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1. Executive Summary

This report gives the results of the programme of excavation and observation undertaken at No 3 Well Street Exeter EX4 6QR by Border Archaeology Ltd on behalf of Grahame and Rebecca Dudley of Culmvale Stoke Canon Exeter in 2014. The report also includes the results of geoarchaeological and geological borehole investigations conducted on July 1st 2014 by ARCA University of Winchester.

This site was thought to enclose the location of the holy well of St Sidwell. This well was a site of religious significance and also an important water source supplying the city through a system of lead pipes until its replacement in the 14th century. The aim of the archaeological investigation was to identify any surviving structural remains associated with the well.

An octagonal structure of local Heavitree masonry was discovered and is believed to represent the late medieval phase of the original well structure. The well had been disturbed by a brick conduit on the W side.

The octagonal well was substantial enough to have supported some form of roofing structure and was surrounded by a cobbled surface with a drainage channel respecting the octagonal form. The cobbled gully had been much disturbed by later activity. An L-shaped wall adjacent to the medieval well may have originally formed part of an enclosure or been a later addition associated with nearby housing.

Borehole analysis of the stratigraphy of the well revealed 1.5m of 19th century backfill, overlying about 1m of peaty organic material which overlay the bedrock at 3.3m below the present-day surface. This suggests the site was originally a marshy area surrounding a natural spring formed between bedrock strata. The presence of preserved peat suggests it was not used as a well (or the peat would have been trampled), before it was formally enclosed by the well structure.

A later 19th -century brick well had been cut through the medieval cobbling surrounding the octagonal well and may represent an attempt to reinstate the medieval well.

2. Introduction

Border Archaeology Ltd (BAL) was commissioned by Grahame and Rebecca Dudley of Culmvale Stoke Canon Exeter to undertake a programme of archaeological work as a planning condition prior to the proposed redevelopment of No 3 Well Street Exeter EX4 6QR (Border Archaeology 2012) (Fig. 1). The work followed an approved Written Scheme of Investigation (Border Archaeology 2012) The programme of work was carried out between June 16th to June 20th 2014 and September 17th and 18th 2014. The premises comprised a small disused commercial garage, the SW extent of which, where the well remains were found, having been enclosed in the latter half of the 20th century.

The proposed redevelopment was for retail units fronting Well Street and residential units above accessed independently. The existing concrete slab would be partly used to support the raft foundations, with a 1m -width band of concrete left in place. The remaining part of the foundations would require substantial reduction of the ground level, which, together with underpinning the surviving part of the concrete slab, necessitated archaeological recording.

BAL carried out the programme of works in compliance with the instruction received from architect Dominic Tyler, these having been previously agreed with Andrew Pye Exeter City Council Archaeology Officer (ECCAO) in January 2012. This report relates to the programme of work undertaken by BAL with respect to the archaeological investigation and recording and is appended by the geoarchaeological and geological results supplied by ARCA University of Winchester.

3. Aims

- To characterise as fully as possible within the parameters of the project the extant archaeological resource contained within the study area and to produce a full and detailed record of it.
- To provide sufficient information to identify the precise location of the medieval well structure and its condition and to inform the eventual foundation design to ensure the preservation of the well and any significant remains of associated deposits or features.
- To inform the as yet unconfirmed foundation design to ensure preservation of any remaining well structure.

4. Soils & Geology

The British Geological Survey (BGS) map shows the site lying on rocks of Whipton Formation. These are mudstones and sandstones with breccias (angular rock fragments in a matrix) of the Permian age (c. 299-251 Mya). The Knowle Sandstone Formation (c. 299-251 Mya) and mudstones and sandstones of the Crackington Formation (c. 322-312 Mya) outcrop approximately 150m to the W and NW of the site, respectively (BGS 2016).

The area is categorised as unsurveyed by the Soil Survey of England and Wales (SSEW 1983).



Fig. 1: Site location: Site marked in red

5. Background

The city of Exeter is famous for its medieval system of underground tunnels and pipework that supplied water from the parish of St Sidwells on the NE side of Exeter into the city and cathedral. Public fountains, that from the late 1400s were enclosed in stone buildings and locked during the night, were prominent features of town life (Stoyle 2014). St Sidwell's well was the earliest recorded in this network (*ibid*).

The parish of St Sidwells derives its name from a Christian martyr (Sativola/Sidwell) who emerged as a saint associated with the City of Exeter by the early medieval period, and St Sidwell's spring/holy well reputedly marks the site of her martyrdom (Hope 1893). St Sidwells is shown on Hooker's 1587 map of this area and a series of later maps including the OS 1st-edition 1:500 map of 1876 (Figs. 2-8). The cartographic evidence indicates that the well was situated within a small separate enclosure that was subsequently incorporated into the present site at No 3 Well Street.

St Sidwells parish is the location of a number of springs which supplied the city of Exeter with its water via a series of wells and aqueducts. St Sidwell's belonged to the Dean and Chapter of Exeter Cathedral, and the well is first referred to in a grant of 1226 when Serlo, the Dean of Exeter Cathedral, granted

the prior of St Nicholas one third of the well of St Sidwell. A further document of 1346 refers to water being brought to the Cathedral Close via lead pipes from St Sidwells (Stoyle 2014). A new well at Headwell, about 250m to the E of St Sidwell's well (in present day St James' Road), had been built by the later 13th century. In 1347–1349 the Dean and Chapter rerouted and improved the cathedral aqueduct using water from Headwell and removed the aqueducts from St Sidwell's well (*ibid*). This implies a decline of importance for St Sidwell's well.

In 1983 an archaeological excavation found evidence of the medieval water system leading from St Sidwell's well. Surviving fabric, representing part of a medieval aqueduct (Historic Environment Record (HER) No. 11020.00), was found in three sections during excavations carried out in King William Street, running SW off York Street. A trench up to 3.3m deep containing a lead pipe bedded on a layer of yellow clay, which had subsequently been dug out, was revealed. This was interpreted as medieval pipe taking water from St Sidwells in a SW direction towards the City's E gate and the Cathedral, which had been subsequently dug out and salvaged in the 14th century (Stoyle 2014).

Despite the downgrading of its importance to the City, St Sidwell's continued to be used as a well. Maps show a castellated well-house existed at this location in the 16th century (Stoyle 2014, 20) and leases indicate St Sidwell's well was a landmark in the 17th and 18th centuries (e.g. The National Archives catalogue 5807 F/L 11/1).

Cartographic evidence (specifically Hooker's map of 1587 and Rocque's map of 1744) indicates that there was relatively little building activity along either side of Well Street during the early post-medieval period and it was not until the 19th century that the S side of Well Street was extensively developed. The well is shown immediately adjacent to 'York Cottages', now Nos. 1 & 2 Well Street, on J. Coldridge's 1819 map of Exeter, just within the boundaries of the present site. A plan of 1824 drawn up by Robert Cornish, Surveyor to the Dean and Chapter of Exeter Cathedral, also shows the well located immediately to the N of York Cottages. 'Aqueducts to the city conduits' are shown on Britton's 1805 'Map of Exeter' located on the junction of what are now St James' Road and Well Street (from Exeter HER derived from Dean and Chapter of Exeter Cathedral Archive (D & C 6010/5/7)).

Site Specific Map Regression

Although the well of St Sidwell's appears to have declined in importance following its disconnection from the cathedral system in 1347 cartographic evidence shows the well itself remained extant until the mid-19th century.

The earliest cartographic source to show the well is Hooker's 'Plan of St Sidwell's Fee' dated 1587 (*Fig. 2*), which shows the structure as a castellated polygonal structure situated in the middle of Well Street (which appears somewhat broader compared to its present width). The well is depicted immediately to the NE of the junction with present day York Road, described as 'the way to St Sidwell's Well'. The well structure is shown as having an entrance facing NE into Well Street and an enclosure is shown bounding the well to the N and W.

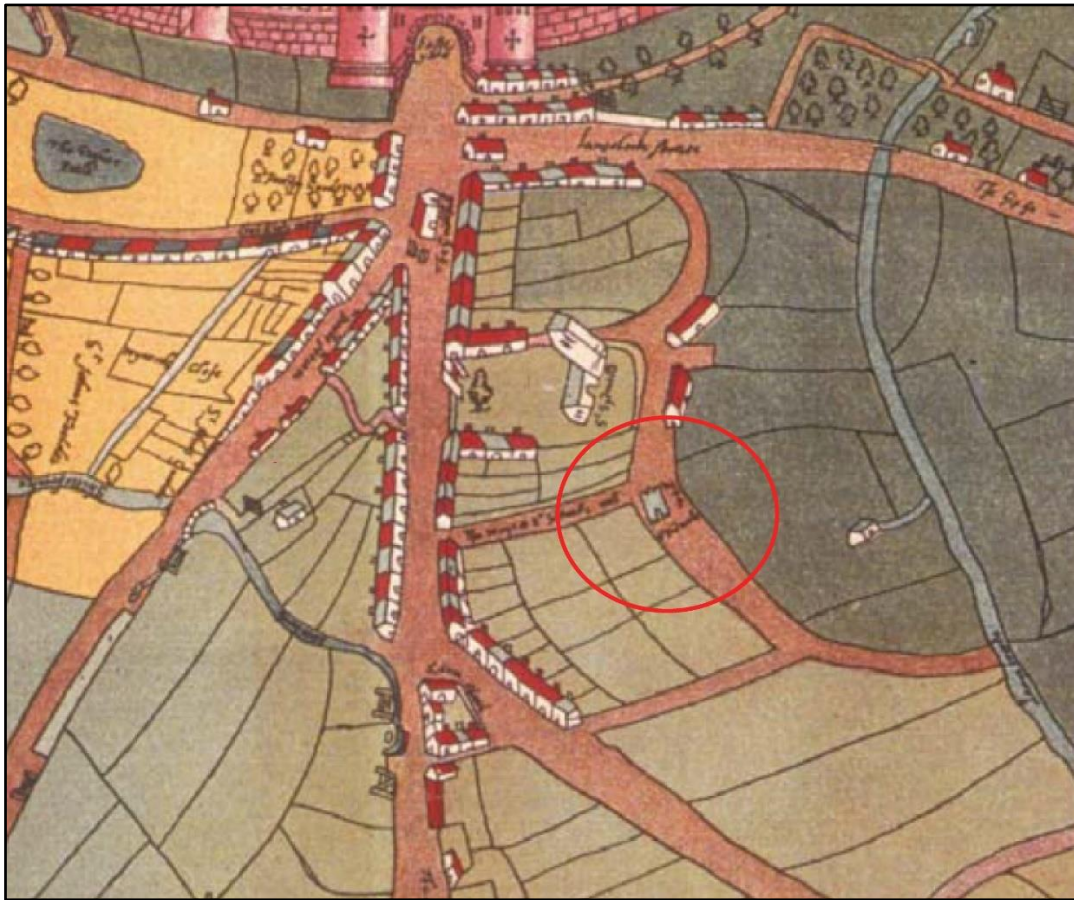


Fig. 2: Extract from Hooker's Plan of St Sidwell's Fee (1587) (Reproduced courtesy of Devon Record Office)

St Sidwell's well is specifically mentioned in local property deeds of a 17th/early-18th century date (listed in the National Archives) and the well structure was evidently still intact in the mid-18th century, as it is marked as 'Sidwell's Wells' on John Rocque's map of Exeter, dated 1744 (Fig. 3). On Rocque's survey, the well is marked immediately E of the corner of York Road and Well Street, on the edge of (rather than directly in the middle of) Well Street.

A more detailed depiction of the well is afforded by a plan of two closes of meadow ground adjoining St Sidwell's Well surveyed by John Tothill in 1772, which shows the well as a polygonal structure at the NE end of a narrow rectangular recess on the SE side of Well Street, immediately NE of the junction of Well Street and York Road (Fig. 4). Tozer's and Britton's maps of Exeter, dated 1793 and 1805 respectively, both mark the well as a small structure at the corner of Well Street and York Road (Fig. 4).

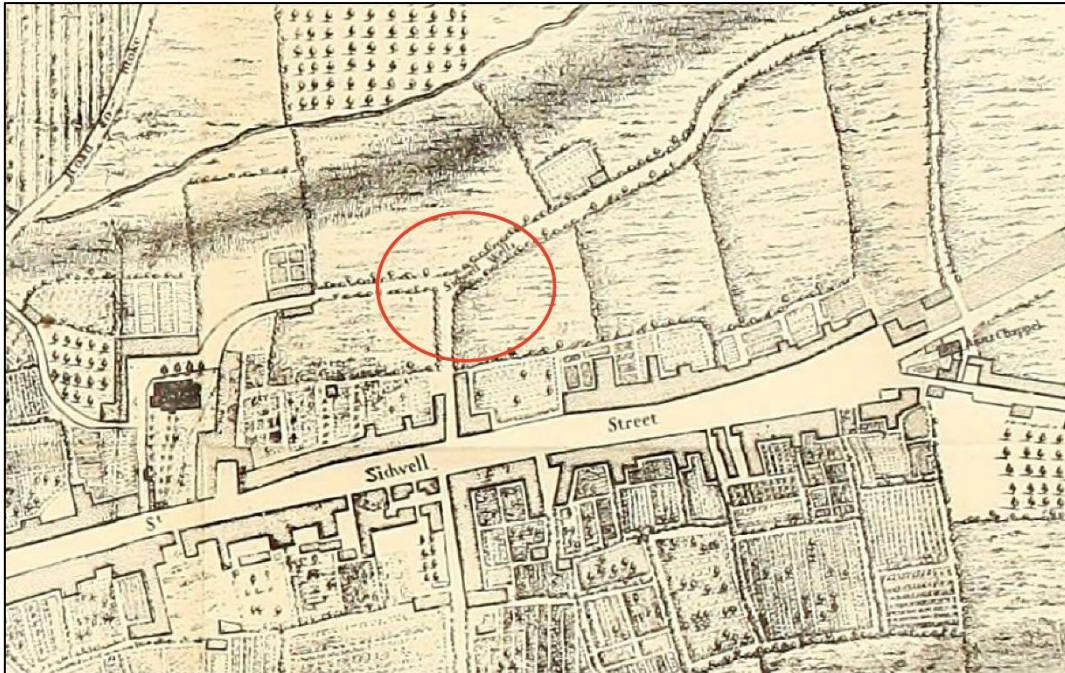


Fig. 3: Extract from Rocque's Map of Exeter (1744); (Reproduced by courtesy of Devon Record Office)

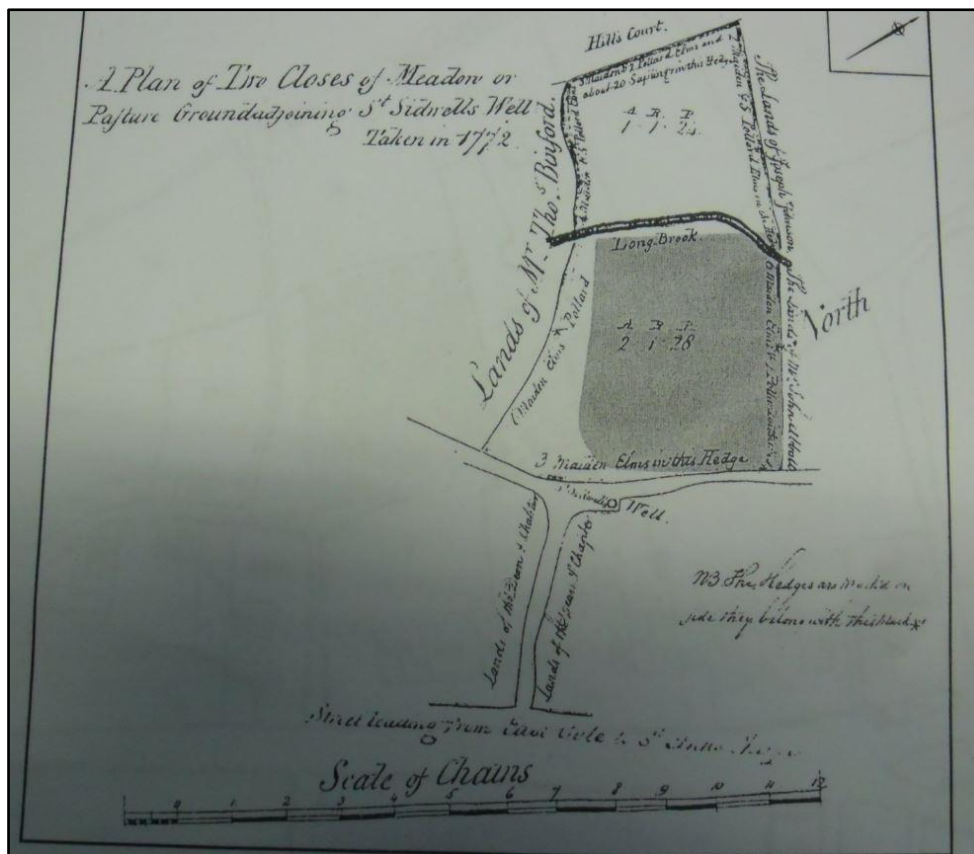


Fig 4: 1772 Plan by Tothill (taken from Juddery and Stoye 1995)

J. Coldridge's map of Exeter dated 1819 (Fig. 6) shows that a pair of cottages (known from c.1828 onwards as Nos. 1 & 2 York Cottages) had been erected at the corner of Well Street and York Road, within the central and western part of the recessed area marked on Tothill's map. The well is depicted as a polygonal structure projecting out from the NE end of the cottages. The accuracy of this depiction is confirmed in a later Dean and Chapter Plan by Robert Cornish, dated September 1824, which also shows the well structure NE of the two cottages.

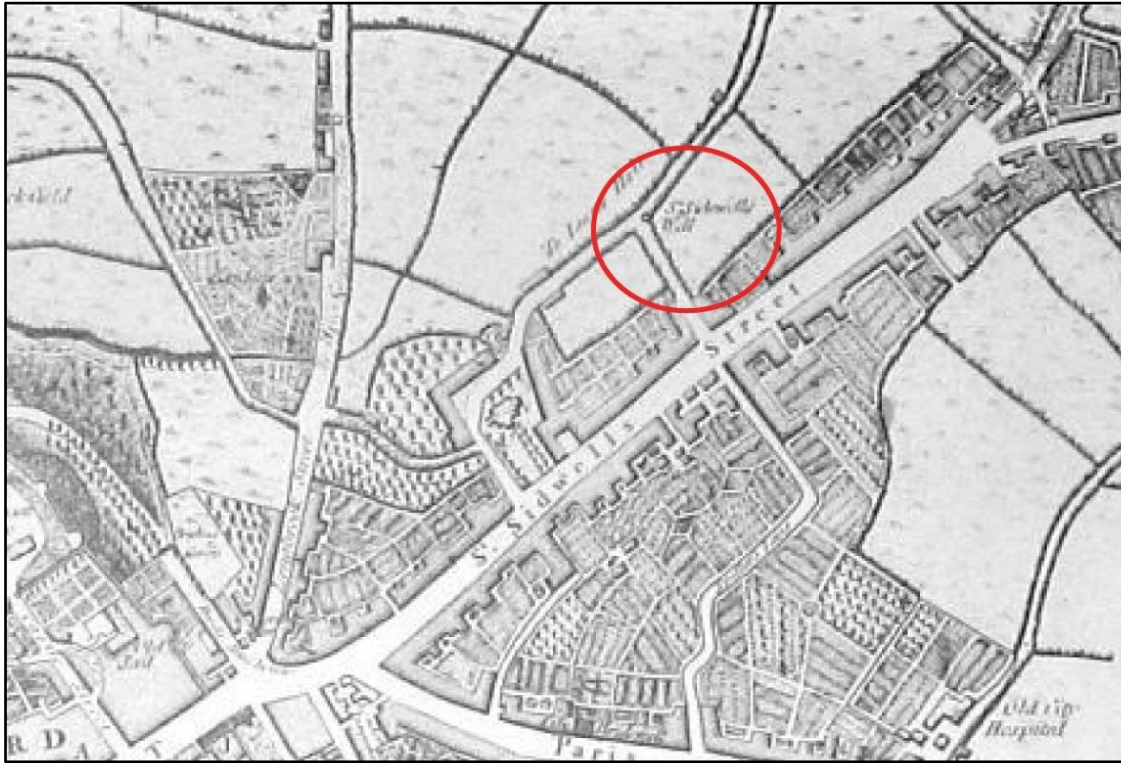


Fig. 5: Extract from Tozer's map of Exeter dated 1793 showing the location of St Sidwell's Well; (Reproduced by courtesy of Devon Record Office)

Between 1819 and 1824, a further range of houses was built immediately to the SE of York Cottages, marked on Brown's map of 1835 as 'York Place' and referred to as 'York Buildings' in a newspaper advertisement for the sale of the properties in the *Exeter Flying Post* of 10 March 1824 and in the *Exeter Itinerary and General Directory* of 1828.

York Buildings were constructed by Hugh Facey, a local builder and joiner who is mentioned in the 1824 sale advertisement for York Buildings, who was in residence there by no later than 1828. It is likely that Facey was also responsible for the construction of the adjacent houses at York Cottages. The bricks from the later well-shaft on the site were stamped with the initials 'H.F.' and it is reasonable to assume that they refer to Hugh Facey, as a search of trade directories, documentary records and other relevant documentary sources has failed to identify any local Exeter brick-makers with the same initials. If this identification is correct, it appears likely that the construction of the second well shaft

occurred in the 1810s-20s and that the well was dug to provide a new water supply to York Cottages and the houses to the rear at York Buildings.



Fig. 6: Extract from Coldridge's map of Exeter (1819) St Sidwell's Well immediately adjacent and NE of York Cottages; (Reproduced by courtesy of Devon Record Office)

Another possible explanation is that the second shaft was required following the severe cholera epidemic in Exeter in 1832 (causing 65 fatalities in St Sidwells parish alone), which resulted in many old wells in the city being reopened by the local Board of Health to provide an improved water supply (Shapter 1849, 91).

St Sidwell's Well is not specifically marked on Brown's map of 1835 or John Wood's map of 1840, although the latter map does show a projecting structure to the NE of York Cottages. There are very few references to St Sidwell's Well in later documentary records; newspaper reports in the *Western Times* of 1861 and 1862 refer on several occasions to motions advanced at local council meetings for the restoration of water to 'St Sidwell's Well' which had been cut off by the construction of a new cutting for the London and South West Railway in 1857, but this probably refers to the Headwell and not to the well at the junction of Well Street and York Road.



Fig. 7: Extract from the OS 1st edition 1:500 map of 1876

(Reproduced by courtesy of Devon Record Office)

It would appear that the well had probably fallen out of use by the mid-1870s, as it is not specifically marked on the OS 1st-edition 1:500 map of 1876 (Fig. 7), although an irregularly shaped structure is marked immediately to the NE of Nos. 1-2 York Cottages, which may represent the structure containing the well.

It is possible that the well was closed for sanitary reasons; a report in the *Western Times* for 25th September 1880 refers to a well, described as being 'in Well Lane, just under York Buildings and close by St Sidwell's Churchyard, which had lost its reputation and was now closed, as it was teeming with impurities'. St Sidwell's Well is also mentioned as having been destroyed in an article by E. Parfitt in the *Transactions of the Devonshire Association* dated 1880 on the sinking of two wells at the City and St Anne's Breweries in Exeter (Parfitt 1880, 451). Parfitt also mentions that the well was formerly known as the 'Beehive' (presumably referring to its appearance) or as 'Captain Cook's Well'.

A later OS 1:500 map surveyed in 1888 marks the irregularly shaped building as 'St Sidwell's well (site of)' which would appear to confirm that the well had ceased to be used by that date.

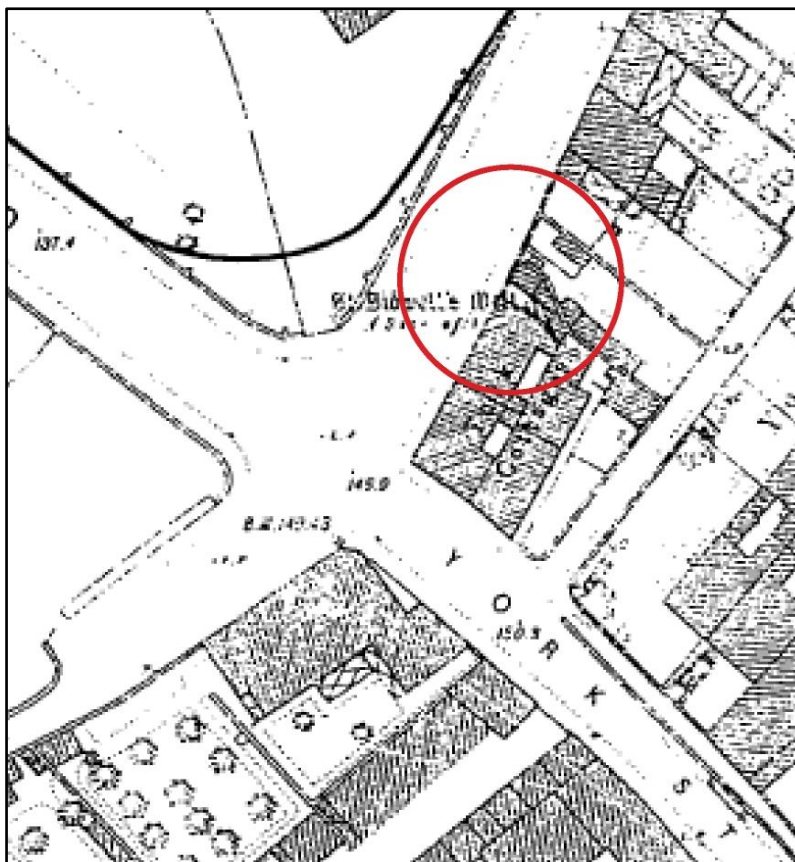


Fig. 8: Extract from the OS 1:500 map (1888) showing the site of St Sidwell's Well to the NE of York Cottages;
(Reproduced by courtesy of Devon Record Office)



Fig 9: Street View of No 3 Well Street in 2014 during archaeological recording

6. Methodology

This programme of archaeological works was carried out in accordance with *Standard and Guidance* as issued by the Institute for Archaeologists prior to confirmation of Chartered status on December 9th 2014, and also to guidance issued by English Heritage prior to its recent restructuring and the launch of Historic England (the Historic Buildings and Monuments Commission for England) in April 2015. These are set out in detail in the WSI (BAL 2012).

The scope of works (as required under Condition 4) comprised in the first instance consultation of the Exeter City Council Historic Environment Record, consultation of maps and plans held by the Devon Record Office and West Country Studies Library Exeter and consultation of any other readily available documentary and cartographic sources, including any information such as property records in the possession of the client.

Floor-slab removal was undertaken prior to formal site start due to space restrictions and health and safety considerations, so as to leave in place a band of concrete at least 1m in width around the site against all walls in order to comply with health and safety requirements and party wall legislation. The slab removal was undertaken carefully to identify and record any remains exposed and to ensure that these remained *in situ* for the duration of this phase of the works. Geotechnical works were carried out towards the end of the archaeological investigation, using information obtained from viewing open trenches and *sondages*. Machining was undertaken so as to minimise disturbance to underlying deposits.

This work followed an initial floor clearance and four test pits dug on 24th April 2014. Figure 10 shows the locations. Following this it was intended to dig a sequence of trial trenching but the constrictions of the site dictated the opening of an area roughly 4m × 3m on the western side where, following the test pits, remains of the well were considered most likely to be found. Engineering considerations coupled with the preservation of areas of concrete slab resulted in an excavation area measuring 10.8m², with an additional 0.5m × 0.5m test trench in the upper part of the site.

The well and other deep intrusions encountered below the surviving horizontal archaeological stratigraphy were excavated to formation level, or marginally below, in the interest of removing a small remaining depth of base fill; where substantial deposits remained below formation level, a hand auger was used to determine depth.

Two hand-collected samples for the recovery of palaeoenvironmental data were taken from well fills (1007) and (1009). These deposits were sieved and were found to contain clay pipe and glazed pottery, with the fills thought to be of 19th -century or later date.

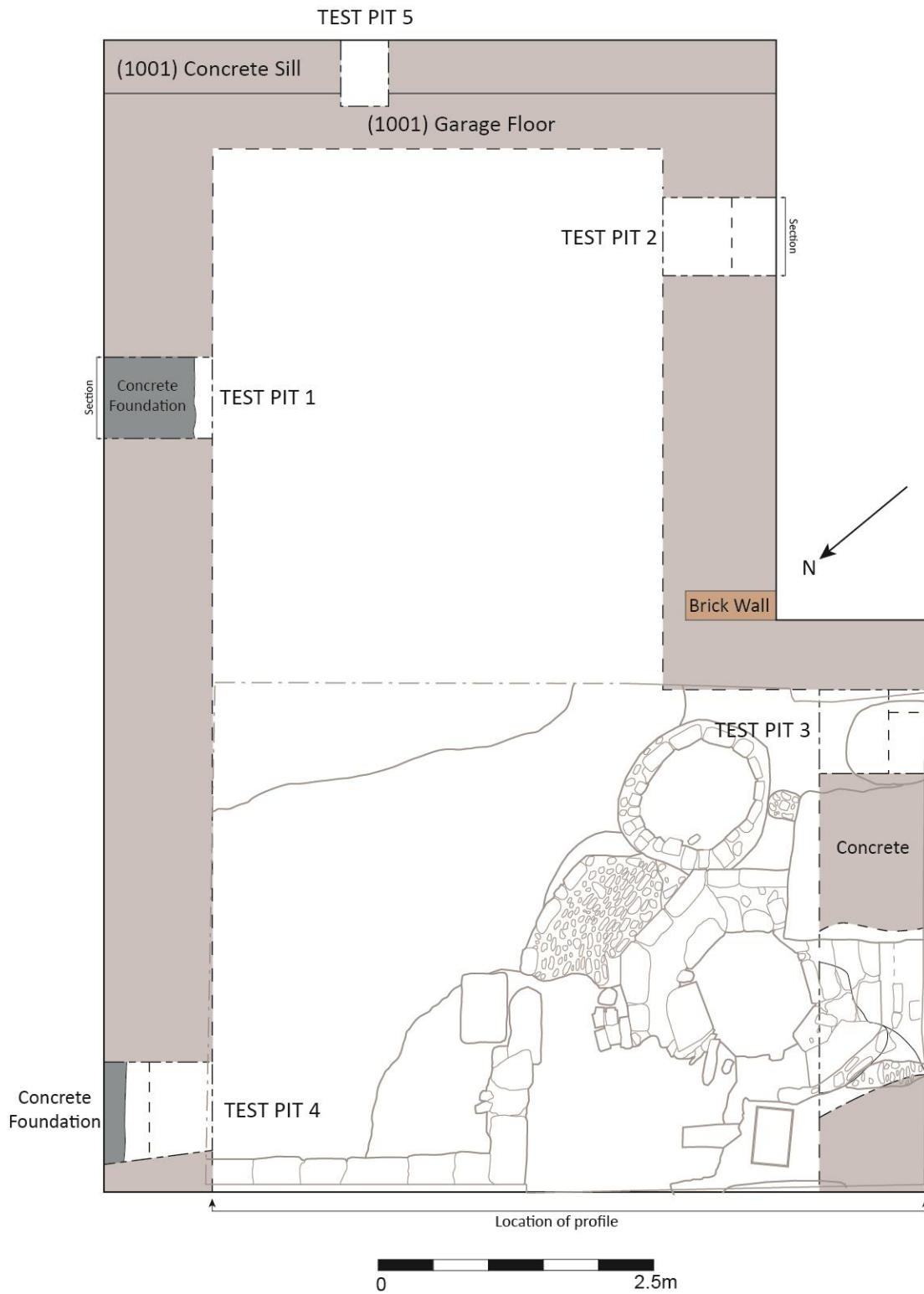


Fig 10: Garage Floor Plan with Test Pits and Excavation Area

7. Results: Test Pits

A programme of test pit excavation preceded the works uncovering the well and was intended as a means of evaluating the area beneath the outer edges of the concrete plinth which were to remain as raft foundations for the new construction.

Test Pit 1:

Located against the NE wall and towards the rear of the garage, Test Pit 1 measured approx. 0.7m in width against the wall and approx. 1m in width across the remaining concrete plinth into the garage. Test Pit 1 had a maximum depth of 0.51m although it encountered sitting water at a depth of 0.35m. Test Pit 1 consisted of three contexts: (1001) formed the uppermost and was concrete to a depth of 0.15m, it included small fragments of stone and comprised the garage floor; underlying (1001) was (1002), a brick rubble of 0.21m depth and, being comprised of whole and fragmented bricks of 20th century date, formed the compacted foundation for the concrete floor (1001); underlying (1002) was (1003), a concrete foundation of 20th century date for the adjacent, slightly earlier, building.

Test Pit 2:

Located against the SE wall and towards the rear of the garage, Test Pit 2 measured approx. 0.7m in width against the wall and approx. 1m in width across the remaining concrete plinth into the garage. Test Pit 2 had a maximum depth of 0.35m and consisted of two contexts: (2001) was a retaining wall foundation for the garage and comprised bricks of 20th century date bonded by cement to a depth of 0.1m; (2001) overlay a firm coarse natural sand, (2002), which comprised the geology and was excavated to a depth of 0.25m.

Test Pit 3:

Located against the SW wall and within the area later excavated to expose the well, Test Pit 3 measured 0.7m in width against the wall by approx. 0.6m width. Test Pit 3 had a maximum depth of 0.32m where the test pit encountered another horizon that was not exceeded. Test Pit 3 therefore comprised three contexts: (3001) was akin to (1001) in Test Pit 1 being the concrete floor of the garage and extending to a depth of 0.13m; (3001) overlay (3002) which was excavated to a depth of 0.19m and formed a rubble backfill of firmly compacted reddish brown clayey sand with frequent medium sized natural stone as a potential foundational layer for the wall.

Test Pit 4:

Located on the NW wall and adjacent to the street frontage, Test Pit 4 measured approx. 0.8m in width against the wall by 0.9m width. Test Pit 4 had a maximum depth of 0.4m and consisted of four contexts: (4001) was akin to (1001) in Test Pit 1 being the concrete floor of the garage and extending to a depth of 0.1m; (4001) overlay (4002) which was akin to (1002) in Test Pit 1 being a brick rubble compacted foundation for the concrete floor extending to a depth of 0.08m; (4002) overlay both (4003) which was akin to (1003) in Test Pit 1 being a concrete foundation for the adjacent building and (4004) which was akin to (5003) in Test Pit 5 being the natural in that area and excavated to a depth

of 0.22m. (4003) cut (4004) vertically with the concrete completely filling whatever void was excavated into (4004).

Test Pit 5:

Located centrally along the rear, south-eastern, wall of the building and measuring 0.4m wide by 0.6m wide into the building was Test Pit 5. Test Pit 5 had a maximum of 0.5m and consisted of three contexts: (5001) was akin to (1001) in Test Pit 1 being the concrete floor of the garage and extending to a depth of 0.3m; (5001) overlay (5002) which was akin to (1002) in Test Pit 1 being a brick rubble compacted foundation for the concrete floor extending to a depth of 0.17m; (5002) overlay (5003) with a very irregular interface, (5003) represented the natural and was a red clay in marls that was excavated to a depth between 0.1m and 0.03m.

8. Results: Excavation

Figure 11 shows the location of features discussed in the text.

The site had had a thin concrete floor of 0.1m, below this was a shallow compacted rubble deposit over sand of 0.1m (1000) a compact dark reddish brown clayey sand with very frequent angular stone inclusions. The octagonal well (1002), smaller brick well (1006), cobbled surface (1001) and a wall structures (1011) lay below this.



Plate 1: View S of the well (1002) later shaft (1006) to the left and wall (1011) front right

Well (1002) was an octagonal masonry structure constructed of Heavitree stone blocks set on edge forming a wall with an internal rubble core that featured Heavitree, other stones and mortar. The observable part of well (1002) was the superstructure that was constructed of very finely cut Heavitree blocks, however lower courses of less well dressed Heavitree were also observed where the superstructure had been disturbed. The Heavitree blocks averaged 0.5m in length, 0.4m in width and 0.4m in depth with an almost ashlar finish leading to very limited pink/grey bonding mortar between the blocks. The well structure (1002) measured 2.15m in external diameter with an internal aperture of 1.05m. The NW side had been converted to a brick arched conduit (1010) and the N side was truncated by the modern silt trap tank [1008], additionally there was damage from the NW/SE electric cable installation.

It was clear that the courses of Heavitree present do not represent the upper courses of the well as the exposed top blocks had mortar on the surface and therefore weren't the finished capping stones. It is possible, due to the rubble core, that only one further course of Heavitree existed above that revealed and that this would have represented the final capping course and would have been of very finely dressed stone that was desirable for reuse elsewhere.

The lining (showing at 44.11m OD) and lower levels of the well were constructed of smaller, cut stone (*Plate 2*) that lay at the water table.



Plate 2: View SE showing Heavitree masonry upper courses (1002) with smaller-sized stones lining the shaft

Due to the restrictions of the excavation and observation, it was not possible to extract or examine lower levels of the stone courses in close detail but in the excavators opinion the stone though different in size was the same type of geology, i.e. Heavitree, and with no observable mortar.



Plate 3 View of lower stone course (1002)

An octagonal shape was present in the upper courses, but not in the lower. This may be due to the large size of the upper stones necessitating the shape, or by design, i.e. larger stones were chosen in order to effect the octagonal shape. A castellated well is shown on Hooker's 1587 plan (Fig 2) and a round or possibly octagonal building on a 1590 Dean and Chapter map (Stoyle 2014, 20) and a stylised small building on the Hogenberg 1618 map (Stoyle 2014, 6 and 83). Exeter medieval octagonal well shapes were recorded by William Dawson in 1838 prior to renovations, at Headwell and Cake Lane not St Sidwells. (Stoyle 2014).



Plate 4; General shot of octagonal shape of well (1002).

The well had been disturbed on the NW side by a brick conduit (1010). Yellow fired bricks occupied the space that would have been taken by Heavitree, mortar bedding survived where the bricks had not showing the location and form of the arch. The arch was likely formed of double thickness with bricks laid on edge in upright header fashion. The width of the arch was 0.65m and an observable height of 0.23m.

Three courses of the medieval well were discovered in good condition. The well appears to have undergone a number of rebuilds and the masonry of the upper part of the structure was of a different form from that of the lower coursing (*Plate 3*).

The fill (1009) of well (1002) was formed of a compact orange yellow clay to pale grey clay with moderate inclusions of coarse stone and occasional brick fragments. The fill (1009) had a 1.05m diameter and unexcavated depth although the fills were geoarchaeologically bored (*Appendix 2*).



Plate 5: View N of the later well (1006) showing several bricks stamped 'HF'

A borehole drilled in the centre of the brick well structure (1006) that was adjacent on the E side of the stone well (1002) encountered bedrock of the Whipton Formation at a depth of 3.26m, 1m of peat clay overlay this. The peat was overlain by 0.25m of sandy clay, and above this was a backfill deposit of about 1.5m with 19th century artefacts (Appendix 2).

The well (1006) (*Plate 5*) was smaller and built of hand-made brick stamped with HF. Three courses were exposed of one or two brick width only with no definite coursing style, the lowest level being header on and stretcher occasionally used to cross gaps. The structure had been backfilled with compacted clay (1007) with 19th century finds. The bedrock here was encountered at 1.1m below the surface.



Plate 6: Brick stamped with initials 'HF'

Wall structure (1011) about 0.5m N of stone well (1002) was formed of Heavitree blocks of varying sub-rectangular sizes with a reasonably regular width averaging 0.3m and varying in length from 0.3m to 0.6m with 0.24m depth. There was no bonding material although the blocks were significantly less well dressed than those comprising the well (1002) and had merely been roughly hewn and squared. The blocks of (1011) formed an L shape measuring 1.8m NW/SE and 2.9m NE/SW although this may have originally extended further. At least three courses were visible on the SE/NW elevation. The wall (1011) abutted (1004). Unfortunately, due to modern disturbance on the E side of the wall (1011) it was not possible to ascertain if (1011) directly overlay the cobbles (1004) or if the cobbles abutted it (Fig 11, Plate 7).



Plate 7: View of wall (1011) with modern disturbance on its E side

No dating evidence was recovered from the wall (1011) except one piece of South Somerset ware of probable 18th century date (Appendix 1).

Surface (1004) was a rough surface of sub-angular pebbles averaging 0.06m to 0.09m in diameter and set amongst clay and other coarse stones. It underlay (1003) a greyish brown sandy gravel interpreted as a levelling deposit which underlay (1001) a cobbled surface. Cobbles (1004) had pottery sherds of the 13th to 17th centuries.

The cobbled surface (1001) around the wells was made of stones 0.2m to 0.6m in diameter, water rounded and set in the levelling deposit (1003). The surface was laid in a spiralling direction around the octagonal well in a way that would enhance drainage, it was therefore contemporary with or later than the well. Pottery from the 14th to 18th century was found in this deposit. The underlying deposit (1003, 1004) had pottery of the 13th to 14th centuries, showing medieval occupation (though it could of course have been brought onto the site as a levelling layer). However, 16th and 17th century pottery was also present in underlying (1004) meaning this layer was 17th C at the earliest.

The cobbled surface (1001) abutted and was later than or possibly contemporary with the octagonal well (1002).



Plate 8 Cobbled surface (1001) abutting well (1002)

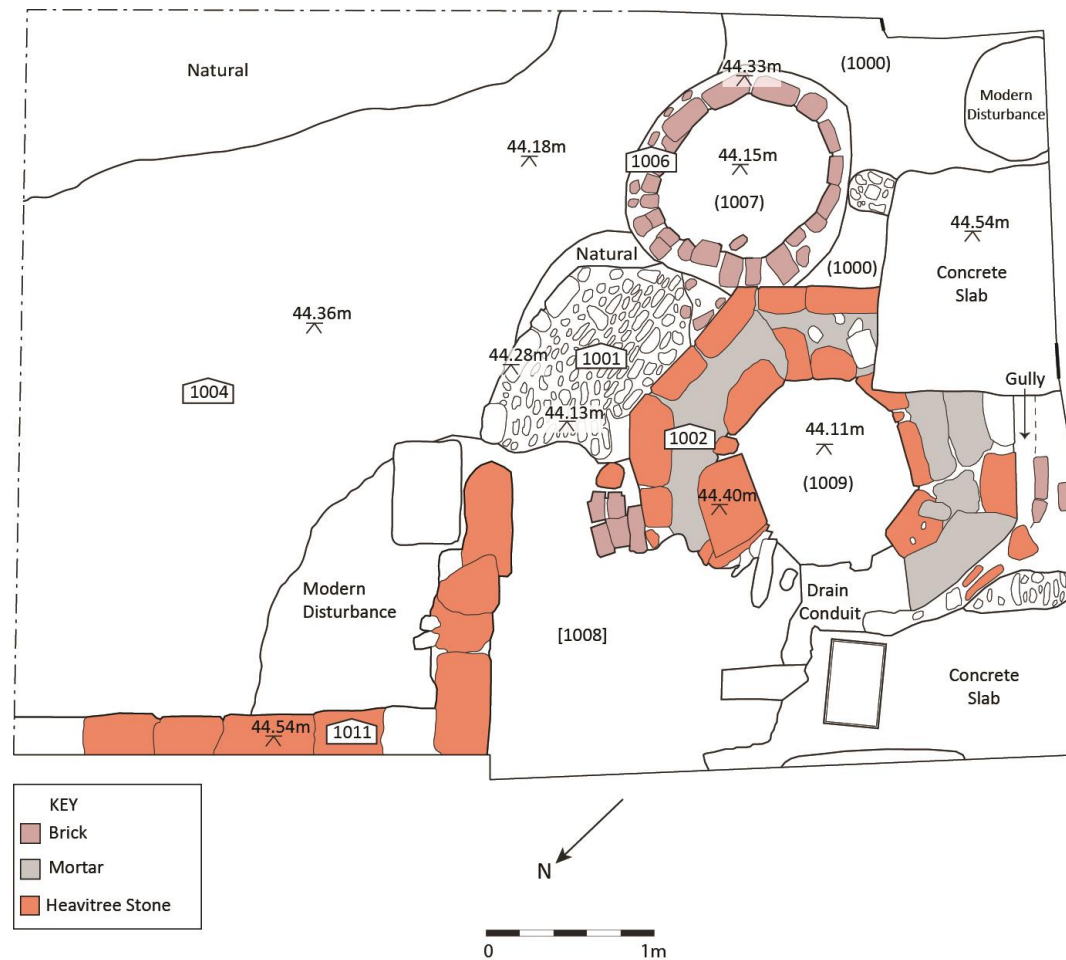


Fig. 11: Trench Plan

Item	Context No.	Type	Interpretation	Description	Finds					Provisional Dating
					Small Find	Pot	Bone	Misc.	Sample No.	
1	1000	Deposit	Compacted rubble levelling deposit.	Compact dark reddish brown clayey sand, very frequent angular stone inclusions; measured 4.0m × 3.0m × <0.20m. Overlying masonry well (1002), cut by [1005].	-	✓	-	✓	-	Post-medieval
2	1001	Structure	Cobbled surface forming gully mirroring octagonal form of masonry well (1002); falling to N and anti-clockwise. ?kerbstones on outer E edge.	Rounded oval riverine pebbles; size of materials: c. 0.12m × 0.04m, more angular stones of <0.25m length bedded into (1003); measures 1.3m N/S × 0.70m; survives mainly on E side of (1002), truncated by [1005] to S and modern silt trap tank [1008] to N.	-	-	-	-	-	Post-medieval
3	1002	Structure	Octagonal masonry well.	Masonry; Heavitree stone blocks (set on edge to form octagonal double wall with a rubble core of Heavitree and other stones bonded by mortar); size of materials: Heavitree blocks average 0.5m × 0.4m × 0.4m; very fine finish; limited bonding; structure measures 2.15m diameter with internal aperture of 1.05m. NW side converted to arched brick conduit (1010), N side truncated by modern silt trap tank [1008], damage from NW/SE electric cable installation. Heavitree blocks may only form upper part of structure & circular well shaft lined differently.	-	-	-	-	-	Late-medieval
4	1003	Deposit	Probable levelling deposit.	Loose greyish-brown gravelly sand, very frequent small stone inclusions; measured 2.5m × 2m. Overlying (1004), underlying cobbles (1001) over (1004)	-	✓	-	-	-	C16/C17

Item	Context No.	Type	Interpretation	Description	Finds					Provisional Dating
					Small Find	Pot	Bone	Misc.	Sample No.	
5	1004	Deposit	Possible earlier (rough) surface.	Sub-angular pebbles; size of materials: average 0.06m-0.09m diameter set amongst clay and other coarse stones; measured 2.5m x 2m. Underlying (1003) (1011) over (1002)	-	✓	-	-	-	C16
6	1005	Cut	Cut for brick lined well.	Circular in plan; break of slope top sharp, sides vertical; measured 1.4m in diameter, largely unexcavated. Cut immediately lined by brick structure (1006), any space between [1005] and (1006) is a void rather than filled. Cuts (1000).	-	-	-	-	-	C19
7	1006	Structure	Circular brick-lined well.	Masonry; frogged brick; size of materials: 240mm x 120mm (occasionally imprinted 'HF'); laid mostly stretcher bond (generally) against [1005]; measured (external) 1.25m diameter, (internal) 0.9m diameter; probable domestic function succeeding use of octagonal well (1002).	-	-	-	-	-	C19
8	1007	Fill	Probable part-deliberate backfill of brick-lined well (1006).	Compact reddish-brown clayey silt, occasional to moderate slate inclusions, occasional brick fragments & medium rounded pebbles; measured 0.9m diameter (depth unexcavated).	-	✓	-	✓	<1>	C19
9	1008	Cut	Modern silt trap tank.	Cut number assigned to modern silt trap tank for rainwater harvesting in the garage. Tank removed but ancillary bricks remain. Truncates well (1002), filled by (1012).	-	-	-	-	-	Late-C20
10	1009	Fill	Fill of octagonal masonry well (1002).	Compact orange-yellow clay to pale grey clayey silt, moderate coarse stone inclusions & occasional brick fragments; measured 1.05m (diameter) (depth unknown as unexcavated). Possible part-deliberate backfill of well; probably modern, as also infills arched brick conduit (1010).	-	-	-	-	<2>	C19
11	1010	Structure	Arched brick conduit disturbing well (1002).	Masonry; largely comprising yellow hard-fired brick (forming arch where Heavitree blocks removed from NW side of octagonal well (1002)); mortar bedding survives where bricks have not, probable double thickness arch with bricks laid on	-	-	-	-	-	Post-medieval

Item	Context No.	Type	Interpretation	Description	Finds					Provisional Dating
					Small Find	Pot	Bone	Misc.	Sample No.	
				edge; arch extends to NW & under concrete. Recent structure may occupy position of original entrance into city's water supply.						
12	1011	Structure	Wall, probably associated with York cottages.	Masonry; L-shape in plan, N-S return marked by large keystones; constructed from large blocks of Heavitree stone, no bonding material; continued to N under adjacent buildings. Below 1000 over 1004.	-	-	-	-	-	Medieval to post-medieval
13	1012	Fill	Fill of modern silt trap tank [1008]	Fill number assigned to backfill of modern silt trap tank hole [1008]; tank probably removed & backfill includes concrete broken from the garage floor.	-	-	-	-	-	2014

Table 1: Summary of Contexts

9. Discussion

20th century

The latest feature on site was the cut for a silt trap tank [1008] placed into the concrete floor of the garage during the use of the garage in the later-20th century. [1008] was irregular although the irregularity may have been as a result of its removal during the early stages of redevelopment and some ancillary bricks used in its construction were still present against the NNE face of the medieval well (1002) suggesting its original dimensions. Tank [1008] was located against the garage wall fronting the street and, to its S, had disturbed the outer facing of medieval well (1002) on its northern face. However, it should be noted that some disturbance to the outer facing of the northern face of the medieval well (1002) may have occurred during insertion of the brick conduit (1010). Tank [1008] may have further disturbed Heavitree block wall (1011) by means of relocated large stones. Silt trap tank [1008] was used for rainwater harvesting but had been fully removed and the fill (1012) was the result of debris filling the void during redevelopment works, it comprised broken concrete.

19th century

A feature of 19th century date was a brick well (1006) inserted next to the medieval well (1002) and probably built as a result of blocking off of the medieval well and dug for a domestic water supply. It is unclear whether the builders of the 19th century brick well (1006) were fully aware of the presence of the medieval well (1002).

The cutting of the levelling deposit (1000) by the 19th century brick well strongly suggests it was cut a short time after the construction of the 19th century housing. This is further supported by the use of bricks marked HF that may have been left over from the housing construction. A clear cut [1005] was observed around the brick well and was circular in plan with vertical sides and an extremely sharp break of slope at the top, it was lined by brick structure (1006). The brick structure (1006) had been built against the cut [1005] walls and, in places, had left voids where the bricks had not butted against the cut [1005] walls. Brick structure (1006) was comprised of frogged bricks laid mostly stretcher style with an external structure diameter of 1.25m and internal structure diameter of 0.9m. The bricks used were 240mm x 120mm and occasionally imprinted HF suggesting their redundancy following the housing construction. The fill of the brick well (1007) is of uncertain date but probably represents a deliberate backfill and marks the point at which a domestic water supply was no longer required as the site became semi-industrial or the point at which the construction of brick well (1006) was found not to draw sufficient water. The fill (1007) was a compact red brown clayey silt with occasional to moderate slate inclusions, occasional brick fragments and occasional medium sized rounded pebbles.

Sealing the medieval features and likely laid prior to the construction of the 19th century housing was (1000), a rubble layer. (1000) can only be confirmed as post medieval although it highly probably

immediately precedes the construction of the 19th century housing and was used as a levelling deposit. (1000) is cut by the later brick well 1006 as this was likely inserted following the construction of the housing.

Medieval and post medieval

The medieval features on the site comprise the octagonal Heavitree medieval well (1002) and associated features such as the wall (1011) and the cobbled and levelling deposits (1004), (1003) and (1001) in addition to the associated features of post medieval date that include the brick conduit (1010) and the ultimate filling of the medieval well (1009).

According to geoarchaeological analysis (Appendix 2), the masonry structure of the well (1002) would have been no more than 2m in depth from the top of the revealed masonry. It is highly probable that the well represents a consolidation of an original water source that had initially formed from fissures in bedrock creating a boggy marshy area that started to accumulate peat. During the medieval period the construction of the well shaft into the peat and siphoning of the spring into the shaft halted the formation of the remainder of the peat and allowed surfaces to be built around the well structure. The well would have been of the brimming water sort, potentially to the top of the masonry surviving with any additional courses forming a decorative lip. This is confirmed by the positioning of the brick conduit to take the rising waters from the shaft and by the nature of the lower courses in the well being of lesser quality blockwork.

Wall structure (1011) may have surrounded the well and formalised the space. However, all direct connections between structure (1011) to the medieval well (1002) had been truncated and this probable contemporaneity can only be suggested by the relationship of enclosure (1011) to the earliest cobbled surface (1004) which it abuts.

Copious quantities of medieval and 16th/17th century pottery were revealed on this surface of (1004) suggesting a fairly early adoption of the well for domestic usage rather than the suggested ecclesiastical function. For this reason, surface (1004) may not be the earliest consolidation of the ground surface around the medieval well (1002).

Surface (1004) was overlain by levelling layer (1003). It represents a probable levelling deposit in preparation for laying the cobbles (1001) and may have been formed from a reworking of surface (1004). Deposit (1003) additionally forms the matrix that cobbles (1001) sit in.

Surface (1001) was the latest formalisation of the ground surface around the medieval well (1002), and bedded into (1003). The cobbling forms a central gully mirroring the octagonal shape of the medieval well (1002) that has a fall anti-clockwise from street position of 0.33m. It is suggested the gully is for drainage purposes although it may also have been decorative and to accommodate the brimming nature of the well by diverting excess water to the street and downhill. Surface (1001) has

a suggestion of kerb stones on the outer eastern edge although much has been truncated by the brick well 1006 to the south and the modern silt trap tank [1008] to the north.

The latest intrusion on the medieval well (1002) was in the form of brick conduit (1010). The arched brick entrance to the conduit truncated the NW side of the octagonal medieval well (1002) and removed the Heavitree blocks. It (1010) formed an unsophisticated insertion into the medieval well that had been built from the outside of the well due to the bulging cement bonding extruding to the rear. The brick conduit clearly formed a run off that may have allowed the water to enter the city's water supply system and would have avoided the flooding of the site for redevelopment for 19th century housing. The brick conduit clearly predates the clay backfilling of the well (1009) as this additionally filled the brick arch.

Well fill (1009) was likely of a significantly later date and may have been contemporary to the levelling deposit (1000) prior to construction of the 19th century housing. It also filled the brick conduit (1010) and therefore represents a complete decommissioning of the well with material specifically to block water flow. This may have been to assist the use of brick well (1006) and they are deliberately compacted clays of an imported type. However, this all suggest that the medieval well (1002) was in use for a considerable period of time.

10. Conclusions

The excavation at 3 Well Street has cored and recorded the upper levels of a medieval well named and documented from the 16th century as St Sidwell's. Peat at the base of the well, suggests the well was purposely constructed and built, prior to its use as a water source, for the peat would have been destroyed by trampling if it had been extensively used, prior to the structure. The well was backfilled, possibly at the time the adjacent brick well was built in the 1820s.

The peat suggests the water supply from the well was not high, for plants will not grow in flowing water, and the supply downhill to the cathedral and town must have been low. It suggests the well was a 'trickle' well, with water probably overflowing into a pipe system taking it downhill.

The octagonal stone structure based on comparison of Heavitree stone elsewhere and the small pottery assemblage is 14th century or later. Lower stone however may have been of a different type and is possibly therefore earlier, though sadly the practicalities of the excavation meant this lower stone could not be examined. The pottery associated wall (1011) is slight evidence that it may have been 19th century and connected with York Cottages rather than the well.

No evidence of lead piping was found, although it is possible that the brick conduit (1010) on the W side of the features may have occupied the position of the medieval pipework.

No surviving evidence was found to characterise the well as a site of pilgrimage. The good masonry

is probably due to its functional role as an element of a water supply for the city and/or for the immediate local houses.

11. Appendix 1: Assessment of the medieval and post-medieval pottery

Katherine Crooks
Border Archaeology

Summary

A total of 213 sherds of pottery were recovered, with pottery found in seven of the 12 contexts excavated. The majority of the material was of post-medieval or later medieval date and the predominant pottery fabric was South Somerset ware. Almost without exception, the pottery was locally sourced, with a single sherd of a Westerwald stoneware chamber pot and a very small (3.2g) and abraded sherd, which may be Saintonge ware, the only imported sherd from the site. Coarse wares predominated, with very few examples of cups or other fine wares, such as chafing dishes, present.

Much of the pottery was heavily abraded, with the majority recovered from post-medieval levelling dumps (1000) and (1003), which contained 141 and 31 sherds, respectively.

The pottery demonstrated continued use of the site through the later medieval and post-medieval periods, when, having ceased to serve its original function as part of the city's piped water supply, it was used to supply the local community. The well continued in use until the last quarter of the 19th century.

Partly as a result of the highly fragmentary nature (average sherd weight (ASW) 15g) of the material, very few form sherds were present (of the medieval pottery only three sherds were of rims). In some cases, abrasion and the small size of the sherds made attribution problematic and for a similar reason the majority of the sherds could not be assigned to a specific vessel form.

The fact that only three sherds from the entire assemblage (one from (1003) and two from (1004)) were from unglazed medieval cooking pots suggests a date for even the earliest deposits on the site at the end of the medieval or into the post-medieval period.

Method

Sherds were sorted by eye and under magnification (×10) into fabric types according to inclusions, decoration and form using work by Allan (1984) and McCarthy & Brooks (1988).

The Pottery

A summary of the pottery present is shown below in Table 3. Some unattributed sherds are not included.

Context	Fabric	No. sh.	Date	Decoration/comments
1000	Slip	6	C17/C18	Bristol/Staffordshire slipwares
1000	NDevon	7	C17/C18	Olive internal glaze
1000	SSomGr	12	C15/C16	Thumbed bands at rim on two sherds. Internal glaze
1000	SSom	59	C17/C18	Internal glaze. White slip on some sherds
1000	Fabs 40-43	56	C14/C15	Some thumbing. Largely plain green glazed
1000	TPW	1	L C18+	Plain white handle from jug or teapot
1001	TPW	1	L C18+	Plain white plate
1001	NDGT?	1	C17/ C18	
1001	Pearlware	2	L C18+	Deckled edge. One sherd joins to sherd from (1002)
1001	SSom	1	C18	Slip and combing
1001	Fabs 40-43	9	C14/C15	
1002=1009	Westerwald	1	C18	Chamber pot. Cobalt decoration
1002=1009	Pearlware	4	L C18+	Sherd with deckled edge joins sherd in (1001)
1002=1009	SSom	6	C17/C18	Internal glaze, some white slipped
1003	SSomGr	1	C16	
1003	SSom	2	C17	
1003	Fabs 40-43	27	C14/C15	One applied thumbed strip beneath green glaze. Some painted slip
1003	Saint?	1	C13/C14	Attribution uncertain; sherd very small and abraded. Cream fabric, in-turned rim; some mica and iron rich inclusions
1003	?	1	C13?	Sherd of a cooking pot with large sub-angular quartz and flakes of black mica
1004	SSomGr	1	C16	
1004	SSom	2	C17	
1004	?	1	Medieval	Jug handle with traces of yellowish gl. Sandy fabric decorated with thumbing. Very crude
1004	Fab 40-43	1	C14/C15	Ring base
1004	Fab 20	2	C13	Two joining sherds
1007	Stoneware	1	C19	Butter crock? In grey stoneware
1007	Fab 40	1	C14/ C15	Green glaze
1011	SSom	1	C18	Orange green internal and external glaze

Table 2: Summary of the pottery from the site

The later post-medieval levelling dump (1000) contained a total of 144 sherds of the total recovered from the site. The dates ranged from the 14th and 15th centuries to the 19th century, suggesting that the deposit could have come from a number of different sources. The deposit included sherds of North Devon gravel-tempered wares, dating to the later 17th to 18th centuries. A number of sherds of South

Somerset wares dated to the 18th to 19th centuries. A sherd of a teapot in plain white glazed ware and dating to the later 18th or 19th centuries confirmed a later post-medieval date for this deposit. Medieval wares, chiefly jug sherds in fabrics 40-43, were also present and may indicate disturbance of existing medieval deposits or possibly dumping of deposits containing medieval pottery from elsewhere to form a levelling layer.

Pottery (14 sherds) from surface (1001) included material of later post-medieval date (transfer-printed wares and pearlware, together with a sherd of North Devon Gravel Tempered ware and material from Donyatt). A sherd of pearlware from this layer cross-joined with one from the well backfill and indicates that the surface was open at the time the well was backfilled. It also confirms that the material in use came from the same source.

Eleven sherds from the upper backfill of well (1002) were all dated to the 19th century and confirm the date at which the well went out of use. A sherd from this material cross-joined with a sherd from the surface of cobbles (1001) and may suggest a general clearing up operation at the time the well went out of use.

A total of 32 sherds were recovered from context (1003), a further, earlier levelling deposit, which may also have represented material from a wide range of sources. As in the case of pottery from (1000), the majority of the material was extremely abraded and of post-medieval date, including sherds of South Somerset ware; however, the form of three jug rims suggests a 14th -to 15th -century date for the remaining material in this context. There was noticeably less abrasion present on the post-medieval fabrics than on medieval sherds from this layer.

A single in-turned rim from this deposit in a white fabric, much abraded, may represent Saintonge ware and date to the late 13th to 14th centuries, although the small size and abrasion made attribution uncertain. A single sherd of a cooking pot or jar in a sandy micaceous fabric probably dates to the 12th to 13th centuries. Interestingly, considering its probable earlier date, it is less abraded than sherds in the same context considered as being of later date. This could be a result of differential initial deposition but may also be a function of the fact that it was considerably harder fired than the remaining wares in this context.

Context (1004) contained a number of sherds of later medieval or post-medieval date, although the glaze of a sherd of South Somerset ware suggests a date in the 18th century. However, two sherds of a jar or cooking pot would probably date to the 15th century at the latest.

Context (1007) was the deliberate backfill of the brick-lined well (1005). Two sherds were recovered from the context, including a substantial piece of stoneware, which was probably from a vessel such as a butter crock, with a lid seating together with a single sherd of a medieval vessel. The context dates to the 19th century and appears to demonstrate a general clearing up operation at the time the wells went out of use.

The wall foundation (1011) contained a single sherd of South Somerset ware, the pale colour suggesting a probable 18th -century date. This would appear to confirm that the wall was not associated with the well but rather constructed at a later date, possibly at around the same time that York Cottages were built.

Conclusions

The majority of the pottery was of fairly local origin and comprised extremely utilitarian material. Most was from levelling deposits and could thus have originated from a variety of sources, as suggested by the wide date range from contexts (1001), with wares spanning the later medieval period and 19th century.

Very few of the sherds of pottery were decorated, although in some cases, the decorative scheme may have worn and, until the later part of the 18th century, was almost all sourced in the immediate area - from Devon or Somerset. The first fine wares were not present until this late date.

It is not thought that any of the deposits dated to earlier than the 14th to 15th century. It does, however, seem likely that evidence for activity of earlier medieval date survives beneath the excavated level.

Only a single sherd of imported pottery was found on the site, a sherd of a chamber pot in Westerwald fabric and dating to the 18th century found in the fill of well (1002), although a much abraded sherd from (1003) may have been Saintonge ware. This figure (0.9%) is much lower than elsewhere in Exeter even in areas considered as 'poor' where the figure was 7% in the 17th century. Jervis (2008: 79) points out that imported vessels and white wares were less well represented in a poorer part of the town than in wealthier areas. It is therefore possible that the pottery demonstrates the poverty of the area during the post-medieval period.

Very few sherds of fine wares such as mugs and cups were present. Although this might be considered to reflect an earlier date this does not seem to be the case, with coarser material of 16th – 18th century date well represented.

12. Appendix 2: Geoarchaeological Boreholes

Phil Stastney
ARCA Geoarchaeology

Summary

ARCA carried out a geoarchaeological borehole survey on July 1st 2014 of a possible medieval masonry-lined octagonal well located at No. 3 Well Street Exeter.

A borehole drilled in the centre of the medieval structure encountered bedrock of the Whipton Formation at a depth of 3.26m. Layers of peat and organic mud overlying the bedrock between 3.26m and 2.08m depth appear to have formed in a vegetated wet environment and may potentially predate the construction of the medieval masonry structure. Coarser, more mineral-rich strata containing traces of charcoal and CBM were encountered over the organic strata, filling in the medieval well.

Given the relatively shallow depth of the well, and the presence of peats which appear unlikely to have formed at the base of a covered well structure, it is hypothesised that the medieval well may have been constructed at the site of a natural spring. The basal peat strata at the site may therefore have formed prior to the medieval period in a wet hollow around this spring.

If the hypothesis that the well was constructed over a spring is correct, it is possible that water levels may, at times, have been near to the top of the masonry structure.

Introduction

On July 1st 2014 ARCA, at the request of BAL, carried out a borehole survey of a medieval well at No. 3 Well Street Exeter (henceforth 'the site').

This document assesses the stratigraphic sequence within, and in the vicinity of, the medieval well at the site. It is organised as follows: first a brief account is provided of the geographic, geological and methodological background to the project, the borehole stratigraphy is then described in detail before final assessment of the potential of the sample resource in the boreholes to address the questions outlined below. A bibliography completes the document.

The site lies NE of Exeter city centre and is centred on NGR SX 92555 93204. Well Street has a predominantly residential character and No. 3 Well Street is occupied by a late 19th/early 20th century garage, situated opposite a primary school. The site lies at an elevation of approximately +44m OD midway down a slope, with higher ground lying to the E and lower ground to the W.

The British Geological Survey map shows the site as lying on bedrock of the Whipton Formation, a Permian deposit dating to c.299-251 Mya; the Knowle Sandstone Formation (c.299-251 Mya) and the

underlying Crackington Formation (322-312 Mya) outcrop c.150m to W and NW of the site, respectively (BGS 2014).

No previous geoarchaeological investigations of the site and its vicinity are known to the author. Archaeological investigations of the site carried out by BAL in 2014 revealed a medieval octagonal masonry well structure, a late 19th-century brick-lined well structure immediately to the E and other associated brick and masonry structures and the remnants of a cobbled surface and possible drain. The medieval structure has an internal diameter of 1.05m and, at the time of the author's visit, had been excavated to a depth of c.0.5m below the top of the masonry structure.

The objective of the geoarchaeological project at the site was to determine the depth and lithostratigraphy of the fills of the medieval masonry structure.

Methodology

A borehole was drilled from the top of the extant fills of the well structure to the top of the bedrock to investigate the fills of the medieval masonry structure. This borehole was drilled using Eijkelkamp gouge augers driven by a Makita electric heavy breaker. Sediments recovered in the gouge were photographed and described on site using standard geological criteria (Troels-Smith 1955; Tucker 1982; Jones *et al.* 1999; Munsell Color 2000).

Further boreholes at the site were drilled using hand equipment (gouge augers and Edelman corer) from the surface to the top of the bedrock within the 19th-century brick-lined structure, the masonry structure immediately W of the medieval masonry well, and in the base of a small trial pit in the NE corner of the site.

Results

Medieval Masonry Well (1002)

Depth (m below top of structure)	Description	Interpretation
0.00 – 0.66	Void	---
0.66 – 1.01	7.5 YR 4/4 Brown matrix-supported clayey gravel of frequent granular to fine pebble-sized angular clasts of various igneous lithologies. Sharp to:	Fill of well
1.01 – 1.16	7.5 YR 3/2 Dark brown slightly humic silt/clay with occasional fine to coarse sand-sized mineral grains, rare fibrous organic remains & rare rounded basalt pebbles. Sharp boundary to:	Fill of well
1.16 – 1.43	7.5 YR 4/4 Brown matrix-supported clayey gravel of frequent granular to fine pebble-sized angular clasts of various lithologies. Sharp to:	Fill of well
1.43 – 1.46	7.5 YR 3/2 Dark brown slightly humic silt/clay with occasional fine to coarse sand-sized mineral grains. Water table.	Fill of well
1.46 – 1.51	Void	---
1.51 – 2.08	7.5 YR 4/3 Brown soft clayey gravel with rare CBM & charcoal granules. Sharp boundary to:	Fill of well
2.08 – 2.25	7.5 YR 3/2 Dark brown soft slightly fine sandy silty clayey very fibrous peat with rare herbaceous aerial plant remains & frequent fine rootlets. Distinct horizontal laminar structure. Rare mollusc shell (<i>Candidula</i> sp.). (Troels-Smith: Th ² 3 Ag1 Ga+ Sh+, Humo 2). Bulk sample collected 2.12m-2.17m depth. Sharp boundary to:	Peat – marshy hollow?
2.25 – 2.32	7.5 YR 4/3 Brown soft sandy clay with some fine gravel, & occasional pebble-sized greenish mottles.	Slightly organic clay - marshy hollow?
2.32 – 3.26	7.5 YR 3/2 Dark brown soft slightly fine sandy silty clayey very fibrous peat with frequent fine rootlets. Horizontal laminar structure. Occasional thin lenses of soft brown (7.5 YR 4/3) silt/clay. Sharp boundary to:	Peat & organic clay - marshy hollow?
3.26 – 3.36	2.5 YR 4/6 Red firm very sandy silt/clay. Auger refused at 3.36m. End of Borehole.	Bedrock [Whipton Formation]

Table 3: Lithostratigraphy of borehole in the medieval masonry well

Table 2 shows the lithostratigraphy of the borehole drilled within the medieval masonry structure. The upper 0.66m of the structure was void, since these had been excavated by hand by BAL.

From 0.66m and 2.08m depth, a series of soft mineral-rich clayey gravelly strata were encountered. These are interpreted as being almost certainly fills of the well and include rare anthropogenic

inclusions, such as CBM (i.e. brick/tile) and charcoal granules. These deposits also include occasional layers of slightly darker, more organic-rich material.

A sharp boundary occurs at 2.08m depth between the mineral-rich deposits described above and a stratum of slightly clayey peat. The peaty layers between 2.08m and 2.25m and between 2.32m and 3.26m depth show a distinct horizontal laminar structure, with frequent fibrous rootlets and rare moderately humified fragments of the aerial parts of herbaceous plants. These features suggest that the peaty strata formed *in-situ* in a damp vegetated environment, such as a marshy peat-forming hollow. A single terrestrial mollusc was noted in the peat, identified as *Candidula* sp.; this taxon is usually associated with dry open habitats and is therefore likely to have been washed in from the surrounding area. Given that it appears to be unlikely that plants (e.g. grasses, sedges etc.) would be actively growing (and forming peat) at the bottom of a 2-3m -deep masonry structure (especially so if the well was previously covered in any way), these strata may instead have formed in a wet hollow surrounding a natural spring, predating the medieval masonry structure.

A sharp boundary was encountered at a depth of 3.26m between the peaty strata and bedrock of the Whipton Formation. The Whipton Formation was represented by red firm to very stiff very sandy silt/clay.

Other boreholes

Three other boreholes were drilled using hand equipment.

A borehole drilled in the centre of the 19th -century brick-lined well, immediately E of the medieval structure, encountered bedrock of the Whipton Formation (firm red very sandy clay) at a depth of 1.10m, which was overlain by brown clayey gravel fill.

A borehole drilled immediately to the W of an arch inserted into the W side of the medieval masonry structure encountered 1.55m of soft very wet clay with sand, gravel and brick fragments overlying an impenetrable obstruction (possibly the bedrock or structural remains).

A final borehole was drilled in the base of a shallow trial pit (approximately 0.4m × 0.4m). Firm sands and red sandy clays of the Whipton Formation were encountered directly underlying the present concrete surface.

Discussion

The earliest strata at the site are sands and sandy clays of the Whipton Formation, which were deposited in a desert environment c.299–251 Mya during the Permian period.

During the Holocene, it appears that a spring may have formed at the site, as water carried within the permeable sand strata of the Whipton Formation emerged at the surface at the contact with an impermeable underlying stratum (either clayey strata of the Whipton Formation, or clays/mudstone of the underlying Crackington Formation) (e.g. see Rapp & Hill 1998, 132).

The borehole drilled through the octagonal masonry structure encountered peats overlying the Whipton Formation bedrock. Whilst it is possible that the peat found overlying the bedrock at this location formed within the masonry structure, it is perhaps more likely that the peat formed within a small wet hollow around the possible natural spring during an earlier period in the Holocene. This feature appears to have been of very restricted extent since no such peaty strata were encountered elsewhere at the site. A bulk sample of peat was collected from the borehole at 2.12m–2.17m depth. A natural spring at the site might potentially have given rise to a small stream flowing downhill towards the W.

During the medieval period, possibly postdating the formation of the spring and the onset of peat formation, an octagonal masonry structure was built at the site. The relatively shallow depth of strata overlying the bedrock appears to support the hypothesis that the well was in fact located over a naturally occurring spring, where the water table was either at, or very near to, the ground surface. It is therefore feasible that water might at times have been close to the top of the structure or might even have flowed from it. After the construction of the octagonal masonry structure, a series of other masonry, cobble and brick structures were constructed culminating in the construction of the present garage and concrete floor surface. Away from the spring/well, these later structures were constructed directly on top of the Whipton Formation bedrock.

Archaeological and Palaeoenvironmental Significance

Given the Permian age of these deposits, the Whipton Formation has NO archaeological or palaeoenvironmental potential.

The peat strata encountered at the site of the medieval well between 2.08m and 3.26m depth are assessed as being of HIGH palaeoenvironmental significance. Well-preserved plant and mollusc macrofossils were noted in the sediments and microbiological remains, such as pollen, are also likely to be well preserved in such waterlogged *in-situ* organic strata. Analysis of these macro- and microbiological remains has the potential to provide evidence for the environmental history of the immediate vicinity of the site (the catchment of the well and any possible earlier natural spring is likely to have been small, since the feature has been shown to be very restricted in extent).

Similarly the peat strata are assessed as being of MODERATE to HIGH archaeological potential. Were this hypothesis to be correct, these waterlogged deposits may contain evidence for earlier human activity at the site of the spring (although no artefacts were observed within the peat strata in the gouge augers).

The fills of the medieval masonry well between 2.08m and 0.66m depth (the base of the BAL excavations) are assessed as being of HIGH archaeological potential, since these demonstrably contain archaeological material (e.g. CBM and charcoal fragments) and are almost certainly the fills of the medieval structure. Archaeological assessment of the uppermost fills of the well has already been carried out by BAL.

13. Appendix 3 Paleoenvironmental Assessment

Amy Bunce BSc MA

Border Archaeology

Summary

Two samples were recovered, one from each of the two substantial features on the site, these being the probable medieval well, an octagonal structure of well-dressed Heavitree masonry blocks, and an adjacent later brick-lined well. The peat sample from the borehole, was not sampled as it was undated and came from an open auger, meaning contamination was possible, but has been held in store at ARCA.

The samples were processed through flotation and the resultant archaeological and archaeobotanical material sorted and identified. The results were disappointing in their almost complete lack of archaeobotanical material. However, artefactual material retrieved from the sampling has been used to inform archaeological interpretation. It is unlikely that the absence of archaeobotanical material is the result of taphonomic bias and thus it is likely that, during the backfilling of the wells, which was probably partially deliberate, the immediate area was not in any kind of domestic occupation and that all such activity would thus have been confined to dwellings and their associated plots.

Slag fragments and spheroidal hammerstone were recovered from both samples, although this material was more abundant in (1007) a fill of the brick line well. As it would appear that the former garage workshop was reasonably long established on the site, it is possible that at some point during this period, or immediately prior to it, it may have functioned, at least in part, as a 'smithy'.

Introduction

The two samples, taken in 10 litre sample buckets, derived from two distinct contexts, (1007) fill of the brick well and (1009) fill of the medieval well, from each of which 20 litres was taken. Although comprising the uppermost fills of the two wells, these were the only uncontaminated contexts available for flotation.

The surrounding geology of mudstones, siltstones, shales and, especially, non-calcareous pelosols with brown earths of loamy silty and permeable clays would exhibit no negative taphonomic effect on the preservation of archaeobotanical remains and the largely waterlogged soils would aid preservation of uncharred material.

Methodology

The objectives of the analysis was to retrieve non-specific palaeoenvironmental remains and to further characterise features. Sampling methodology followed the BAL Palaeoenvironmental Manual for Environmental Sampling and Processing (BAL 2015).

Flotation and primary analysis was undertaken by Robin Putland BSc MSc, Janice McLeish MA, David Stockwell BA, Matthew Gutteridge BSc and David Elgar BSc MSc within BAL's Palaeoenvironmental department. This work was assisted by BAL field staff as part of a programme of Continuing Professional Development (CPD).

Further analysis and identification was undertaken by Robin Putland BSc MSc and Amy Bunce BSc MA. No external specialism was required for this report.

No.	Job no.	Site code	Sample no.	Sample part	Context no.	Floated
1245	BA1212WSE	WSE12	1	2/2	1007	09-10-14
1247	BA1212WSE	WSE12	2	2/2	1009	13-10-14
1248	BA1212WSE	WSE12	1	1/2	1007	13-10-14
1250	BA1212WSE	WSE12	2	1/2	1009	13-10-14

Table 4: Processing Log

Description of Results

The material from No. 3 Well Street is marked by the absence of charred and uncharred archaeobotanical material of palaeodietary origin. As this cannot be due to taphonomic bias, these results can be said to accurately reflect an absence of domestic activity on the site during the deposition of the upper fills of the wells. The presence of significant quantities of pottery, ceramic building material (CBM), slate, coal/coke and clinker/tar is coupled with instances of glass and other artefacts, such as a Fe nail, clay tobacco pipe (CTP) and a copper pin. This suggests nearby occupation but also points to the likelihood of the charcoal inclusion relating solely to industrial practices. Of some note is the absence of snail shell, which, in this instance, is likely due to a combination of soil conditions unfavourable to their preservation and the depositional processes being unattractive to terrestrial *mollusca*.

Archaeological finds within palaeoenvironmental samples are fairly common and help confirm that the sampling of the material was not biased in any manner. They also highlight the absence of archaeobotanical material. Occupation was clearly located nearby but domestic activity was not practised on the site, with any such activities being confined to dwellings and their associated plots.

The archaeological finds all derived from the retents and consisted of pottery, CBM, glass, slate, coal/coke, clinker/tar and a Fe nail, CTP and Cu pin.

The pottery was predominantly in smaller fragments and was glazed, being predominantly of a medieval to post-medieval date with some examples of early modern ceramics. Decoration was present on many of the pieces, although the fragment size precluded identification through means of pattern recognition. The presence of pottery at a well is, in many respects, to be expected and it is not present due to standard domestic refuse practices, which would have resulted in other midden

materials becoming incorporated into the fills.

CBM predominantly comprised larger brick fragments, although the presence of locally tempered daub cannot be discounted. The brick fragments are presumed to date from the phase of construction that included the sinking of the brick-lined well.

Slate was common throughout the samples and was clearly of broken roofing slate; coupled with the brick fragments, this illustrates the local building materials during the nearby housing construction.

Coal/coke and clinker/tar were recovered from the samples. This suggests an industrial fuelling and is consistent with the archaeometallurgical evidence (below) which suggests possible use of the site in a related fashion prior to its formalisation as a garage. If smithing activity was undertaken on site this would date to the late 19th to early 20th century.

Small fragments of glass were also retrieved. Like the pottery, this may be expected at a well site without the usual accompaniment of domestic midden material. In addition, a Fe nail, CTP stem fragment and Cu pin were discovered. These personal items would likely have been lost or discarded on site and not imported onto the site.

Archaeometallurgical debris was present in the form of unspecific slag fragments and occasional inclusions of spheroidal hammer scale. Slag was retrieved from the flots and retents, the presence of air vesicles causing the slag to float. Droplets of slag become spheroidal as they are expelled during ironworking and cool whilst airborne. This ironworking detritus can be derived from standard hot smithing or the primary smithing of a bloom; considering the date of the site, the presence of hammer scale was more likely resultant of blacksmith's activities. Spheroidal hammer scale is almost always deposited within a few metres of the anvil, which, excluding contamination through the importation of material, is considered strong evidence for the use of the site as a blacksmith's premises at some point prior to its establishment as a garage; it is known that some smithies became garages in the early to mid-20th century as traditional sources of work declined and new opportunities emerged.

However, it should be noted that the fairly limited quantity of slag and the lack of slag amongst the other material discovered during archaeological excavation (probably due to slag fragmentation) suggests that this activity was not long lived on the site. The presence of coal/coke and clinker/tar suggests a fuelling that did not use wood or charcoal, which is entirely consistent with industrial activity such as smithing, which requires much higher temperatures than domestic activity.

The bone inclusions from No 3 Well Street are very occasional and exceptionally fragmented. The unburnt large mammal bones were highly fragmentary and cremated bone is inherently fragmentary, precluding species identification. The very occasional incidence of unburnt small mammal bone was inconclusive, in that the species were undeterminable due to a lack of identifying elements on the fragments present.

Burnt bone within palaeoenvironmental samples is reasonably conclusively of anthropogenic origin, since it derives predominantly from domestic activities, by contrast, unburnt bone may have become incorporated due to animal death in the vicinity. Food waste is frequently disposed of within fires and the white colour of the bone, which is traditionally categorised as cremated bone, due to the high temperatures (>800°C) required to obtain this coloration, strongly supports disposal in a fire such as a blacksmith's hearth.

No modern root fibres were present due to the urban nature of the site, but some modern moss material came through in the flots. No uncharred organic materials were present in any form. This, in itself, further points to the enclosed and industrial nature of the site.

The charcoal from No 3 Well Street was retrieved solely from the retents but occurred in comparatively very limited quantities. The complete absence of charred archaeobotanical material suggests respect for the site, it was in no way domestically occupied.

Paleoenvironmental Significance

Context (1007); The only fill of the later brick-lined well [1006] encountered was probably a partly deliberate backfill deposited towards the upper level of the well. It contained 19th-century finds, such as pottery, CBM and slate.

The palaeoenvironmental evidence added glass, coal/coke, clinker/tar, a Fe nail and CTP stem to the finds discovered during the archaeological work. Slag fragments and spheroidal hammerscale were also present. Unburnt bone and burnt bone was present to some extent, as well as charcoal. As in the case of (1009), this fill appears to add to the general picture of probable partially deliberate backfilling of the wells.

Context (1009) comprised the fill of the earlier octagonal holy well [1002] that was encountered upon removal of the modern rubble, although this deposit was still relatively late and likely to be a partly deliberate backfill of 19th-century date. The archaeological investigation recovered CBM, to which was added glass, coal/coke and a Cu pin. Smaller quantities of slag, spheroidal hammerscale and charcoal were also present. Only burnt bone was included with (1009), although, given the quantities observed, little can be concluded from this. As in the case of (1007), this fill appears to support the interpretation of a partially deliberate backfilling of the wells.

The following table details the results of both the archaeobotanical material and the archaeological finds. The flot and retent data has been recombined due to the lack of variation in the material represented.

Context no.			1007		1009	
Sample no.			1		2	
Sample part			1/2	2/2	1/2	2/2
Bucket no.			1248	1245	1250	1247
Sample vol. (mℓ)			2100	1800	3000	2800
% sample analysed			100	100	100	100
Waterlogged?			N	N	N	N
Refloated?			N	N	N	N
Latin name	Common name	Plant part				
Charcoal						
Undetermined	Undetermined	fragments	+	++	+	
Artefactual						
Ceramic/pottery	-	-	+	++	+	+
CBM	-	-	++	+++	+++	++
Glass	-	-	+	+	+	
Worked stone - slate	-	-	++	++++	+++	++
Coal / coke	-	-	++	++	++	++
Clinker / tar	-	-		+++		
Fe nail	-	-	+			
Clay Tobacco Pipe	-	-		+		
Cu pin	-	-			+	
Archaeometallurgical						
Spheroidal hammerscale	-	-		+	+	
Slag	-	-	++	++	+	
Faunal						
Mammal (unburnt)	Indeterminate	-	++	+		
Mammal (burnt)	Indeterminate	-		+	+	+

Table5: Archaeobotanical and Non-archaeobotanical Remains

Conclusions

The non-specific palaeoenvironmental sampling programme undertaken at No 3 Well Street was conducted principally for the retrieval of archaeobotanical remains. The results obtained from the 40 litre of sample recovered add further detail to the archaeological interpretation, suggesting a short period of blacksmithing prior to the site's use as a garage. The palaeoenvironmental sampling adds nothing to the known construction of the wells and is relevant only to later infill activity, which appears likely to have been partially deliberate.

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15. Archive

Site Code: BA1212WSE

Item	No	Location
Context Records	12	Border Archaeology
Plans	5	Border Archaeology
Photographs	127	Border Archaeology
Pottery	213 sherds	Border Archaeology
Environmental Samples	2	Border Archaeology
Peat Samples	2	From Augers, with ARCA

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