YORK ARCHAEOLOGICAL TRUST

Archaeological Monitoring of Geotechnical Investigations at

York Flood Alleviation Scheme: Flood Cell B15 Ouse Bridge to Skeldergate Bridge left bank

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YAT Evaluation Report 2018/80 July 2018

YORK ARCHAEOLOGICAL TRUST

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Abbreviations

YAT - York Archaeological Trust

CBM - Ceramic Building Material

CP - Cable Percussion borehole

WS - Windowless Sample borehole

TP - Trial Pit

AOD - Above Ordnance Datum

OS - Ordnance Survey

NON-TECHNICAL SUMMARY

York Archaeological Trust was commissioned by Capita AECOM on behalf of the Environment Agency to undertake archaeological monitoring of site investigations for the York Flood Alleviation Scheme (FAS) at Flood Cell B15: Ouse Bridge to Skeldergate Bridge left bank (SE 60418 51373).The programme of works were carried out between 8th March and 25th April 2018.

The majority of the deposits encountered during the monitoring of interventions in B15 relate to land build-up, both through natural processes and deliberate dumping, dating from early periods through to the modern period. However the sterile nature of many of the deposits has meant there has been little secure dating for much of the phasing of the archaeological sequence.

KEY PROJECT INFORMATION

Project Name	York Flood Alleviation Scheme (FAS) at Flood Cell B15: Ouse Bridge to Skeldergate Bridge left bank
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1 INTRODUCTION

Between the 8th March and the 25th April 2018 YAT undertook archaeological monitoring of site investigations for the York Flood Alleviation Scheme (FAS) at Flood Cell B15: Ouse Bridge to Skeldergate Bridge left bank (SE 60418 51373) (Figure 1 Site Location).

The work was undertaken for Capita AECOM on behalf of the Environment Agency to produce information on the deposit sequence revealed by the Geotechnical Investigations (GI) through a variety of interventions including; cable percussive (CP) boreholes, windowless sampling (WS) boreholes and hand dug trial pits.

For the purpose of the York FMP, ten communities have been identified across York and these communities have been further sub-divided on the basis of 'flood cells' (FC). A flood cell is defined as an area where the flood risk can be addressed independently of the areas up- and downstream. The Environment Agency is exploring a range of potential flood management options for each cell.

2 METHODOLOGY

As stated in the WSI (Appendix 3) the aims of the GI was to investigate the deposit sequence along the bank of the River Ouse and to assess the character of deposits within the flood cell. Particular objectives of the archaeological monitoring in Flood Cell B12 include:

- To record the character and sequence of the deposits within each GI intervention
- To assess the potential for deposits where possible
- To retrieve dating evidence for deposits where possible
- To record the character and foundations of the city wall
- To minimise disturbance to significant archaeological remains if encountered or if this is unavoidable to ensure that the remains are investigated and recorded in a controlled archaeological manner
- To assess the extent to which landscaping associated with the setting out of the gardens has affected the preservation and relative depths of earlier archaeological strata

2.1 Trial Pits/Boreholes

A total of three windowless sample boreholes, three cable percussion boreholes and seven trial pits were monitored (Figure 2):

Borehole Ref No.	Easting	Northing	Notes
B15-WS02	460297	451523	
B15-WS03	460403	451371	Borehole refusal at 4m–5m.
B15-WS04	460427	451356	Triaxial permeability testing sample taken. Sample no. 10
B15-BH08	460405	451398	Bulk samples no's. 1 & 2 taken from cxt 8004
B15 BH09	460421	451397	Monitored to 10m BGL as had reached natural sands.

Borehole Ref No.	Easting	Northing	Notes
B15-BH11	460370	451447	Monitored to 10m BGL as had natural clay for over 3m. Bulk sample no. 9 taken from cxt 11009
B15-TP01	460306	451498	
B15-TP02	460324	451467	Halted at 0.80m BGL due to presence of brick structure
B15-TP03	460335	451448	
B15-TP04	460342	451436	
B15-TP08	460374	451390	Halted at 0.3m BGL due to presence of metal pipe
B15-TP09	460392	451404	Additional monitoring
B15-TP10	460414	451416	Additional monitoring

Key: The borehole reference number provides flood cell location and exploratory hole type. The first two digits provide the cell number. The next two digits provide exploratory type; where BH is cable percussion borehole, WS is windowless sample borehole and TP is trial pit. E.g. B15-BH08 is a cable percussion borehole located in flood cell B15.

Table 1 GI interventions monitored

In addition to the above interventions, YAT were asked to attend to CP borehole BH18 as the GI contractor had recovered a significant amount of bone from around 6.70m BGL. Upon arrival the YAT archaeologist found two bulk bags filled with an organic rich clay deposit and a selection of finds which the GI team had recovered from the deposit. Subsequently two environmental samples (Nos. 12 and 13) were collected, one from each bulk bag, and the finds were bagged and labelled. A copy of the onsite geologist's notes was also taken.

Methodology for boreholes

Inspection pits for the windowless sampling and cable percussion boreholes were hand excavated by the GI contractor to a depth of 1.2m and observed by YAT. Deposit characteristics and depths were recorded on pro forma sheets and digital photographs were taken.

Cable Percussion Boreholes

A cable percussion rig was used to drill to a depth of around 15m BGL, which produced SPT and bulk samples to be collected by the GI team every 5m. Archaeological monitoring was conducted for the full extent of the excavation on borehole BH08, however it was deemed pertinent to only monitor until natural sands and clay were reached on boreholes BH09 and BH11.

A total of three environmental samples were taken from boreholes BH08 (2) and BH09 (1) when deposits which contained potential organic material were encountered. The depth of samples taken was recorded on standardised pro forma sheets, as well as the presence, depth and description of each deposit.

Windowless Sample Boreholes

A tracked windowless sampling rig was used to drill to a depth of 5m BGL under the direction of the GI contractor. This depth was attained in all three boreholes. Plastic sleeves containing

the drilled-out cores, measuring 1m in length, and either 8" or 6" in width were opened on site, hand cleaned, recorded and photographed with an appropriate scale by the onsite archaeologist. A triaxial permeability test sample was collected from WS04 between 1.5m and 2m BGL. The depth of samples taken was recorded on standardised pro forma sheets, as well as the presence, depth and description of each deposit.

The location of the boreholes and depths of deposits relating to Ordnance Datum were determined based on survey information provided by the GI contractor.

3 LOCATION, GEOLOGY & TOPOGRAPHY

The following is taken from Capita AECOM's WSI for the archaeological monitoring of City Wall, Tower Gardens Flood Cell B15, King's Staith (2018):

> *Flood cell B15 is located on the left bank of the Ouse. It is bounded to the northwest by the city wall, to the northeast by Tower Street, to the southwest by the River Ouse and to the southeast by the Skeldergate Bridge. The...GI trial pits (are) to be excavated against the scheduled monument of the city wall at Tower Place which forms the northwest boundary of Tower Gardens.... The wall runs for approximately 60m from Davy Tower to Tower Street.*

The underlying geology consists of alluvial clay, silt, sand and gravel overlying sandstone of the Sherwood Sandstone Group (www.bgs.ac.uk accessed 24/05/18). Previous borehole interventions in the area recorded the top of natural alluvial deposits at between 6.25m and 7.50m BGL (on Peckitt Street), 6.50m and 6.75m BGL (in Tower Gardens), and 2.50m and 7.90m BGL (by Clifford's Tower).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Roman

During the Roman period the Rivers Ouse and Foss were wider than they are currently, extending beyond the current banks of the rivers and encroaching onto the proposed site. This is confirmed by the results of a series of boreholes dug in the 1990's at St Georges Field where alluvial deposits dated to the Roman period were recorded (Hunter-Mann 1990), along with timber piles, possibly of similar date. The ground between the Roman fortress and the rivers was occupied by settlement activity; evidence of this was recorded at King Street and Cumberland Street, in the northern part of the site, where a limestone and cobble wall as well as waterlogged Roman deposits were uncovered at around 2m BGL (YAT 1988.1032 & YAT 1990.7). Further evidence of occupation has been uncovered at Coppergate and the Piccadilly/Castlegate area (YAT 1976–1981.7 & YAT 1981-1982.22) where ditches and timber and stone buildings were recorded in the 1970s and 1980s. At the periphery of this settlement activity Castlegate follows the route of a Roman road and Roman burials have been recorded at York Castle in 1835 and in 1956 (RCHMY 1, 67–8), and in the Castlegate area, around 120m to the northeast of the Tower Gardens.

Anglo-Scandinavian

There is little evidence of settlement activity within the proposed development area until the Anglo-Scandinavian period when the land between the former Roman fortress and the Rivers Foss and Ouse became intensively occupied. Excavations at Coppergate shopping centre, to the east of the study site unearthed an area of dense settlement comprised of narrow timber buildings fronting onto Coppergate with narrow backyards. Within the study site boundaries, a layer of organic deposits were recorded at 12 King Street/2 Cumberland Street (YAT 1990.7) measuring 1m thick, whilst a 1.16m thick deposit recorded at 5–13 Clifford Street (YAT 1990.3) contained evidence of antler working. Further along Clifford Street at No. 17 a pit containing organic material was also recorded (YAT 1988.1013). Anglo-Scandinavian occupation deposits were revealed at 2 Clifford Street (YORYM 1999.256) immediately below 19th cellars and overlying Roman deposits. The deposits were composed of partially preserved wattle fencing aligned parallel and perpendicular to King Street, which was sealed by a series of dumped, slightly organic deposits, which in turn were cut by another set of wattle fencing. The latest phase of Anglo-Scandinavian activity comprised of dumped domestic refuse. The dumped organic deposits contained refuse such as fragments of leather shoes, a stone disc, iron slag, sheet lead and antler, some of which was worked. Pottery recovered suggested a late 9th century to early 10th-century date.

Medieval

Around 1230 AD a Franciscan Friary was founded just to the north of Clifford's Tower, between Castlegate and the River Ouse. There is suggestion that the city wall at Tower Place formed the southern side of the precinct wall. Excavations at 23 Clifford Street (YAT 1990.8) uncovered deposits relating to the Friary at 7.70m AOD, and in particular evidence of the apparent demolition of a building and an inhumation burial which were interpreted as part of a clearance event prior to the Friary being built followed by Friary-related mortuary practice. Later medieval deposits dating to between the 13th and 16th centuries were also recorded around 8.45m AOD. Final demolition layers were recorded at 9m AOD, and contained architectural fragments, bricks, painted plaster and leaded window glass, pointing to its high status origins. The medieval deposits were sealed by post-medieval garden soils, as indicated on the 1852 OS map.

A borehole survey at the former fire station on Clifford Street (Savine & Milsted 2017) encountered medieval build-up deposits comprising of reworked clayey material and sandy silts between 3m and 4m BGL. The deposits contained frequent flecks and small fragments of limestone, and probably relate to land reclamation associated with the Friary. Mortared limestone walls were also encountered in two of the boreholes at similar depths as the deposits and were considered potentially part of the friary buildings. During the same survey clayey natural material and silty alluvial deposits were encountered between 4.5m and 6.5m BGL; the deposits became more organic from around 5m BGL and below, with finds of charcoal and animal bone fragments suggesting human activity was occurring close by during earlier periods.

The Kings Staith was constructed in 1366 and was used for landing traded goods until the early 20th century; evidence of the medieval waterfront has been found during works at the New Police Headquarters on Cumberland Street (YAT 1974.6) where medieval timbers and a lava quern were seen in a contractor's trench. A borehole survey undertaken at 1–1a Low

Ousegate (YAT 1999) recorded well-preserved, water-logged organic deposits dating from the Roman to the post-medieval period, with late-medieval deposits appearing at 2m BGL. Natural boulder clay was encountered between 8.5m and 10m BGL.

King's Street, Cumberland Street and Lower Friargate were 'water lanes' leading down to the river waterfront.

Land to the south of the medieval city walls was mainly agricultural until the 18th to 19th century. St George's Field in this period was meadowland on which, in the 12th century, a chapel was built to serve the Norman motte and bailey castle to the north.

Post-medieval

To the north of the site there was a period of improvement in the 19th century; former slums around the Castlegate area were cleared to create Clifford Street in 1881, and Piccadilly was extended to Pavement in 1902 via a new bridge and raised roadway. Tower Gardens was separated from St George's field in 1881, at the same time as the construction of Skeldergate Bridge, and became York's first public park garden.

Post-medieval build-up deposits have been recorded at Clifford Street (Savine & Milsted 2017) and on land between King Street and Cumberland Street, up to 1.5m thick. A borehole recorded on St George's Field, close to St George's chapel, also found deposits comprised of organic sandy silt clays dating to this period which contained fragments of bone, brick and timber at a depth of between 5.85m to 2.00m AOD. The deposits were thought to be the infill of a post-medieval basin (Hunter-Mann 1990).

5 RESULTS

In order to differentiate between the different exploratory hole types blocks of context numbers were assigned corresponding to their designation; trial pits were assigned numbers in the 10's, windowless sampling boreholes had numbers in the 100's and CP boreholes were assigned numbers in the 1000's. In addition to this the borehole or trial pit reference number also corresponded with the assigned context number; windowless sample borehole WS01 commenced with context 100 onwards, WS02 commenced with context 200 onwards and so on. These contexts were then allocated to a group which represented one of six broad phases of activity. Due to the paucity of finds recovered from the boreholes, it should be noted that the designation of these phases are tentative and rely on observations by the experienced attendant archaeologist.

Full descriptions of these deposits and their phase designations can be found in the context table which forms Appendix 2 of this report.

5.1 Windowless Sample WS02

Windowless sample WS02 (Figures 1, 2, 4, 7 and 8; Plates 1-6) was monitored on 23rd April 2018. Ground level on the tarmac surface was 9.37m AOD.

Phase 1 Early alluvial deposits

The earliest deposit recorded from this phase comprised of very wet and soft mid grey silty clay (210), recorded at 4.40m BGL (4.97m AOD) and overlain by soft light brown grey clay (209), recorded at 4.20m BGL (5.17m AOD).

Plate 1 Core 1m–2m, top to the left, showing (l–r) contexts 210 and 209. Scale 0.5m

Phase 2 Early to medieval land reclamation deposits/build-up

This phase is characterised predominantly by redeposited natural clay containing frequent small fragments of limestone (211, 212 and 208) and dumps of clayey silts containing frequent small fragments of limestone, occasional charcoal flecks and small fragments of CBM (207, 206, 213 and 205). The top of the redeposited clay was recorded at 3.50m BGL (5.87m AOD), whilst the clayey silts were observed from 1.82m BGL (7.55m AOD).

Whilst no datable finds were recovered from these deposits they are very similar to ones recorded during the borehole survey at the former fire station on Clifford Street (YAT 2016), around 70m to the north east of the borehole location. The deposits at the fire station were believed to relate to the process of land build-up prior to the construction and during the life of the Franciscan Friary.

Plate 2 Core 3m–4m, top to the left, showing (l–r) contexts 208, 211 and 212. Scale 0.5m

Plate 3 Core 2m–3m, top to the left, showing (l–r) contexts 207 and 208. Scale 0.5m

Plate 4 Core 2m–3m, top to the left, showing (l–r) contexts 205, 213 and 206. Scale 0.5m

Phase 4 Post medieval surface

The location of the borehole is at the end of one of the 'water lanes' that extended down to the River Ouse from Clifford Street. A crushed brick layer overlain by crushed limestone and mortar (214) was observed at 1.70m BGL (7.67m AOD) and could potentially relate to the laying of a hard road surface along the lane.

Due to crushed nature of the brick, a viable date for the surface was unattainable however it lay between medieval and post medieval deposits.

Plate 5 Core 1m–2m, top to the left, showing (l–r) contexts 204, 214 and 205. Scale 0.5m

Phase 5 19th century to present day activity

Modern made ground deposits comprising of disturbed deposits of silt and clays containing frequent sandstone and charcoal flecks with crushed mortar (203 & 204), occasional fragments of CBM and oyster shell (202) and mortar fragments (201). The top of the deposits were encountered at 1.40m, 1.50m, 1.10m and 0.38m BGL (7.97m AOD, 7.87m AOD, 8.27m AOD and 8.99m AOD) respectively.

Sealing the deposits was the modern ground surface of tarmac and associated make-up (200) which measured 0.38m thick.

Plate 6 Core 1m–2m, top to the left, showing (l–r) contexts 202 and 203

5.2 Windowless Sample WS03

Windowless sample WS03 (Figures 1, 2, 4, 7 and 8; Plates 7-9) was monitored on 24th April 2018. Ground level on the garden turf was 8.24m AOD. A core refusal occurred between 4m and 5m BGL.

Phase 3 Later alluvial deposit/ground build-up

Mid grey brown clays (302 & 303) interspersed with alluvial silts (304 & 305) were present from 1.20m BGL (7.04m AOD), down to the end of the retrieved cores at 4m BGL (4.24m AOD). The deposits have likely built up over time, from the late-medieval period onwards, and comparable deposits encountered during investigations at the Foss Barrier (Savine 2016) were dated to the late-medieval to post-medieval periods; however the lack of dating makes it impossible to be more definitive. No obvious inclusions were noted from these deposits though this is unsurprising as the borehole was located in an area that was unoccupied agricultural fields and meadow land until the 19th century.

Plate 7 Core 3m–4m, top to the right, showing (l–r) contexts 303 and 304. Scale 0.5m

Plate 8 Core 2m–3m, top to the right, showing (l–r) contexts 303 and 305. Scale 0.5m

Plate 9 Core 1m–2m, top to the right, showing context 302. Scale 0.5m

Phase 5 19th century to present day activity

The deposits relating to this phase were concerned with the Tower Gardens; deposit 301 was a build up of garden soil comprising of loose light brown clay silt with moderate CBM flecks and occasional limestone fragments. The top of 301 was seen at 0.2m BGL (8.04m AOD) and was overlain by the modern topsoil and turf (300).

5.3 Windowless Sample WS04

Windowless sample WS04 (Figures 1, 2, 4, 7 and 8; Plates 10–11) was monitored on 24th April 2018. Ground level on the garden turf was 8.50m AOD. A sealed tube sample was taken between 1.5m and 2m BGL.

Phase 3 Later alluvial deposits/ground build-up

Mid to light grey (405 and 403) , brown (404) and reddish brown (402) clays were present from 1.00m BGL (7.50m AOD) onwards to the end of the borehole at 5m BGL (3.5m AOD). Clays 404 and 405 were similar in make-up as clays 305 and 303 that were recorded in WS03. No dating was available from the deposits, but like the clays encountered in WS03 they likely date between the late-medieval to post-medieval periods, pre-dating the creation of the Tower Gardens in 1881.

Plate 10 Core 4m–5m, top to the right, showing (l–r) contexts 405 & 404. Scale 0.5m

Plate 11 Core 2m–3m, top to the right, showing context 403. Scale 0.5m

Phase 5 19th century to present day activity

The deposits relating to this phase were concerned with the Tower Gardens; deposit 401 was the same as deposit 301 in WS03, though the limestone inclusions were flecks in this borehole, rather than fragments. The top of 401 was seen at 0.2m BGL (8.30m AOD) and was overlain by the modern topsoil and turf (400).

5.4 Cable Percussion Borehole BH08

CP borehole BH08 (Figures 1, 2, 3 and 6; Plates 12–15) was monitored on the 8th March 2018. Ground level on the topsoil and turf was given as 7.52m AOD.

Phase 1 Natural and early alluvial deposits

Natural sandstone bedrock (8008) was reached at around 9.5m BGL (-1.98m OD).

Above the bedrock was a series of natural gravels (8007 & 8006) and alluvial clays (8004, 8005), which were observed from 2.95m BGL (4.57m AOD) and 8.30m BGL (-0.78m OD) respectively. Lenses of organic material were observed at around 4.5m BGL (3.02m AOD) in deposit 8004 and the presence of occasional fish bone fragments and plant material throughout suggest the deposit was formed through slow accumulation.

Plates 12 and 13 Deposit 8007 at around 9m BGL and deposit 8004 at around 4.5m BGL. Scale 0.2m

Phase 3 Late build-up deposits

This phase of activity is characterised by two build up deposits of fairly sterile material; the earliest deposit comprised of grey brown slightly silty clay (8003) with decayed plant roots and occasional CBM and charcoal fleck inclusions. It is probable that the deposit is the same as deposit 302, recorded in WS03 and has accumulated from the late medieval period onwards. The top of the deposit was recorded at 1.50m BGL (6.02m AOD).

Plate 14 Deposit 8003 at around 2.5m BGL. Scale 0.2m

Above clay 8003 was light brown silty sand (8002) that contained occasional medium sized plain tile fragments and which was recorded from 1.06m BGL (6.46m AOD).

Phase 5 19th century to present day activity

The deposits relating to this phase were concerned with the formation of the Tower Gardens; deposit 8001 was seen below the modern topsoil and turf and was the same material make up as the brown silty garden soil 301 in WS03. The top of the deposit was recorded at 0.4m BGL (7.12m AOD) and was overlain by the modern topsoil and turf (8000).

Plate 15 showing from top to bottom contexts 8000, 8001 and 8002

5.5 Cable Percussion Borehole BH09

CP borehole BH09 (Figures 1, 2, 3 and 6) was monitored on the 16th April 2018. Ground level on the topsoil and turf was given as 8.92m AOD.

Phase 1 Natural and early alluvial deposits

Alluvial clay (9004) and natural gravels (9005) were encountered from 3.00m and 8.60m BGL (5.92m AOD and 0.32m AOD), respectively. The presence of flecks of charcoal within deposit 9004 showed evidence of human activity occurring close by when the deposits were laid.

Phase 3 Later alluvial and build up deposits

The earliest deposit from this phase comprised of mid blue grey alluvial clayey silt with inclusions of charcoal and small fragments of CBM (9003). Above this was mid brown sandy clay which contained moderate inclusions of mortar and charcoal flecks (9002). No dating was available for these deposits; however it is reasonable to suggest that it dates to between the late medieval and post-medieval periods. The top of this phase of deposits was observed at 0.70m BGL (8.22m AOD).

Phase 5 19th century to present day activity

The deposits relating to this phase were concerned with the formation of the Tower Gardens; deposit 9001 was seen below the modern topsoil and turf and was the same material make up as the brown silty garden soil 8001 in BH08. The top of the deposit was recorded at 0.30m BGL (8.62m AOD) and was overlain by the modern topsoil and turf (9000).

5.6 Cable Percussion Borehole BH11

CP borehole BH11 (Figures 1, 2, 3 and 6; Plates 16-21) was monitored on the 26th March 2018. Ground level on the cobbled ground surface was 9.81m AOD.

Phase 1 Early alluvial deposits

Alluvial clays (11010 and 11011), mid to light blue grey in colour were observed from c.5.50m BGL to 10m BGL (c.4.31m AOD to c.-0.19m AOD). A small amount of charcoal and animal bone was present at around 6.50m BGL within deposit 11010, indicating the presence of human activity.

Plates 16 and 17 Deposit 11011 at around 7.70m BGL and deposit 11010 at about 6.20m BGL. Scale 0.2m

Phase 2 Early land reclamation/build-up

This phase of activity is characterised by a series of interspersing dumps of material and alluvial clays. The earliest deposit in this sequence was recorded at approximately 4.50m BGL (around 5.31m AOD) and comprised of a grey clay (11009) containing frequent charcoal fleck and occasional limestone fragments and organic material. The clay also contained frequent lenses of fine sand and sandy clay. A very similar deposit lay above 11009, though deposit 11008 was a lighter grey in colour and was seen from 4.00m BGL (5.81m AOD).

Sealing this was a band of mid grey brown clay (11007) which contained moderate charcoal flecks, occasional CBM, mortar and limestone flecks, and a slightly cessy presence. Towards the base of the deposit there were significant lenses of organic rich silts, at around 3.80m BGL (6.01m AOD). The top of the clay deposit 11007 was recorded at around 3.00m BGL (approx. 6.81m AOD).

The later section of this phase was characterised by clays (11005 & 11006) containing occasional to frequent inclusions of building material, including limestone fragments, mortar and CBM. The top of this sequence of deposits was encountered at 2.40m BGL (7.41m AOD) and were similar in makeup to the deposits recorded in WS02 around this depth.

Though no datable material was available from any of the clay deposits, results from previous investigations in the area has lead to the probable likelihood that these are of medieval and earlier date.


Plates 18 and 19 Deposit 11008 at around 4.00m BGL and 11007 at about 3.50m BGL. Scale 0.2m

Plate 20 Deposit 11006 at around 2.70m BGL. Scale 0.2m

Phase 5 19th century to present day activity

An almost 2m thick deposit of 19th century made ground was recorded from 0.5m BGL (9.31m AOD); the soil was formed from dark grey brown sandy silty clay with frequent limestone, mortar and CBM fragments and charcoal flecks (11004). The made ground deposit was likely associated with the construction of the terraced housing during the late 19th century.

Plate 21 Deposit 11004 at around 1.50m BGL. Scale 0.2m

The present day ground surface comprised layers of concrete (11003) and hardcore (11002) overlain by set bricks (11000) and their sand bedding (11001). The overall thickness of these deposits was 0.50m.

5.7 Trial Pit TP01

Trial pit TP01 (Figures 1, 2 and 5; Plate 22) was monitored on the 25th April 2018 and the ground level was given as 7.64m AOD.

Phase 1 Medieval Friary wall

The medieval limestone wall formed a chamfered course almost immediately below ground level and extended beyond the base limit of the trial pit, at 1.20m BGL (6.44m AOD). The base of the seen course extended around 0.30m from the vertical face of the wall.

Phase 3 19th century to present day activity

Late post-medieval to modern period made ground layers butted up against the medieval wall; the earliest deposit comprised of mid grey brown clay (12) recorded from 1.00m BGL (6.64m AOD), whilst laying above this was a mid brownish grey silt (11) which contained moderate fragments of CBM and sandstone. The top of this deposit was recorded at 0.15m BGL (7.49m AOD).

The modern ground surface was formed of concrete and tarmac and measured 0.15m thick.

Plate 22 Trial Pit TP01, view north-east, scale 0.2m

5.8 Trial Pit TP02

Trial pit TP02 (Figures 1, 2 and 5; Plate 23) was monitored on the 25th April 2018 and the ground level was given as 7.59m AOD.

Phase 2 19th century to present day activity

The trial pit only reached 0.80m BGL (6.79m AOD) as it was halted by the presence of a substantial brick drain (22), the top of which was observed at 0.40m BGL (7.19m AOD). The drain was rectangular in plan and constructed from 70mm thick bricks bonded with a grey concrete mortar. An opening for the drain pipe was visible on the southwest edge of the trial pit, heading towards the River Ouse. A stone slab was also recorded at the base of the drain.

Above the drain was grey brown clayey silt (21) made ground layer containing CBM and mortar flecks and fragments, the top of which was recorded at 0.15m BGL (7.44m AOD). The ground surface was constructed of tarmac (20).

Plate 23 Trial Pit TP02, view south-west, scale 0.2m

5.9 Trial Pit TP03

Trial pit TP03 (Figures 1, 2 and 5; Plate 24) was monitored on the 25th April 2018 and the ground level was 7.55m AOD.

Phase 1 Medieval Friary wall

The friary wall (33) was constructed from limestone blocks in an ashlar bonding style. A chamfered course was visible just above ground level and another was observed at 0.70m BGL (6.85m AOD); the base of which reached 0.80m BGL (6.75m AOD), 0.10m out from the vertical face of the wall. The wall continued downwards from the base of the course until 1.00m BGL (6.55m AOD), where a probable footing was recorded, extending slightly out from the wall face. The footing extended vertically beyond the trial pit base at 1.30m BGL (6.25m AOD).

Phase 3 19th century to present day activity

Late post-medieval to modern made ground deposits (31 & 32) butted up against the medieval wall face and were formed from mid greyish brown clays which contained moderate to occasional CBM and mortar flecks; deposit 31 contained a modern pipe. The top of these deposits were recorded at 0.10m and 1.00m BGL (7.45m AOD and 6.55m AOD), respectively.

The modern ground surface was constructed from concrete make-up and tarmac (30).

Plate 24 Trial Pit TP03, view south, scale 0.2m

5.10 Trial Pit TP04

Trial pit TP04 (Figures 1, 2 and 5; Plate 25) was monitored on the 19th April 2018 and the ground surface level was 7.60m AOD.

Phase 1 Medieval Friary wall

The Friary wall (44) was constructed from limestone blocks in an ashlar bonding style. A chamfered course was present at 0.95m BGL (6.65m AOD), extending 0.10m from the wall face and continuing beyond the base of the trial pit at 1.20m BGL (6.40m AOD).

Phase 3 19th century to present day activity

Late post-medieval to modern made ground deposits (42 & 43) butted up against the medieval wall face and were formed from mid greyish brown clays which contained moderate to occasional CBM, limestone and mortar flecks in deposit 42. The top of these deposits were recorded at 0.40m and 1.00m BGL (7.20m AOD and 6.60m AOD), respectively.

The modern ground surface was constructed from layers of concrete, hardcore and tarmac (40).

Plate 25 Trial Pit TP04, view north-east

5.11 Trial Pit TP08

Trial pit TP08 (Figures 1, 2 and 5; Plate 26) was monitored on the 21st March 2018 and the ground surface level was 7.62m AOD. The trial pit only reached 0.3m BGL (7.32m AOD).

Phase 3 19th century to present day activity

The earliest deposit recorded was a modern made ground layer comprising of loose mid brown grey clayey silt and gravel (81). Sealing this was the present ground surface of concrete (80), measuring 0.2m in depth.

Plate 26 Trial Pit TP08, view north-east, scale 0.5m

5.12 Trial Pit TP09

Trial pit TP09 (Figures 1, 2 and 5) was monitored on the 21st March 2018 and the ground surface level was 8.23m AOD. The medieval wall extended beyond the base of the trial pit, with no additional features to make note of, including any chamfered course, contrasting with the above trial pits.

Phase 2 Undated build up deposit

The earliest deposit from this phase comprised of light grey brown silty clay which contained occasional inclusions of mortar (92). No dating was available for this deposit; however its similarity to deposits found in BH09 and BH08 suggests it dates to between the medieval and post-medieval period. The top of the deposit was observed at 1.20m BGL (7.03m AOD).

Phase 3 19th century to present day activity

The deposits relating to this phase were concerned with the formation of the Tower Gardens; deposit 91 was seen below the modern topsoil and turf and was the same material make up as the mid to dark brown silty garden soil 8001 in BH08 and 9001 in BH09. The top of the deposit was recorded at 0.20m BGL (8.03m AOD) and was overlain by the modern topsoil and turf (90).

5.13 Trial Pit 10

Trial pit TP10 (Figures 1, 2 and 5; Plate 27) was monitored on the 21st March 2018 and the ground surface level was 9.08m AOD. The medieval wall extended beyond the base of the trial pit, with no additional features to make note of including any chamfered course, contrasting with the above trial pits.

Phase 2 Undated build up deposit

The earliest deposit from this phase comprised of light grey brown silty clay which contained occasional inclusions of mortar and CBM fragments (102). No dating was available for this deposit; however its similarity to the deposit 92 in TP09 suggests it dates to between the medieval and post-medieval period. The top of the deposit was observed at 0.90m BGL (8.18m AOD).

Phase 3 19th century to present day activity

The deposits relating to this phase were concerned with the formation of the Tower Gardens; deposit 101 was seen below the modern topsoil and turf and was the same material make up as the dark brown silty garden soil 91 in TP09. The top of the deposit was recorded at 0.20m BGL (8.88m AOD) and was overlain by the modern topsoil and turf (100).

Plate 27 Spoil from TP10, view northwest. Lighter spoil at bottom is deposit 102, whilst the dark spoil at the top is garden silt 101

6 DISCUSSION

Natural sandstone bedrock was reached in borehole BH08 at -1.98m OD, and was overlain by natural gravels which were seen in both BH08 and BH09 from -0.78m OD. Early alluvial deposits seen close to sea level comprised mainly of clays with lenses of sand and organics and occasional charcoal and animal bone inclusions near the top of the deposits. The presence of charcoal could indicate a nearby presence of early human activity; Roman pottery was recovered from deposits at -1.7m OD during borehole investigations at St George's Field, to the east of the current study site (Savine 2016) and a piece of Roman brick was recovered from context 8004 in borehole BH08, however this is not conclusive evidence of Roman activity in the area.

To the north of the study site, around the locations of boreholes BH11 and WS02, there is evidence of prolonged land build-up during the medieval period, beginning prior to the Franciscan Friary's construction. The lack of cultural material from these deposits makes dating difficult; however they were encountered from 7.55m AOD through to 5.31m AOD and are comparable with similar deposits found at the former Fire Station (Savine & Milsted 2017) on Clifford Street where deposits of reworked clay and dumps of silt containing fragments of limestone were recorded between 7.00m AOD and 8.50m AOD and sealed by mortared limestone walls, believed to form part of the friary buildings.

To the south of the site, in what was marginal land outside the medieval city walls and main settlement of York, build-up deposits of redeposited clays with a fragment of 13th–16th century plain tile, mortar, and charcoal inclusions, interspersed with alluvial silts and clays were recorded in boreholes BH08, BH09, WS03 and WS04. A similar phase of land build-up and flooding episodes was found during the St George's Field investigations (Savine 2016), overlaying a securely dated context of medieval dumping, at around 5.5m and 6.5m AOD, and given a date of late medieval to post-medieval. Due to the similarity to these deposits it can be reasonable to conclude that the rise in ground levels in the Tower Gardens, of around 4m, also dated to these periods.

An indication of the amount of increase in ground level that has been created along the river front from the medieval period can be seen in the trial pits along the western friary precinct wall; decorative chamfered coursing was seen up to 0.95m BGL in trial pits TP01, TP03 and TP04, which is normally visible at the base of walls, above ground level. No chamfered coursing was seen along the southern friary wall, however the ground levels here were much higher, and therefore the coursing maybe at greater depth below current ground level. The friary walls were constructed from limestone ashlar blocks and there was no evidence of underpinning work noted during the course of the monitoring.

Borehole WS02 was located at the end of one of the 'water lanes' that extended down to the River Ouse from Clifford Street during the post-medieval period and possibly earlier. A crushed brick layer overlain by crushed limestone and mortar was observed at 7.67m AOD and could potentially relate to the laying of a hard road surface along the lane. Unfortunately due to crushed nature of the brick, a viable date for the surface was unattainable however it lay between medieval and post medieval deposits.

Modern made ground deposits were encountered across the study site; to the north in boreholes BH11 and WS02 up to 2m thick deposits relating to 19th and 20th century building

and development were encountered from around 0.50m below ground level. In Tower Gardens garden subsoil from 0.20m below present ground level and measuring up to 1.20m thick were seen in both the boreholes and the trial pits located along the friary wall.

The majority of the deposits encountered during the monitoring of interventions in B15 have been concerned with land build up, both through natural processes and deliberate dumping, though the sterile nature of many of the deposits render the identification of which rather difficult. Outside the medieval friary walls, no structural deposits were found and a dearth of cultural material recovered meant there has been little secure dating; much of the phasing has been assigned through comparison with nearby archaeological sites, notably those at the Foss Barrier in St George's Field and at the former fire station on Clifford Street.

Analysis of the potential of any organic remains cannot be done at this time, as further work is required on the environmental samples taken from relevant contexts. It is recommended that a range of samples are tested across all the interventions from which they were recovered; namely CP boreholes BH08 and BH011, and WS borehole WS04. Two samples have been identified as candidates for processing; SN.9 from context 11009, and SN.1 from context 8004, an early land reclamation deposit and an alluvial deposit which contain lenses of organic material and charcoal and therefore have high potential for dating material and environmental remains which could provide data about the early activity that occurred in this area of York.

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APPENDIX 1 – INDEX TO ARCHIVE

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Borehole data log sheets	12
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Written Scheme of Investigation	3
Report	1

Table 1 Index to archive

APPENDIX 2 – CONTEXT LIST

Context Number	Deposit depth (AOD)	Description
BH08		
8000	7.52m	Topsoil. Dark brown silt, with CBM and mortar flecks
8001	7.12m	Made ground/ demolition. Rubbly dark brown silt, with occasional CBM flecks
8002	6.46m	Made ground. Friable, light brown, silty sand with occasional medium size plain tile fragments.
8003	6.02m	Re-worked Clay. Firm, greyish brown, slightly silty clay with gingery brown decayed plant roots, occasional CBM flecks and charcoal flecks.
8004	4.57m	Alluvial deposit. Firm, grey clay with moderate micaceous flecks. Quite homogeneous – probably very slow accumulation. Occasional animal bone fragments. Occasional fish bone. Frequent flecks of organic material – plant remains
8005	0.52m	Alluvial deposit. Firm, dark grey, clay. Occasional fishbone, moderate organic wood/plant flecks.
8006	-0.78m	Natural. Gravel.
8007	-1.18m	Natural. Gravel and large cobbles within mid brown grey clay.
8008	-1.98m	Bedrock. Sandstone.
BH09		
9000	8.92m	Topsoil. Loose, dark brown, clayey silt. Occasional sub angular stones.
9001	8.62m	Garden soil. Friable, mid greyish brown, clayey silt. Moderate mortar flecks, CBM flecks, charcoal flecks.
9002	8.22m	Made ground/ build-up. Friable, mid brown, sandy clay. Moderate mortar patches, occasional limestone flecks.
9003	7.22m	Alluvial deposit. Soft, mid blue grey, clayey silt. Occasional charcoal, CBM flecks 1mm x 1mm.
9004	5.92m	Alluvial deposit. Friable to soft, mid blue grey, clay. Occasional charcoal flecks, CBM flecks 1mm x 1mm.
9005	0.32m	Natural. Friable to firm, mid brown with grey mottles, clayey sand with gravel.
BH11		
11000	9.89m	Brick sets. Measuring 190mm x 100mm x 60mm.
11001	9.83m	Sand bedding. Coarse sand bedding for brick sett surface.
11002	9.67m	Hardcore. Compact, pale yellow/white, limestone and sand.
11003	9.55m	Concrete. Coarse light grey, concrete within large CBM fragments.
11004	9.31m	Make-up. Firm dark greyish brown, sandy silty clay. Frequent limestone, CBM and mortar small to medium fragments and frequent charcoal flecks.
11005	7.41m	Build-up. Soft, light brown, slightly sandy clay. Frequent mortar fragments 0.1m thick.
11006	7.44m	Build-up. Firm to compact, light slightly red brown, clay. Occasional mortar, limestone, charcoal and CBM (plan tile) flecks to small fragments.

Context Number	Deposit depth (AOD)	Description
11007	6.81m	Build-up. Firm, mid greyish brown, slightly silty clay. Moderate charcoal flecks, occasional CBM, mortar, limestone flecks very slightly cessy.
11008	5.81m	Build-up. Firm, light grey, clay. Frequent charcoal flecks to small fragments.
11009	5.31m	Build-up. Firm, dark grey, clay. Frequent charcoal flecks slightly organic, occasional limestone fragments. Many fine lenses which are orange/grey which are sandy clay.
11010	4.31m	Alluvial deposit. Firm, mid to light greyish brown laminated clay. Moderate charcoal flecks, lenses of very fine light brownish grey, sandy clay, occasional animal bone.
11011	0.19m	Natural. Firm, mid brownish grey, alluvial clay – clean.
WS02		
200	9.37m	Tarmac and Make-up.
201	8.99m	Made ground. Friable to firm, mid orange brown, silty clay. Frequent CBM, charcoal and mortar flecks.
202	8.27m	Made ground. Friable, mid to dark greyish brown, clayey silt. Moderate charcoal flecks, CBM flecks to small fragments, limestone fragments, occasional oyster shell.
203	7.97m	Made ground. Friable, mid brown, silt. Frequent charcoal and sandstone flecks and crushed mortar.
204	7.87m	Made ground. Friable, mid to dark grey, clayey silt. Occasional mortar and charcoal flecks.
205	7.55m	Build-up. Soft, mid to light greyish brown, silty clay. Occasional CBM fragments 10mm x 10mm and lime mortar flecks.
206	7.12m	Build-up. Friable, mid greyish brown, silty clay. Occasional small CBM and charcoal flecks and small stone flecks to fragments 1mm x 1mm
207	6.87m	Build-up. Friable to loose, light reddish brown, slightly clayey sand. Occasional charcoal flecks.
208	6.77m	Build-up. Friable, dark brown mottled dark gray, clay. Occasional charcoal and CBM flecks with limestone and sandstone fragments
209	5.17m	Alluvial deposit. Soft, light brownish grey, clay. Occasional CBM fragments and charcoal flecks.
210	4.97m	Alluvial deposit. Soft, mid grey, silty clay. Very wet.
211	5.44m	Build-up. Mid greyish brown, clay. Occasional sub angular limestone fragments and charcoal flecks.
212	5.87m	Build-up. Mid greyish light brown, clay. Occasional sub angular limestone fragments and charcoal, mortar and CBM flecks.
213	7.27m	Build-up. Dark grey, silty clay. Frequent limestone fragments.
214	7.67m	Surface. Crushed brick and crushed lime mortar.
WS03		
300	8.24m	Topsoil. Loose, mid brown grey, clayey silt. Occasional CBM flecks 2mm x 2mm, sub angular stone fragments 20mm x 20mm
301	8.04m	Garden soil. Loose, light greyish brown, clayey silt. Moderate CBM flecks and occasional limestone fragments 20mm x 20mm to 150mm x 150mm

Context Number	Deposit depth (AOD)	Description
302	7.04m	Build-up. Soft light greyish brown, silty clay.
303	5.84m	Build-up. Soft, light yellowish brown, sandy clay.
304	4.34m	Alluvial deposit. Soft, yellowish light brown, sandy silt.
305	6.04m	Alluvial deposit. Soft mid grey brown clay.
WS04		
400	8.50m	Topsoil. Loose, mid brownish grey, clayey silt. Occasional CBM flecks 2mm x 2mm and sub angular stone fragments 20mm x 20mm
401	8.30m	Garden/made ground. Friable, light greyish brown, silty clay. Moderate CBM flecks 2mm x 2mm, mortar flecks 2mm x 2mm and sub angular pebbles 10mm x 10mm
402	7.50m	Build-up. Loose, mid reddish brown, clayey sand.
403	7.00m	Alluvial deposit. Friable, mid grey brown, clay. Occasional charcoal flecks.
404	5.95m	Build-up. Soft, light brown, clay.
405	3.56m	Alluvial deposit. Mid greyish brown clay.
TP01		
10	7.64m	Tarmac and concrete.
11	7.49m	Build-up/ made ground. Friable, mid brownish grey, clayey silt. Moderate CBM fragments 50mm x 50mm to 20mm x 20mm, sandstone fragments 50mm x 50mm and occasional charcoal flecks.
12	6.64m	Make-up. Friable, mid grey brown, clay.
13	N/A	Stone wall, medieval in date.
TP02		
20	7.59m	Tarmac and concrete.
21	7.44m	Make-up. Friable, mid brownish grey, clayey silt. Moderate CBM flecks to fragments 5mm x 5mm to 20mm x 20mm and white mortar flecks.
22	7.19m	Drain. Brick built, rectangular in plan as exposed within pit. Bricks measure 70mm in thickness with a grey concrete mortar bond. A stone slab was found at the base.
TP03		
30	7.55m	Tarmac and concrete.
31	7.45m	Build-up/made ground. Friable, mid brownish grey, clayey silt. Moderate CBM flecks to fragments 5mm x 5mm to 20mm x 20mm, white mortar flecks and small cobbles 50mm x 50mm.
32	6.55m	Made ground. Friable, mid greyish brown, clay. Occasional CBM flecks 2mm x 2mm and white mortar flecks.
33	N/A	Wall. Stone wall medieval in date.
TP04		
40	7.60m	Tarmac and concrete.
41	7.50m	Make-up. Sandy gravelly tarmac and brick.
42	7.20m	Make-up. Crushed mortar and CBM with medium to small fragments of limestone within a clay matrix.
43	6.60m	Make- up. Mid greyish brown, clay. Sterile and hit water at 1.2m.

Context Number	Deposit depth (AOD)	Description
44	N/A	Wall. Stone wall medieval in date.
TP08		
80	7.62m	Concrete.
81	7.42m	Make-up. Loose, mid brownish grey, clayey silt and gravel.
TP09		
90	8.23m	Topsoil. Loose, light brown, clayey silt.
91	8.03m	Made ground. Loose, dark brown, clayey silt.
92	7.03m	Made ground. Friable, light greyish brown, silty clay. Occasional white line mortar flecks.
TP10		
100	9.08m	Topsoil. Friable, light brown, clayey silt.
101	8.88m	Made ground. Friable dark brownish grey, clayey silt.
102	8.18m	Made ground. Friable light greyish brown, silty clay. Moderate lime mortar flecks and CBM fragments 20mm x 20mm to 50mm x 50mm

Table 2 Context list

APPENDIX 3 – WRITTEN SCHEME OF INVESTIGATION

Water and Environment Management Framework

Lot 3 – Engineering and Related Services

York FMP

Written Scheme of Investigation for Archaeological Monitoring City Wall, Tower Gardens

Flood Cell B15, King's Staith

January 2018

Document overview

Capita AECOM were commissioned by the Environment Agency in June 2016 to undertake a Flood Management Plan for York. As part of this process a programme of Geotechnical Investigation (GI) for geotechnical purposes is to be carried out. This document is a written scheme of investigation (WSI) for archaeological monitoring of the GI works to be undertaken to investigate the City Wall that forms the north-western boundary of Tower Gardens. The City Wall is part of the Scheduled Monument - City Walls, gates, posterns (not including the section from Bootham Bar to Monk Bar, N of the Minster), moats, mounds, Bayle (or Baile) Hill, St Leonard's Hospital and Merchant Taylor's Hall, Aldwark (National Heritage List Entry Number (NHLE): 1004910) and is also grade I listed. It has been produced to support an application for Scheduled Monument Consent for the GI works and to provide a framework and methodology for recording any archaeological remains that may be encountered during the GI works.

Limitations

This Report has been prepared for the sole use of the Environment Agency in accordance with the Agreement under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by AECOM. This Report is confidential and may not be disclosed by the Client nor relied upon by any other party without the prior and express written agreement of AECOM.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken between June and September 2016 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

Where assessments of works or costs identified in this Report are made, such assessments are based upon the information available at the time and where appropriate are subject to further investigations or information which may become available.

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1. Introduction

The York Flood Management Plan (FMP) is being undertaken in response to the severe flooding experienced between the 26th and 28th December 2015. As part of the FMP, the risk of flooding and the performance of the existing flood defences through York have been reviewed.

For the purposes of the York FMP, ten Communities have been identified across York and these Communities are further sub-divided on the basis of 'flood cells'. A flood cell is defined as an area where the flood risk can be addressed independently of the areas up- and downstream. The Environment Agency is exploring a range of potential flood management options for each cell. As part of the options assessment process GI will be carried out within each cell.

This WSI has been prepared to support a Scheduled Monument Consent application for GI trial pits to investigate the construction and foundations of the City Wall that forms the north-western boundary of Tower Gardens. The City Wall is Scheduled as part of the Scheduled Monument - City Walls, gates, posterns (not including the section from Bootham Bar to Monk Bar, N of the Minster), moats, mounds, Bayle (or Baile) Hill, St Leonard's Hospital and Merchant Taylor's Hall, Aldwark (National Heritage List Entry Number (NHLE): 1004910) located within flood cell B15 (Figure 1).

GI works shall be undertaken by a Geotechnical Contractor ('the GI Contractor') who will supply suitable plant, equipment and personnel. An Archaeological Contractor ('the Archaeological Contractor') shall be appointed to undertake archaeological monitoring of GI

works alongside the GI Contractor, including the supervision of plant operations and reporting on any findings and results.

The WSI for archaeological monitoring of the GI has been prepared by AECOM ('the Consultant') on behalf of the Environment Agency in accordance with the Chartered Institute for Archaeologist Code of Conduct (CIfA, 2014), Standard and Guidance for an Archaeological Watching Brief (CIfA, 2014) and standards and guidance published by Historic England (Appendix 1). The WSI will be agreed with Keith Emerick, Inspector of Ancient Monuments for Historic England. Andy Hammon, Regional Science Advisor for Historic England has been consulted on the approach and methodology as set out in this WSI.

1.1 Site location and description

Flood cell B15 is located on the left bank of the Ouse. It is bounded to the northwest by the city wall, to the northeast by Tower Street, to the southwest by the River Ouse and to the southeast by the Skeldergate Bridge. The WSI relates to GI trial pits to be excavated against the scheduled monument of the city wall at Tower Place which forms the northwest boundary of Tower Gardens in order to investigate its construction and foundations (Figure 2). The wall runs for approximately 60 m from Davy Tower to Tower Street.

Current information indicates that the geology of the cell comprises made ground to 4 m below ground level (bgl). Given the medieval date of the wall the made ground deposits in the trial pits can be anticipated to comprise medieval and earlier evidence sealed by landscaping associated with Tower Gardens. Below the made ground is alluvium and glacial till to 18 m bgl. Weathered Sherwood Sandstone can be expected below around 18 m bgl. The complex nature of archaeological deposits within the centre of York means that localised variation of the deposit sequence can be expected at the site.

1.2 Designations

The trial pits will be excavated against the city wall, which forms part of the Scheduled Monument City Walls, gates, posterns (not including the section from Bootham Bar to Monk Bar, N of the Minster), moats, mounds, Bayle (or Baile) Hill, St Leonard's Hospital and Merchant Taylor's Hall, Aldwark (NHLE: 1004910). The section of city wall is also grade I listed (1259260).

Number 9 Tower Place, which abuts the southwestern end of the city wall is a grade II* listed building. The wall that runs along the northern edge of Tower Gardens fronting onto Tower Street is curtilage listed at grade II as it forms part of Skeldergate Bridge a grade II listed structure.

1.3 Archaeological and Historical Background

The defences surrounding York have been present in a number of iterations since first constructed around the Roman colonia. The remains of these Roman defences are probably buried in the earthwork embankment for much of the wall circuit. The construction of the stone walls of the city was funded following Royal authorisation in 1226 to raise money for maintenance of the walls through murage taxes on goods brought into the city.

The section of city wall between Davy Tower and Tower Street is constructed of what is likely magnesian limestone ashlar masonry and originally ran from Davy Tower to Castlegate

Postern. In 1243 Franciscan friars established a friary on the left bank of the Ouse between the river and the castle defences and the section of city wall at Tower Gardens formed part of the south-eastern boundary of the friary precinct. The friary was surrendered to the Crown in 1538 as part of the Dissolution.

Tower Gardens is a relatively recent name for the gardens which were previously known as St George's Park (St George's Park being derived from St George's Field and St George's Close names for the area that was common land for the citizens of York).

1.4 Scope of work

The GI interventions subject to archaeological monitoring comprise 3 hand dug trial pits (B15-TP08, B15-TP09 and B15-TP10) that are laid out against the city wall to investigate the deposit sequence at each location and to gather information about the character of the wall itself (method of construction and foundations). The locations of the trial pits are shown on Figure 2.

Some flexibility will need to be maintained in the location of each GI intervention. If significant archaeological remains are encountered, or if burials are found, the option to re-locate a GI intervention will be considered. It may also be necessary to move GI interventions depending on local ground conditions at the time of the investigation.

1.5 Aims and Objectives

The aim of the GI is to investigate ground conditions and structural foundations relating to flood defence features within each flood cell, in order to inform the selection of the preferred flood defence option for each cell. The GI interventions also offer the opportunity to investigate and assess the deposit sequence in Tower Gardens. The objectives of the archaeological monitoring will be as follows:

- To record the character and foundations of the city wall.
- To record the nature and character of the deposit sequence within each trial pit.
- To retrieve dating evidence for deposits where possible.
- To minimise disturbance to significant archaeological remains if encountered or if this is unavoidable to ensure that the remains are investigated and recorded under controlled archaeological manner.
- To assess the extent to which later landscaping associated with the setting out of the gardens has affected the preservation, condition and relative depths of the archaeological strata.

2. Methodology

2.1 Fieldwork procedures

Access to the site will be arranged through the GI Contractor, and the Archaeological Contractor will adhere to the health and safety requirements of the GI Contractor. The Archaeological Contractor will prepare a risk assessment and method statement to be submitted to and approved by the Consultant and the GI Contractor prior to attending the site.

The GI Contractor shall provide a suitable and safe position from which the Archaeological Contractor can effectively view the excavation of the trial pits. If archaeological remains are encountered excavation will cease to allow the remains to be assessed and described. It is not proposed that the Archaeological Contractor will enter deep holes. The Archaeological Contractor shall at all times obey the site rules of the GI Contractor. The GI Contractor will be responsible for identifying the location of services and ensuring it is safe to excavate.

Trial pits will be hand dug by the GI Contractor (dimensions of each hole will typically be 1 x 1 m in plan area to a maximum depth of 1.2 m). The Archaeological Contractor shall ensure that disturbance to archaeological deposits/features is minimised and that the location of any deposits/features is recorded.

The Archaeological Contractor will make every reasonable effort to complete any essential hand investigation and recording works without impacting upon the GI programme.

The Archaeological Contractor will not investigate any area beyond the GI trial pits.

The GI Contractor will need to sample natural geological deposits below the level at which archaeological deposits occur. When the investigations have proceeded beyond the lowest potential archaeological horizon into undisturbed natural strata, the archaeological monitoring for that GI intervention shall be deemed to be complete.

Archaeological recording, where significant archaeological deposits are not present, will consist of:

- limited hand cleaning of sections and surfaces sufficient to establish the stratigraphic sequence exposed;
- the collection of dating evidence from in situ deposits and visual scanning of spoil heaps for dateable artefacts;
- a drawn record at an appropriate scale of representative exposed sections of the trial pits, and plan if appropriate;
- photographs of exposed deposits within the trial pits, with an appropriate scale, and sufficient photographs to establish the setting of the groundworks undertaken; and
- a record of the datum (either AOD or m bgl) levels of the archaeological deposits.

The GI Contractor shall provide the Archaeological Contractor with information regarding the level (above Ordnance Datum) of the top of the ground surface at each hole where archaeological monitoring is required.

The upcast resulting from the investigation of any archaeological remains shall be stored at a safe distance from each trial pit, in accordance with the requirements of the GI Contractor.

Where required, appropriate barrier fencing will be supplied by the GI Contractor to secure the worksite, and at the end of the investigation, the GI Contractor shall be responsible for the backfilling and reinstatement of the each intervention.

The Archaeological Contractor shall record the date, time and duration of all archaeological monitoring site visits until the work is completed.

Archaeological deposits will be hand drawn at a scale of 1:20. Cross-section of features or trial pits will be drawn to a basic scale of 1:10. All drawings will be related to Ordnance Datum.

Where it aids interpretation, structural remains will also be recorded in elevation.

Each context will be described on a pro forma context record sheet in accordance with accepted context record conventions. Each context will be given a unique number. These field records will be checked and indexes compiled.

Photographs of work in progress and post-excavation of individual and groups of features will be taken. This will include general views of entire features and of details such as sections as considered necessary. The primary photographic archive register will comprise 35mm format black and white prints. Digital photography of not less than 10 megapixels will be used in addition to illustrate the report, but will not form the primary site archive. All site photography will adhere to accepted photographic record guidelines.

Areas which do not contain any archaeological deposits will be photographed and recorded as being archaeologically sterile. The natural stratigraphic sequence within these areas will be recorded.

All finds will be collected and handled following the guidance set out in the CIfA guidance for archaeological materials. Finds of particular interest or fragility will be retrieved as Small Finds, and located on plans. Other finds, finds within the topsoil, and dense/discrete deposits of finds will be collected as Bulk Finds, from discrete contexts, bagged by material type. Any dense/discrete deposits will have their limits defined on the appropriate plan.

All artefacts and ecofacts will be appropriately packaged and stored under optimum conditions, as detailed in the RESCUE/UKIC publication First Aid for Finds, and recording systems must be compatible with the recipient museum. All finds that fall within the purview of the Treasure Act (1996) will be reported to HM Coroner according to the procedures outlined in the Act, after discussion with the Consultant, the client and the local authority.

Sampling will be carried out in consultation with the Consultant and the Historic England Regional Science Advisor.

Sampling for environmental and biological material will take place in accordance with the recommendations contained in the papers Environmental Archaeology and Archaeological Evaluations, Association for Environmental Archaeology (1995) and Environmental Archaeology: A Guide to the Theory and Practice of Methods from Sampling and Recovery to Post -Excavation 2nd Edition (English Heritage 2011).

The sampling programme for significant archaeological deposits shall assess the potential for palaeo-environmental remains across the site in support of the aims of the mitigation. Samples shall be taken as routine from securely stratified deposits irrespective of their apparent ‘organic’ content as judged in the field or the presence of datable material.

The sampling regime will include samples of the four types of deposit sample described below:

- Bulk-sieved Sample (BS). Sample size will depend upon the context/feature size, but should be up to 40- 60 litres in size (if the context size allows). They are taken for the recovery of charcoal, burnt seeds, bone and artefacts. The samples will be processed (flotation) on site where possible with 1 mm and 500 micron sieves on a rack to collect

the carbonised washover. The retents and flots will then be dried, sorted and assessed to advise the potential for further analysis.

- General Biological Sample (GBA): These are only taken if a deposit is waterlogged. A 10 litre sample size will be used (if the context size allows). These samples will be processed in the laboratory, to recover macrofossils and microscopic remains such as pollen and insects.
- Column monolith: Kubiena tin samples may be taken for soils and pollen analysis and to determine soil accumulation processes.
- Spot samples: these samples are taken as required. they may be contexts or material not suited to sieving, such as caches of seeds, pieces of eggshell or any specific finds of organic material. They may also be specialist samples (e.g. charcoal for radiocarbon dating).

Samples will be taken for scientific dating where necessary for the development of subsequent mitigation strategies. Material removed from site will be stored in appropriate controlled environments.

If industrial activity of any scale is detected, industrial samples and process residues will also be collected. Separate samples (c. 10ml) will be collected for micro-slags (hammer-scale and spherical droplets) (English Heritage, 2001).

3. Human Remains

In the event of the discovery of human remains work will cease and the Archaeological Contractor will notify the Archaeological Consultant immediately. The Consultant will liaise with the Environment Agency and City of York Archaeologist in order to agree whether the GI intervention will be moved. In the first instance it should be assumed that in the event that human remains are discovered the GI intervention will be moved to avoid disturbing the remains. In this instance, the remains will be left in situ and the GI intervention backfilled. The Consultant will instruct the GI Contractor to relocate the GI intervention.

The Archaeological Contractor shall provide a detailed methodology for excavation and recording of human remains in the event that this becomes unavoidable.

In the event that excavation of human remains is to proceed the Consultant will arrange to contact H.M. Coroner. The removal of human remains will only take place in accordance with a licence obtained from the Ministry of Justice and under the appropriate Environmental Health regulations and the Burial Act 1857.

4. Treasure

Any artefacts which are recovered that fall within the scope of the Treasure Act 1996 and Treasure (Designation) Order 2002 will be reported to the Archaeological Consultant immediately. The Archaeological Consultant will contact H.M. Coroner, and will ensure that the Treasure regulations are enforced and that all the relevant parties are kept informed. A list of finds that have been collected that fall under the Treasure Act and related legislation will be included in the fieldwork report.

5. Completion of Fieldwork

The Archaeological Contractor shall prepare and submit a Completion Statement to the Consultant within one working day of completing the survey.

Work areas will be left in a tidy and workman-like condition and the Archaeological Contractor will ensure that all materials brought onto site are removed.

An OASIS entry shall be completed at the end of the fieldwork, irrespective of whether a formal report is required. The Archaeological Contractor will complete the online form at http://ads.ahds.ac.uk/project/oasis/ within one month following completion of the fieldwork. Archaeological contractors are advised to contact OASIS (oasis@ads.ahds.ac.uk) for technical advice.

6. Reporting

6.1 General

The GI Contractor will supply copies of their exploratory hole logs to the Archaeological Contractor at the earliest opportunity, who will prepare their fieldwork report within four weeks of the completion of GI monitoring. The report will contain as a minimum:

- a non-technical summary;
- a site location drawing;
- the archaeological and historical background;
- the methodology employed;
- the aims and objectives of the investigations;
- the results of the monitoring and a statement of potential for archaeological remains to exist within the area of the city wall;
- a location plan of the GI interventions, including original and relocated positions, accurately positioned on an Ordnance Survey base map (at an appropriate and recognised scale);
- plans, sections and stratigraphic matrix of each trial pit illustrating the sequence of deposits and any noted archaeological features or remains (at an appropriate and recognised scale);
- where appropriate, a list of all finds recovered and recorded, along with the appropriate trial pit number, context and date;
- where appropriate, a complete list of all finds as submitted as Treasure, if applicable;
- where appropriate, an appendix containing specialist assessment reports (artefacts; palaeoenvironmental / geoarchaeological data) or their equivalent;
- where appropriate, an appendix illustrating specific finds and portraits of specific features or structures, as appropriate;
- a stratigraphic matrix for each trial pit, if appropriate;
- an assessment /conclusion and a statement of potential with recommendations for post- excavation analysis and publication, if appropriate;

- where appropriate, a statement of the significance of the results in their local, regional and national context cross-referenced, if appropriate, to research frameworks;
- the current and proposed arrangements for long term conservation and archive storage (including details of the accredited repository), if appropriate;
- digital photographs illustrating the site setting, work in progress and archaeological discoveries.

The draft report will be submitted to the Archaeological Consultant for review. Any comments from the Archaeological Consultant will be addressed and taken into account within a revised final version. The report will then be submitted to the Inspector for Ancient Monuments for Historic England and the Archaeologist for City of York Council for review. Following the incorporation of comments on the report a digital copy of the final report will be provided to the York HER and Historic England.

The copyright of the report and associated images belongs to the Environment Agency

Material copied or cited in reports will be duly acknowledged; all copyright conditions (such as those for Ordnance Survey maps or the National Grid) will be observed.

7. Archiving

The Archaeological Contractor will, prior to the start of fieldwork, liaise with the Yorkshire Museum to obtain agreement in principle to accept the documentary, digital and photographic archive for long-term storage. The Archaeological Contractor will be responsible for identifying at the initial project set-up stage any specific requirements or policies of the museum in respect of the archive (for example, the discard policy for retained finds), and for adhering to those requirements.

Any charges levied by the repository for the long term storage of the archive will be met by the Archaeological Contractor.

All finds and coarse-sieved and flotation samples will have been processed and stored under appropriate conditions. The archive will also contain a site matrix, a summary of key findings and descriptions of artefactual and environmental assemblages. Arrangements should be made for the proper cataloguing and storage of the archive during the project life-cycle.

The archive of finds and records generated during the fieldwork will be removed from site at the end of each day and kept secure at all stages of the project until it is deposited in the agreed repository. The archive will be produced to current national standards (refer to Appendix 1).

Prior to deposition of the archive a retention and discard policy for each category of find or sample will be developed in consultation with appropriate specialists. The Archaeological Contractor will agree the retention and discard policy for the archive with the Consultant and the Yorkshire Museum.

The deposition of the archive forms the final stage of this project. The Archaeological Contractor shall provide Consultant with copies of communication with the accredited repository and written confirmation of the deposition of the archive. The Consultant will deal

with the transfer of ownership and copyright issues and will inform York City Council once the archive has been transferred to the recipient repository.

8. Health and Safety

The works shall be carried out under The Construction (Design & Management) (CDM) Regulations 2015 with the Archaeological Contractor being part of a wider team under the GI Contractor (whilst on-site). Consequently, the GI Contractor's Health & Safety Plan, Health & Safety Policies and Risk Assessments will be adhered to at all times.

The Archaeological Contractor will have their own Health & Safety Policy as required under the Health and Safety at Work etc. Act, 1974. A copy of the Archaeological Contractor's Health & Safety Policy will be submitted to the Archaeological Consultant, who will forward it on to the Employer and the GI Contractor.

The Archaeological Contractor shall prepare a Risk Assessment and Method Statement (RAMS), and a project-specific Health & Safety Plan and submit these to the Archaeological Consultant and GI Contractor for approval prior to starting on site. If appropriate, the Method Statement shall be prepared in association with the GI Contractor, taking account of their Environmental Management Procedures and Health & Safety Plan(s).

The Archaeological Contractor will not be permitted to start on site until the GI Contractor has confirmed that the RAMS and Health & Safty Plan are acceptable for the proposed works. If amendments are required to these reports during the works, the Archaeological Consultant and any other interested party must be provided with the revised document at the earliest opportunity.

The Archaeological Contractor shall follow the instructions of the GI Contractor and will liaise closely with the GI Contractor and comply with their site rules.

All site personnel will familiarise themselves with the following:

- site emergency and evacuation procedures;
- the site's health and safety coordinator;
- the first aider; and
- the location of the nearest hospital and doctor's surgery.

All equipment that is used in the course of the fieldwork must be 'fit for purpose' and be maintained in a sound working condition that complies with all relevant Health and Safety regulations and recommendations.

The RAMS shall include, as appropriate:

- the safe method of working whilst undertaking the archaeological monitoring;
- a resource plan, programme and CVs;
- the Health & Safety Plan and Site-Specific Risk Assessment;
- the Quality Assurance Plan; and
- the procedures for on- and off-site security and Emergency Response Plan (including environmental incidents).

The Archaeological Contractor shall liaise with the GI Contractor and the Consultant to ensure that the archaeological work is undertaken in an organised and professional manner.

All parties shall have full regard for the safety of all personnel on site, including measures to ensure the safety of all.

The GI Contractor shall supply welfare facilities for the archaeologist(s) to make use of as needed.

9. Fieldwork Resources and Limitations

9.1 Resources and timetable

The GI Contractor shall provide the Archaeological Contractor with a timetable for the ground investigations prior to the start of the investigations, and shall provide sufficient notification of the start of each trial pit to allow the Archaeological Contractor time to mobilise.

The site archaeologist will be a suitably qualified and experienced in the deep stratigraphic nature of York's archaeological deposits. The site archaeologist will hold an appropriate valid CSCS card.

The appointed GI contractor will provide all necessary resources for the safe excavation of the trial pits.

The GI Contractor will be required to facilitate the Archaeological Contractor to carry out the programme of archaeological monitoring during the investigation period by:

- programming the Ground Investigation to include the Archaeological Contractor's requirements for carrying out the programme of archaeological monitoring;
- protecting revealed or discovered archaeological remains to be left in situ to the satisfaction of the Archaeological Contractor. The GI Contractor shall be responsible for providing any protective covering (such as geotextile) as specified by the Archaeological Contractor. The GI Contractor shall be responsible for protecting any archaeological features exposed during the works under the direction of the Archaeological Contractor.

The GI Contractor will agree the following with the Consultant and the Archaeological Contractor:

- a programme to ensure that the GI works are carried out under the supervision of the Archaeological Contractor;
- a Method Statement describing how the GI works will be undertaken;
- arrangements to allow the Archaeological Contractor sufficient time to examine, record and remove, if necessary, the revealed and discovered archaeological remains; and
- arrangements to protect archaeological remains to be left in situ.

10. Confidentiality and Publicity

The archaeological works may attract the interest of the public and the press. All communication regarding this project is to be directed through the Consultant. The Archaeological Contractor will refer all inquiries to the Consultant without making any unauthorised statements or comments.

The Archaeological Contractor will not disseminate information or images associated with the project for publicity or information purposes without the prior written consent of the Consultant and the Environment Agency.

11. Access Arrangements

Access to the site is restricted to authorised personnel only.

Access for the archaeological monitoring will be arranged and organised through the GI Contractor.

The location of welfare facilities, site offices and first aiders, will be communicated to the on-site archaeologist by the GI Contractor on first arrival on site, through site induction procedures.

12. General Provisions

The Archaeological Contractor will undertake the works according to this WSI and any subsequent written variations. No variation from or changes to the WSI will otherwise occur.

All communications on archaeological matters will be directed through the Archaeological Consultant.

The Archaeological Contractor shall make the minimum of disturbance during the survey and will avoid any unnecessary damage.

13. References

Nuttgens, Patrick (ed) 2007, *The History of York*

Savine, B. and Milsted, I. 2016. A*rchaeological Investigations at the Former Fire Station, Clifford Street, York,* York Archaeological Trust Report Number 2016/19 unpublished.

Tillott, P.M. (Ed), 1961, *A History of Yorkshire: The City of York*, Victoria County History

Appendix 1

Relevant Legislation, and Standards and Guidance

Ancient Monuments and Archaeological Areas Act (1979) (as amended). 1979 c. 46. http://www.legislation.gov.uk/ukpga/1979/46

Burial Act 1857. 1857 c. 81 http://www.legislation.gov.uk/ukpga/Vict/20-21/81/contents

Dealing with Cultural Objects (Offences) Act 2003. 2003 c. 27. http://www.legislation.gov.uk/ukpga/2003/27/contents

The Construction (Design and Management) Regulations 2015. 2015 No. 51. http://www.legislation.gov.uk/uksi/2015/51/contents/made

AAF 2007 Archaeological Archives. A guide to best practice in creation, compilation, transfer and curation. Archaeological Archives Forum

AEA, 1995, Environmental Archaeology and Archaeological Evaluations. Recommendations concerning the environmental archaeology component of archaeological evaluations in England. Working Papers of the Association for Environmental Archaeology No 2

AML 1994 A Strategy for the Care and Investigation of Finds. Ancient Monuments Laboratory, English Heritage

Brown, A and Perrin, K 2000 A Model for the Description of Archaeological Archives. Information Management & Collections. English Heritage Centre for Archaeology/Institute of Field Archaeologists, Reading http://www.eng-h.gov.uk/archives/archdesc.pdf

Brown, DH 2011 Safeguarding Archaeological Information. Procedures for minimising risk to undeposited archaeological archives. English Heritage https://www.historicengland.org.uk/images- books/publications/safeguarding-archaeological-information/

Brown, DH 2011 Archaeological Archives: A guide to best practice in creation, compilation, transfer and curation. 2nd edition. Institute of Field Archaeologists/Archaeological Archives Forum (Reading) http://www.archaeologyuk.org/archives/aaf_archaeological_archives_2011.pdf

CIfA 2014 Code of Conduct. Chartered Institute for Archaeologists, Reading, December 2014 http://www.archaeologists.net/sites/default/files/node-files/CodesofConduct.pdf

CIfA 2014 Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives. Chartered Institute for Archaeologists, Reading, December 2014 http://www.archaeologists.net/sites/default/files/node-files/CIFAS&GArchives_0.pdf

CIfA 2014 Standard and guidance for the collection, documentation, conservation and research of archaeological materials. Chartered Institute for Archaeologists, Reading, December 2014 http://www.archaeologists.net/sites/default/files/node-files/CIfAS&GFinds.pdf

CIfA 2014 Standard and guidance for commissioning work on, or providing consultancy advice on, archaeology and the historic environment. Chartered Institute for Archaeologists, Reading, December 2014 http://www.archaeologists.net/sites/default/files/node-files/CIfAS&GCommissioning.pdf

CIfA 2014 Standard and guidance. Archaeological watching brief. Chartered Institute for Archaeologists, Reading, December 2014 http://www.archaeologists.net/sites/default/files/node- files/CIfAS&GWatchingbrief.pdf

CIfA 2014 Standard and guidance. Appendices. Chartered Institute for Archaeologists, Reading, December 2014 http://www.archaeologists.net/sites/default/files/node-files/CIfAS&GAppendices.pdf

DCMS 2008 Treasure Act 1996 Code of Practice (2nd Revision) England and Wales. https://www.gov.uk/government/publications/treasure-act-1996-code-of-practice-2nd-revision-england- and-wales

English Heritage 1995 A Strategy for the Care and Investigation of Finds. English Heritage Ancient Monuments Laboratory, London

English Heritage 2011 Environmental Archaeology: A guide to the theory and practice of methods, from sampling and recovery to post-excavation. Second edition. English Heritage Centre for Archaeology Guidelines, London https://www.historicengland.org.uk/images-books/publications/environmental- archaeology-2nd/

English Heritage 2012 MIDAS: the UK Historic Environment Data Standard Version 1.1. Best practice guidelines. Forum on Information Standards in Heritage (FISH) http://heritage-standards.org.uk/wp- content/uploads/2015/10/MIDAS_Heritage_2012_update-_v5.doc

FAME 2006 Health and Safety in Field Archaeology Manual. Federation of Archaeological Managers and Employers

Ferguson, L and Murray, D 1997 Archaeological Documentary Archives. IFA Professional Practice Paper 1, Institute of Field Archaeologists, Reading

Historic England 2015 Geoarchaeology. Using earth sciences to understand the archaeological record. English Heritage, London https://historicengland.org.uk/images-books/publications/geoarchaeology- earth-sciences-to-understand-archaeological-record/

Historic England 2016 Preserving Archaeological Remains: Decision-taking for sites under development. Historic England, London https://historicengland.org.uk/images-books/publications/gpa2-managing- significance-in-decision-taking/

Owen, J 1995 Towards an Accessible Archaeological Archive. The Transfer of archaeological archives to museums. Guidelines for use in England, Northern Ireland, Scotland and Wales. Society of Museum Archaeologists http://www.socmusarch.org.uk/docs/towardsaccessiblearchive.pdf

SMA 1997 Selection, Retention, Dispersal of Archaeological Finds. Guidelines for use in England, Wales and Northern Ireland (Revised). Society of Museum Archaeologists http://www.socmusarch.org.uk/docs/selectionretentiondispersalofcollections1.pdf

UKIC 1983 Packaging and Storage of Freshly Excavated Artefacts from Archaeological Sites. (United Kingdom Institute for Conservation, Conservation Guidelines No 2)

UKIC 1984 Environmental Standards for Permanent Storage of Excavated material from Archaeological Sites. (United Kingdom Institute for Conservation, Conservation Guidelines No 3)

UKIC 1990 Guidance for Conservation Practice. United Kingdom Institute for Conservation

UKIC 1990 Guidelines for the Preparation of Excavation Archives for Long-term Storage. United Kingdom Institute for Conservation Archaeology Section

UKIC 2001 Excavated Artefacts and Conservation. (United Kingdom Institute for Conservation, Conservation Guidelines No 1, revised)

Watkinson, DE and Neal, V 2001 First Aid for Finds. RESCUE/United Kingdom Institute for Conservation

Appendix 2

Scheduled Monument and Listed Building listing descriptions

Historic England

City Walls, gates, posterns (not including the section from Bootham Bar to Monk Bar, N of the Minster, now part of National Monument No 13280), moats, mounds, Bayle (or Baile) Hill, St Leonard's Hospital and Merchant Taylor's Hall, Aldwark

List Entry Summary

This monument is scheduled under the Ancient Monuments and Archaeological Areas Act 1979 as amended as it appears to the Secretary of State to be of national importance. This entry is a copy, the original is held by the Department for Culture, Media and Sport.

Name: City Walls, gates, posterns (not including the section from Bootham Bar to Monk Bar, N of the Minster, now part of National Monument No 13280), moats, mounds, Bayle (or Baile) Hill, St Leonard's Hospital and Merchant Taylor's Hall, Aldwark

List entry Number: 1004910

Location

Not currently available for this entry.

The monument may lie within the boundary of more than one authority.

County:

District: York

District Type: Unitary Authority

Parish:

National Park: Not applicable to this List entry. Grade: Not applicable to this List entry.

CITY WALLS ATTACHED TO TOWER PLACE

List Entry Summary

This building is listed under the Planning (Listed Buildings and Conservation Areas) Act 1990 as amended for its special architectural or historic interest.

Name: CITY WALLS ATTACHED TO TOWER PLACE

List entry Number: 1259260 Location

CITY WALLS ATTACHED TO TOWER PLACE, CITY WALLS

The building may lie within the boundary of more than one authority.

County:

District: York

District Type: Unitary Authority

Parish:

National Park: Not applicable to this List entry. Grade: I

Date first listed: 24-Jun-1983

Date of most recent amendment: 14-Mar-1997

Legacy System Information

The contents of this record have been generated from a legacy data system.

Legacy System: LBS

UID: 463063

Asset Groupings

This list entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

List entry Description

Summary of Building

Legacy Record - This information may be included in the List Entry Details.

Reasons for Designation

Legacy Record - This information may be included in the List Entry Details.

History

Legacy Record - This information may be included in the List Entry Details.

Details

YORK

SE6051SW CITY WALLS 1112-1/21/6 City Wall attached to Tower Place 24/06/83 (Formerly Listed as: TOWER PLACE Wall to south of footpath running from No.9 to Tower Street)

GV I

Defensive wall attached to No.9 Tower Place (qv), extending approximately 60 metres north-east, now forming southern boundary to Tower Place. Probably late C13. Magnesian limestone ashlar.

Approximately 2 to 3 metres high with embattled parapet. Cruciform arrow slit towards No.9 (Davy Tower), and head of weathered buttress adjacent to No.2 Tower Place (qv). On inner side of wall a narrow length of original wallwalk survives behind the parapet. Wall ran originally from Davy Tower on the river bank to Castlegate Postern, demolished in 1826. (An Inventory of the Historical Monuments in the City of York: The Defences: HMSO: 1972-: 158).

Listing NGR: SE6040351412

APPENDIX 4 – THE CERAMIC BUILDING MATERIAL

BY J. M. MCCOMISH

June 2018

INTRODUCTION

This assessment relates to 825g of ceramic building material (CBM) recovered from archaeological boreholes on flood defence works (York Archaeological Trust project code 6008). The CBM ranged in date from Roman to medieval.

METHODOLOGY

The collection was recorded to a standard YAT methodology (McComish 2014) whereby each sherd is individually recorded on a pro-forma sheet which details the project code, the context number, the weight in grams, the fabric type, the surviving complete dimensions (length, width, thickness, flange height) and any other relevant information (surface marks, glazes, unusual features etc.). A question mark is placed after the form name if the identification is uncertain, for example 'Imbrex?', while the form of non-standardised sherds is listed as 'Other'. The fabric is determined by comparing the sherd to a York fabric reference collection held by York Archaeological Trust (YAT). The data is stored on YATs internal computer system (IADB) under the project code 6008.

Because IADB does not allow entry of context numbers containing decimal points context 15.8004 was entered as 158004 and 15.11007 was entered as 1511007.

RESULTS

The various forms present are summarised in relation to context on Table 3. There was one sherd of Roman brick. The medieval material was a roofing tile of 13th-16th century date comprising a sherd of plain roof tile. All of the forms, fabrics and of dimensions recorded are typical for CBM in York as a whole.

SUMMARY AND RECOMMENDATIONS

The collection of CBM has no potential for further research, mainly being of use to provide dating evidence for the various contexts seen. No further work is recommended. None of the material was worthy of museum display or retention.

Context	Dating	Forms present
15.8004	1st to 4th century	Rbrick
15.11007	13th to 16th century	Plain

Table 3 CBM in relation to context

APPENDIX 5 – THE ANIMAL BONE

BY NIENKE VAN DOORN

INTRODUCTION

Bore holes on the York FRMP SI Works site have produced a small assemblage of hand collected animal bone. These animal bones were recovered from two contexts. This assemblage has been rapidly assessed focussing primarily on the range of animal taxa present.

METHODOLOGY

The faunal remains were examined and recorded with guidance from Dobney et al. (1999) and O'Connor (2008). Evidence of butchery, gnawing, burning or post depositional damage was recorded where present, with reference to Shipman et al. (1984) and Stiner et al. (1995).

Identification of species was completed using published identification guides (Pales & Lambert 1971). Wherever identification to species could not be achieved, bone fragments were classified using the following categories; unidentified mammal, unidentified bird, or unidentified fish. Mammalian fragments that retained characteristics that enabled estimation of the size of the animal were assigned to one or more of the following categories: large mammal (the size of horse/cow/large cervid [i.e. deer]), medium mammal 1 (the size of sheep/goat/pig/small cervid), medium mammal 2 (the size of dog/cat/hare), small mammal (the size of rodents, mustelidae (badger/otter/polecat family) etc). Very small bone scraps (usually smaller than 10mm) were recorded as unidentifiable and only counted approximately.

DISCUSSION

The results are outlined in table 4.

CONTEXT	QUANTITY AND DESCRIPTION	TAPHONOMY
8004 C.3.7m BGL	3 small fragments of medium (1) mammalian bone (vertebra)	Medium colour, fair preservation
BH18 C.5-6m BGL	4 fragments of large mammalian bone, likely cattle femoral heads, femoral shaft and a pelvis fragment.	Very dark colour, vivianite staining. Fair condition

Table 4 Animal Bone

CONCLUSION

The animal bone recovered from York FRMP SI Works contained mostly mammalian bone, and consists of domestic taxa such as cattle and sheep.

Most of the assemblage seems to be consistent with undifferentiated domestic refuse. The preservation of the bones was overall fair, but no complete elements were present. Some bones were heavily stained with vivianite, a hydrated form of iron phosphate. Similar stains, as well as the dark, shiny appearance of the bone from these deposits, have previously been found on bones associated with anoxic conditions in the soil (O'Connor, 1988).

RECOMMENDATIONS FOR FURTHER RESEARCH

The collection of animal bone has limited potential for further research. The animal bone does not reflect any specific activity taking place on the site and while in a fair condition, all elements are incomplete or fragmented.

RECOMMENDATIONS FOR RETENTION/DISCARD

It is recommended that the animal bone collection is discarded after recording according to museum disposal guidelines.

REFERENCES

Dobney, K., Jacques, D.S., Johnstone, C.J. (1999) Protocol for recording vertebrate assemblages, *Reports from the Environmental archaeology Unit, York*, 99, 15, p. 1–12.

O'Connor, T.P. (1988). Bones from the General Accident Site, Tanner Row. In: P.V. Addyman (Ed.), *The Archaeology of York*. York Archaeological Trust, AY 15/2, p.73.

O'Connor, T. (2008). *The Archaeology of Animal Bones* Texas; Texas A&M University Press

Shipman, P., Foster, G., Schoeninger, M. J. 1984. 'Burnt bones and teeth: an experimental study of colour, morphology, crystal structure and shrinkage', *Journal of Archaeological Science* 11, pp. 307-325.

Stiner, M. C.; Kuhn,S. L.; Weiner, S.; Bar-Yosef, O. 1995. 'Differential burning, recrystallisation, and fragmentation of archaeological bone', *Journal of Archaeological Science* 22, pp.223-227.

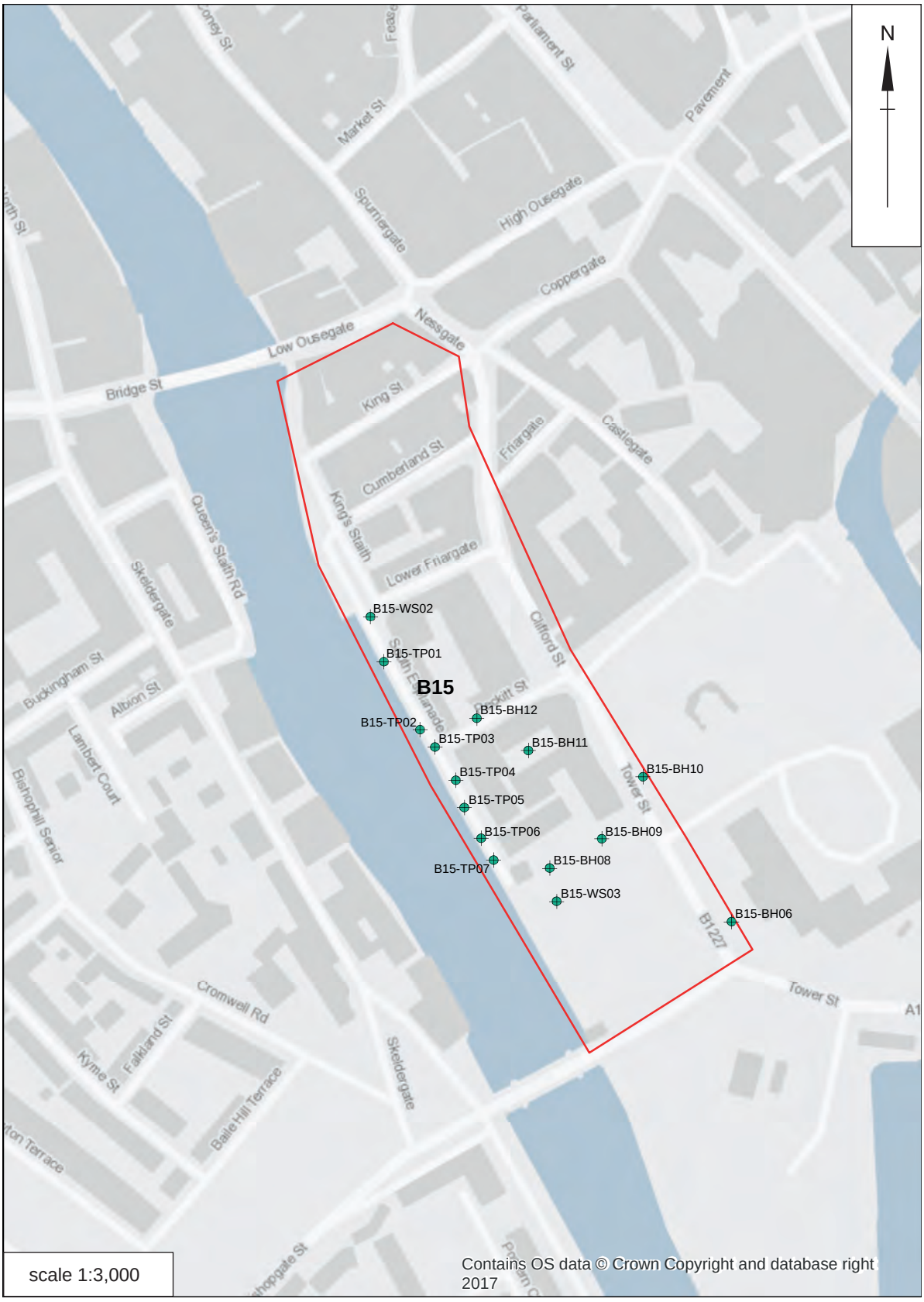

Fig. 1 Original Intervention Locations

Fig. 2 Location of Monitored Interventions

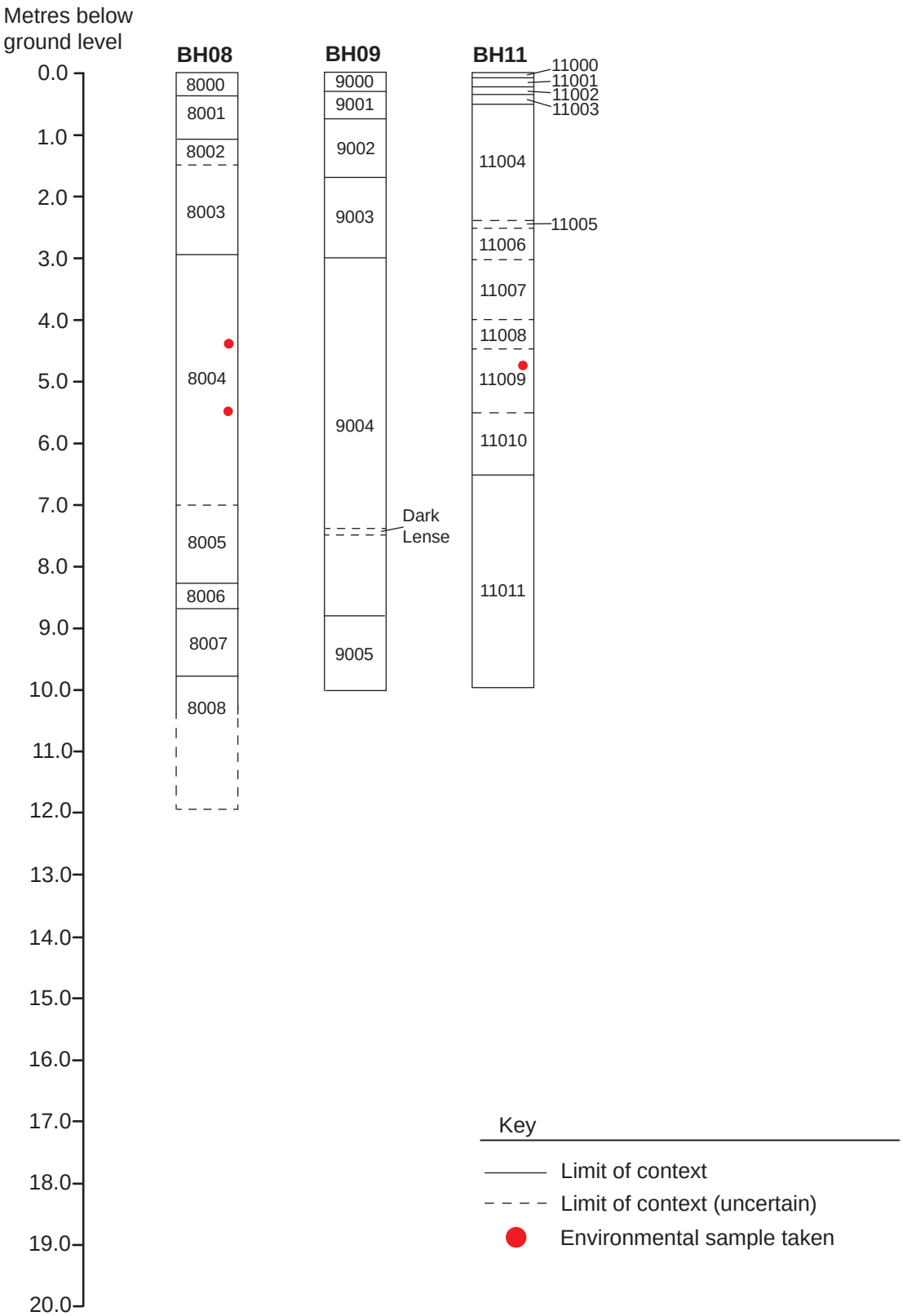

Fig. 3 CP Borehole Profiles

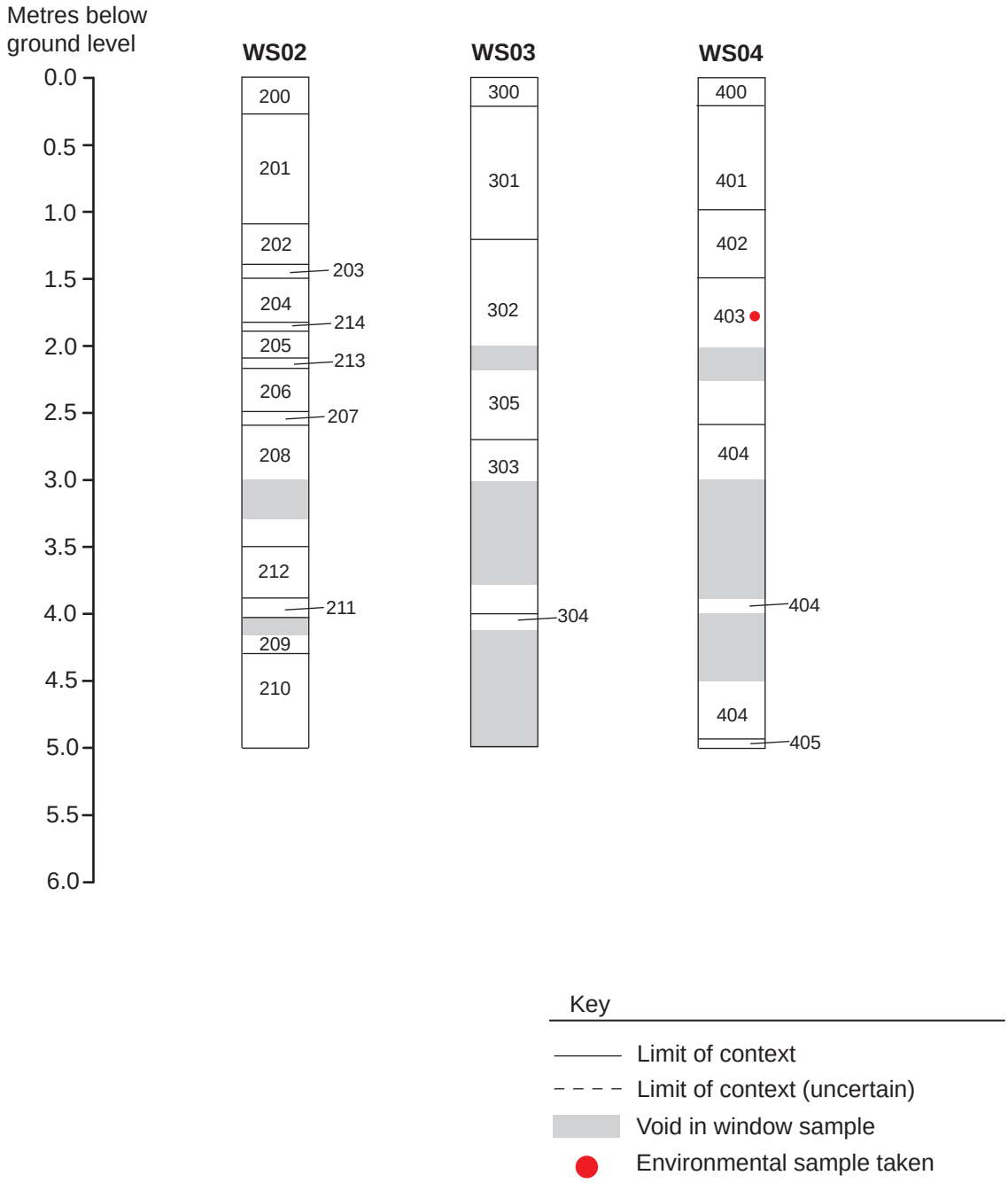

Fig. 4 WS Borehole Profiles

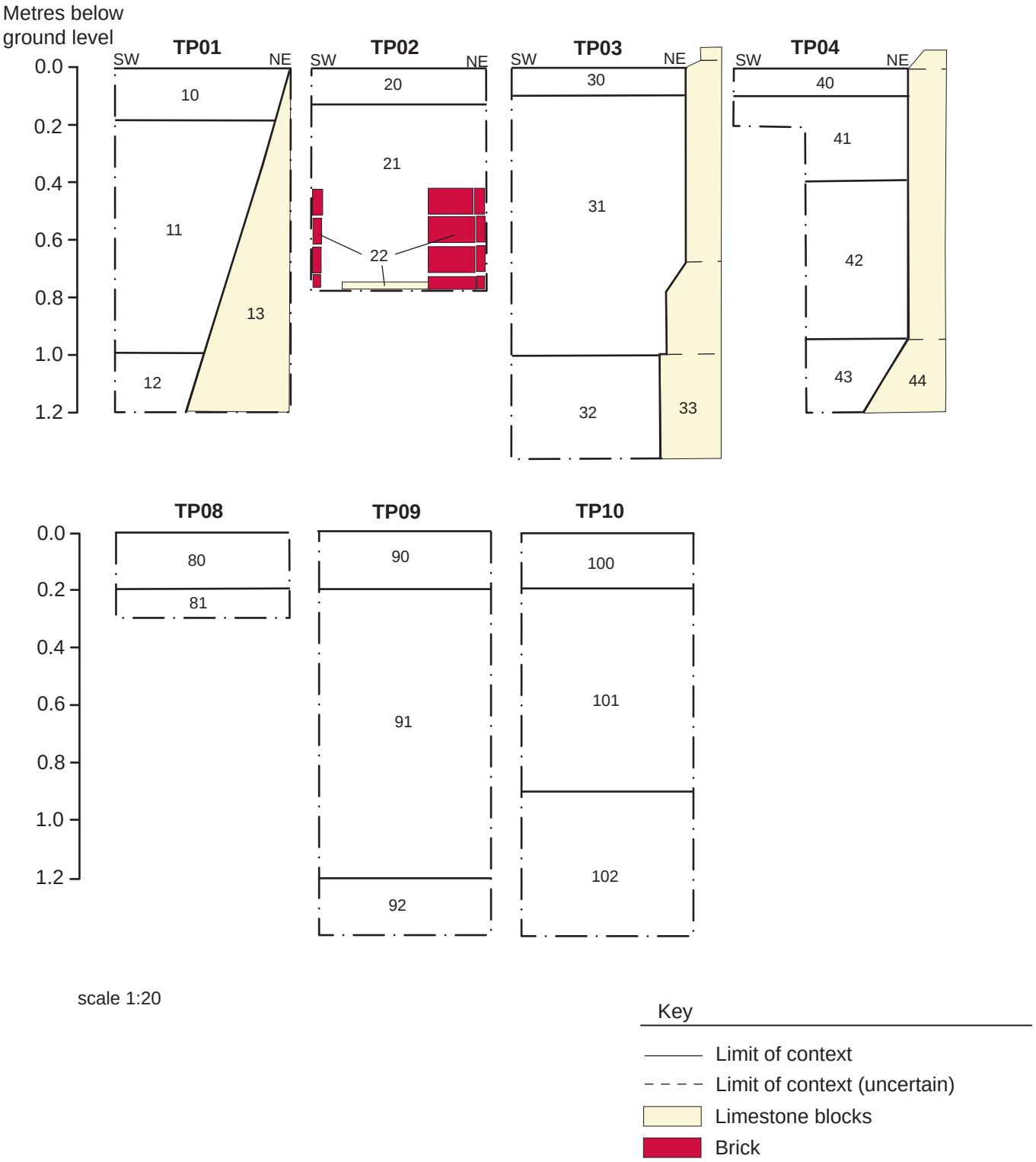

Fig. 5 Trial Pit Sections

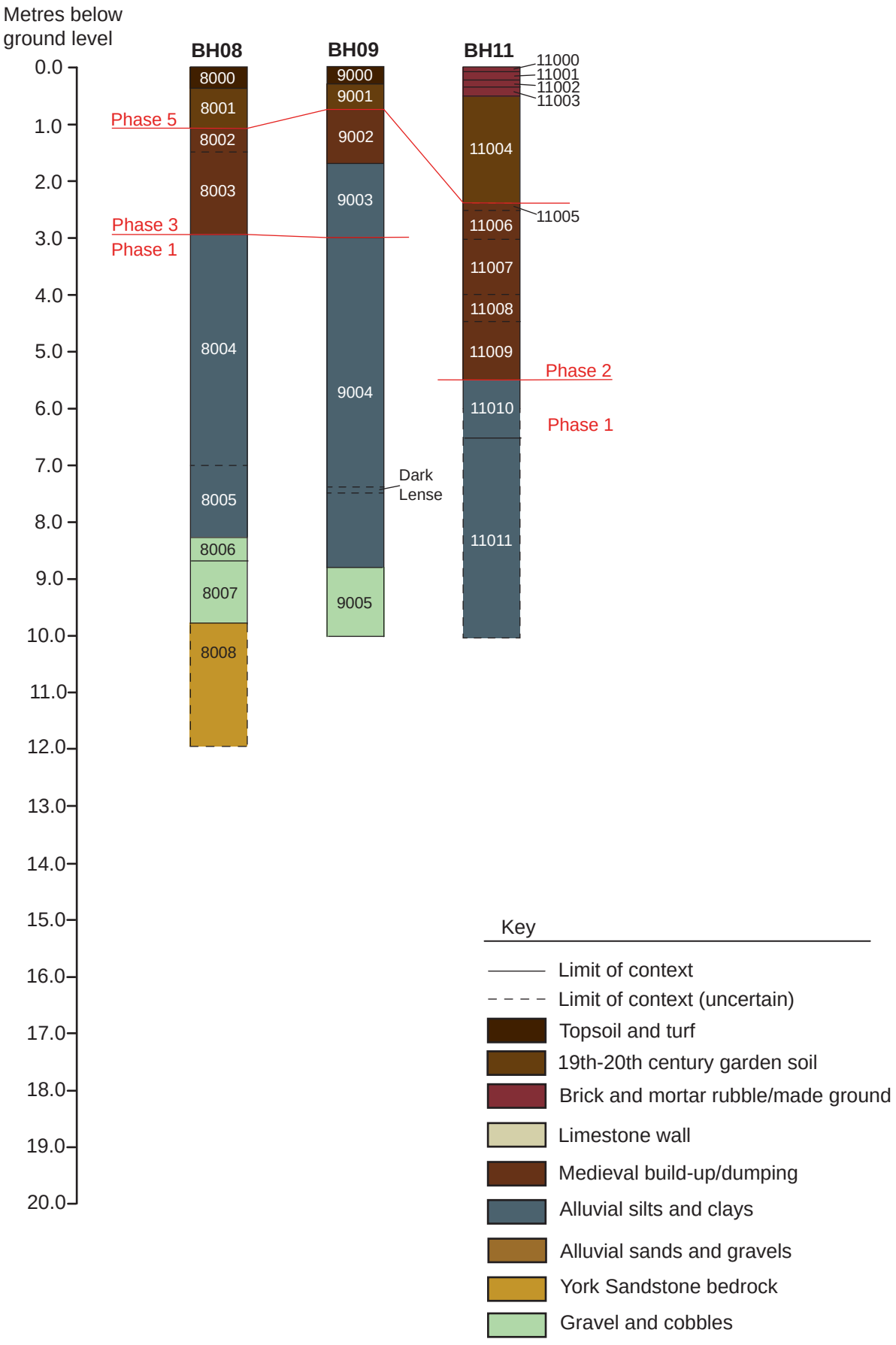

Fig. 6 CP Borehole Deposit Model

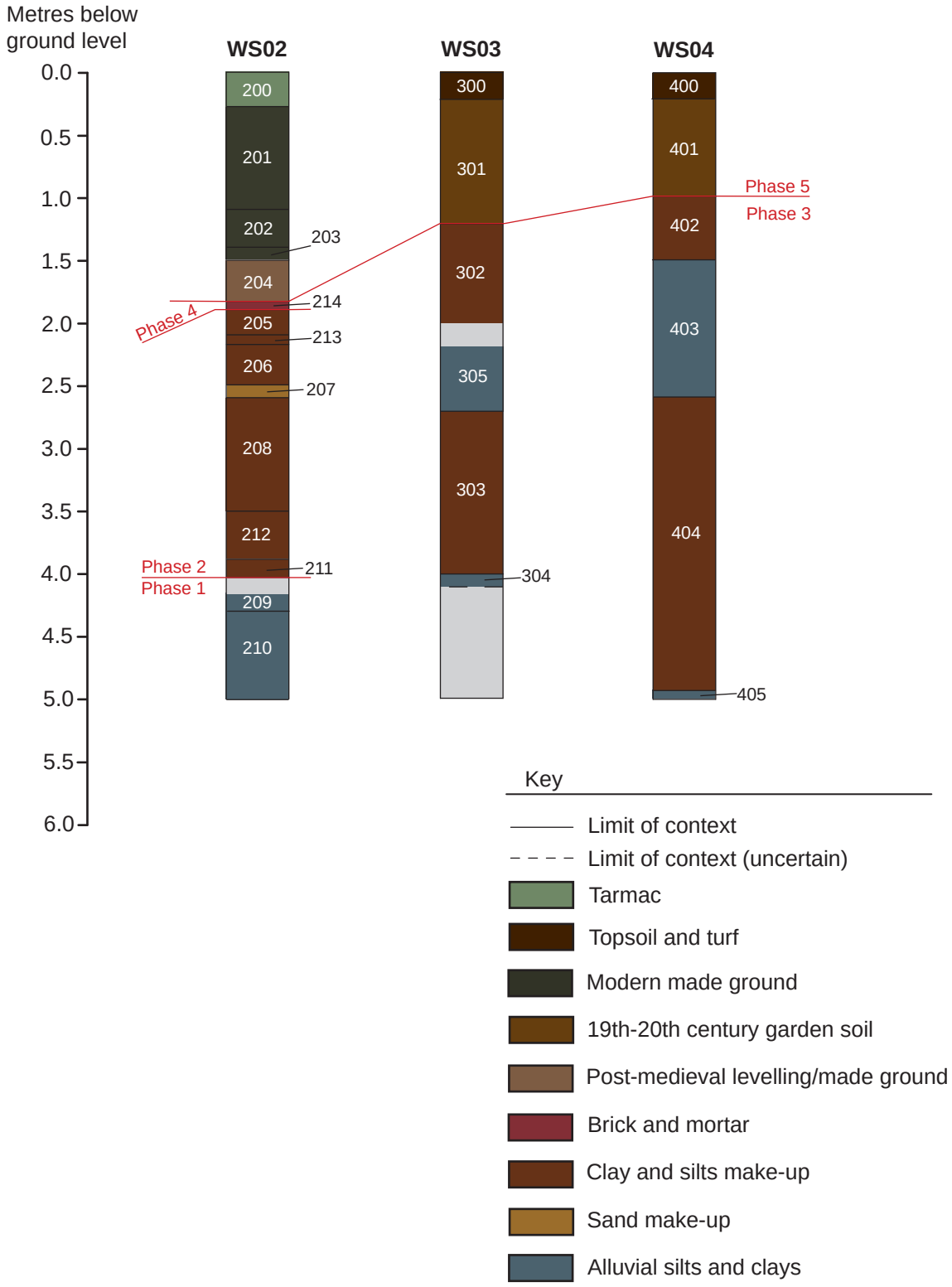

Fig. 7 WS Borehole Deposit Model

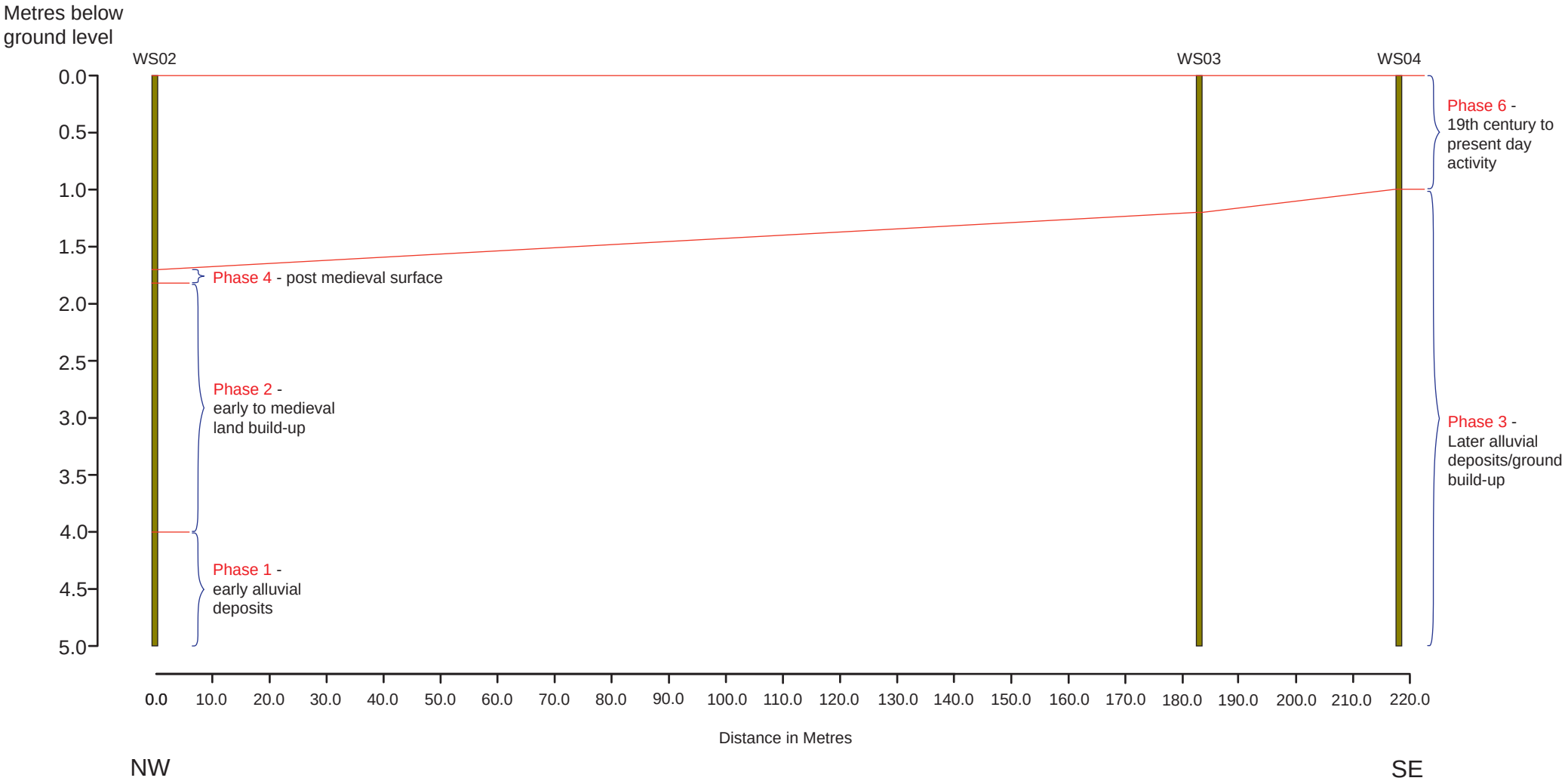

Fig. 8 WS Deposit model, northwest to southeast transect

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