

ICE HOUSE, CARLTON TOWERS, CARLTON,
GOOLE, NORTH YORKSHIRE

ARCHAEOLOGICAL EXCAVATION,
INVESTIGATION AND RECORDING



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On behalf of

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**ICE HOUSE, CARLTON TOWERS, CARLTON, GOOLE, NORTH YORKSHIRE:
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EXECUTIVE SUMMARY

In March 2017, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Lord Gerald Fitzalan Howard, on behalf of the Beaumont Trustees, to undertake a programme of archaeological excavation, investigation and recording at an ice house in the grounds of Carlton Towers, Carlton, near Goole, North Yorkshire (NGR SE 64828 23821 centred). The extent of the archaeological work was determined following discussions between Lord Gerald Fitzalan Howard and Ed Dennison.

Documentary evidence demonstrates that the ice house was present by January 1772, when it was being filled with ice, and it was most probably constructed in c.1770-71 as part of the wider works to the estate undertaken by Thomas Stapleton (c.1739-1821). The ice house lies some 120m west of the main house. No ice source, such as deliberately constructed shallow ice ponds, have been identified - it is possible that the main lake, probably built as part of the same later 18th century works as the ice house, provided the source, but it lies some distance away. The distance of the ice house from the main house suggests that filling or 'ice-ting' would have been undertaken by the estate gardening staff.

The original 'cup and dome' form of the Carlton Towers structure is typical of an ice house built in the second half of the 18th century on a large country estate provided with lighter sandy soils. Allowing for an entrance passage that was high enough to walk into, the total internal height of the ice house from the top of the dome to the base of the ice well was probably something in the order of 4.8m. The external walls of the ice well were rendered to improve waterproofing. The brickwork recovered during the excavation of the ice well suggests that there was a secondary slate roof or covering over the dome, as recommended in the later 18th century, with a covering of soil probably heaped over this. There would have been a short vaulted passage to the entrance, which was probably also covered with soil - the entrance faced north-east, away from the direct rays of the sun. There may also have been a secondary opening or manhole in the top of the dome, equipped with doors. The main entrance would also have had a door, the surround of which could have been enhanced by the use of stone dressings.

The ice house was still extant in the mid 19th century, although to what extent it remained in use is currently uncertain. The small finds assemblage uncovered during the excavation suggests that the ice well was deliberately backfilled in a single operation in the later 19th century, perhaps after c.1868. It is unlikely that the material used for this backfilling would have been brought any great distance, and therefore a small quantity of medieval pottery recovered from the fills does indicate some level of activity within the area during this period.

1 INTRODUCTION

- 1.1 In March 2017, Ed Dennison Archaeological Services Ltd (EDAS) were commissioned by Lord Gerald Fitzalan Howard, on behalf of Beaumont Estates, to undertake a programme of archaeological excavation, investigation and recording at an ice house in the grounds of Carlton Towers, Carlton, near Goole, North Yorkshire (NGR SE 64828 23821 centred). The extent of the archaeological work was determined following discussions between Lord Gerald Fitzalan Howard and Ed Dennison.
- 1.2 The impetus for the archaeological work was an assessment of the designed landscape at Carlton Towers produced in May 2016 by the Yorkshire Gardens Trust (Wickham & Ratcliffe 2016). This assessment identified the ice house as being part of extensive later 18th century alterations undertaken to the gardens in the immediate vicinity of the house. At the time of the assessment, the ice house was completely filled with soil, with only a small area of the surviving upper part being visible. Lord Gerald Fitzalan Howard expressed a desire to have the ice house excavated and exposed as a feature within the gardens, and the ice house was subsequently excavated and recorded by EDAS in March 2017.

2 LOCATION AND DESCRIPTION

- 2.1 The ice house lies some 120m west of Carlton Towers, within a belt of woodland largely comprising self-seeded sycamores, set between the house and the rear plots of the houses fronting onto the A1041 High Street through Carlton (see figures 1 and 2). The gardens and park surrounding Carlton Towers lie in the flat valley landscape of the River Aire, the underlying geology being sandstone (Sherwood Sandstone Group) overlain with glacial tills and drift (Lake Humber deposits). The majority of the park is overlain with clays and silts, giving rise to slowly permeable, seasonally wet, loamy and clayey soils. The northern parkland has bands of sand and gravel forming freely draining, acid and sandy soils. Some areas around the lake are wet, very acid, sandy and loamy soils (Wickham & Ratcliffe 2016, 10). The uppermost surviving part of the ice house is set at an elevation of c.7m AOD. At the start of the works, only a small part of the ice house remained visible. The ice house is not subject to any statutory protection, but the wider gardens and park lie in the Selby District Local Landscape Character Area: River Aire Corridor (Wickham & Ratcliffe 2016, 10).

3 METHODOLOGY

- 3.1 The methodology for the work was defined following conversations between Lord Gerald Fitzalan Howard and Ed Dennison. The aim of the work was to expose the fullest extent possible of the ice house's structure, so as to better understand its function and form. Following exposure, any necessary conservation works would then be undertaken, further tree clearance carried out and the ice house maintained as a permanently visible feature within the gardens. An initial inspection was made to view the remains of the ice house, accompanied by the Estate gardener Simon Gash in March 2016. This identified a number of saplings which needed to be carefully removed, and two stumps and associated roots which needed to be reduced in size, together with the removal of ground cover such as ivy.
- 3.2 Following vegetation clearance, the removal of topsoil was undertaken under archaeological supervision using a tracked mini-excavator using a straight-edged toothless bucket. Once the extent of the surface remains had been carefully

defined, the excavator was positioned so that the interior of the ice house could be emptied. Although a depth of c.2.00m of fill was removed to one side of the interior, it proved impossible to remove any more due to the arm length of the excavator. A plan and section of the ice house at a scale of 1:20 were therefore made, showing those parts that had then been exposed. This work was done on 7th-8th March 2017. Following further discussions, it was decided to completely empty the interior of the ice house. This was undertaken by hand over two further days (21st-22nd March 2017) by Simon Gash and Shaun Richardson of EDAS. The volume of material removed by hand measured a maximum of 3.80m in depth by 2.80m in diameter. Once the interior of the ice house had been completely cleared, the 1:20 plan and section were amended.

- 3.3 Following standard archaeological procedures, each discrete stratigraphic entity (e.g. a cut, fill or layer) was assigned an individual three digit context number. A total of five contexts were recorded, principally the different fills of the ice house (see Appendix 1); deposits or layers are identified in the following text using round brackets. In-house recording and quality control procedures ensured that all recorded information was cross-referenced as appropriate. A detailed photographic record was maintained through the work using a digital camera with 12 megapixel resolution.
- 3.4 The artefacts, comprising a small assemblage of mainly pottery and glass recovered mostly from the interior of the ice house, were assessed and dated where possible; Appendix 2 provides the appropriate specialist report. All artefacts were returned to Lord Gerald Fitzalan Howard at the end of the project. Two representative bricks were also removed from the body of the ice house for assessment by a ceramic buildings material specialist. No archive for the project was deposited with an appropriate organisation, although site notes, plans and photographs have been retained by EDAS (site code CIH 17).

4 OUTLINE ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The Ice House in Britain during the 18th and 19th centuries

- 4.1 The construction of structures in which to store ice has a long and complex history, stretching back to the ancient world. However, for the purposes of this report, only the most recent part of their history is considered.
- 4.2 There is some scarce evidence for late medieval ice houses in Britain, all apparently associated with monasteries, whilst later in the 16th century, a form of ice house appears to have been introduced into the grounds of estates associated with large houses (Beamon & Roof 1990, 17). Nevertheless, the earliest well-documented ice houses or similar structures are all associated with the royal household (Ellis 1982, 2; Beamon & Roof 1990, 18). Buxbaum (2014, 8) states that the earliest recorded purpose-built English 'snow well' lined with brick dates from 1619, when James I had one dug at Greenwich. In the 1660s, several 'snow wells' were dug in London, including five for the royal household. These were generally cone-shaped brick structures covered by a thatched roof above ground (Buxbaum 2014, 11).
- 4.3 Ice houses thus became very fashionable, but despite these early royal examples, they were still regarded as a luxury in the 1750s because of the high cost of construction. As building techniques improved and cheaper materials became available, more were built; by 1786, an ice house built in Inveraray, Scotland, took four months to construct. By the end of the 18th century, many landowners,

including the aristocracy, had built ice houses (Beamon & Roof 1990, 19; Oxford Archaeological Unit (OAU) 1995, 4). Ice was obtained from adjacent ponds and lakes, or alternatively shallow ponds were sometimes dug close to the ice house for the sole purpose of supplying it with clean ice during the winter.

- 4.4 The commonest type of ice house built during this period was what is described as the 'cup and dome' form, often constructed in brick, with a dome or vault covering the ice well or chamber, with sides sloping downwards and inwards to a sump or drain at the base (see figure 3). The extent to which the ice well was sunk into the sub-soil was dependent upon the nature of the ground; in heavy clay or strong loams, it was raised as far above the ground surface and water table as possible so as to facilitate drainage, but in sandy soils, chalk or gravel, the ice well could be sunk to a substantial depth. The dome above was often covered with an earth mound, and was approached by a vaulted passage, again sometimes covered with earth (Beamon & Roof 1990, 56-59 & 86).
- 4.5 The 'cup and dome' form had several advantages. It was structurally enormously strong and very effective in withstanding the underground stresses. The sloping sides encouraged the drainage of melt water into the sump. Ease of loading was also an important consideration, and the doors of these type of ice houses were built just below or into the springing line of the dome, so at least two thirds of the volume of the ice well was below the waist level of people standing in the passage. In this way, ice could be tipped down into the well from passage level, making it easier to fill than if ice had to be manually stacked or piled up. Straw was most commonly used as an insulating material, sometimes tied into bundles and placed between the side walls of the well and ice as it was being loaded; some wells were provided with a timber lining, held in place by iron pegs. Others had a covered manhole structure in the roof of the dome or vault which could be used for loading. When the ice house was full, the ice was covered with straw or reeds before the external door was shut. Due to the sloping sides of the well, any melting ice slid down the sides, compacting and consolidating under the weight of the ice above, so maintaining a minimum surface area and facilitating its continual freezing. However, the main disadvantage of this form of structure remained the expense of construction (Dennison 1989; Beamon & Roof 1990, 59, 61-62 & 110-112).
- 4.6 As water conducts heat more efficiently than air, wet ice melts more quickly than dry ice, and so a great deal of consideration was given to eliminating damp from the interior of the ice house. Many early designers preferred a northerly aspect for the design of their ice houses, so that passages, porches and doors faced away from the direct rays of the sun; later designs sometimes had long entrance passages, incorporating a series of doors or changes of angle (Beamon & Roof 1990, 93-94). Writing in 1786, Phillip Miller recommended that the site of an ice house should be open to the sun and wind, and not shaded, so as to prevent dampness (Buxbaum 2014, 20). Miller also advised that, when waterproofing an ice house, the dome or vault should ideally be covered by a second brick arch, or, if covered by a second roof of slates or tiles, it should have a two feet thick layer of reeds between, plastered over with lime and hair. A second roof of slates, then covered in earth, was a common feature of ice houses. One could also puddle with clay behind the walls of the ice well, or build hollow walls or indeed walls with a cavity between them (Beamon & Roof 1990, 88). It is suggested that cavity walls were common by the end of the 18th century, but rare before the mid to late 18th century. Cement waterproofing was also in use by the end of the 18th century (OAU 1995, 12 & 17).

- 4.7 At the turn of the 19th century, America began to export ice, and within 50 years it was being shipped as far as Europe and beyond. In Britain, the importation of American, and then Norwegian, ice coincided with the expansion of the railway network, meaning that in towns and cities people no longer had to source the ice themselves. Mechanically-produced ice was first sold in Britain during the 1860s, and by the 1920s many large houses had had fashionable paraffin or electric refrigerators installed. However, by this date, most ice houses had long since been abandoned, principally due to two factors. Firstly, the British climate had changed; the rise in mean temperatures after the mid 19th century meant that local sources of ice no longer froze for long enough to provide enough ice with which to stock the ice house. Secondly, during and after the First World War, there was an insufficient number of staff on large country estates to undertake the laborious task of filling the ice house. Many abandoned ice houses were subsequently backfilled, or used as a handy location into which to dump rubbish (Beamon & Roaf 1990, 3-4, 138-139 & 149).

The Ice House at Carlton Towers

- 4.8 A detailed assessment of the development of the gardens and park at Carlton Towers has recently been undertaken by the Yorkshire Gardens Trust (Wickham & Ratcliffe 2016) and the following text is drawn entirely from this assessment. It concentrates on the 18th and early 19th centuries, those periods most relevant to the ice house.
- 4.9 The estate has been owned by the Stapleton family since the late 13th century. In 1394, Carlton passed to Brian Stapleton (c.1385-1418) who was the first of the family to live there. The current Hall dates from 1614 and was built by Elizabeth Stapleton (née Pierpoint), the granddaughter of Elizabeth Cavendish (Bess of Hardwick), after the death of her husband, Richard. The family maintained their Catholic faith and so suffered the full weight of recusancy fines, but this did not impede the development of the estate throughout the 17th and 18th centuries.
- 4.10 In 1750, Thomas Stapleton (c.1739-1821), a minor, inherited the estate, and Carlton was managed by his mother, Winifred, until he reached his majority. Once he reached his majority, his tenure of over 70 years had a significant impact on the landscape surrounding the house, largely shaping the landscape which still exists today. Between 1765 and about 1784, he created the landscape park, lake and walled kitchen garden, employing the designers Richard Woods and Thomas White. At the start of the 19th century, the land around the Hall and park was enclosed, replacing the ancient field strips. Knowledge of what was undertaken during this period is greatly enhanced by a substantial body of surviving archival material.
- 4.11 In 1765, Thomas Stapleton commissioned a plan to improve the estate from the designer Richard Woods. In the estate archives, there is also an undated plan from Thomas White Senior that is thought to be of a similar period. There has been much debate as to what was actually implemented from these two plans. However, using two available maps that pre- and post-date the plan by Woods, and information from the garden accounts and other archive material, it has proved possible to confirm those parts of the plan that had been implemented by around 1773.
- 4.12 By 1767, a hothouse had been installed within the walled kitchen garden and by c.1771 there may have been two, one inside the walled area and another outside, against the north external wall. The other feature on the White and, possibly

Woods, plans is a Menagerie. No further reference has been found for this so far in the surviving documentation; however, it is likely that if it was constructed, it would be between 1765 and 1773. There is no reference in the detailed garden accounts, which finish in 1779, to the lake and other wider landscaping as shown on the two plans. However, other documentation suggests that this wider landscaping within the park had taken place by the early 1780s.

- 4.13 The ice house appears to have been constructed as part of these later 18th century works. On the 23rd January 1772, the garden accounts contain an entry “& p. Mr Clark his Bill for the Ice House filling - £1 14s 1d”, suggesting that it was already complete by that date, and so it was perhaps built in 1771. The ice house does not appear on either Woods’ or White’s plan, although Woods is known to have designed three other ice houses. The ice house is however clearly shown on the 1853 Ordnance Survey 6” to 1 mile map (see figure 4), as a circular feature named “Ice House”, within a belt of woodland to the west of the house. It does not appear on any later Ordnance Survey or estate maps.

5 ARCHAEOLOGICAL INVESTIGATION

Structural Description

- 5.1 A description of the ice house is given below, beginning with the location and plan form, the structure and materials, then proceeding to the interior. The description refers to the plan and section (see figure 5).
- 5.2 As has been already noted above, the ice house is located some 120m west of Carlton Towers itself, within a belt of woodland largely comprising self-seeded sycamores, set between the house and the rear plots of the houses fronting onto the A1041 High Street through Carlton. Following clearance of vegetation, the structure of the ice house was seen to comprise two concentric circles or rings of brickwork, the inner ring forming the ice well; the average gap or cavity between the two rings is 0.62m (see plate 1). The ice house was once of the common ‘cup and dome’ form described above, although the upper part of the structure above-ground has been largely demolished. Most parts of the structure were built from brownish-red handmade bricks (average dimensions 260mm by 130mm by 60mm), set with a very pale brown lime mortar and laid in an irregular bonding pattern, with large numbers of headers interspersed with stretchers to each course. The sump at the base of the ice well is built from unmortared bricks, laid almost entirely as headers, in order to aid drainage. Many of the bricks are tapered to make the circular form of the sump easier to construct; they have average dimensions of 255mm by 120mm to 85mm by 50mm.
- 5.3 The outer ring of brickwork has an external diameter of 6.00m and is itself 0.24m wide (the length of a single brick); it survives to a depth of at least 0.30m. The inner ring, forming the well, has an external diameter of 4.30m and is itself 0.75m wide; the upper part has been rather crudely repaired in the past using a concrete capping, presumably to prevent the truncated remains from weathering and decaying further. To the southern side, the outer face of the well preserves sections of a smooth sandy render (see plate 2). The outer ring is broken to the north-east side by the former entrance to the ice house, formed by a brick structure measuring 1.15m in length by 1.80m in width (see plate 3). The entrance would once have had a doorway to the north-east side, and have been covered by a vaulted passage leading to the ice well. The entrance passage is shorter than might be expected; Buxbaum (2014, 16-17) suggests that the vaulted passage was typically ten feet (c.3.30m) long. Excavation of a small test pit to one side of the

entrance revealed the structure to extend to 0.70m below ground level, with stepped footings, although there was no indication that it had ever extended further to the north-east in plan. Several worn bricks to the upper part of the structure may form the remains of a floor surface. In addition, there were several moulded stones in the vicinity of the ice house that might once have formed part of an external door surround; in the later 18th century, neo-classical facades were sometimes given to ice houses on large country estates, whereas through the early to mid 19th century, Egyptianate, Chinese or rustic styles became popular (Beamon & Roaf 1990, 27 & 29-30).

- 5.4 The outer face of the ice well is slightly flattened where it meets the entrance. Although the walls of the well are 0.75m wide, no clear traces of an internal cavity were uncovered during the excavation. The internal sides of the well slope very steeply downwards to meet the base of the interior; the internal diameter decreases from 2.80m to 2.15m over a vertical height of 2.80m (see plates 4 and 5). At 2.80m below the surviving top of the inner ring, the sides of the well step inwards by 0.40m to form the sump of the ice house. This sump has an internal diameter of 1.36m, and a total depth of 1.00m (see plate 6). At its base, the sump gives way to a clean sand (see below). The sump would once have been covered by a timber grating or perforated iron plate, and might once have been filled with stones or clinker to aid drainage, although no such material was recovered during the excavation. The form of the sump at Carlton Towers is typical for what would be expected of a later 18th century 'cup and dome' ice house placed in a lighter sandy soil (Beamon & Roaf 1990 100 & 103; OAU 1995, 9-10). The dry orange sand (005) exposed at the base of the sump is likely to be an artificial deposit laid down to enhance the drainage of the ice well.

Results from the Excavation

- 5.5 As noted above, the majority of the interior of the ice house was excavated by hand over a period of two days. At the commencement of the excavation, only the uppermost courses of a small part of the ice house remained visible. Careful clearance to reveal the extent of the surface remains involved the removal of a mid-brown sandy silt (001), containing frequent inclusions of rounded pebbles (up to 0.10m across) and infrequent handmade red brick rubble. A number of *ex situ* finds were recovered during the clearance works (see below).
- 5.6 When excavation of the ice house's well began, it was found that the mid-brown sandy silt (001) extended to 1.80m below the level of the top of the sides. The sandy silt overlay a similar deposit (002), but this was drier and contained far more frequent inclusions of handmade red brick rubble set with a lime mortar; the brick rubble was often hard-packed, with substantial voids between into which the sandy silt had fallen. The brick rubble was sometimes in the form of two to three courses of brickwork mortared together, often with pieces of Welsh slate mortared to one surface, representing parts of the former dome over the ice house.
- 5.7 The sandy silt with frequent brick rubble (002) continued to 2.80m below the level of the top of the sides, to the point where they stepped inwards to form the ice house's sump. The sump, which was 1.00m deep, was largely filled with a similar deposit (003) to the drier sandy silt (002). In the base of the sump, the latter deposit overlay a 0.10m deep layer of very dry light-brown sandy silt (004) with frequent inclusions of dried powdery wood. Beneath the light-brown sandy silt (004), and extending beneath the brickwork at the base of the sump, there was a layer of clean, dry, orange sand (005).

Summary of the Finds Assessment

- 5.8 The following represents a summary of the results obtained from the finds assessment, with the more detailed report appearing as Appendix 3. The assemblage comprised seven material categories, namely pottery, clay pipe, shell, glass, ceramic building material, stone building material and metalwork. With the exception of nine *ex situ* artefacts, the assemblage was recovered from the fills of the ice house well and sump.
- 5.9 The most numerous category within the assemblage was pottery, of which a total of 27 sherds were recovered. The earliest material comprised seven sherds of late Humberware from the upper fill of the ice house well (001), including a cistern rim and a handled bowl, dating to the 15th/16th centuries. However, the majority of the pottery was of 18th through to early 20th century date. A cross-contextual join, two sherds of a transfer-printed Whiteware plate, was recorded between the upper and lower fills of the ice house well (001) and (002). Although non-joining, two sherds of white-dipped ware from the same two contexts *may* be from the same vessel.
- 5.10 A small transfer-printed Whiteware ointment pot recovered from the fill of the sump (003) is worthy of note. The pot is complete with the following writing on the body: “*HOLLOWAY’S OINTMENT. FOR THE CURE OF GOUT AND RHEUMATISM, INVETERATE ULCERS, SORE BREASTS, SORE HEADS, BAD LEGS, &c. 1/1½, 2/9, 4/6, 11/22/, & 33/, PR POT, MANUFACTURED BY THE PROPRIETOR. 533 OXFORD ST. LONDON*” with an image of a seated woman (possibly Hygeia, the goddess of health) in a robe, a snake entwined around a column (possibly the rod of Asklepios) to her right and a small child (possibly Hygeia’s brother, Telesphorus, the demi god of convalescence) to her left who carries a banner “*NEVER DESPAIR*”. Thomas Holloway began to market his ointments around 1837. As business progressed during the late 19th and early 20th centuries, trading both in Britain and the United States, production moved to various premises in London including 533 Oxford Street between 1868 and 1881. Although the business moved to 78 Oxford Street in 1881, the pots continued to have the 533 Oxford Street address.
- 5.11 In the same context (003), two sherds of a late 19th/early 20th century, pale green, mould-made, blob-top bottle were non-joining but are considered to be the same vessel; one bears the name “H. KITCHING GOOLE”. The bottle was probably used for soft drinks or waters. In 1879, an H Kitching produced a patent for a bottle stopper (*The Chemist and Druggist*, April 15th 1880, p158), although this may not be the same person.
- 5.12 In terms of the other finds categories, the metalwork comprised nails/bolts, wall hooks, hinge pivots, looped and eyed spikes and a possible angle tie. All are multi-purpose fittings with a variety of functions including for binding timbers, suspending shutters, doors or gates, and attaching timbers to brickwork and masonry. A number of fragments of pantile and Welsh grey-blue roof slate were also recovered.

6 DISCUSSION

- 6.1 Documentary evidence suggests that the ice house was present by January 1772, when it was being filled, and it was most probably constructed in c.1770-71 as part of the wider works to the estate undertaken by Thomas Stapleton (c.1739-1821).

- 6.2 Although Ellis (1982, 12) states that the distance between an icehouse and the source of the ice was of little consequence, Beamon and Roof (1990, 85) argue that in terms of siting, the majority of ice houses are placed closer to their ice source than to the house they served, as filling them was a uncomfortable and back-breaking operation. At Carlton Towers, the ice house lies some 120m west of the house, which begs the question, where was its ice source? It is possible that the main landscape lake, probably built as part of the same later 18th century works as the ice house, provided the source of ice, but it lies some 400m south of the ice house, further away than the main house. Of course, ice could have been carted from the lake, but there may have been specially-constructed shallow ice ponds nearer to the ice house which have since been lost; these were commonly constructed on larger estates to provide a clean source of ice for the ice house. The distance of the ice house from the main house suggests that filling or 'ice-ting' would have been undertaken by the estate gardening staff.
- 6.3 The original 'cup and dome' form of the Carlton Towers structure is typical of an ice house built in the second half of the 18th century on a large country estate provided with lighter sandy soils. The very earliest examples of this form date from the early 18th century, but even quite early examples from the mid 18th century already make use of a cavity wall and cement waterproofing (OAU 1995, 17). According to the sizes given by Beamon and Roaf (1990, 67), the ice house falls into the range of what would be considered medium-sized. Allowing for an entrance passage that was high enough to walk into, the total internal height of the ice house from the top of the dome to the base of the ice well was probably something in the order of 4.8m. The exterior walls of the ice well were also rendered to improve waterproofing. The brickwork recovered during the excavation of the ice well which has Welsh slate mortared to it suggests that there was a secondary slate roof or covering over the dome, as recommended in the later 18th century, with a covering of soil probably heaped over this. There would have been a short vaulted passage to the entrance, which was probably also covered with soil, and the entrance faced north-east, away from the direct rays of the sun. There may also have been a secondary opening or manhole in the top of the dome, equipped with doors. The main entrance would also have had a door, the surround of which could have been enhanced by the use of stone dressings.
- 6.4 Despite the above, there are several features of the ice house which appear either to be less common or which require further explanation. The entrance passage is shorter than would normally be expected, and there is no convincing evidence that it ever extended further to the north-east. Secondly, at 0.62m wide, the cavity between the ice well and the outer ring of brickwork is unusually wide. Normally, any cavity would be quite narrow, and often incorporated into the walls of the ice well itself (Beamon & Roaf 1990, 100-101); the walls of the ice well at Carlton Towers are easily thick enough to have done so, but no evidence of such a cavity was exposed during the excavation, unless it had been obscured by the later concrete capping. In the early decades of the 19th century, some wider cavities of between 0.35m and up to 0.60m are quoted (Beamon & Roof 1990, 5, 95 & 101; Buxbaum 2014, 20), so it may be that the Carlton Towers ice house is an early surviving example of a structure with such a wide cavity. Alternatively, rather than rising fully over the dome or vault of the ice well to form a secondary arch, the outer ring of brickwork may have risen only a relatively short distance to support the base of an external roof structure which has since been lost.
- 6.5 The 1853 Ordnance Survey 6" to 1 mile map demonstrates that the ice house was still extant in the mid 19th century, although to what extent it remained in use after this is currently uncertain. The small finds assemblage uncovered during the

excavation suggests that the ice well was deliberately backfilled in the later 19th century; in particular, the ointment jar from the fill of the sump (003) indicates a date after c.1868. It is tempting to see the dried powdery wood contained within the light-brown sandy silt (004) exposed in the very base of the sump as the remains of a timber grid which had slowly collapsed into the sump itself during a period of extended disuse. At least part of the dome over the ice well was deliberately pushed into the sump, filling the sump itself and forming a deposit (002) in the lower part of the wall. The remainder of the well was then backfilled with soil (001), and any surviving superstructure also demolished; the cross-contextual join and possible same vessel within contexts (001) and (002) implies a rapid back-filling.

- 6.6 It is unlikely that the material used to backfill the ice well would have been brought any great distance, and so, despite the small quantity recovered, the medieval pottery does indicate some level of activity within the area during this period.

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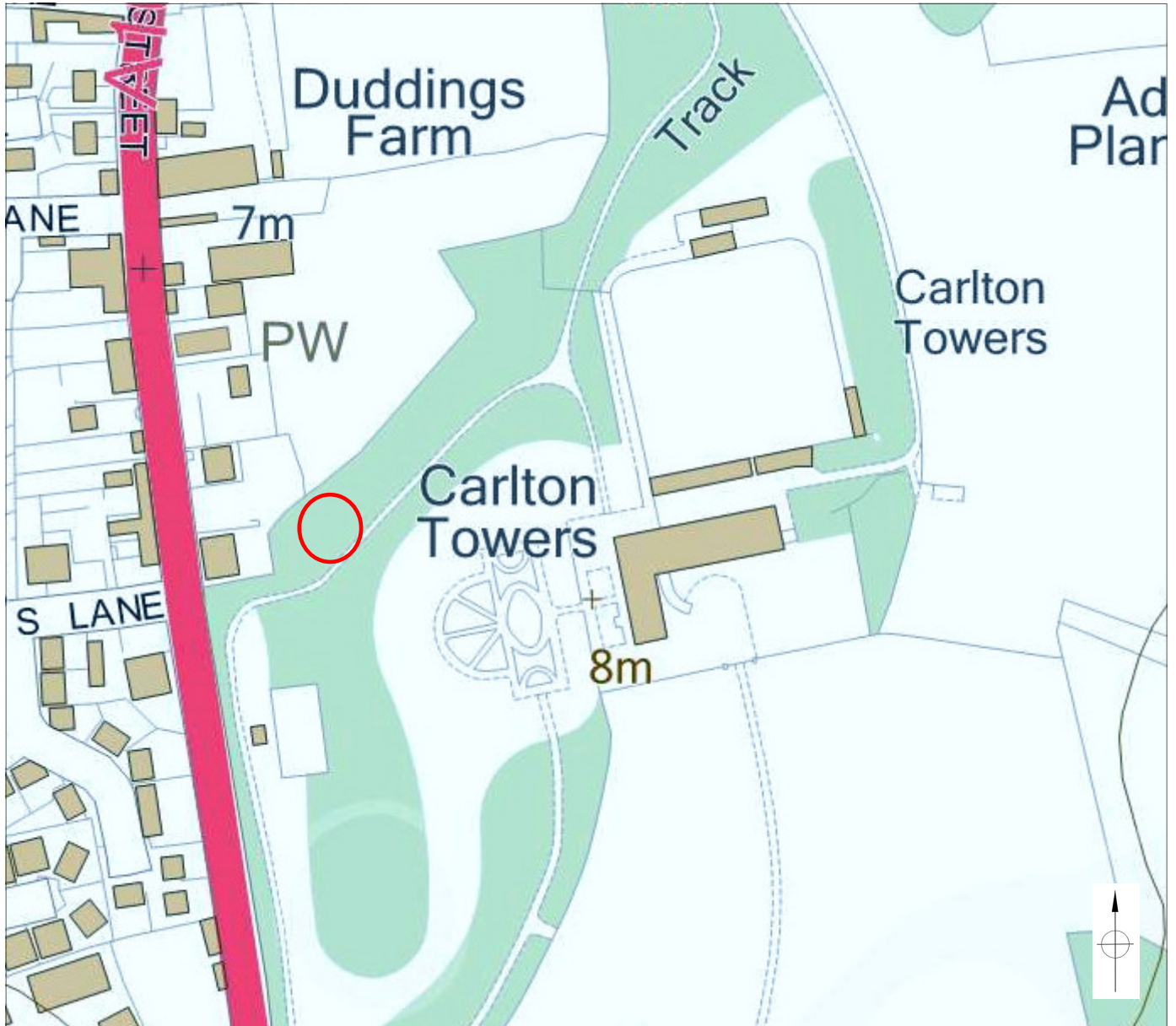
8 ACKNOWLEDGEMENTS

- 8.1 The archaeological work was commissioned and funded by Lord Gerald Fitzalan Howard, on behalf of the Beaumont Estate, and EDAS would like to thank him for his co-operation in carrying out the work. Sincere thanks are also extended to gardener Simon Gash, without whose hard work and assistance it would not have been possible to excavate the interior of the ice well over a two day period. The site recording was undertaken by Shaun Richardson of EDAS, and he produced the fieldwork records. The pottery was identified and assessed by Sophie Tibbles. Shaun Richardson also produced the final report and drawings, and the responsibility for any errors or inconsistencies remains with him.

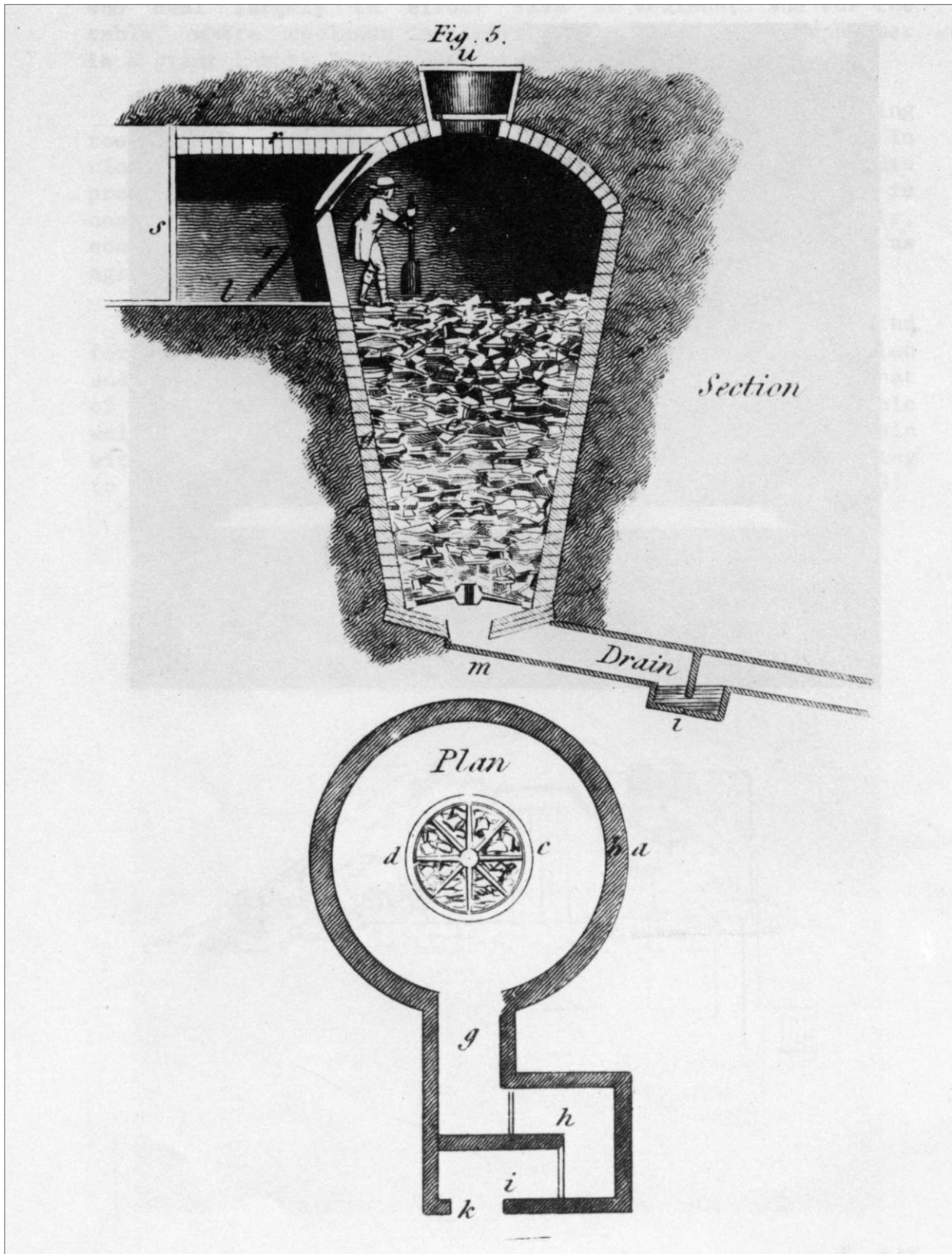


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PROJECT		ICE HOUSE, CARLTON TOWERS	
TITLE		GENERAL LOCATION	
SCALE	DATE	NTS	MAY 2017
EDAS		FIGURE	1

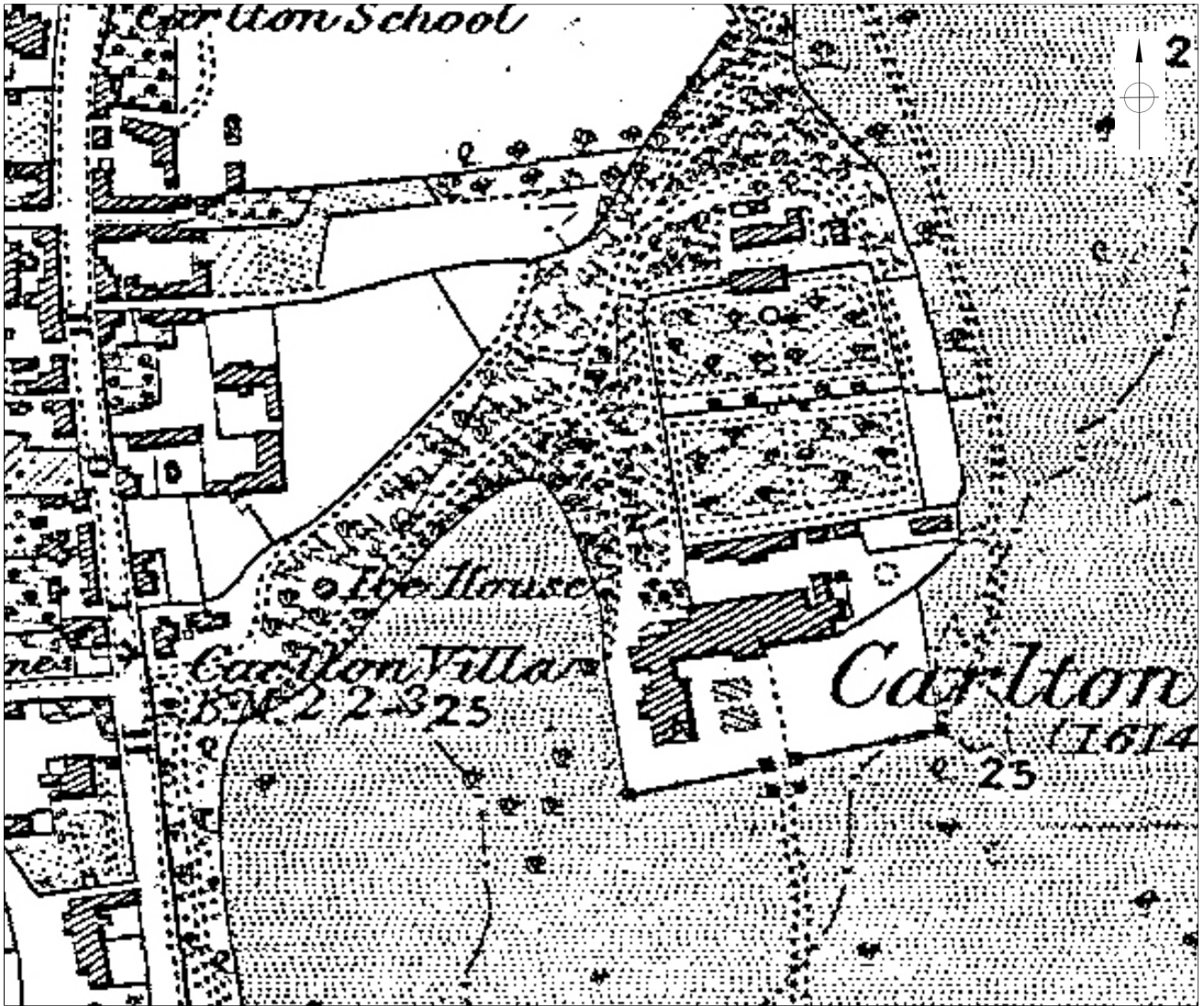


PROJECT		ICE HOUSE, CARLTON TOWERS	
TITLE		DETAILED LOCATION	
SCALE	DATE	NTS	MAY 2017
EDAS		FIGURE	2



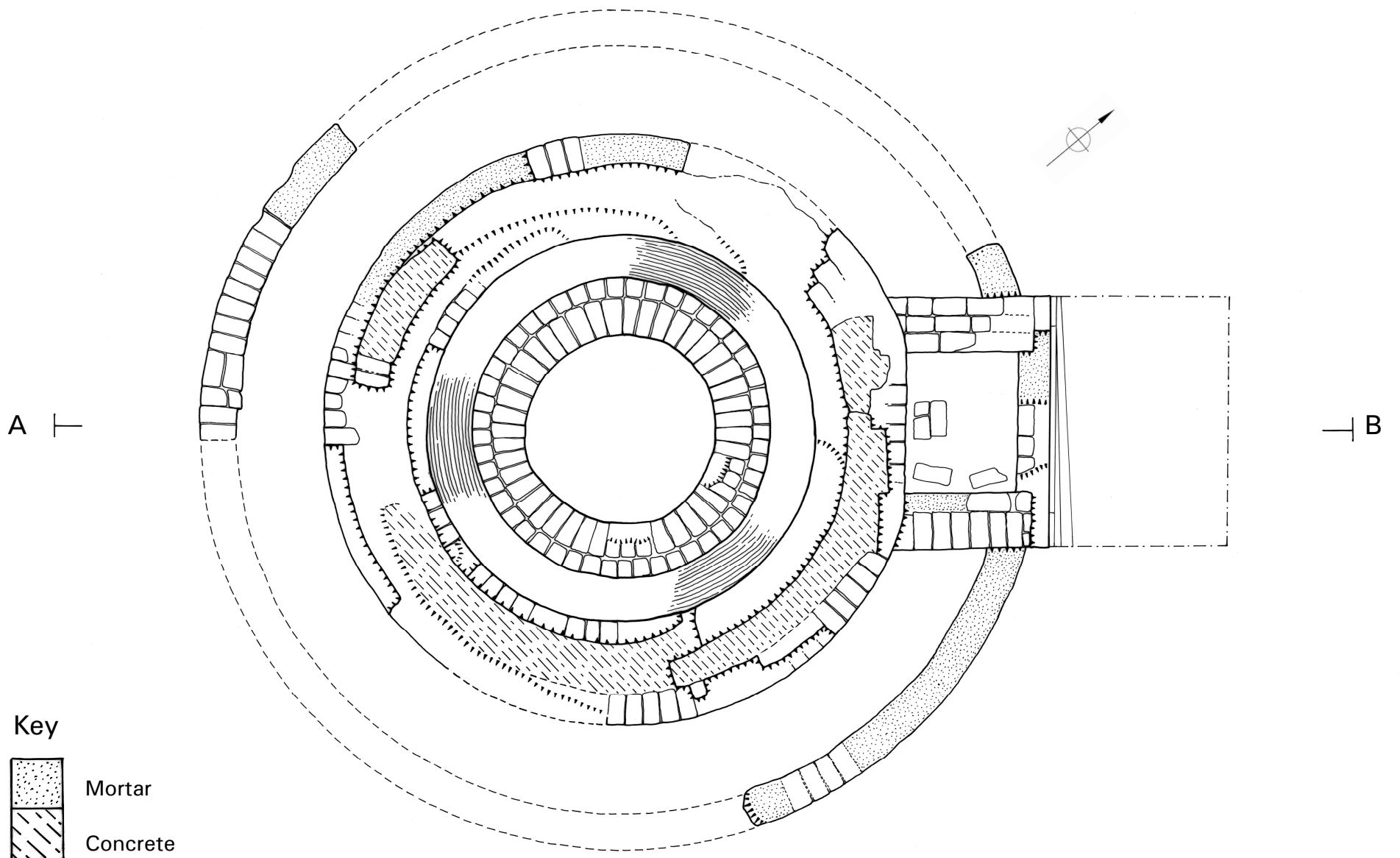
Taken from Rees 1819 Cyclopaedia or Universal Dictionary of Arts, Science & Literature (reproduced in Ellis, M 1982 *Ice and Icehouses through the Ages*, figure 4).

PROJECT		ICE HOUSE, CARLTON TOWERS	
TITLE		TYPICAL EARLY 19TH CENTURY 'CUP AND DOME' ICE HOUSE	
SCALE	NTS	DATE	MAY 2017
EDAS		FIGURE	3



Source: Ordnance Survey 1853 6" to 1 mile map, sheet 236 (surveyed 1849).

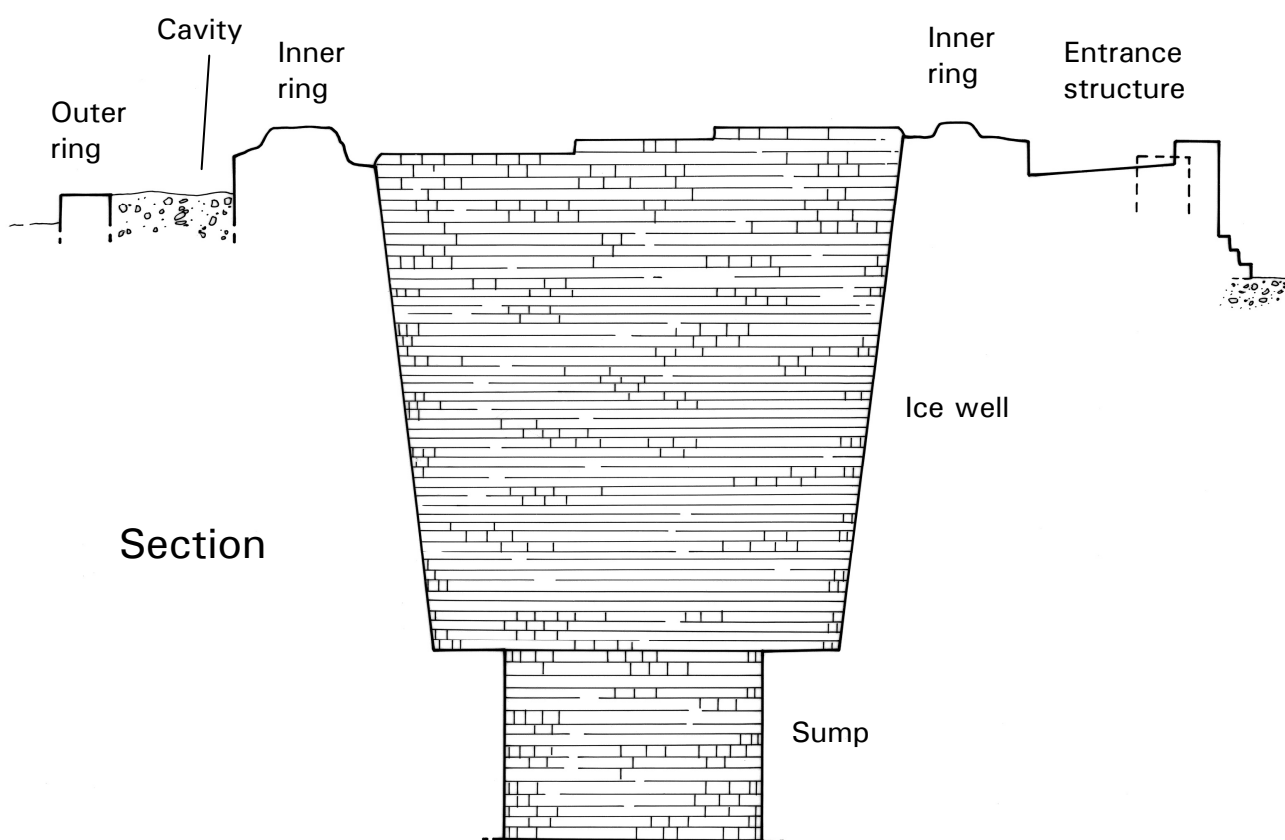
PROJECT		ICE HOUSE, CARLTON TOWERS	
TITLE		DETAILED LOCATION	
SCALE	AS SHOWN	DATE	MAY 2017
	EDAS	FIGURE	4



Ground Plan

A
⌵

B
⌵



Section



PROJECT		ICE HOUSE, CARLTON TOWERS	
TITLE		GROUND PLAN AND SECTION	
SCALE	AS SHOWN	DATE	MAY 2017
EDAS		FIGURE	5



Plate 1: Ice house after initial clearance, looking N (2 x 1m scale) (photo 1/167).



Plate 2: Outer ring of brickwork and render to external face of ice well, looking N (1m scale) (photo 2/216).



Plate 3: Partly excavated ice house, showing entrance, looking NW (2 x 1m scale) (photo 2/220).



Plate 4: Fully excavated ice well, looking NE (2 x 1m scale) (photo 3/252).



Plate 5: Fully excavated ice well, looking S (2 x 1m scale) (photo 3/253).



Plate 6: Fully excavated ice well showing sump, looking N (2 x 1m scale) (photo 3/268).

APPENDIX 1: LIST OF CONTEXTS

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<i>Context</i>	<i>Description and Interpretation</i>
001	Mid-brown sandy silt, up to 1.80m thick where forms upper fill of well of ice house, but at least 0.30m thick where it covers the remainder of the structure.
002	Dry mid-brown sandy silt, with very frequent inclusions of handmade reddish-brown bricks (some mortared) and brick rubble, 1.00m thick - lower fill of ice house well.
003	Dry mid-brown sandy silt, with very frequent inclusions of handmade reddish-brown bricks (some mortared) and brick rubble, 0.90m thick - upper fill of sump to ice house well.
004	Very dry light-brown sandy silt with frequent inclusions of dried, powdery wood, 0.10m thick - lower fill of sump to ice house.
005	Clean, dry, orange sand - set at base of ice house sump to aid drainage.

APPENDIX 2: SPECIALIST REPORT

The Ice House, Carlton Towers, North Yorkshire
EDAS Site Code: CIH 17

The Finds

Sophie Tibbles.

Introduction and Methodology

The aim of this assessment is to identify the potential of the finds assemblage recovered from archaeological investigations at the Ice House at Carlton Towers, North Yorkshire, in keeping with the requirements of MoRPHE guidelines (English Heritage 2008) and the specific aims of the project.

The assemblage comprised seven material categories: pottery; clay pipe; shell; glass; ceramic building material; stone building material and metalwork. With the exception of nine ex-situ artefacts, the assemblage was recovered from the fills of the ice house well and sump.

Material types were subject to basic quantification by count and weight, where applicable and appropriately packaged for long term storage. A conservation assessment was not considered necessary for the metalwork as the artefacts are of relatively recent date and little additional information would be gleaned from x-ray. A digital catalogue (Access database) was completed as part of the site archive.

Spot dating and identification of the pottery, clay pipe and tin-glazed tile was undertaken by Peter Didsbury, MPhil, FSA.

Quantification and Condition of the Assemblage

Pottery: 27 sherds – good condition
Clay pipe: 1 stem – good condition
Tin-glazed tile: 1 fragment – good condition
Shell: 1 valve – fair condition
Glass: 7 shards – fair/good condition
Metalwork: 9 artefacts – fair/good condition
Ceramic building material: 2 fragments & 2 complete examples – good condition
Stone building material: 6 fragments – good condition

Catalogue by Material Type

Pottery

A small assemblage of twenty-seven sherds of pottery was recovered from [001], [002] [003] and [ex-situ/surface clearance] (Table 1). The pottery had a combined weight of 804 grams with an average sherd weight (ASW) of 29.7 grams.

The earliest material comprised seven sherds of Late Humberware from [001], including a cistern rim and a handled bowl. This assemblage is of 15th/16th century date.

The remainder of the pottery (74%) was of post-medieval to early modern date, (18th through to the early 20th century), and included various tablewares/kitchenwares and flowerpots in the following fabrics: Creamware; White-Dipped wares; Modern Stoneware;

Transfer-printed Whitewares: Green and Brown Glazed Earthenwares: unglazed Red Earthenwares and unattributed Stoneware.

A cross-contextual join, two sherds of a Transfer-printed Whiteware plate, was recorded between [001] and [002]. Although non-joining, two sherds of White-dipped ware, a sherd from contexts [001] and [002], *may* be the same vessel.

A small Transfer-printed Whiteware ointment pot [003], is worthy of note. The pot is complete with the following details on the body:

'HOLLOWAY'S OINTMENT. FOR THE CURE OF GOUT AND RHEUMATISM, INVETERATE ULCERS, SORE BREASTS, SORE HEADS, BAD LEGS, &c. 1/1½, 2/9, 4/6, 11/,22/, & 33/, PR POT, MANUFACTURED BY THE PROPRIETOR. 533 OXFORD ST. LONDON' with an image of a seated woman (?Hygeia, the goddess of health) in a robe, a snake entwined around a column (Rod of Asklepios?) to her right and a small child (?Hygeia's brother, Telesphorus, the demi god of convalescence) to her left who carries a banner 'NEVER DESPAIR'.

Thomas Holloway began to market his ointments around 1837 (VOT 7017; SM 2017). As business progressed during the late 19th/early 20th centuries, trading both in Britain and the United States, production moved to various premises in London including 533 Oxford Street between 1868-1881 (VOT 2017). Although the business moved to 78 Oxford Street in 1881, the pots continued to have the 533 Oxford Street address (*ibid*).

Clay pipe

A clay pipe stem from [ex-situ/surface clearance] weighed 11 grams, dated c. 18th century. No other distinguishing features were noted.

Tin-glazed tile

A small fragment of tin-glazed tile from [001] weighed 7 grams and had a thickness of 7mm. Remnants of blue line decoration were noted but the design was not determinable. The tile is of 18th century date.

Shell

An oyster (*Ostrea edulis* L.) left (bottom) valve was recovered from [001]. The valve had a weight of 32 grams. No evidence of damage from opening e.g. a V-shaped notch/nick was recorded.

Glass

This assemblage (Table 2) comprised two window shards and five shards of vessel glass, with a combined weight of 613 grams. The earliest material was recovered from [001], a basal and a body sherd from an olive green wine bottle(s) of late 17th/18th century date. Both shards were severely weathered with delaminating surfaces.

The two shards of a late 19th/early 20th century, pale green, mould-made, blob-top bottle [003] were non-joining but are considered to be the same vessel. Details of the manufacturer of the ?contents were recorded, 'H. KITCHING GOOLE'. The bottle was probably used for soft drinks or waters. Ex-situ/surface clearance produced a clear body/rim shard of a narrow vase or possibly a drinking glass of 20th century date.

Both shards of clear window glass from [001] and [ex-situ/surface clearance], were of 20th century date.

Metalwork

All of the metalwork was of iron and comprised nine structural fittings: x3 [001]; x2 [002]; x2 [003] and x2 [ex-situ/surface clearance] (Table 3). Despite corrosion products adhering to surfaces, the ironwork was generally in fair to good condition and the majority were complete. A post-medieval/early modern date is given for the artefacts.

Nails/bolts, wall hooks, hinge pivots, looped and eyed spikes and a possible angle tie were identified. All are multi-purpose fittings with a variety of functions including binding timbers, suspending shutters, doors or gates and attaching timbers to brickwork and masonry.

Very Pale Brown mortar (10YR/8/2) was recorded on the shank of a looped spike [002], similar to the mortar noted on the ceramic and stone building material (see below). Mineralised preserved organics (MPOs) of wood, were evident on the guide arm of the hinge pivot also from [002], probably from original use.

Ceramic building material

The assemblage of ceramic building material comprised two complete bricks and two fragments of roof tile.

Two brick samples from the sump at the base of the ice well had complete dimensions of 255mm x 124mm x 58mm (10" x 5" x 2¼") and 264mm x 124mm x 57mm (10¼" x 5" x 2¼"). The larger of the bricks was slightly warped and over-fired in appearance and although not considered a second, this brick is of a lower quality to the other example. Small patches of Very Pale Brown (10YR/8/2) fine-grained, lime-based mortar were noted on all surfaces. Both are of 18th century date.

The two fragments of roof tile [ex-situ/surface clearance], both pantile, had a combined weight of 524 grams and a complete thickness dimension of 16mm. The smaller fragment displayed black sooting on one surface from original use, over which patches of White (5Y/8/1), fine-grained, lime-based mortar were evident; mortar was also recorded over broken edges, suggesting re-use. Based on fabric and manufacturing characteristics, the tiles are dated to the late 18th/early 19th century.

Stone building material

All of the stone building material was Welsh grey/blue slate roof tile; a total of six fragments (Table 4). The tiles had a thickness range between 7mm and 10mm and a combined weight of 1409 grams. All are dated between the late 18th/19th centuries.

One fragment [ex-situ/surface clearance] was diagnostic, bearing a circular nail hole with a diameter of 7mm. The remainder from [003] were non-diagnostic, but one dressed edge was recorded on four fragments. Very Pale Brown (10YR/8/2) mortar, similar to that recorded on the bricks and ironwork, was noted on original surfaces and over breaks on all fragments, again, suggesting re-use post-breakage.

Discussion and Recommendations

Overall, the artefacts mostly represent elements of the ice house structure and associated fittings. The dating of the ceramic and stone building material would support the suggested

late 18th century date for construction with potential evidence for the re-use of materials (slate and ceramic roof tile) within its fabric.

There is a small element of domestic waste which is most likely the result of casual deposition/dumping once the ice house fell out of use; the cross-contextual join and possible same vessel within the contexts [001] and [002] imply rapid back-filling.

Despite the small quantity, the medieval pottery does indicate some level of activity within the area during this period.

No further work is recommended on the retained artefacts. Unless the landowner requests the return of any of the material, the assemblage is recommended for discard unless the recipient museum stipulates otherwise (with particular reference to the medieval pottery and possibly the ointment pot).

Tables

Pottery and clay pipe: Fabric terminology is based upon that employed in the published Hull and Beverley fabric series (Watkins 1987; Didsbury & Watkins 1992). Other names are generic, self-explanatory or in common regional or national use.

<i>Code</i>	<i>Common name/Remarks</i>
CREAM	Creamware
CTP	Clay tobacco pipe
GREB	Glazed red earthenware, with brown glazes (= Brown-Glazed Coarseware in Watkins 1987)
GREG	Glazed Red Earthenware with green glazes (post-medieval)
HUM5	Late Humberware.
MODSW	Modern Stoneware
TIN	Tin-Glazed earthenwares
TPWW	Transfer-printed whiteware
UGRE	Unglazed Red Earthenware (modern flowerpots <i>et al.</i>).
UNATSW	Unattributed Stoneware
WHDIP	White-Dipped Ware.

Table 1: The pottery, clay pipe & tin-glazed tile

<i>Context</i>	<i>No. of sherds</i>	<i>Fabric code</i>	<i>Comments</i>	<i>Wt (g)</i>	<i>Date</i>
001: Upper fill of ice house well	7	HUM5	Bodies (x3), basal (x2) rim (x1) and a strap handle. Includes a handled bowl and a cistern rim.	272	15th/16th century
	1	WHDIP	Vessel with bifurcated rim. ?Same vessel as [002] though non-joining. Contemporary with the Tin-glazed tile.	28	?17th/18th century
	1	TIN	Tile fragment. Blue decoration, design not determinable.	7	18th century
	2	GREB	Basal/body and rim sherds. Different vessels.	93	Post medieval
	1	GREG	Body.	15	Post medieval
	1	CREAM	Body. Glazed internally and externally.	13	Very late 18th/early to mid 19th century
	1	TPWW	Rim. Plate. Foliage pattern. Cartouches in a border. Cross-contextual join with sherd from [002].	13	19th century

<i>Context</i>	<i>No. of sherds</i>	<i>Fabric code</i>	<i>Comments</i>	<i>Wt (g)</i>	<i>Date</i>
	1	MODS W	Body. Glazed internally and externally.	38	Late 19th century
	4	UGRE	Bodies (x3) and a base/rim. Different vessels.	130	Early modern
002: Lower fill of ice house well	1	WHDIP ?	Vessel. ?Same vessel as [001] though non-joining.	22	?17th/18th century
	1	GREB	Body. Internal and external glaze.	36	Post medieval
	1	TPWW	Rim. Plate. Cartouches in a border. Cross-contextual join with sherd from [001].	7	19th century
	1	UNATS W	Body. External brown glaze.	6	?19th century
	2	UGRE	Body and rim sherd. Different vessels.	31	Early modern
003: Upper fill of sump to ice house	1	TPWW	Complete small ointment pot. 'HOLLOWAY'S OINTMENT. FOR THE CURE OF GOUT AND RHEUMATISM, INVETERATE ULCERS, SORE BREASTS, SORE HEADS, BAD LEGS, &c. 1/1½, 2/9, 4/6, 11/22/, & 33/, PR POT, MANUFACTURED BY THE PROPRIETOR. 533 OXFORD ST. LONDON' with an image of a seated woman in a robe, a snake entwined around a column to her right and a small child to her left carrying a banner 'NEVER DESPAIR'.	42	19th/early 20th century
Ex-situ/ surface clearance	1	GREB	Body.	16	Post medieval
	1	UGRE	Base. Small plant pot. Perforated base.	42	Early modern
	1	CTP	Stem.	11	c.18th century

Table 2: The glass

<i>Context</i>	<i>Type</i>	<i>Quantity</i>	<i>Comments</i>	<i>Use</i>	<i>Wt (g)</i>	<i>Date</i>
001: Upper fill of ice house well	Window	1	Clear shard.	Structural	8	20th century
	Vessel	1	Olive green basal shard. Bottle. Weathered/delaminating surfaces.	Wine	124	Late 17th/18th century
		1	Olive green body shard. Bottle. Weathered/delaminating surfaces.	Wine	26	Late 17th/18th century
002: Lower fill of ice house well	Window	1	Clear shard.	Structural	16	20th century
003: Upper fill of sump to ice house	Vessel	2	Pale green, blob-top bottle. Non-joining shards but poss. same bottle. Mould-made. Details of manufacturer of ?contents on body: 'H. KITCHING GOOLE'.	Miscellaneous beverage/ water	403	Late 19th/early 20th century.

<i>Context</i>	<i>Type</i>	<i>Quantity</i>	<i>Comments</i>	<i>Use</i>	<i>Wt (g)</i>	<i>Date</i>
Ex-situ/ surface clearance	Vessel	1	Clear body/rim shard of a narrow vase or poss. drinking glass.	Household equipment	36	20th century

Table 3: The metalwork

<i>Context</i>	<i>Quantity</i>	<i>Comments</i>	<i>Dimensions (max.)</i>
001: Upper fill of ice house well	1	Nail/bolt. Complete. Square-sectioned shank, blunt tip and an oval head.	Length: 103mm Shank: 10mm x 10mm Head: 28mm x 37mm.
	1	Nail? Rectangular-sectioned shank with a blunt tip. Details of head obscured by corrosion products.	Length: 107mm Shank: 11mm x 6mm.
	1	Wall hook/angle tie? Rectangular-sectioned tapering shank with a flattened, broken head?/arm? at a 90° angle at the opposing end.	Length: 189mm Shank: 22mm x 5mm to 8mm x 4mm Head?/Arm? 25 x 4mm.
002: Lower fill of ice house well	1	Looped spike. Complete. Rectangular-sectioned shank, blunt tip, with a small integral loop at the opposing end. Patches of Very Pale Brown (10YR/8/2) fine-grained lime-based mortar on shank.	Length: 127mm Shank: 15mm x 7mm Loop (ext.): 30mm x 30mm Loop (int.): 24mm x 22mm.
	1	Large hinge pivot. Complete. Square-sectioned shank tapering to a flattened tip. Circular-sectioned guide arm. Mineralised preserved organics (MPOs) of wood, adhering to concretions on the guide arm.	Length: 182mm Shank: 22mm x 22mm to 16mm x 12mm Arm (diam.): 22mm
003: Upper fill of sump to ice house	1	Looped spike/wall hook. Rectangular-sectioned shank, tip broken. Small integral loop at the opposing end.	Length: 160mm Shank: 15mm x 11mm Loop (ext.): 33mm x 25mm Loop (int.): 25mm x 22mm.
	1	Eyed spike. Complete. Square-sectioned shank tapering to a blunt tip. Opposing end has a flattened, circular head with a small, square-headed nail <i>in-situ</i> , just off centre.	Length: 141mm Shank: 17mm x 17mm to 15mm x 4mm Head: (diam.) 27mm; (th.) 4mm Nail Head: 8mm x 8mm Nail Shank: 4mm x 4mm.
Ex-situ/ surface clearance	1	Eyed spike. Complete. Similar form to (003): square-sectioned shank, blunt tip with a flattened, circular head but no nail evident.	Length: 174mm Shank: 17mm x 15mm to 10mm x 6mm Head: (diam.) 28mm; (th.) 4mm.
	1	Large hinge pivot. Complete. Square-sectioned shank, tapering to a flattened tip. Tip slightly bent from use. Circular-sectioned guide arm.	Length: 164mm Shank: 22mm x 22mm to 10mm x 4mm Arm: (diam.): 22mm.

Table 4: The stone building material

Context	Quantity	Type	Comments	Wt. (g)	Date
003: Upper fill of sump to ice house well	5	Roof Tile	Welsh slate. Non-diagnostic. Four fragments have 1 dressed edge. Very Pale Brown (10YR/8/2) fine-grained lime-based mortar on all surfaces and over breaks. Thickness: 7mm to 10mm.	1303	Late 18th/19th century
Ex-situ/ Surface clearance	1	Roof Tile	Welsh slate. Diagnostic. Small patches of Very Pale Brown (10YR/8/2) fine-grained lime-based mortar on original surfaces and over breaks. Nail hole diameter: 7mm. Thickness: 8mm.	106	Late 18th/19th century

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