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**WALTHAM ABBEY ROYAL GUNPOWDER MILLS,
BEAULIEU DRIVE / HIGHBRIDGE STREET,
WALTHAM ABBEY, ESSEX**

ARCHAEOLOGICAL MONITORING & RECORDING

Authors: Zbigniew Pozorski (Fieldwork & report)	
NGR: TL 3768 0057	Report No: 4039
District: Epping Forest	Site Code: AS1484
Approved: Claire Halpin	Project No: 4735
Signed:	Date: March 2012

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CONTENTS

OASIS SUMMARY SHEET

SUMMARY

- 1 *INTRODUCTION***
- 2 *DESCRIPTION OF THE SITE***
- 3 *TOPOGRAPHY, GEOLOGY AND SOILS***
- 4 *ARCHAEOLOGICAL AND HISTORICAL BACKGROUND***
- 5 *METHODOLOGY***
- 6 *DESCRIPTION OF RESULTS***
- 7 *CONFIDENCE RATING***
- 8 *DEPOSIT MODEL***
- 9 *DISCUSSION***
- 10 *DEPOSITION OF THE ARCHIVE***

ACKNOWLEDGEMENTS

BIBLIOGRAPHY

OASIS SUMMARY SHEET

Project details			
Project name	<i>Waltham Abbey Royal Gunpowder Mills, Beaulieu Drive / Highbridge Street, Waltham Abbey, Essex</i>		
<p><i>In March 2012 Archaeological Solutions (AS) carried out a programme of archaeological monitoring and recording at Waltham Abbey Royal Gunpowder Mills, Beaulieu Drive / Highbridge Street, Waltham Abbey, Essex (NGR TL 3768 0057). The monitoring was commissioned by AECOM Ltd and was carried out during the construction of a new sewer rising main to provide adequate discharge from the Lee Valley White Water Rafting Centre.</i></p> <p><i>The site is to the immediate west of the historic core of Waltham Abbey and lies within the Scheduled Ancient Monument (SAM) associated with The Royal Gunpowder Mills. The monitoring was carried out within the SAM's smaller detached area at the southern end of Beaulieu Drive. Gunpowder production has been taking place on the site since the mid 17th century, and the site had a potential for archaeological remains related this manufacturing activity.</i></p> <p><i>In the event the monitoring revealed the remains of two modern walls.</i></p>			
Project dates (fieldwork)	<i>5-6/03/2012</i>		
Previous work (Y/N/?)	<i>Y</i>	Future work (Y/N/?)	<i>N</i>
P. number	<i>4735</i>	Site code	<i>AS1484</i>
Type of project	<i>Archaeological Monitoring and Recording</i>		
Site status	<i>Scheduled Ancient Monument</i>		
Current land use	<i>Lawn and road at the front of entrance to estate</i>		
Planned development	<i>Construction of a new sewer rising main</i>		
Main features (+dates)	<i>Two modern walls</i>		
Significant finds (+dates)	<i>-</i>		
Project location			
County/ District/ Parish	<i>Essex</i>	<i>Epping Forest</i>	<i>Waltham Abbey</i>
HER/ SMR for area	<i>Essex HER</i>		
Post code (if known)	<i>-</i>		
Area of site	<i>c. 100m²</i>		
NGR	<i>TL 3768 0057</i>		
Height AOD (min/max)	<i>c. 19.30m AOD</i>		
Project creators			
Brief issued by	<i>English Heritage</i>		
Project supervisor/s (PO)	<i>Zbigniew Pozorski</i>		
Funded by	<i>AECOM Ltd.</i>		
Full title	<i>Waltham Abbey Royal Gunpowder Mills, Beaulieu Drive / Highbridge Street, Waltham Abbey, Essex. Archaeological Monitoring & Recording</i>		
Authors	<i>Pozorski, Z.</i>		
Report no.	<i>4039</i>		
Date (of report)	<i>March 2012</i>		

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SUMMARY

In March 2012 Archaeological Solutions (AS) carried out a programme of archaeological monitoring and recording at Waltham Abbey Royal Gunpowder Mills, Beaulieu Drive / Highbridge Street, Waltham Abbey, Essex (NGR TL 3768 0057). The monitoring was commissioned by AECOM Ltd and was carried out during the construction of a new sewer rising main to provide adequate discharge from the Lee Valley White Water Rafting Centre.

The site is to the immediate west of the historic core of Waltham Abbey and lies within the Scheduled Ancient Monument (SAM) associated with The Royal Gunpowder Mills. The monitoring was carried out within the SAM's smaller detached area at the southern end of Beaulieu Drive. Gunpowder production has been taking place on the site since the mid 17th century, and the site had a potential for archaeological remains related this manufacturing activity.

In the event the monitoring revealed remains of two modern walls.

1 INTRODUCTION

1.1 In March 2012 Archaeological Solutions (AS) carried out archaeological monitoring and recording at Waltham Abbey Royal Gunpowder Mills, Beaulieu Drive / Highbridge Street, Waltham Abbey, Essex (NGR TL 3768 0057; Figs. 1 & 2). The monitoring was commissioned by AECOM Ltd and was carried out during the construction of a new sewer rising main to provide adequate discharge from the Lee Valley White Water Rafting Centre. Part of the proposed pipe route traverses the Scheduled Ancient Monument (SAM) associated with the Royal Gunpowder Mills at the southern end of Beaulieu Drive. The groundworks for this section of pipe were carried out in accordance with Scheduled Monument Consent for the works by English Heritage. A programme of archaeological monitoring and recording was required during the excavation for the pipe's installation.

1.2 The monitoring was undertaken in accordance to a brief issued by English Heritage East of England Regional Office (EH; dated 02/02/2012), and a written scheme of investigation (specification) prepared by AS (dated 03/02/2012), and approved by EH. The project conformed to the Institute for Archaeologists (IfA) *Code of Conduct and Standard and Guidance for An Archaeological Watching Brief* (revised 2008), as well as the document *Standards for Field Archaeology in the East of England* (Gurney 2003).

1.3 The principal aim was to identify any evidence of archaeological remains exposed during the groundworks required for the proposed new pipe. It was particularly important to identify and record any further evidence of the buildings and ancillary features of the Highbridge Street SAM.

Planning policy context

1.4 Planning Policy Statement 5 (PPS5; 2010) states that those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest are heritage assets. The Planning Policy Statement aims to deliver sustainable development by ensuring that policies and decisions that concern the historic environment recognise that heritage assets are a non-renewable resource, take account of the wider social, cultural, economic and environmental benefits of heritage conservation, and recognise that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. It aims to conserve England's heritage assets in a manner appropriate to their significance. It states that opportunities to capture evidence from the historic environment and to contribute to our knowledge and understanding of our past, and to make this publicly available, should be taken, particularly where a heritage asset is to be lost.

2 DESCRIPTION OF THE SITE

2.1 The site is located off Highbridge Street, Waltham Abbey, at its junction with A121 Meridian Way and access road Beaulieu Drive. It comprises a small area on both sides of Beaulieu Drive, and the road itself, at the front of the boundary wall for the estate located to the immediate north of Highbridge Street. The site lies within the area of the Scheduled Ancient Monument (SAM), which is bordered by the infilled arm of a canal to the north, land off Horsemill Stream to the west, and a culverted branch of the river Lea to the east (Mill Head Stream).

3 TOPOGRAPHY, GEOLOGY AND SOILS

3.1 The site lies in a relatively flat location in the valley of the river Lea, c.19.30m AOD (Fig. 1). The land to the west of the site falls towards the Horsemill Stream.

3.2 The solid geology of the area is Eocene clay of the Thames Group (British Geological Survey 1978). Soils on the site are those of the Fladbury 1 association, described as stoneless calcareous clayey soils, variably affected by groundwater (Soil Survey of England and Wales 1983).

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 The Royal Gunpowder Mills lie to the north of Waltham Abbey and

comprise a large site containing intact buildings, ruins, earthworks, and buried remains of the Royal Armament Research and Development Establishment, formerly known as the Royal Gunpowder Factory. The site was associated with the manufacture of gunpowder, guncotton, nitroglycerine, cordite paste and tetryl, and has ancillary buildings and structures surviving from these processes. Parts of the site also include an extensive water management system, remains of a complex associated with the production and testing of modern high explosives and parts of an associated tramway and railway network. Parts of the site were converted to a visitor centre in the early 2000s.

4.2 The site has two areas scheduled as Ancient Monuments, the smaller is a detached area at the southern end of Beaulieu Drive, at its junction with Highbridge Street. The area occupied by the Highbridge Street SAM was purchased by the government from the Walton family in 1787 (gunpowder having been privately produced on the site since at least the mid 17th century). Following the purchase, two buildings within the SAM were constructed as a saltpetre refinery. The refinery was remodelled at the start of the 19th century, with six smaller buildings constructed to the west of the entrance. By the 1860s the old refinery had been converted for use as a pilot plant for the then new process of guncotton production. This was again superseded by the construction of a new purpose-built guncotton factory on the South Site by 1900. Thereafter the Highbridge Street SAM area was converted to an acetone factory (supplying the solvent for cordite production). Few changes took place in the inter-war years, and the factory closing in 1945 to become a centre for research and development (under Crown ownership). Most of the buildings on the site had been demolished by 1963, except for a surgery building in its north eastern part, which was demolished in 1972. The site finally closed in June 1991. The present Beulieu Drive roadway and entrance was constructed in 1998 to serve as the new entrance to the redeveloped Gunpowder Mills and Visitor Centre.

4.3 In 1998 Hertfordshire Archaeological trust (now AS) conducted an archaeological evaluation and archaeological observation and recording (Murray 1998), in advance of and during the construction of a new access road to serve a housing development on the site. The monitoring revealed the extensive remains of the foundations of a succession of buildings on the site. These included the foundations of a surgery built in 1872, and evidence for the construction of a previous acetone factory and guncotton building on the site.

5 METHODOLOGY

5.1 The principal element monitored was the mechanically-excavated trench for a new sewer rising main (Fig. 2). The rising main is to intercept an existing pipeline situated next to the southern perimeter of the White Water Rafting Centre and reconnect to a chamber by the Highbridge Street roundabout, with a total pipe length of some 400m. The inspected section of the trench was 60m long and on average 0.60m wide and 0.90m deep.

5.2 The archaeological monitoring comprised the observation of all groundworks, the inspection of the subsoil and natural deposits for archaeological features and the examination of spoil heaps and the recording of soil profiles. Archaeological features and deposits were recorded using *pro-forma* recording sheets, drawn to scale and photographed as appropriate. Excavated spoil was checked for finds and the excavated area was scanned by metal detector.

6 DESCRIPTION OF RESULTS

Deposits located within the area of excavation were recorded in sample sections described below.

<i>Sample section 1 (DP 4)</i> <i>W part of the trench, facing NNW</i> <i>0.00 = 19.35m AOD</i>		
0.00 – 0.10m	L3000	Topsoil. Mid brown, soft, sandy silt.
0.10 – 0.38m	L3001	Made Ground. Light to mid brown, loose, silty sand with moderate CBM fragments.
0.38 – 0.39m	L3002	Geotextile
0.39m+	L3003	Made Ground. Mid grey, loose, silty sand with frequent CBM fragments

<i>Sample section 2 (DP 5)</i> <i>W part of the trench, facing NNW</i> <i>0.00 = 19.39m AOD</i>		
0.00 – 0.15m	L3000	Topsoil. As above.
0.15 – 0.38m	L3004	Made Ground. Light yellow, loose, sand with some brown, loose, sandy silt.
0.38 – 0.39m	L3002	Geotextile
0.39 – 0.72m	L3005	Made Ground. Grey brown, friable, clayey silt and yellow, loose, sand and occasional CBM fragments.
0.72m+	L3006	Dark grey, compact, clayey silt.

<i>Sample section 3 (DP 6)</i> <i>E part of the trench, facing SSW</i> <i>0.00 = 19.43m AOD</i>		
0.00 – 0.12m	L3000	Topsoil. Mid brown, soft, sandy silt.
0.12 – 0.37m	L3007	Made Ground. Mid grey brown grey, compact, sandy silt with occasional CBM fragments.
0.37m+	L3008	Made Ground. Loose brick rubble with dark grey, loose, silty sand.

<i>Sample section 4 (DP 7)</i> <i>E part of the trench, facing SSW</i> <i>0.00 = 19.45m AOD</i>		
0.00 – 0.07m	L3000	Topsoil. As above.
0.07 – 0.45m	L3007	Made Ground. As above.
0.45 – 0.85m	L3008	Made Ground. As above.
0.85m+	L3009	Natural. Light to mid yellow, compact, clay.

Description: The remains of two modern walls were present within the trench.

M3010 was located in the very western end of monitored trench section (Fig. 2; DP 9). It was aligned north-north-west/south-south-east and it followed the existing boundary wall of the estate to the north of the investigation area. It was constructed using mid red coloured bricks bonded with white chalky mortar. The wall was 0.38m wide, 0.35m+ deep and it was present at c.0.50m below existing ground level.

M3011 was also present in the western part of the trench and was also aligned north-north-west/south-south-east (Fig. 2; DP 10). It was constructed using mid red coloured bricks bonded with creamy chalky mortar. The wall was 0.50m wide and 0.39m+ deep and it was present at c. 0.40m below existing ground level.

7 CONFIDENCE RATING

7.1 It is not felt that any factors inhibited the recognition of archaeological features or finds during the programme of archaeological monitoring and recording.

8 DEPOSIT MODEL

8.1 The majority of the area monitored was overlain by Topsoil L3000, a mid brown, soft, sandy silt (0.10 – 0.15m thick). Below L3000 were deposits of made ground overlying the geotextile, L3002 laid at c. 0.40m below existing.

8.2 The natural clay, L3009, was present only in the eastern end of the trench at c. 0.85m below existing ground level and comprised a light to mid yellow, compact, clay.

9 DISCUSSION

9.1 The site had a potential for archaeological remains, in particular for the post-medieval and early modern archaeology related to gunpowder manufacturing within The Waltham Abbey Royal Gunpowder Mills Scheduled Ancient Monument.

9.2 The area of the current archaeological investigation had been a subject to modern construction works which resulted in an accumulation of c.0.40m of deposits above original ground level. The latter was still clearly visible as single pavement stones and a manhole with a closed lid were still *in situ* and below the made ground. Those works likely took place in 1998. The basal deposits were also likely of early modern/modern date (19th – 20th century). One of the exposed walls (M3010) was almost certainly a boundary wall which had been shortened possibly during the 1990's works. The wall was modern. The other wall was a remnant of a building and it was likely of late 19th century date. Large quantities of CBM was present within the trench suggesting extensive demolition works have been undertaken on the site. No residual finds were recovered from the trench.

10 DEPOSITION OF THE ARCHIVE

10.1 Archive records, with an inventory, will be deposited with any donated finds from the site at Epping Forest Museum Service. The archive will be quantified, ordered, indexed, cross-referenced and checked for internal consistency.

ACKNOWLEDGEMENTS

Archaeological Solutions would like to thank Mr Graham Funnell and Michael Beresford of AECOM Ltd for funding the project and for their assistance, and the assistance of the main contractor, J Browne Construction.

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PHOTOGRAPHIC INDEX



DP 1. The area of monitoring. Looking west-north-west.



DP 2. Western part of the trench. Looking east.



DP 3. Eastern part of the trench. Looking east.



DP 4. Sample section 1. Looking south.



DP 5. Sample section 2. Looking south.



DP 6. Sample section 3. Looking north-north-east.



DP 7. Sample section 4. Looking north-north-east.



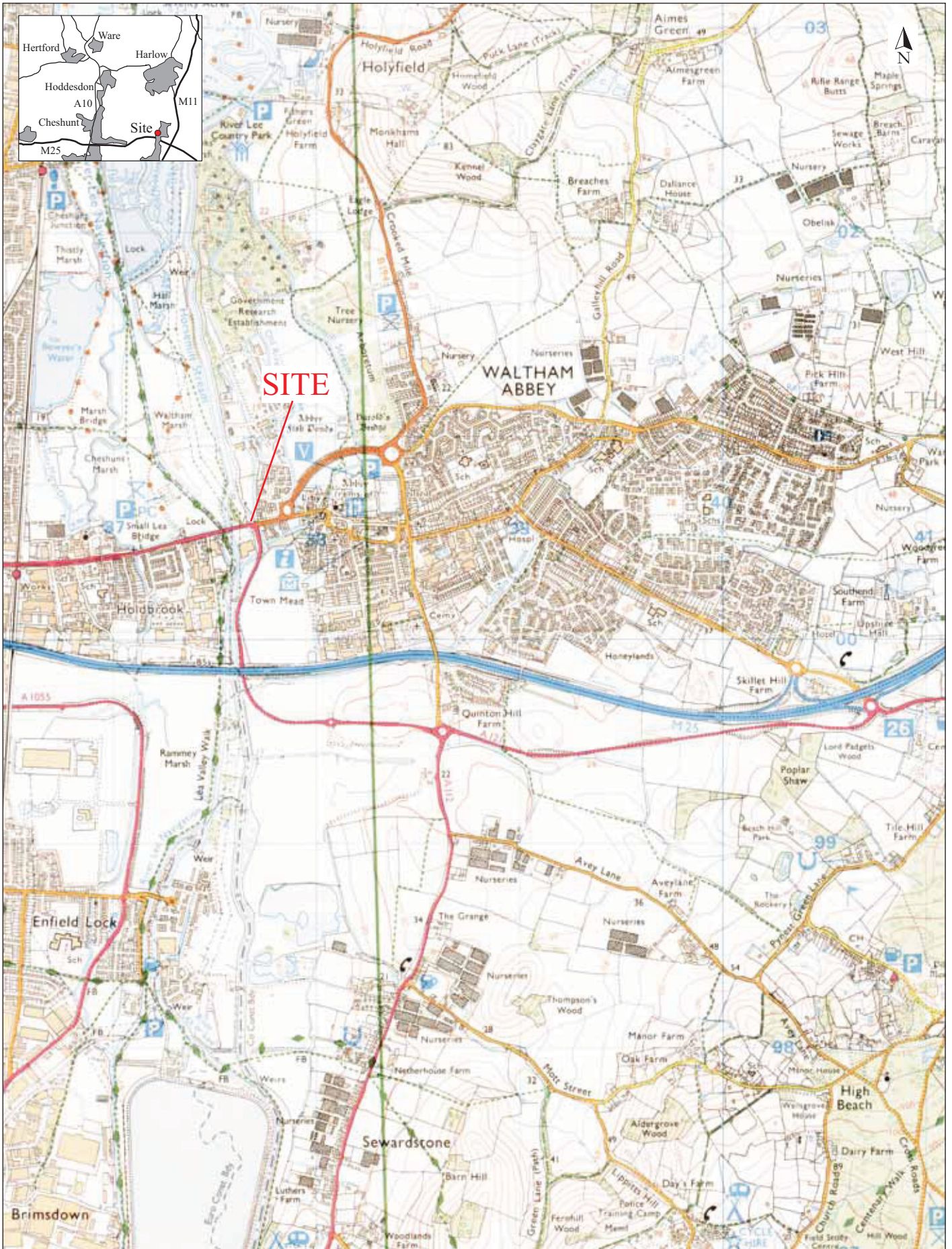
DP 8. Trench for a new chamber. Looking west-north-west.



DP 9. Wall M3010. Looking south.

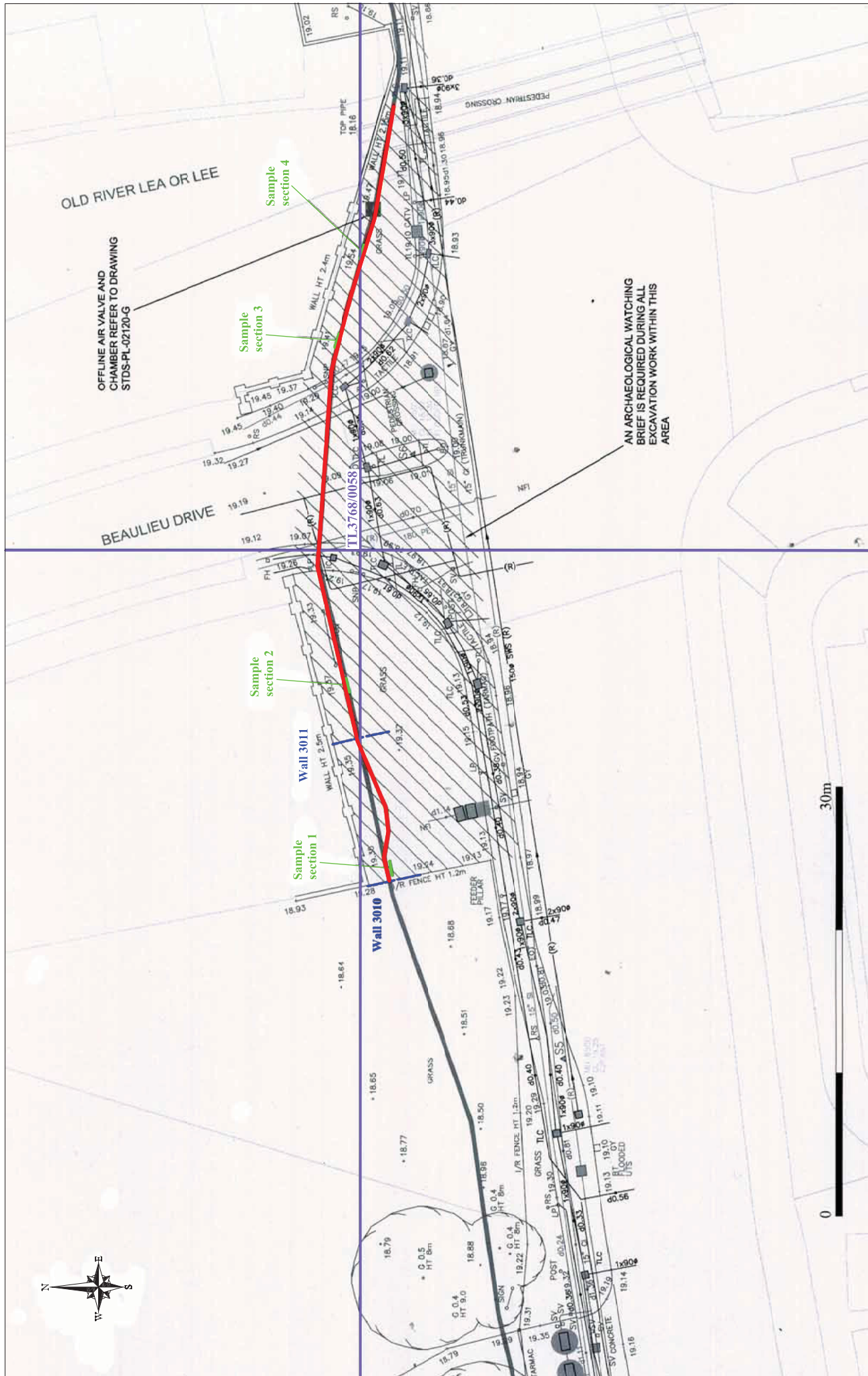


DP 10. Wall M3011. Looking south.

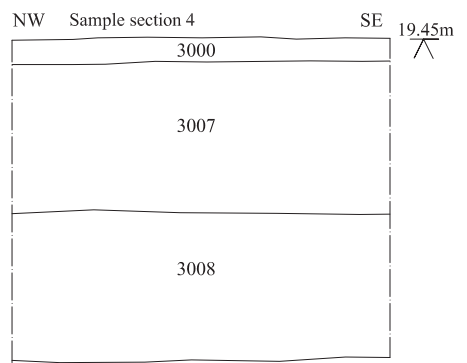
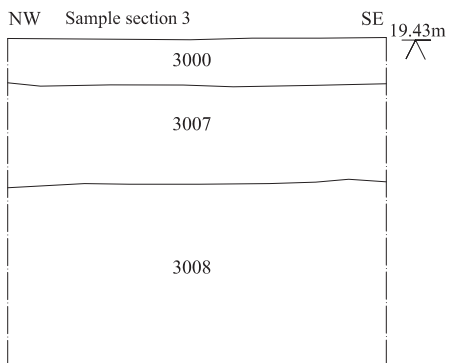
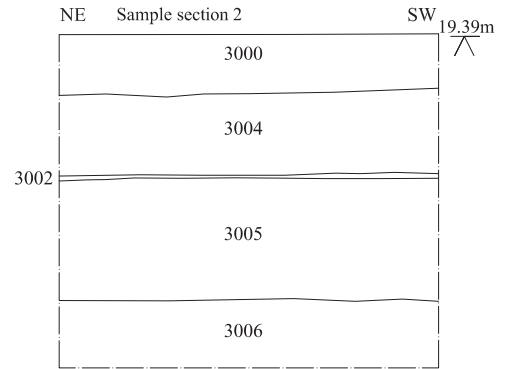
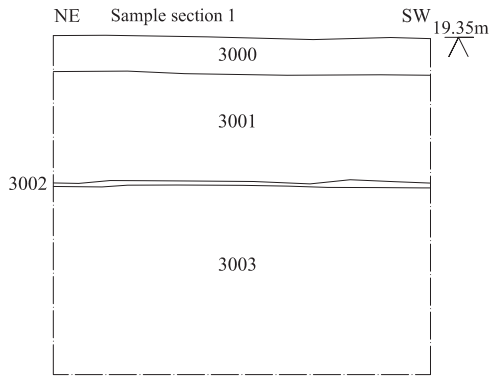


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Fig. 1 Site location plan
 Scale 1: 25,000 at A4



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Fig. 2 Detailed site location plan
 Scale 1:250 at A3



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Fig. 3 Sample sections
 Scale 1:20 at A4