

## *Discovery and Excavation in Scotland*

Updated on 15/06/2007

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<b>PROJECT TITLE/SITE NAME:</b>	Edinburgh Castle: Water Towers (near Foog's Gate)
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<b>PARISH:</b>	Edinburgh, City of
<b>NAME OF CONTRIBUTOR:</b>	Alan Radley
<b>NAME OF ORGANISATION:</b>	Kirkdale Archaeology
<b>TYPE(S) OF PROJECT:</b>	Minor excavation
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<b>NGR</b> (2 letters, 8 or 10 figures)	NT 2512 7349
<b>START DATE</b> (this season)	4 November 2013
<b>END DATE</b> (this season)	25 November 2013
<b>PREVIOUS WORK</b> (incl. <i>DES</i> ref.)	
<b>MAIN (NARRATIVE) DESCRIPTION:</b> (May include information from other fields)	<p>An integrated programme of test trenching, standing building recording and survey over exposed areas of bedrock was completed at intervals between June and November 2013.</p> <p>The earliest features revealed were traces of eroded rock-cut features comprising slots and crudely-squared cuts thought to pre-date mid-16<sup>th</sup> century masonry. The masonry and other remnants of defensive features were thought to range from the mid-16<sup>th</sup> century to the late 18<sup>th</sup> century, over which the first of the works to install water towers were carried out in the mid 19<sup>th</sup> century, with further work on new water towers in the early 1900s.</p>
<b>PROPOSED FUTURE WORK:</b>	
<b>CAPTION(S) FOR ILLUSTRS:</b>	
<b>SPONSOR OR FUNDING BODY:</b>	Historic Scotland
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<b>ARCHIVE LOCATION</b>	Archive to be deposited in NMRS

# EDINBURGH CASTLE

## -THE WATER TOWERS-

### ARCHAEOLOGICAL EXCAVATION & RECORDING

*For*

Historic Scotland

*By*

Kirkdale Archaeology



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8<sup>th</sup> March 2014

## **INDEX**

Introduction .....	2
Documentary Evidence.....	2
Fieldwork .....	14
Conclusions.....	31
Appendix 1: List of Contexts .....	33
Appendix 2: List of Drawings .....	34
Appendix 3: List of Photographs.....	35
Appendix 4: Historical Map Comparison.....	36
Appendix 5: Bedrock Survey.....	38
Appendix 6: Finds.....	52
Appendix 7: South Elevation of the Water Towers .....	54

## **INTRODUCTION**

OS Grid Reference: NT 249 734 – NT 254 736

HS Index Number: 90130

In the light of a desk based assessment of documentary sources and the results of trial trenching in 1998, an integrated programme of test trenching, standing building recording and survey over exposed areas of bedrock was completed at intervals between June and November 2013.

## **DOCUMENTARY EVIDENCE**

### **Early background**

The present water tanks lie close to St Margaret's Chapel, on the highest part of the Castle Rock. This area, the highest point of the rock, is presumed to have been the core of the early castle, before the creation of the present Crown Square in the late 15th/early 16th century (MacIvor 1993, 67). Today, of the early buildings, only St Margaret's Chapel survives. Fernie (1986, 401) has suggested that this originally was part of a larger tower, and compares it to the chapels in the keeps at Rochester and Bamburgh. Other towers appear to have been part of the defences of this area; a 'Sanct Marareth's Tour' stood until 1573 (RCAHMS 1951, 13). A document of 1335 described how there was no dwellings (habitacoun) within the castle apart from a chapel a little unroofed, a little 'pentice' above the chapel, and a new stable, unroofed. It is clear from a contemporary document, however, that there were other buildings which underwent repairs at that time. These included the 'great chapel' under which kitchens were constructed, the 'contynghous' the 'great gate' and the gate under the 'hurdys' (Cal Doc Scot iii, 215-6 no 1186). None of these structures can be located from this account alone. The report of the siege of 1573 mentions 'Sanct margretis port' (RCAHMS 1951, 7) although there is again no evidence for its precise location.

Apart from St Margaret's Chapel, no other upstanding medieval structures have been identified on the summit of the castle Rock. The area has been much altered from the 16th century onwards but documentary evidence indicates the existence of other structures. Early drawings of the castle, together with excavation within the Queen Anne Building, indicate that the medieval defensive circuit was defended by towers. Drawings such as Holinshed's depiction of the siege of 1573 suggest that the same was true of the inner defensive wall around the summit of the Castle Rock.



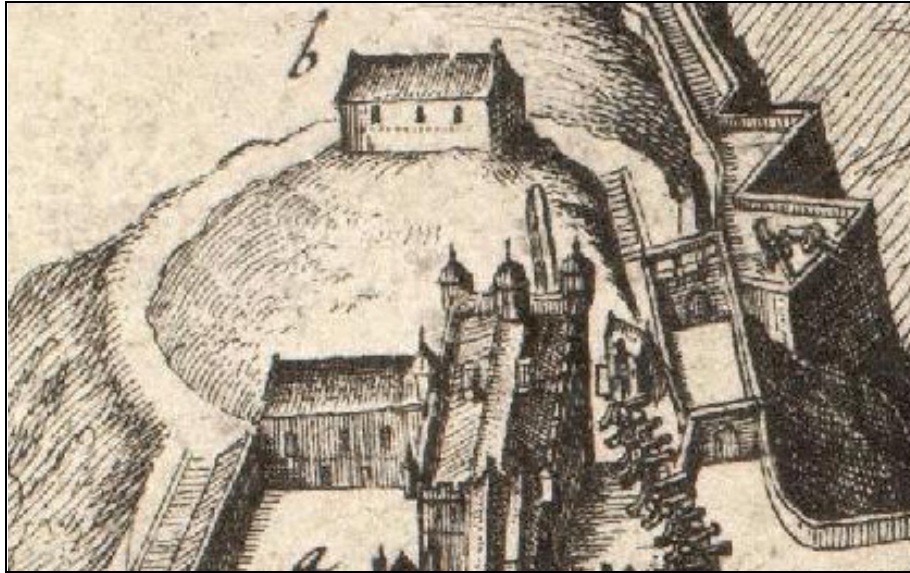
Fig.1: The siege of Edinburgh Castle, from Holinshed's Chronicles of England, Scotland and Ireland, 1577.

### The defensive wall

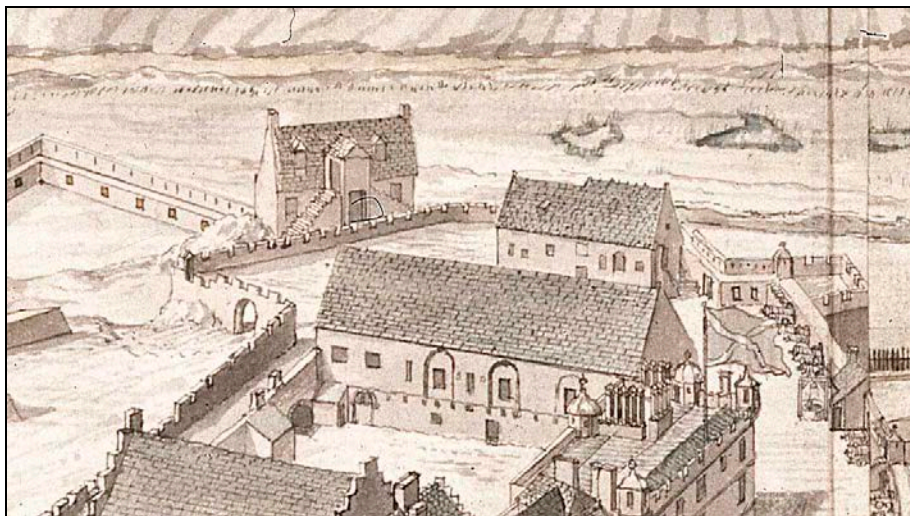
The present water tanks are bounded on their west side by a defensive wall, loop-holed for both artillery and muskets, which was erected in the 1670s. This is likely to have been a modification of an early enclosure. Holinshed's depiction of the siege of 1573 shows a stylised depiction of this defensive wall defended by towers. Foog's gate is shown. The building to its right, shown on the curtain wall, may be St Margaret's Chapel. The former wall is shown as what appears to be an earthwork on Gordon of Rothiemay's bird's eye view of 1647. This may not be, as it appears, a degrading of the defences, but rather the depiction of an earthwork strengthening an earlier wall line to create a better defence against artillery. Gordon of Rothiemay does not show Foog's Gate, which must have existed at that time as it is shown on the earlier drawings. Its omission demonstrates the limitations of drawings as evidence.

Foog's Gate is poorly documented. There is no evidence of a medieval gate in this position. It may have originated when, in 1539-40, the rock of the 'crag' was cut to make a passage for cannons to the munitioun house which James V had created on the site of the present Scottish National War memorial (TA VII, 341-2). Quarrying of the basaltic rock required the use of fire, 'grete irne mellis, irne weggis and pikkis' [great iron hammers, iron wedges and picks] (TA VII, 224 and 226). This may be the origin of the present route to the summit of the castle via Foog's Gate (MacIvor 1993, 83).

Excavations on the lower ground to the north of the summit revealed a cobbled track leading to the western part of the castle (Driscoll and Yeoman 1997, 45-7), which may have led to a gateway on the site of the present Foog's Gate, but the evidence for this is inconclusive.



**Fig. 2:** Detail of Gordon of Rothiemay, *Edinodunensis Tabulam* 1647 (NLS EMS.s.52)



**Fig. 3:** Foog's Gate is depicted in a somewhat stylised form on Georg Braun's *Edenburgum, Scotiae Metropolis*, published in 1582 (NLS EMS.s.653). Slezer's drawing of the castle of c.1700 shows it in more detail (British Library K Top XLIX.74).

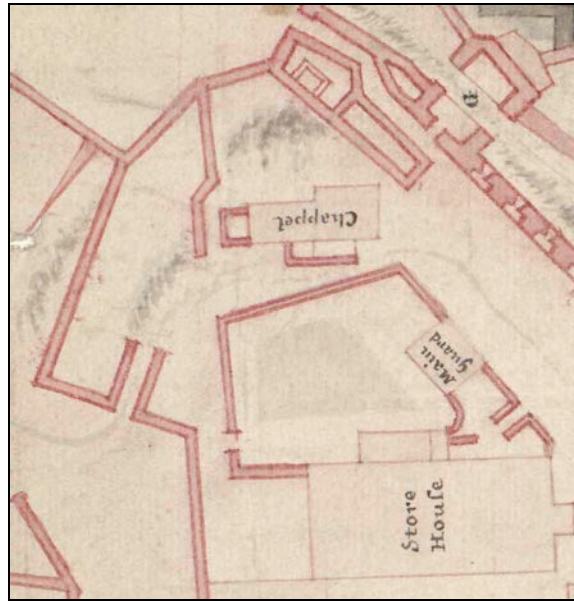


Fig.4: Plan of the works to be made at Edinburgh Castle, Theodore Dury 1709 (NLS MS.1649 Z.03/58b).

Theodore Dury's plan of 1707 (NLS MS.1649 Z.03/58b) shows the ramp inside the gate flanked on each side by a wall. There is an interval N-S wall to the west of St Margaret's Chapel. The chapel itself has small enclosures to the west and south. An extension abuts its east wall, probably the later garrison chapel.

### **Burials**

Two burials, which were described as being 'side by side' and without coffins, were found during construction of the fire-engine house. When discovered, they were presumed by Richardson to have been soldiers 'apparently buried during a time of siege' (Richardson and Wood 1937, 6). The fire-engine house (the present shop) lies immediately to the north of the later water tank. These burials may have been buried 'in time of siege', similar to the late 17th century burials discovered during the excavation of the Coal Yard (Driscoll and Yeoman 1997, 170).

### **The Shot Yard**

The western wall inside Foog's Gate was utilised as part of the enclosure of a shot yard, that is, a storage space for solid munitions (cannon balls etc) as opposed explosive shells. The construction of the yard may be dated to the period 1735-50. It is not shown on A Plan of part of Edinburgh Castle of 1735 by John White (NLS MS.1645 Z.02/09), but appears on William Skinner's plan of the castle of 1750 (NLS MS.1645 Z.02/08a).

It is mentioned in various accounts of the castle. Grose 1797, I, 16 mentions the shot yard within the Foog Gate and his account is quoted verbatim without attribution in numerous later descriptions of the castle. The shot yard was entered through a gateway on the north side of the enclosure. Cassell's *Old and New Edinburgh*, published in 1880, describes how:

‘.. we find on the left the modern water-tank, the remains of the old shot-yard, the door of which has now disappeared, but on the gablet above it was a thistle, with the initials D.G.M.S’ (Grant 1880, I, 76)

Moore’s 1725 Plan of Edinburgh Castle (NLS MS.1645 Z.02/03a) marks a building to the NW of St Margaret’s Chapel. This short-lived structure was rectangular in plan and angled NE-SW.

### **Water supply: the background**

The castle was dependant on wells for its water supply until the late 18th century. The High Street benefited from piped water before this date. In 1681 pipes were laid to a reservoir at Castle-Hill at the top of the High Street from whence it was pipes down hill to various wellheads. This supply of piped water was extended to the outer defences of the castle in the late 18th century. There is a Board of Ordnance estimate of 1794 for cisterns ‘at the south end of the Barrier Guard House’, that is, at the south end of the present outer gatehouse (NLS MS.1649 Z.03/54c). Water was carried from here to the upper part of the castle.

The demands of a growing population and the occasional severe water shortages meant that the flow was supplemented during the first of the 19th century with the addition of new water sources. A notable improvement followed the passing of an Act of Parliament in 1847 which allowed the construction of four new reservoirs and an enlargement of the reservoir at Castle-Hill (Ramsay 1864, 291). The more powerful water supply meant that for the first time piped water could be lead to the barracks in the core of the castle.

The antiquity of St Margaret’s was discovered by Daniel Wilson in 1845 and this led to an increased awareness of the architectural heritage and archaeological potential of the castle. The chapel underwent restoration in 1851-2, contemporary with the construction of a water tank on the site of the former shot yard.

### **1851: The first water tank**

The water was led to a tank situated in the former shot yard. Newspaper advertisements were issued in May 1851 inviting tenders for the construction of the new tank:

Caledonian Mercury Monday 12 May 1851

TO IRON-FOUNDERS AND BUILDERS ETC

The COMMANDING ENGINEERS in NORTH BRITAIN hereby give Notice that TENDERS will be received at the Ordnance Office. Mall Pall, on or before 7 June 1851, for sundry sundry works to be executed in the erection of a water tank at Edinburgh Castle.



The tank was constructed by the engineer, James Ward Hoby, of Renfrew. It was designed to supply not only the castle but those houses at the head of the High Street that were higher than the main Castle-hill reservoir.

Anon, *The Civil Engineer and Architects Journal* 14 (October, 1851), 534:

*The extensive operations which have so long been in progress on the Castle Hill, in connection with the new reservoir of the Water Company, are now entirely completed. The enormous cistern has been completed to contain about 16½ million gallons... For houses in the immediate neighbourhood, and the upper part of the High Street, which are higher than the reservoir, a smaller one has been constructed of iron, by Messrs Hoby and Co. of Renfrew, and it is at present in the process of erection in the shot yard of the Castle. When this is completed the Water Company will be able to supply the very highest houses in the town constantly. The new system cannot, however, be brought into operation for nearly two years, as much needs to be done in the way of laying pipes etc.*

Groome 1882: *Ordnance Gazetteer of Scotland*:

*The reservoir on Castle Hill stands at the head of the W corner of Ramsay Lane, near the NE verge of the Castle esplanade, and was originally constructed about the year 1674. It was a remarkably plain structure, 5 feet deep, 30 wide, and 40 long, with a capacity for about 6000 cubic feet of water; but, being too small for the increasing wants of the city, it was demolished in the autumn of 1849, to give place to a much larger one. The present reservoir stands on the same site, and is constructed with great strength, and has an ornamental appearance, rising exteriorly to the height of one story. It measures interiorly 30 feet in depth, 90 in width, and 110 in length; has capacity for about 297,000 cubic feet of water; is fed by a pipe which delivers 253 cubic feet per minute; and sends off from its bottom a series of pipes for distributing the water to the higher parts of the city. A large cistern, for furnishing an ample ready supply to the troops in garrison, and affording ordinary supply to such houses in Castle Hill, Lawnmarket, and the upper part of High Street as are situated at a greater altitude than the reservoir on Castle Hill, is in the shot-yard of the Castle, and was constructed in 1850.*

The Ordnance Survey 1st edition Sheet 35, surveyed 1852, published 1854 shows the new water tank with the fire-engine house on its north side. The tank was supplied on its western side by a 10 inch (0.25m) wide supply pipe, as shown on drawings of 1907. A 4 inch diameter pipe led out to the Lawnmarket and there was a 6inch (0.15m) emergency overflow pipe (HS 007-130-J-011).



Fig.5: Ordnance Survey 1st edition Sheet 35, surveyed 1852

### **The context of the 1851 tank**

The metal tank was hidden within a stone building designed to blend into its surroundings. Its construction in 1851 must be considered in the light of the intense contemporary interest in that party of the castle. The antiquity of St Margaret's Chapel was revealed by Daniel Wilson in 1845. This discovery generated ambitious schemes relating both to its restoration and to the development of the adjacent areas of the castle. Robert Billings, in 1853, drew up designs for a Chapel School around three sides of St. Margaret's Chapel. This Chapel School was designed with a robust jumble of Romanesque windows topped with oversized machicolations and included a large keep-like tower. This scheme was shelved on outbreak of the Crimean War.

Present research has not identified the architect responsible for the masonry building that hides the metal cistern. It may have been the work Colonel Richard Moody (1813-87) of the Royal Engineers, who was responsible for organising the restoration work within the castle.

### **1907: Changes to the first tank**

The tank installed in 1851 was replaced with a slightly larger circular tank. The building was altered to accommodate this, with curved recesses cut into the interior wall (HS 007-130-J-008).

### **1907: The second water tank**

This cistern was erected in 1907 to a design by William Thomas Oldrieve, as architect for Scotland in the Ministry of Works (Gifford et al 1984, 101; HS 007-130-J-005).

The masonry building erected to screen the tank was a castellated structure with a crenellated parapet and narrow windows imitating arrow loops. These windows were purely decorative, as almost the whole of the interior was occupied by the metal tank. The roof had a slight slope

toward the centre for the collection of rainwater (HS 007-130-J-007). The NW and SW parts of the screen wall were founded on concrete set below ground level (HS 007-130-J-007).

The tank was seated on blocks of hard brick in cement, 0.35m square, set in two concentric rings at 2.44m and 4.12m from the centre. There was also a central octagonal seating (HS 007-130-J-006). The central seating was arched allow access for a centre post pipe which collected rainwater from the roof (HS 007-130-J-011).

## References

Driscoll, S T and Yeoman, P A 1997

*Excavations within Edinburgh Castle in 1988-91.*

Grant, J 1880

*Old and New Edinburgh.*

Gromme, F H 1882

*The Ordnance Gazetteer of Scotland.*

Ramsay, A 1864

*Mr A Ramsay on the water supply of Edinburgh', Transactions of the Royal Scottish Society of Arts 6, 285-314.*

MacIvor, I 1993

*Edinburgh Castle.*

RCAHMS 1951

*An Inventory of the Ancient and Historical Monuments of the City of Edinburgh.*

Richardson, J S and Wood, M 1937

*The Castle of Edinburgh.*

National Library of Scotland

Gordon, James of Rothiemay, *Edinodunensis Tabulam*, 1647

MS.1649 Z.03/54a: Henry Rudyard, Plan of Part of Edinburgh Castle Showing the Proposed Situation for a Pipe & Cistern, 1794.

MS.1649 Z.03/54c: Henry Rudyard, Estimate of expense of... a cistern at Edr. Castle, 1794.

Ordnance Survey 1st edition Sheet 35, surveyed 1852

Historic Scotland plans

007-130-J-001	New switch room and fire apparatus house
007-130-J-002	New switch room and fire apparatus house
007-130-J-003	Drawing showing alterations on masonry required for new tank
007-130-J-004	New fire apparatus house and masonry screen around water tanks
007-130-J-005	Proposed enclosure for new water tank
007-130-J-006	Foundations of water supply tank

- 007-130-J-007 Proposed enclosure for new water tank, 11.05.1907
- 007-130-J-008 Drawing showing alterations on masonry required for new tank  
(coloured version of 007-130-J-003)
- 007-130-J-009 New cast iron tank
- 007-130-J-010 New cast iron tank details
- 007-130-J-011 Plan and elevation of piping

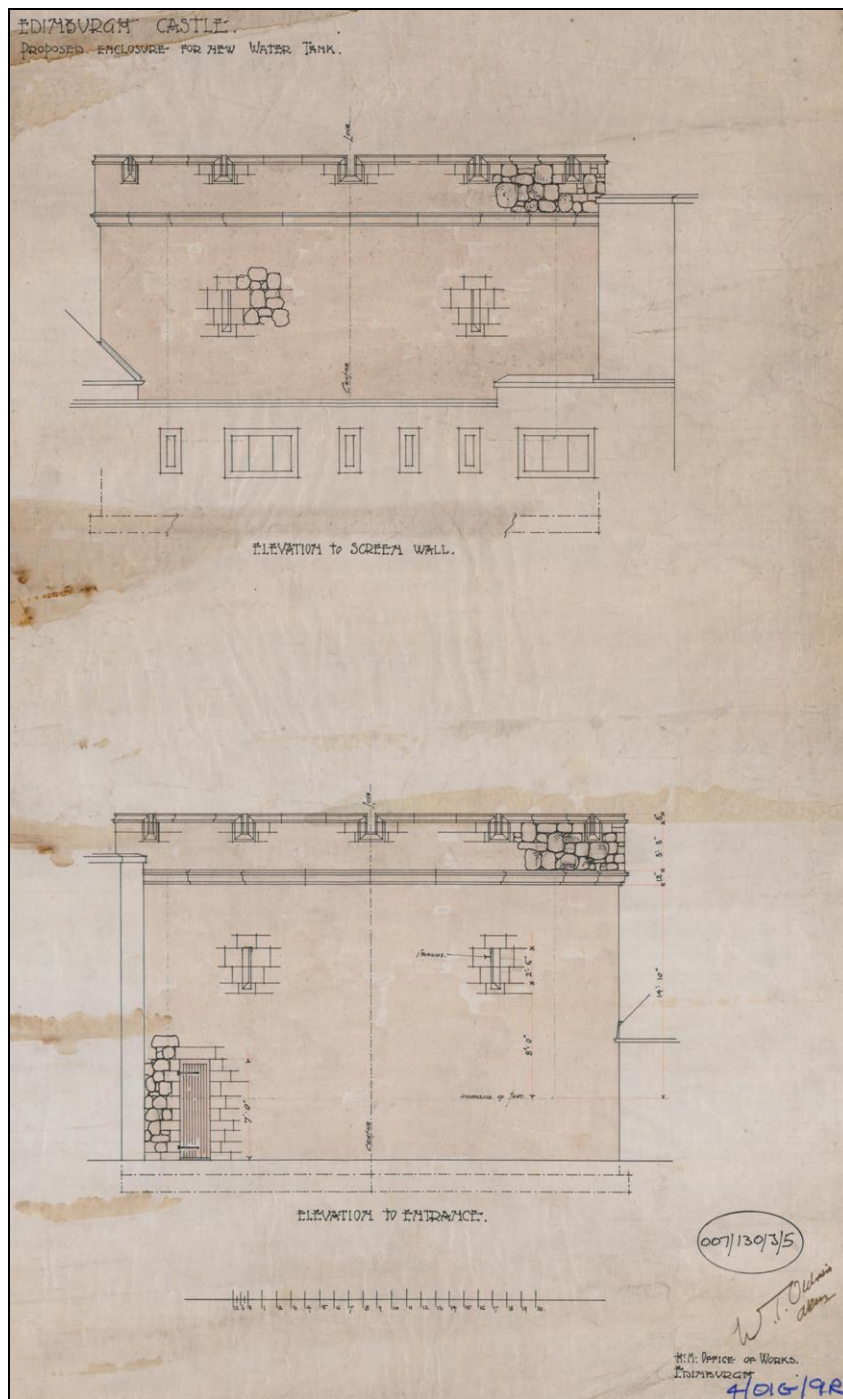


Fig. 6: 007-130-J-005 Proposed enclosure for new water tank.

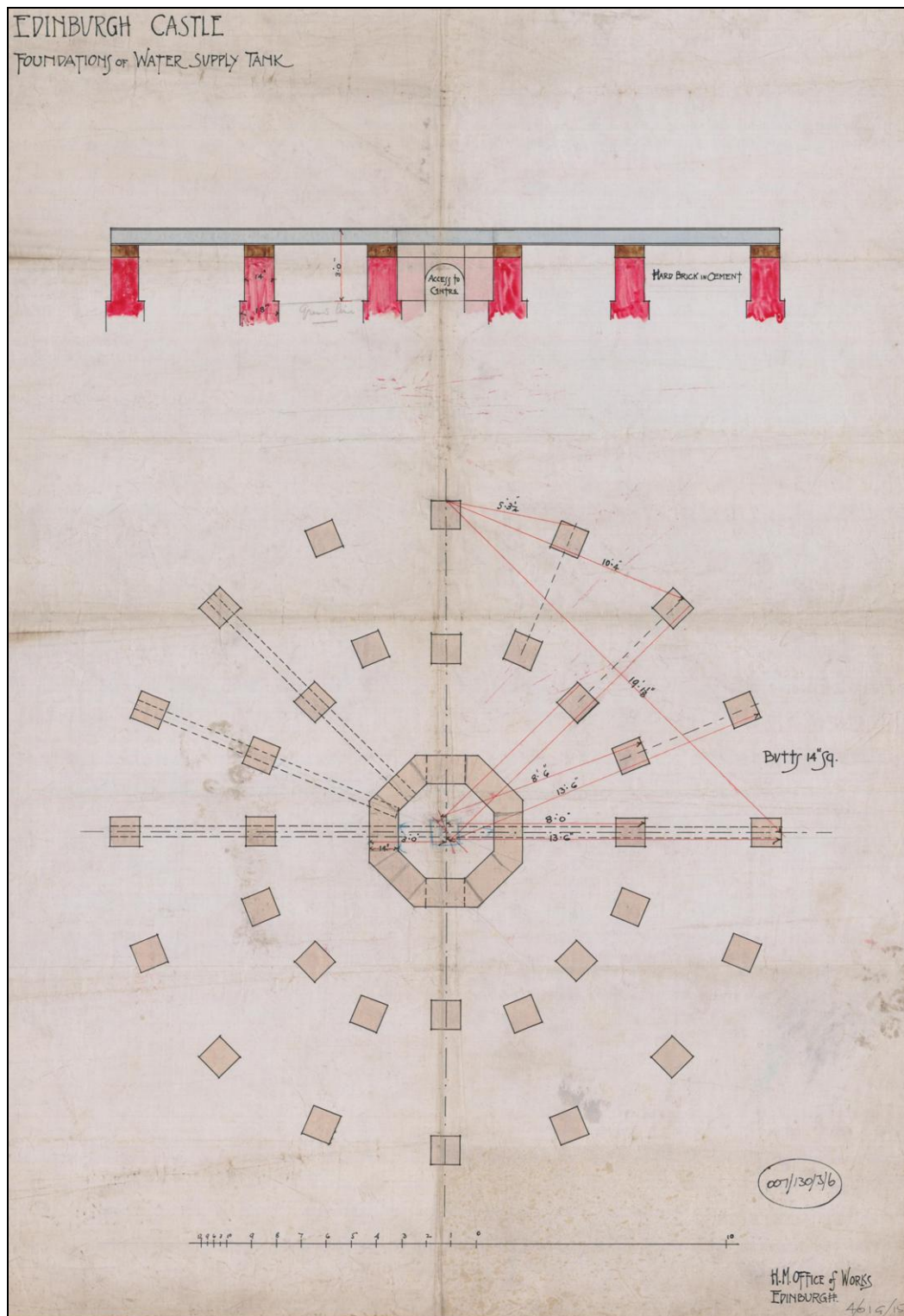


Fig. 7: 007-130-J-006 Foundations of water supply tank.

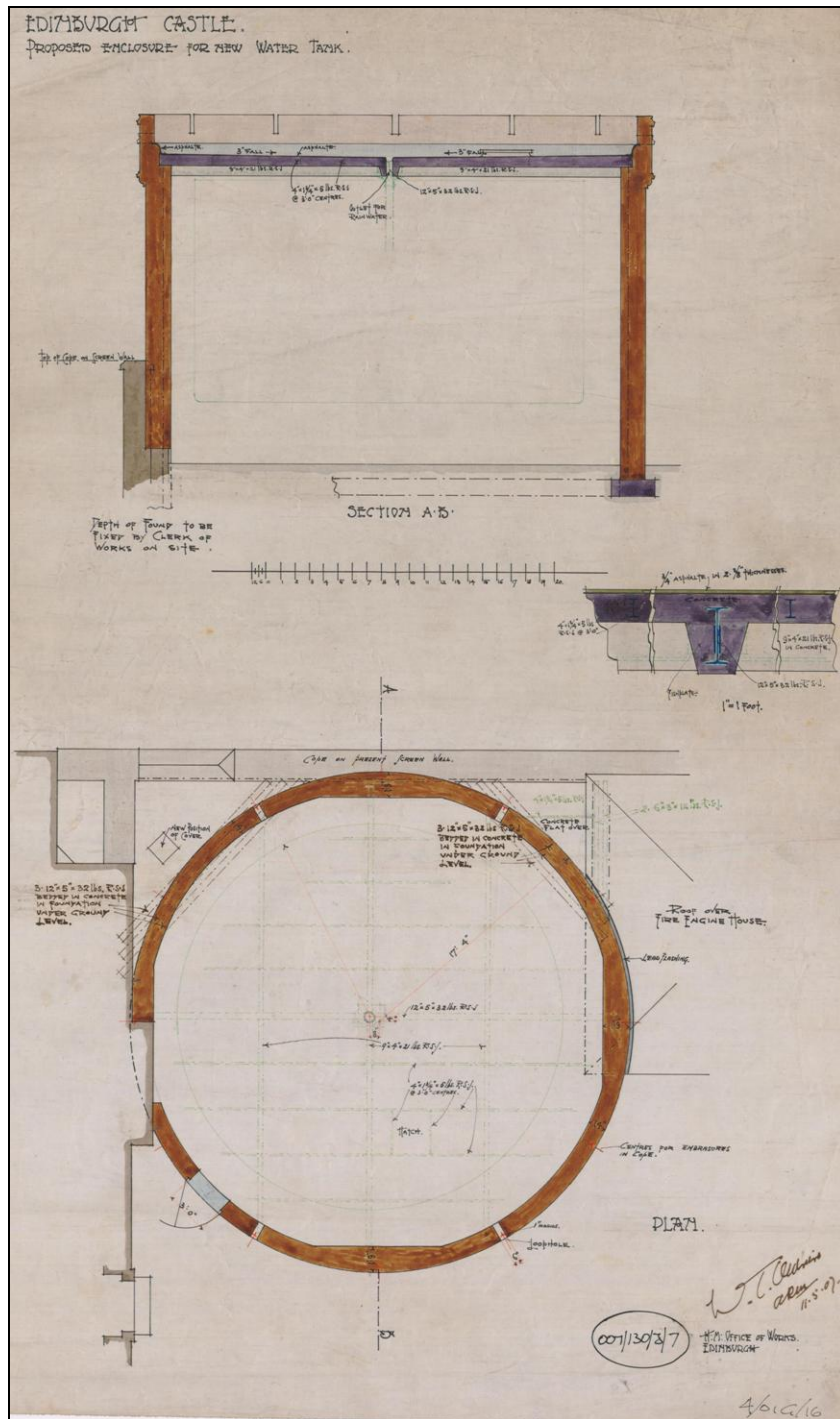


Fig. 8: 007-130-J-007 Proposed enclosure for new water tank, 11.05.1907

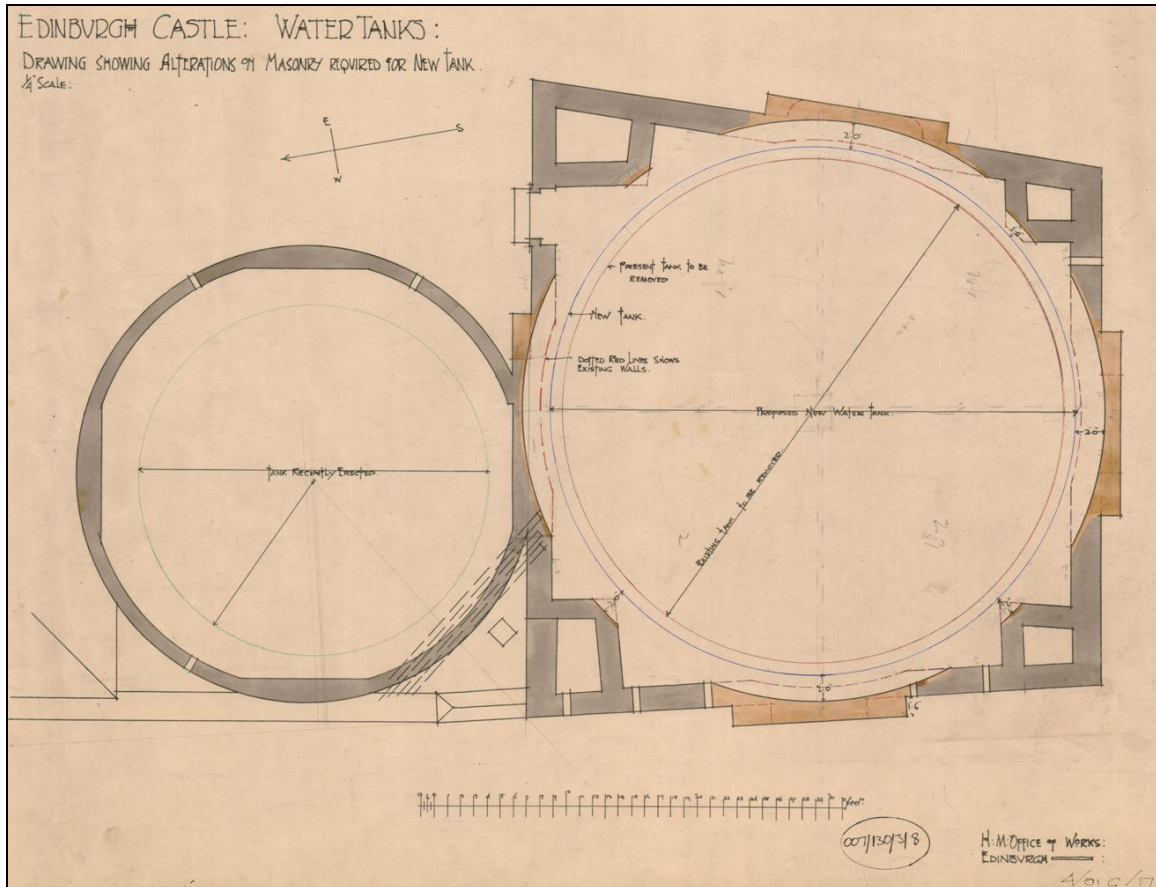


Fig. 9: 007-130-J-008 Drawing showing alterations on masonry required for new tank

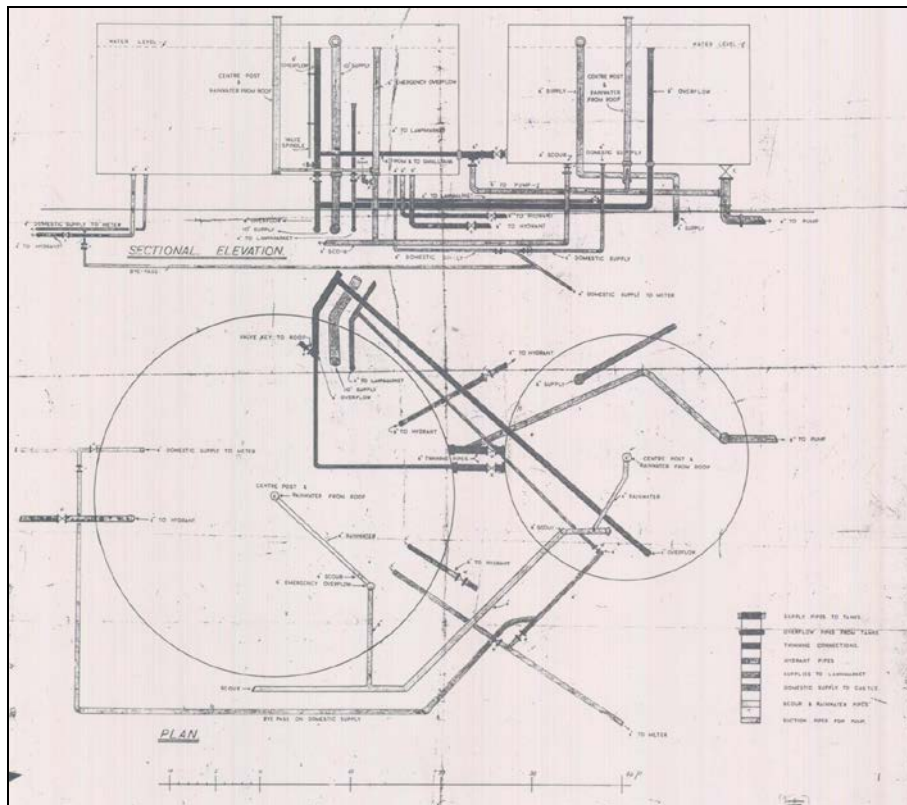


Fig. 10: 007-130-J-011 Plan and elevation of piping

## FIELDWORK

Four trenches were dug in the vicinity of the two water towers, one in the NW corner of the S tower and three (2 - 4) in the N tower. There are the remains of small mural chambers built in the NW and SW corners of the S tower and Trench 1 lay largely within the NW of these. However, as a stone floor was quickly encountered within the chamber, excavation concentrated on the remainder of the trench which was located further S, outside the chamber<sup>1</sup> (Fig. 11).

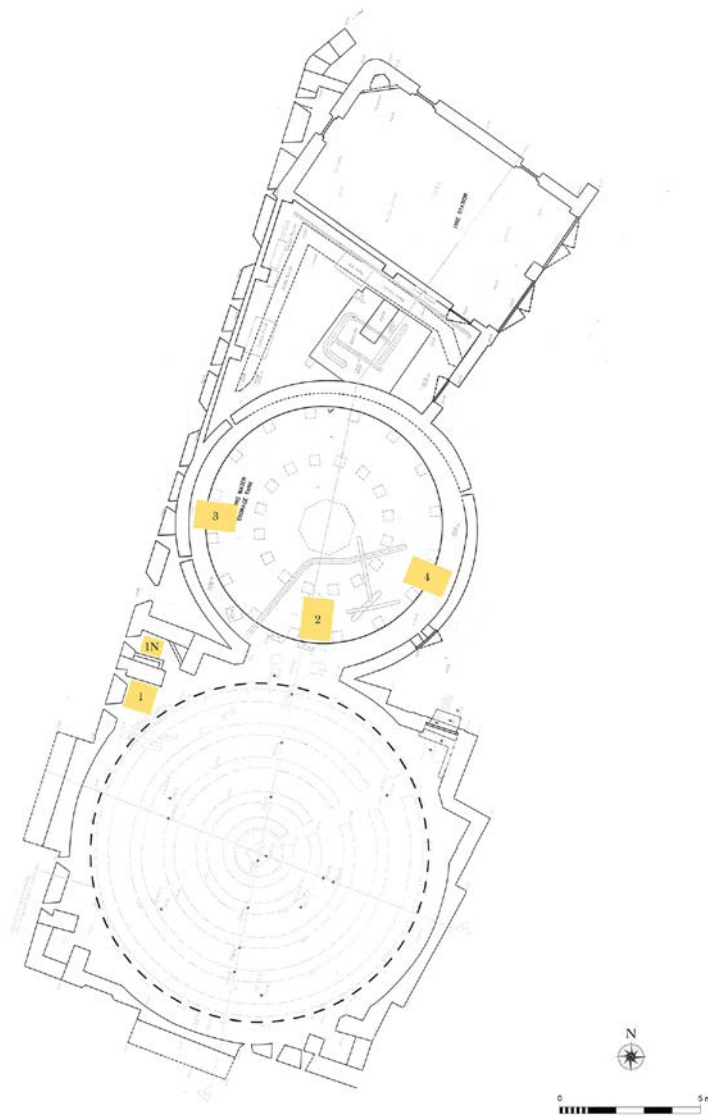


Fig. 11: Location plan of the trenches

<sup>1</sup> The phases assigned in the S tower (Trench 1 and '1 North') do not relate to those in the N tower (Trenches 2, 3 and 4)



### **Trench 1N**

This was the part of the trench within the mural chamber, it measured 0.75m N/S x 0.6m E/W and was excavated to a depth of 0.3m.

**Phases 1 - 3:** Not present.

#### **Phase 4**

The excavation in this trench stopped on **122**, a surface of flat stone slabs with yellow/light brown mortar pointing between them.

#### **Phase 5**

Over the phase 4 surface **122**, **121** was a deposit of yellow/light brown mortar and grey brown silt in a fairly even mix. Context **121** measured up to 0.1m thick.

#### **Phase 6**

The deposit removed from this area, **120**, was very loose mid-dark brown silty loam containing crisp bags and other plastic wrappers.



**Plate 1:** Trench 1N, showing the surface at the base of the excavation.

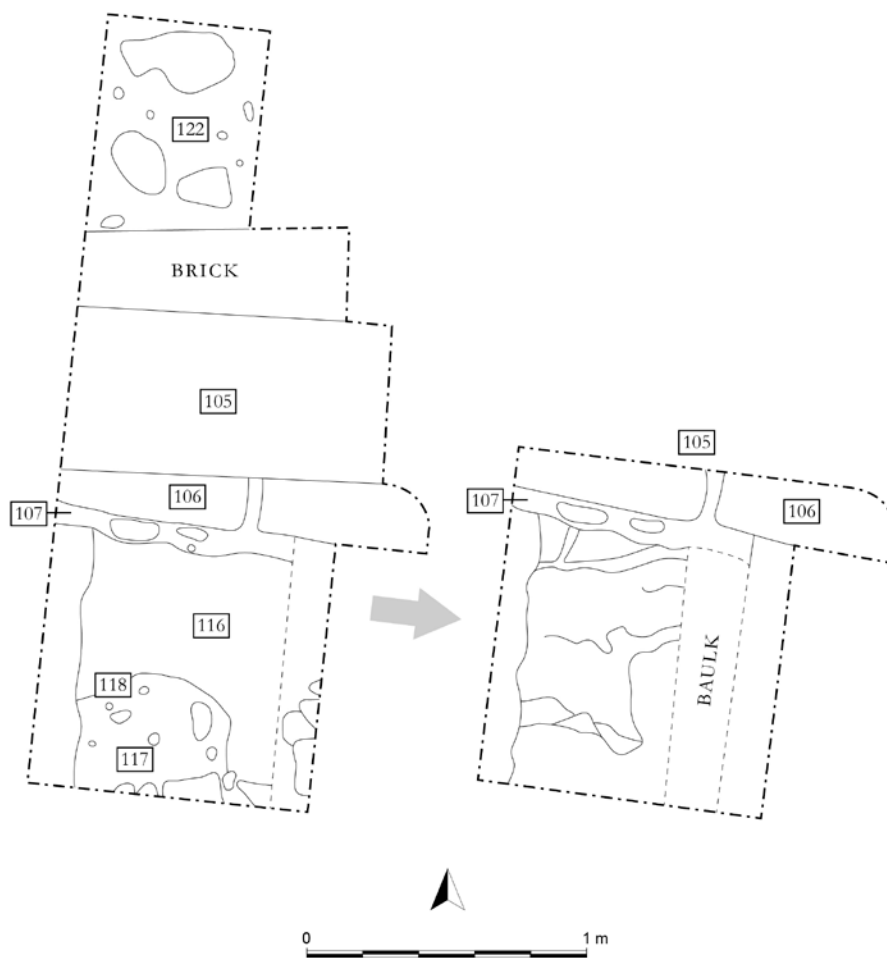


Fig. 12: Post-excavation plans from Trench 1N (left/top) and Trench 1 (left/bottom and right)

### **Trench 1**

The excavation immediately S of the mural chamber measured 1m x 1m and was excavated up to a maximum depth of 1.70m.

### **Bedrock**

The bedrock seen in the part of the deeper excavation (123) was fairly flat, only sloping gently to the N and W.

### **Phase 1**

The W wall of the S tower, 104, formed the W edge of the trench. The uncovered part of the wall was formed with roughly faced blocks, measuring 0.35m x 0.25m on average, and pointed with fairly hard light brown sandy mortar containing occasional stone grits. The inner (E) face sloped E towards the bottom. Immediately above the uncovered stones, in the area around the firing slots the wall featured smaller stones, 0.2m x 0.15m on average, although the pointing looked similar.

WEST

EAST

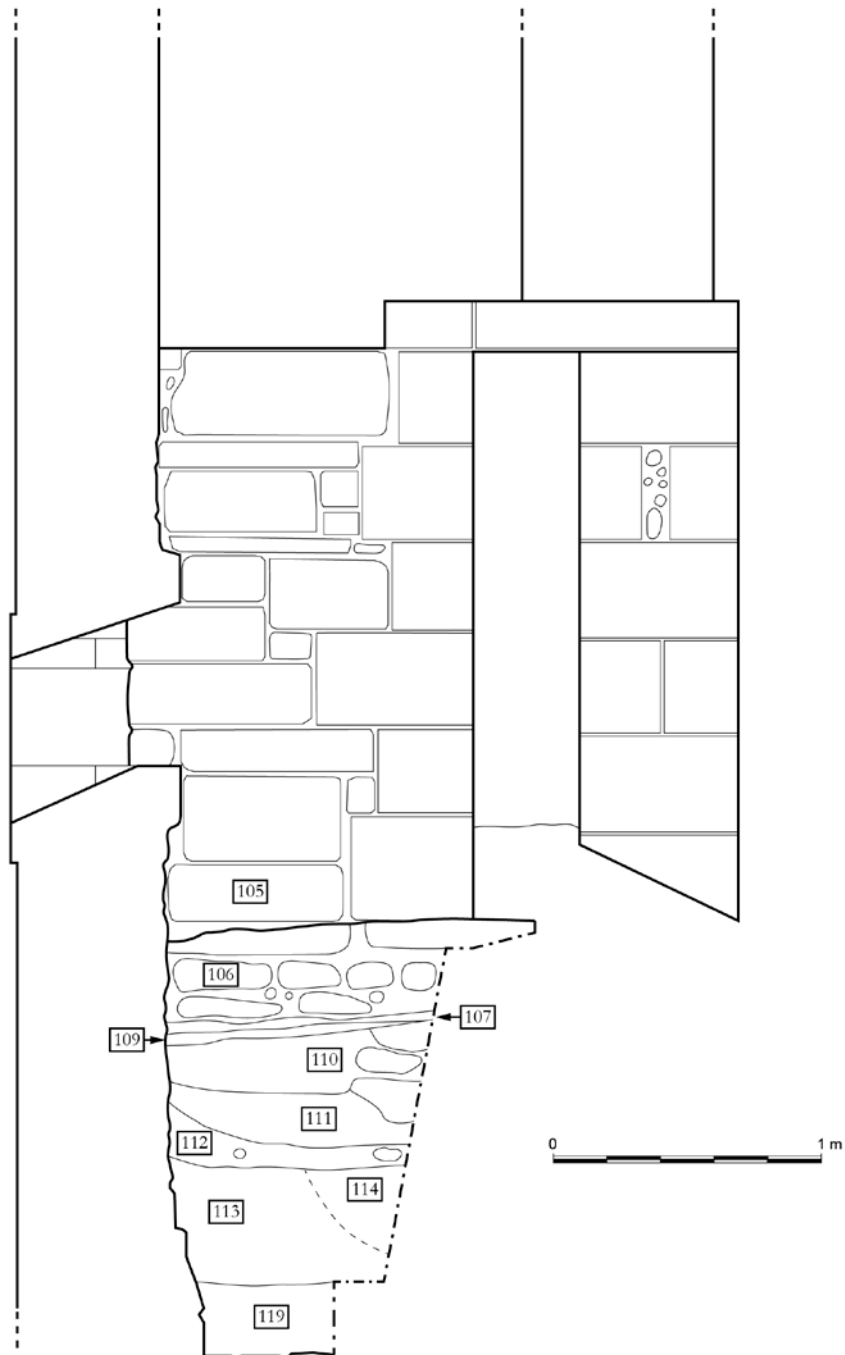


Fig. 13: S-facing section in Trench 1

## **Phase 2**

Context **113** sealed **116**, a 0.05m thick deposit of fairly compact mid brown slightly silty clay with occasional coal and mortar flecks.

It was subsequently decided that more of the bedrock should be exposed, so a trench extending 0.5m E from the W wall (**104**) was excavated. The material removed during this work was numbered **119** but was the same deposit as previously labelled **116**. It was seen here that **116/119** was 0.3m thick and bottomed onto bedrock.

## **Phase 3**

Sealed by the Phase 4 features **107** and **108**, there was a 0.02m - 0.03m thick deposit of dark grey silt, **109**.

Under the make-up for wall **105**, context **110** was a 0.3m thick deposit of fairly loose grey brown clayey silt and stones. Approximately 30% of the stones were mostly displaced chunks of bedrock measuring up to 0.3m x 0.25m x 0.25m.

Context **110** sealed **111**, a fairly loose mid-brown clayey silt containing approximately 20% chunks of displaced bedrock and some coal flecks. The stones in **111** measured up to 0.2m x 0.2m x 0.15m; the deposit was up to 0.25m thick.

Loose light brown mortar with occasional stone grits and charcoal flecks, **112**, was seen below **111**. Context **112** measured 0.1m in thickness at the N section but thickened to 0.2m at the edge of **103**, it was also noted to slope down to the S.

In the eastern 0.5m of the trench, context **114** was a 0.3m thick deposit of loose mid-brown sandy silt with occasional 0.06m x 0.04m stones and some flecks of charcoal and mortar.

Context **113**, a deposit of loose mid brown sandy silt with occasional 6cm x 4cm stones, charcoal and mortar flecks throughout was seen to the W of, and under, **114**. Context **113** measured up to 0.05m thick. A gradual change in colour was the only difference between **113** and **114**.

Context **113** sealed **115**, a thin patchy deposit of loose mid grey clayey silt with 30%-40% angular stone fragments and coal flecks throughout.

#### **Phase 4**

The upstanding wall to the N of the trench, **105**, was the outer face of the NW mural chamber S wall. It was noted that the blocks at the end of this structure, forming the W side of the doorway into it, showed many tool marks, mainly short pecks. Further E there was little tooling seen. The W end of this structure is built into a window in the E wall. The pointing in **105** was hard yellow/light brown gritty mortar.

Immediately under **105**, context **106** consisted of two large slabs over smaller stones continuing down another 0.25m. The slabs each measured around 0.6m in length (E/W) and 0.12m thick. They appeared to continue E of the upstanding structure and curve NW to the other side of the doorway.

Directly under **106** there was a 0.03m - 0.06m thick deposit of a very hard and stony light grey mortar, **107**. Against **106** and immediately W of **107**, broken sandstone fragments **108** extended 0.5m E/W x 0.4m N/S and up to 0.05m in depth. The fragments in **108** measured 0.08m x 0.06m on average.

#### **Phase 5**

E/W through the southern 0.5m of the trench, context **103** was the N edge of a large, straight sided cut measuring 1.3m in depth. The upper 0.5m was filled with **101**, and it was noted that there were pieces of plastic within it. Below **101** lay **102**, comprised of a concrete, stone, and light brown sandy silt in a fairly even mix.

Seen toward the end of the excavation, when the N half of the trench had been excavated, context **118** was a cut into the surface of **116**, in the SW corner of the trench. Context **118** had irregular edges and measured 0.55m E/W, was 0.4m wide and up to 0.25m deep. The fill of **118**, **117**, was a mix of light brown and grey/brown silty clay with stones, mortar and flecks of coal throughout.

#### **Phase 6**

The upper deposit, **101**, comprised a fairly loose green/grey stone grits and sand. Context **101** was seen throughout the trench but to the N it measured 0.03m in thickness. In the S part, where it continued into the top of **103**, it was 0.5m thick.



**Plate 2:** Trench 1, bottom part of wall 104 showing the trench excavated down to bedrock.

## **Trench 2**

Trench 2 was located at the S end of the N tower; it measured 1.50m N/S x 1.10m E/W and reached a maximum depth of 1m. A short way below the current ground surface there was a wall running N/S through the trench, leaving only a 0.4m wide strip along the western edge, where deeper excavation was possible.

## **Bedrock**

At the base of the trench, in the NW corner, bedrock **207** was seen. Context **207** was visible as large 'blocks' sloping down gradually to the N. There were no obvious tool marks on **207** but there was some light brown gritty mortar seen in the crevices between the blocks.

## **Phase 1**

Wall **209** extended N/S through the trench, measuring up to 0.6m in width and 0.8m high. The construction was with rectangular stone blocks, a mix of sandstone and basalt, pointed with hard pale grey gritty mortar. The W face went down 0.15m then stepped out (to the W) 5cm before continuing down to the bedrock. The upper 0.4m of the N end of the structure had been cut away.

**Phase 2:** Not present.

## **Phase 3**

Up to 0.4m deep at the N end of the trench, **204** was a deposit of moderately compact, mid brown, silty clay with approximately 30% stone fragments. The limited space and poor lighting made it very difficult to be certain about this deposit's relationship with wall **209**. It was certainly against the face of that structure, but whether it was in a foundation trench, had built up against it, or been cut by that feature couldn't be confidently stated.

## **Phase 4**

Sealed by **201**, context **202** was a 0.2m thick deposit of quite compact and crumbly grey brown clay with 30%-40% stones (sub-angular stone fragments measuring 8cm x 6cm on average).

Context **202** sealed **203**, a fairly loose grey/brown slightly clayey silt with approximately 40% angular stone fragments measuring 6cm x 4cm on average. Context **203** measured up to 0.5m in thickness.

Context **203** was against the N face of **206**, a brick pillar, measuring 0.35m x 0.35m, one of those currently supporting the water tank. The concrete base for **206**, context **205**, was only seen

directly under and N of the pillar. Context **206** measured 0.2m in thickness and extended 0.07m outside (to the N of) the N face of **205**.

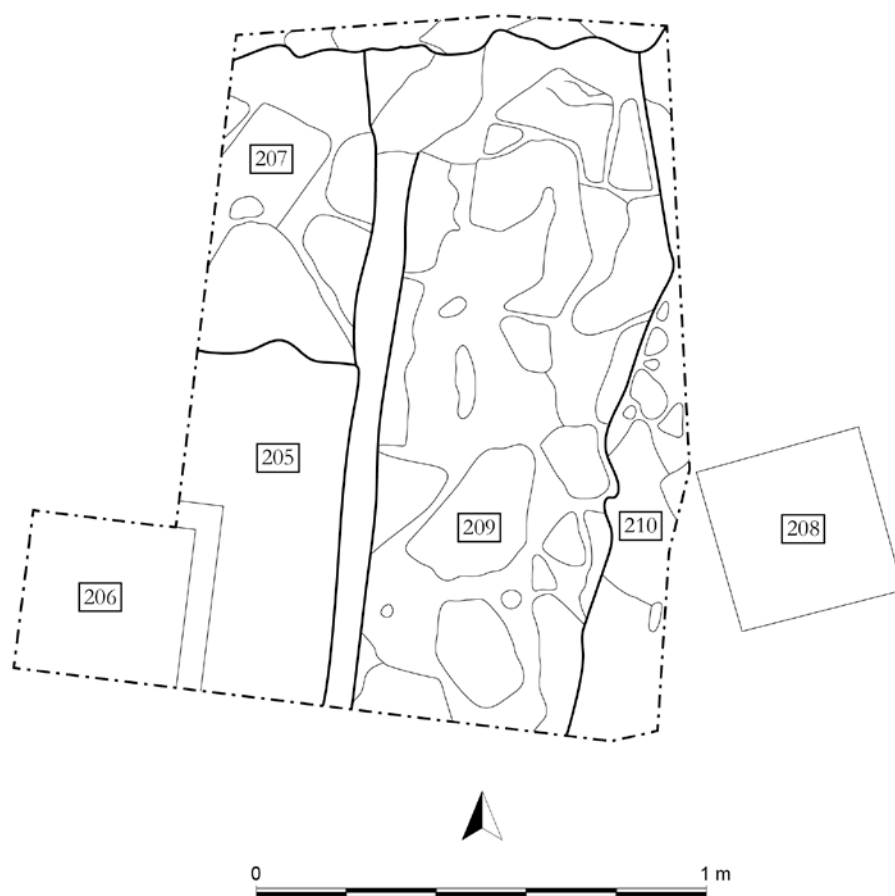


Fig. 14: Trench 2, post-excitation plan

The brick pillar **208** was located a little way to the E of the trench, so was not recorded in detail; the upstanding part of it was the same size as **206**.

Seen in a small area in the SE corner of the trench, context **210** comprised loose sandstone rubble and mortar. Only the upper 0.1m of **210** was removed due to the lack of space in this area.

#### Phase 5

The upper deposit, **201**, measured 0.1m in depth and comprised very loose light brown silty loam.

**Phase 6:** Not present.



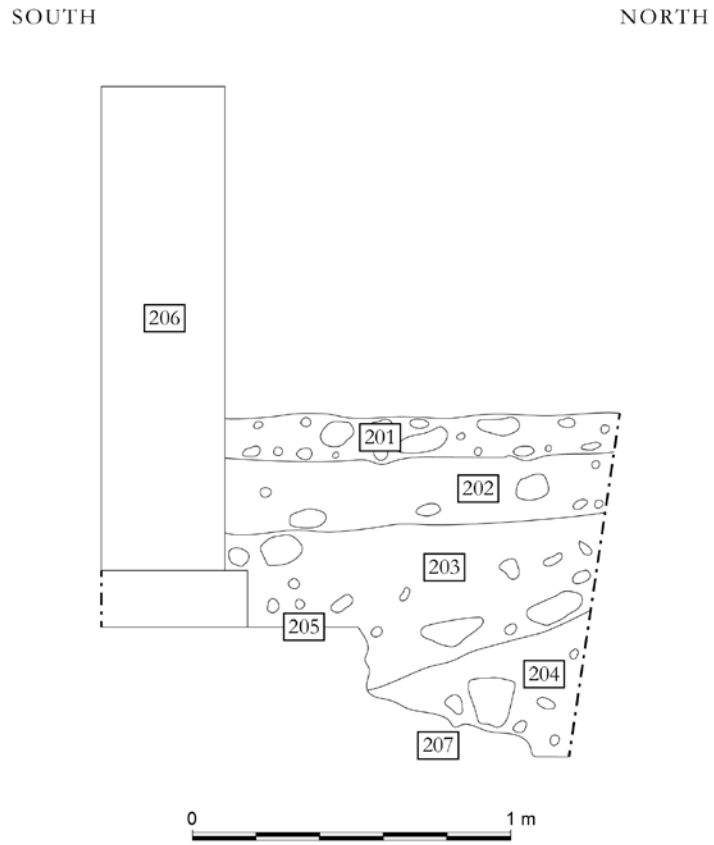


Fig. 15: Trench 2, E-facing section



Plate 3: Trench 2, upper face of wall 209.

### **Trench 3**

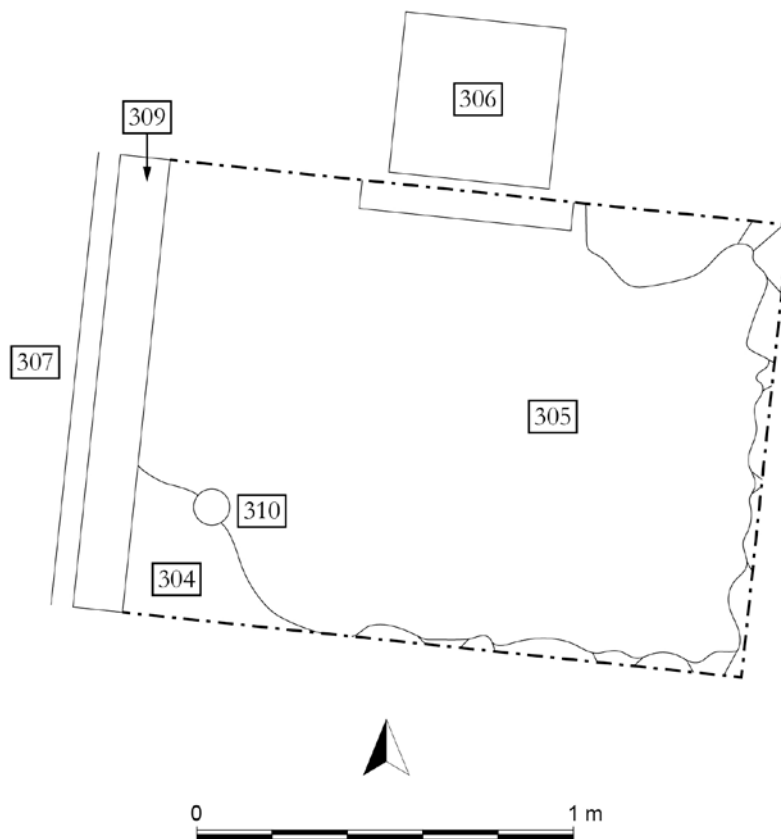
Trench 3 measured 1m N/S x 1.50m E/W, and was up to 1.1m deep. There was a pillar in the N section, and the W side was against the W wall of the N tower.

**Phases 1 - 2:** Not present.

### **Phase 3**

The W wall from the top to 0.2m above the current ground level wall was formed with curving sandstone blocks, **307**. At the base of **307**, stepping 0.08m E from it, and continuing down 0.4m, context **308** was constructed with brick. The lowest construction seen, **309**, was also of brick. It stepped in (to the E) approximately 0.12m from **308**, and although it was seen to a height of 0.7m, the base of it remained uncovered.

At the base of the excavation there was a deposit of fairly compact pink brown clay, **305**. A maximum depth of 0.1m of **305** was excavated; it was not bottomed.



**Fig. 16:** Trench 3, post-excitation plan

#### Phase 4

Roughly half way along the N section, brick pillar **306** measured 0.32m x 0.32m square and 1.50m in height, roughly 0.5m of which was underground at the start of the excavation. The concrete base under **306**, context **311**, measured 0.45m E/W, and although it was seen to a height of 0.6m, the base of it was not uncovered.

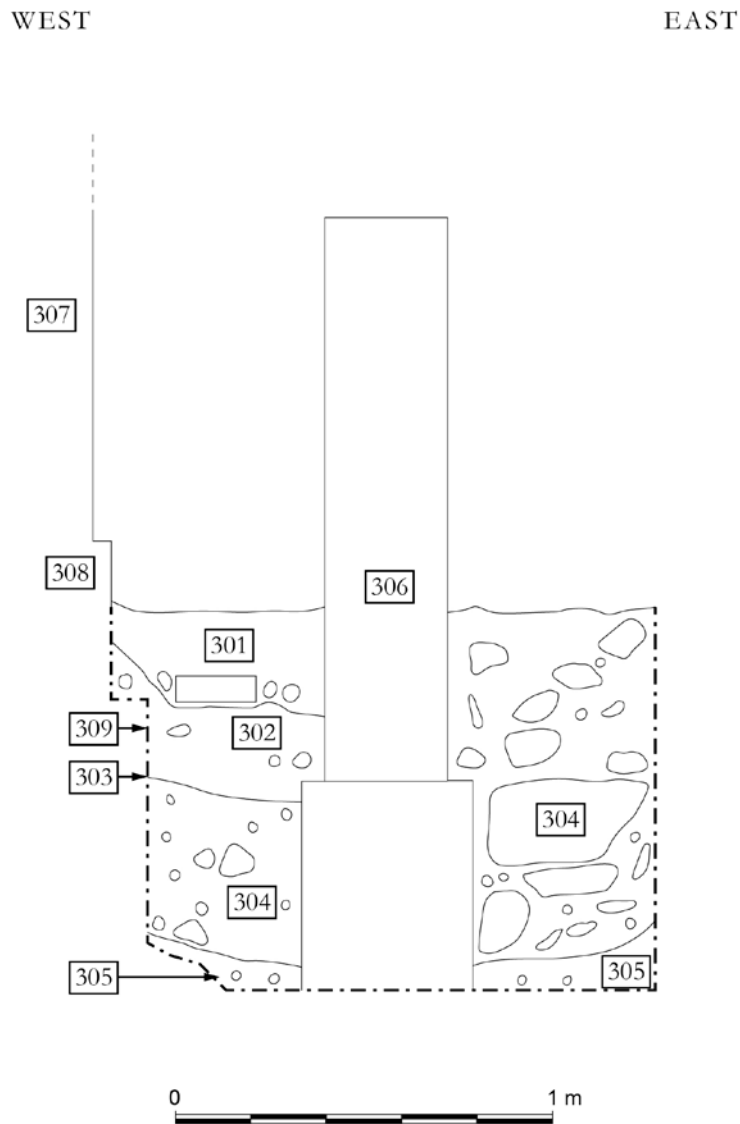


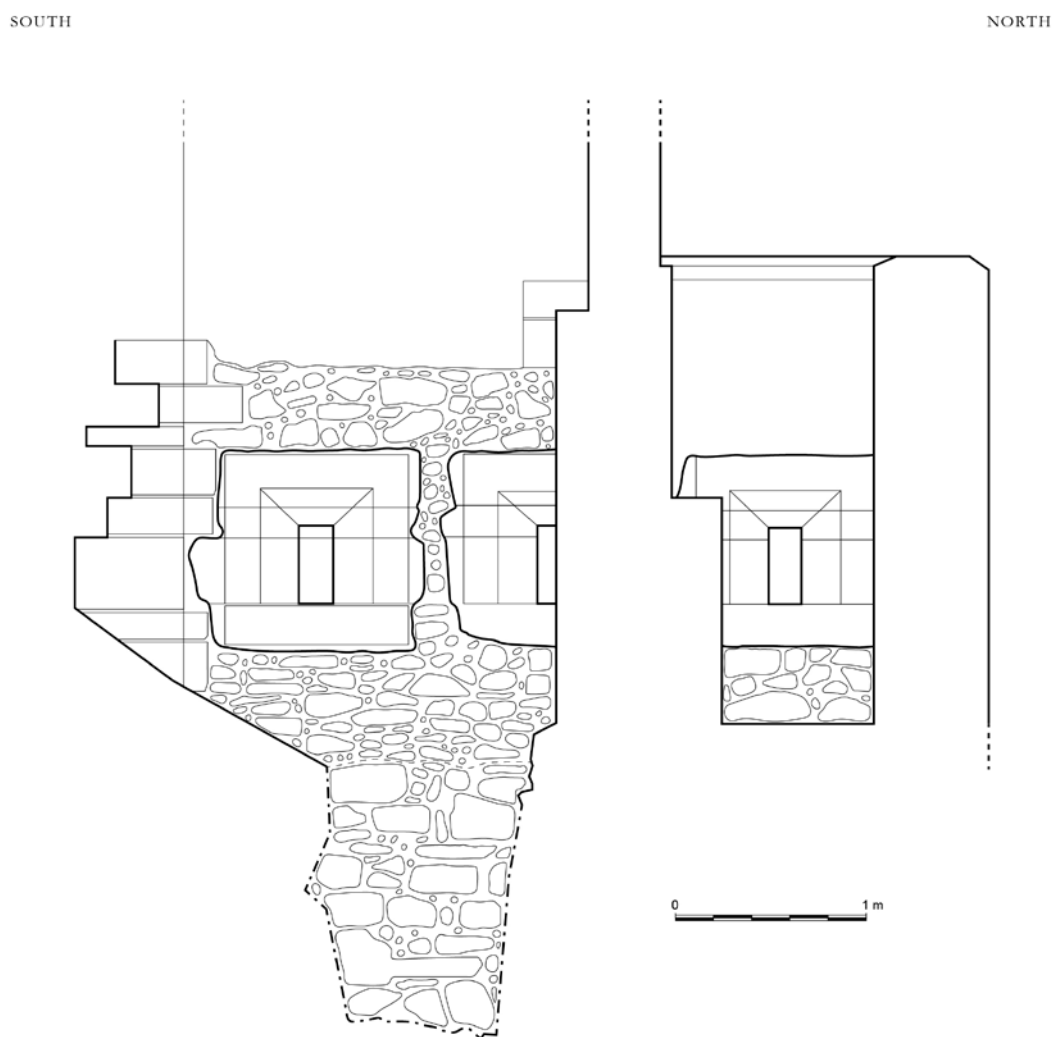
Fig. 17: Trench 3, S-facing section

#### Phase 5

Cut **303** was the upper feature in the W part of the trench. It extended N/S through the excavated area W of pillar **306**, and measured 0.5m in depth. The upper fill of **303**, context **301** was a fairly loose deposit of green blaise measuring roughly 0.25m in depth. Context **301** lay over **302**, loose light-mid brown silty loam with roughly 20% angular stones and lumps of mortar.

In the SW of the trench, context **310** was a blue plastic water pipe measuring 8cm in diameter. Filling the E side of the trench and up to 0.45m deep towards the W, context **304** was a deposit of very loose mid brown sandy loam with stones bricks and mortar throughout.

**Phase 6:** Not present.



**Fig. 18:** Trench 3, E-facing section



Plate 4: Trench 3, W section, post-excavation, showing contexts 412 - 415

#### **Trench 4**

Trench 3 measured 1m N/S x 1.50m E/W, and was up to 1.2m deep. The E side was against the E wall of the N tower.

#### **Bedrock**

The bedrock, **416**, was very uneven and showed no obvious tool marks.

**Phase 1:** Not present.

#### **Phase 2**

In the W part of the trench there were a series of deposits, **412 - 415**, that had been cut by **402** to the E, **405** to the N and **403** to the S. The area the deposits were seen in measured approximately 0.8m N/S x 0.8m E/W.

The upper of these deposits, **412**, comprised 80% fine very dark grey silt and 20% small fragments of sandstone; there were charcoal flecks and oyster shell fragments throughout.

Context **412** was very compact and measured 0.15m in thickness. It sealed **413**, another very compact deposit. Context **413** was a 0.12m thick, mix of pale brown silty clay (60%), fine pale grey silt (30%) and small sandstone fragments (10%); there were oyster shell and charcoal fragments throughout.

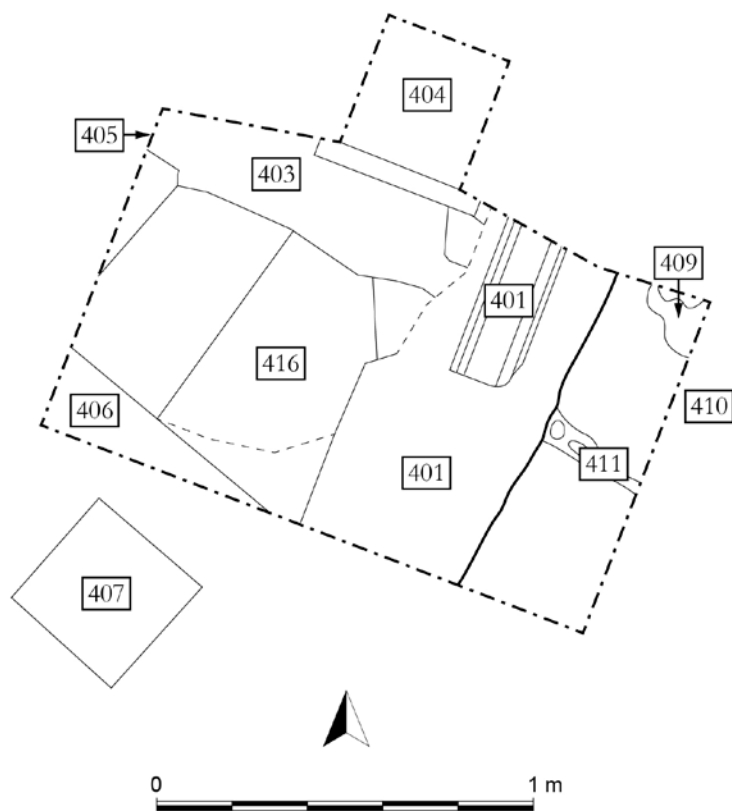


Fig. 19: Trench 4, post-excavation plan

Immediately below **413**, context **414** was a loose deposit of fine dark grey silt with many charcoal flecks and some oyster small sandstone fragments; it measured 0.2m in thickness.

The bottom of these deposits, **415**, was very loose fine pale grey silt with some charcoal and oyster shell fragments. Context **415** was up to 0.15m deep and bottomed onto bedrock **416**.

### Phase 3

The E wall of the N tower, **410**, was not recorded in detail as part of this work. The footings for **410**, context **411**, extended 0.3m E from **410** and the two large slabs visible both measured over 0.45m N/S (both continued outside the trench). There were small stones infilling between them.

Against **410**, over **411**, and cut by **402**, context **409** comprised 80% small-medium sized stone fragments and 20% dark grey silt and mortar chunks. There were both sandstone and dolomite fragments in **410** and it was seen N/S across the trench, extending 0.25m from **410**; it was up to 0.25m thick.

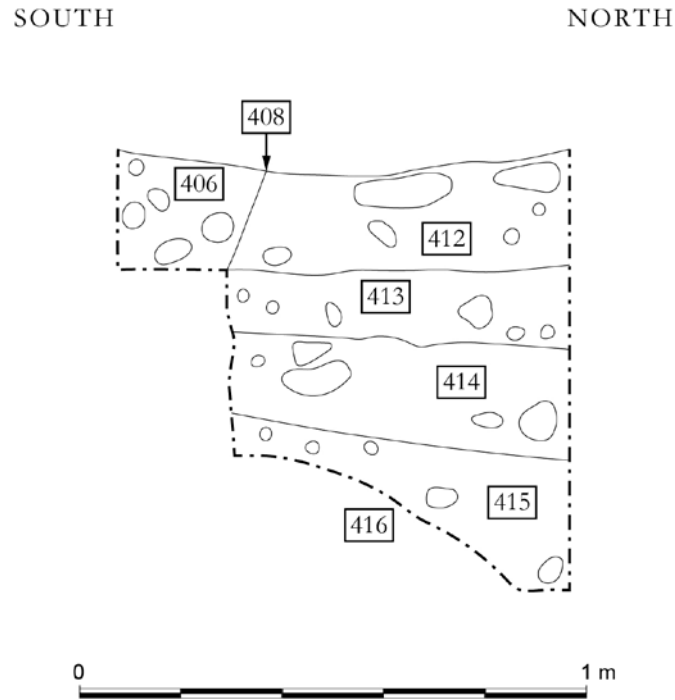


Fig. 20: Trench 4, E-facing section

#### Phase 4

Context **404** was a brick pillar to the N of the excavated area; it measured approximately 0.35m x 0.35m. The S edge of the cut for **404**, context **405**, was seen towards the NW of the trench. Context **405** was a straight-sided cut measuring at least 0.8m E/W (cut by **402** to the E) and 0.73m deep, it was located 0.35m S of pillar **407**, and bottomed onto concrete. The fill of **405**, context **403**, comprised rubble and pale grey clayey silt with some discrete lenses of pale brown clay and both shell and charcoal fragments throughout. The stone seen in **403** was usually sandstone but there were also dolerite fragments, often with mortar attached.

S of the E end of the trench, context **407** was another brick pillar measuring roughly 0.35m x 0.35m. The N edge of the cut for **407**, context **408**, appeared in the SW corner of the trench. It appeared straight-sided, but no full dimensions were revealed during the current work. The fill of **405**, context **406**, was similar to **403**.

#### Phase 5

The upper deposit, **400**, comprised whin dust and rubble. It measured roughly 0.1m in depth. Running N/S through the trench, and cut against pillar base pillar **404** to the W and **410** to the E, context **402** was a steep sided cut measuring roughly 0.5m in depth. Cut **402** carried a blue plastic water pipe and was filled with whin dust, **401**.

**Phase 6:** Not present.



**Plate 5:** Trench 4, showing the pillar 404, cut 405 and the trench edges.



## **CONCLUSIONS**

The results of the trial trenching, standing building recording and bedrock surveys revealed five basic periods of occupation and construction in and around the two water towers.

### **Period 1**

There are traces of a series of eroded rock-cut features comprising slots and crude squared cuts. They predate the Period 3 masonry and do not appear to respect the surviving Period 2 structures and deposits. They are distinct from Period 3 drainage channels and Period 5 wall trenches and quarrying activities. They extend in a rough alignment S and SE of Foog's Gate, following the likely natural upper edge of the bedrock terrace, currently occupied by the National War Memorial. At this stage, there is no dating evidence for these features but they appear to represent primarily timber structures, arguably of a defensive nature.

### **Period 2: Mid-16<sup>th</sup> century**

The lower section of the W wall of the enclosure extending from Foog's Gate, underlies a 17<sup>th</sup> century defensive line featuring intermittent small loops and larger embrasures. This wall line is at least 16<sup>th</sup> century in date, and appears to define the western limits of the upper bailey or citadel of the late medieval /post-medieval castle as depicted in 1582.

### **Period 3: Late-17<sup>th</sup> century**

A section of defensive rampart, featuring musket loops and larger embrasures survives below the mid-19<sup>th</sup> century water tower and seals Period 2 masonry. This masonry is of late-17<sup>th</sup> century date and extends S towards the QAB. The ground levels immediately E of this wall were raised and levelled along its entire length to form a firing platform comprising a series of tipped deposits c.1m deep sealing and projecting out beyond the sloping face of the bedrock.

### **Period 4: Early – Mid-18<sup>th</sup> century**

The Period 4 defensive line was recycled, defining open areas to the W of the extended Queen Margaret's Chapel - including the 'Shot Yard' . It is likely that 17<sup>th</sup> century ground levels were retained during this Period.

### **Period 5: Mid-19<sup>th</sup> century**

The first (S) of the water towers was built within the Period 4 Shot Yard in 1851, over the reduced remains of Period 3 masonry.

**Period 6: Early 20<sup>th</sup> century**

The original tank was replaced with a larger version and was augmented by a second tank (N) in 1907, an exercise which saw the elaboration of the screening masonry for both tanks and the construction of complex footings and pipe works. The latter features have significantly affected the residual Period 2 ground levels, and the castellated architecture for both Water Towers has impacted on the surviving E side of the Period 3 wall line – Period 2 masonry appears to be untouched as it is still sealed by Period 3 masonry.

However, on the evidence of Trenches 1 and 3, it appears that the bedrock slopes steeply down towards the W across the footprint of both water tower sites along a line c.3m E of the W wall of the S water tower. Therefore there is still the potential for buried Period 1, 2 and 3 features, up to 1m deep towards the W limits of the footprint of both Towers. In contrast, Trenches 2 and 4, beneath the N water tank, reached bedrock but did not expose any deposits or contexts arguably any earlier than Periods 5 and 6.

## APPENDIX 1: CONTEXT LIST

No	Trench	Description	Phase
101	1	Fairly loose grey/green stone grits and sand	6
102	1	Fill of 103, mix of concrete, stone and light brown sandy silt	5
103	1	North edge of a deep, steep-sided, cut	5
104	1	W wall of the S Tower	1
105	1	S wall of the NW corner tower	4
106	1	Foundations of 105	4
107	1	Mortar deposit, base for 106	4
108	1	Area of broken sandstone fragments	4
109	1	Dark grey silt, possibly trampled deposit	3
110	1	Grey brown clayey silt and stones, infill	3
111	1	Mid-brown clayey silt and stones	3
112	1	Loose deposit of light brown mortar	3
113	1	Loose mid-brown sandy silt with occasional stones	3
114	1	Loose grey brown sandy silt	3
115	1	Mid-grey clayey silt	3
116	1	Fairly compact mid-brown slightly silty clay	2
117	1	Mix of light brown and grey brown silty clay, fill of 118	5
118	1	Possible cut feature, may be base of 103	5
119	1	Fairly compact mid-dark brown slightly silty clay	2
120	1N	Very loose mid-dark brown silty loam	6
121	1N	Yellow light brown mortar and grey brown silt in a fairly even mix	5
122	1N	Surface of stone slabs pointed with yellow/light brown mortar	4
123	1	Bedrock at the W end of trench	bedrock
201	2	Light brown sandy loam, topsoil	5
202	2	Quite compact grey brown clay and stones	4
203	2	Fairly loose grey brown clayey silt and stones	4
204	2	Moderately compact, mid-brown silty clay and stone fragments	3
205	2	Concrete pillar base	4
206	2	Brick built pillar	4
207	2	Bedrock	bedrock
208	2	Brick pillar E of the trench	4
209	2	Wall	1
210	2	Rubble in-filled against 209	4
301	3	Fairly loose green blaise, upper fill of 303	5
302	3	Loose light-mid brown silty loam with angular stones and lumps of mortar, lower fill of 303	5
302	3	Cut seen in the W part of the trench	5
304	3	Very loose mid-brown sandy loam with brick and stone fragments throughout	5
305	3	Fairly compact pink/brown clay	3
306	3	Brick pillar	4
307	3	West wall of the N tower	3
308	3	Brick footings seen at base of 307	3
309	3	Bricks stepped out from, and under, 308	3
310	3	Blue plastic water pipe	5
311	3	Concrete footings of 306	4

No	Trench	Description	Phase
400	4	Whin dust and rubble topsoil	5
401	4	Whin dust and blue plastic pipe filling 402	5
402	4	Cut for modern water pipe	5
403	4	Fill of 405	4
404	4	Brick and concrete pillar in the N section	4
405	4	Cut for pillar 404	4
406	4	Fill of 408	4
407	4	Brick pillar S of the trench	4
408	4	N side of the cut for 407	4
409	4	Rubble against 410 and over 411	3
410	4	Ewall of the N tower	3
411	4	Footings for 410	3
412	4	Very compact dark grey silt	2
413	4	Pale brown silty clay, sealed by 412	2
414	4	Dark grey charcoal rich silt, sealed by 413	2
415	4	Pale grey silt, sealed by 414	2
416	4	Bedrock	bedrock

## APPENDIX 2: LIST OF DRAWINGS

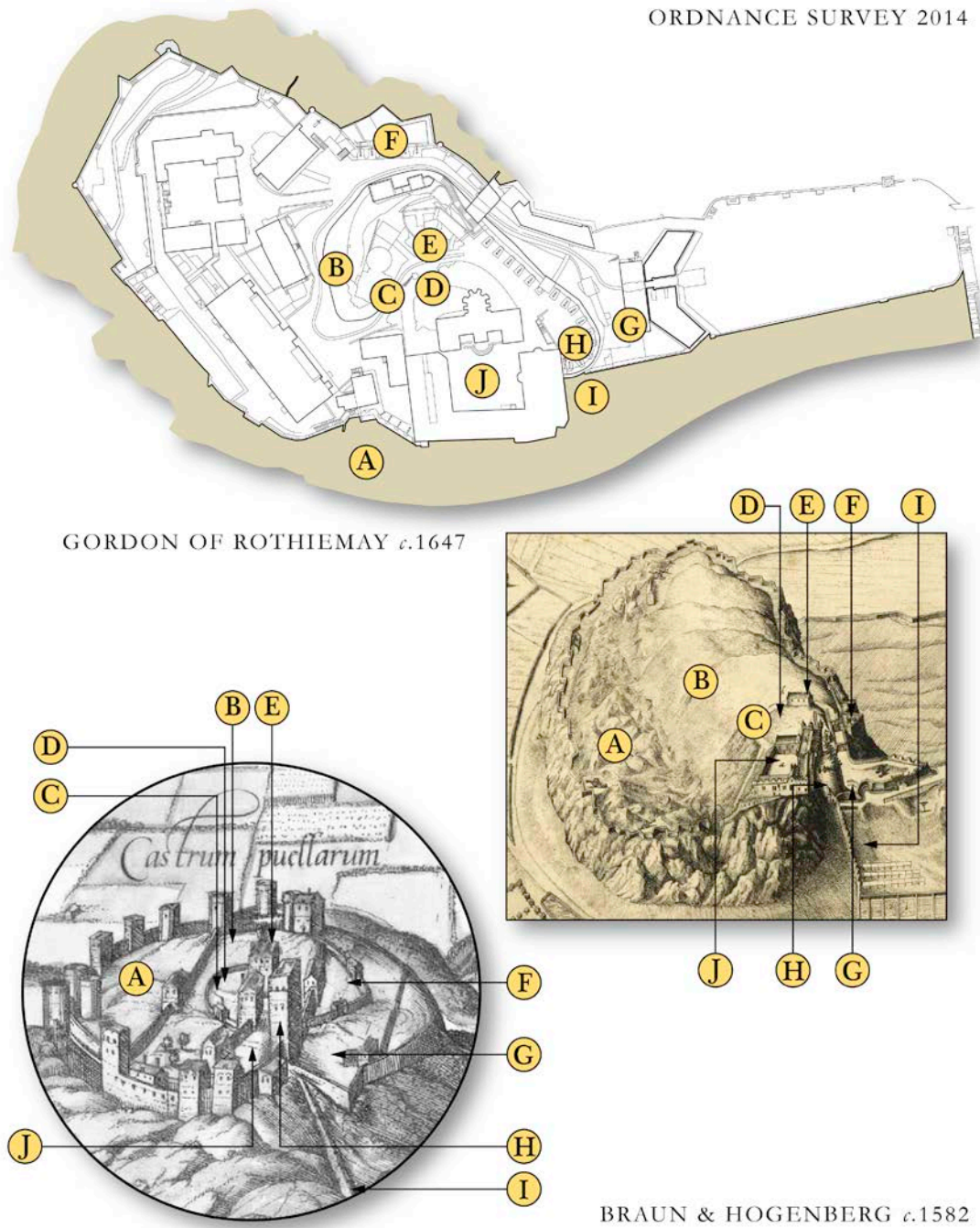
No	Trench	Type	Scale	Description
1	1	Elevation	1:20	Of the wall face to the W of Trenches 1 and 1 N.
2	1	Elevation	1:20	Of the outer face of the NW corner tower's S wall, and the trench deposits below.
3	1 and 1 N	Plan	1:20	Trench 1 N, excavated to surface 122. Trench 1 excavated to 116.
4	2	Plan	1:20	Post-excavation plan 205 - 210.
5	2	Section	1:20	W section, 201 - 207.
6	4	Plan	1:20	Post-excavation plan, 401, 403 - 407, 409 - 412 and 416.
7	4	Section	1:20	W, showing 406, 408 and 412 - 416.
8	3	Plan	1:20	Post-excavation: 304-306 and 308 - 310.
9	3	Section	1:20	North: 301-309.
10	1	Plan	1:20	Showing bedrock 123 in the base of Trench 1.

**APPENDIX 3: LIST OF PHOTOGRAPHS**

No	From	Description	Trench	Date
1	E	Gun slots in the W wall	1	07/11/13
2	E	Surface at the base of the excavation	1 N	18/11/13
3	E	Surface at the base of the excavation	1 N	18/11/13
4	SE	Surface at the base of the excavation	1 N	18/11/13
5	S	Upper face of wall 209	2	12/11/13
6	SE	W face of wall 209	2	12/11/13
7	E	Pillar 205 and S end of the W section	2	12/11/13
8	E	Bedrock and the N end of the West section	2	11/11/13
9	S	Pillar 404, footings 411 and the N section	4	18/11/13
10	E	W section, post-excitation, 412 - 415	3	18/11/13
11	S	N section 301 - 309	3	18/11/13
12	S	N section with the trench excavated down to bedrock	1	18/11/13
13	S	N section with the trench excavated down to bedrock	1	18/11/13
14	E	Bottom part of wall 104 and the trench excavated down to bedrock	1	18/11/13
15	E	Bottom part of wall 104 and the trench excavated down to bedrock	1	18/11/13
16	E	Bottom part of wall 104 and the trench excavated down to bedrock	1	18/11/13
17	E	Pillar 404 and cut 405	4	18/11/13
18	S	Pillar 404 and cut 405	4	18/11/13
19	S	Pillar 404, cut 405 and the trench edges	4	19/11/13
20	E	W elevation	4	19/11/13
21	E	W elevation	4	19/11/13
22	S	N elevation	4	19/11/13

## APPENDIX 4: A COMPARISON OF HISTORIC PLANS

A comparison of features of Edinburgh Castle as depicted on the modern Ordnance Survey map (2014), Gordon of Rothiemay's map (c.1647) and Braun and Hogenberg's map (c.1582).

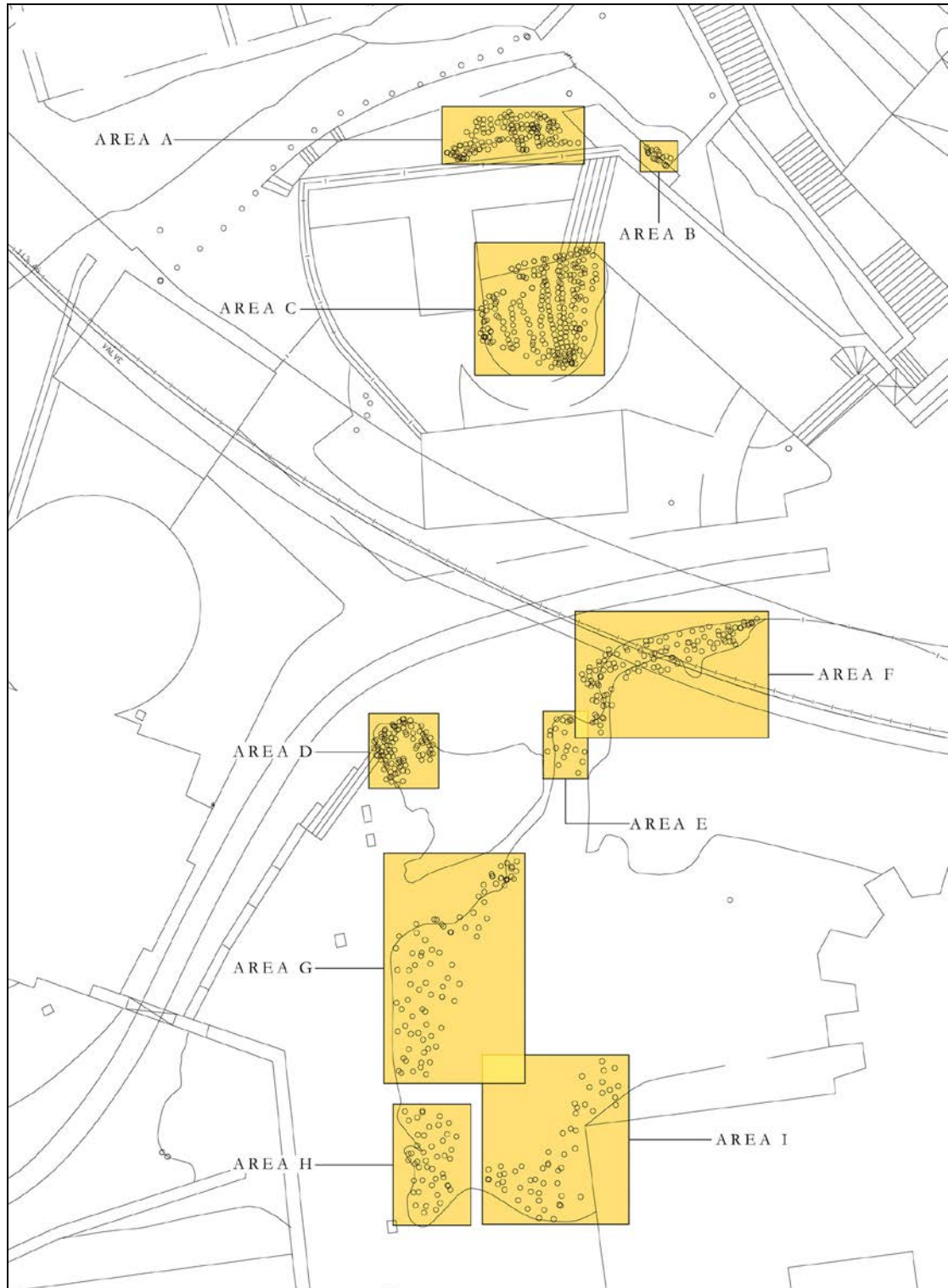


Index of highlighted features:

- A. The lower ragged bedrock ridge forming the S portion of the Castle rock. Braun & Hogenberg show this as being separated from the higher central bedrock spine to the N (B) by a roughly E-W cross-wall with a building located centrally along it. The outer defensive wall contains multiple towers. Gordon shows the area as bare without the towers on the outer wall and no E-W dividing wall to B.
- B. The central (roughly E-W) bedrock spine which drops down from the Citadel (D) in a series of undulating shelves (especially on Gordon's plan). There is quite a severe drop to (A) to the S. The highest point of the castle is shown as holding St Margaret's Chapel (E). Braun & Hogenberg again show this as an area contained within walls with numerous buildings around the perimeter walls with the Palace Square (J) to the E.
- C. A track, or earthwork rampart, is shown encircling the Citadel mound (D) and running up to the Palace Square (J). Braun & Hogenberg show a wall surrounding the W, S & E sides of the road with a gate to the E. This feature is not indicated by Gordon.
- D. The Citadel mound on which is St Margaret's Chapel (E).
- E. St Margaret's Chapel. Gordon shows it as a recognisable single-storey structure. Braun & Hogenberg show a large tower of several storeys on the same spot, unless this tower is in front of and obscuring the chapel behind.
- F. A triangular area of ground defended by walls containing buildings on the site of Argyle's Battery on Gordon.
- G. Defensive spur.
- H. Braun & Hogenberg show David's Tower which is replaced by the half-Moon Battery on Gordon.
- I. Flodden Wall.
- J. Palace Square (Note confusion on earlier drawing as building on S, that appears to represent the Great Hall, is on open area to W).

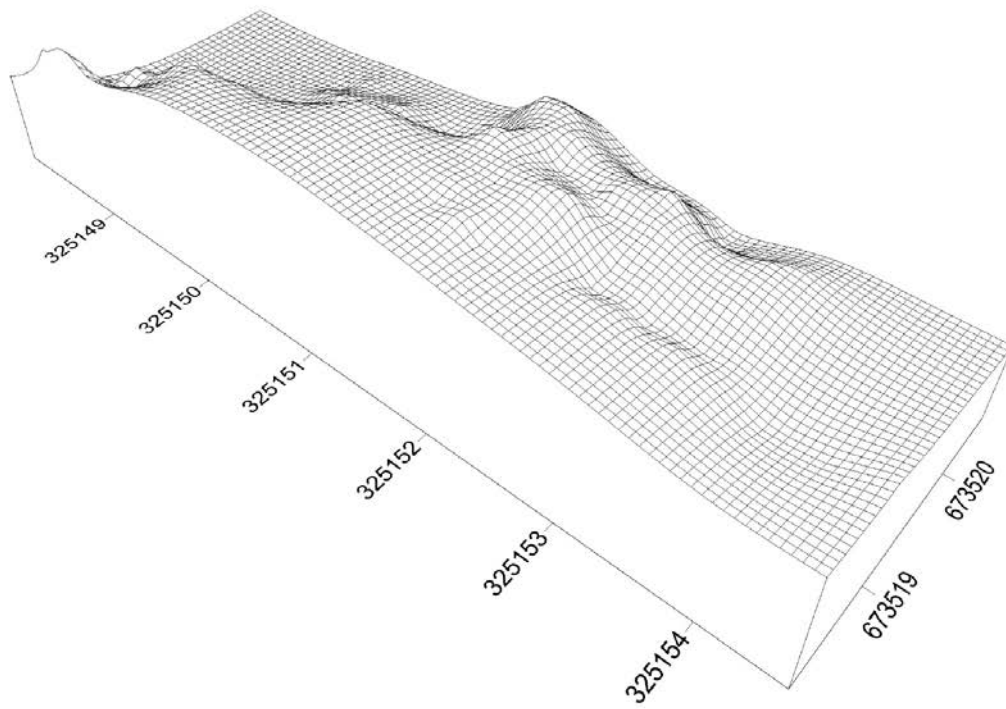
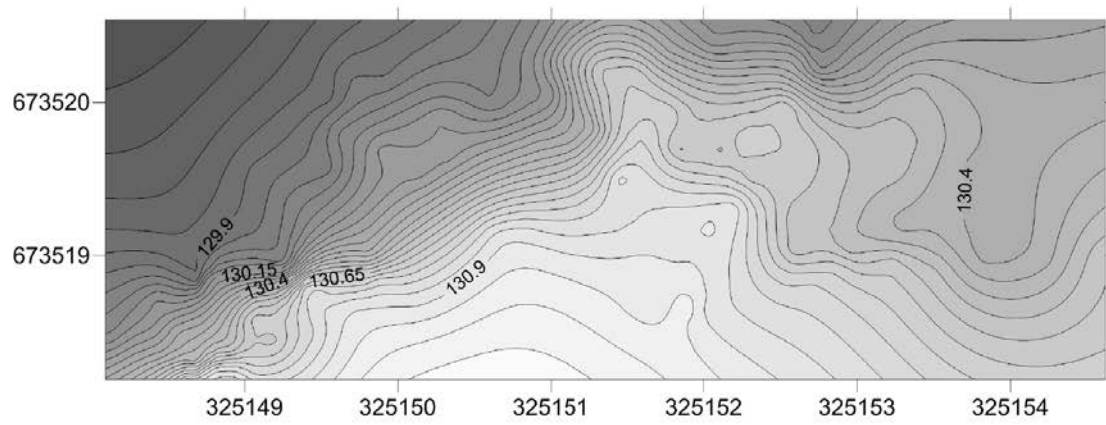
## APPENDIX 5: BEDROCK SURVEY

### 1. GPS SURVEY

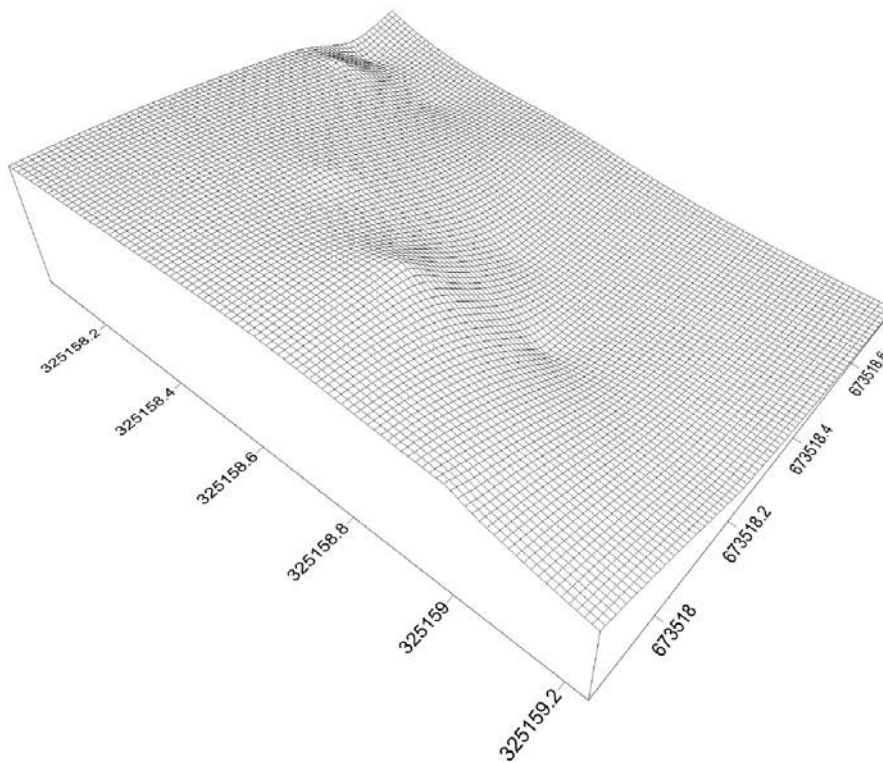
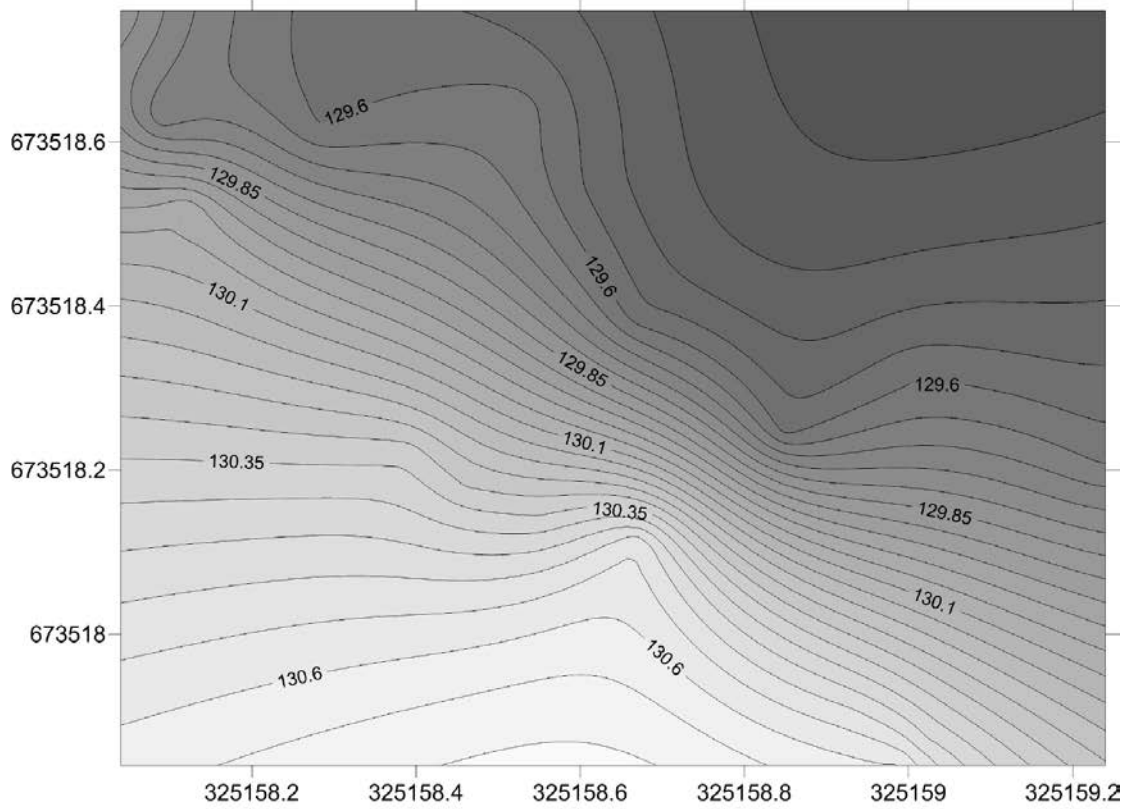




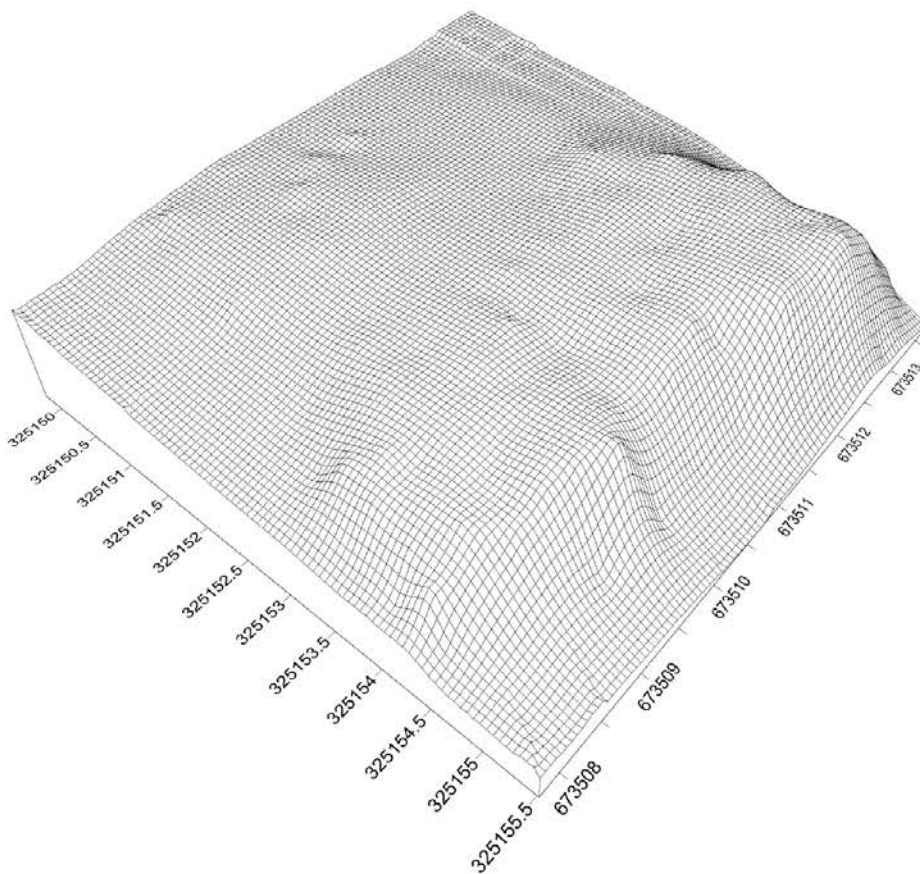
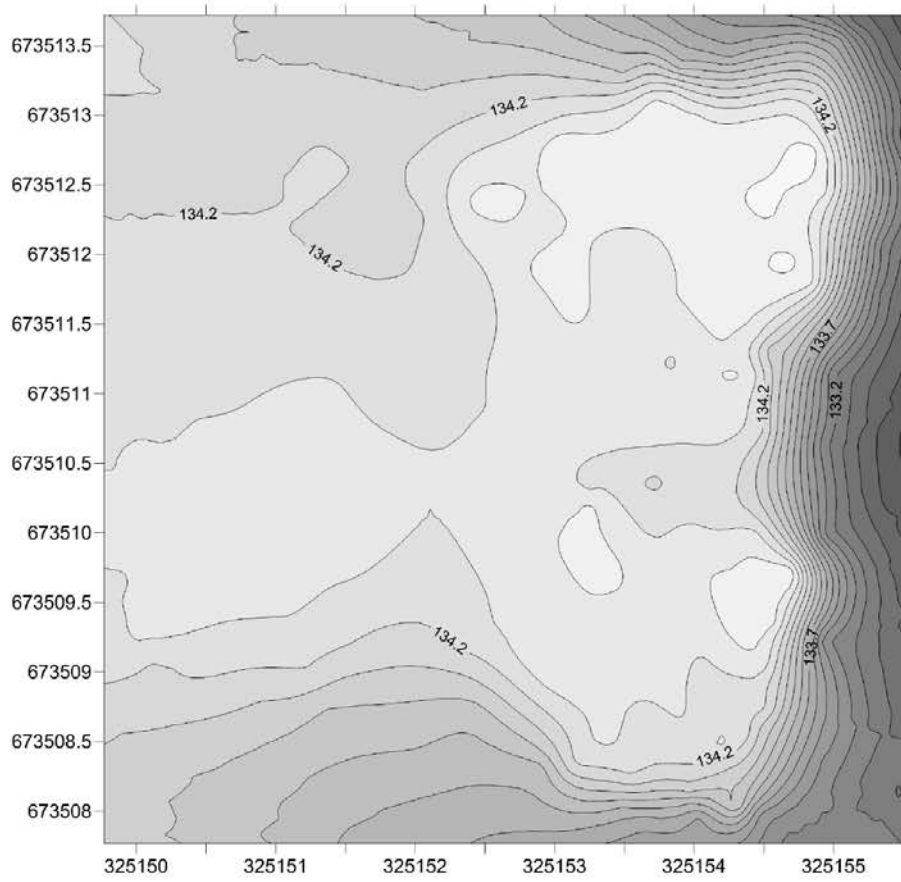
## SURVEY AREA A



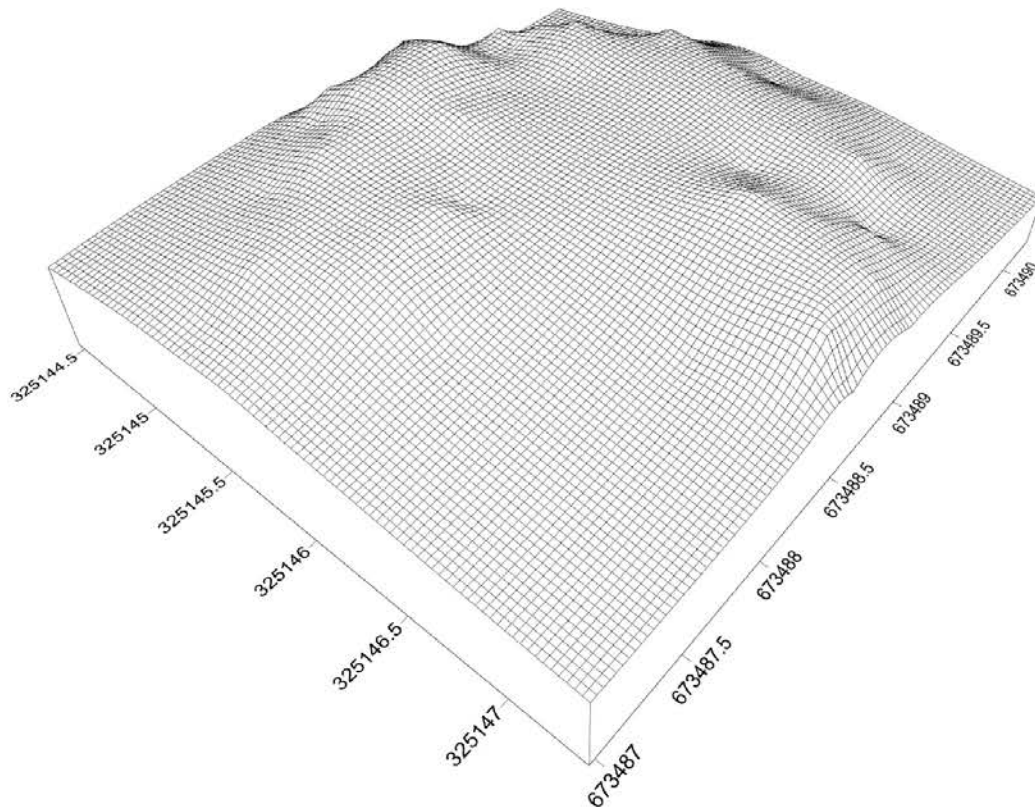
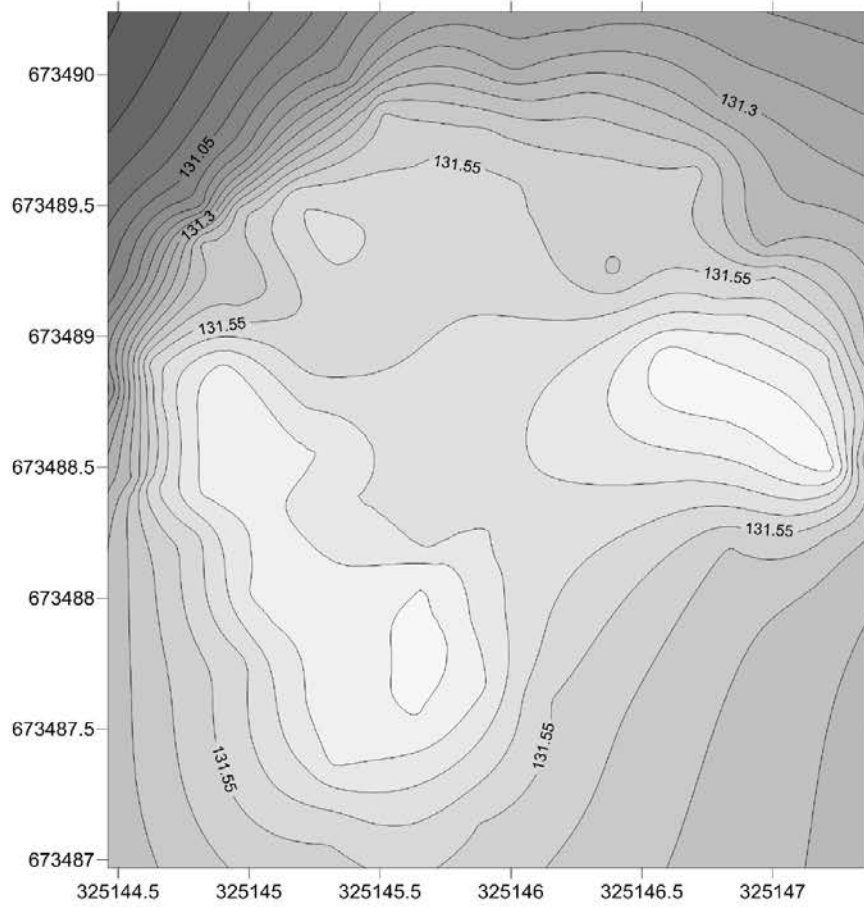
### SURVEY AREA B



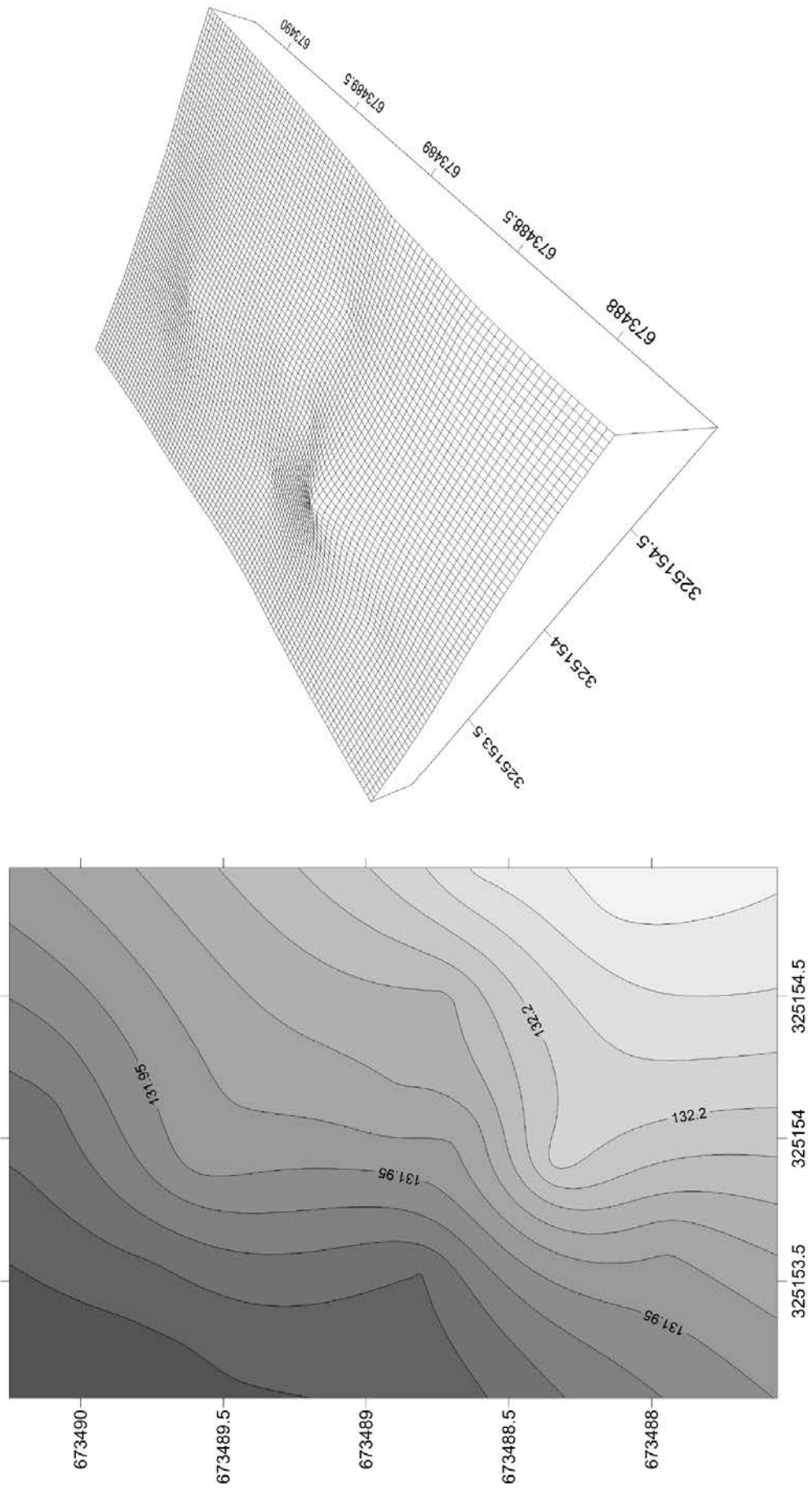
### SURVEY AREA C



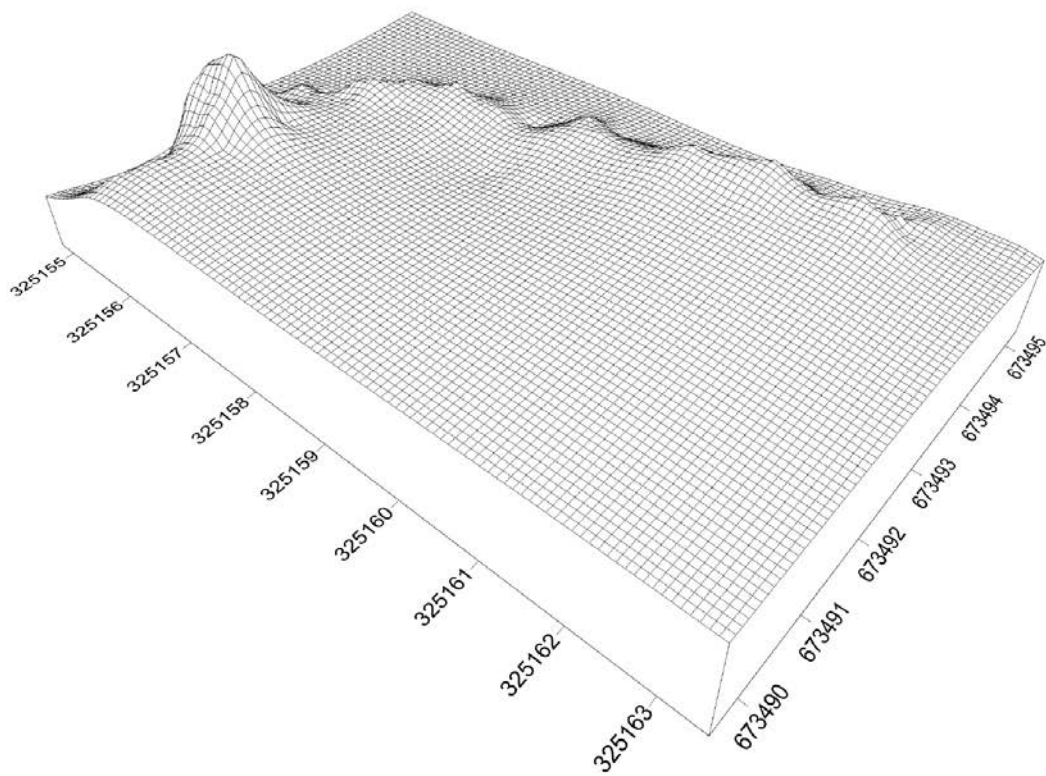
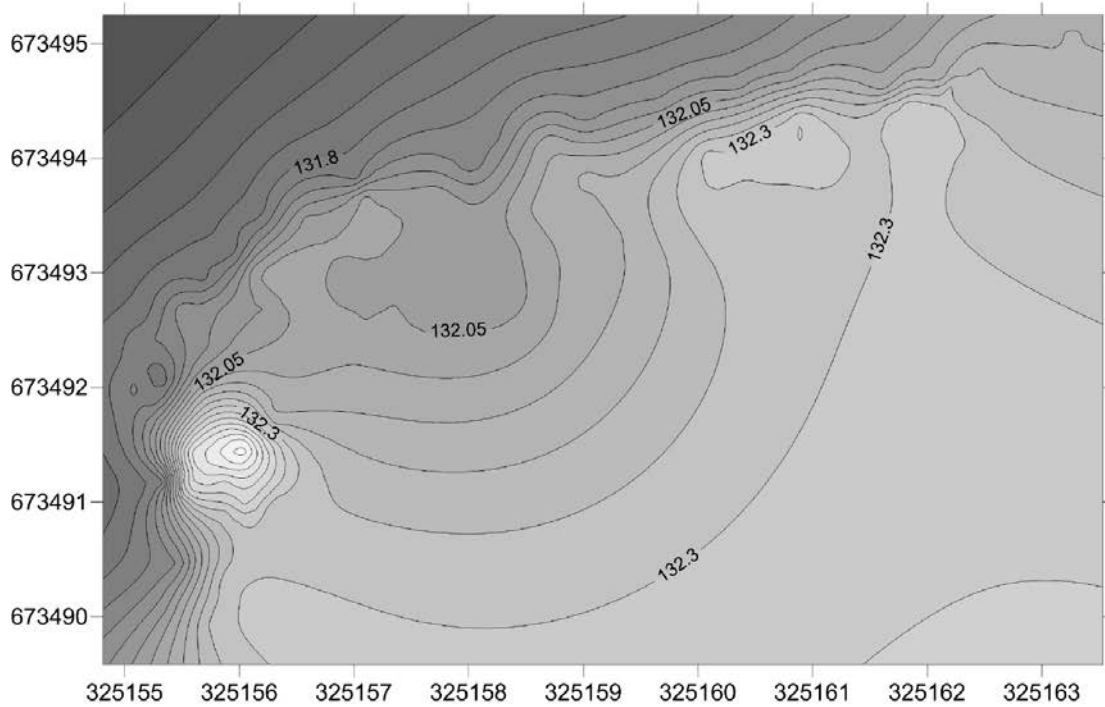
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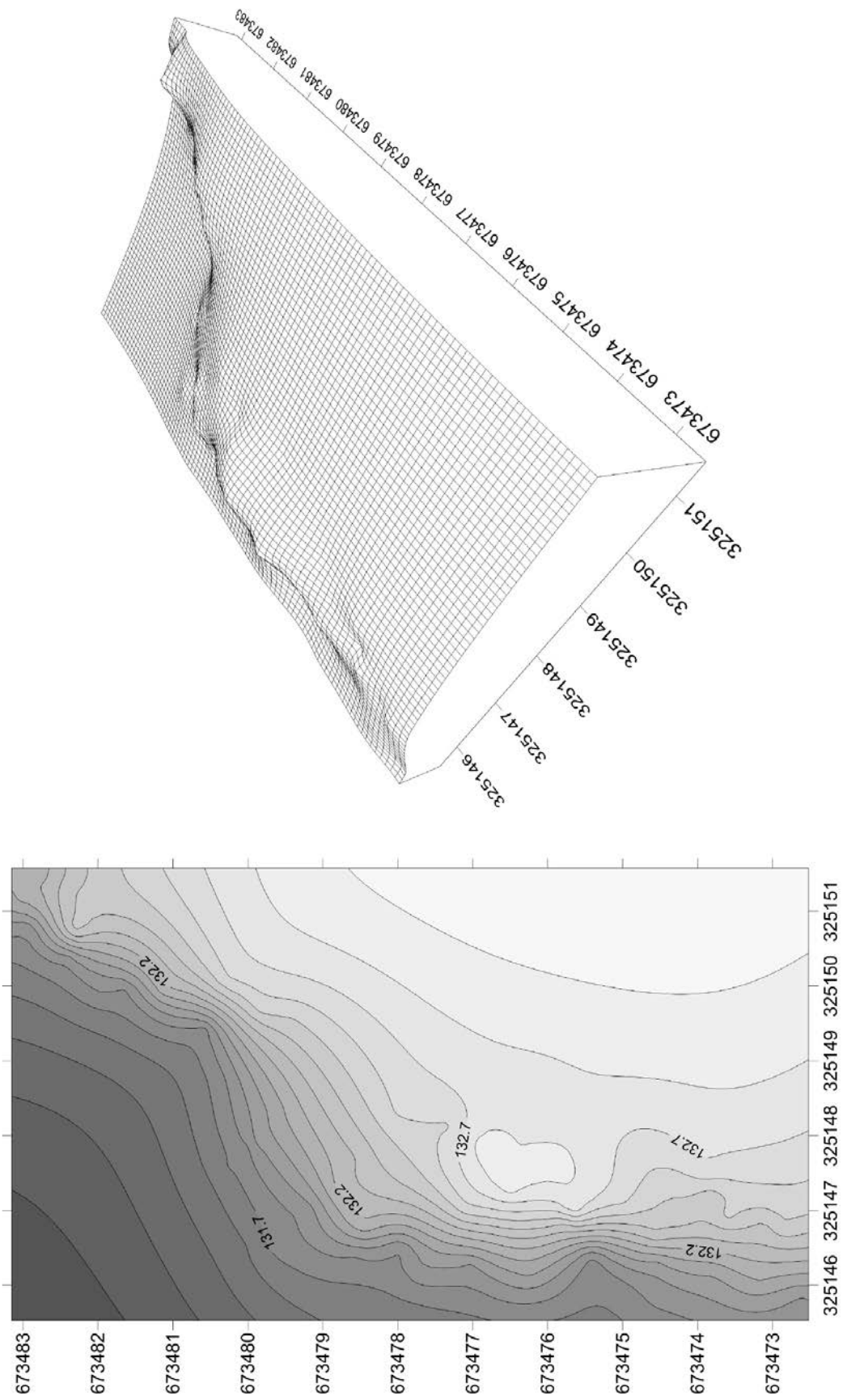
SURVEY AREA E



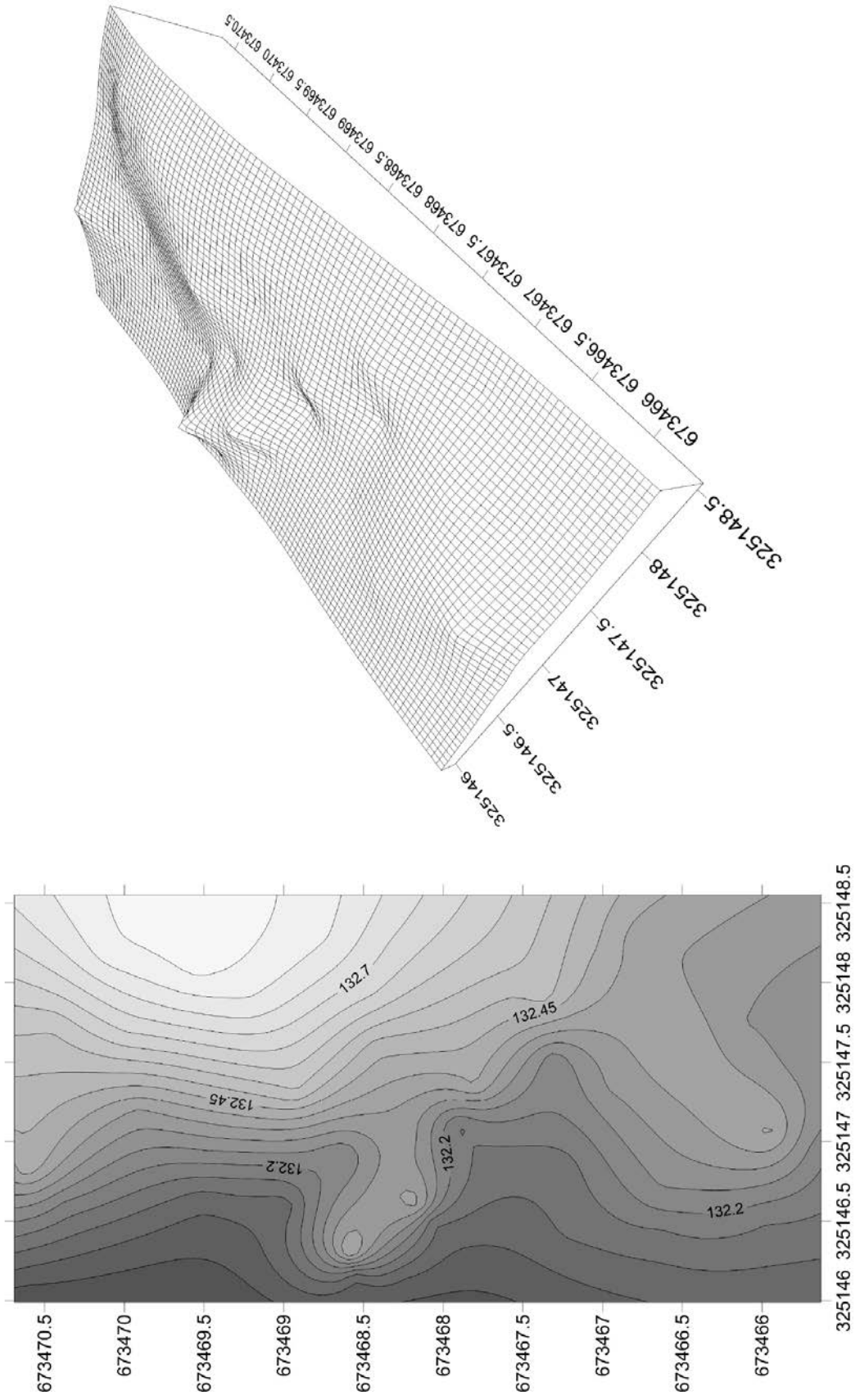
### SURVEY AREA F



SURVEY AREA G

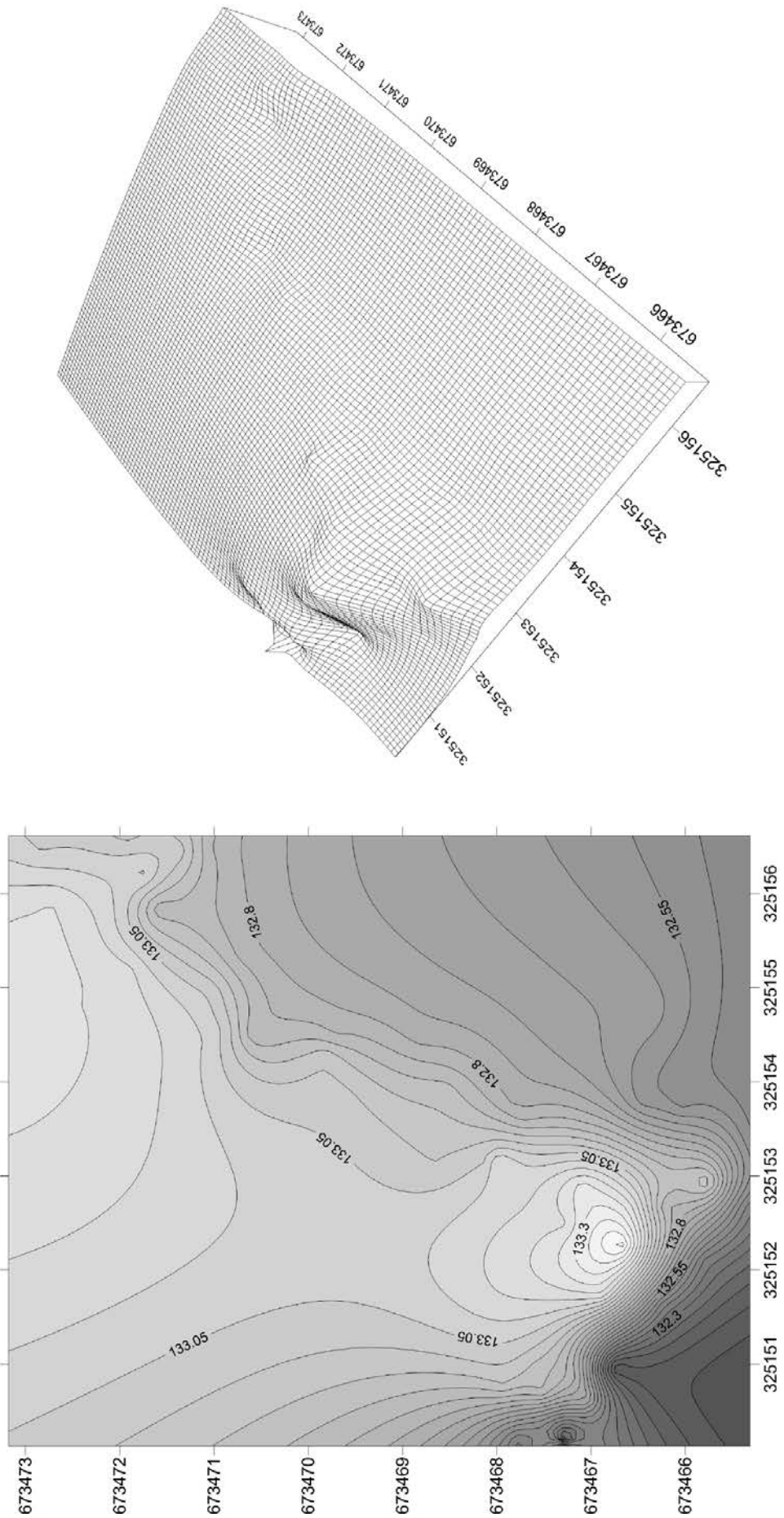


SURVEY AREA H

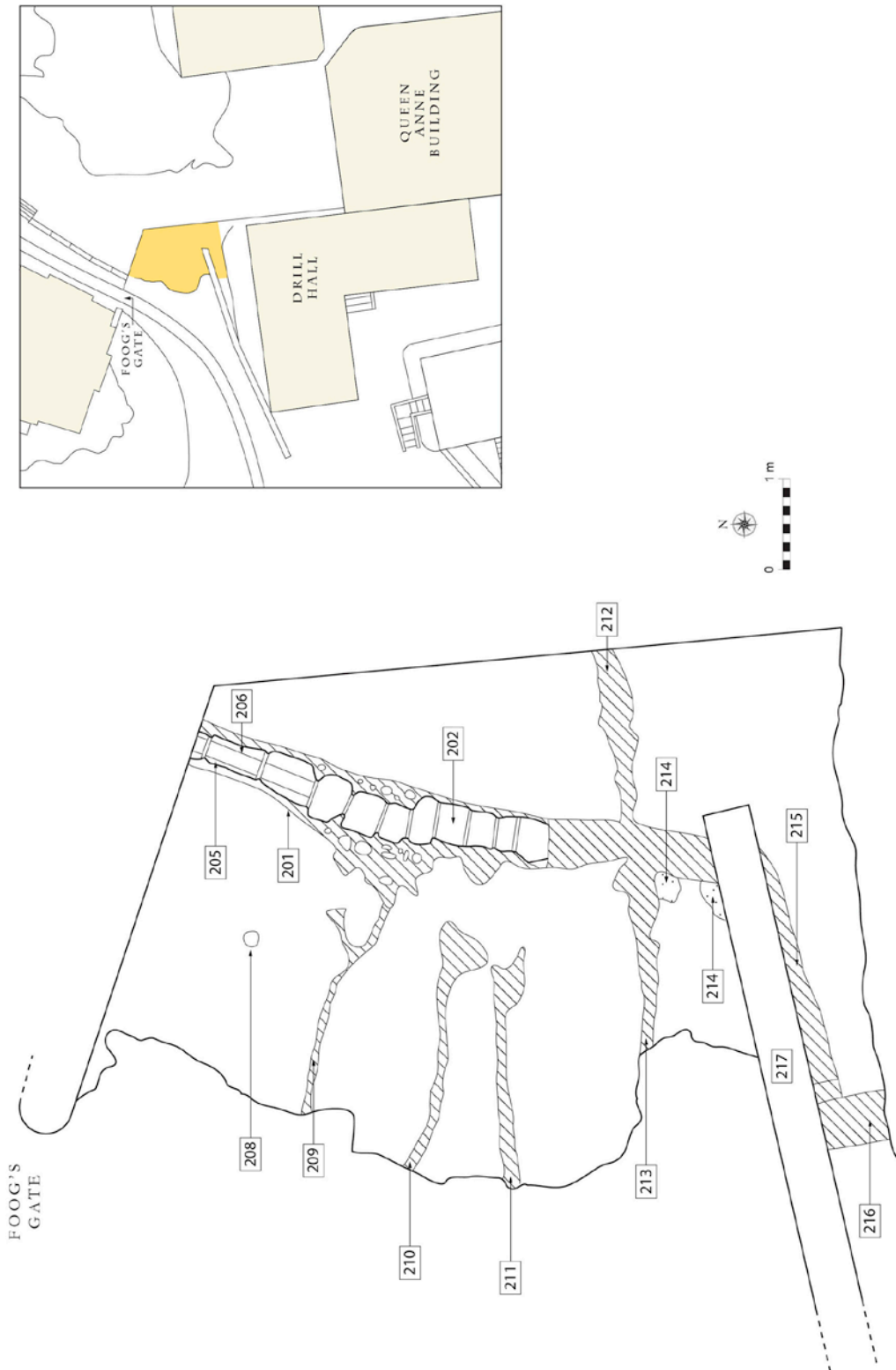


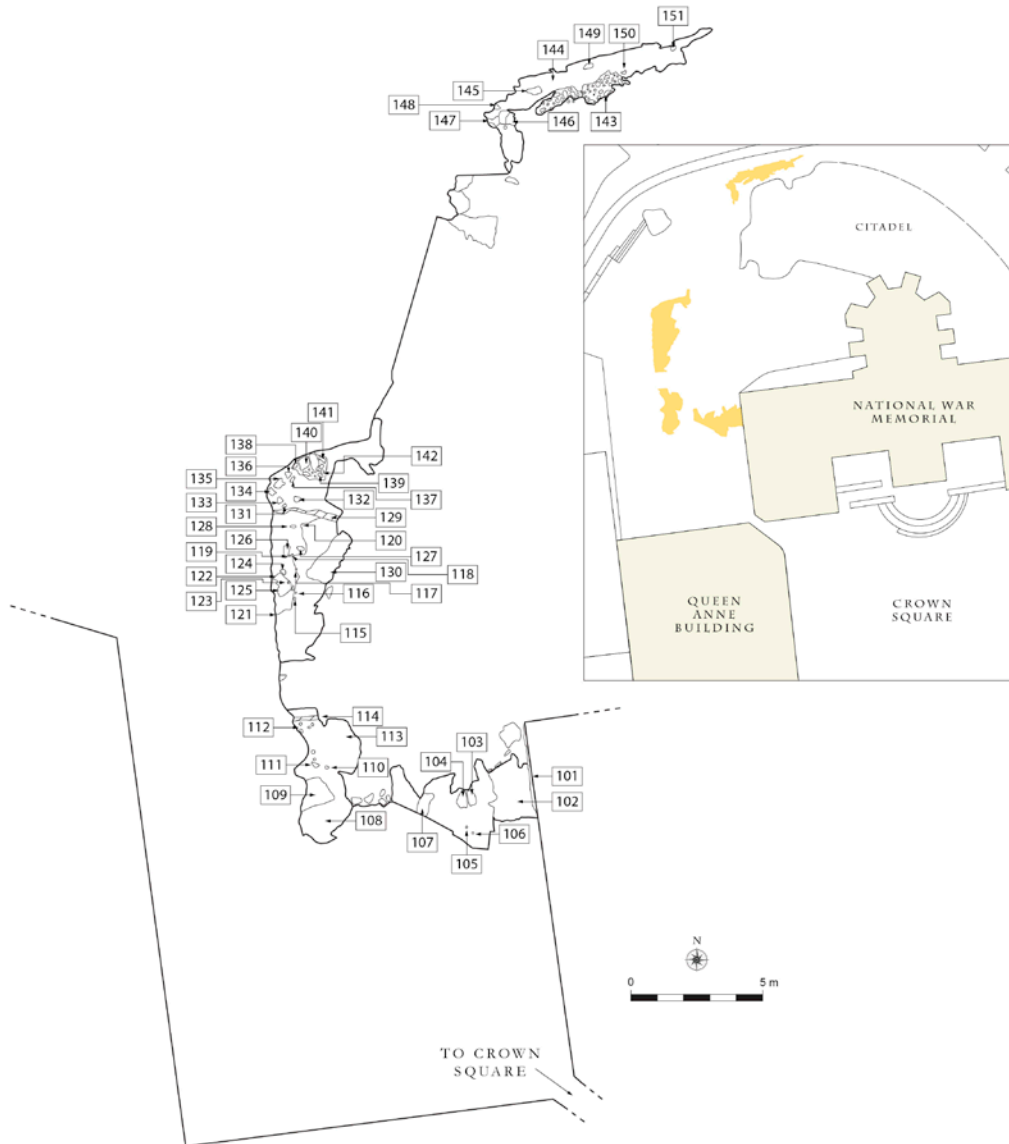


SURVEY AREA I



## 2. DRAWN BEDROCK SURVEY





**BEDROCK CONTEXT NUMBERS**

<b>No.</b>	<b>Description</b>
101	Footings below the War Memorial at N end of W wall. Bedrock and sandstone pieces bonded in a yellowish gritty lime mortar. Some modern concrete still attached to surface.
102	Area of bedrock which may have been subject to flattening. Approximately 1.2m N/S x 0.5m E/W (probably continuing E under 101). Possible part of the ground preparation for the building of St Mary's Chapel, suggesting that the building was sited further W and possibly S than the war memorial.
103	Possible cut in the bedrock 0.45m NW/SE, 0.35m wide and up to 0.2m deep. NE edge is along a seam in the bedrock but base shows possible indications of cutting.
104	Possible cut gully in the bedrock 0.7m N/S, 0.4m wide and up to 0.3m deep. Base and sides look deliberately cut.
105	Round drill hole in bedrock, 0.04m diameter x 0.23m deep
106	Round drill hole in bedrock, 0.04m diameter x 0.13m deep
107	Large possible cut in the bedrock. Approximately 0.9m N/S x 0.55m wide, up to 0.45m deep. W side slopes at a 45 degree angle, N side is vertical and E side slopes steeply.
108	Area of bedrock which may have been subject to flattening. Approximately 1.30m N/S x 1.90m E/W.
109	Possible cut in the bedrock 1.2m NE/SW, 1m wide and up to 0.3m deep. E and S sides are vertical, N side is sloping and there is no edge to the W where it meets the cobbles. No visible tool marks.
110	Possible cut in the bedrock 0.2m E/W x 0.1m wide x up to 0.25m deep. No visible tool marks.
111	Possible cut in the bedrock 0.3m SE/NW x 0.2m wide x up to 0.25m deep. No visible tool marks.
112	6 small patches of yellowish gritty lime mortar seen on 113 representing the remains of a building/wall.
113	General number for this patch of bedrock. S edge forms N edge of 110 and 111. Drainage channel 114 may continue at E side of the upper N edge (obscured by soil).
114	Possible drainage channel currently visible in a stretch 1m E/W, 0.15m wide x 0.1m deep. The channel may continue at E side of the upper N edge (obscured by soil).
115	Round drill hole in bedrock, 0.04m diameter (0.05m-0.32m deep)
116	Round drill hole in bedrock, 0.04m diameter (0.05m-0.32m deep)
117	Round drill hole in bedrock, 0.04m diameter (0.05m-0.32m deep)
118	Round drill hole in bedrock, 0.04m diameter (0.05m-0.32m deep)
119	Round drill hole in bedrock, 0.04m diameter (0.05m-0.32m deep)
120	Round drill hole in bedrock, 0.04m diameter (0.05m-0.32m deep)
121	Possible cut in the bedrock delineated by drill holes 115-120, bedrock truncated to the W.
122	Patch of yellowish gritty lime mortar up to 0.3m N/S x 0.2m wide representing the remains of a building/wall.
123	Patch of yellowish gritty lime mortar in the base of cut 125, up to 0.2m N/S x 0.1m wide representing the remains of a building/wall.
124	Patch of yellowish gritty lime mortar up to 0.25m N/S x 0.25m wide representing the remains of a building/wall.
125	Possible cut in the bedrock 1m N/S x 0.9m wide x up to 0.3m deep. No visible tool marks. 115-125 may all represent ground works ahead of the construction of the 19 <sup>th</sup> century wash house.
126	Possible cut in the bedrock 0.5m N/S x 0.3m wide x up to 0.25m deep. No visible tool marks.
127	Possible cut in the bedrock 0.3m E/W x 0.2m wide x up to 0.35m deep, narrowing to the E. Steep sides. No visible tool marks.
128	Patch of yellowish gritty lime mortar up to 0.28m N/S x 0.18m high on the N side of

No.	Description
	the bedrock face, representing the remains of a building/wall.
129	Possible cut gully, meandering down from E/W through the bedrock. Obscured by garden soil to the E, 0.2m wide and extends 1.35m W. It then drops and narrows against a seam in the bedrock.
130	Weathered bedrock crown truncated to N, S and W.
131	Possible cut in the bedrock, roughly triangular, 0.25m N/S x 0.25m wide x up to 0.12m deep. No visible tool marks. 131-138 are generally silted up fairly shallow cuts in the bedrock and may represent bedrock preparation ahead of the construction of the 19 <sup>th</sup> century wash house.
132	Possible cut in the bedrock, 0.25m N/S x 0.4m wide x up to 0.15m deep. No visible tool marks.
133	Area of bedrock which may have been subject to flattening. Approximately 0.3m N/S x 0.3m E/W.
134	Possible cut in the bedrock with jagged edges, 0.35m NE/SW x 0.34m wide x up to 0.13m deep. No visible tool marks.
135	Possible cut in the bedrock with jagged edges, 0.5m E/W x 0.4m wide x up to 0.12m deep (although silted up). No visible tool marks.
136	Possible cut in the bedrock, roughly triangular, 0.3m NE/SW x 0.3m wide x up to 0.1m deep. No visible tool marks.
137	Possible cut in the bedrock, 0.3m NE/SW x 0.13m wide x up to 0.14m deep. No visible tool marks.
138	Possible cut in the bedrock, 0.4m NE/SW x 0.2m wide x up to 0.1m deep. No visible tool marks.
139	Patch of stones (bedrock and sandstone pieces) bonded in a yellowish gritty lime mortar up to 1.2m E/W x 0.7m wide, representing the remains of a building/wall.
140	Two large bedrock boulders
141	Possible cut in the bedrock, 0.35m N/S x 0.33m wide x up to 0.15m deep. No visible tool marks.
142	Possible larger cut into which 138-141 were inserted.
143	Base of a wall 3.25m E/W x 0.75m N/S. A mixture of sub-angular and sub-rounded pieces of bedrock & sandstone bonded in a yellowish gritty lime mortar. Possible remains of N wall of the c.19 <sup>th</sup> century cook house.
144	Area of bedrock which may have been subject to flattening. No visible tool marks.
145	Possible cut in the bedrock, 0.55m E/W x 0.27m wide x up to 0.25m deep. Vertical sides to S and E, sloping to N, uneven to W. No visible tool marks.
146	Patch of stones (bedrock and sandstone pieces) bonded in a yellowish gritty lime mortar, a probable continuation of 143.
147	Possible cut in the bedrock, 0.45m E/W x 0.4m wide x up to 0.15m deep. No visible tool marks.
148	Possible cut in the bedrock, roughly triangular, 0.15m N/S x 0.1m wide x up to 0.12m deep. No visible tool marks.
149	Possible cut in the bedrock, 0.35m E/W x 0.15m wide x up to 0.2m deep. No visible tool marks.
150	Possible cut in the bedrock, 0.2m N/S x 0.2m wide x up to 0.08m deep. No edge to N. No visible tool marks.
151	Possible cut in the bedrock, 0.25m E/W x 0.2m wide x up to 0.12m deep. Straight edges to S and W. No edges to N and S. No visible tool marks.

APPENDIX 6: FINDS



Type	Context	Quantity
Miscellaneous animal bone fragments	111	5
Modern china and bone	112	
Green glazed rim sherd	113	8
Green glazed body sherd	113	7
Green glazed basal sherd	113	3
Green glazed decorative sherd	113	1
Clay pipe stems	113	12
Miscellaneous animal bone fragments	113	85
Winkle and Oyster shells	113	3
Iron nails	113	9
Green glaze body sherd	119	3
Miscellaneous animal bone fragments	119	4
Modern china	122	
19 <sup>th</sup> century chinaware sherds	206	5
Miscellaneous animal bone fragments	403	6
Fragment of roofing slate and modern china	412	
Miscellaneous animal bone fragments	413	6

APPENDIX 6: WEST ELEVATION OF THE WATER TOWERS

