

CRYSTAL PALACE PARK
Crystal Palace Parade
London
SE19
London Borough of Bromley

An archaeological evaluation report

August 2007



MUSEUM OF LONDON

Archaeology Service

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Site Code: CYT07
National Grid Reference: 534000 171000

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Summary (non-technical)

This report presents the results of an archaeological evaluation carried out at Crystal Palace Park, Crystal Palace Parade, London, SE19 by the Museum of London Archaeology Service, commissioned by the London Development Agency.

Following the recommendations of The Morton Partnership and Waterman Environmental, a programme of evaluation pits/trenches were excavated on the site. Ten test pits and two larger evaluation trenches were excavated archaeologically in order to ascertain sub-surface survival pertaining to the Crystal Palace and the features on the surrounding terraces. A further seven test pits were dug for environmental sampling, but monitored and recorded archaeologically.

Within the area of the Crystal Palace, brick walls and other structural features were found to survive at levels varying between 0.7m and 6m below modern ground level. These include the truncated bases of the cast iron columns which supported the building, walls and a surface associated with Paxton's Tunnel, the base of the southern nave fountain with associated electricity and water supplies, and internal and external wall foundations. Associated with these structures were deposits of debris from the fire which destroyed the Palace in 1936, marble mouldings from the fountain, stucco mouldings, and other building materials and artefacts. The remains of the Palace were covered in often deep deposits of imported modern rubble, from the use of the site for landfill after the fire.

On the Lower Terrace, it was found that the fountains and their basin structures had been removed, leaving an underlying control room with associated pipework, a few redeposited pieces of the structures, and organic silts from the basins. These were sealed beneath c 1.2–1.9m of modern landscaping. Similarly the structures of the stone stairs had been removed leaving partially damaged brick supporting walls.

The evaluation has demonstrated that within the area of the Palace (including the North Wing and the South Water Tower), there is a high potential for structural remains, many of which are at least moderately well-preserved. These structures have considerable potential to add to our detailed understanding of the construction and configuration of the Palace. The Lower Terrace appears to have been disturbed to a significant extent, reducing the potential for the features and layouts of the former sunken gardens, fountains, and other landscaping. However, this has not been confirmed archaeologically for the areas outside the two fountain basins and four stair locations evaluated.

The report concludes that overall, the remains of the Crystal Palace and Park are of high (national/international) importance, therefore the preferred option for mitigation strategy remains preservation in situ. Only where this is not achievable (or the survival quality of individual remains is poor) should the alternative mitigation strategy of preservation by record be employed.

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1 Introduction

1.1 Site background

The archaeological evaluation (field trial work) took place at the western end of Crystal Palace Park ('the site'). It is bounded by Crystal Palace Parade to the west, Anerley Hill to the south, and other parts of the Park and the National Sports Centre to the north and east (*Fig 1*). The Ordnance Survey National Grid Reference for the approximate site centre is 534000 171000. The site occupies a steep slope and fieldwork took place on ground ranging in height from 108m OD down to 83m OD. The site code is CYT07.

The site is subject to development proposals by the London Development agency (*LDA*). An Environmental Impact Assessment (*EIA*) has been carried out, leading to production of an Environmental Statement (*ES*). The Museum of London Archaeology Service (*MoLAS*) has provided supporting specialist technical studies addressing the archaeological implications (*MoLAS 2004, MoLAS 2007a*). These studies contain more detailed information on the archaeological and historical background to the site, particularly the history and layout of the Crystal Palace and its grounds.

From the archaeological desk studies, the LDA's landscape and conservation consultants have identified areas where further site-based information on archaeological survival is required. These areas have been subject to archaeological field evaluation via exploratory test pits and trenches, carried out as part of a geotechnical exercise coordinated by the consulting engineers Waterman Environmental.

1.2 Planning and legislative framework

The framework within which the archaeological exercise took place has been summarised in the *EIA* and *ES*, and *MoLAS 2007b*.

1.3 Origin and scope of the report

This report was commissioned from MoLAS by the London Development Agency and has been prepared to the relevant professional standards of the Institute of Field Archaeologists (*IFA, 2001*).

The main purpose of the field evaluation was to clarify key buried structural remains of the Palace and its grounds. These are elements that may potentially be affected by the development proposals. This data will then be fed into the planning and detailed development design process, so that any impacts on the buried built heritage may be avoided or minimised. Under government guidelines (*DoE 1990*) the preferred option for mitigating development impacts on significant archaeological remains is changes to detailed designs, so that remains may be permanently retained and safeguarded (*preservation in situ*). Where this

is not feasible, mitigation via archaeological excavation may be carried out (*preservation by record*). The archaeological field evaluation is initial exploratory trial work only and does not constitute *preservation by record*.

1.4 Aims and objectives

The following general site research aims were established for the evaluation (*MoLAS 2007b*):

- What is the nature and level of natural topography?
- What are the earliest deposits identified? In particular, is there any evidence of activity pre-dating the construction of the Crystal Palace?
- What is the level of survival of elements of the Crystal Palace itself (the North Transept, the Paxton Tunnel and the North and South Wings)? Is there associated artefactual material?
- What was the configuration and structure of the (now removed) access steps from Upper to Lower Terrace and from Lower Terrace to the Park?
- What typically survives of the fountains on the Lower Terrace?
- What was the structural configuration of the southern and northern ends of the Lower Terrace?
- What were the effects of landscaping subsequent to the destruction of the Palace in 1936?

For the specific objectives of each test pit or trench see section 2.2 below:

2 The evaluation

2.1 Methodology

The archaeological evaluation was carried out to a design approved by English Heritage (*MoLAS 2007b*) and to the recording standards specified in the Archaeological Site Manual (*Museum of London, 1994*). Field evaluation is designed to clarify the layout, nature, survival quality and hence significance of buried remains for forward planning purposes. Any significant surviving remains that may merit *preservation in situ* are not archaeologically excavated, or removed, at this stage (pending agreement of a suitable mitigation strategy). The evaluation was carried out by means of test pits and trial trenches.

The archaeological evaluation was carried out as part of a geotechnical exercise being coordinated by Waterman Environmental. In total nineteen separate exploratory interventions were made across the site. The first seven were environmental pits to test for ground conditions (TP102–107 & TP112). These were not shored and so it was not possible to enter them to carry out close archaeological inspection and investigation by hand. Nevertheless, they were monitored and recorded by MoLAS under a Watching Brief and provided useful additional information. A further ten test pits and two trenches were designed with specifically archaeological objectives (*NB: these do not have consecutive numbering. They are TP1–4, TP7–9, TP11–13, Tr 1A & Tr 1B: see Fig 2*).

The remains of the Palace are the former basement level, now buried beneath substantial infill deposits of modern rubble (up to 6m deep). The infill was removed by machine (under archaeological supervision) to uncover any intact remains which were then exposed, cleaned, and recorded by hand, by MoLAS archaeologists. The walls and other structural features exposed have not been removed, but after recording were reburied *in situ*.

The topography of the site had been surveyed previously by Warner Land Surveys Ltd.¹ Their stations, on Ordnance Survey co-ordinates, were used for early stages of trench setting out by MoLAS surveyors. A combination of GPS (Trimble 5800 rover receivers with TSCE 5700 datalogger) linked to a fixed base station at our offices and an optical total station instrument (Leica TCR805 Reflectorless EDM) was used to set out trenches and test pits as well as locating the same as excavated. Selected cardinal points on features and deposits within some of the trenches and test pits were recorded in three dimensions, using the GPS. The digitally captured elements have been used to produce figures. AutoCAD Release 2005 was used as the main CAD drafting package, and as an accessible intermediary environment between survey software and presentation graphics environments. This information was then plotted on to the Ordnance Survey grid.

¹ Warner Land Surveys Ltd, Crystal Palace, London, Topographical Survey, job no T04/0158, DWG no T04/0158/P/0001 Rev 3, October 2005.

Levels above Ordnance Datum were calculated from the Bench Mark on Crystal Palace Parade, which has a value of 106.79m OD.

A written and drawn record of all archaeological deposits encountered was made in accordance with the principles set out in the site recording manual (*MoL, 1994*).

The site records will eventually be deposited under the site code CYT07 in the London Archaeological Archive and Resource Centre (LAARC). Finds are currently stored by MoLAS: the approved receiving body for long term archive and curation has yet to be determined.

2.2 Results of the evaluation

For test pit and trench locations see Fig 2.

Numbers in square brackets are context numbers, assigned to basic units of archaeological stratigraphy (e.g. individual layers, deposits, or structural elements).

Numbers prefixed with CP are references to cultural heritage sites/features in the gazetteer which forms Volume II of the Cultural Heritage Assessment (MoLAS, 2004).

2.2.1 Watching Brief on geotechnical test pits

The following seven test pits were excavated by Waterman Environmental in order to examine and sample sub-surface deposits of the site as part of a ground investigation survey. Archaeological measurements and descriptions were recorded by MoLAS archaeologists. The tables below summarise key levels and in the explanatory text the pits are described from the earliest/lowest deposit upwards.

2.2.1.1 Test Pit 102

Location	Centre of the main palace building
Dimensions	1m by 3m by 2.8m deep
Modern ground level	108.29m OD
Base of modern fill	Not revealed
Depth of archaeological deposits seen	Not revealed
Highest archaeological survival	none
Level of base of trench	105.49m OD
Natural observed	Not revealed

The test pit was located within the footprint of the former Crystal Palace. It did not reach natural geology, and the lowest deposit revealed was a 2.5m thick deposit of demolition rubble [3] which was not completely removed. Above this was a recent 0.15m thick surface of compacted concrete and gravel [2] that directly underlay the 0.15m thick topsoil and turf that formed the modern ground surface.

Although not archaeologically investigated, the interpretation of these contexts is that the pit was entirely within the modern infill of the Palace basements, which are more than 2.8m deep at this point. The demolition rubble [3] represents imported material dumped over the site of the Palace following the fire of 1936.

2.2.1.2 Test Pit 103

Fig 3

Location	Centre of the main palace building
Dimensions	1m by 3m by 2.7m deep
Modern ground level	107.95m OD
Base of modern fill	105.75m OD
Depth of archaeological deposits seen	0.4m deep (wall >1.0m high)
Highest archaeological survival	Top of wall at 106.25m OD
Level of base of trench	105.25m OD
Natural observed	105.35m OD

The test pit was located within the footprint of the former Crystal Palace. What appeared to be natural sandy clay [18] was revealed at 105.35m OD. Overlying this was a 0.40m thick destruction deposit characterised by burnt debris [30]. Above this was a 1.8m thick deposit [16] of demolition rubble which underlay the surface deposit [15] comprising modern waste. At the southern end of the test pit was an east–west brick wall [17] surviving to 106.25m OD.

Although not archaeologically investigated, the interpretation of these contexts is that wall [17] – surviving at *c* 1.70m below present ground level – was probably a foundation within the basement levels of the Palace, which are *c* 2.60m deep at this point. The burnt debris [30] overlying natural geology was probably from the fire which destroyed the Palace in 1936. The demolition rubble [16] represents later dumping of imported material.

2.2.1.3 Test Pit 104

Fig 3

Location	Centre of the main palace building
Dimensions	1m by 3m by 2.9m deep
Modern ground level	108.11m OD
Base of modern fill	106.81m OD
Depth of archaeological deposits seen	0.30m (wall >1.9m high)
Highest archaeological survival	Top of wall at 107.11m OD
Level of base of trench	105.21m OD
Natural observed	106.51m OD

The test pit was located within the footprint of the former Crystal Palace. What was probably natural mottled sandy clay [22] was revealed at 106.51m OD. This was excavated to a depth of 1.3m without revealing any change in composition. Above this was another, 0.30m thick, deposit of sandy clay [21] likely to be a pedogenic (naturally formed) subsoil. Over this was a 1.3m thick deposit of modern rubble [19] topped by the turf ground surface. At the northern edge of the pit an east–west brick wall survived up to 107.11m OD, with traces of vaulting arching southwards [20], some of which was seen in the east section.

Although not archaeologically investigated, the interpretation of these contexts is that wall [20] – surviving at *c* 1.00m below present ground level – is probably a structural vault or relieving arch within the Palace basements, which are *c* 1.60m deep at this point. The rubble [19] represents dumping of imported material following the fire of 1936.

2.2.1.4 Test Pit 105

Fig 3

Location	Eastern side of the Palace
Dimensions	1.0m by 3.3m by 2.15m deep
Modern ground level	100.72m OD
Base of modern fill	99.67m OD
Depth of archaeological deposits seen	No horizontal deposits (wall >1.25m high)
Highest archaeological survival	Top of wall at 99.82m OD
Level of base of base of trench	98.57m OD
Natural observed	99.67m OD

This test pit was situated just within eastern side of the former Palace (*Fig 23*), at the foot of a bank formed by modern landscaping of the Palace remains. Natural clay/gravel [8] was revealed at 99.67m OD and excavated for a further 1.1m without revealing any change in composition. Above this was a 0.78m thick deposit of demolition rubble [6] underlying a 0.15m thick topsoil, itself below the existing turfed ground surface. At the southern edge of the test pit an east–west brick wall [7] was exposed, surviving to 99.82m OD. The nature and dimensions of the wall were not visible from the limited exposure available in the test pit.

Although not archaeologically excavated, the interpretation of these contexts is that wall [7] – surviving at *c* 0.90m below present ground level – is presumably from the Palace. The demolition rubble [6] – *c* 0.80m deep – represents later dumped infill and levelling.

2.2.1.5 Test Pit 106

Fig 3

Location	Eastern side of the Palace
Dimensions	2m by 3m by 2.7m deep
Modern ground level	100.72m OD
Base of modern fill	100.57m OD
Depth of archaeological deposits seen	0.2m deep (wall 0.46m high)
Highest archaeological survival	Fire debris & Top of wall at 99.72m OD
Level of base of trench	98.02m OD
Natural observed	99.52m OD

This test pit was situated just within eastern side of the former Palace (*Fig 23*), at the foot of a bank formed by modern landscaping of the Palace remains. Natural gravel [13] was recorded at 98.12m OD. This was sealed by a 0.80m thick layer of natural clay [8], itself

below what appeared to be a brickearth-like deposit [14]. As brickearth should not be present in this area (BGS digital mapping), this material may be a subsoil at or near the original land surface and formed on the London Clay or Claygate Beds.

Above this was a 0.20m thick destruction deposit characterised by burnt debris [11], itself below a 0.85m thick deposit [10] of demolition rubble, which was sealed by the topsoil and turf ground surface [9]. Across the centre of the test pit, and surviving to 99.72m OD was an east–west brick wall [12], 0.46m thick, whose base lay just below the clay at 98.82m OD.

Although not archaeologically investigated, the interpretation of these contexts is that wall [12] was presumably from the Palace, and the burnt debris [11] from the fire of 1936. These archaeological deposits are both present c 1.00m beneath the present surface. The demolition rubble [10] represents recent dumping of imported material.

2.2.1.6 Test Pit 107

Location	Immediately east of the Palace
Dimensions	1m by 3m by 2.7m deep
Modern ground level	100.21m OD
Base of modern topsoil	99.84m OD
Depth of archaeological deposits seen	None
Highest archaeological survival	None
Level of base of trench	97.51m OD
Natural observed	99.84m OD

Test Pit 107 was situated at the foot of a bank formed by modern landscaping of the Palace remains. This location would originally have been on top of the former raised bank immediately to the east of (outside) the Palace (*Fig 23*), overlooking the Upper Terrace.

Natural mottled sandy clay [24] was revealed at 99.84m OD. This was excavated to a depth of 2.3m without revealing any change in composition. Above this clay was a 0.37m thick deposit [23] of topsoil containing modern debris.

The interpretation is that this test pit encountered an embankment forming the uphill side of the Upper Terrace (created by cutting into the original hill contours of natural clay east of the test pit). The surface of the natural clay may have been the product of Victorian landscaping, c 0.40m below the present surface and associated with construction of the Palace. No archaeological features were present.

2.2.1.7 Test Pit 112

Location	South-east corner of site
Dimensions	0.95m by 2.9m by 1.7m deep
Modern ground level	83.72m OD
Base of modern fill	82.42m OD
Depth of archaeological deposits seen	None
Highest archaeological survival	None
Level of base of trench	82.02m OD
Natural observed	82.42m OD

This test pit was located on grass near the base of sloping ground, close to the access route from Crystal Palace station to the National Sports Centre.

A natural mottled brown clay [27] was recorded at 82.42m OD. Cutting through this clay in the southern part of the test pit was a large concrete foundation, which was not fully exposed in the test pit. Above the clay and the concrete was a 0.85m thick layer [26] of redeposited natural clay. Over this was a 0.45m thick layer [25] of topsoil with a turf capping at 83.72m OD.

This test pit was positioned over the former Rosary (an ornamental mound with terraces and steps: *Fig 23*), since heavily reconfigured. Due to the limited exposure, it is unclear whether the concrete foundation and deposits observed were part of the original mound structure or more recent works.

2.2.2 Archaeological Test Pits

2.2.2.1 Test Pit 1

Fig 4

Location	South end of Upper Terrace retaining wall
Dimensions	3.0m by 2.6m by up to 2.3m deep
Modern ground level	97.42–97.91m OD
Base of modern fill	96.61m OD
Depth of archaeological deposits seen	0.65m deep (walls >1.30m high)
Highest archaeological survival	Wall [76] at 97.64m OD
Level of base of trench	95.3m OD
Natural observed	95.96m OD

This test pit was situated on a sloping grass bank against the retaining wall of the Upper Terrace, where a projecting stone bay marks the former location of a staircase (*Fig 2 & Fig 23*). It was placed to examine any surviving structural evidence for these steps. Within the southern part of the test pit, a deeper sondage (smaller exploratory pit) was excavated by machine to determine the depth of the foundations.

Natural clay [79] was recorded at a truncated level of 95.96m OD. Two east–west brick walls were recorded in the test pit, and a third presumed wall along the western edge of the pit was obscured by a modern concrete overhang. Against the northern edge of the pit, facing the stonework of the eastwards projecting bay, was wall [76]. 1.24m parallel to the south was wall [77] which was seen in the sondage to be founded at 95.58m OD.

It is probable that wall [77] was one of perhaps three brick foundations which originally supported a flight of steps descending eastwards from the Upper towards the Lower Terrace (as shown in *Fig 23*). The upper parts of these walls had however been partially demolished (probably when the staircase was removed) and so it was not possible to determine the original gradient of the steps. Laid against these walls, the upper fill of the test pit [78], comprised redeposited natural clay.

Thus only the damaged brick foundations of the stairs survive (at *c* 0.30m below present ground level), the stone treads and balustrades having been removed in the past.

2.2.2.2 Test Pit 2

Fig 5

Location	Centre of Upper Terrace retaining wall
Dimensions	2.2m by 3.0m by up to <i>c</i> 3.6m deep
Modern ground level	98.03–99.11m OD
Base of modern fill	97.26m OD
Depth of archaeological deposits seen	2.86m (wall [86] 2.55m high)

Highest archaeological survival	Wall [85] at 98.59m OD
Level of base of trench	c 95.3m OD
Natural observed	c 95.45m OD

This test pit was also located on a grass bank against the retaining wall of the Upper Terrace, where a projecting stone bay [90] marks the location of a former staircase (*Fig 2 & Fig 23*). It was placed to examine any surviving structural evidence for these steps.

Within the test pit, a deeper sondage was excavated by machine to determine the depth of the foundations. At the base of the sondage, a natural grey clay [89] was recorded at c 95.35m OD. Over this was another natural light brown clay [88] with a surface at c 95.45m OD.

Along the western edge of the test pit was a north–south brick wall [84] (*fig 5*) which served as the main retaining wall of the Upper Terrace (in general, only the upper visible parts of the terrace structures were in stone, the foundations being brick). Bonded to this wall and forming the northern edge of the pit was an east–west wall [85] that appears to have been built against the stone bay. Also bonded to [84] and parallel 1.05m to the south of [85] was another brick wall [86] whose base was recorded at c 95.6m OD within the sondage.

These walls appear to have formed the brick foundations of a former flight of steps descending from the Upper towards the Lower Terrace, the general arrangement being shown in *Fig 23*. The upper parts of the walls had already been partially demolished (probably when the staircase was removed) and so it was not possible to determine the original gradient of the steps. The upper layer within this test pit was a backfill [87] against the structural elements – it largely comprised redeposited natural clay.

Thus only the damaged brick foundations of the stairs survive (at c 0.50m below present ground level), the stone treads and balustrades having been removed in the past.

2.2.2.3 Test Pit 3

Fig 6, Fig 7, Fig 8

Location	North end Upper Terrace retaining wall
Dimensions	2.6m by 2.4m by up to 3.26m deep
Modern ground level	98.33–98.89m OD
Base of modern fill	97.90m OD
Depth of archaeological deposits seen	Uncertain (wall [73] 2.66m high)
Highest archaeological survival	Wall [73] at 98.29m OD
Level of base of trench	95.63m OD
Natural observed	uncertain

This test pit was situated on a sloping grass bank against the retaining wall of the Upper Terrace, where a projecting stone bay marks the location of a former staircase (*Fig 2 & Fig 23*). It was placed to examine any surviving structural evidence for these steps.

Within the northern half of the test pit, a sondage was excavated by machine to determine the depth of the foundations. Within the confines of the deep sondage it was not possible to determine the exact depth of natural clay.

Along the western edge of the test pit was a north–south brick wall [73] which served as the main retaining wall of the upper terrace (*Fig 6*). At the southern edge of the pit was an east–west wall [74], bonded to [73], that almost certainly retained the northern side of the adjacent bay extension. 1.46m north of [74], lay another east–west wall [72], also bonded to [73]. This was founded at approximately 95.63m OD – and it appeared that this was also the level at which wall [73] was founded.

The upper parts of the test pit were occupied by a redeposited clay fill [71], below modern dumping [70]. The latter was almost certainly associated with demolition and robbing of the former stone steps. It is probable that the east–west wall [72] was one of perhaps three foundation walls which, together with the edge walls, held the steps in place. The uppermost parts of these walls, however, had been partially demolished and so it was not possible to determine the original gradient of the steps.

Thus, consistent with the results from TP1 and TP2, only truncated brick walls that originally supported the stairs survived (at *c* 0.60m below present ground level; *Fig 7*) the stone treads and balustrades having been removed in the past. Fragments of the original balustrade from the terrace retaining wall were found in the upper levels of this test pit (*Fig 8*). The current balustrade is a modern replacement.

2.2.2.4 Test Pit 4

Fig 8, Fig 9

Location	North end of Upper Terrace retaining wall
Dimensions	2.5m by 2.0m by 1.0m deep
Modern ground level	97.42–98.1m OD
Base of modern fill	97.86m OD
Depth of archaeological deposits seen	>1.10m deep
Highest archaeological survival	Wall [81] at 98.06m OD
Level of base of trench	96.85m OD
Natural observed	N/A

This test pit was situated on a sloping grass bank against the retaining wall of the Upper Terrace, to examine any evidence for the former steps in this location. The original projecting stone bay marking the location of the stairs has previously been removed (*Fig 2 & Fig 23*).

A north–south brick wall [81] formed the main retaining wall for the Upper Terrace. Bonded to it at right angles, along the southern edge of the pit, was wall [80] one of the brick foundations that originally supported the staircase. These walls survived from immediately beneath the present ground level. Abutting them was a redeposited clay [82] that may have been the original fill. However, just 1m northwards a substantial more recent cut [83] had

truncated wall [81] and the fill. It is clear that not only the stone steps, but also most of the brick foundation walls in this location have been destroyed in the past.

2.2.2.5 Test Pit 7

Fig 10

Location	East edge of Lower Terrace
Dimensions	0.75m by 0.75m by 1.17m deep
Modern ground level	93.10m OD
Base of modern fill	Unknown
Depth of archaeological deposits seen	Wall and step 1.17m deep/high
Highest archaeological survival	Granite step at 93.10m OD
Level of base of trench	91.93m OD
Natural observed	N/A

The test pit was located on the Lower Terrace against the rear of the eastern retaining wall, to assess the original terrace ground levels. The size and depth of the test pit were severely limited by numerous buried services. The modern metalled surface was abutted on the south by a granite block that would have been the landing at the top of a former stairway descending to the east (*Fig 2 & Fig 23*).

Because of the extensive disturbance by services, the material seen within the test pit was recent made ground and there was no trace of any original terrace surfaces. Beneath the granite staircase block (recessed in 0.12m to the east) was the rear face of a brick foundation wall [91] – *Fig 10*. This is the main terrace retaining wall and was a vertical construction without apparent corbelling. Its full depth, likely to be over 2.5m, was not ascertained within the confines of the test pit.

2.2.2.6 Test Pit 8

Fig 11

Location	North end of Lower Terrace (former North Wing)
Dimensions	4.2m by 3.3m by 1.5m deep (maximum)
Modern ground level	96.65m OD (maximum)
Base of modern fill	95.15m OD (average)
Depth of archaeological deposits seen	Wall [92] >0.26m high
Highest archaeological survival	Wall [92] at 95.19m OD
Level of base of trench	94.93m OD
Natural observed	94.93m OD

This test pit was placed to examine any surviving evidence for the North Wing of the palace, and particularly its foundations and floors. With the agreement of Bromley Parks and Leisure

Services, it was situated at the base of the woodland that slopes down from the still surviving northern wall of the former Wing (*Fig 2 & Fig 23*).

A truncated natural sandy clay lay in the base of the test pit, at 94.93m OD. Towards the northern end a brick wall [92] retained a concrete floor [96] at 95.14m OD (*Fig 11*). A brick dividing wall [97] ran northwards from wall [92]. Above these features, and the clay, the upper parts of the trench comprised modern fills.

Wall [92] formed the southern side of the North Wing, and the floor and dividing wall demonstrate the survival of structural features associated with it, at least locally.

The highest archaeological survival was *c* 1.50m beneath present ground level at the upslope edge of the test pit. Although the test pit had been located with the hope that it might also uncover any remains of the iron columns that had supported the wing no trace was found within the exposed brickwork. It may be that the test pit lay between former column positions.

2.2.2.7 Test Pit 9

Fig 12, Fig 13

Location	South end of the former palace building
Dimensions	4.06m by 3.6m by 2.45 deep
Modern ground level	107.5m OD (average)
Base of modern fill	105.3m OD (average)
Depth of archaeological deposits seen	Probably 0.1–0.2m (Fountain base [50] >1.7m high)
Highest archaeological survival	Fountain base [50] at 106.78m OD
Level of base of trench	105.05m OD
Natural observed	Probably at 105.05–105.25m OD

This test pit was located to assess evidence for the survival of a large fountain inside the south nave of the Palace (marked ‘Lake’ on the 1871 Ordnance Survey: *Fig 23*). The main basin would have been at ground level and no longer survives. The test pit was within the former services basements of the Palace, beneath it.

What was probably (truncated) natural sandy clay formed the base of most of the pit. Two former services for the Palace had been partially sunk into this: one [56] was a ceramic ducting that contained electrical wiring. The other, [55] was a cast iron pipe, assumed to have been for water supplying the fountain above.

Two main structural elements from the basement-level brick supports for the nave fountain basin were present (*Fig 12 & Fig 13*). On the northern side was a large arched structure [50], the surface of which included a layer of smooth cement or concrete (at 106.78m OD) that may have been associated with the former fountain basin above. Running westwards from

this structure was a thinner brick wall [57], surviving up to 106.05m OD. Corbelled footings to both these structures were present.

Along the southern edge of the trench, 1.7m from and parallel to [50]/[57], was a further brick wall [49], though rebated back along its centre. The top of the wall lay at 106.54m OD, *c* 1.00m below present ground level. This wall also rested on two corbelled footings and had four brick piers attached to it: [51], [52], [53], [54].

The bases of these structures were abutted or partially sealed in places by a layer of loose black ash and cinders [29], 0.10–0.20m deep. This contained some fragments of brick and fused glass, and a variety of stone mouldings in white marble, many of which could be associated with decorative edges to the former fountain basin above. This layer and the brick structures were sealed by a 2.2m thick modern rubble infill of the basements [28].

The substantial brickwork encountered represents the partially demolished remains of the basement-level services and foundations for the fountain basin (*Fig 13*). The latter had not survived, although the cement skim *c* 0.7m below modern ground level may represent the impression of the removed basin superstructure. The 1936 fire that destroyed the Palace was represented by the burnt debris [29], which included elements of the marble superstructure that had been discarded, perhaps during salvage operations before the basement was filled in.

2.2.2.8 Test Pit 11

Fig 14

Location	Adjacent to South Water Tower
Dimensions	1.20m by 1.50m by 3.15m deep
Modern ground level	102.25m OD
Base of modern fill/slab	102.16m OD
Depth of archaeological deposits seen	2.82m deep (from modern ground level)
Highest archaeological survival	Water Tower stands above ground level
Level of base of trench	99.10m OD
Natural observed	102.16m OD

This test pit was located against the north side of Brunel's South Water Tower (CP71) in order to examine its foundations. The local ground surface comprises a brick paving installed in *c* 1970, following ground reduction to expose the adjacent pipework associated with the tower.

Natural sandy clay was present immediately below the brick paving, at 102.16m OD. The construction cut [64] for the foundations was nearly vertical and provide the edge for the basal concrete [61]. This comprised coarse aggregate concrete with fragmentary brick / tile inclusions and was founded at 99.42m OD. The concrete projected *c* 0.43m beyond the overlying brick foundations [60] which were of yellow stock brick and narrowed in two courses, the joints chamfered with mortar (*Fig 14*). The construction backfill [62] largely comprised redeposited natural clay, probably from digging out the foundations. Given the

original size of the tower above, this concrete (c 1.10m thick) probably forms a circular foundation raft under the whole structure, although this could not be demonstrated from the test pit.

2.2.2.9 Test Pit 12

Fig 15

Location	Lower Terrace
Dimensions	2.6m by 2.4m by 2.9m deep
Modern ground level	94.15m OD
Base of modern fill	92.25m OD
Depth of archaeological deposits seen	0.7m deep
Highest archaeological survival	92.25m OD
Level of base of trench	91.05m OD
Natural observed	91.55m OD

This test pit was located within the lawns of the Lower (Italian) Terrace, in the area of a fountain (CP67) within the former sunken garden, now filled in (Fig 23).

A natural light grey clay, probably truncated London Clay [69] was recorded at 91.55m OD. Above this was a 0.7m thick organic black silt [68] containing twigs, reeds, and grass, formed in anaerobic conditions as a result of localised waterlogging. This layer contained two loose large blocks of stone; one was plain and the other a plinth base for one of the statues that formerly stood on this terrace. The upper layer in this pit was a 1.9m thick mixed clay [67] containing modern debris.

It is probable that this test pit was located within the large basin of the former fountain, as represented by the organic pond deposits. No floor or lining to the basin was located within the test pit – possibly the London Clay was sufficient. No *in situ* parts of the basin or fountain were located, although the blocks of stone appear to represent parts of the terrace structures later dumped into the pond, which was then filled in with substantial clay deposits [67].

2.2.2.10 Test Pit 13

Fig 16

Location	Lower Terrace
Dimensions	8.2m by 2.5m by 2.6m deep (maximum)
Modern ground level	93.78m OD
Base of modern fill	92.8m OD
Depth of archaeological deposits seen	1.2m
Highest archaeological survival	92.8m OD
Level of base of trench	91.2m OD
Natural observed	c 91.55m OD

This test pit was located on the Lower Terrace. It was designed to examine what might remain from fountain CP66 and its underground control room (*Fig 23*). The original trench measured 2.0m by 2.5m, but was later enlarged.

Following the main evaluation, two deeper machine-dug sondages were excavated. The first was within the eastern end of the test pit, to determine the floor level of the control room. The second was a 1.0m wide slot extending 6.1m from the western side of the test pit, to find the edge of the control room and natural geology.

Natural grey clay [69] was revealed in the western sondage at *c* 91.55m OD.

The test pit contained two brick walls: [66] was a north–south wall, up to 92.01m OD, which retained a floor on its eastern side, at approximately 91.20m OD (*c* 2.50m below present ground level). The east face of the wall was rendered and had electrical cabling attached. Running 4.68m westwards from this was the second wall [65], the western end of which terminated in a possible buttress overlain by metal pipework (possibly a later addition). These walls survived to an average height of 91.85m OD (*c* 2.00m below present ground level).

The walls created three rooms to the north, south and east. The wall edges defining the northern room were waterproofed with a bitumen lining. Later dumped demolition fills within the basement area contained metal work almost certainly associated with the fountain, including curved iron pipes with a series of water jets around one edge (*Fig 24*).

The natural geology in the western part of the sondage was overlain by a deposit of organic silt [75] up to 1.2m thick (composition as [68] in TP12, see above). Within it were two large redeposited blocks of stone moulding, almost certainly from the edges of the former fountain basin (*Fig 17*). Similar silt was present over parts of the control room, but was less homogeneous and may have been redeposited from [75]. The organic silt was in turn overlain by modern debris that included large fragments of brickwork and blocks of concrete.

The brick walls and concrete floor appear to be the remains of the control room that stood beneath the fountain basin. The upper level of this structure survived to *c* 1.8m below modern ground level. The fountain structure above had been removed, although redeposited metal parts survived in the control room. As in TP12, either the basin was lined with London Clay, or a floor had been truncated by modern disturbance. It is likely that the basin edges were formed of ornamental stonework, but again this is unlikely to survive *in situ*, as redeposited sections were found in the organic silt.

2.2.3 Archaeological Evaluation Trenches 1A and 1B.

2.2.3.1 Trench 1A

Fig 18 and Fig 22

Trench 1A was designed to examine the interior of the Palace and in particular the western part of the Paxton Tunnel (a service access route through the basements) and any associated boiler rooms or furnace areas to the west (*Fig 23 and front cover*). However the depth of post-war landfill over the investigation area has produced a 6m-high bank sloping down from the former Palace interior, across the tunnel location, to an area overlooking the Upper Terrace. This made opening the trench logistically difficult, as a result of the extreme depth of unstable modern rubble infill, and it had to be significantly enlarged to allow safe access. This has however facilitated a better exposure of the complex structural remains in this area (*Fig 18*).

To the western end, a 10m stretch of north–south walling [58] was exposed, surviving to a maximum height of 107.39m OD (*Fig 22*). This substantial wall or foundation was built as a series of arches. Although it could not be investigated to any depth (because of the unstable fills at the top of the slope) this was clearly a main support wall inside the Palace. During clearance and recording, fragments of moulded stucco were retrieved from the modern rubble infill at its northern end.

Wall [58] had two projecting buttresses on its east face, both located next to iron columns within the wall. Aligned with the southern buttress was a pier [59] connected by a steel girder to a larger pier [100], 1.54m further to the east (*Fig 18*). Similar pier bases to the east of the northern buttress were not apparent, but may be conjectured. A distance of 6.7m east of wall [58] were a series of pier bases aligned north–south. The rebate at the east end of pier [100] formed the southern end of an alignment of three more piers. Two single piers [99] and [105] lay in the centre, and north of these lay a pier base/junction [101] whose dimensions were not fully exposed but it appeared to align with the north buttress on wall [58], and a section of wall [102].

These structures appear to lie west of the projected line of Paxton’s Tunnel and are probably foundations supporting the colonnaded courts above (in this case the Elizabethan Court) – *for the general suggested layout see front cover and fig 18*.

The second main group of structural remains within Trench 1A lay to the east in the general area of the projected line of Paxton’s Tunnel (*Fig 18*).

Walls [106], [107] and [103] appear to have formed one or two rooms, the inner faces of which were rendered. Within this room a small area of burnt wood that had the appearance of floor planking was present beneath the rubble, at 100.53m OD. To the north, wall [106] returned westwards abutting a possible buttress [108]. Wall [103] continued west on a line off-set from [106], and returned to the south. Running north from buttress [108] was another wall [109]. On the south side of [106] was another east–west wall [107] that terminated in a

thick rebate. To the west of wall [103] there appeared to be natural gravel/clay [104] truncated at 101.43m OD (overlain by rubble) and probably terracing into the natural slope.

Possibly this group of structural contexts represents one of the boiler rooms associated with the west side of Paxton's Tunnel, although the precise layout is difficult to interpret. The suggestion that this is part of the Tunnel may be strengthened by the presence here of the western edge of a crushed clinker surface [46] at 100.65m OD, fractionally higher than in Trench 1B (see below). If its western edge was bounded by the western ends of wall [107] and buttress [109], then its full width was *c* 7.4m (*c* 24ft) the basic unit of measurement between sets of columns within the Palace. However, this initial exploratory work is not sufficient to fully confirm that suggestion.

2.2.3.2 Trench 1B

Fig 18, Fig 19, Fig 20, & Fig 21

Trench 1B was located was situated on gently sloping land at the foot of the steep bank formed by modern landscaping of the Palace remains (over which Trench 1A was located, see above). This location would originally have been across the basement levels on the eastern side of the Palace, including part of Paxton's Tunnel (*Fig 23*). The trial trench was designed to examine what evidence there might be for the basement levels of the eastern side of the Palace building, and Paxton's Tunnel. The trench measured 13.9m by 1.7m by a maximum of 1.25m deep.

At the eastern end of the trench, what appeared to be natural clay was revealed, cut into by the construction trench [47] for a brick wall [42] which only survived in section. This was crudely built on a foundation bed of chalk rubble founded at 99.74m OD. The construction cut incorporated a section of upright octagonal iron column [48]. This wall line probably represents the eastern side of the main palace building.

To the west, within the Palace, the natural clay [41] was truncated to a greater, but uneven depth ranging from 99.79m OD in the east to 99.88m OD in the west. Cut into this clay was a line of bases, interpreted as joist supports for a suspended floor above. These bases [31], [33], [35], and [37] were spaced at slightly irregular intervals and were crudely built of concrete and clinker. It is assumed that brick piers were built on top. The scar of the actual pier was clearly seen on base [37] (*Fig 20*). A distance of 6.6m to the west of wall [42] was another north-south wall [43], but built of shuttered concrete, again around an iron column [44] (*Fig 20, Fig 21*).

To the west of wall [43] it appeared that the natural clay/gravel [45] had been terraced at a slightly higher level – producing an edge against which the shuttered concrete was formed. Here a surface of *c* 0.2m thick compacted clinker [46] may be the floor of Paxton's Tunnel. Within this trench it was revealed over a width of 3.65m. At its eastern edge the surface was eroded to 100.48m OD, whilst its western edge (in Trench 1A, see above) was at 100.65m OD.

3 Assessment of the evaluation results

3.1 Summary of results

The main elements of the Crystal Palace complex that were evaluated comprised the palace itself; wall divisions, internal features such as the fountain, and the service areas on its eastern side. Within the park, features investigated included the terrace steps and fountains on the Lower Terrace. Small areas of the North Wing and the foundations of the South Water Tower were also exposed.

3.1.1 Topography and landscape

As noted elsewhere, the exact topography of the pre-existing natural terrain is not fully understood. Although the original landscape was massively reconfigured to create the Palace and the terraced park and gardens below, it seems clear that where possible full use was made of the natural slope.

As noted in the Cultural Heritage Assessment (*MoLAS 2004*), the site lies on London Clay, mostly capped by clayish Claygate Beds. On the highest, westernmost, part of the site a natural deposit described as sandy clay silt is likely to represent the latest, coarser, Claygate deposition. Farther down the slope, this material becomes more plastic and has been water sorted for a longer period.

Only in TPs 2, 12 and 13 was the underlying greyish London Clay revealed in deep sondages. On the slope of TP2 it directly underlay the brown Claygate Beds at *c* 95.35m OD, but in TPs 12 and 13 it was truncated at a level of *c* 91.5m OD. The distance between TP2 and TP13 is less than 20m and may therefore represent a shallow gradient in this area.

It is assumed that the western (up-slope) edge of, for example, the Lower Terrace was cut into the hillside, and the resultant spoil used to raise the ground level at the eastern (down-slope) side of the terrace, against the retaining wall. Somewhere just to the east of TP13 therefore, there should be traces of the original natural slope covered by introduced dumps.

Only in TPs 104 and 106 was the natural geology covered by a subsoil that was thought to be a remnant of the original landscape pre-dating the construction of the Palace. This horizon lies 1.3m below the present ground surface and it is possible that other former surface areas survive at the top of the natural slope, beneath the level of the former suspended floor of the Palace (*see front cover*).

3.1.2 The Palace

Within the area of the Palace, brick walls and other structural features survive to a maximum height varying between 0.7m and 1.7m below modern ground level. These depths increase on the eastern side of the building, with the increasing depth of the sloping floors of the former basements (*front cover*). At the western end of Tr 1A, the walls were approximately 2–2.5m

below modern ground level, increasing to 5–6m at the eastern end, over the western side of the Paxton Tunnel. Depths then decrease to *c* 1.0–2.5m in Tr 1B.

Fragmentary walls found in Test Pits 102, 103 and 104 are likely to relate to the main Palace building, suggesting, as elsewhere, that there is potential survival for much of the building foundations below the present ground surface. With further study, it may be possible to identify these features, particularly the (relieving) arch in TP104. In Trench 1A there is considerable survival of identifiable Palace structural remains. In this area only the easternmost elements were truncated by the creation of a bank within the new park layout.

In Trenches 1A and 1B the 24 foot (7.31m) modular plan on which the Palace was built can be suggested (*Fig 18*). The higher, western square area in Trench 1A (bounded by [58] to the west, [59] and [100] to the south and [99]–[101] to the east) defines the eastern part of the narrow 24ft space between the larger Italian Gallery to the south and the Renaissance Gallery to the north. This formed the western part of the Elizabethan Court. A distance of 24ft further east is the line represented by [107]–[109], which may be the western side of Paxton's Tunnel, the wall on right hand side of the reconstructed cross-section on the Front Cover. The eastern frontage of the building at this point seems to be represented by wall [42] and its construction cut [47].

The fragmentary walls in TPs 105 and 106 may also represent the eastern face of the building.

There is little evidence for activity within the main Palace building above these basement-level foundations. However, amongst the demolition rubble from the northern end of wall [58] there were numerous fragments of moulded stucco portraying pseudo-classical scenes that might plausibly have been used to decorate the Renaissance Court. Other fragments, of timber and metalwork, almost certainly represent fire debris, although they were redeposited, mixed in with later dumped infill. In TPs 9, 103, and 106, however, clear *in situ* fire deposits were present beneath modern dumping.

Test Pit 9 was designed to examine what remained of the southern fountain in the nave of the Palace, where it crossed the South Transept (*Fig 23*). Loose fragments of marble within the fire debris were the only remnants of the fountain superstructure. However, the brick base of the foundation was found, with storage and service areas, containing a water pipe and electrical conduit at low level.

3.1.3 The Lower Terrace

The retaining wall between the Upper and Lower Terraces, although in a structurally reasonable condition, has suffered considerable changes to the historic fabric, in addition to weathering decay, localised cracking, etc. Much of the balustrading is cement replacement, which dates from a refurbishment of the 1960s, when many of the steps down to the Lower (Italian) Terrace were apparently removed. Evaluation in TPs 1–4 examined these former stairs in order to provide information on survival. The stone treads had been removed, damaging the uppermost parts of the brick foundation walls which had supported them.

These walls were all founded at close to the same level; *c* 95.6m OD. The base of the retaining wall of the Upper Terrace was seen at the same height in TP3. Elsewhere, however, this retaining wall must have been deeper.

The bays projecting eastwards into the Lower Terrace mostly reveal a stone superstructure above exposed brickwork foundations; these were uniformly at 96.90m OD and may thus have had the same foundation levels. This is certainly above the ground level of the Lower Terrace and may reflect the solidity of the natural clay into which the foundations were dug. However, the retaining wall here must have been deeper in localised areas

The original ground surface of the Lower Terrace has been removed, and it seems that there is at least 1m depth of dumped material over the area. Large organic layers found in both TP12 and TP13 probably represent natural silt deposits accumulated in two unlined fountain basins. There was no trace of any fountain structure remaining *in situ*, although redeposited edge blocks from TP13 almost certainly came from fountain CP66 (and a block from TP12 is the plinth from one of the statue bases on this terrace). What does remain from TP13 are the walls from a control room under this fountain, said to have been introduced in the 1890s. It is likely that further excavation would reveal its full dimensions.

Although only a small exposure, TP8 revealed key evidence for the North Wing, including the location of its front wall and its lower floor level, close to modern ground level at the base of the present steep wooded bank.

Similarly limited evaluation against the South Water Tower has fully revealed its foundation. The concrete raft forming the base of the 3m-deep foundations presumably underlies the whole structure, originally 200ft high.

3.2 Realisation of original research aims

- What is the nature and level of natural topography?

There was very little evidence for the natural topography. Where the natural clay was present it was generally truncated although fragmentary subsoil deposits survived in two test pits. The major mid-19th-century terracing and reconfiguration associated with construction of the Crystal Palace has largely destroyed any natural hill-slope.

- What are the earliest deposits identified? In particular, is there any evidence of activity pre-dating the construction of the Crystal Palace?

Probably because of the truncation of the natural topography noted above, there were no features or remains that pre-dated the Crystal Palace.

- What is the level of survival of elements of the Crystal Palace itself (the North Transept, Paxton Tunnel and the North and South Wings)? Is there associated artefactual material?

The level of structural survival reflects the destruction of the Palace by fire and subsequent site clearance. Despite this there is fairly good survival of basement level foundations within the area of the palace itself survive, to a variety of depth as noted in

section 3.1.2, above. These have been truncated or partially removed to varying degrees, but mostly provide valuable information about the structure and layout of the Palace. For example, the substructure of the southern nave fountain appears to survive well, complete with water and electricity supply. The location and surface of Paxton's Tunnel appears to have survived, as does the ground surface of the North Wing. Artefactual evidence from the Palace consisted almost exclusively of building material and decoration. This includes marble, stone mouldings, stucco, and metalwork, but the majority of these were redeposited: in fountain basins, fire debris, or later demolition and infill deposits. In TP9, water and electrical services survive *in situ* at the base of the former basement, and fittings from similar services survive in the control room in TP13.

- What was the configuration and structure of the (now removed) access steps from Upper to Lower Terrace and from Lower Terrace to the Park?

The stone steps and associated balustrades have been systematically removed, damaging the uppermost parts of the brick supporting walls beneath. Therefore information about the stairs is severely limited, confined to the layout and construction of the supports.

- What typically survives of the fountains on the Lower Terrace?

Although what appear to be unlined fountain basins and associated organic deposits survive, neither the stone superstructure of the basin walls or the fountains remain *in situ*. However, the walls and floors of the sub-surface control room below fountain CP66 (Test Pit 13) survive. There is evidence of widespread damage, probably post-war, in TP12 and TP13. Fragments of stone moulding associated with the fountains were found redeposited within the organic deposits.

- What was the structural configuration of the southern and northern ends of the lower terrace?

This was not revealed in any of the test pits, apart from what appears to be modern disturbance noted in TP12 and TP13, above.

- What were the effects of landscaping subsequent to the destruction of the Palace in 1936?

Within the area of the Palace itself there are substantial quantities of rubble. Infilling of the former basements apparently took place for up to forty years after the fire. This has sealed the sub-surface remains between varying depths of modern material, introduced from outside the site, anecdotally from as far away as Hackney. However, the modern creation of a bank down to the level of the Upper Terrace has truncated some of the structural remains at the eastern edge of the main building. It seems equally probable that remains of the North Wing survive beneath recent landscaping. Conversely, modern damage and reconfiguration of the Lower Terrace – particularly the removal of many of the steps – appears to have greatly affected the survival of remains in that area. However, given the limited areas investigated by TP7, TP12, and TP13, it is possible that such truncation is not comprehensive, and that more extensive remains of the original garden layouts may survive in other locations.

3.3 Assessment by English Heritage criteria

The evaluation results have also been assessed against criteria used by English Heritage (*DoE 1990*):

Criterion 1: period

No evidence was found that pre-dated construction of the Palace. The archaeological evidence from the evaluation was from the mid-19th-century Palace and park, and its continued use until the fire of 1936.

Criterion 2: rarity

The archaeological remains are associated with the Crystal Palace. The building was unique, and any remains that survive in good condition are likely to be of considerable importance. However, within the limited exposure of the test pits, most structures were damaged (to varying degrees) and survival was localised, reducing significance of some individual elements.

Criterion 3: documentation

There is a great deal of background documentary, cartographic and photographic evidence concerning the Crystal Palace. The identification of much of the archaeological evidence is therefore straightforward.

However, more detailed information has not survived, and it is thought that much of the documentation was lost in the 1936 fire. Such information might have included details of the pre-construction natural terrain. More importantly there is little information concerning the actual construction of the palace. Neither is there much documentary detail concerning the servicing of the complex such as the heating or drainage systems, nor for later introductions such as control rooms for the electrical supply or fountain hydrology.

The survival of servicing structures in some of the test pits therefore suggests that archaeological evidence may contribute to an understanding of these aspects.

Criterion 4: group value

The archaeological deposits and remains seen in the evaluation are associated with a contemporary single monument of considerable historic significance i.e. the Palace and Park. The surviving structural elements clearly retain considerable group value with other extant and buried remains of this monument within its parkland setting.

Criterion 5: survival/condition

Archaeological survival quality varies (*see Criterion 8, below*). However, although individual remains had been partially damaged or removed (by the 1936 fire and subsequent demolition and salvage) collectively considerable buried structural evidence survives across the site.

Criterion 6: fragility

Some surviving masonry structures, above and below ground, are in a relatively fragile state.

Criterion 7: diversity

The remains represent the development of one major monument, constructed to a single grand design although there is some evidence of later alterations (e.g. the insertion of a fountain control room and electricity supplies).

Criterion 8: potential

The evaluation has suggested differing areas of potential for the survival of below-ground remains. The footprint of the former Palace has a high potential for remains of the main palace building. This may also be the case with the North Wing.

On the Lower Terrace, potential appears to have been reduced by salvage and modern re-configuration. This has removed fountains and staircases at the test pit locations. However, the extent of such modern re-landscaping across the whole terrace and its effect on the original garden layout is uncertain.

3.4 Archaeological potential

The layout of the archaeologically-designed test pits forming the evaluation was limited compared with the considerable size of the Palace and terraces. This selective trial work may not, therefore, give an entirely representative picture of archaeological survival and potential across the whole site.

There is a clearly demonstrated high potential for structural remains within the area of the Palace (including the North Wing) and at the South Water Tower, many of which are at least moderately well-preserved. Structural remains were present within seven out of nine test pits/trenches within the Palace footprint. The remains seen were generally buried beneath *c* 0.7m to *c* 2.5m of modern material, with the infill between upstanding remains increasing to 6m depth at the bank over the eastern side of the building. These structures have considerable potential to add to our detailed understanding of the construction and configuration of the Palace.

Survival at the sites of the former stairs from the Upper to the Lower Terrace was poor, limited to the brick supporting walls, the uppermost parts of which were damaged. These can only provide limited information about the stairs.

The limited number of test pits on the Lower Terrace, and their location within the former fountain basins, restricts the extent to which the results can be extrapolated to the rest of the terrace. It has been suggested that the terraces may have been disturbed to a significant extent in the post-war period, reducing the potential for the features and layouts of the former sunken gardens and other landscaping. However, this has not been confirmed archaeologically.

The two test pits did demonstrate that at least two of the fountains and basin structures appear to have been extensively demolished, although some sections of structural stonework have been redeposited into organic silts filling the basins. The control room located beneath fountain CP66, however, does survive at TP13, with associated artefacts from the fountains.

3.5 Archaeological Significance

Criteria for assessing the importance of the resource were set out in the original cultural heritage assessment for archaeology (*MoLAS 2004*) and in the Environmental Statement (*ES Chapter 12, Table 12.1*). The evaluation has principally examined the Palace interior and Lower Terrace. In general, the Palace and terrace structures and the associated Park and grounds constitute a site of great historical and architectural importance. Well-preserved remains would therefore be of considerable heritage significance. However, the Palace was destroyed by fire, much of the remaining structure was demolished and the basements were then used for landfill. Similarly, on the terraces fountains appear to have been demolished and filled in, and extant terrace balustrading is largely a 1960s reconstruction.

The degree of present survival is the key to an assessment of significance for archaeological remains, both above and below-ground. Although probably localised, there is good survival of several elements of the basement level service structures within the Palace. Although the Lower Terrace as a whole is a Grade II listed structure, there appears to have been more past damage to buried structures here.

In the light of these factors, the overall significance of the two areas where the evaluation took place has been assessed as:

- Area of the former Crystal Palace: high (national/international)
- Lower Terrace: moderate (regional) – but this forms part of the 1854 group (Paxton's original 1854 design of the Crystal Palace and park: *MoLAS 2004*, section 3.3.7), which collectively are of high (national/international) significance
- Overall Group Value of the Palace, Terraces, and Park: high (national/international)

The value of particular elements within these areas (in relation to specific development impacts) will however depend on their individual survival quality.

4 Proposed development impact and recommendations

The potential impacts of the development upon buried archaeological remains, and mitigation measures to reduce and/or remove them, are described in Chapter 12, Archaeology, of the Environmental Statement (LDA/Waterman Environmental, in prep).

5 Acknowledgements

The Museum of London Archaeology Service (MoLAS) is grateful to the London Development Authority for commissioning this report. MoLAS would also like to thank Andy Hayden and Adam Jenkins of Bromley Parks and Leisure Services, Alex Noake of Waterman Environmental, Ed Morton and Jag Manku of The Morton Partnership, Jason Davis of Turner & Townsend, Mark Stevenson of English Heritage, and Sarah Couch of Sarah Couch Historic Landscapes Ltd for advice and supply of data, and finally Ken Kiss of Crystal Palace Museum for providing valuable historical background and interpretation during the evaluation.

The MoLAS archaeological team on site included, at various times, Julian Bowsher, Hazel Cooley, Nicola Lyons, Simon Pennington, Sarah Ritchie, Charlotte Vaisey, Bruce Watson, Sadie Watson, Nigel Wilson. The MoLAS surveyors included Mark Burch, Eamonn Baldwin and Neville Constantine. The survey plots were prepared by Sarah Jones and the drawings by Ken Lymer. The MoLAS photographer was Maggie Cox. The MoLAS Project Manager and Officer were George Dennis and Nicholas Elsdon.

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7 Appendix: Site Records

7.1 List of archaeological contexts

Context	Trench	Description
1	TP102	topsoil
2	TP102	rubble layer
3	TP102	rubble layer
4	TP105	topsoil
5	TP105	layer
6	TP105	rubble layer
7	TP105	brick wall
8	TP105	natural clay
9	TP105	layer
10	TP106	brick rubble
11	TP106	brick rubble
12	TP106	brick wall
13	TP106	gravel lens
14	TP106	clay layer
15	TP103	rubble layer
16	TP103	modern surface layer
17	TP103	brick wall
18	TP103	natural clay
19	TP104	layer
20	TP104	brickwork
21	TP104	brickearth
22	TP104	natural sandy clay
23	TP107	topsoil
24	TP107	natural sandy clay
25	TP112	topsoil
26	TP112	redeposited natural clay layer
27	TP112	natural clay
28	TP9	rubble layer
29	TP9	burnt debris layer
30	TP103	burnt debris layer
31	Tr1B	pier base
32	Tr1B	cut, to 31
33	Tr1B	pier base
34	Tr1B	cut, to 33
35	Tr1B	pier base
36	Tr1B	cut, to 35
37	Tr1B	pier base
38	Tr1B	cut, to 37

39	Tr1B	brick base
40	Tr1B	stone base
41	Tr1B	natural clay
42	Tr1B	north-south brick wall
43	Tr1B	north-south concrete wall
44	Tr1B	iron column base
45	Tr1B	natural gravel / clay
46	Tr1B	surface / floor
47	Tr1B	cut, for 42
48	Tr1B	metal support joist
49	TP9	east-west brick wall
50	TP9	brick pier
51	TP9	brick buttress
52	TP9	brick buttress
53	TP9	brick buttress
54	TP9	brick buttress
55	TP9	metal pipe
56	TP9	ceramic pipe
57	TP9	east-west brick wall
58	Tr1A	north-south brick arcaded wall
59	Tr1A	brick pier base, W
60	TP11	curving brick wall
61	TP11	concrete foundation
62	TP11	backfill, to cut 64
63	Tr1A	unstratified (for loose finds)
64	TP11	cut, for 61
65		not used
66	TP13	north-south and east-west brick wall
67	TP12	dumped layer
68	TP12	organic deposit
69	TP12	silty clay deposit
70	TP3	upper fill
71	TP3	clay dumped layer
72	TP3	east-west brick wall
73	TP3	north-south brick wall
74	TP3	east-west brick wall
75	TP13	organic deposit
76	TP1	east-west brick wall
77	TP1	east-west brick wall
78	TP1	backfill
79	TP1	natural clay
80	TP4	east-west brick wall
81	TP4	north-south brick wall
82	TP4	redeposited clay fill
83	TP4	modern cut
84	TP2	north-south brick wall

85	TP2	east–west brick wall
86	TP2	east–west brick wall
87	TP2	backfill
88		not used
89	TP2	natural grey clay
90	TP2	east–west stone wall
91	TP7	north–south brick wall
92	TP8	east–west brick wall
93	TP1	unstratified (for loose finds)
94	TP3	unstratified (for loose finds)
95	TP13	unstratified (for loose finds)
96	TP8	concrete floor
97	TP8	north–south brick wall
98	TP2	unstratified (for loose finds)
99	Tr1A	brick pier base
100	Tr1A	east–west brick wall
101	Tr1A	brick wall / junction
102	Tr1A	brick pier base
103	Tr1A	north–south and east–west brick wall
104	Tr1A	natural clay and gravel deposit
105	Tr1A	brick pier base
106	Tr1A	north–south and east–west brick wall

7.2 Finds

Geoff Egan, August 2007

The following list is a preliminary catalogue, produced from a rapid scan of the finds recovered from the site. These are currently stored by MoLAS; their final place of deposition is to be determined.

7.2.1 Ceramic

Brick

[68] TP12 fragment; red fabric.

Electrical

[63] Tr1A ?switch housing with wires etc.

[63] insulating mount.

Piping

[29] TP9 one length, complete.

Tiles

[28] TP9 One complete + fragments.

Tobacco Pipe

[41] Tr1B Decorative bowl + stem fragment.

Vessels

[28] TP9 Fragment with blue glaze.

[68] TP12 redware fragments.

[68] white-glazed cup and plate fragments.

7.2.2 Concrete

[63] Tr1A right-angled fragment with infill.

7.2.3 Copper alloy

[63] Tr1A length of piping with terminal.

7.2.4 Glass

[63] Tr1A Several fragments of melted colourless glass. May include parts of the Palace structure.

[68] TP12 Bottle body ('LYONS & Co Ltd') and top (??from same vessel).

- [68] Green (?)spheroid with metal suspender – decorative ball or lamp?
[75] TP13 Vessel fragments x5 (3 bases).

7.2.5 Iron

Bolts

- [63] Tr1A x3.

Container

- [29] TP9 shallow tin (corroded): ‘...YLINE / *The* / WONDER / POLISH;’ contents still fragrant; ?mid C20th (fragile item – needs appropriate packing).

Piping

- [29] TP9 collar fragment.
[46] Tr1b collar (‘fountain’).
[63] Tr1A collar fragment.
[95] TP13 bolted join of two fragmented lengths.
[95] part curved, part straight length.
[95] circular lengths (one complete) with copper-alloy jets [for external fountain].

Structural – Struts etc.

- [63] Tr1A straight bar (incomplete).
[63] angled join of two incomplete T-section lengths.
[63] x-section, complete.
[63] right-angled fragment.

7.2.6 Lead

Piping

- [56] TP9 outer lead, around pitched fibrous layer, around multiple copper wires [TP13 control room?].
[68] TP12 simple length.

7.2.7 Plaster – decorative stucco fragments

- [63] Tr1A 34 sizeable fragments (28 trays) + 3 trays of smaller pieces; largely arabesque borders, a couple of pieces of more pronounced three-dimensional moulding; most items have coloured paint.

7.2.8 Stone

Limestone:

- [63] Tr1A moulded plinth fragment [?for statue].

Marble:

- [28] TP9 Several small fragments.
- [28] fragment of moulding/block.
- [29] TP9 simple moulding strips x6, two tooled '25'.
- [29] moulded block etc. fragments x13.
- [29] slabs: rectangles x2 (one complete), fragments 1 bag + 14 larger pieces.
- [29] wedges, complete sections x13 (one complete block; two tooled '24'); fragmentary pieces x3.
- [29] column/pilaster fragments x2.
- [29] fragment of right-angled wedge-section corner.
- [29] fragment of tapering semicircular moulding.
- [29] ?fluted, wedge-shaped fragment with melted white metal adhering.
- [63] Tr1A cuboid block.
- [63] moulded-strip fragment (burnt).
- [63] several fragments of slabs (one piece with copper wire through hole and fragment of ceramic switch attached) – two different thicknesses (5 bags).
- [0] rectangular slab.

(?)Sandstone

- [63] Tr1A moulded block.
- [93] TP1 moulded block fragments, x2.
- [94] TP3 moulded block fragments, x2.

7.2.9 Wood

- [43] Tr1B Plank fragment.
- [63] Tr1A several thick planking fragments, some with dark red paint, 'door.'

7.2.10 Sample

- [68] TP12 to be identified.

8 NMR OASIS archaeological report form

OASIS ID: molas1-28721

Project details

Project name	Crystal Palace Park
Short description of the project	Evaluation of 19 test pits and trenches. These were located in order to examine what remains of the Victorian Crystal Palace and its environment. structural remains of the palace itself on the highest western part of the site, survive well. Features such as steps and fountains on the Lower Terrace have been largely demolished during past re-landscaping projects.
Project dates	Start: 17-05-2007 End: 22-06-2007
Previous/future work	No / Not known
Any associated project reference codes	CYT07 - Sitecode
Type of project	Field evaluation
Site status	English Heritage List of Parks and Gardens of Special Historic Interest
Current Land use	Woodland 6 - Parkland
Monument type	WALLS Post Medieval
Methods & techniques	'Test Pits'
Development type	Amenity area (e.g. public open space)
Prompt	Environmental Assessment regulations Schedule 1 projects (Obligatory)
Position in the	Pre-application

planning process

Project location

Country	England
Site location	GREATER LONDON BROMLEY BECKENHAM Crystal Palace Park
Postcode	SE19
Study area	1.00 Kilometres
Site coordinates	TQ 34170 70900 51.4207029973 -0.07014897043680 51 25 14 N 000 04 12 W Point
Height OD	Min: 83.00m Max: 108.00m

Project creators

Name of Organisation	MoLAS
Project brief originator	London Development Agency
Project design originator	MoLAS
Project director/manager	George Dennis
Project supervisor	Julian Bowsher
Type of sponsor/funding body	London Development Agency
Name of sponsor/funding body	London Development Agency

Project archives

Physical Archive recipient To be determined

Digital Archive recipient LAARC

Paper Archive recipient LAARC

Project bibliography 1

Publication type Grey literature (unpublished document/manuscript)

Title Crystal Palace Park Archaeological Evaluation Report

Author(s)/Editor(s) Bowsher, JMC

Date 2007

Issuer or publisher MoLAS

Place of issue or publication London

Description Evaluation Report

Entered by Julian Bowsher (JBowsher@museumoflondon.org.uk)

Entered on 13 July 2007

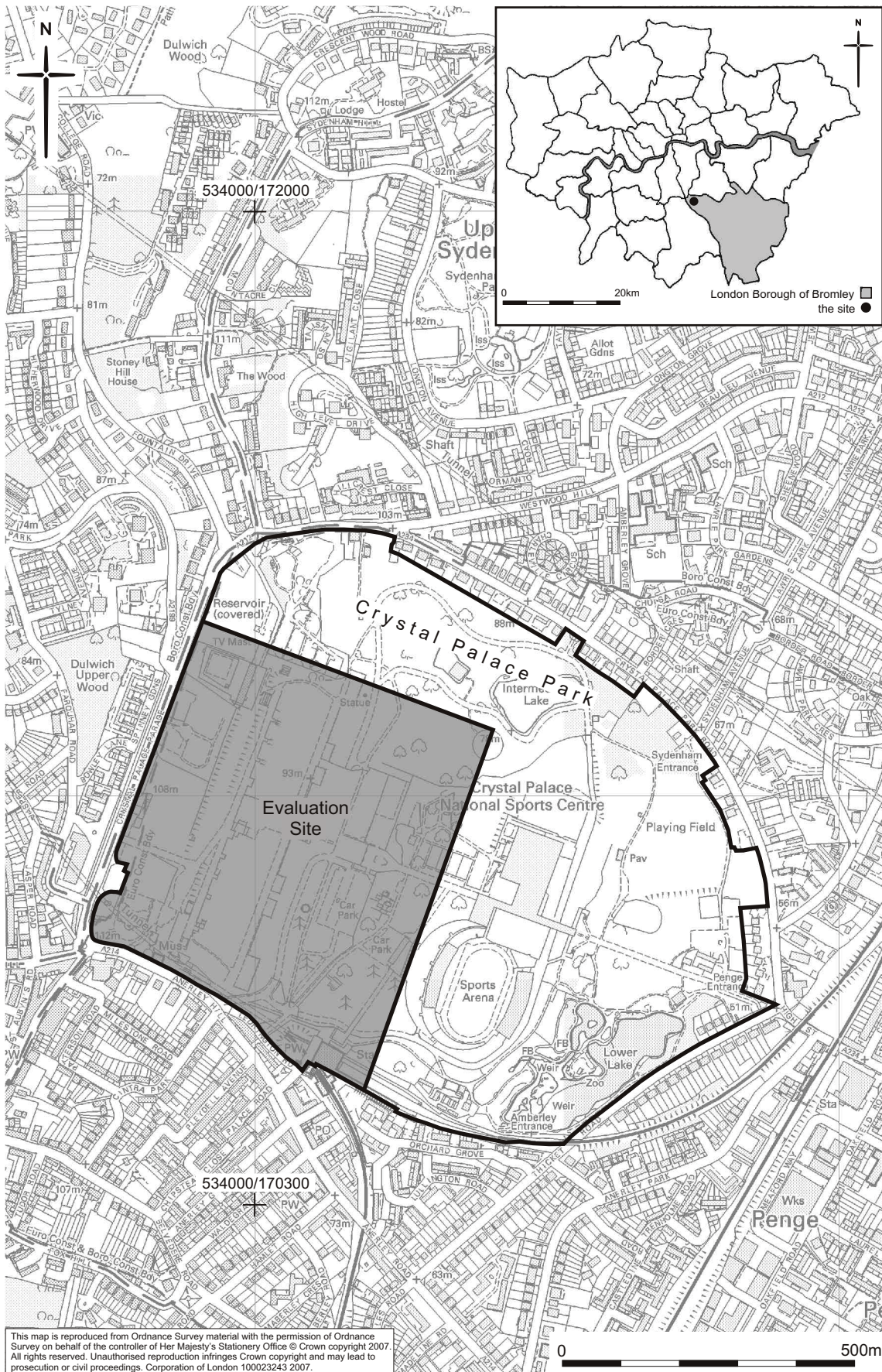


Fig 1 Site location

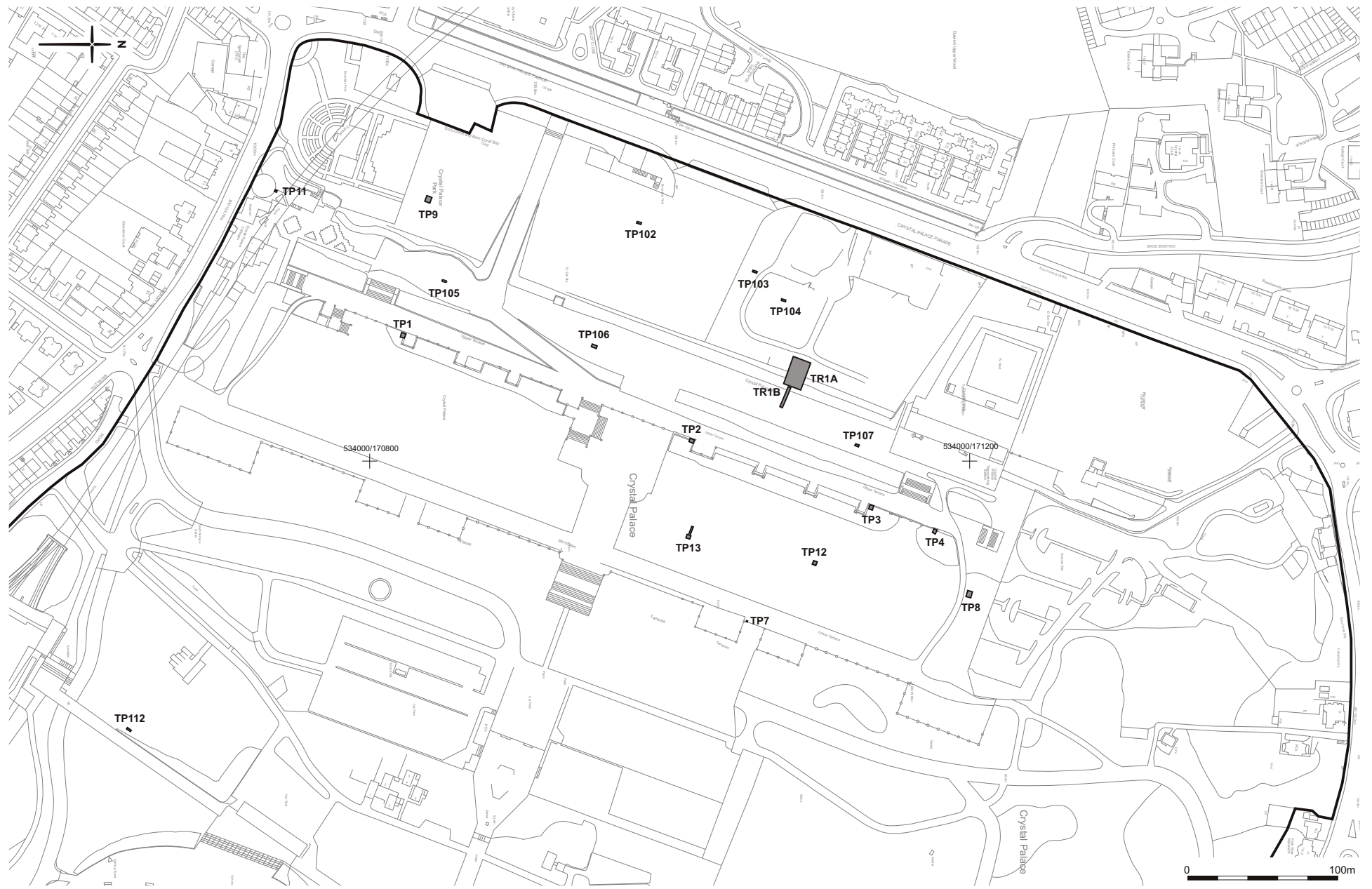


Fig 2 Trench and test pit location

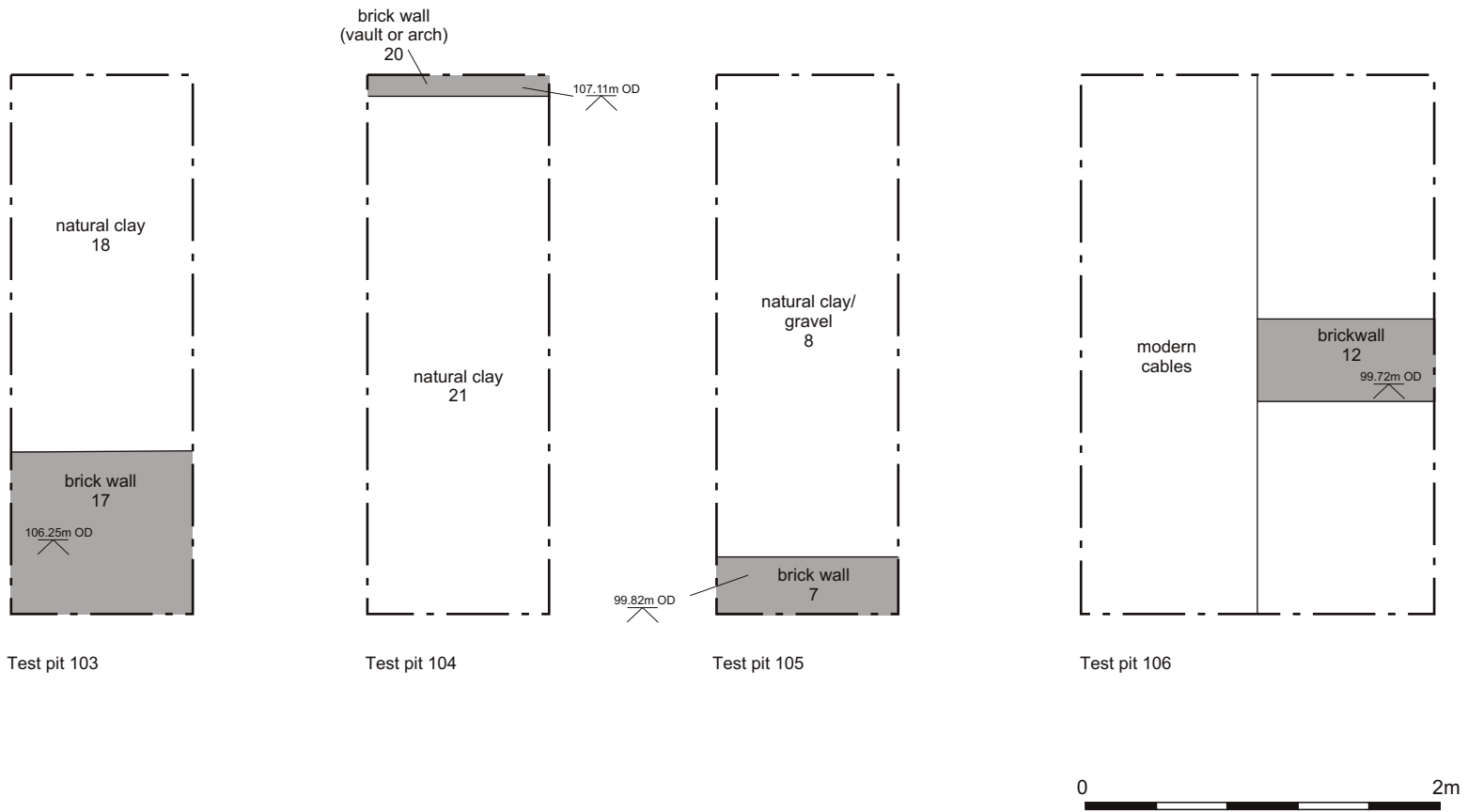


Fig 3 Plans of test pits 103–106, showing brick walls within the Palace

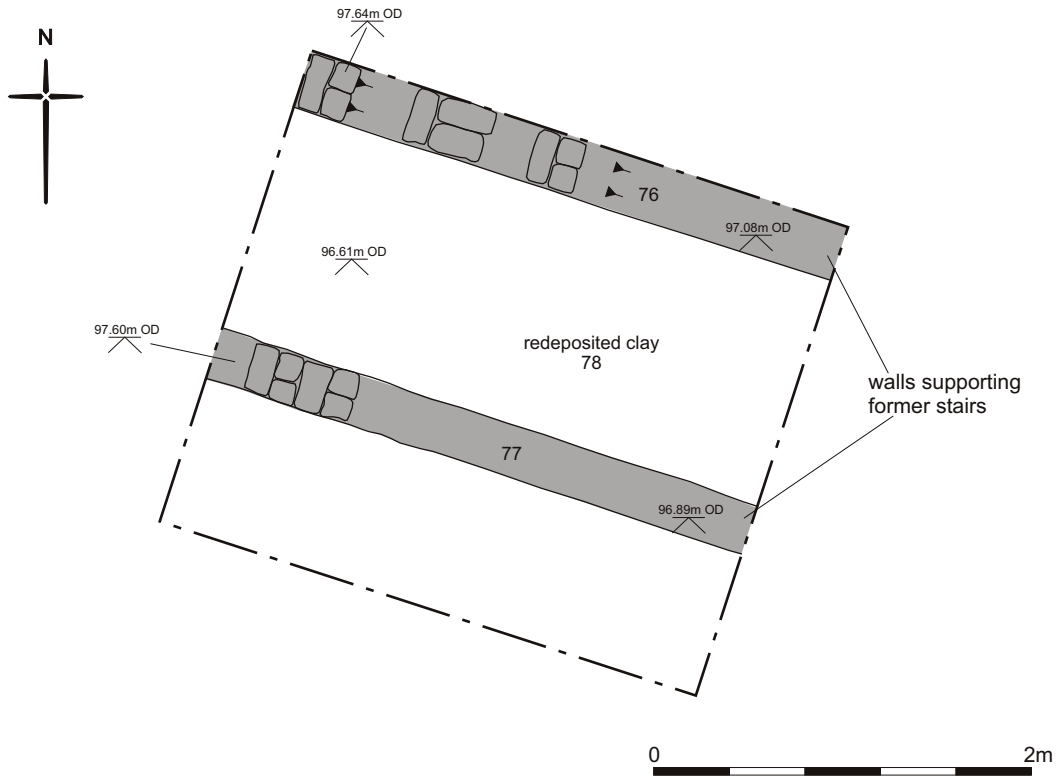


Fig 4 Test pit 1, plan of supports for former stairs

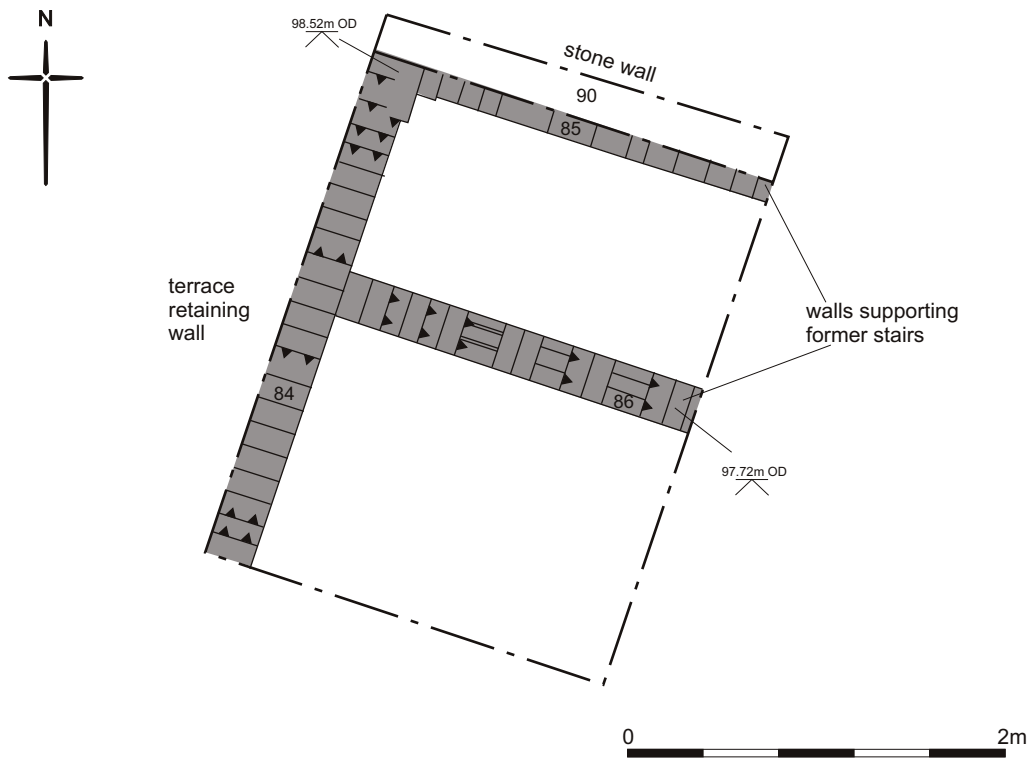


Fig 5 Test Pit 2, plan of terrace retaining wall and supports for former stairs

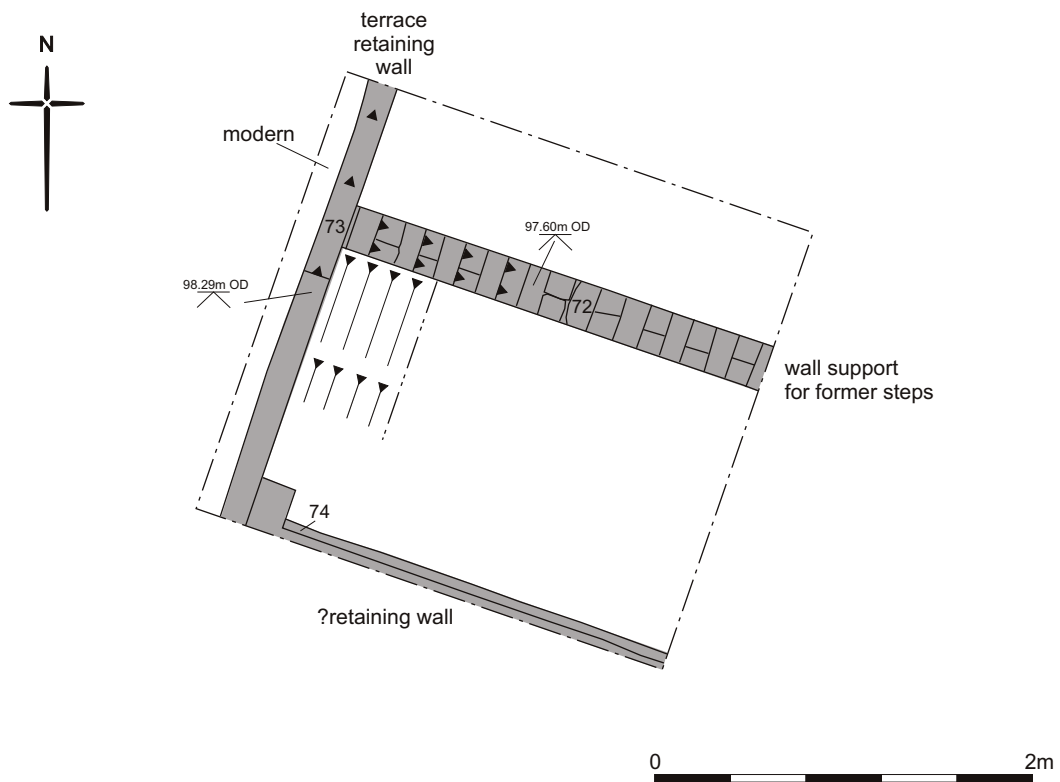


Fig 6 Test pit 3, plan of terrace retaining wall and supports for former stairs



Fig 7 Test pit 3, terrace retaining wall and supports for former stairs, looking west



Fig 8 Sections of the original terrace balustrade, dumped over the former stairs in Test pits 1–4

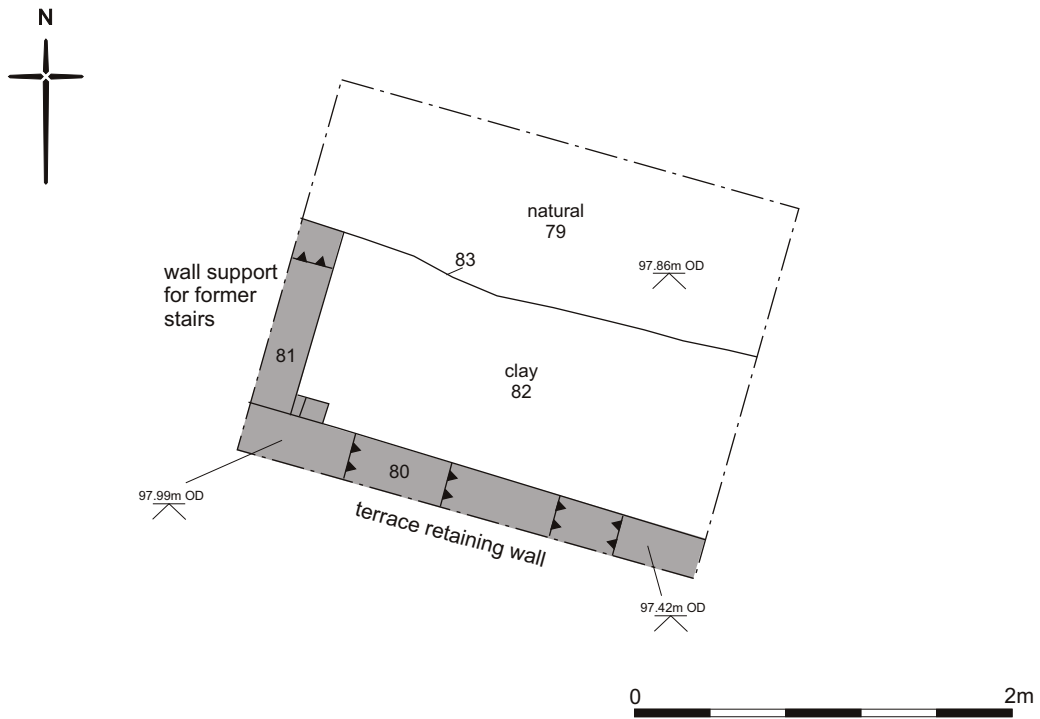


Fig 9 Test pit 4, plan of terrace retaining wall and supports for former stairs

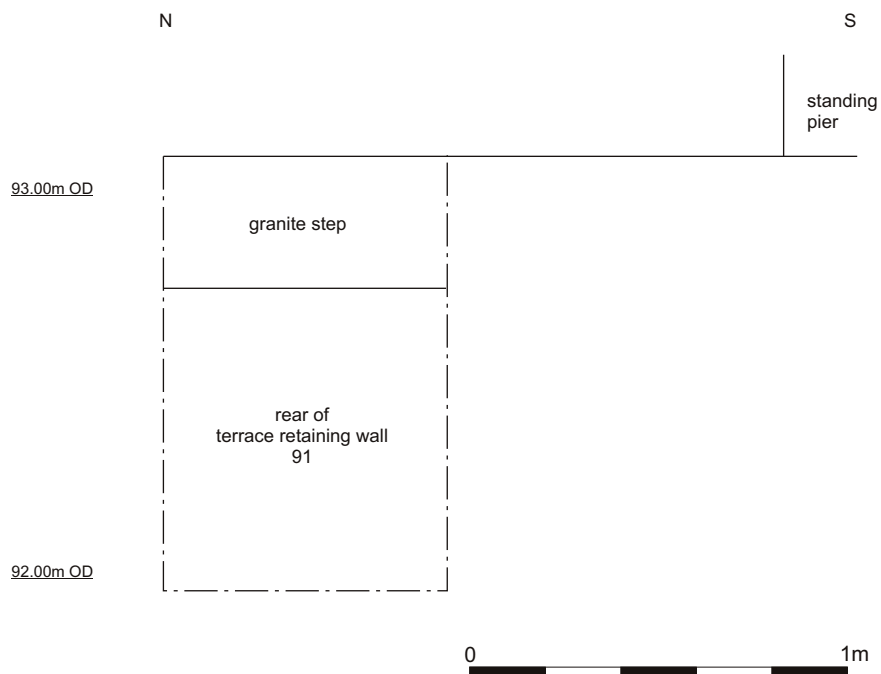


Fig 10 Test pit 7 , elevation of part of terrace retaining wall

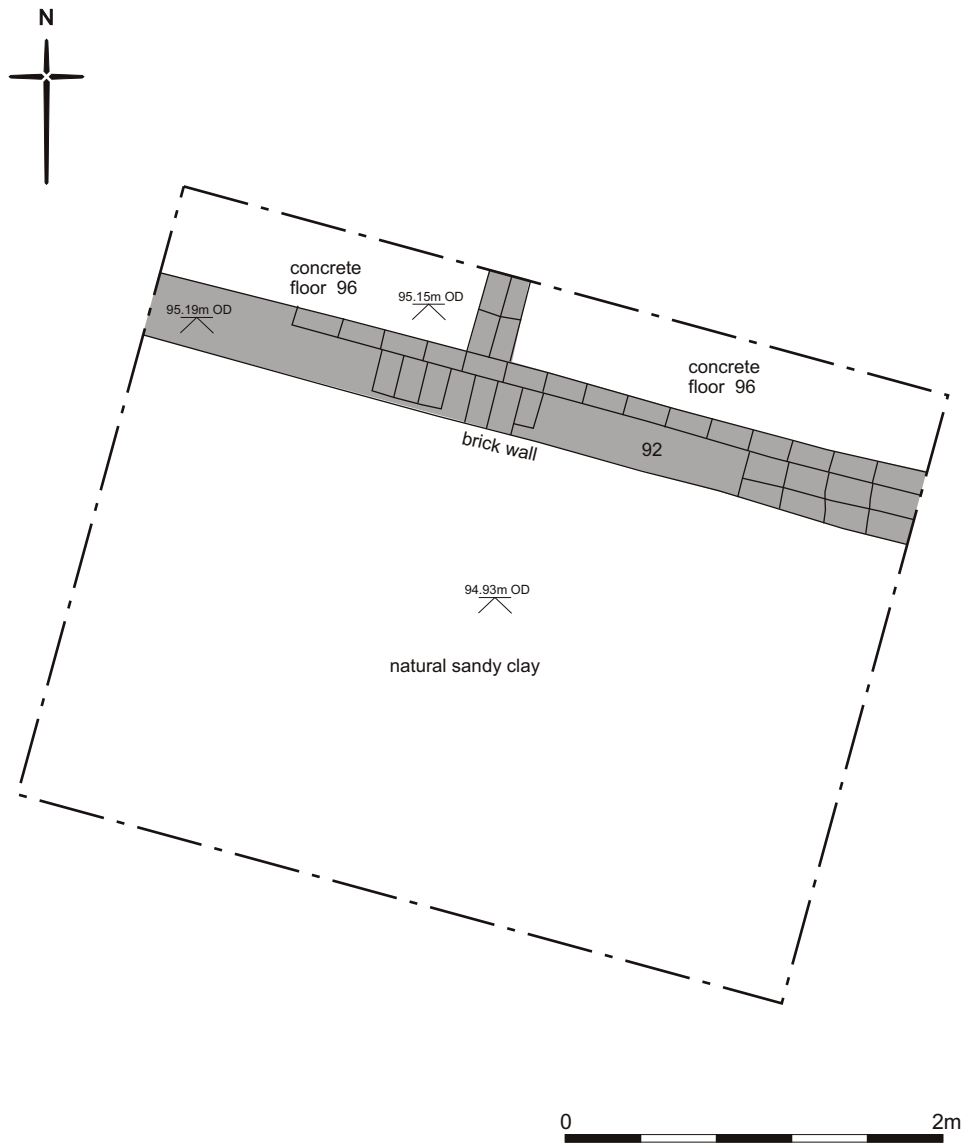


Fig 11 Test pit 8, plan of floor and south wall of North Wing

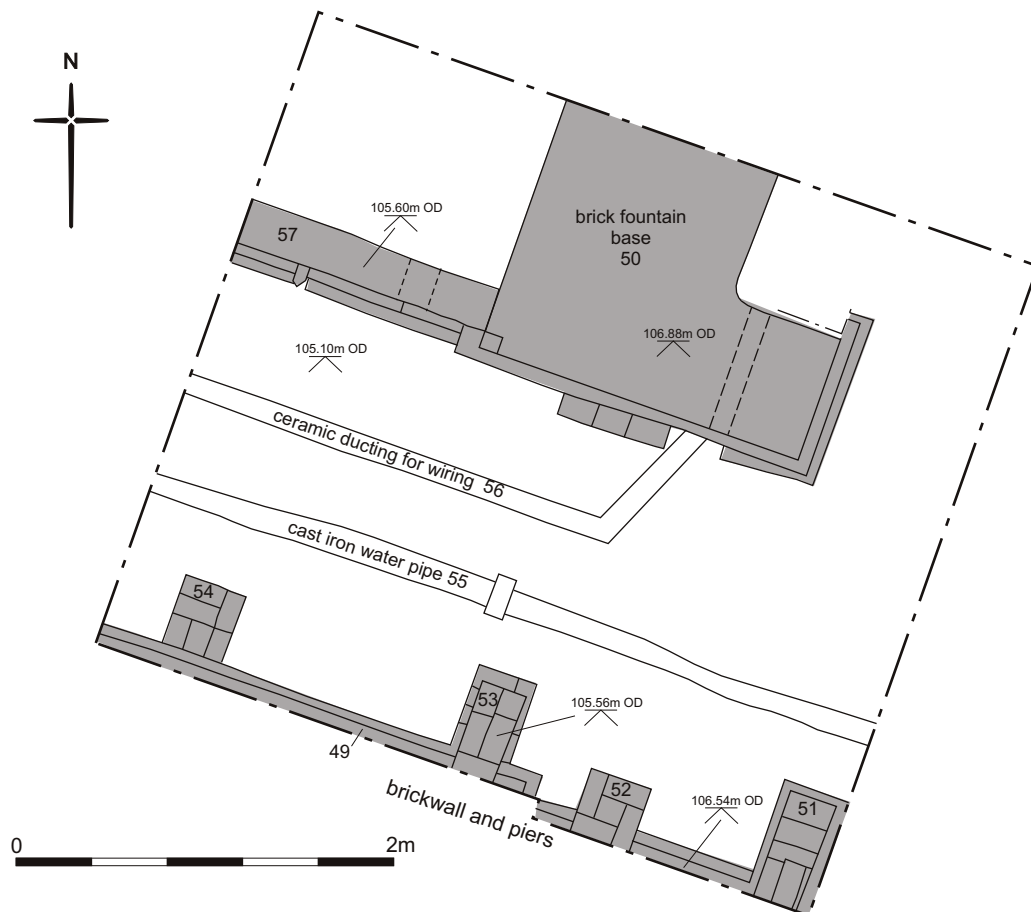


Fig 12 Test pit 9, plan showing base of south nave fountain



Fig 13 Test pit 9, base of south nave fountain, looking west

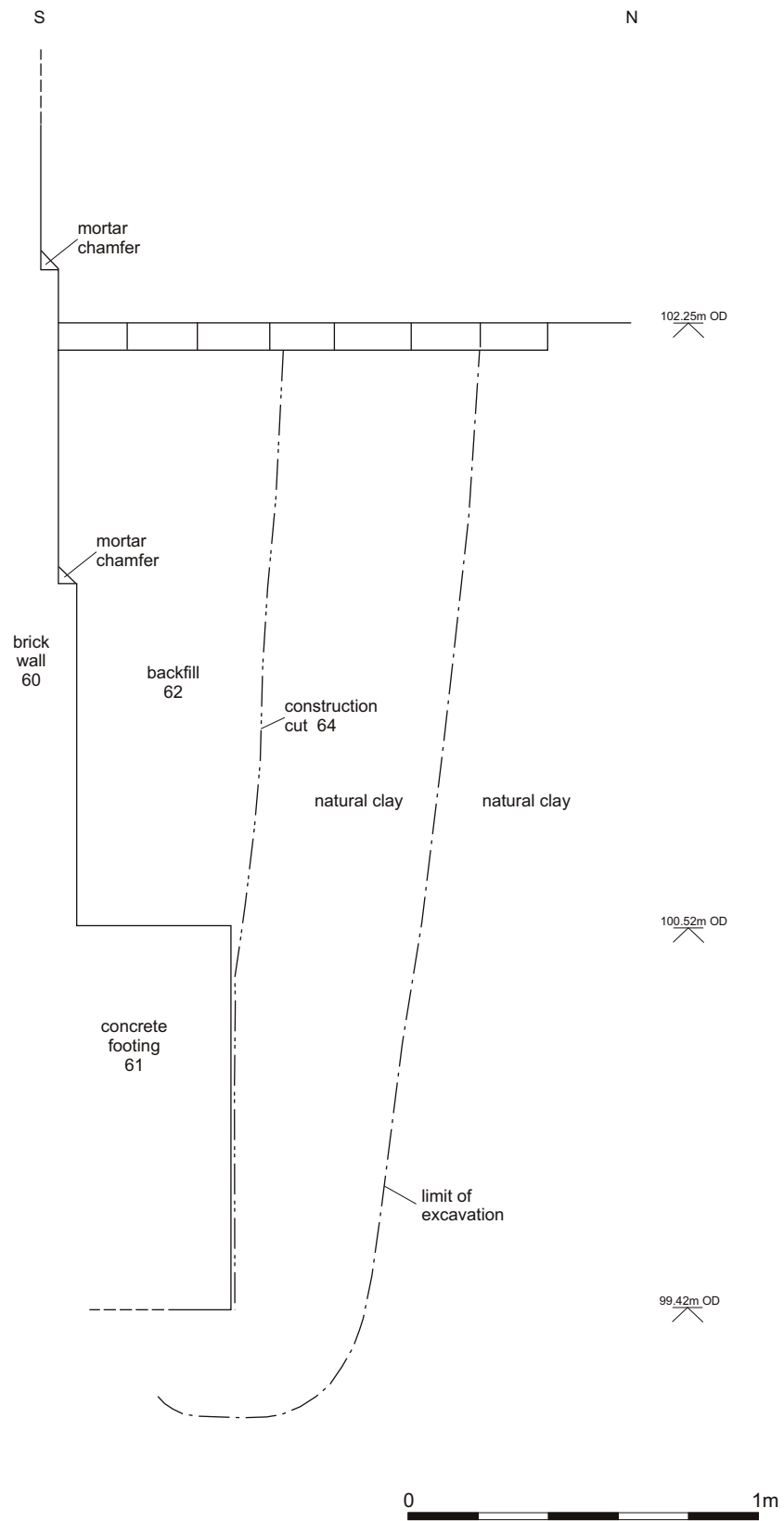


Fig 14 Test pit 11, section showing foundations of Brunel's South Water Tower

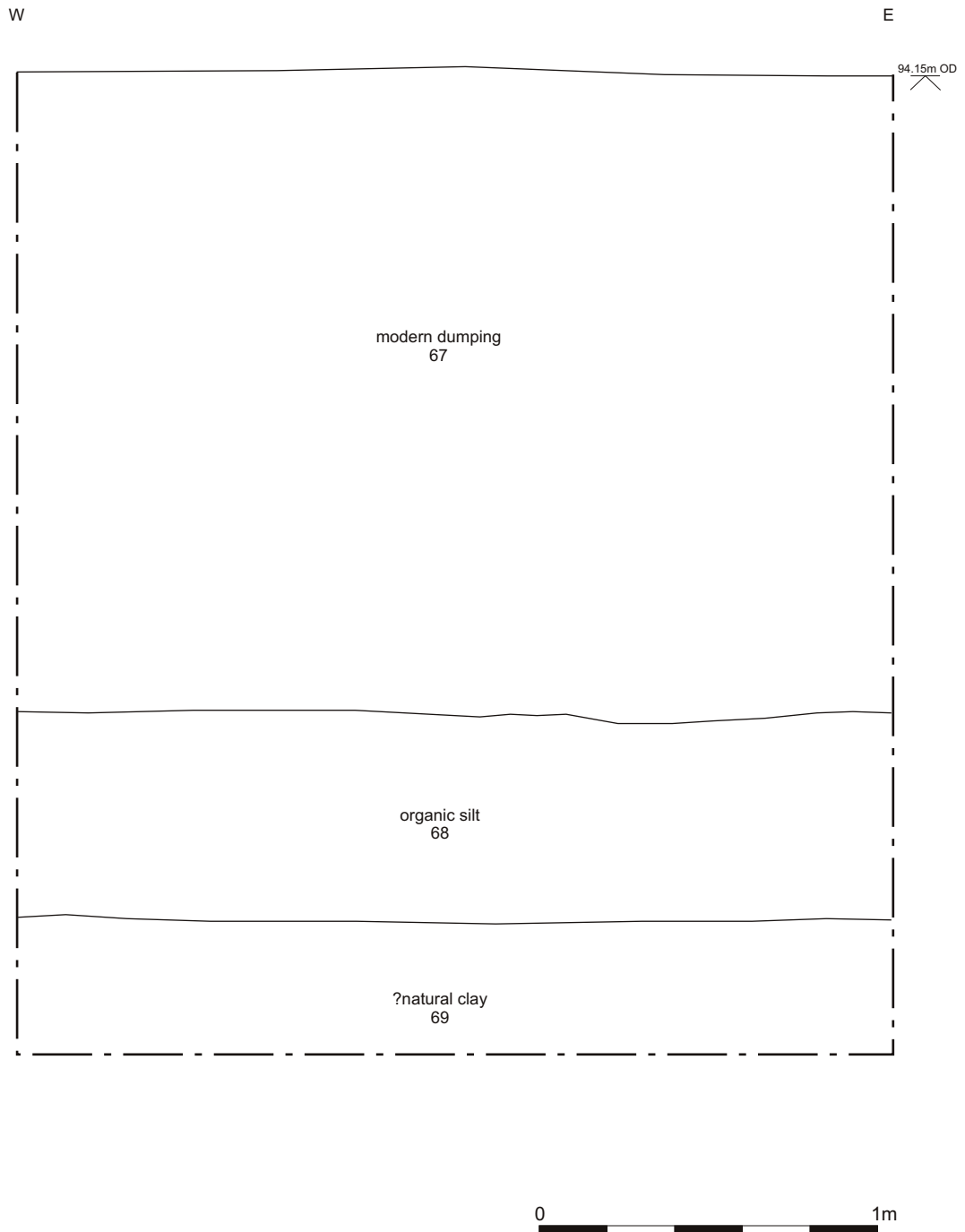


Fig 15 Test pit 12, section within fountain basin CP67

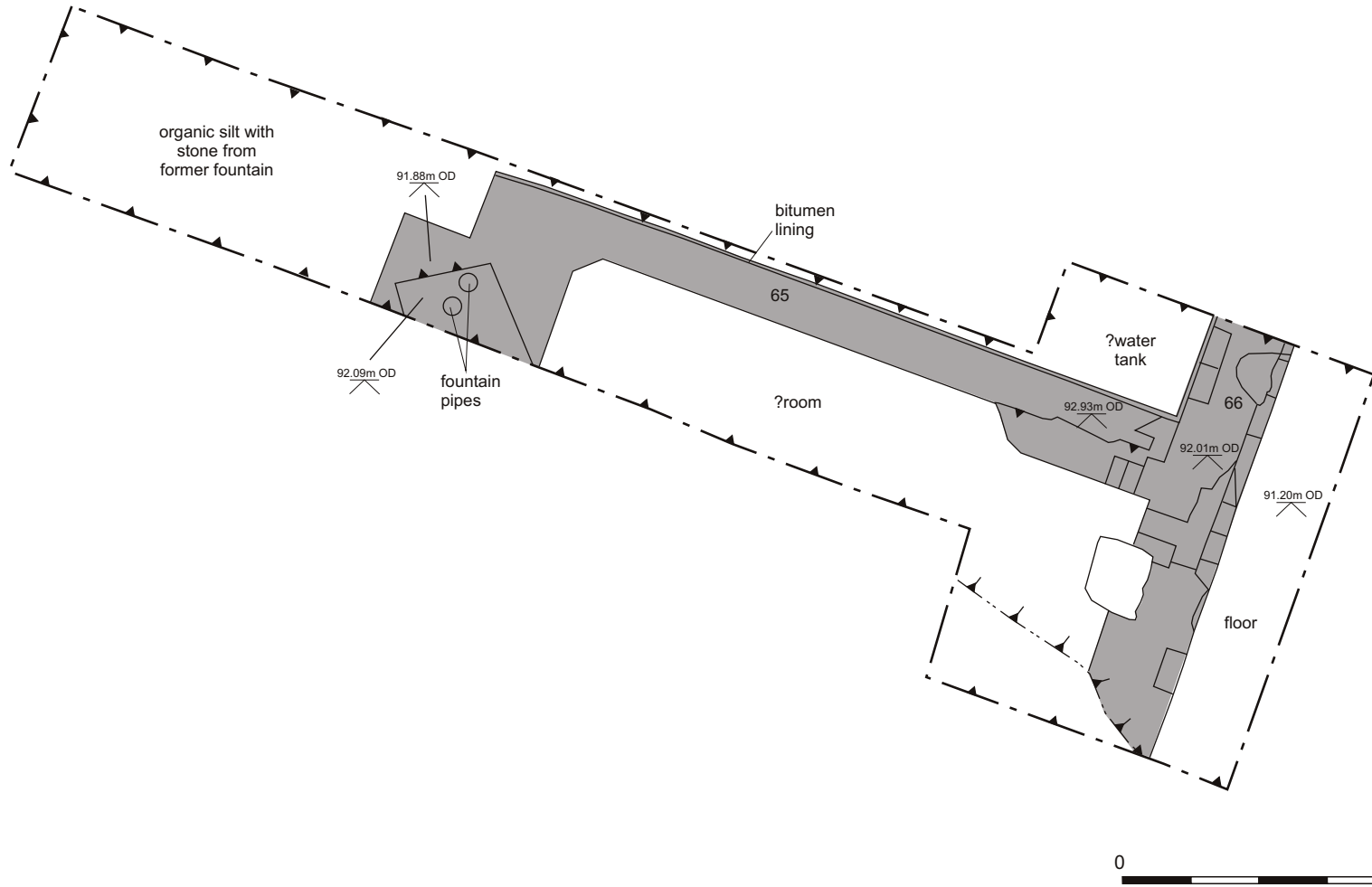


Fig 16 Test pit 13, plan of walls from fountain CP66 control room



Fig 17 Edging block from former fountain CP66 found in TP13

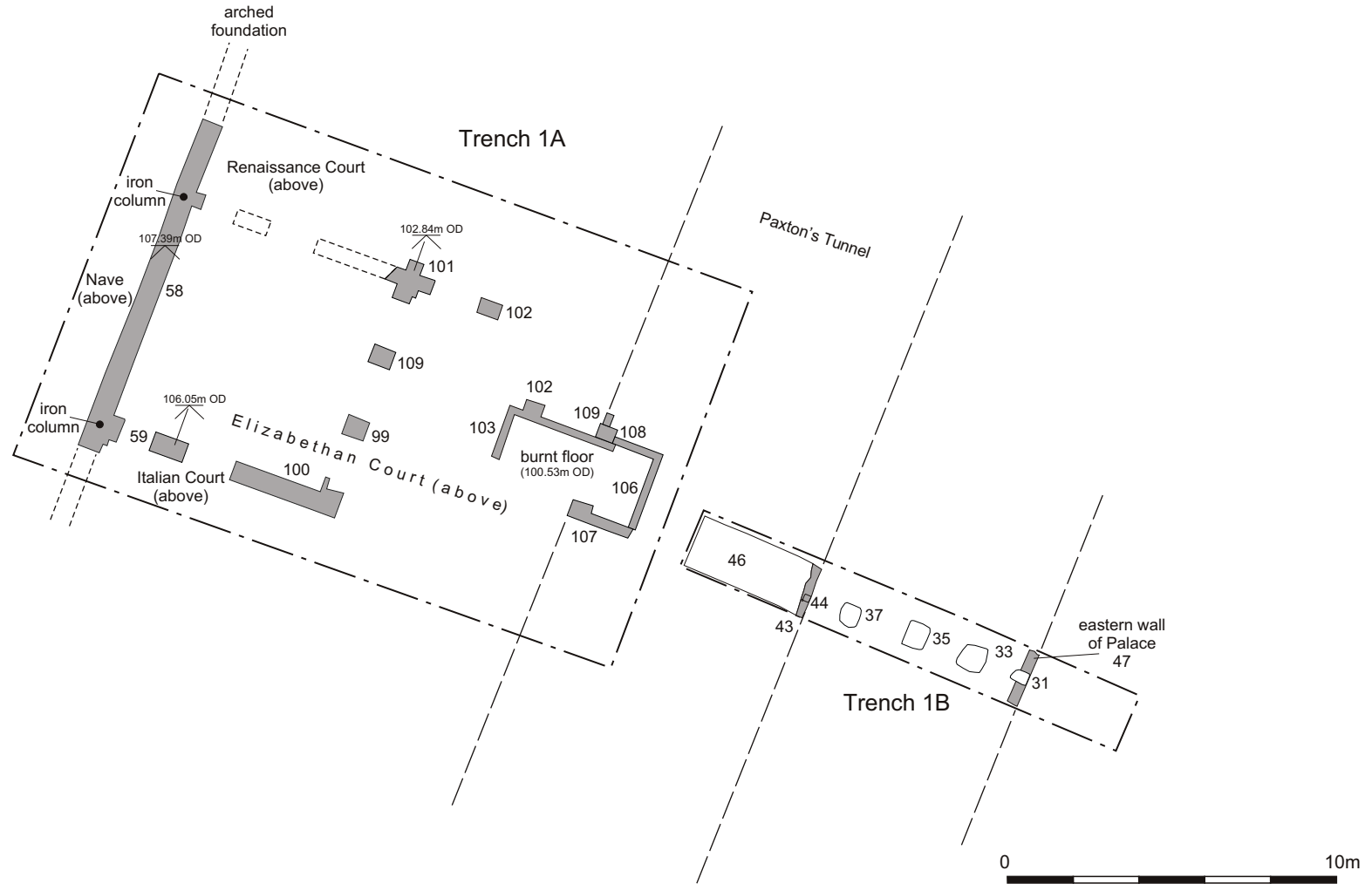


Fig 18 Trenches 1A and 1B, plan of structural features from the Palace

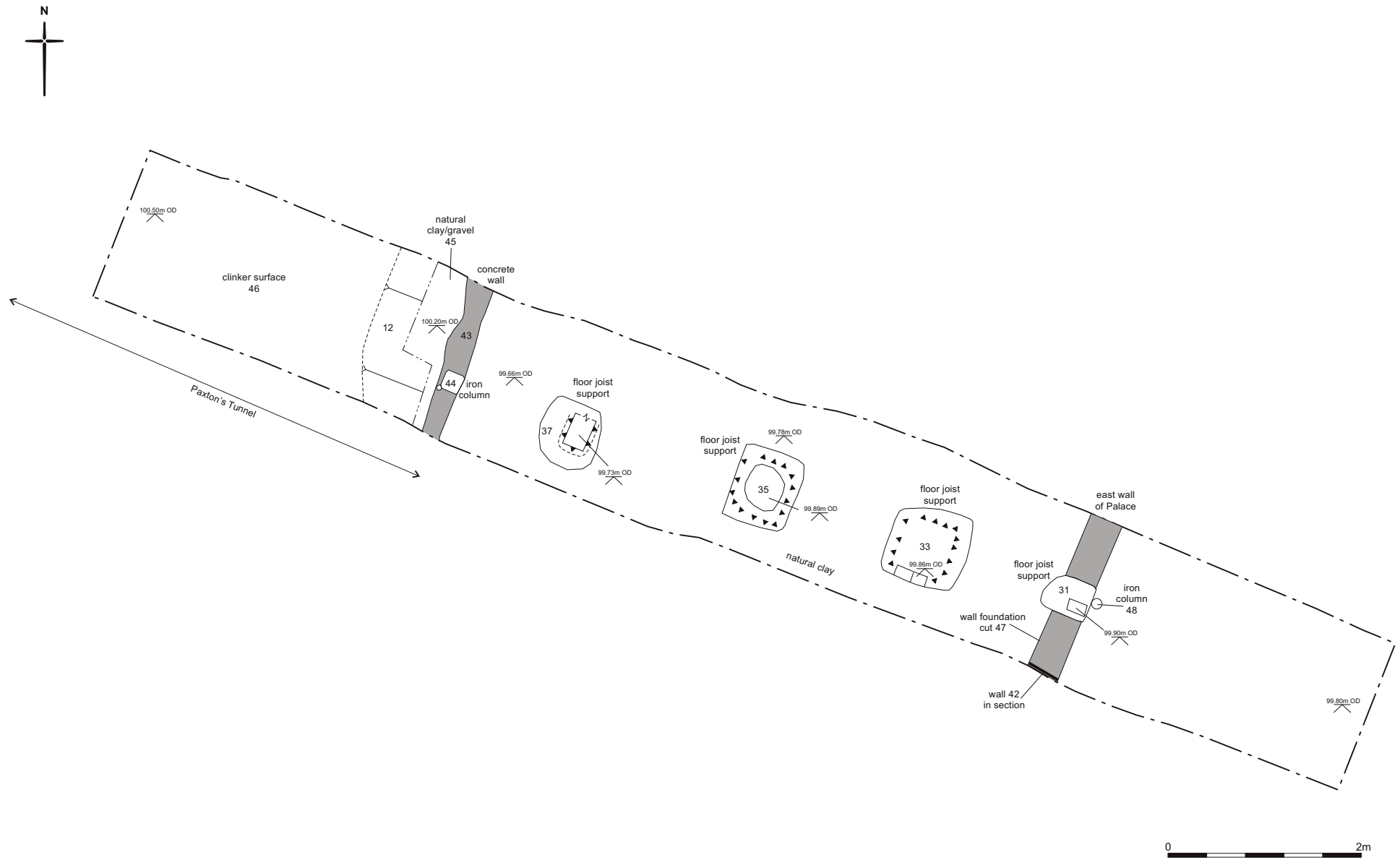


Fig 19 Trench 1B, plan of features from east side of the Palace and Paxton's Tunnel



Fig 20 Trench 1B, crushed cinder floor of Paxton's Tunnel (46) with iron column (44) and joist support (37), looking east



Fig 21 Iron column [44], set in concrete



Fig 22 Arched brick wall [58] in Trench 1A

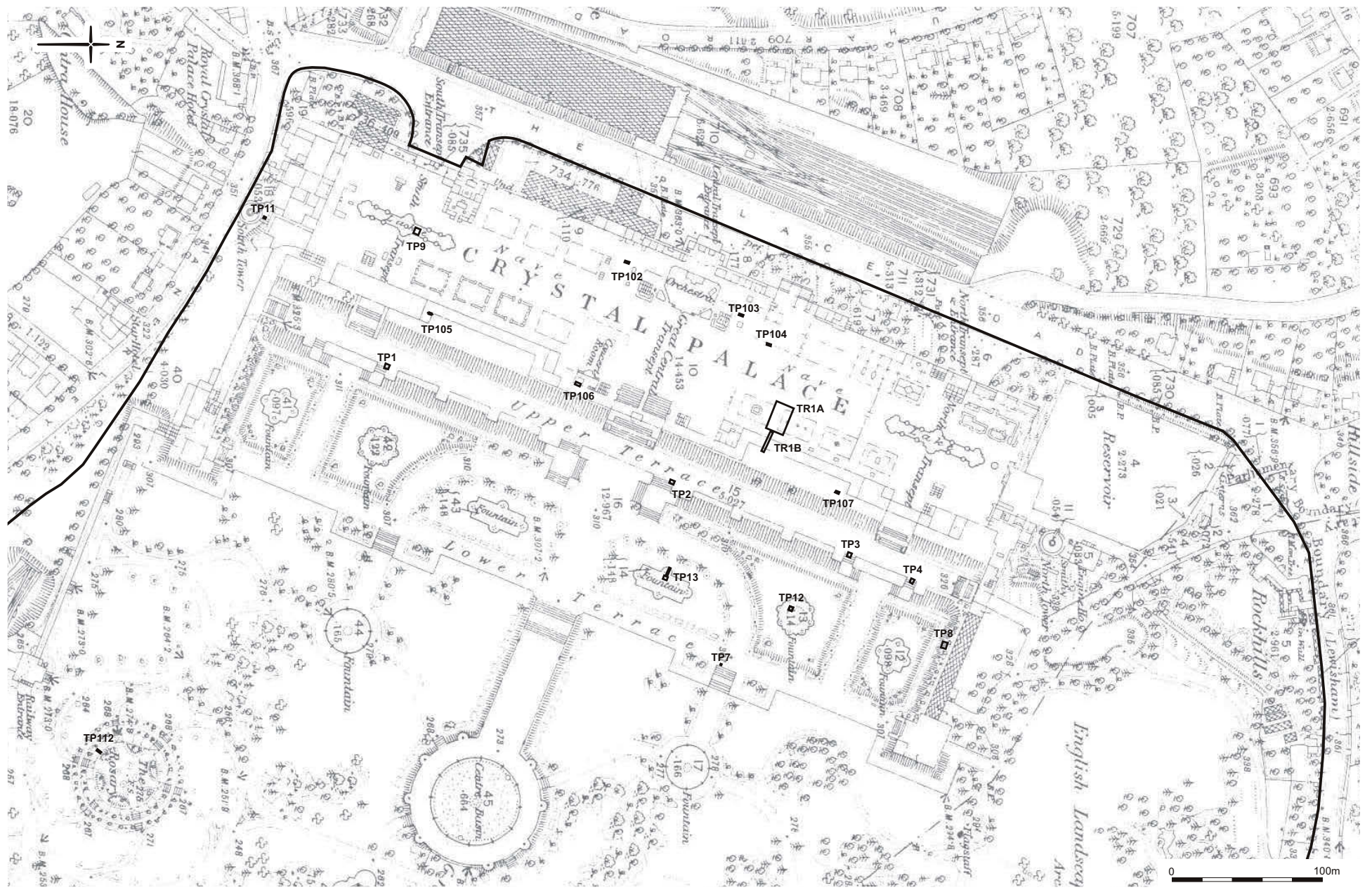


Fig 23 The evaluation Trenches and Test Pits superimposed on a plan of Crystal Palace (1871 Ordnance Survey)

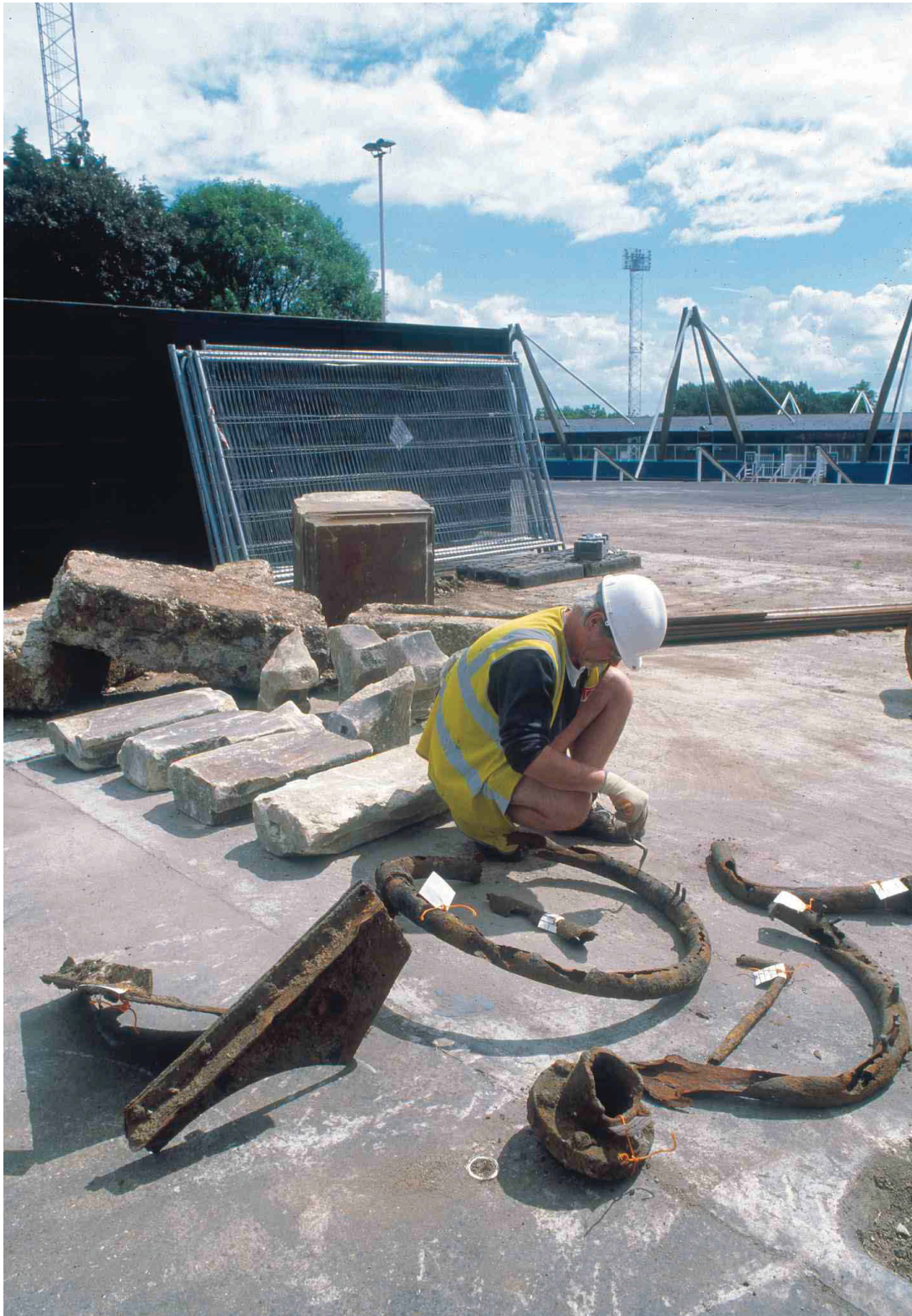


Fig 24 Stone work and metal fragments from the evaluation being catalogued