

**Norwich Cathedral Close, the
rediscovery of the Medieval Bell Tower:
Archaeological Monitoring during the
installation of a new electricity supply for
No.71 The Close, Norwich Cathedral.**



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*2x2m Scales

Archaeological Monitoring during the installation for a new electricity supply of No.71 The Close, Norwich Cathedral. NR1 4DD.

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1.0 Introduction

Norvic Archaeology was commissioned by the Norwich School to carry out monitoring of groundworks during a programme of refitting work to No.71 The Close. The installation of a new electricity supply included three elements of groundworks requiring archaeological supervision and control. This included initial work to accommodate a thrust-bored hole from the roadway into the cellar for an uprated power cable, a new connection trench along the road and pits to allow for the disconnection of the existing supply. The replacement of a length of lead water pipe serving the property was also monitored.

The area has previously produced evidence of Saxon through to post-medieval activity, although most significantly the location of the proposed works had the potential to encounter evidence relating to a free-standing bell tower built in the 12th or 13th century. The tower was rebuilt between 1299 to 1309/10 after the riot of 1272 and the tower stood until the Dissolution but was largely gone by c. 1580. Substantial sub-surface foundations of the bell-tower were noted below the roadway opposite No.71 in 1881 and a north-south water main trench dug in 1956 encountered masonry believed to be part of these large foundations.

The archaeological monitoring was undertaken in accordance with a brief issued by the Cathedral Archaeologist (Dr Roland Harris). The aim of the monitoring work was to record the presence/absence, date, nature and extent of any buried archaeological remains and features identified during the programme of groundworks. This report presents a brief description of the methodology and an archaeological interpretation of the results

2.0 Summary of Results

The solid flint & mortar footings of the medieval bell-tower were encountered opposite No.71, just 20cm below the modern road surface. The work confirmed that the masonry remains of the bell tower, as originally uncovered in 1881 and surveyed by J.H.Brown, survive at least partly intact directly below the roadway. The 1881 survey plan matches very well with both the uncovered remains and the medieval masonry incorporated into the cellar of No.71. Its accuracy allows us to be confident of the position and form of the bell tower footprint.

The depth of the medieval masonry remains uncertain, although the footings for an integral buttress at its northern most limit survived to a depth of c.0.7m. Around the area of the tower, and pre-dating its construction, was a dark greyish-brown ?subsoil, sealed by levelling material contemporary to the tower, which included a layer of mortar waste mixed with flint building waste and occasional chips of limestone. Upper make-up layers included large volumes of post-medieval building waste, most likely derived from the clearance of local late medieval to post-medieval buildings within The Close.

An evenly spaced alignment of three postholes of likely Saxon to medieval date was recorded in the base of the electricity mains trench, at the northern limit of the trench work.

Noteworthy finds include a small lead plumb-bob found within the medieval layers adjacent to the tower, a small copper-alloy dress pin of medieval to post-medieval date, several fragments of medieval roof tile and two small fragments of copper-alloy casting waste.

3.0 Geology and Topography (Figure 5)

The site lies in the centre of Norwich, within a bend of the River Wensum within the precinct of the medieval cathedral. Norwich Cathedral is situated within a broad curve of the river and occupies a position on gently rising ground to the western edge of the flood plain. The underlying geology consists of alluvial sands (BGS 1991) above Cretaceous Upper Chalk with silts and peats known to occupy the immediate flood plain (BGS 1985) with gravels and sands up-slope where No.71 is located, adjacent to the Erpingham Gate (NHER 26083) just inside the walls of the original Cathedral precinct (NHER . The road surface opposite No.71 lies at c. 9.2m OD, falling down to c. 7.7m OD opposite No.70, just to the east of the Erpingham Gate.



Plate 2. Outside No.71, The Close (Looking W)

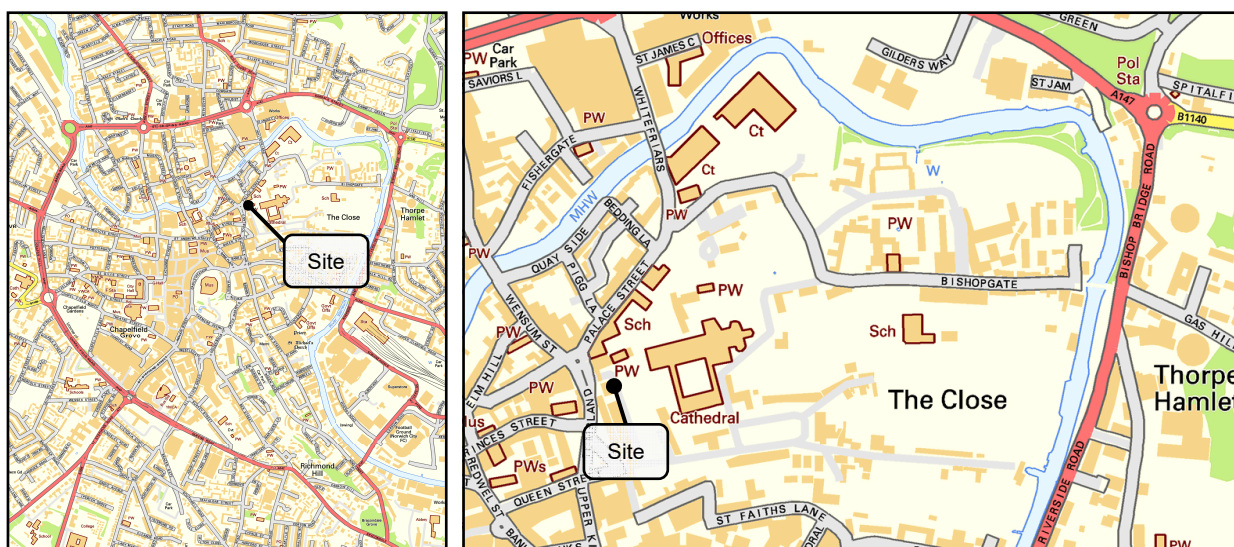


Figure 1. General Site Location.

4.0 Brief Archaeological and Historical Background

By Dr Roland Harris (as presented in the document Norwich Cathedral: 71 The Close, Archaeological Assessment and Mitigation Strategy, October 2018).

4.1 Medieval history

No.71 lies at the northern end of the west side of the Upper Close, which, in the medieval period was that part of the inner court that was more publicly accessible and used for charitable and commercial purposes. The central area, which broadly corresponds with the green and the adjacent roads today, was largely open and was known as the almary green (not to be confused with the area of that name today, south-east of the Ethelbert Gate). At the north end of the green a free-standing bell tower was built in the 12th or 13th centuries (NHER 634): the site corresponds to No.71 The Close and the road in front. The use of the bell tower appears to have been differentiated from the cathedral crossing-tower belfry in the Norwich Customary of c.1260, with the heavier bells in the free-standing tower rung for important festivals only (Cattermole 494-504, 1996). The 12th or 13th-century bell tower, or *clocher*, was rebuilt after the riot of 1272, with the reconstruction taking place from 1299-1309/10. Accounts from this period record a tower of Barnack and Caen stone, with eight round windows (or belfry openings), and a leaded spire. A new bell was cast, weighing, it has been estimated, at least 2.5 tonnes. The bells and tower were kept in use until after the Dissolution, with the bells removed c.1569 and the tower largely gone by c.1580 (Cattermole 494-504, 1996). A plan of the city by William Cunningham (1558) shows the tower with its spire (Frostick 2002; extract shown as Figure 2). A plan of 1581 by George Braun and Franz Hogenberg of Cologne is an almost exact copy of Cunningham's but with much embellished detail, with a clearer and much stylised depiction of the bell tower, which is believed to have already been partly demolished by this time (*ibid*).

By the 15th century, a row of shops extended eastwards from the bell tower towards the outer parlour (Locutory) of the priory, and north of what appears to have been an earlier lane. This northern part of the upper inner court had a more commercial function, although the trades represented were closely related to the needs of the priory (including masons, carpenters and glaziers (Gilchrist 190, 2005). At the same time, the bell tower and, to the north, the college of St John the Evangelist (the Canary college) were part of a mortuary landscape in this part of the Close. At the foundation of the Canary college by Bishop Salmon in 1316 it was identified as being in the 'west part of the cathedral cemetery'. As with other similar chantry colleges, that at Norwich cathedral was staffed by secular priests (the number of which was increased to six in 1322), offering masses for the souls of the departed, and living communally. The college chapel was located above a charnel vault that was administered by the priory sacrist (Gilchrist 100-2, 2005). Previously, it has been assumed that the lay cemetery, which the college served, was located to the north-east of the surviving early 14th-century Canary chapel, but excavation outside the west front in 2009 revealed seven *in situ* burials (radiocarbon dated to c.1290-1640), showing that the cemetery included this area (Adams 2012).

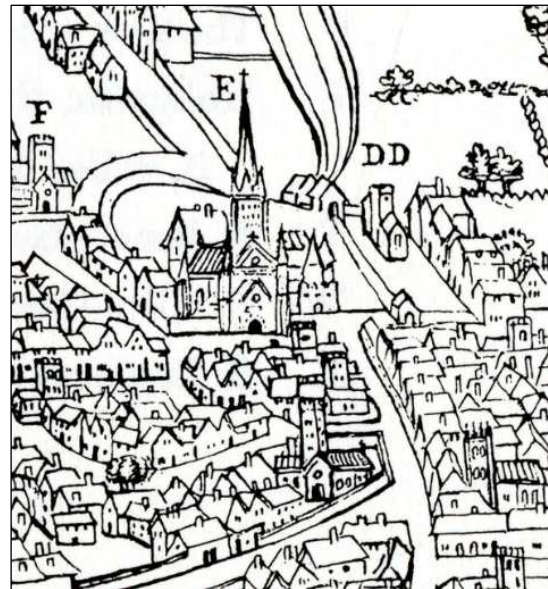


Figure 2. Extract from Cunningham's Plan of Norwich (1558), showing the crudely depicted bell tower just to the right of the Cathedral.

4.2 Post-medieval history

Following dissolution of the priory, the former upper inner court became a focus for substantial houses, developed for leasing. The earliest of these – indeed, the earliest post-dissolution new building in the Close – was No.69 The Close, built by John Barrett (Rector of Hethersett and of St Michael-at-Plea, and made a canon in 1558) adjacent to the east end of the Carnary chapel on land leased by the Dean and Chapter from 1 December 1543 (NRO, DCN 47/1 fol. 38; NRO, DCN 47/2 fol. 89).



Plate 3. North wall of cellar below No.71, incorporating remains of the north wall of the medieval bell tower.
(Photo by Dr R.B.Harris, 2007)

In the early 17th century, the site of Nos.71-3 The Close was that of the tenement of Sir William Denny. A three-storey prebendary house was then built at No.71 The Close in 1626-8, or soon thereafter which along with its 18th century extensions forms the current Grade II* listed building (English Heritage ref. 228979). This replaced the ruinous tenement of Sir William Denny (who had moved to the house incorporating the Hostry arch), although material was to be salvaged for the new building (Whittingham 1985). It is unclear as to whether the pre-1626 building had been built over the demolished bell tower or had been built against it, although remains or the bell tower footings are incorporated into the extant cellar of No.71 (Plate 3).

The site of Nos. 71a-73 The Close remained part of No.71 The Close until the subtraction of No.73 The Close (i.e. the stables of the property) in 1794 (Whittingham 1985). Construction of No.72 The Close (built as offices for Henry Hansell, solicitor) took place in 1855 (NRO DCN 24/7), and the building of No.71a The Close (the combined house and practice of Bernard Feilden, architect) in 1956 (Peter Codling pers comm). No. 71 The Close was restored c.1956, with the render removed from the front (east) elevation, and the later adaptations of the central first-floor window removed.

4.3 Previous archaeological investigations in the vicinity

There have been several archaeological investigations in the vicinity of note, comprising:

- *Geotechnical survey at No.71a The Close (Oct 2007): NC064-200712*

Although not an archaeological investigation as such, a preliminary geotechnical survey by SIC (East Anglia) Ltd suggests that the general level of natural may be around 6-7m OD, with a minimum of 3-3.5m of made ground above: it is not clear what proportion of the made ground is likely to be of archaeological significance.

- *Observations during excavation for a water main near No.71 The Close (1956): NC010-195614*

During digging of a trench along the roughly north-south road, substantial masonry remains were revealed that were identified as part of the bell tower foundations found previously (i.e. in 1881, see below)). Medieval and post-medieval pottery was also discovered.

• *Observations of the bell tower near No.71 The Close (Sept 1881): NC002-188116*

J. H. Brown (surveyor to the cathedral) recorded exposed foundations under the roadway east of No.71 The Close, which were evidently of a substantial building. The entire east wall and partial elements of the north and south walls of a building were revealed. The south-east and north-east corners were provided with buttresses, the latter thickened to allow for a spiral stair above. The walls were massive, averaging around 2.4m thick. Combined with observations of the still visible masonry within the cellars of No.71 The Close, this indicated a free-standing tower 14m square externally. Detailed scaled and dimensioned plans survive, but no depths were recorded (Figure 3).

NB: Records of the discovery of the bell tower masonry in 1881 and 1956 do not record the depth of the remains

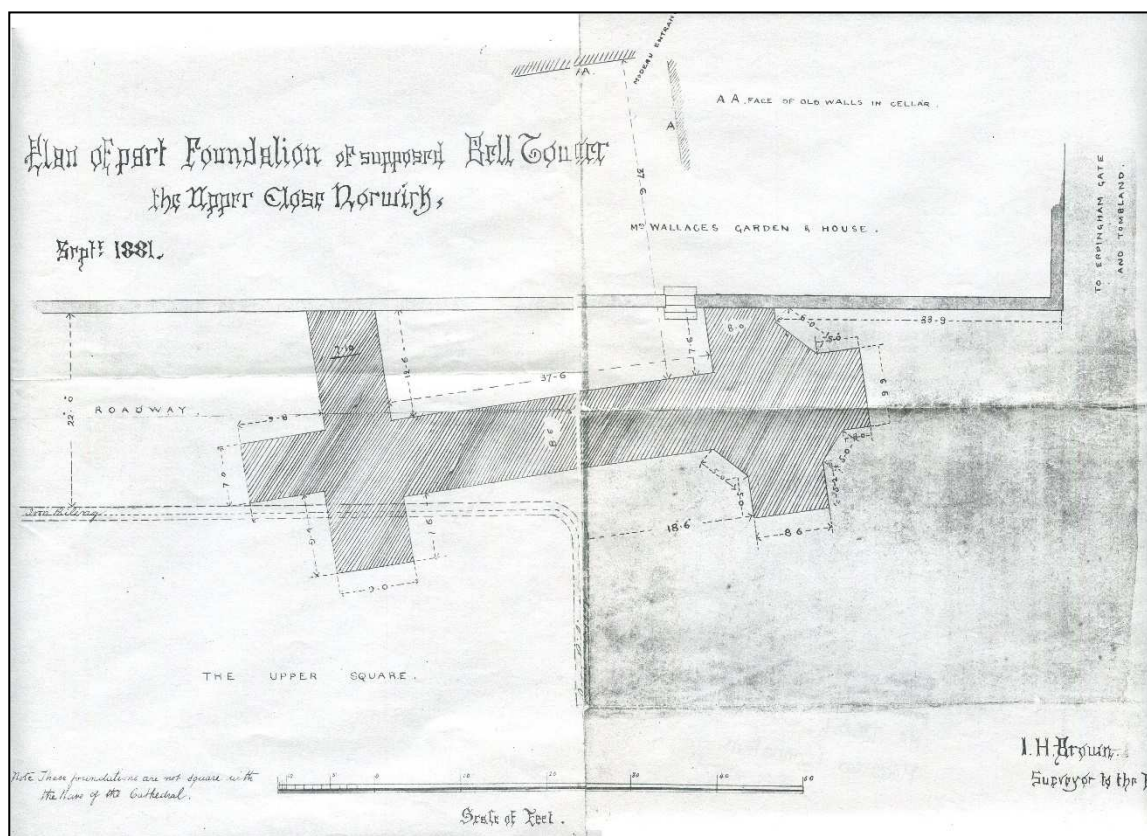


Figure 3. J.H.Brown's survey of the partly exposed Bell Tower footing made in 1881. (NRO MS 21987/9, 626X3)

• *Observations during construction of No.71a The Close (1956): NC013-195615*

Digging of foundations for the new building revealed a Late Saxon rubbish pit to a depth of 3.05m below the modern ground level (i.e. c.7.2m OD), which contained pottery and oyster shell. The footing of a medieval chalk wall was found together with an associated burnt layer containing fired daub. The topsoil contained pottery from the 15th and 16th centuries.

• *Archaeological excavation at Norwich School, north-west of the Erpingham Gate (1975): NC026-197513 / NHER 280*

Excavation prior to redevelopment recovered a scatter of sherds of Middle Saxon Ipswich-type wares across the site but only a few truncated post-holes or pits belonged to this period. Two possible beam slots of 10th-11th-century date (associated with Thetford-type and Early Medieval wares) mark the beginning of settlement of the site: given that these could be pre-Conquest, it is interesting that the beam slots are parallel to, and imply the existence of, Palace Street. There was a higher density of 11th-13th-century features (small

pits, scoops, possible building slots and post-holes, and a cesspit), and later medieval features (mainly pits, but including the north wall of the Carnary College, documented in 1318 and rebuilt in the 18th or 19th centuries).

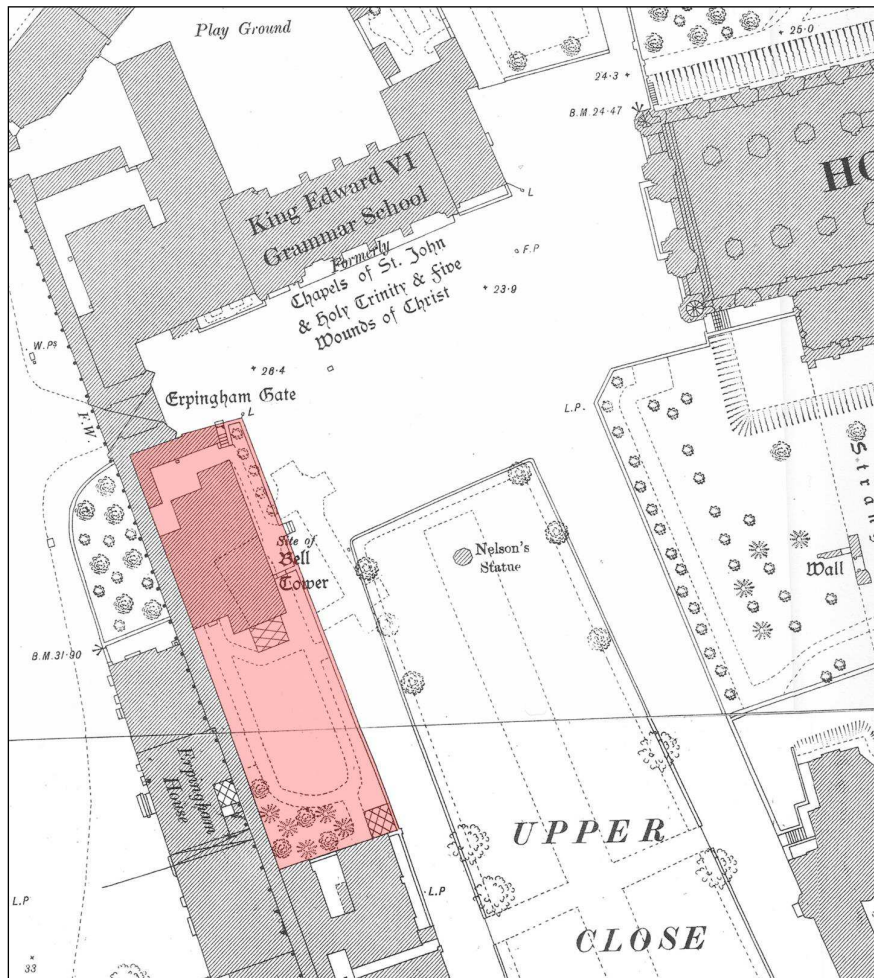


Figure 4. Ordnance Survey 1:500 town plan (1885: surveyed 1882), extract showing location of 71 The Close highlighted in red (much of the garden has since been lost to 71a The Close, built in 1956). Plus believed position of the Bell Tower footprint after J.H.Brown's survey of 1881.

• *Hostry excavation (2007-9, preceded by evaluations in July 2003 and Nov 2006): NC066-2007 / NHER 39455*

Excavation was undertaken in advance of construction of a new building (consisting of rooms for education, the song school, community use and exhibition use) on the site of the medieval Hostry (guest hall), and post-medieval prebendary houses that were demolished in the 19th century. Although remains of Late Saxon pits and one possible sunken featured building have been discovered, the excavation was dominated by the archaeology of the monastic period. Remains were found of the west wall of the 12th-century west range, confirming that the first building was narrower than its replacement of c.1300. The entire west wall of the latter was exposed north and south of the upstanding fragment of the Hostry arch, or doorway, and to the west the lower parts of the walls of the medieval porch were discovered.

Cross-walls were excavated that marked the limit of the medieval Hostry hall, showing the position of two-storey chambers at either end. Excavation revealed details relating to the adjacent conventual buildings: within the Hostry-cloister doorway investigation showed that the present Gothic cloister is at a lower level than its 12th-century precursor; a piped

connection was discovered between the guest hall basins and the Cloister *lavatorium*; and at the southern end of the excavation, the west wall of the 12th-century refectory was exposed together with foundations of further medieval buildings to the south-west of the Hostry.

The Hostry-related works also included a watching brief on a water pipe trench outside the west front of the cathedral in 2009, extending towards 69 The Close, which revealed several sarcophagi and articulated skeletons with radiocarbon dates ranging from the late 13th to early 16th centuries. The post-medieval evidence on the main part of the site (including cellars, walls, wells, and numerous small finds) largely related to the prebendary houses that were established on the site of the former Hostry and its court.

The November 2006 evaluation consisted of window sampling with six of the 15 samples located west of the area eventually excavated (to explore the feasibility of a wider landscaping scheme), which identified extensive rubble deposits (possibly representing post-Dissolution demolition debris) a wall and evidence of a relict soil, and concluded that Late Saxon deposits were likely to be better preserved than on the main Hostry site

• *ENF138952. Archaeological Monitoring during Anglian Water pipe work at the Cathedral Close in 2015-16 by Norvic Archaeology.*

This work included sites within the Upper Close and as far as Ferry Lane. Two brick drainage culverts of 18th to 19th century were encountered within a trench opposite Nos. 73 to 75, along with make-up layers of clay, chalk and mortar waste which may relate to the 19th century roadway construction and is thought to include material sourced from locally demolished post-medieval buildings.

• *Other Historic Record Environment Records in the immediate proximity.*

NHER 5244: It has been suggested that a Roman road may have extended from Bawburgh to a causeway in the area of Bishop Bridge. The unconfirmed route may have run across the area of Tombland close to the position of the Erpingham Gate and below the footprint of the Cathedral.

NHER 413: In 1979 human skeletal remains were recovered during building works at No.24 Tombland, just on the other side of the precinct wall from No.71 Other finds recovered included a single Late Saxon pottery sherd, medieval floor tiles, undated iron objects and various animal bones.

5.0 Methodology (Figure 2)

The objective of the archaeological monitoring was to record archaeological evidence revealed during the groundworks, conducted under archaeological supervision and control.

Initial works consisted of the hand excavation of a 'mole-receiver' trench against the front wall of the property to receive the mole-drill, which ran from inside the cellar of No.71 to the street. The trench was excavated prior to attendance of the mole team and was extended slightly during the course of the work. A duct was pulled through the bore hole ready for the new electricity cable.

An c. 26m long trench was machine excavated from the electric main opposite No.70 to allow for connection of the new supply cable into the cellar of No.71. During the course of the work, the solid flint & mortar footings of the medieval bell-tower were encountered just below the road surface opposite No.71. In order to navigate this obstacle, the 1956 watermain trench was successfully identified and re-excavated to a suitable depth, which enabled the laying of the cable with no new damage to the medieval masonry.

A small trench was machine excavated opposite the Erpingham Gate, just to the north of the retaining wall for No.71 to expose the old electric cable. At a later date this was re-excavated and extended slightly and another small trench hand dug against the north-east corner of No.71 to adjust the power supply to allow for a live supply to the street lighting here to be reconnected.

A lead pipe was exposed in the north-west corner of the building which led from a water meter. A hand excavated trench was opened to bypass the pipe with a plastic replacement.

Spoil, exposed surfaces and features were scanned with a metal detector (Minelab XTerra 705). All metal-detected and hand-collected finds were retained for inspection, other than those which were obviously modern.

All archaeological features and deposits were recorded using Norvic Archaeology *pro forma* sheets. The trench location, plans and sections were recorded at appropriate scales and digital images were taken of all relevant features and deposits.

All levels were taken using a temporary benchmark of 9.10m OD located on the base of Nelson's Statue, tied to an OS Benchmark of 7.59m OD located on the south-west corner of No.67a.

6.0 Results (Appendix 1a)

- **Waterpipe replacement work**

The concrete floor was cut to reveal lead piping (07) on the ground floor of the north-east corner of No.71. This revealed part of a former dirt-bonded pavement tile floor (06) sealed below the 30mm thick concrete. This space was formerly accessible via the blocked side door in the north-west wall.

The external trench was excavated through the thin concrete surface to a maximum depth of 0.6m. It exposed the existing drainage for the iron downpipes and part of the lead pipe run. The disturbed ground here comprised of a well-mixed brownish-grey silty-sand with occasional 19th to early 20th century building rubble fragments and salt-glazed pipe fragments (08). A few residual finds incorporated into this material include a pipkin foot (probable 15th-16th century date), a sherd of tin-glazed earthenware (16th-18th century date) and a shard from a 17th to mid-18th century onion bottle.

- **Mole receiver trench**

The mole receiver trench was excavated just to the south of the steps up to No.71. It measured c.1.6m by up to 0.7m wide and was hand-dug to a maximum depth of 0.75m, where it revealed a layer of pale yellowish-white mortar debris mixed with building flint waste (05). Four pieces of medieval roof tile were collected from this deposit, although they are likely to be residual, derived from the clearance of medieval precursors of buildings within the Close.

Make-up layer (05) was sealed by a dirtier 0.2m thick make-up layer of mid-grey silty-sand mixed with mortar & flint debris, with rare pieces of post-medieval flat roof tile (04). Sealing this was a firm layer of mid-yellowish-brown clay-sand (03) up to 100mm thick, very likely a redeposited natural. Above it was a compacted 80mm thick layer of dark-grey silty-sand (02) with a firm 130mm thick layer of mixed soil and 18th to 19th century brick rubble (01) as hard ground to support a former asphalt surface, sealed below the current asphalt and cobble sets.

- **Medieval Bell-tower Masonry and associated deposits**

To everyone's surprise, the flint and mortar masonry footings (09) for the medieval bell-tower were uncovered just below the sloping asphalt surface of the modern road, sealed only by a layer of between 100mm to 200mm of modern brick rubble. The masonry consisted of a hard, pale yellow, gritty sandy-mortar with irregular flints. It had suffered significant damage during the excavation the 1956 water pipe trench, which contained a mix of soil and flint & mortar rubble.

At the northern limit of the medieval footings, were the remains of a flint and mortar buttress. Its position corresponds very well to the 1881 plan by J.H.Brown, which recorded a buttresses stairwell positioned here (Figure 2). The buttress footing (31) was constructed of a hard, greyish-white gritty-sandy mortar with large flints and survived to a depth of 0.6m. The buttress fabric was built within a construction trench ([29]) which contained banded deposits of soft white mortar and a firm brownish-grey silty-sand (30). This trench truncated a probable subsoil horizon (27) of soft but compacted mid to dark greyish-brown fine silty-sand with occasional charcoal flecks, of a depth greater than 0.35m. A small lead plumb bob of medieval date was recovered from this layer.

Sealing the construction trench and abutting the construction of the footings, was a make-layer (28); a friable yellowish-brown silty-sand with inclusions of mortar and building flint rubble. This appears to be a levelling soil of medieval date, established around this part of the tower immediately following its construction and is a good indicator for a contemporary land surface.



Plate 4. Bell Tower Footings. (Looking S)
[10.5m & 2x2m Scales]

A further make-up layer was recorded to the north of the tower (25), of yellowish mortar debris with fragments of 18th to 19th century brick and flint rubble up to 0.28m thick. It sealed a 0.2m thick layer of dark greyish-brown silty-sand (24) similar in character to deposit (27), which overlaid an earlier make-up layer of mortar waste mixed with building flint waste and occasional chips of limestone (23). This deeper layer of waste material is suspected to be of medieval date and could potentially date to either the construction of the tower in the 12th to 13th century or the demolition and subsequent rebuilding of the bell tower from 1299-1309/10.



Plate 5. Bell Tower – Buttress. (Looking SW)
[1 & 2m Scale]

A small area of relatively clean mid-yellowish-brown subsoil (11) was recorded c. 8m to the north-west of the tower, flecked only by occasional charcoal flecks. It had been disturbed by the insertion of a modern drain, which had removed evidence for its stratigraphic relationship with a mortar rich make-up layer just to the north (23), although a steep sided cut to the south indicates a pit-like feature which contained further deposits of yellowish mortar debris mixed with flint waste and occasional chips of limestone (26).

- **19th to early 20th century soakaway**

A circular brick-lined soakaway (32) was partly exposed just 2m east of the front steps for No.71. The soakaway had a diameter of c. 0.9m and the bricks were identifiable as sandy 'Norfolk Reds' of 19th to early 20th century date. The soakaway was not capped and contained an infill of soft mortar debris and late brick rubble. The soakaway was located on the expected continuation of the bell-tower masonry exposed in the main trench, which appears to have been removed here as part of the soakaway construction.

- **Electricity mains trench**

A trench measuring c. 1.4m by 0.7m was excavated at the northern limit of the linear trench, to fully expose the mains electric cable. Natural sand (10) was reached at a depth of 0.55m, sealed below a 0.16m thick layer of dense mid-yellowish-brown silty-sand with occasional charcoal flecks (11).



Plate 6. Electricity Main Trench with postholes [17], [19] & [20]. (Looking W)
[1x1m Scale]

Above the relatively clean subsoil was a 90mm thick post-medieval make-up layer of pale-yellow mortar waste and flint rubble, with occasional small fragments of flat roof tile (12). Directly overlaying this hard make-up layer was a 30mm thick trample layer of friable mid-yellowish-grey silty-sand (13) flecked by mortar and brick. Above this was what may be a more recent make-up layer of yellowish-white mortar waste, with occasional fragments of 18th-19th century brick and flint rubble (14). This firmly compacted layer measured 0.15m thick and

was cut by the modern electricity cable trench. The ground surface here comprises of smooth cobble sets upon a fine concrete layer up to 0.12m thick.

The shallow concave V-shaped bases of three small oval posthole features were identified in the base of the machined trench (surviving only to a depth of c. 80mm, sealed below the make-up layers, which may have cut down through the subsoil and into the natural sand ([17], [19] & [21]). They ranged from 0.2 to 0.3m in length and were spaced c. 0.3m apart on a straight WSW to ENE alignment. They each contained a similar mid-yellowish brown silty-sand (18), (20) and (22) respectively). No dating evidence was evident within them, although the relatively clean nature of their fills indicates that they pre-date the post-medieval period and are suspected to be of Saxon to Medieval date.

- **Electricity cut-off trenches**

A small trench with maximum dimension of 1.35m by 0.55m was dug just to the north of the high retaining wall for No.71 in order to expose the sub-surface electric cable. This trench revealed natural sand (10) at a depth of c. 0.5m, below a 0.23m thick layer of subsoil (11). Above this, the same hard rubble make-up layer (25) seen in the main trench with concrete and cobble sets formed the modern surface here. A salt-glazed drainpipe was partly exposed along the eastern edge of the trench.

A second smaller trench was dug against north-east corner of No.71, against the east wall (measuring c.0.8m by 0.35m). It was excavated to a maximum depth of 0.45m and revealed only disturbed ground (=08), riddled by modern services. No clarity was gained on the nature the masonry footings here for No.71, which remained obscured by soil and the presence of a soil filled void through which the pipes and cables entered the building.

7.0 Finds Analysis *(Appendix 2a)*

- **Pottery**

Only two pieces of pottery were collected, both as residual finds from a relatively modern make-up layer (08). One piece is a sherd of tin-glaze earthenware (7g), probably part of a small bowl which exhibits part of a hand painted foliate design typical of pieces dating from the late 16th to 18th century date, the other is a pipkin foot (19g) of late medieval transitional ware of probable 15th to 16th century date which still retains lead glaze and traces of sooting from use.

- **Bottle Glass**

A single shard of bottle glass in flaky condition was collected from the relatively modern make-up (08). The piece is a 38g curving body sherd from a 17th to mid-18th century onion bottle with a light green hue

- **Ceramic Building Material (CBM)**

Medieval to late-medieval roof tile fragments were collected where identified, while post-medieval and modern ceramic building material was described as part the relevant context records. All collected roof tile fragments were cleaned, quantified (count and weight) and examined to define fabric and form.

A total of 6 pieces were collected with a combined weight of 453g from just two contexts. All six pieces fall into the same medium-sandy fabric type and size range for as those categorised by Drury (1993) for material generated from excavated sites in Norwich. The pieces all have a reduced grey core and a medium orange (oxidised) coloured exterior.

Of the four fragments collected from (05) one has a wiped surface and another retains abraded traces of a greenish glaze. Of the two pieces from (35) one has a wiped surface with part of a circular peghole (diam. 13mm) and the other retains a hard chalky-lime mortar on one side. The pieces range in thickness from 10mm to 14mm and range and are generally fairly abraded.

These forms of medieval roof tiles date from the late 12th to 15th century and were all collected from make-up deposits containing residual and highly fragmentary rubble, most likely derived from the clearance of medieval precursors of buildings within the Close.

• **Worked Stone**

A relatively modest number of small and highly fragmentary pieces of limestone were noted during the monitoring work within the post-medieval make-up layers. Two of the largest pieces of stone were retained for further analysis, both of which area examples of architectural stone

One piece was collected from the spoil from within the 1950s water main trench (36) and the other was collected from spoil generated from the post-medieval mortar rich make-up layers (04) and (05) (designated context (35).

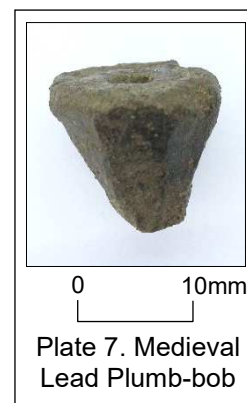
The piece from (36) weighs 340g and is an edge fragment from an ashlar block of fine early medieval Caen stone, with rough tool marks on both surfaces (max dimensions: 100x58mmx44mm). The other from (35) is a well-abraded medieval jamb stone fragment of Barnack limestone and weighs 518g (max dimensions: 91mmHx85Wx80mmD).

Both pieces represent demolition of medieval buildings within the Cathedral Close. Although it remains possible both pieces may have been reused within later buildings given the location of the material it seems likely that they derive from the 12th to 13th century bell tower, known to have included both types of stone within its reconstruction between 1299-1309/10.

• **Metal Objects**

Two small metal objects were collected during the work; a lead plumb bob of medieval date and a copper-alloy dress pin of medieval to post-medieval date.

Both represent the casual loss of objects, although the recovery of the plumb bob is a reminder that medieval masonry work was an intrinsic activity at the Cathedral since its inception.



Context No.	Material	Object	Object Date
27	Lead	Weight – plumb bob	Medieval
A small and relatively crude conical shaped weight, base diam. 14mm, height 13mm, weight 9.93g. The sides are knife trimmed from tip to base making an octagonal edged base. Has a very narrow vertical central suspension hole running centrally from top 0.5mm to base 2mm. Probably suspended 'inverted' as a small 'plumb-bob' although could also have served as a small balance weight. Several similarly shaped and vertically perforated lead weights are recorded on the PAS database as probable plumb bobs of medieval to post-medieval date. Unperforated examples of various sizes are more likely to be classified as standing weights, such as several conical and pyramidal weights classified by Egan e.g. Fig.239; 1036.(Egan 2010).			
36	Copper-alloy	Pin	Medieval to Post-medieval
A near complete drawn copper-ally pin, it is bent and missing its head. Length 38mm, diam. 1mm. Weight 49g. The size and form characterise this is a dress pin and similar types from Norwich have been identified as late medieval to post-medieval in date by Margeson (11, 1993)			

- **Copper-alloy casting waste**

Two small fragments of puddled copper-alloy (most likely bronze) were collected from make-up layer (05), with a combined weight of 16g. One of the pieces has a slightly tabular form and both are likely to be residual waste from bronze casting.

A heavy and corroded slightly conical shaped copper-alloy 'plug' shaped lump (88g) with a 'base' diameter of 36mm and a height of 22mm appears to be a further example of bronze casting waste. It was recovered from context (36); the spoil generated by the main cable trench. This may represent waste from the use of a large mould, such as a cannon-style mould for the casting of large vessels (such as cauldrons) and large bells; the most obvious candidate being the possible localised casting of a bell for the former medieval bell tower at this location.

On a large scale these processes are inherently messy, producing large quantities of false mould fragments, splash pieces and casting waste for even a single cast. No such density of material was uncovered, although it remains a possibility that further residual evidence for casting activity may yet be encountered within the Close.

- **Animal bone**

A small quantity of fragmentary butchered animal bone pieces were collected for further assessment from context (35), the spoil generated from make-up layers 04 and 05. The bone has a combined weight of 86g and comprises eight pieces of bone in a moderate to good state of preservation. The bone represents scraps of food waste of medieval to post-medieval date.

The assemblage includes a chopped fragment of large bird vertebrae (such as a goose or swan) a chopped ulna and scapula fragment from a bovine, two rib pieces from a sheep/goat, two limb bone shatter fragments (indicating the processing of bone to remove marrow) and chopped distal humerus end from a pig with some canid gnaw marks.

8.0 Conclusions

An c. 26m long trench was machine excavated from the electric main opposite No.70 to allow for connection of the new supply cable into the cellar of No.71. During the course of the work, the solid flint & mortar footings of the medieval bell-tower were encountered opposite No.71, just 20cm below the modern road surface. In order to navigate this obstacle, the 1956 watermain trench was successfully identified and re-excavated to a suitable depth, which enabled the laying of the cable with no new damage to the medieval masonry.

Where the new roughly north to south electricity cable trench was extended to the west, to link with the duct installed via percussive thrust-boring from inside the cellar, it encountered an infilled 19th to early 20th century brick soakaway. The soakaway was located on the expected continuation of the bell-tower masonry exposed in the main trench, which appears to have been removed here as part of the soakaway construction.

The depth of the medieval masonry for the tower walls remains unseen, although the footings for an integral buttress at its northern most limit survived to a depth of c. 0.7m. The buttress was built above a construction trench containing banded deposits of soil and mortar waste. This buttress matched extremely well with the position of a stairwell buttress surveyed in by J.H.Brown (Cathedral Surveyor) in 1881 when he recorded much of the bell tower footprint when it was uncovered by roadworks here. The walls he recorded were substantial, averaging around 2.4m thick. Combined with observations of the still visible masonry within the basement of No.71 The Close, this indicates a free-standing tower 14m square externally. The remains within the basement rise from the floor level of c. 7.98m OD to around 9.14 to 9.31m OD. If the base of the buttress (at c. 7.65m OD) is anything at all

similar to the tower walls themselves then the basement floor may be as little as 0.3 to 0.4m higher than the base of the medieval masonry.

Around the area of the tower buttress and pre-dating its construction was what seems to be a buried subsoil sealed by levelling materials which may be an indicator for a temporary medieval land surface at anything from c. 8.25m AOD upwards. This includes a layer of mortar waste mixed with flint building waste and occasional chips of limestone, potentially dating to either the construction of the tower in the 12th to 13th century or possibly the demolition and subsequent rebuilding of the bell tower from 1299-1309/10.

It should be noted that all of the masonry remains excavated and seen in the basement of No.71 appear to be foundations only, with no foundation offset and no evidence of ashlar quoins or any other above-ground details such as a plinth. Although much of the masonry seen in the trenchwork was only core material the buttress remains were also likely to be of below ground masonry, as again no evidence for ashlar or plinth stones were present. This combined evidence currently suggests that the lost medieval land surface around the tower established post-construction was created through the addition of more make-up material than has survived later landscaping and could be anything from just above 9.3m AOD, which happens to be the present level of the modern road surface outside of No.71, with sub-surface tower footings of a minimum of around 1.4m.

Topographically, the footprint of the tower base was located on ground that slopes fairly quickly down to the Erpingham Gate, to an expected former medieval land surface of around 7.5m AOD (over a distance of less than 10m).

Upper make-up layers included large volumes of post-medieval building waste, most likely derived from the clearance of local late medieval to post-medieval buildings within The Close. Just to the north of the tower base were further deposits of possible medieval construction/destruction debris, also sealed by similar post-medieval make-up. The edge of a steep sided cut suggests that some of the medieval material may lie within as yet undefined large pit like features.

An evenly spaced alignment of three postholes of likely Saxon to medieval date was recorded in the base of the electricity main trench, at the northern limit of the trench work. The natural sand here (opposite the Erpingham Gate) was shown to lie at a depth of c. 0.55m, below a relatively clean silt-sand subsoil. This was sealed by various layers of post-medieval make-up rich in mortar waste.

Noteworthy finds include a small lead plumb-bob found within the medieval layers adjacent to the tower, a small copper-alloy dress pin of medieval to post-medieval date, several fragments of medieval roof tile and two small fragments of copper-alloy casting waste.

This project has confirmed that the masonry remains of the bell tower as originally uncovered in 1881 survive at least partly intact directly below the roadway. The 1881 survey plan by J.H. Brown matches very well with both the uncovered remains and the masonry incorporated into the cellar of No.71. Its accuracy allows us to be confident of the position and form of the bell tower footprint. If desirable, it would therefore be possible to mark out the remains on the ground (for example in brass studs or a differentiation in surface materials) to physically mark the site of this former and rather substantial monument which forms part of the Cathedral's rich history.

9.0 Acknowledgements

The author is grateful to the Norwich School who commissioned Norvic Archaeology to carry out this work. Thanks are also due Dr Roland Harris (Cathedral Archaeologist), John Allison (Building Surveyor) and the various teams of UK power Network for their assistance and full cooperation on site. All stages of the monitoring and post-excavation analysis work were carried out by the author. The author was kindly assisted by Martin Clarke during the clean-up of the Bell Tower footings. NHER data was supplied by the Historic Environment Service.

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Appendix 1a: Context Summary

Context	Category	Fill of	Brief Physical Description	Interpretation	Period
01	Deposit		Firm mix of mid-grey silty-sand soil and late brick rubble with flint rubble. c. 130mm thick.	Rubble rich make-up	Modern
02	Deposit		Firm/compacted dark-grey silty-sand. Up to 80mm thick.	Trample//Make-up	Post-medieval to modern
03	Deposit		Firm/dense, mid yellowish-brown clay-sand, occ. chalk flecks (redeposited natural) up to 100mm thick.	Make-up	Post-medieval to modern
04	Deposit		Mix of mid-grey silty-sand soil of mortar debris (light brownish-white, sandy) + flint debris, rare small pieces of p.med. flat roof tile. 0.2m thick.	Make-up	Post-medieval
05	Deposit		Friable, pale-yellowish-white mortar debris, mod. flint debris, depth unknown.	Make-up	Medieval to post-medieval
06	Deposit		Square pammments 230x230x30mm. Buff to pink. Dirt bonded. Sealed below 0.3m of modern concrete flooring	Pamment floor	C18 th -19 th
07	Deposit		Lead pipe trench disturbed ground: Friable, mid brownish-grey silty-loam, mod. mortar flecks, occ. late brick + mortar lumps, mod flint debris. >0.3m deep, similar to (08)	Make-up	Modern
08	Deposit		Friable, mid brownish-grey silty-sand. Occ. late brick frags and roof tiles of C19 th to E20 th , occ. salt-glazed pipe frags, occ. mortar lumps, mod. stones, rare slate pieces. >0.6m deep	Make-up	Modern
09	Masonry		SE wall footing for medieval bell tower – damaged by 1950s service trench. Hard, pale yellow v.gritty sandy mortar, irreg. flints (occ. fractured) mod. sorting only, make up c. 60% of fabric	Flint & mortar footings of the Bell-tower	Medieval
10	Deposit		V.dense, v.pale brownish-yellow damp sand (sterile)	Natural sand geology	?Holocene+
11	Deposit		Firm/dense, mid yellowish-brown silty-sand, occasional charcoal flecks, damp. 0.16m deep	Subsoil	?Late Saxon to Medieval
12	Deposit		Hard, pale-yellow mortar waste + freq. flint rubble and p.med flat roof tile pieces. 90mm thick.	Make-up layer	Post-medieval
13	Deposit		Friable, mid-yellowish-grey silty-sand, mod. cbm + mortar flecks. 30mm thick.	Trample layer	Post-medieval to modern
14	Deposit		Firm, yellowish-white mortar waste, occ. late brick and flint rubble, very dry. 0.15m thick	Make-up layer	Late post-med. to modern
15	Cut		Modern machine bucket scar? c.0.6m wide	Machine dist.	C20th
16	Deposit	[15]	Loose mix of soil and mortar debris	Fill	C20th
17	Cut		Oval, shallow V-shaped profile, 0.3m L 0.25 W	Post/stakehole	?Late Saxon to medieval
18	Deposit	[17]	Firm, mid-yellowish-brown silty-sand	Fill	?Late Saxon to medieval
19	Cut		Oval, shallow V-shaped profile, 0.25m L 0.20 W	Post/stakehole	?Late Saxon to medieval
20	Deposit	[19]	Firm, mid-yellowish-brown silty-sand	Fill	?Late Saxon to medieval
21	Cut		Sub-circular, shallow V-shaped profile, 0.3m Diam	Post/stakehole	?Late Saxon to medieval
22	Deposit	[21]	Firm, mid-yellowish-brown silty-sand	Fill	?Late Saxon to medieval
23	Deposit		Firm, yellowish mortar debris + flint waste. Occ. limestone chips	Make-up	?Medieval

Context	Category	Fill of	Brief Physical Description	Interpretation	Period
24	Deposit		V.firm, v. dark greyish-brown silty-sand	?Make-up	?Medieval to post-medieval
25	Deposit		Hard, well-mixed layer of yellowish mortar debris, late brick and flint rubble, dry. 0.15m thick	Make-up	Late post-medieval to modern
26	Deposit		Loose, yellowish mortar debris + flint waste. Occ. limestone chips. Similar to (23)	Make-up	?Medieval
27	Deposit		Soft/dense, mid to dark greyish-brown fine silty-sand, occ. charcoal flecks, fairly homogenous, rare stones	?Subsoil	?Medieval
28	Deposit		Friable, mid-yellowish-brown silty-sand, mod. mortar lumps, rare cbm flecks, mod flint rubble. c. 0.28m thick	Make-up	?Medieval
29	Cut		Steep sloping cut for 31	Construction cut	Medieval
30	Deposit	[29]	Firm, mid-brownish-grey v.silty-sand, occ. stone, occ. mortar flecks, with bands of soft, white mortar	Fill	Medieval
31	Masonry		Hard, greyish-white, gritty v.sandy mortar, grit up to 10mm, large flints, irregular sorted core, well sorted outer, c. 0.6m deep.	Buttress	Medieval
32	Masonry		Circular brick soakaway opposite No.71. internal diam. of 0.9m. Of late brick (sandy Norfolk Reds)	Brick soakaway	C19 th -E20 th
33	Deposit	32	Mix of soft soil and mortar/cbm rubble	Fill	C19 th -E20 th
34	Cut		Distinct cut into clean subsoil contains (26)	?Pit edge	?Medieval
35	Recorded finds		Finds collected from spoil mix of 04+05	-	-
36	Unstratified		Finds collected from the mixed spoil of the main linear cable trench	-	-

Appendix 1b: OASIS feature summary table

Period	Feature type	Quantity
Late Saxon (851 to 1065AD)	Posthole	3
Medieval (1066 to 1539AD)	Bell Tower	1
Post-medieval (1540 to 1900AD)	Soakaway	1

Appendix 2: Finds by Context & Period

Context	Material	Qty	Wt (g)	Period
05	CBM – Roof tile	4	250	Medieval
05	Copper alloy casting waste	2	16	Medieval to Post-medieval
08	Glass – bottle	1	38	17th to mid-18th century
08	Pottery	1	19	15th to 16th century
08	Pottery	1	7	Post-medieval
27	Lead – plumb bob	1	9.93	Medieval
35	Animal bone	8	86	Medieval to Post-medieval
35	CBM – Roof tile	2	203	Medieval
35	Worked Stone	1	340	Medieval
36	Copper alloy casting waste	1	88	Medieval to Post-medieval
36	Copper alloy – Pin	1	49	Medieval to Post-medieval
36	Worked Stone	1	518	Medieval

Appendix 3: Factual Archive summary table

Factual Type	Quantity
Site diary sheets	1
Permatrace drawing sheets	5
Context register sheets	1
Context Sheets	22
Plan/Section register sheet	1
Photo Index sheets	1
Digital Images	36
Dwg. CAD file	1

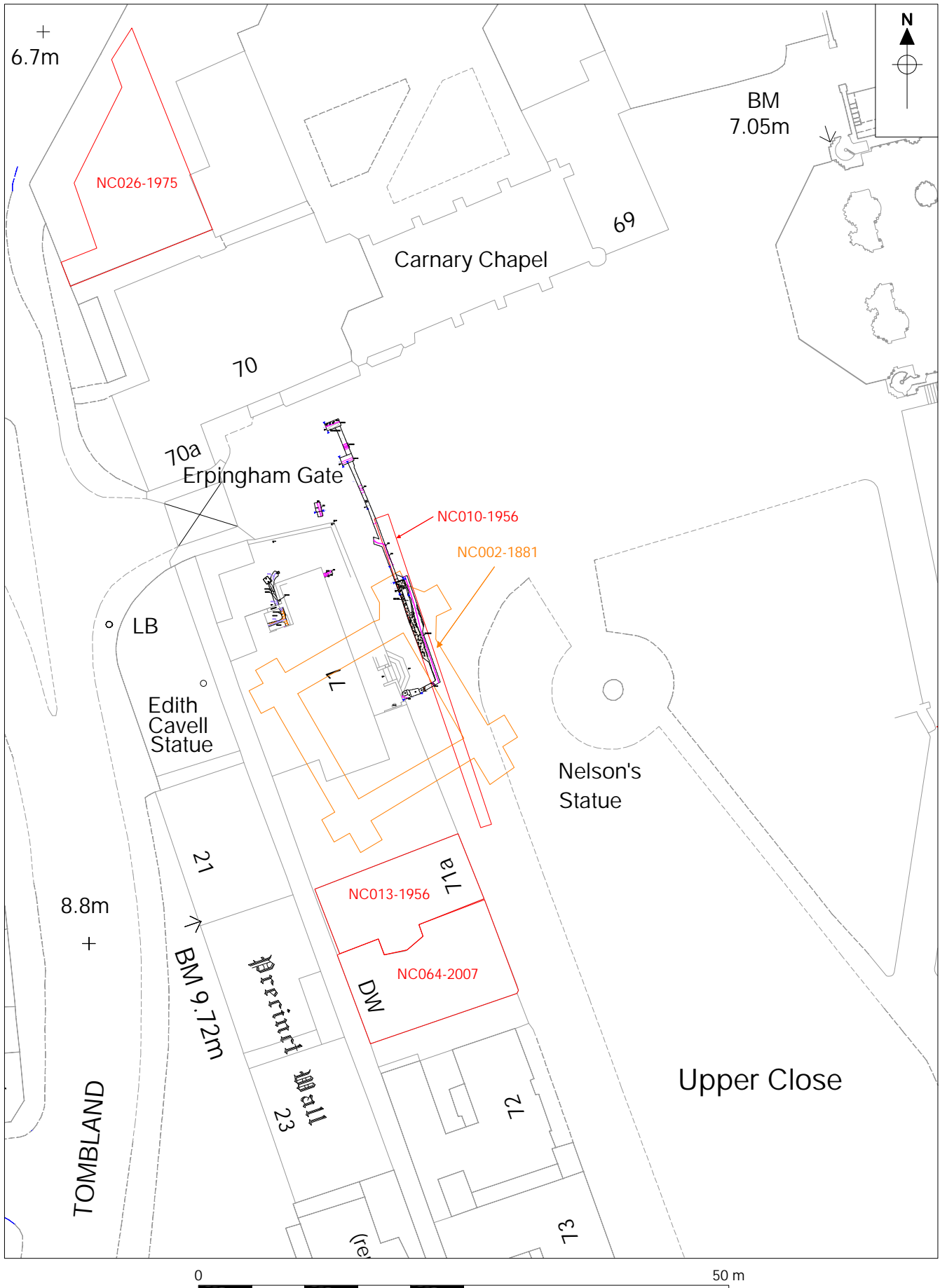


Figure 5. Site plan. Scale 1:500

am Gate

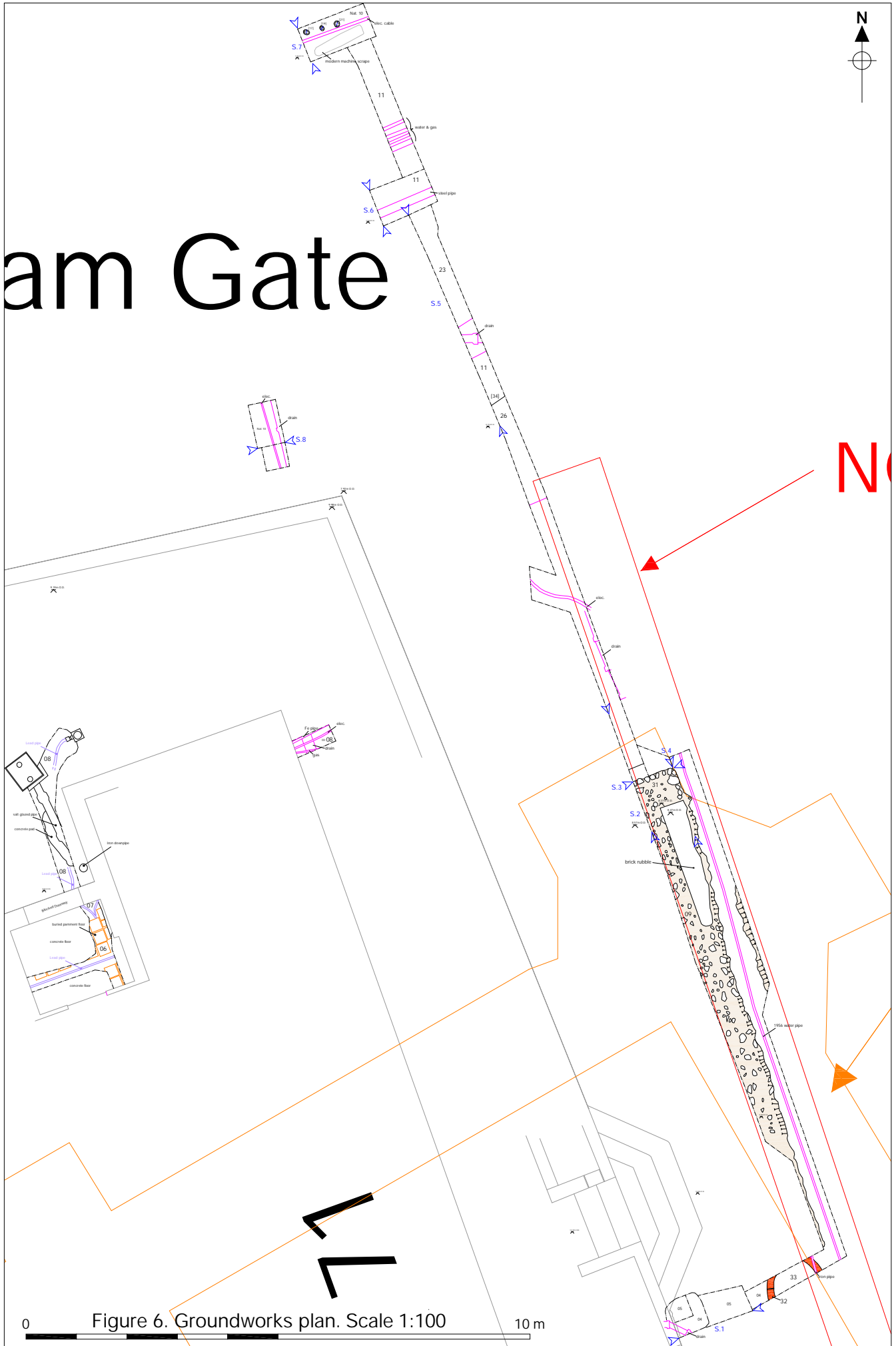
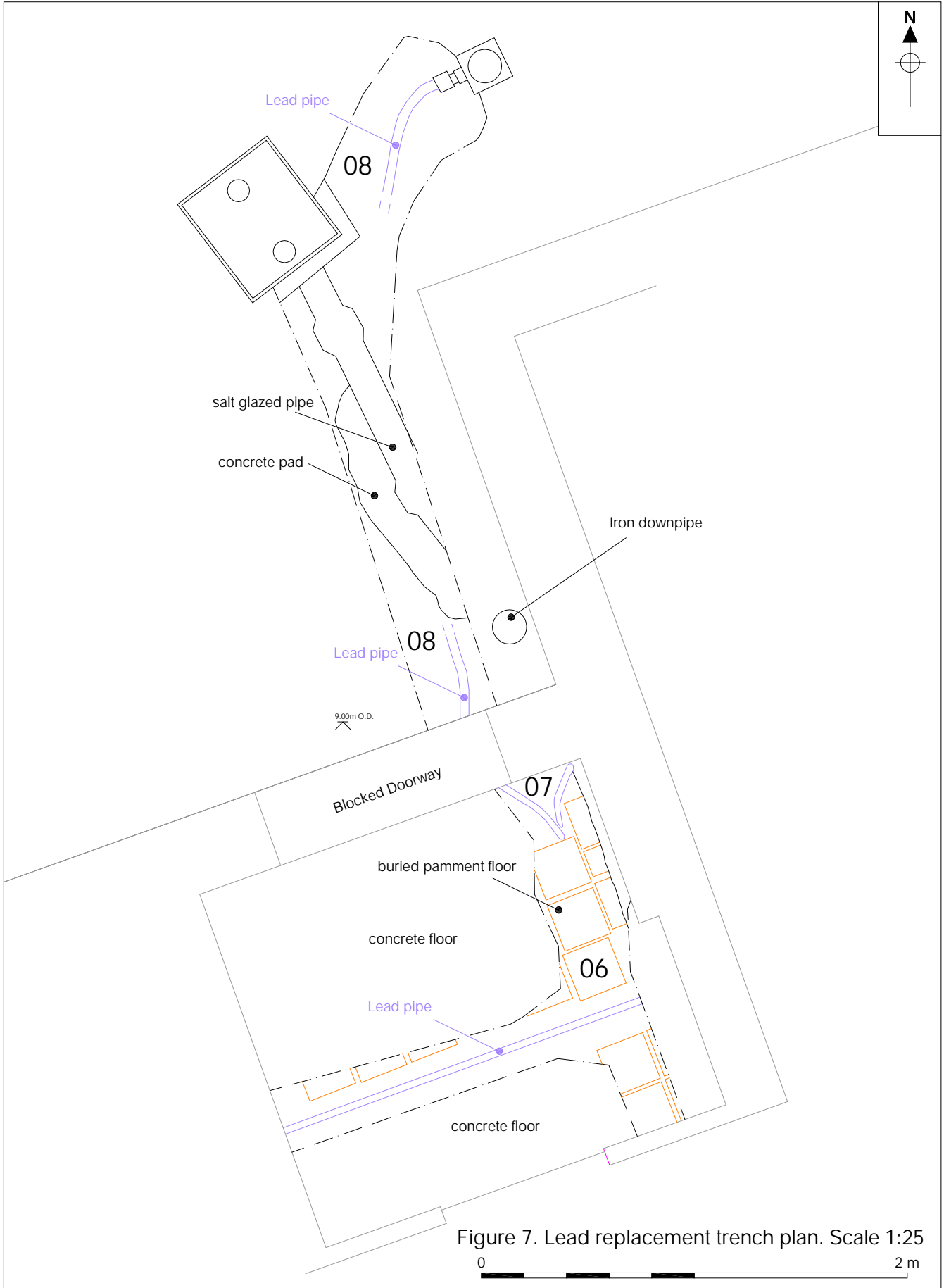
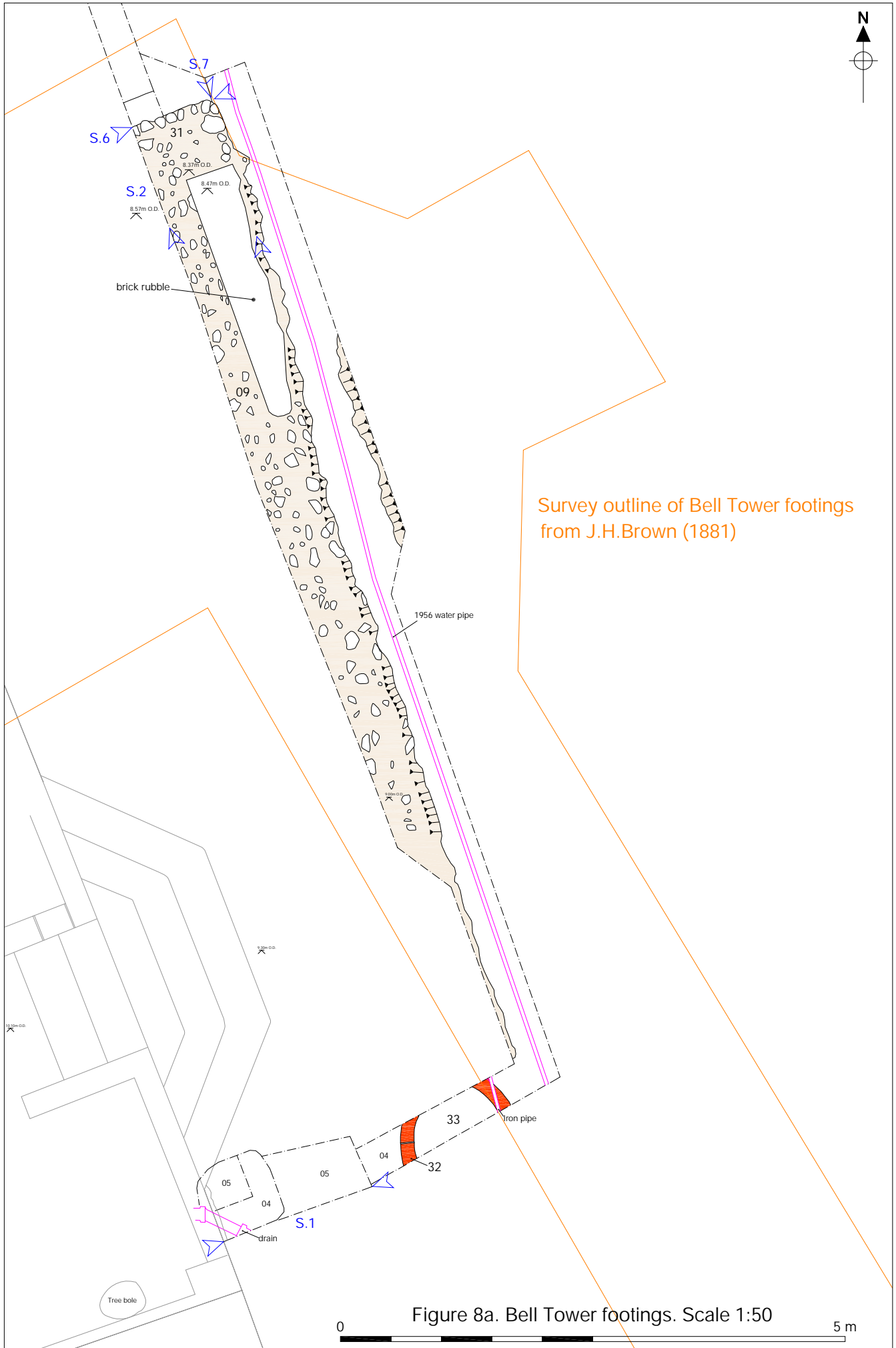


Figure 6. Groundworks plan. Scale 1:100





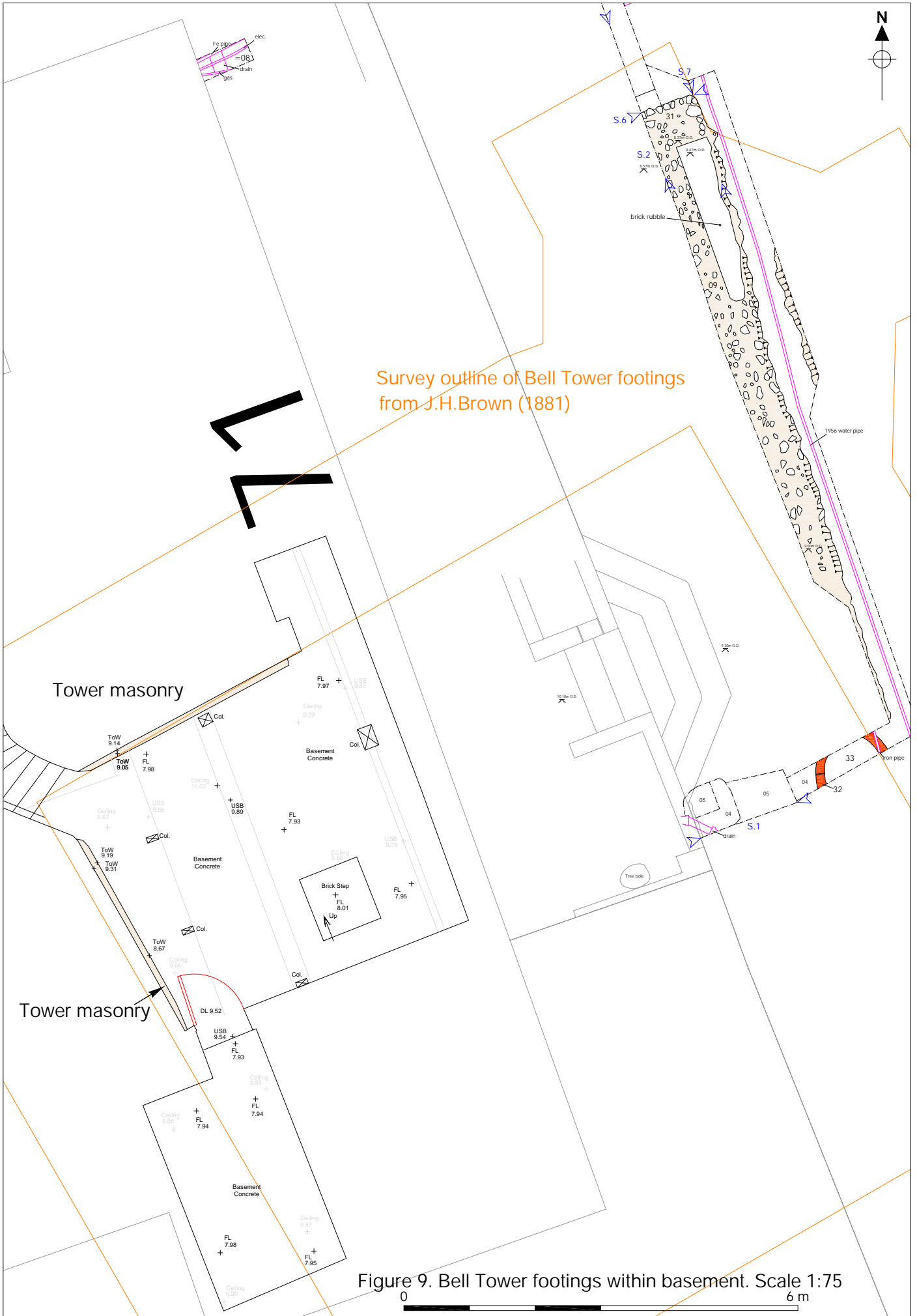


Figure 9. Bell Tower footings within basement. Scale 1:75

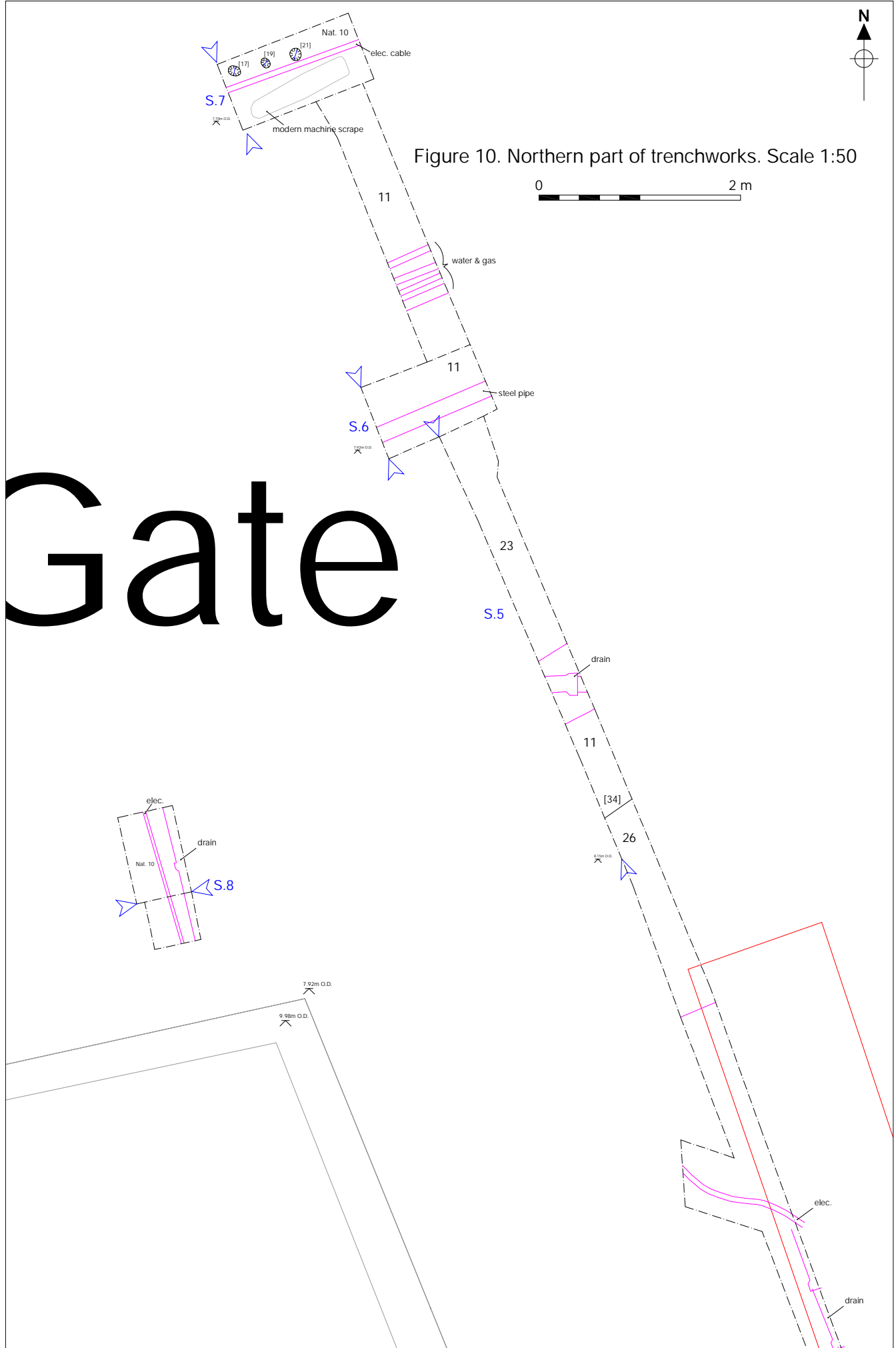
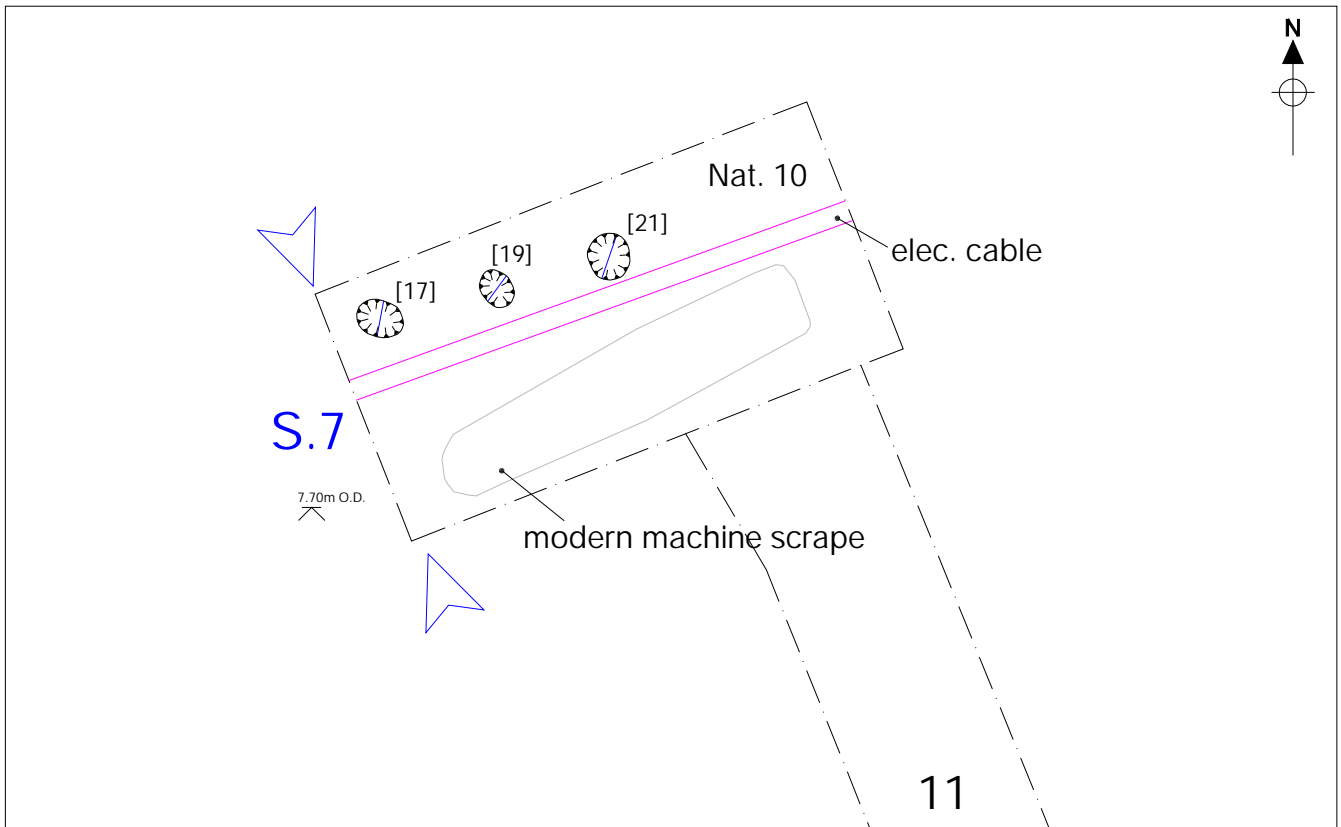
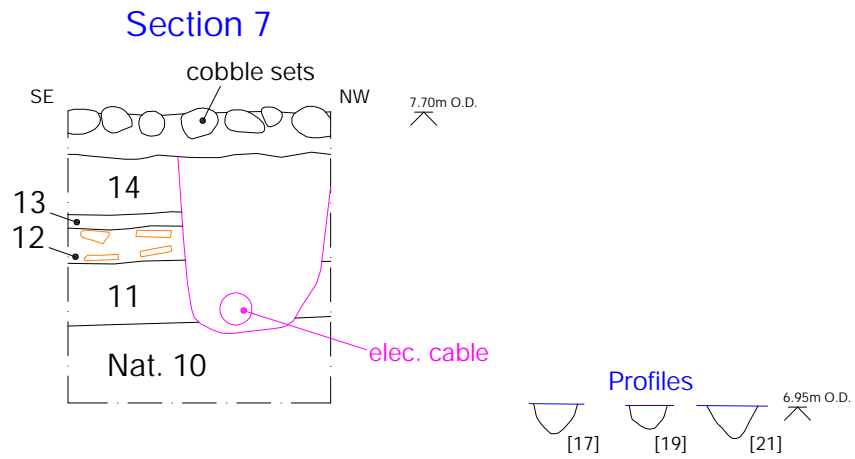


Figure 10. Northern part of trenchworks. Scale 1:50

Gate



0 Figure 11. Mains electric cable trench. Scale 1:20 2 m

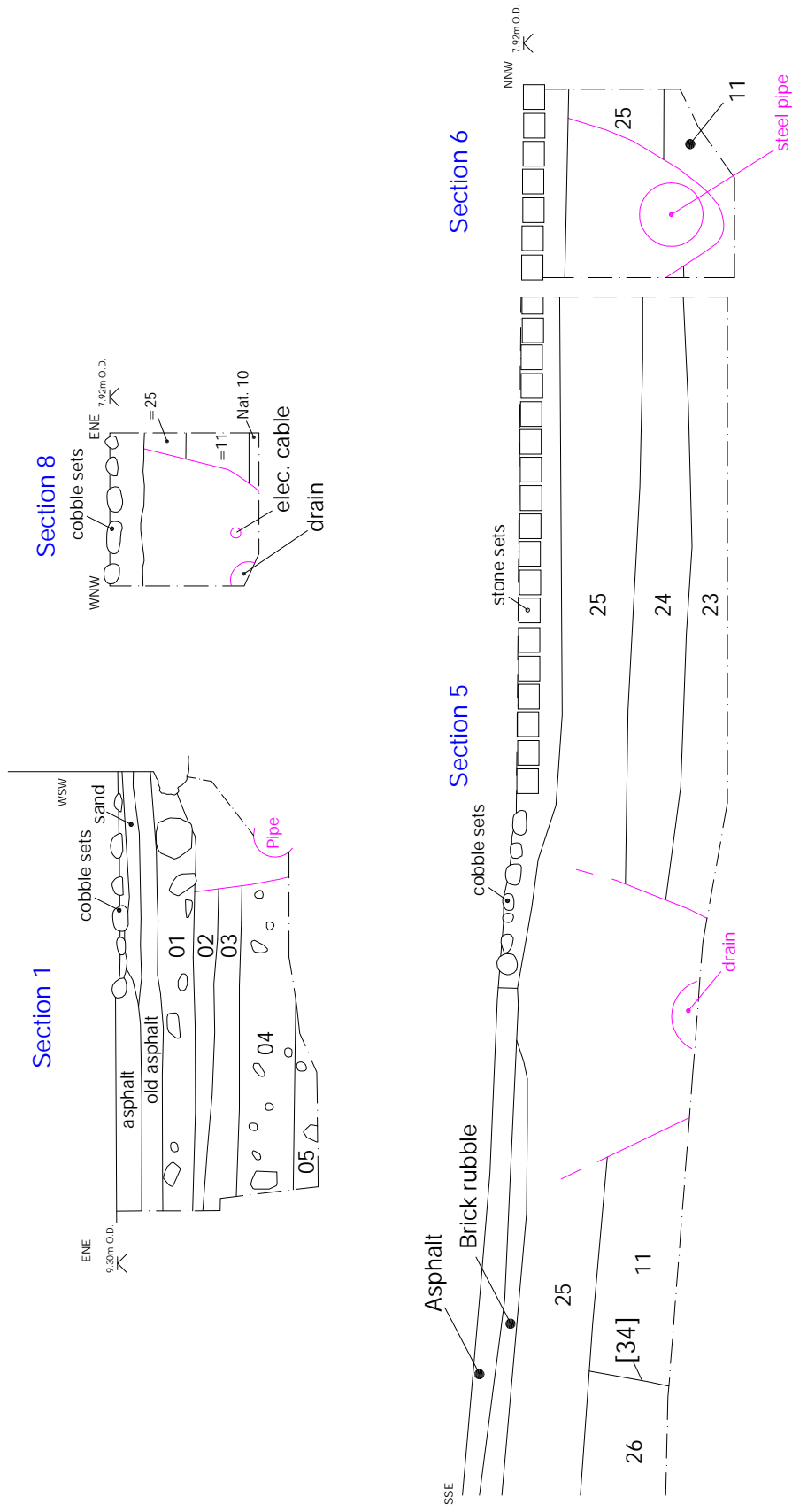


Figure 12. Sections 1, 5, 6 and 8. Scale 1:25

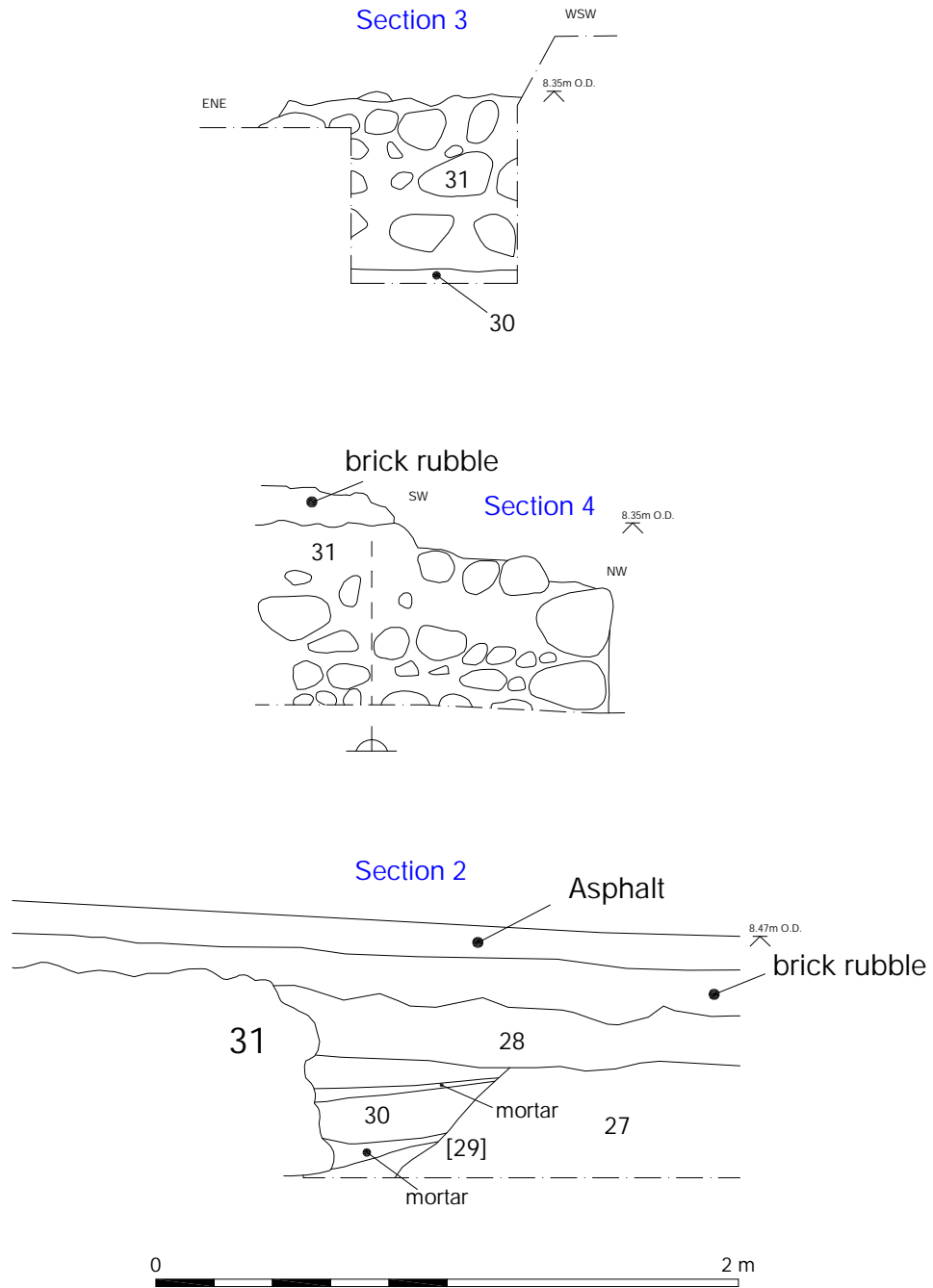


Figure 13. Sections 2 to 4. Scale 1:25

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OASIS ID: norvicar1-396393

Project details

Project name	Archaeological Monitoring during the installation of a new electricity supply for No.71 The Close, Norwich Cathedral.
Short description of the project	The results of monitoring of groundworks during a programme of refitting work to No.71 The Close. The installation of a new electricity supply required three elements of groundworks requiring archaeological supervision and control. This included initial work to accommodate a thrust-bored hole from the roadway into the cellar for an uprated power cable, a new connection trench along the road and pits to allow for the disconnection of the existing supply. The replacement of a length of lead water pipe serving the property was also monitored. The solid flint and mortar footings of the medieval bell-tower were encountered opposite No.71, just 20cm below the modern road surface. The work confirmed that the masonry remains of the bell tower as originally uncovered in 1881 and surveyed by J.H.Brown survive at least partly intact directly below the roadway. The 1881 survey plan matches very well with both the uncovered remains and the medieval masonry incorporated into the cellar of No.71. Its accuracy allows us to be confident of the position and form of the bell tower footprint. An evenly spaced alignment of three postholes of likely Saxon to medieval date was recorded in the base of the electricity mains trench, at the northern limit of the trench work. Noteworthy finds include a small lead plumb-bob found within the medieval layers adjacent to the tower, a small copper-alloy dress pin of medieval to post-medieval date, several fragments of medieval roof tile and two small fragments of copper-alloy casting waste.
Project dates	Start: 14-05-2019 End: 28-01-2020
Previous/future work	No / No
Any associated project reference codes	ENF146082 - HER event no.
Any associated project reference codes	NVC19/504 - Contracting Unit No.
Type of project	Recording project
Site status	None
Current Land use	Industry and Commerce 2 - Offices
Monument type	POSTHOLE Early Medieval
Monument type	BELL TOWER Medieval
Monument type	SOAKAWAY Post Medieval
Significant Finds	CBM Medieval
Significant Finds	COPPER WORKING WASTE Medieval
Significant Finds	COPPER ALLOY PIN Medieval
Significant Finds	POTTERY Medieval
Significant Finds	LEAD PLUMB BOB Medieval

Significant Finds	ANIMAL BONE Medieval
Significant Finds	WORKED STONE Medieval
Significant Finds	POTTERY Post Medieval
Significant Finds	GLASS BOTTLE Post Medieval
Investigation type	"Watching Brief"
Prompt	Voluntary/self-interest

Project location

Country	England
Site location	NORFOLK NORWICH NORWICH No.71 The Close, Norwich Cathedral
Postcode	NR1 4DD
Study area	0 Square metres
Site coordinates	TG 23366 08858 52.630933172138 1.301076540294 52 37 51 N 001 18 03 E Point

Project creators

Name of Organisation	Norvic Archaeology
Project brief originator	Diocesan Archaeologist
Project design originator	Norvic Archaeology
Project director/manager	Giles Emery
Project supervisor	Giles Emery
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Norwich School

Project archives

Physical Archive recipient	Norfolk Museums Service and Norvic Archaeology
Physical Archive ID	NWHCM.2020.88
Physical Contents	"Animal Bones","Ceramics","Glass","Metal","Worked stone/lithics"
Digital Archive recipient	NMAS
Digital Archive ID	NWHCM.2020.88
Digital Contents	"Survey"
Digital Media available	"Images raster / digital photography","Images vector","Text"
Paper Archive recipient	NMAS
Paper Archive ID	NWHCM.2020.88
Paper Contents	"Survey"
Paper Media available	"Context sheet","Diary","Plan","Report","Section"

**Project
bibliography 1**

Publication type	Grey literature (unpublished document/manuscript)
Title	Norwich Cathedral Close, the rediscovery of the Medieval Bell Tower: Archaeological Monitoring during the installation of a new electricity supply for No.71 The Close, Norwich Cathedral.
Author(s)/Editor(s)	Emery, G
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