features including lithic artefacts dated to the late Mesolithic (Cherry and Cherry 2000). This were discovered below a low mound, interpreted as a prehistoric ring cairn that had been subsequently re-used (Sturdy 1976); Beaker pottery from the early Bronze Age was certainly recovered from it, although this was not published until sometime later (Turnbull and Walsh 1996). Immediately to the west of Frosthwaite, on Sizergh Fell, excavation of burial mounds recorded prehistoric material (McKenny-Hughes 1904a; 1904b), some of which was later re-interpreted as also being of Beaker period (Fell 1953). More recent excavation on the same site failed to discover finds of similar date, or any further burials, but did identify evidence of earlier, Neolithic activity (Edmonds and Evans 2007), and remains of a similar date have also been found in the Levens area (Cherry and Cherry 1987). Recent work within Levens village has also recorded a crouched burial radiocarbon dated to the late Iron Age (OA North 2004), which is an extremely rare discovery within the North West (Hodgson and Brennand 2006, 55). Another burial, perhaps of a similar date, was also discovered on Sizergh Fell, however (McKenny-Hughes 1912a). Remains dating from the Roman period are not plentiful from the general area, although coins have been found in reasonable numbers (Shotter 2004). Evidence of immediately post-Roman activity is also not certain, although burials found near Levens in 1911 may be early Christian on account of their orientation (McKenny-Hughes 1912b).

3.1.2 **Levens Hall:** the Levens district belonged to *Tosti*, the great Earl of Northumberland, before being forfeit to Roger de Poitou after the Conquest (Curwen 1898, 2) and was granted to *Normannus de Hieland*, Yealand, later de Redman (d1184), by the baron of Kendal c1170 (Greenwood 1903, 272-3, 276). The Redmans (variously written Redmayne, Redmaine, or Redmain (Curwen 1898, 2)) probably commenced building Levens Hall in the early part of the 14th century '*in the fierce days of Border warfare, when a man's home was literally his castle*' (Greenwood 1903, 286); '*the first building... took the form of a border Pele tower... for the defence of their owners against the raiding Scots, and for a refuge and protection for their tenants and dependents*', which was annexed with an aula or great hall to the west side (Greenwood 1903, 285) and there are remains of a 14th-century house within the Hall as it stands today (RCHME 1936, 151), most notably in the basement level of the house which has features in 14th century style (Hyde and Pevsner 2010, 492).

3.1.3 The Park was enclosed by licence in 1360 (Curwen 1898, 39; Greenwood 1903, 286-7) and the Redmans held unbroken possession of the estate until 1489 when Levens was sold to Alan Bellingham (Curwen 1898, 4). The Bellinghams had bought the rest of the property which formed the estate by 1550 (Beckett 1985, 132).

3.1.4 The Hall is considered a '*little altered example of the Elizabethan age [and] is largely a reconstruction of Sir James Bellingham*' (1577-1641) (RCHME 1936, 151), who is attributed with having '*built most of what makes it memorable*' (Hyde and Pevsner 2010, 492); the tower on the north and the staircase-wing on the south of the hall-block, the kitchen-wing, and the then detached brew house [latterly the boiler house] were built around the 16th century (RCHME 1936, 151; a '*new brew house*' is also mentioned as being built in the late 17th century, which was presumably a separate structure (Bagot at Munby 1988, x)), although the one-step four-light window in its gable is as a rule a sign of the late 17th century, and the main block of the house faces across a 17th century entry court (Hyde and Pevsner 2010, 492).

3.1.5 Levens remained in the possession of the Bellinghams for two centuries but '*in a few years of indulgent living*' Alan Bellingham (d1693), the heir to the estate, amassed substantial debts which forced him first to mortgage and then sell the estate (Beckett 1985, 132; Munby 1998, 194). Tradition holds that he '*gambled his property bit by bit*' and that Levens passed either '*by game or purchase*' (Curwen 1898, 5), '*traditionally said to have been the result of a game of cards*' (Munby 1998, 200), to his cousin (Munby 1998, 194), Colonel James Grahme or Graham (of the Netherby family) (Hyde and Pevsner 2010, 492) in 1689. The Graham family is thought to have been '*descended from the Earls of Monteith in*

Scotland' (Munby 1998, 183). 'The conveyance on 5 February 1689, was done by the straightforward method of "bargain and sale" and a breakdown of the costs in a paper at Levens can be summarized thus:

'Paid:

Mortgages and loans between May 1687 and July 1688 £17,870:00:00

(including £3200 for interest and some principals)

To be paid:

Debts and interest to various creditors £5,869:19: 3

Mr Pigeon and Mr Hilton to make up the purchase money £660:00: 9

(the Timber yet unvalued)

Total: £24,400:00:00' (Munby 1998, 194).

The purchase of the estate seems to have been a bargain since it was thought to be worth £40,000 in 1711 (Beckett 1985, 132).

3.1.6 James Grahme (1650-1730) had a distinguished military career (Munby 1998, 183, 186-7) and his marriage to Dorothy Howard, one of the Maids of Honour to Catherine of Braganza, queen consort of Charles II, brought him within the ambit of the court (Curwen 1898, 6; Munby 1998, 186). In 1679 he was attached to the Duke of York's household, the future James II of England, and he was appointed privy purse to the Duchess of York, and shortly afterwards to the Duke (Munby 1998, 187). He was Keeper of the Privy Purse after the Duke ascended the throne in 1685 (Beckett 1985, 131; Munby 1998, 190). However, in the aftermath of the Revolution of 1688, which saw King James II deposed, '*his career seemed in ruins when he was tainted with Jacobitism*' (Beckett 1985, 131) and '*he and his brothers suffered for their loyalty to the house of Stuart*' (Munby 1998, 183) during the reign of William III of Orange (William III van Oranje). He was sought for high treason after his elder brother was arrested en route for France with treasonable papers in his possession and although he received a pardon in 1692 he was again imprisoned after a brief visit to James II in France and was imprisoned a further time after the discovery of the Fenwick conspiracy in 1696 (Beckett 1985, 131). After his release he retired to the Levens estate to concentrate again on regaining political respectability and '*we find him representing the City of Carlisle, as Member of Parliament in 1685, Appleby in 1702, and Westmorland during the Parliaments of 1708, 1710, 1713, 1714, and 1722*' (Curwen 1898, 6). '*Symbolic of his return to the political scene was Grahme's appointment as a deputy-lieutenant of Westmorland in 1715, the year of the Jacobite invasion, and by 1722 he was searching Catholic houses for non-jurors during the Atterbury plot crisis*' (Beckett 1985, 132).

3.1.7 During his time at the estate Grahme carried out further renovations and alterations to the Hall (RCHME 1936, 151), for instance, the building of the south wing, connecting the kitchen-wing with the brew-house, to provide extra accommodation for domestic offices and servants, is well-documented between 1692 and 1695 (see Bagot and Munby 1988) and can be seen as an investment by Grahme in his recently purchased estate (Munby 1986, 275; 1989, 233; 1998, 196; Hyde and Pevsner 2010, 492). The kitchen-wing was repaired following a fire in 1703 and the main staircase was added to the body of the house in 1717 (Munby 1986, 275; 1998 196). The fantastic gardens were also designed and laid out for Grahme by Monsieur Guillaume Beaumont, '*Gardener to James II and Col. James Grahme*', c1690s (Hyde and Pevsner 2010 495; Munby 1998, 183).

3.1.8 When Colonel Grahme died in 1730 the estate passed to his eldest daughter and only surviving child, Catherine (Beckett 1985, 139), who was married to her first cousin, Henry Bowes Howard, 4th Earl of Berkshire, and the estate then '*became the inheritance of that noble family*' (Curwen 1898, 7). '*Her husband was created Earl of Suffolk in 1745*' (Beckett 1985, 139). His grandson, also called Henry (the fifth Earl of Berkshire and 12th Earl of Suffolk) became heir of the estates upon the death of his father, Viscount Andover, in 1757, but dying without issue, bequeathed the estates to his mother, Lady Andover, in 1779, and after her death, to his sister Frances (Curwen 1898, 7). Frances married Richard Bagot Esq. in 1783, who assumed by 'sign manual' the surname of Howard (*ibid*). Their daughter, Hon.

Mary Howard, married 'Colonel, the Honourable Fulke Greville Upton, second son of Clothworthy, first Baron of Templetown, who also assumed the name of Howard', and inherited the property after Frances Howard's death in 1818 (Curwen 1898, 8). Following his death the estates passed to his nephew who died without issue in 1883 and was succeeded by Josceline Fitzroy Bagot, the great great nephew of Richard and Frances Howard, by entail (*ibid*). The Hall saw further alterations during this time; the south wing of the courtyard was altered in the latter part of the 18th century and the Howard Tower at its east end is an early 19th-century addition (RCHME 1936, 151). The Bagots, to whom the house is now residence, 'are [also] a family of great antiquity' (*ibid*).

3.1.9 The area in which the watching brief took place is at present a formal garden, known as the '17th Century Garden' (Haigh Architects 2016, 8). The reason for this is not known but it is perhaps because the adjoining part of the hall was built in the late 17th century, even though the garden does not appear to have developed until after the mid-18th century (see Section 3.2 below).

3.2 Map Regression

3.2.1 **Robert Skyring, c1750**: an undated but probably mid-18th century plan of Levens Hall, currently held within the hall itself (although it was reproduced by Curwen (1898, 33) who gives the date as 'about 1720'), is the earliest detailed depiction of the building and associated grounds. Because of the manner in which the hall has been shown, which uses a perspective view rather than an actual plan, and the relatively limited amount of detail, it is difficult to be certain what is being depicted in the area in which the watching brief took place. However, it does not appear that it comprised part of the formal gardens at the hall at that time, rather it was on the edge of a drive linking the main entrance to the outbuildings and stable block to the rear.

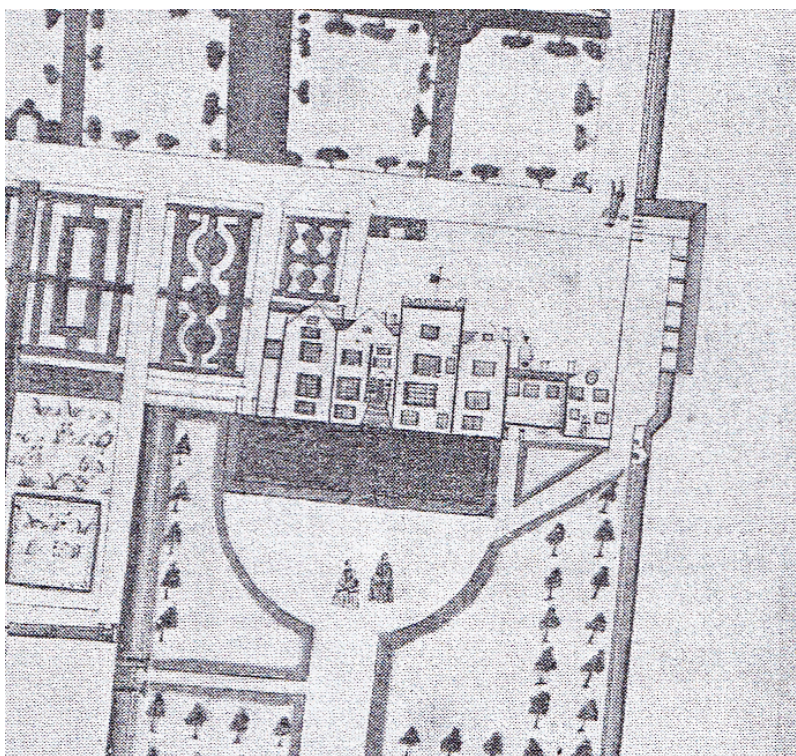


Plate 2: Extract from Skyring's mid-18th century plan of Levens Hall and gardens (from Curwen 1898, 33)

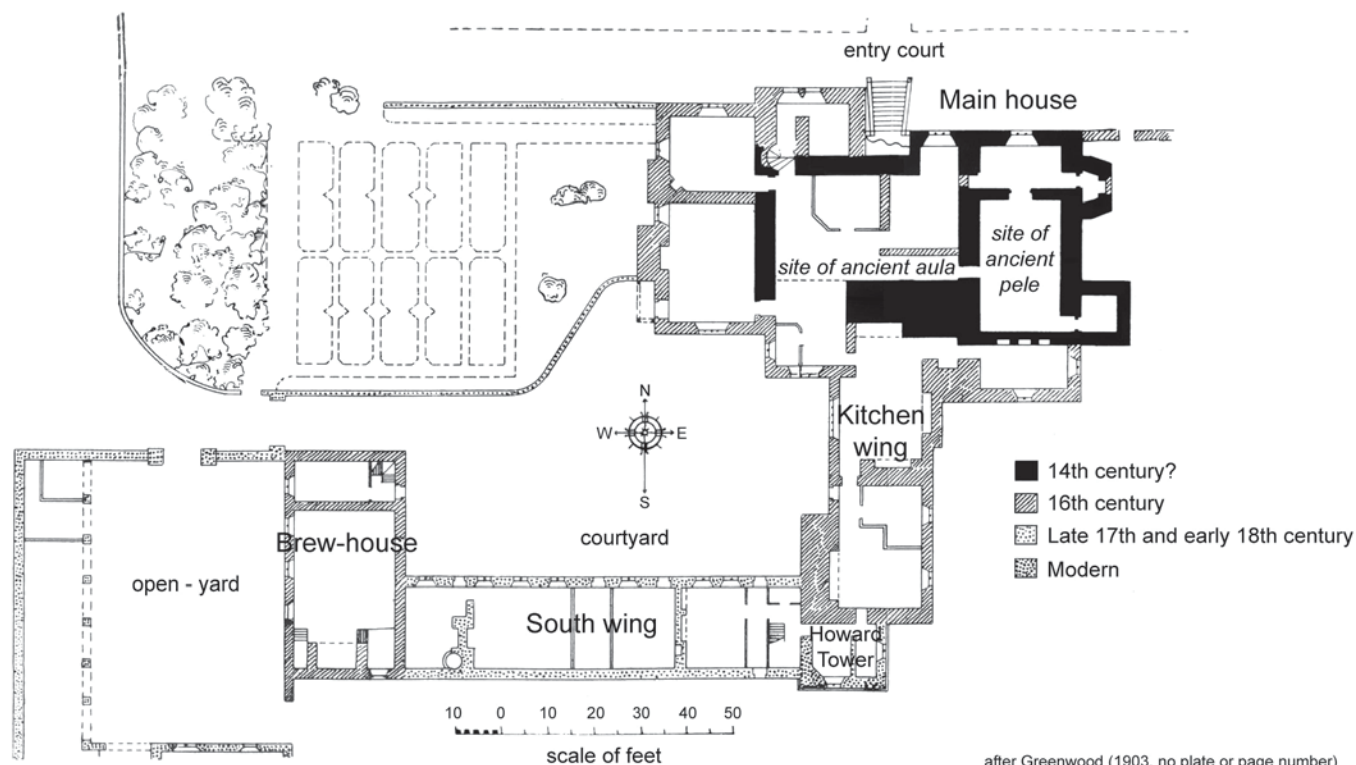
3.2.2 **Ordnance Survey map c1862**: the early editions of the Ordnance Survey mapping show open areas of the courtyard and between the courtyard and the potting sheds (see Plate 3 and Plate 4). The area to the west of the potting sheds (currently the site of the greenhouses) appears to be undeveloped.



Plate 3 (left): Ordnance Survey map c1862

Plate 4 (right): Ordnance Survey map 1862

3.2.3 **Phase plan of the Hall (after Greenwood 1903, no plate or page number):** a plan reproduced by Greenwood (1903) from an original drawing by Curwen shows the suggested phases of development of the Hall to that point. At the time, the area to the west of the brew-house was marked as an open yard with a coal house to the west side. The phase plan has been simplified and re-oriented here, so that north is up the page (Plate 5). The suggested dates are based upon those given by Curwen in his *Historical Description of Levens Hall* (1898).



after Greenwood (1903, no plate or page number)

Plate 5: Phase plan of Levens Hall

3.2.4 **Plan of 1936:** the plan reproduced in *An Inventory of the Historical Monuments in Westmorland* (RCHME 1936, 154) shows that the arrangement of the house is mostly unchanged to this day and that the courtyard and areas to the west of the main house were still open at the time (Plate 6).

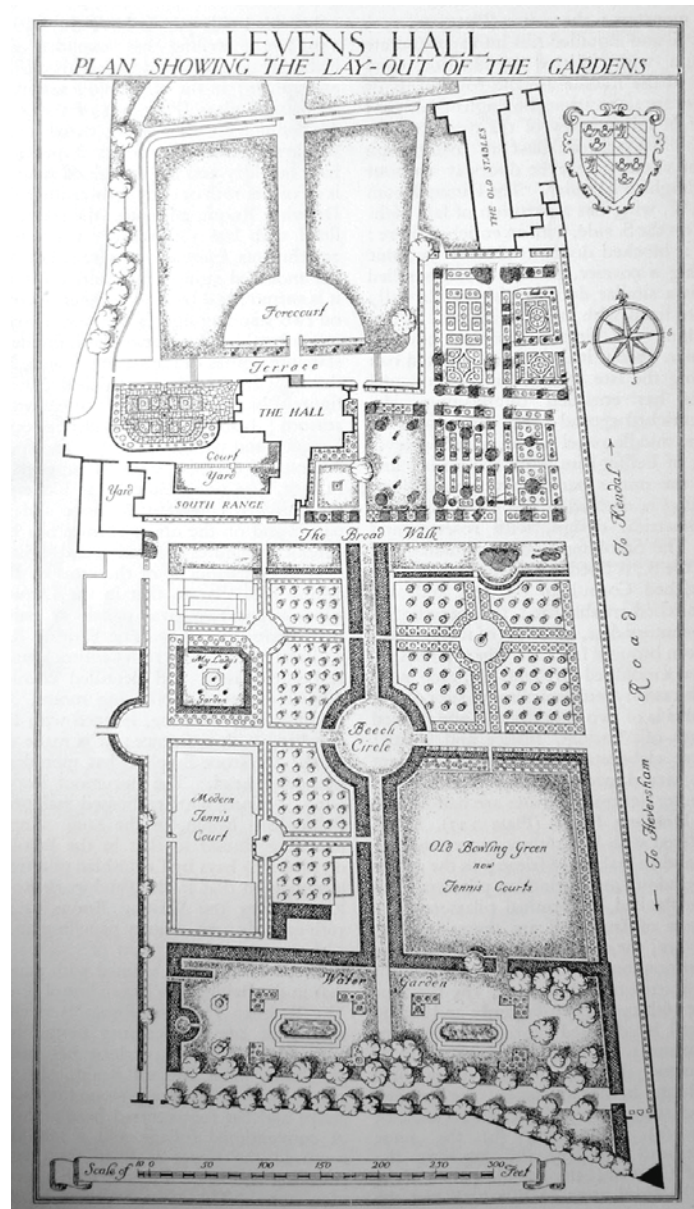


Plate 6: Plan of Levens Hall, showing the gardens c1936 (from RCHME 1936)

3.4 Conclusion

3.4.1 Levens Hall is thought to have its origins in the early part of the 14th century (Greenwood 1903, 285-286), although occupation shortly before that date is possible and there is evidence for much more ancient activity in the general area. Since that time the estate has been essentially in the possession of three families only; the Redmans, the Bellinghams, and the Grahmes with their successors (Curwen 1898, 9).

3.4.2 The area in which the watching brief took place certainly seems to have formed part of the formal gardens at the hall by the late 19th century, but a century before that it may have formed part of the drive way connecting the main entrance to the hall with the stables to the rear.

4. Watching Brief

4.1 Introduction

4.1.1 The watching brief comprised two phases: the initial reduction of the ground level into several stepped areas and the subsequent excavation of foundation trenches across much of the area. Parts of the site, notably the south-west and north-east corners, were subject to very minimal excavation – little more than the removal of topsoil and overlying deposits associated with the original garden. Elsewhere excavation was relatively extensive and reached depths of approximately 2m below the original surface.

4.2 Results

4.2.1 The initial phase of ground reduction involved the removal of an overlying deposit (**1000**) made up of a mixture of dark grey soft silty garden soil mixed with pale grey gravel (remnants of the former paths) and other overburden such as roots and rubble, typically extending to a depth of 0.3m to 0.4m. Below this a layer of pale brown gritty silty clay with lots of lime mortar and up to 50% angular cobbles was revealed (**1001**), extending over almost the entire site with the exception of the east side (Plate 7 and Plate 8). **1001** was found to vary in depth across the site, typically 0.3m to 0.5m but up to 0.8m to 0.9m deep in places. It was also considerably more stony in places (although this was probably due to drainage features in some cases, see below) and there were discrete patches of lime mortar and softer black material, as well as large amounts of animal bone, pottery, ceramic tile, and even some large sections of slate roof tile. Across the west side of the site **1000** overlay a deposit of orangey brown firm sandy clay with 20% rounded pebbles (**1002**), which was eventually revealed to overly **1001**. This was bounded, on the north side, by a wall (**1003**) constructed from angular limestone cobbles and boulders bonded in lime mortar, which was covered by **1001** on the north side but by **1002** to the south (Plate 9). This wall was found to form part of a section cut through along the northern boundary running east/west (**1004**), which was respected by an extant wall but clearly had earlier origins (Plate 10). In addition, an iron water pipe running approximately north/south was also revealed cut into **1001** (Plate 11) as well as an early electrical cable running east/west and another running north/south, which was set below protective tiles and met the former before turning to the west below it (Plate 12). Unexpectedly, the east/west cable ran below the iron water pipe and so was clearly earlier. A plastic pipe with more recent cables running alongside it was also revealed to the west running north/south and also cutting through **1001**.



Plate 7 (left): General view of the north-east corner of the site following the removal of deposit **1000**, viewed from the south

Plate 8 (right): General view of the site following the removal of deposit **1000**, viewed from the north-west



Plate 9: Wall 1003 and deposits 1001 and 1002, viewed from the north-east

Plate 10 (right): The junction of walls 1003 and 1004, viewed from the west



Plate 11 (left): Water pipe running across the site cutting through 1001, viewed from the south

Plate 12 (right): Junction of electrical cables showing protective tiles, viewed from the south

4.2.2 On the north-east side of the site the removal of **1001** also exposed a square structure constructed from two to three courses of reddish-orange bricks without frogs 0.6m square, in the centre of which was an iron pipe finished with a valve (**1005**) (Plate 13). At the west end of the site, beyond wall **1003** the ground level meant that more of **1001** and **1002** was removed, below which was a firm pinkish-orange gravelly clay with 5% rounded cobbles, which probably represents the natural ground (**1007**). To the west of this the footings of another wall, corresponding with the line of a previously extant wall, were discovered orientated north/south and constructed from angular limestone in lime mortar (**1006**) (Plate 14). Once excavation of the footings began it was clear that across much of the site there was a buried soil underlying the majority of the features (**1008**), which was up to 0.6m – 0.7m thick on the east side of the site (Plate 15) but much shallower to the west and confused with **1002**. This comprised a mid-orangey brown silty clay with 20% rounded cobbles and 1% angular cobbles. Cutting through this, but evidently below **1001**, was a wide ditch-like feature 0.9m wide and up to 1.2m deep with near vertical sides running approximately east/west (**1010**) (Plate 16). It was entirely filled by loose stones, mostly

sub-angular cobbles and occasional boulders (**1009**). Feature **1010** clearly pre-dates all of the other features present on site as it ran below wall **1004** and it is likely that some of the stony patches revealed to the south, and particularly the east, represent similar features the edges of which were not evident because of the position of the footing trenches. The excavation of the footings also resulted in part of wall **1003** being exposed in section, revealing that it comprised approximately seven courses at a height of 0.7m (Plate 17 and Plate 18).



Plate 13 (left): Brick structure 1005, viewed from the south

Plate 14 (right): Wall 1006, viewed from the south



Plate 15 (left): Typical sequence of deposits, showing 1008 at the base, in the south-east corner of the site, viewed from the east

Plate 16 (right): Stone-filled cut feature 1010 in section, viewed from the west



Plate 17 (left): Wall 1003 as revealed in the side of the foundation trench, viewed from the south-west

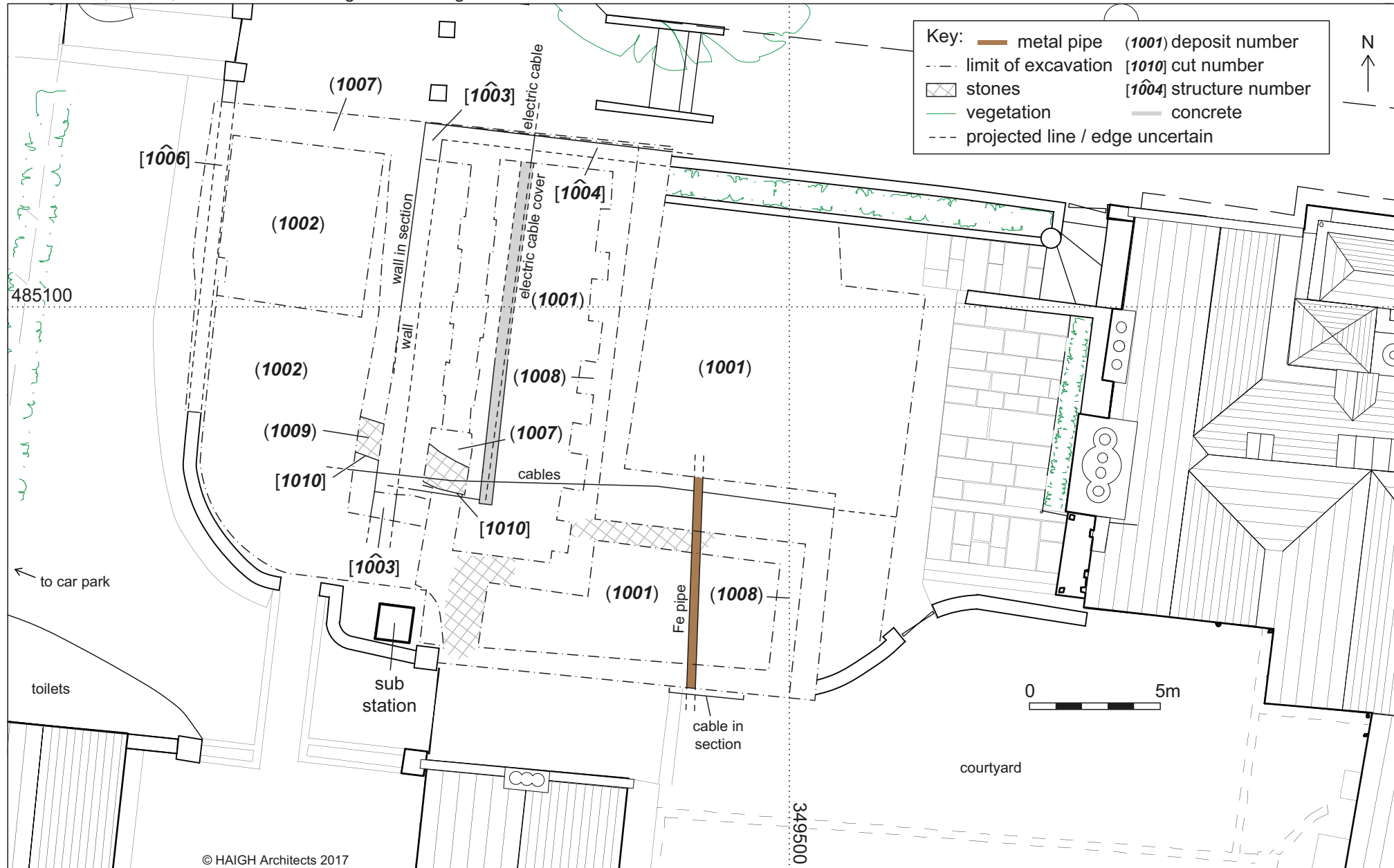
Plate 18 (right): Wall 1003 as revealed in the side of the foundation trench, viewed from the west



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Figure 2: Watching brief area after initial strip



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Figure 3: Watching brief area after excavation of the footings

4.3 Finds

4.3.1 **Introduction:** a total of 999 artefacts and ecofacts were recovered during the watching brief, including large quantities of post-medieval pottery (240 fragments), ceramic building material (109 fragments), glass (85 fragments), and animal bone (489 fragments, plus two worked fragments), with smaller amounts of clay tobacco pipe (45 fragments), medieval pottery (9 fragments), marine shell (3 fragments), stone (4 fragments), and metal (1 Fe fragment). Of the bone a large proportion, approximately 80% by fragment count, was too small and fragmentary or lacking in diagnostic features to be identified. The finds have been catalogued in Appendix 3, with the exception of the clay tobacco pipe, which is catalogued in Appendix 4. The finds are summarised in Table 1, below, and discussed by type in the paragraphs that follow.

	1000	1001	1001? (cut of water pipe / below water pipe)	1002	1003 / 1004	1008	Total
Medieval pottery		9					9
Medieval (?) ceramic		3					3
Post-medieval pottery	140	94		6			240
Post-medieval ceramic		9					9
Ceramic building material	3	74				32	109
Clay tobacco pipe	1	13	31				45
Glass	38	13		34			85
Stone	1	2				1	4
Fe		1					1
Worked animal bone		1					1
Worked antler?		1					1
Animal bone	8	467		1	8	5	489
Marine shell						3	3
Total	191	687	31	41	8	41	999

Table 1: Finds by context and type

4.3.2 **Medieval pottery:** nine fragments of medieval pottery were recovered from **1001**. The material was fragmentary and vessel forms could not be identified. The earliest material is of 12th to 14th century date, represented by the fragment of gritty ware, and there are several fragments of sandy ware, which probably also date from the late 12th to 14th century (McCarthy and Brooks 1992, 22; Bradley and Miller 2009, 664). One fragment of late medieval reduced grey ware was also recovered. This ware was introduced possibly in the late 13th or 14th century and became the dominant 15th to 16th century ware, perhaps persisting into the early 17th century (*ibid*), however, the suggested date ranges for many of these pottery types is approximate, based on comparable material recovered from elsewhere in the region.

4.3.3 **Ceramic building material and other ceramic:** 109 fragments of ceramic building material were retrieved, almost exclusively from context **1001** and **1008**. Those from context **1001** have largely been dated by association with the pottery from the same context, the majority of which has been dated to the late 17th to early 18th century. Almost all of the fragments from that context (62) were apparently parts of

roof tiles, although no peg holes were observed. The remainder were from sand-cast bricks (11), and from a field drain or ridge tile. Those from context **1008** were similar, comprising 30 apparent roof tile fragments, again with no peg holes observed, and two possible ridge tiles. The fragments from context **1000** are white-glazed tile fragments, dated to the late 19th to early 20th century. Finally, three possible medieval ceramic fragments and nine post-medieval ceramic fragments were identified from context **1001**.

4.3.4 Post-medieval pottery: 240 fragments were retrieved from the watching brief, almost exclusively from contexts **1000** (140 fragments) and **1001** (94 fragments). The assemblage from context **1000** is consistently 19th to early 20th century in date, with the most closely dated item being a fluted or ribbed bottom baker whose design was registered in April 1883 (see Plate 19, Plate 20, and Appendix 3). Kitchenware items indicative of the large kitchens that must have existed at Levens Hall are present, some of which are specialist and unusual enough to remain unidentified at this point in time. Dinnerware patterns included the ubiquitous Willow and Asiatic Pheasants, while the teaware/breakfast ware included Broseley (on white earthenware) and various bone china examples, including band and stripes. The assemblage from context **1001** contained late 17th to early 18th century tablewares such as salt-glazed stoneware and tin-glazed earthenware, and kitchenwares such as mottledware from the same period. The latest closely dateable wares were creamware (mid to late 18th century) and factory-produced red slip-coated cream-coloured earthenware (mid 18th to early 19th century?). However, the vast majority of the more closely dateable wares from this context group were dated to the late 17th to early 18th century. The final assemblage of just six fragments were recovered from context **1002**, and comprised tin-glazed earthenware broadly dated to the late 16th to 18th century.

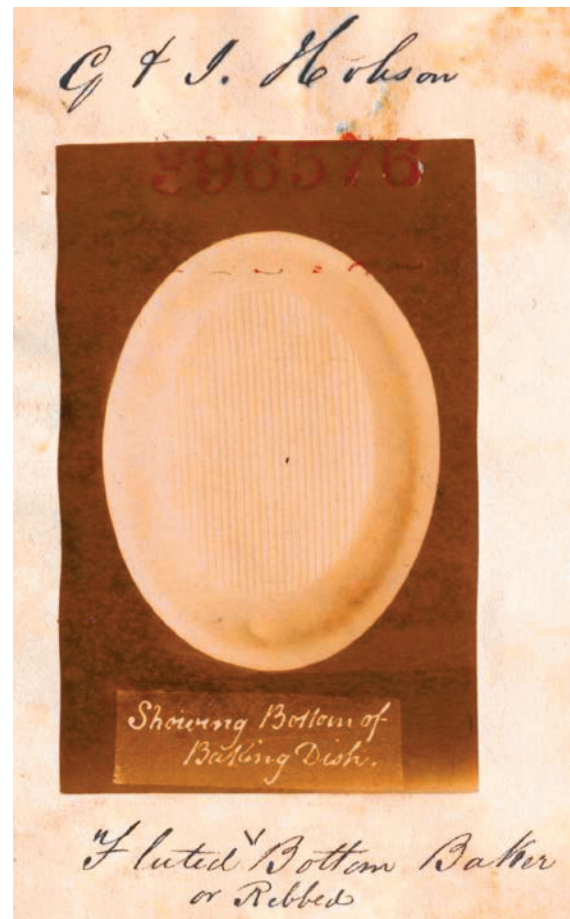


Plate 19 (left): Refitting fragments of rim of fluted or ribbed bottom baker, with registered design number, from context **1000**

Plate 20 (right): Photo of complete 'Fluted' or Ribbed Bottom Baker from registered design (NA BT 43/74/396576 1883)

4.3.5 **Clay tobacco pipe:** a full report on the clay tobacco pipe is presented in *Appendix 4*, with its associated tables (Table 3 to Table 5). Some of the information from that report is given here. Regarding the source of the pipes, The tailed heel in Context 1001 is almost certainly from Tyneside or Yorkshire and provides further evidence for trans-Pennine links already seen at Levens Hall with the John Gill find in 2011 (cf pipe report dated 5/9/11). These are rare. The very dense well-made stem in the same context (No 12) may well be from the same general area.

4.3.6 The actual production centre for the remainder of the finds in both 1001 contexts is more difficult to define. Although the bowl and stamp are of Rainford type the fabric (2) is not. It does not bear any of the characteristics of the pipe clays derived from the Coal Measures such as were in use in Broseley, Buckley or South Lancashire, but rather appears similar to the North Devon ball clays used in Chester, but much less well refined (Davidson and Davey 1982). Given that Rainford makers, on the evidence of the finds of Marsh rolled-stamps, may have been producing pipes in Cumbria by the early 18th century it is possible that such a move occurred earlier or that an intermediate town, such as Lancaster, that would also have required to import pipe clay, may have been involved.

4.3.7 The evidence presented in Table 5 not only gives the best indication of minimum numbers but also demonstrates that, in general, the widest stems in Context 1001 are thicker than those in 1001? The absence of mouthpieces and narrower portions of the stem is also clear. The thicker stems almost certainly belong to slightly later pipe forms that became the norm from the 1670s until around 1710. Therefore, Context 1001 probably dates to c1660 to 1670 and Context 1001? to c1640 to 1650.

4.3.8 **Glass:** a total of 85 fragments of glass, all post-medieval in date, were recovered, and they originated from contexts **1000** (38 fragments), **1002** (34 fragments), and **1001** (13 fragments). The fragments from **1000** were dated to the 18th to 19th centuries, and the late 19th to early 20th century. Of these 25 were from bottles, 3 from other vessels including a wine glass, and 10 from window panes. The most closely dated fragments from this context were a Lea and Perrins Worcestershire Sauce bottle dated to c1880-1900, and a complete jar manufactured by Bagley and Co, Knottingley, Yorkshire, from c1899+. Almost all the fragments from context **1002**, including 24 from bottles, were in very poor condition, and were dated to the 17th to 18th century, and the 18th to early 20th century. Finally, the smallest group, from context **1001**, were dated to the early 17th to early 18th century, 17th to 18th century(?), and 19th to early 20th century.

4.3.9 **Animal bone:** 491 fragments of animal bone were recovered during the watching brief. It was generally well-preserved, however, much of it has not been identified at this stage as it is too fragmentary to allow further analysis. Of the material which has been identified, horse, cattle, sheep, pig, deer, and probably dog are represented within the assemblage. A small fraction of the cattle-size fragments in particular appeared to have been chewed by a dog as there were characteristic tooth marks around the ends. None of the material had been burnt. Butchery marks were noted on the cattle-size bones and deer in particular and probably reflect the use of domestic livestock and deer for food.

4.3.10 The majority of the material (95% by fragment count and probably a larger percentage by weight) came from **1001**. This also included the widest variety of animals, including horse, cattle, sheep, pig, deer, and probably dog, and represents many disarticulated elements rather than complete skeletons. The relatively high incidence of cattle metapodials (the metatarsals and metacarpals), which form the lower limbs, in relation to other elements of the skeleton, particularly the pieces of horn core, which have been recognised within the assemblage, is interesting. Although the upper limb bones are not absent, they are less common within the assemblage as a whole and the conspicuously high incidence of cattle metapodials could indicate craftsmen working in bone (English Heritage 2014, 14, fig 9). A small fragment of worked bone was recovered from **1001**, although its purpose is unknown, and a small fragment of possibly worked antler was also recovered from the same context, which is potentially waste from making combs or similar. Tanners too would obtain cattle hides from the slaughterhouse with horns and feet attached, so waste material from this industry would also produce some metapodials with skinning cut marks (*ibid*). The levels of waste here probably do not indicate work on an industrial scale, however, where the work was actually carried out is unclear. Here the by-products appear to have been mixed with domestic waste, presumably from the hall.

4.3.11 Eight fragments of bone were recovered from **1000**, including cattle- and sheep-size bone fragments and deer. The cattle bone had clearly been butchered; it had clearly been sawn and chopped. Some of the sheep bone and one fragment of deer bone also had chop marks. The deer bone represented at least two individuals as there was a considerable size difference represented between elements, but whether this represents different species, ages, or sexual dimorphism would require further analysis. A possible fragment of deer bone was also recovered from **1002**. Eight cattle-size bone fragments were also recovered from **1003/1004**. A small quantity of unidentified fragments (five) were also recovered from **1008**, including two refitting fragments of horn core.

4.3.12 **Marine shell**: three fragments of marine shell were recovered from context **1008**, comprising cockle and oyster valve fragments.

4.3.13 **Metal**: a single highly corroded iron object, probably a nail, was recovered from context **1001**.

4.3.14 **Stone**: part of a decorative fire surround was recovered from context **1000**, a fragment of roof slate including a peg hole was recovered from context **1001**, and a possible whetstone end was recovered from context **1008**.

4.3.15 **Finds discussion**: a summary of the main dating evidence from the finds by context is presented in Table 2, below. Of all the finds, the clay tobacco pipe is the most useful for accurate dating for this project. Firstly, because each individual pipe was in use for such a short period of time (days rather than weeks (P Davey, pers comm)). Secondly, because of all the finds recovered, the clay tobacco pipes have been assessed by one of the leading authorities in the field, which is not the case for the broader assessments of the pottery. From the clay tobacco pipe evidence alone, context **1001** and the group within it, **1001?** (cut of water pipe/below water pipe), would be dated to c1660-1670, and c1640-1650, respectively. The majority of the finds from this context can be more broadly dated to the 17th to 18th centuries but are likely to be broadly contemporary with the clay pipes (with the obvious exception of the clearly residual and clearly intrusive finds, which are very small in number). The finds from all contexts represent an interesting group, and the pottery, glass, and possibly also ceramic building material, would benefit from more specialist study, and ultimately publication. Also significant is the presence of certain animal bone types and worked bone fragments, which suggest that at least some of the finds from this deposit are not purely domestic in origin and might have been brought in from elsewhere.

Context	Notes	Date
1000	Mainly pottery and glass	19 th – early 20 th century, including 1883, c1880-1900, and 1899+
1001	Residual medieval pottery, but mainly animal bone (including worked), pottery, ceramic roof tile and sand-cast brick, clay tobacco pipe, and glass	c1660 to 1670 (clay tobacco pipe), 17 th – early 18 th century? (pottery), and early 17 th – early 18 th century (glass), but with small quantities of later material (late 18 th - early 19 th and 19 th - early 20 th century)
1001? (<i>cut of water pipe / below water pipe</i>)	Clay tobacco pipe group with internally consistent dates	c1640 to 1650
1002	Mainly glass with some pottery	17 th – 18 th century, and 18 th – early 20 th century (glass) and 16 th – 18 th century (pottery), so probably 18 th century overall?
1003/1004	Small quantity of cattle-sized bone	Not closely dateable
1008	Mainly ceramic roof tile, with small quantities of animal bone and marine shell	17 th – 18 th century?

Table 2: Contexts dated by finds present within them

5. Discussion and Conclusion

5.1 Discussion

5.1.1 The results of the watching brief revealed a similar range of deposits to those encountered during the earlier phase of work (Greenlane Archaeology 2017), although it revealed that these were present across a very large area. Some additional deposits and structures were also revealed, and the exposure of a larger area also allowed the extent of these to be better understood and interpreted.

5.1.2 **Phase 1 (natural)**: the earliest deposit revealed on site was a layer of pinkish-orange gravelly clay (**1007**), which was at a considerable depth in places, up to 1m below the existing surface, and was cut or overlain by other deposits. This deposit clearly represents natural glacially-derived material deposited in the area at the end of the last Ice Age.

5.1.3 **Phase 2 (medieval? – early post-medieval)**: overlying deposit **1007** was a thin layer (**1008**), which probably represented the original ground surface. Finds from this primarily comprised fragments of red earthenware tile, probably roof tile. These were discovered in relatively large quantities during one of the previous phases of work (Greenlane Archaeology 2011, 24) and it was postulated at that time that these probably correspond with those recorded as being purchased in 1692 during the construction of the new south wing (Bagot and Munby 1988, 12n), which was damaged by fire and subject to repair in 1703 (Munby 1986, 275; 1998, 196). This soil horizon is therefore likely to represent that which was present during the building work of 1692 and/or the repair of 1703, and so is likely to have been present from at least the medieval period.

5.1.4 **Phase 3 (early post-medieval)**: cutting into the Phase 2 deposit and underlying subsequent structures and deposits was the large ditch **1010**, which was filled with loose stones (**1009**). This may have extended further to the east and not been identified due to the position of the footings in this area. The purpose and date of this feature is unclear; stratigraphically it is sealed between layers that are, on the basis of the finds, early post-medieval so it must be too. Its fill suggests that it was constructed to form a large drain or soakaway across this area and so it was presumably put in place immediately prior to the extensive development of the site represented by Phases 4-6, most likely as a means of draining water from this area.

5.1.5 **Phase 4 (early post-medieval)**: walls **1003** and **1004** are clearly contemporary and form part of a single structure, which was built onto the Phase 2 deposit (**1008**) and over the Phase 3 ditch (**1010**). Wall **1006** was of a similar build and also apparently built on top of the Phase 2 deposit. These walls were clearly external and not part of buildings as they had no plaster or other finish and seem likely to represent boundary walls around this part of the gardens. The position of **1003** and **1006**, running parallel and defining a narrow area running north/south, might suggest that they were bounding the sides of a track or driveway leading to the stables and outbuildings to the south. Again, these walls cannot be dated in themselves but stratigraphically they must belong to the early post-medieval period.

5.1.6 **Phase 5 (18th century)**: covering the majority of the site was a substantial dumped deposit containing large amounts of stone and lime (**1001**). The numerous finds from this, which included large amounts of animal bone, pottery – including some more unusual types such as German stoneware and tin-glazed earthenware but also some residual medieval pottery, and red earthenware tiles, suggest a broadly 18th century date for this deposit. This seems to have been initially deposited while some of the Phase 4 walls were still standing but subsequently buried **1003** while **1004** and **1006** continued to form boundary walls until immediately prior to the current development. The origin of deposit **1001** is uncertain. It would seem obvious to suggest that it represents kitchen waste from the hall, especially given the proximity of this area to the service wings and the presence of relatively expensive and unusual fabrics and large amounts of animal bone and it was noteworthy that the quantity of finds was generally higher closer to the hall. However, the presence of two fragments of worked bone and the nature of the bone assemblage in general, which included elements more commonly associated with a tannery or other industry working in bone, would suggest that at least some of **1001** represents material deliberately brought in and dumped on the site. This was presumably due to the development of the

gardens on this side of the hall, which were said to have been 17th century (see 3.1.9), but on basis of the finds from **1001** in fact saw substantial redevelopment in the 18th century.

5.1.7 **Phase 6 (18th century)**: surface **1002** overlay part of **1001** but was otherwise spread over the western end of the site, essentially between walls **1003** and **1006**. The finds recovered from this again suggest an 18th century date. Its form and location suggests it formed part of a track or driveway connecting the main drive to the stable block and service wings to the south, in which case it may correspond with that shown on the mid-18th century plan of the hall (see *Section 3.2.1* above).

5.1.8 **Phase 7 (late 19th-20th century)**: overlying the closely dated group of features and deposits representing Phases 3-6 is a more recent surface, essentially representing the most recent incarnation of the gardens (**1000**). The finds recovered from this are typically of late 19th to early 20th century date, and certainly indicate that during this period the west side of the garden at least had been used for dumping rubbish for a time. Included in this phase is structure **1005**, which was set into the underlying deposit (**1001**). It possibly represents the valve for attaching a hose, perhaps for firefighting equipment or for watering the gardens. This phase clearly also saw the loss of any track or driveway to the stables and outbuildings beyond, with access presumably having been moved to the west to its present location.

5.2 Conclusion

5.2.1 The watching brief revealed that the deposits of archaeological interest revealed during the earlier phase of watching brief extended across the whole of the development area. Despite the presence of some medieval pottery this was clearly residual but the deposits and structures encountered clearly represent a phase of rapid development of the area, most probably in the early 18th century. This seems likely to correspond to the development of the gardens in this area and wider improvements to the hall carried out in the late 17th and early 18th centuries during the ownership of James Grahme (1650-1730). The finds represent an interesting assemblage within a relatively limited date range including some unusual and relatively exotic types of pottery, locally unusual red earthenware roof tiles, but also large amounts of animal bone that showed evidence for working or connections with the tanning process.

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Appendix 1: Project Design

LEVENS HALL, LEVENS, KENDAL, CUMBRIA

Archaeological Watching Brief Project Design



Client: Mr and Mrs Richard Bagot

October 2017

1. Introduction

1.1 Project Background

1.1.1 Following the submission of a planning application (Ref. SL/2016/1144 and SL/2016/1160) for the construction of a café to the west of Levens Hall, Levens, Kendal, Cumbria (NGR 349497 485099) a condition was placed requiring an archaeological watching brief during the associated ground works. This project design has been produced in response, and is intended to outline the methodology that would be used during the archaeological work.

1.1.2 Levens Hall has at least medieval origins, with the present hall probably coming into existence in the 14th century as a peel tower to which other sections were added later. Two previous archaeological watching briefs, one carried out during the excavation of test pits as preliminary work relating to the new café, revealed deposits of dumped material of later medieval and post-medieval date across much of the area to the west of the hall suggesting that there is some archaeological interest in this area (Greenlane Archaeology 2011; 2017).

1.2 Greenlane Archaeology

1.2.1 Greenlane Archaeology is a private limited company based in Ulverston, Cumbria, and was established in 2005 (Company No. 05580819). Its directors, Jo Dawson and Daniel Elsworth, have a combined total of over 18 years continuous professional experience working in commercial archaeology, principally in the north of England and Scotland. Greenlane Archaeology is committed to a high standard of work, and abides by the Chartered Institute for Archaeologists' (CIfA) Code of Conduct. The watching brief will be carried out according to the Standards and Guidance of the Chartered Institute for Archaeologists (CIfA 2014a).

1.3 Project Staffing

1.3.1 The project will be managed by **Dan Elsworth (MA (Hons), AIfA)**. Daniel graduated from the University of Edinburgh in 1998 with an honours degree in Archaeology, and began working for the Lancaster University Archaeological Unit, which became Oxford Archaeology North (OA North) in 2001. Daniel ultimately became a project officer, and for over six and a half years worked on excavations and surveys, building investigations, desk-based assessments, and conservation and management plans. These have principally taken place in the North West, and Daniel has a particular interest in the archaeology of the area. He has recently managed a wide variety of projects including building recordings of various sizes, watching briefs, and excavations in the region, including an excavation and evaluation in the centre of medieval Kendal (Greenlane Archaeology 2009a; 2010a), evaluation in the Roman *vicus* at Stanwix (Greenlane Archaeology 2010b), evaluation of a Scheduled post-medieval gunpowder works (Greenlane Archaeology 2010c), and watching briefs in Preston (Greenlane Archaeology 2009b; 2010d).

1.3.2 The watching brief will be carried out by **Tom Mace (BA (Hons), MA, MIfA)** or another suitably qualified member of staff, depending on scheduling constraints. Tom has extensive experience of working on a variety of archaeological projects, especially watching briefs, but also excavations, evaluations, and building recordings, as well as report writing and illustration production. He joined Greenlane Archaeology in 2008 having worked for several previous companies including Archaeological Solutions and Oxford Archaeology North.

1.3.3 All artefacts will be processed by Greenlane Archaeology, and it is envisaged that they will initially be assessed by Jo Dawson, who will fully assess any of post-medieval date. Medieval pottery will be assessed by Tom Mace, and other finds will be assessed by specialist sub-contractors as appropriate. Historic England will be notified of any other specialists, other than those named, whom Greenlane Archaeology wishes to engage.

1.3.4 Environmental samples and faunal remains, should significant deposits of these be recovered, will be processed by Greenlane Archaeology. It is envisaged that charred plant remains will be assessed by staff at Headland Archaeology Ltd, and faunal remains by Jane Richardson at ASWYAS. Should any human remains be recovered for assessment it is envisaged that these will be examined by Malin Horst at York Osteoarchaeology, following appropriate advice on initial processing.

2. Objectives

2.1 Rapid Desk-Based Assessment

2.1.1 Information outlining the development of the site will be collected, in order to place the results of the watching brief in context. This will primarily be acquired from secondary sources, in particular the report produced during a previous phase of work at the same site (Greenlane Archaeology 2011).

2.2 Watching Brief

2.2.1 To identify any surviving archaeological remains and to investigate and record any revealed archaeological remains or deposits.

2.3 Report

2.3.1 To produce a report detailing the results of the watching brief, which will outline the nature, form, extent, and date of any archaeological remains discovered.

2.4 Archive

2.4.1 Produce a full archive of the results of the watching brief.

3. Methodology

3.1 Rapid Desk-Based Assessment

3.1.1 Information about the site, intended to place the results of the watching brief in context, will be taken from the previous work carried out on the site. As a result no new primary sources will be consulted.

3.2 Watching Brief

3.2.1 Where the groundworks involve excavation of a depth of more than six inches (15cm) below the surface these will be monitored, with one archaeologist on site. If there are several areas being excavated concurrently it may be considered necessary to have more than one archaeologist on site.

3.2.2 The watching brief methodology will be as follows:

- All excavation will be carried out under supervision by staff from Greenlane Archaeology;
- All deposits of archaeological significance will be examined by hand if possible in a stratigraphic manner, using shovels, mattocks, or trowels as appropriate for the scale;
- The position of any features, such as ditches, pits, or walls, will be recorded and where necessary these will be investigated in order to establish their full extent, date, and relationship to any other features. If possible, negative features such as ditches or pits will be examined by sample excavation, typically half of a pit or similar feature and approximately 10% of a linear feature;
- All recording of features will include detailed plans and sections at a scale of 1:20 or 1:10 where practicable or sketches where it is not, and photographs in both colour print and colour digital format. In addition, photographs will also be taken of the site before work begins and after completion;
- All deposits, drawings and photographs will be recorded on Greenlane Archaeology *pro forma* record sheets;
- All finds will be recovered during the watching brief for further assessment as far as is practically and safely possible. Should significant amounts of finds be encountered an appropriate sampling strategy will be devised;
- All faunal remains will also be recovered by hand during the watching brief as far as is practically and safely possible, but where it is considered likely that there is potential for the bones of fish or small mammals to be present appropriate volumes of samples will be taken for sieving;
- Deposits that are considered likely to have, for example, preserved environmental remains, industrial residues, and/or material suitable for scientific dating will be sampled. Bulk samples of between 20 and 60 litres in volume (or 100% of smaller features) where possible, depending on the size and potential of the deposit, will be collected from stratified undisturbed deposits and will particularly target negative features (e.g. gullies, pits and ditches) and occupation deposits such as hearths and floors. An assessment of the environmental potential of the site will be undertaken through the examination of samples of suitable deposits by specialist sub-contractors (see *Section 1.3.4* above), who will examine the potential for further analysis. All samples will be processed using methods appropriate to the preservation conditions and the remains present;
- Any articulated human remains discovered during the watching brief will be left *in situ*, and, if possible, covered. The client will be immediately informed as will the local coroner. Should it be considered

necessary to remove the remains this will require a Home Office licence, under Section 25 of the Burial Act of 1857, which will be applied for should the need arise;

- Any objects defined as 'treasure' by the Treasure Act of 1996 (HMSO 1996) will be immediately reported to the local coroner and securely stored off-site, or covered and protected on site if immediate removal is not possible;
- Should any significant archaeological deposits be encountered during the watching brief these will immediately be brought to the attention of historic and ground works in that area halted so that the need for further work can be determined. Any additional work (which would result in additional costs) will be agreed with Historic England, and subject to a variation to this project design.

3.3 Report

3.3.1 The results of the watching brief will be compiled into a report, which will contain the following sections as necessary:

- A front cover including the appropriate national grid reference (NGR);
- A concise non-technical summary of results, including the date the project was undertaken and by whom;
- Acknowledgements;
- Project Background;
- Methodology, including a description of the work undertaken;
- Results of the watching brief including descriptions of any deposits identified, their extent, form and potential date, and an assessment of any finds or environmental remains recovered during the watching brief;
- Discussion of the results;
- Illustrations at appropriate scales including:
 - a plan showing the location of the ground works;
 - plans and sections of the watching brief ground works, as appropriate, showing any features of archaeological interest;
 - photographs of the watching brief, including both detailed and general shots of features of archaeological interest and the trenches;
 - photographs of individual artefacts as appropriate.

3.4 Archive

3.4.1 The archive, comprising the drawn, written, and photographic record of the watching brief, formed during the project, will be stored by Greenlane Archaeology until it is completed. Upon completion it will be deposited with the Cumbria Archive Centre in Kendal. The archive will be compiled according to the standards and guidelines of the ClfA (ClfA 2014b). In addition details of the project will be submitted to the Online AccesS to the Index of archaeological investigationS (OASIS) scheme. This is an internet-based project intended to improve the flow of information between contractors, local authority heritage managers and the general public.

3.4.2 A copy of the report will be supplied to the client, a digital copy will be supplied to the client's agent, and within three months of the completion of fieldwork one copy will be provided to Historic England and another will be provided to the Cumbria Historic Environment Record (HER). In addition, Greenlane Archaeology Ltd will retain one copy, and a digital copy will be deposited with the OASIS scheme as required.

3.4.3 The client will be encouraged to transfer ownership of the finds to a suitable museum. If no suitable repository can be found the finds may have to be discarded, and in this case as full a record as possible and necessary would be made of them beforehand.

4. Work timetable

4.1 Greenlane Archaeology will be available to commence the project from the **7th November 2017**, or at another date convenient to the client. It is envisaged that the project will involve tasks in the following order:

- **Task 1:** watching brief;

- **Task 2:** post-excavation work on archaeological watching brief, including processing of finds and production of draft report and illustrations;
- **Task 3:** feedback, editing and production of final report, completion of archive.

5. Other matters

5.1 Access

5.1.1 Access to the site will be organised through co-ordination with the client and/or their agent(s).

5.2 Health and Safety

5.2.1 Greenlane Archaeology carries out risk assessments for all of its projects and abides by its internal health and safety policy and relevant legislation. Health and safety is always the foremost consideration in any decision-making process.

5.3 Insurance

5.3.1 Greenlane Archaeology has professional indemnity insurance to the value of **£1,000,000**. Details of this can be supplied if requested.

5.4 Environmental and Ethical Policy

5.4.1 Greenlane Archaeology has a strong commitment to environmentally- and ethically-sound working practices. Its office is supplied with 100% renewable energy by Good Energy, uses ethical telephone and internet services supplied by the Phone Co-op. In addition, the company uses the services of The Co-operative Bank for ethical banking, Naturesave for environmentally-conscious insurance, and utilises public transport wherever possible. Greenlane Archaeology is also committed to using local businesses for services and materials, thus benefiting the local economy, reducing unnecessary transportation, and improving the sustainability of small and rural businesses.

6. Bibliography

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HMSO, 1996 *Treasure Act*, <http://www.opsi.gov.uk/acts/acts1996/1996024.htm>

Appendix 2: Summary Context List

Context	Type	Description	Interpretation
1000	Deposit	Overburden comprising mix of dark grey soft silty garden soil and pale grey gravel, typically 0.3m-0.4m thick	Topsoil and gravel from adjoining gardens and paths
1001	Deposit	Brown gritty and silty clay with up to 50% angular cobbles and lots of lime mortar, typically 0.3m-0.5m thick but up to 0.9m in places	Dumped material
1002	Deposit	Orangey brown firm sandy clay with 20% rounded pebbles up to 0.2m thick	Drive surface
1003	Structure	Wall orientated north/south constructed from angular limestone cobbles and boulders, bonded with lime mortar, at least five courses remaining, extending to over 0.5m tall and up to 0.7m thick	Boundary wall
1004	Structure	Wall orientated east/west against north edge of site, same construction as 1003 , 0.7m wide with several courses extending to over 0.5m deep	Boundary wall
1005	Structure	Arrangement of brick walls comprising two to three courses of plain reddish-orange bricks without frogs defining a small area 0.6m by 0.6m housing an iron water pipe with a 90° bend topped with a valve	Inspection cover around valve
1006	Structure	Wall orientated north/south along west side of site, of similar construction to 1003	Boundary wall
1007	Deposit	Firm pinkish-orange gravelly clay	Natural
1008	Deposit	Firm mid orangey brown silty clay with 20% rounded cobbles, 0.6m-0.7m thick	Subsoil/buried soil
1009	Deposit	Loose sub-angular cobbles and occasional boulders, 0.9m wide by 1.2m deep filling 1010	Fill of ditch 1010
1010	Cut	Ditch running approximately east/west 0.9m wide and 1.2m deep with nearly vertical sides and a fairly pointed base	Soakaway or drain?

Appendix 3: Summary Finds List

Context	Type	Quantity	Description	Date range
1000	Pottery	26	White earthenware with transfer-printed patterns as follows: Asiatic Pheasants (plate fragments - 6 rims, 2 bodies, and 4 bases, including one with part of transfer printed pattern mark '[Asiatic Pheas]ants'); Willow (vegetable dish body fragment, and small hollow-ware fragment); Cracked Ice and Prunus plate base; Broseley bowl rim; blue floral and star pattern ashet/meat plate rim to base; blue landscape and scrolls pattern lid (?) rim; Marble kitchenware/bedroomware (?) body fragments x 2, with pattern on inside only and 'rim' part way up outside – an insert for a larger item; slightly flown blue floral pattern on relief-moulded plate rim and refitting base fragments; black label on marmalade jar '[KEILL]ER & SONS / [DUN]DEE / [MA]RMALADE' (refitting x 3)	19 th – early 20 th century
1000	Pottery	2	White earthenware refitting hollow-ware rim and body fragments, with black transfer-printed dated registration mark on outside 'HOBSON / REGISTERED [...] / IV / 6 / 14 Rd K / H' (class IV, 6 th day of month, Parcel number 14, year K, month H: i.e. Ceramic, Parcel 14 on 6 th April 1883 (fluted or ribbed bottom baker, manufactured by Charles and J Hobson, Burslem, Staffordshire (NA BT 43/74/396576 1883; Kowalsky and Kowalsky 1999, 235))	1883
1000	Pottery	1	White ironstone plate rim with black geometric transfer-printed pattern with orange and pale orange clobbering	Mid 19 th – early 20 th century
1000	Pottery	3	White earthenware with coloured glazes: brown-glazed teapot (?) base, blue-glazed majolica-type hollow-ware base with relief-moulded fish scales (?), and hollow-ware fragment with pink-painted or pink-glazed exterior	19 th – 20 th century
1000	Pottery	35	White earthenware (undecorated): kitchenware (?) with relief-moulded bands (hollow-ware – 1 base and 5 body fragments); refitting fragments from unusual hollow-ware vessel x 2, similar to deep, narrow bowl with substantial rim; rim-seated lid rim fragment; small hollow-ware base; small jug pouring lip; basin rim; refitting bowl rims x 2; bowl rim; paste pot rim; plate bases x 2, ashet base x 1; hollow-ware body fragments x 11; flatware fragments x 5	19 th – early 20 th century
1000	Pottery	1	Bone china Willow cobalt blue transfer-printed and gilded cup rim	Late 19 th – early 20 th century
1000	Pottery	17	Bone china with decoration: gilded lines (leafy scroll-moulded jug (?) handle, 2 side plate rim-to-bases, 3 saucer rims and 1 saucer base, 3 fluted saucer rims (of which 2 refitting with 3 stripes and band) and 1 fluted saucer body, 2 refitting cup rims (heavily iron-stained), and 2 refitting bowl rims); pink enamel band and stripe side plate rim-to-base; green and orange enamel foliage painted saucer rim;	19 th – 20 th century
1000	Pottery	1	Bone china moulded 2 ply twist handle fragment	19 th – 20 th century

Context	Type	Quantity	Description	Date range
1000	Pottery	11	Bone china (undecorated): plate rims x 4, plate base x 2, saucer rim-to-base x 1, hollow-ware rim x 1 and bodies x 3	19 th – 20 th century
1000	Pottery	3	White earthenware fluted tea cup base and body fragment with lower handle terminal, and fluted hollow-ware base (not circular)	19 th – 20 th century
1000	Pottery	2	White ironstone jug rim with handle terminal scar, and handle, both with beaded relief-moulding, probably from same vessel	Mid 19 th – early 20 th century
1000	Pottery	12	Red earthenware flower pot fragments (rims x 4, bodies x 6, bases x 2), including one marked '[B]ULWELL [...]'	19 th – 20 th century
1000	Pottery	6	Brown-glazed red earthenware (3 pancheon rims including one with distinctive handle below rim; 3 crock body fragments, of which 2 refitting)	Late 17 th – early 20 th century
1000	Pottery	1	Black-glazed red earthenware pancheon rim with distinctive handle below rim	Late 17 th – early 20 th century
1000	Pottery	4	Brown-glazed red earthenware with white slip-coated interior (1 pancheon rim and 2 body fragments; hollow-ware with darker glaze on white slip)	19 th – early 20 th century
1000	Pottery	1	Red earthenware hollow-ware vessel base with white slip-coated exterior and green glaze on top, and brown glaze internally and on part of base (Wetherigg's? Unidentified vessel type)	Late 19 th – early 20 th century?
1000	Pottery	5	Brown-glazed grey-bodied stoneware: small bottle base; dish rim; bottle mouth; bottle body; bottle body with impressed mark on side '[...]ON / [...]ER'	19 th – early 20 th century
1000	Pottery	9	Glazed buff-bodied stoneware: ridged jar (bas, body, and rim), jar/bottle bodies x 4, complete lid x 1; bottle with black transfer-printed label '... MANUFACTURER / KENDAL'	Late 19 th – early 20 th century
1000	Glass	8	Brown bottle fragments (3 bases, 1 rim, and 4 neck fragments)	19 th – early 20 th century
1000	Glass	2	Refitting white opaque rim fragments with folded over rim from hollow-ware vessel	19 th – 20 th century
1000	Glass	1	Colourless octagonal faceted wine glass stem	18 th – 19 th century
1000	Glass	1	Blue bottle mouth with octagonal faceted body, presumably poison bottle or similar	18 th – 19 th century
1000	Glass	12	Very light turquoise bottle fragments: refitting cylindrical body and base with embossed text on side 'JONASDER / & SONS / KENDAL' and '4' embossed on base; plain base from cylindrical bottle; base with embossed text on side of cylindrical body 'NORT...' with embossed pattern number on base '1241'; body from cylindrical bottle with embossed text 'WHITW... & C ^O L ^{TD} '; complete cylindrical bottle with embossed text up side 'LEA & PERRINS' and embossed text along shoulder 'WORCESTERSHIRE SAUCE' and punt mark on base 'A G B Co / 8758' (possibly Albion Glass Bottle Co, c1880-1900 (Toulouse 1971, 38)); complete jar punt marked 'B & C ^O L ^{TD} / 66 / K' (Bagley & Co, Knottingley, Yorkshire, c1899+ (Toulouse 1971, 77)); 3 large cylindrical body fragments; faceted base fragment with no punt mark; complete sheared lip small faceted bottle	Late 19 th – early 20 th century

Context	Type	Quantity	Description	Date range
1000	Glass	10	Very light turquoise window pane fragments	19 th – early 20 th century
1000	Glass	4	Dark green bottle fragments: 2 complete wine bottles with aluminium foil on necks; base, and body fragment	19 th – early 20 th century
1000	Ceramic building material	3	White-glazed tile fragments, 2 refitting	Late 19 th – early 20 th century
1000	Stone	1	Part of an engaged column or pilaster probably originally part of a fire surround, with fluted decoration, in very fine grained polished stone, perhaps marble but painted on outer face and less well finished on inner. Broken off at one end and with peg hole for fixing in other.	18 th – 19 th century
1000	Animal bone	8	1x cattle-size long bone shaft (probably humerus), missing ends (clearly sawn at proximal end and chop marks to distal end); ?sheep-size: 1x rib fragment; 2x long bone fragments with sawn ends; deer: 1x distal end of a femur (R), with ?arthritic bone growth; ?small deer (?roe deer): 1x scapula fragment; 1x distal end of a tibia (R) with chopped end; 1x proximal end of radius (L)	Uncertain
1001	Pottery	1	Gritty ware: soft, fairly uniform, sandy fabric with abundant quartz inclusions 1- 2mm in size; fragment of a thin-walled vessel, 5-6mm thick; the surfaces and margins are oxidised to a light orange and the core is reduced, light grey; unglazed	12 th – 14 th century
1001	Pottery	1	Very small and much abraded fragment of soft, light orange ceramic, with very few inclusions; unglazed; ?possibly sandy ware	Possibly late 12 th – 14 th century
1001	Pottery	6	Sandy wares: 3x hard-fired, mid-to-light grey fabric with oxidised light orange patches; thin, slightly flaking glaze applied internally and externally, varying from light apple / light olive green, from thin-walled vessel(s) 5-6mm thickness; one fragment shows ribbed neck of vessel; 2x similar fabric to above, from coarser vessel(s) (9-12mm thick), with slightly mottled green glaze with brown specks applied internally; 1x fragment of a smooth, uniform, sandy fabric; only the internal surface remains, which, together with the internal margin, is oxidised to a light orange colour, the ?core is mid-grey; no glaze apparent;	Possibly late 12 th – 14 th century
1001	Pottery	1	Reduced grey ware: hard-fired, mid-to-dark grey fabric, with slightly lighter grey outer margin; the external surface has a thin, slightly flaking mottled light green and brown glaze; internally it has a darker green glaze; the fabric has few visible inclusions	Late 13 th to 17 th century
1001	Ceramic	3	Medieval/early post-medieval soft red earthenware	Medieval – post-medieval
1001	Pottery	3	Light brown salt-glazed grey-bodied stoneware body fragments, two refitting, probably all from same spherical cup/jug	17 th – 18 th century?

Context	Type	Quantity	Description	Date range
1001	Pottery	1	Salt-glazed grey-bodied stoneware body fragment, with relief-moulded/stamped decoration, decorated with dark blue (cobalt) and dark purple (manganese) glaze, German, probably Westerwald	17 th – early 18 th century
1001	Pottery	1	Tin-glazed earthenware hollow-ware body fragment, white-glazed externally with blue and dark yellow painted decoration, pale pink-glazed internally. Soft, cream-coloured fabric	17 th – 18 th century
1001	Pottery	3	Tin-glazed earthenware with plain white glaze, soft, cream-coloured fabric; two body fragments, and one hollowware rim fragment	17 th – 18 th century
1001	Pottery	3	Creamware: plate base, hollow-ware body, and abraded (water-worn (?)) and iron-stained plate rim with relief-moulded decoration	Mid – late 18 th century
1001	Pottery	1	Pearlware (?) body fragment	Late 18 th – early 20 th century
1001	Pottery	4	Very pale orangey-yellow earthenware, with orange-brown slip and fireskin on exterior, and light brown glaze with dark speckles on interior. Refitting rim and body from lid-seated (?) jar(?), and body fragment from same vessel, and strap handle terminal	17 th – early 18 th century
1001	Pottery	1	Yellow-glazed white earthenware with mottled leopard-like dark brown spotting on exterior	17 th – early 18 th century?
1001	Pottery	2	Refitting glazed red slip-coated very pale yellowish orange earthenware, from rim and body of hollow-ware vessel with applied/trailed white slip 'S' spiral decoration, or possibly part of initialled and dated vessel	17 th – early 18 th century?
1001	Pottery	1	Glazed cream-coloured earthenware, factory-made, with red slip coating, from hollow-ware rim	Mid 18 th – early 19 th century?
1001	Pottery	3	Refitting brown-glazed red earthenware thin-walled hollow-ware body fragments, with white slip-trailed wavy line just above lower edge of glazed area	Late 17 th – early 20 th century
1001	Pottery	10	Brown-speckled light brown-glazed orange earthenware, many with fireskin externally, sometimes with thin red wash: refitting body fragments x 2, refitting base fragments x 2, other base fragments x 4, rim fragments x 2	Late 17 th – early 18 th century
1001	Pottery	1	Light brown-glazed red earthenware frying pan handle, blackened on unglazed underside of handle	Late 17 th – early 18 th century
1001	Pottery	1	Light brown-glazed red earthenware plate/dish rim with pie crust edge with unglazed white slip decoration, and underglaze white slip stripes lower down on upper surface	Late 17 th – early 18 th century
1001	Pottery	4	Mottledware – brown-glazed very pale yellowish orange earthenware hollow-ware vessel lid rim, hollow-ware vessel rim, body fragment, and hollow-ware base	Late 17 th – early 18 th century
1001	Pottery	51	Brown-glazed red earthenware: pancheon rims x 8 (from four different vessels, including refitting rims x 2, and refitting rim and body fragments x 4), crock fragments x 38 (including rims x 4, refitting rim and body x 2, refitting body x 2, base x 4, refitting body and base x 2, and refitting body and base x 9), and hollow-ware coarseware x 4 (including base)	Late 17 th – early 20 th century

Context	Type	Quantity	Description	Date range
1001	Pottery	1	High-fired lid-seated hollow-ware rim, possibly purpleware	Mid 15 th – early 18 th century?
1001	Pottery	1	Brown-glazed red earthenware hollow-ware body fragment, partially dipped in glazed white slip externally	18 th – early 20 th century
1001	Pottery	1	Water-worn red earthenware hollow-ware body fragment	Late 17 th – early 20 th century
1001	Pottery	1	Red earthenware flower pot fragment	Mid 18 th – 20 th century
1001	Ceramic	9	Red earthenware fragments, probably from ceramic building material, including one sand-cast	Post-medieval
1001	Ceramic building material	47	Fairly soft pale- to harder medium-orange earthenware roof tile fragments (no apparent evidence for peg holes, but fragment size and quantity probably too small), 7 to 13 16ths of an inch thick, comprising 23 rim fragments, 5 corner fragments, and 19 body fragments	Probably 17 th – 19 th century by association with pottery, but not closely dateable
1001	Ceramic building material	2	Orange earthenware roof tile (?) fragments, reused in walls (?) as covered in mortar	Post-medieval
1001	Ceramic building material	13	Red earthenware roof tile fragments (no apparent evidence for peg holes, but fragment size and quantity probably too small), 8-10 16 th of an inch thick, comprising 7 rims fragments and 6 body fragments (all but one of the rims, and same for the body fragments, had reduced or partially reduced cores)	Probably 17 th – 19 th century by association with pottery, but not closely dateable
1001	Ceramic building material	7	Sand-cast brick fragments	17 th – 19 th century?
1001	Ceramic building material	4	Low-fired brick body fragments, of which 3 with reduced cores	17 th – 18 th century?
1001	Ceramic building material?	1	Red earthenware, possibly field drain or ridge tile fragment (or plant pot body)	Post-medieval
1001	Glass	8	Dark green bottle fragments with degraded surfaces (1 mouth from onion bottle with short wide-bottomed neck, c1670-1720 (Morgan nd, 25); 5 body fragments, and 2 base fragments including 1 complete base (early 17 th – early 18 th century))	Early 17 th – early 18 th century
1001	Glass	3 + surface chips	Light green hollow-ware vessel fragments in highly degraded condition	17 th – 18 th century?
1001	Glass	1	Very light turquoise bottle/vessel body fragment	19 th – early 20 th century
1001	Glass	1	Very small colourless rim fragment	19 th – early 20 th century
1001	Fe	1	Highly corroded object, probably a nail	Not closely dateable
1001	Stone building material	2	Slate roof tile fragment with peg hole, reused in wall (?) as covered in mortar, and chip from similar	Post-medieval?

Context	Type	Quantity	Description	Date range
1001	Animal bone	467	<p>Fragmentary, but generally well-preserved, generally fairly large fragments in good condition; much of it has not been identified at this stage (some of it is too fragmentary to allow further analysis); those identified include:</p> <p>several ?horse teeth;</p> <p>Cattle: 4x mandible fragments and at least nine loose teeth (mostly adult/elderly based on wear); 1x mandible of ?juvenile with milk teeth (believed to be calf) and 1x loose tooth (perhaps same individual); cattle-size long bone fragments (few recognisable fragments), cattle rib/rib fragments, cattle-size vertebrae, scapulae (assumed to be cattle), cattle-size femoral heads x2, cattle distal end of humerus x3 (2x left, 1x right); cattle proximal end of humerus (2x fitting/unfused); 4x metatarsals (2x L (1x near complete; 1x R proximal end, 1x ?R distal end); metacarpals x8 or x9 (1 is very fragmentary) (x6/7 from LHS, 3x near complete, 4x distal ends, including one with severe chop marks; 2x from RHS proximal ends); 2x (or 3x, one is very small ?calf) cattle talus (both/all the same side); 4x proximal phalanges (2x L, 2x R); 1x intermediate phalange (L); 1x distal phalange;</p> <p>sheep: 2x loose teeth (in wear; 1-3yr); vertebrae, 1x distal end of a humerus (R); 3x tibia distal end of tibia (1x left, 2x right), 1x proximal end of a sheep-size radius (L; ?fused to ulna at distal end);</p> <p>?pig: 1x radius and 1x ulna fused together; 2x mandible fragments (possibly L and R sides of one individual? probably adult based on wear);</p> <p>?deer: deer-size distal end of a humerus (R); 2x metatarsal (possibly same animal, L+R); deer-size distal end of a tibia (L); deer-size metacarpal (L);</p> <p>?dog-like (canid) 4x humerus (2x proximal end, 2x distal end (all RHS)); dog-like teeth in section of mandible and loose canine (possibly from same jaw);</p> <p>Butchery/chop marks noted on the long bones, the cattle-size fragments in particular; possibly gnawing/pocked marks (chewed by a ?dog), again on cattle-size long bone fragments, around the head</p>	Not closely dateable
1001	Animal bone	1	Worked fragment of curved bone, apparently broken at both ends; 76mm long on the diagonal, varying between approximately 6mm and 12mm wide from end to end; it appears to have been planed from end to end around the outside, creating at least eight plane surfaces around the outside; it is unclear what species it represents or what purpose the piece could have served	Not closely dateable
1001	Antler?	1	Worked ?antler fragment; flat and smooth piece 1.5mm thick, 22mm wide and 50mm long	Not closely dateable

Context	Type	Quantity	Description	Date range
1002	Glass	24	Dark green bottle fragments with surfaces in poor condition (2 base fragments and 22 body fragments)	17 th – 18 th century
1002	Glass	5	Flat very light turquoise thin pane fragments, including surface chips, possibly from lanterns or similar	17 th – 18 th century?
1002	Glass	4	Flat very light turquoise thin pane fragments with surfaces in reasonable condition	18 th – early 20 th century?
1002	Glass	1	Flat dark green fragment	18 th – 19 th century?
1002	Pottery	6	Tin-glazed earthenware: 4 refitting rim and body fragments from hollow-ware vessel with painted decoration in light purple and light, medium, and dark blue; 2 refitting body and base fragments from second hollow-ware vessel with very dark purple painted stripes and possible sponged light purple decoration (possibly not intentional)	Late 16 th – 18 th century
1002	Animal bone	1	?deer: 1x metatarsal (side uncertain)	Uncertain
1003/1004	Animal bone	8	Fairly large fragments of well-preserved cattle-size bone, including femoral head	Uncertain
1008	Ceramic building material	29	Fairly soft pale- to harder medium-orange earthenware roof tile fragments (no apparent evidence for peg holes, but fragment size and quantity probably too small), 8 to 12 16ths of an inch thick, comprising 10 rim fragments, 3 corner fragments, and 16 body fragments	Probably 17 th – 19 th century since similar to same from 1001 , but not closely dateable
1008	Ceramic building material	2	Orange earthenware ridge (?) roof tile (?) fragments	Probably 17 th – 19 th century since similar to same from 1001 , but not closely dateable
1008	Ceramic building material	1	Red earthenware roof tile fragment (no apparent evidence for peg holes, but fragment size and quantity probably too small), 8-10 16 th of an inch thick, rim with reduced core)	Probably 17 th – 19 th century since similar to same from 1001 , but not closely dateable
1008	Marine shell	1	Oyster valve fragment	Not closely dateable
1008	Marine shell	2	Cockle valve fragments	Not closely dateable
1008	Stone	1	Possible broken off end of a whetstone in fine grained hard grey stone	Not closely dateable
1008	Animal bone	5	1x unidentified bone (complete), 2x unidentified fragments; 2x refitting fragments of horn core	Not closely dateable

Appendix 4: Clay tobacco pipe report

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Summary

Forty-five fragments of clay tobacco pipe were recovered from the Levens Hall excavations from three possible contexts. They consisted of 39 stem fragments, two bowls and four mouthpieces. Except for the single stem from the topsoil (Context 1000) all the pieces appear to date from the 17th century. All the data recorded has been laid out in Table 3. The codes used are given in brackets in the text that follows.

Methodology

The pipe fragments were given individual numbers, by context, written in pencil, to make them easier to handle and compare with each other. All the windways were cleaned of soil and the stem-bores measured using the butt end of imperial drill bits calibrated from 5 to 8 64^{ths} of an inch (Harrington 1954). Each piece was examined to see whether it had been burnished (B) and if there were smoking residues present (S). The length of each stem (L) was recorded in millimetres; and the maximum (Max/d) and minimum (Min/d) diameters of each end of the stems and available ends of the bowls and mouthpieces was measured using callipers with an accuracy of 0.05mm. The fabric (F) of each item was examined using a binocular microscope at a magnification of x 45. Four different fabrics were identified (1-4). Fresh breaks and weathered breaks were recorded where possible. The presence of post-depositional residues (eg MOR) was also recorded. Each exposed break was tested against every other available section to find any joining pieces that might be present. Joining pieces were separately bagged within each context.

The context groups

The data recorded for each of the three groups is discussed in sequence below.

1000

The single unburnished stem from this context, 80mm in length, with a stem-bore of 5/64" is in a very dense, off-white fabric with few inclusions (Fabric 1). It is tobacco stained at one end. The very slight taper (0.25mm over an 80mm length), the bore value and fabric are typical of 19th-century products. Without further detail it is not possible to suggest where this pipe was made.

1001

The 12 stems and one heel fragment from this context appear, on grounds of stem-bore and surviving heel to be of 17th-century date. Eleven of the stems are in the same fabric (Fabric 2). This is coarse and off-white with a creamy/pink cast. There are many inclusions, mostly of both opaque and translucent rolled quartz, the larger ones vary in size from c0.5mm to 2.5mm. There are rare black, glistening fragments which look like pieces of metamorphic rock and occasional examples of rolled flint or chert. Very fine mica crystals can be seen, especially on the outer, polished surfaces. The fabric has frequent small voids. The fracture is almost hackly. One stem (No. 12) is entirely different. It is made in a very dense, pure white clay with no visible inclusions (Fabric 3); it is high-fired and has a 'glassy' fracture like stoneware. The heel fragment (No. 11) is also in a dense, well refined body (Fabric 4) with very fine opaque quartz inclusions with a rare larger, translucent grain.

Slightly more than half, seven, of the pipes are burnished and the same number (though not the identical examples) retain internal staining from tobacco residues.

Two stems (Nos. 6 and 10) join. Apart from an area of iron-staining at one end of No. 1 all the broken surfaces are clean and un-weathered.

It is not easy to estimate the minimum number of pipes represented by this group. If a typical pipe of this period is c185mm long the total accumulated length of the stems of 581mm would suggest that at least

three pipes are present. Studies of complete examples of the period show that makers trimmed pipes made in the same mould differently producing a total length range of up to 20 to 30mm (Davey *et al* 1982, 203-204). There are, however, at least three pipes present, simply based on the three fabrics. In addition, the overlap in size between many of the stems that occupy the central and bowl end of the pipe suggests a minimum number of at least six, four in Fabric 2, and one each in Fabrics 3 and 4. The absence of mouthpieces and narrower sections of stem also shows that significant lengths of pipe are absent from the collection (Table 5).

1001?

The single bowl, five mouthpieces and 25 stem fragments for this context are in Fabric 2 and appear to be of 17th-century date.

Well over half of the collection (19) is burnished but none bears any evidence of having been smoked.

Four joining pieces were found. These include one stem (No. 25) joining a mouthpiece (No. 28) and two long pieces of stem (Nos. 8 and 9) with a combined length of 170mm.

Most of the fragments, 29 out of 31, bear traces of a mineralized organic residue (MOR) on them. This has clearly occurred after burial as the deposit is found on broken surfaces, covering the exposed inclusions, as well as external ones. The cross-sections of three of the four joining pieces (8/9, 22/27, 26/28), that is six surfaces, have no residue suggesting that they may have been broken during excavation. In all these cases there is residue on the outer surfaces of the stems. The fourth (14/19) had, apparently, been broken before deposition as one of the sections bears traces of the residue.

Given a minimum length of c185mm for a whole pipe, the total accumulated length of the stems of 1342mm would suggest that at least seven are present. The evidence of the thickness/taper diagram (Table 5) brings that number up to ten.

Dating

The fabrics, thickness, taper and finish of the pipes from contexts 1000 and 1000? all suggest a 17th-century date. Study of the two bowl forms and stem-bore values present allow narrower ranges to be suggested.

The bowls

The tailed heel fragment from context 1000 (No. 11) is insufficiently preserved for a definitive identification of source and date to be made. Tailed heels of this general type are not normally found in makers in north-west England, such as in Chester or Rainford. They do occur in Broseley in the period 1670 to 1720 but are larger and wider and made in a Coal Measures pipe clay. Similar forms of heel do, however, occur in Yorkshire and Tyneside.

In Tyneside such heels are found on Parsons' Types 1 to 3 which he dates from 1630 to 1680 (Edwards 1988, 8-9, Fig. 5). The scale of the Levens Hall piece suggests it would be closest to Parsons' Type 2 dating from c1640 to 1660. Tailed heels are not the most common form in Yorkshire, especially once the 'Yorkshire Bulbous' became fully established. But they do occur regularly in groups throughout the county and are usually dated to c1640-1660 (eg White 2004, 323, 343, Fig. 92, Nos. 9 and 10).

The bowl included in the group from Context 1001? is complete (No. 31) and is stamped IB on the underneath of the heel. It is both a Rainford-style form and stamp. The bowl is an example of a heeled version of Rainford Type C (Davey 1978, 7, Fig. 3). Examples with an IB incuse heel stamp very similar to the Levens pipe were found in field walking in Rainford (Davey 1978, 3, Fig. 1, No.7) and are widely found throughout north-west England and beyond. This form was originally dated to the period 1660 to 1700, but extensive study of many more examples in good contexts has shown that they are earlier, probably beginning before 1650 and evolving into much larger forms in the 1670s. A good example, very close to the Levens pipe was recovered from excavations in Wrenthorpe, West Yorkshire (Davey 1992; White 2004, 148-148, Fig. 10.5, No. 9) and is dated to 1640 to 1660.

The stem-bore data

The two groups from Levens Hall are unusual in that their bore values lie within a narrow range and are internally consistent. There is no indication of any intrusive or residual element. Although large assemblages are needed for stem-bore dating to be used with any confidence, groups as small as 20 can provide useful estimates (Davey 1975). The determinations for the two groups of 1658.29 for Context 1001 and 1644.13 for Context 1001? agree very well with the evidence of the bowl forms present.

The evidence presented in Table 5 not only gives the best indication of minimum numbers but also demonstrates that, in general, the widest stems in Context 1001 are thicker than those in 1001?. The absence of mouthpieces and narrower portions of the stem is also clear. The thicker stems almost certainly belong to slightly later pipe forms that became the norm from the 1670s until around 1710. Therefore, Context 1001 probably dates to c1660 to 1670 and Context 1001? to c1640 to 1650.

Discussion

Relationship between the two 1001 contexts?

These two contexts, whilst very close in date, are clearly distinct. Context 1001 includes three distinct fabrics. More than half of the pieces show evidence of having been smoked, none has any mineralized organic residue. Stem-bore values include a number of 6/64" suggesting a date of around 1660 or later which agrees with the thicker stems present. The absence of mouthpieces and narrower stems implies a complex depositional history since the loss or throwing away of the pipes. This is to an extent confirmed by the presence of only 581mm of accumulated stem length against a minimum expected of 1110mm (52%).

In contrast Context 1001? which was recovered from within the cut for and underneath a water pipe within Context 1001 is entirely in one fabric and bears no evidence of smoking, despite close study under the binocular microscope. The surviving bowl and stem bore values agree on a mid-17th-century date for the group. If a minimum of ten pipes is present these would have given an accumulated length of around 1850mm. The total length recovered during the excavations was 1342mm, that is 73% of the minimum number. If the bowl is included in the calculation this data would suggest that some three-quarters of the collection has survived. This is an unusually high proportion which is supported by the presence of mouthpieces and a complete range of stem widths (Table 5). The presence of the mineralized organic residue on almost all the fragments shows that the depositional histories of the two groups was also different.

Source(s)?

The tailed heel in Context 1001 is almost certainly from Tyneside or Yorkshire and provides further evidence for trans-Pennine links already seen at Levens Hall with the John Gill find in 2011 (cf pipe report dated 5/9/11). These are rare. The very dense well-made stem in the same context (No 12) may well be from the same general area.

The actual production centre for the remainder of the finds in both 1001 contexts is more difficult to define. Although the bowl and stamp are of Rainford type the fabric (2) is not. It does not bear any of the characteristics of the pipe clays derived from the Coal Measures such as were in use in Broseley, Buckley or South Lancashire, but rather appears similar to the North Devon ball clays used in Chester, but much less well refined (Davidson and Davey 1982). Given that Rainford makers, on the evidence of the finds of Marsh rolled-stamps, may have been producing pipes in Cumbria by the early 18th century it is possible that such a move occurred earlier or that an intermediate town, such as Lancaster, that would also have required to import pipe clay, may have been involved.

The stamp is not especially helpful. Although IB marks on the front of the bowl facing the smoker are far more common than those on the heel, they are by far the most widely found single mark from the north-west and are recovered widely in Ireland and east of the Pennines (Davey 2009, 189-191; White 2004,

148-149). Although at least four contemporary Rainford makers with the initials IB are known, their relationship to the many dies present is unclear (King 1982).

It is even possible that this very common mark became a signifier of quality or veracity rather than an individual maker. The VG marks of South America (Davey 1994) and St Quentin (Leclaire and Leclaire 2008, 22; 73-76) provide a later example along with the international use of the TD moulded initials in Britain and France (eg Deloffre and Alain 2006, 54-55). The Scottish 1900 price lists include many models of TD pipes on offer by the four different firms of McDougall, White, Davidson and Waldie (Gallagher 1987) showing that the initials do not refer to an individual maker. The north-western IB may represent an earlier manifestation of this phenomenon.

Summary

The watching brief at Levens Hall produced two distinct, coherent groups of 17th-century pipes, the earlier, unsmoked, dating from c1640 to 1650 and the later, smoked, to c1650 to 1670. The two bowl fragments present appear to derive from either side of the Pennines. The source of the clay from which most of the pipes are made is unclear. Although the IB bowl is a Rainford type it is possible that all the Fabric 2 pipes were made in north Lancashire or Cumbria itself.

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Table 3 (below): Raw data from clay tobacco pipes

Context	/No	S	B	M	8	7	6	5	T	F	L	Max/D	MOR	Min/D	MOR	S/MOR	B	S	Comment
1000	1	1						1	1	1	80	7.05	0	6.80	0	0	0	1	Tar stained; almost certainly a 19th-century piece
													0		0	0			
1001	1	1			1				1	2	65	9.70	0	8.55	0	0	1	1	
	2	1			1				1	2	48	8.05	0	6.80	0	0	1	1	
	3	1			1				1	2	40	8.70	0	7.85	0	0	1	0	
	4	1			1				1	2	27	7.80	0	7.60	0	0	1	0	
	5	1				1			1	2	55	9.15	0	8.15	0	0	1	0	
	6	1				1			1	2	45	10.50	0	9.65	0	0	0	1	Joins 10
	7	1				1			1	2	38	10.65	0	10.35	0	0	1	0	
	8	1				1			1	2	37	9.10	0	8.55	0	0	1	1	
	9	1				1			1	2	35	8.30	0	8.05	0	0	0	0	
	10	1				1			1	2	30	9.65	0	9.05	0	0	0	1	Joins 6
	11		1			1			1	4	37	c9.45	0	8.85	0	0	0	1	Tailed heel
	12	1					1		1	3	79	10.10	0	8.35	0	0	0	1	
	13	1					1		1	2	45	9.90	0	9.25	0	0	0	0	
		12	1		4	7	2		13		581						7	7	581/13 = 44.69
1001?	1	1			1				1	2	61	7.45	1	6.40	0	1	1	0	
	2			1	1				1	2	32	6.30	1	6.20	1	1	0	0	
	3	1			1				1	2	28	6.35	1	5.80	1	1	0	0	
	4			1	1				1	2	25	6.55	1	5.95	0	1	0	0	
	5	1			1				1	2	21	7.70	1	7.55	0	1	1	0	
	6	1				1			1	2	6	6.80	1	6.50	0	1	0	0	
	7	1				1			1	2	103	8.60	0	7.40	0	0	1	0	
	8	1				1			1	2	90	9.45	0	8.40	0	1	1	0	Joins 9
	9	1				1			1	2	80	8.40	0	7.10	0	1	1	0	Joins 8

10	1			1	1	2	82	7.15	1	6.15	1	1	1	0	
11	1			1	1	2	71	8.25	0	7.65	0	1	1	0	
12	1			1	1	2	63	8.75	0	8.10	0	0	1	0	
13		1		1	1	2	60	6.50	0	5.95	0	1	0	0	
14	1			1	1	2	52	8.05	0	7.55	1	1	1	0	Joins 19
15		1		1	1	2	51	6.20	1	5.90	1	1	0	0	
16	1			1	1	2	43	8.10	0	7.45	0	1	1	0	
17	1			1	1	2	43	6.90	1	6.55	1	1	1	0	
18	1			1	1	2	43	7.70	1	7.10	1	1	1	0	
19	1			1	1	2	42	7.55	0	6.15	1	1	1	0	Joins 14
20	1			1	1	2	40	6.85	0	6.00	0	0	0	0	
21	1			1	1	2	37	8.45	1	7.60	1	1	1	0	
22	1			1	1	2	37	7.85	0	6.65	0	1	0	0	Joins 27
23	1			1	1	2	36	8.35	1	7.90	1	1	1	0	
24	1			1	1	2	32	7.45	1	7.30	0	1	1	0	
25	1			1	1	2	29	6.65	1	6.50	1	0	1	0	
26	1			1	1	2	29	6.60	1	6.40	0	1	0	0	Joins 28
27	1			1	1	2	29	6.65	0	6.35	0	1	0	0	Joins 22
28		1		1	1	2	26	6.40	0	5.60	0	1	0	0	Joins 26
29	1			1	1	2	26	8.90	0	7.95	1	1	1	0	
30	1			1	1	2	25	7.95	1	7.45	0	1	0	0	
31		1		1	1	2	11	c9.55	/	?	1	1	1	0	IB stamp in relief on base of bowl
	25	1	5	6	25		31	1353					19	0	1342/30 = 44.73 (ie not including bowl)
1000		1					1	1						0	1
1001		12	1		4	7	2	13					7	7	Mean bore = 7.154/64"
1000?		25	1	5	6	25		31					19	0	Mean bore = 7.516/64"
		38	2	5	10	32	2	1	45				26	8	
															X = 1931.85 x 38.26Y

Table 4 (below): Clay tobacco pipe widths and dates

Context	/No	L(mm)	Max/w	Min/w		Formula	Context	X	Y	equals	date	
1001	2	48	8.05	6.80		$X = 1931.85 \times 38.26Y$	1001	1931.85	-	(38.26×7.15)	273.56	1658.29
1001	4	27	7.80	7.60		$X = 1931.85 \times 38.26Y$	1001?	1931.85	-	(38.26×7.52)	287.72	1644.13
1001	3	40	8.70	7.85		X= date						
1001	9	35	8.30	8.05		Y= mean bore in/64"						
1001	5	55	9.15	8.15								
1001	12	79	10.10	8.35								
1001	8	37	9.10	8.55								
1001	1	65	9.70	8.55								
1001	11	37	/	8.85	Tailed heel							
1001	10	30	9.65	9.05	Joins 6							
1001	13	45	9.90	9.25								
1001	6	45	10.50	9.65	Joins 10							
1001	7	38	10.65	10.35								
1001?	28	26	6.40	5.60	Joins 26							
1001?	3	28	6.35	5.80								
1001?	15	51	6.20	5.90								
1001?	13	60	6.50	5.95								
1001?	4	25	6.55	5.95								
1001?	20	40	6.85	6.00								
1001?	10	82	7.15	6.15								
1001?	19	42	7.55	6.15	Joins 14							
1001?	2	32	6.30	6.20								
1001?	27	29	6.65	6.35	Joins 22							
1001?	26	29	6.60	6.40	Joins 28							
1001?	1	61	7.45	6.40								

1001?	25	29	6.65	6.50	
1001?	6	6	6.80	6.50	
1001?	17	43	6.90	6.55	
1001?	22	37	7.85	6.65	Joins 27
1001?	18	43	7.70	7.10	
1001?	9	80	8.40	7.10	Joins 8
1001?	24	32	7.45	7.30	
1001?	7	103	8.60	7.40	
1001?	30	25	7.95	7.45	
1001?	16	43	8.10	7.45	
1001?	5	21	7.70	7.55	
1001?	14	52	8.05	7.55	Joins 19
1001?	21	37	8.45	7.60	
1001?	11	71	8.25	7.65	
1001?	23	36	8.35	7.90	
1001?	29	26	8.90	7.95	
1001?	12	63	8.75	8.10	
1001?	8	90	9.45	8.40	Joins 9
1001?	31	11	/	?	IB stamp in relief on base of bowl

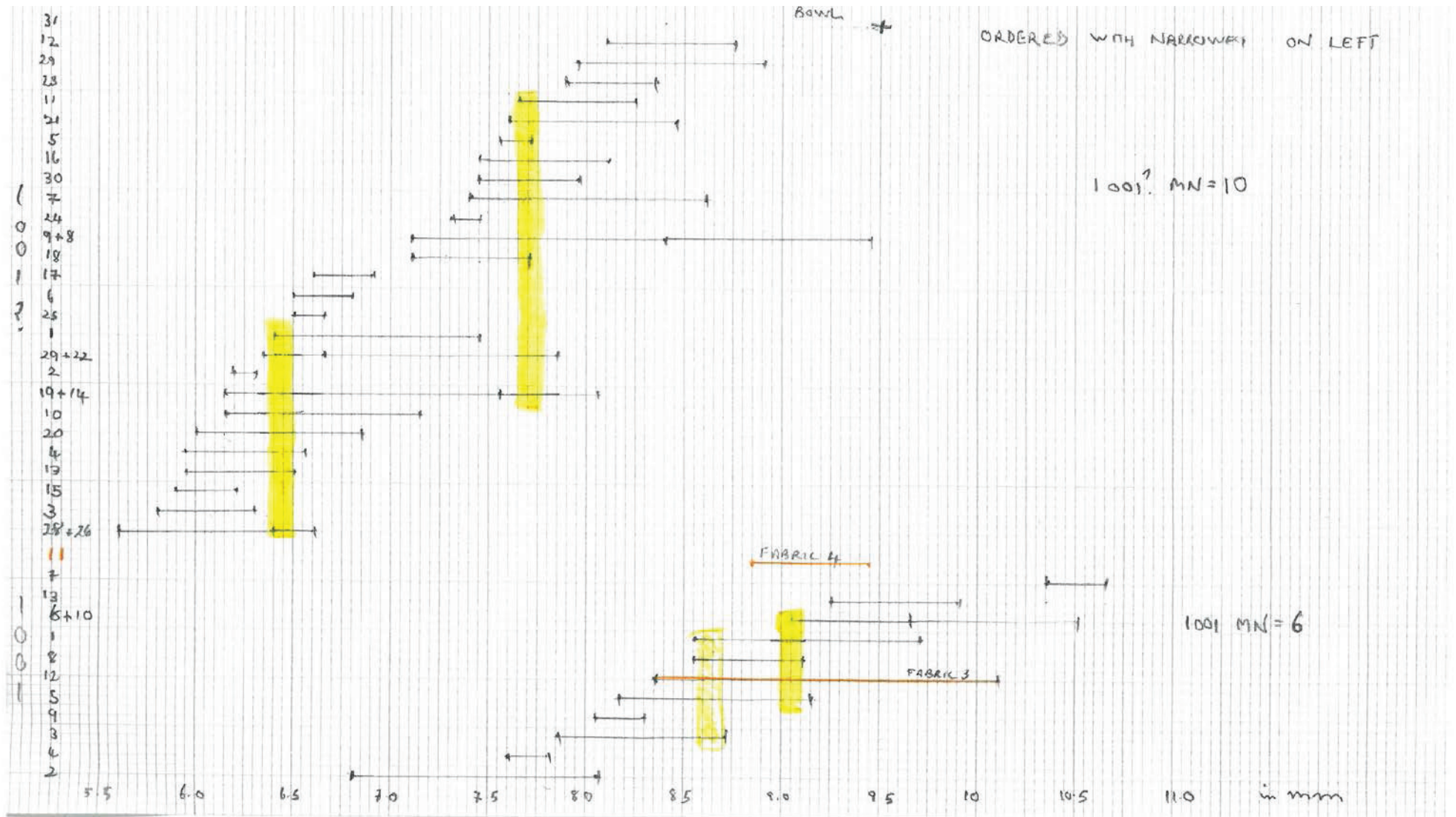


Table 5: Maximum and minimum widths of stem ordered with narrowest on left (fragment No. on Y axis, stem width in mm on X axis)