



Bristol and Region
Archaeological
Services

Archaeological Watching Brief
**LAND AT BARNES HILL, CALIFORNIA,
BIRMINGHAM.**

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FAME
Federation of Archaeological Managers & Employers



Archaeological Watching Brief
of land at
**BARNES HILL,
CALIFORNIA, BIRMINGHAM.**

Centred on NGR SP 01500 82700

Prepared for **ASDA**

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Adopted Chronology

Prehistoric	Before AD43
Roman	AD43-410
Anglo Saxon/Early Medieval	AD410-1066
Medieval	AD1066-1540
Post-medieval	AD1540-present

Abbreviations

AD	Anno Domini	EHA	English Heritage Archive
aOD	Above Ordnance Datum	Km	Kilometre
BaRAS	Bristol & Region Archaeological Services	m	Metre
BC	Before Christ	NGR	National Grid Reference
BHER	Birmingham Historic Environment Record	OS	Ordnance Survey
c	Circa		

NOTE

Notwithstanding that Bristol and Region Archaeological Services have taken reasonable care to produce a comprehensive summary of the known and recorded archaeological evidence, no responsibility can be accepted for any omissions of fact or opinion, however caused.

October, 2013

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SUMMARY

An archaeological watching brief undertaken during groundworks associated with the construction of a new food store at Barnes Hill, California, Birmingham, uncovered structural remains of the Lapal Tunnel Brick Company brickworks. The brickworks operated between 1876 and 1884 and for a short period prior to the First World War. The remains included walls, floors, tramway cuttings, a bridge abutment and part of a Scotch kiln.

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1. INTRODUCTION

- 1.1 This report presents the results of an archaeological watching brief carried out by Bristol and Region Archaeological Services (BaRAS) on land at Barnes Hill, California, Birmingham.
- 1.2 The watching brief was commissioned by ISG plc on behalf of ASDA in order to fulfil a planning condition for the construction of a new food store and petrol filling station with associated car parks, brook diversion and landscaping (Planning Application No. 2010/03291/PA).
- 1.3 The archaeological work took place between the 6th of November 2012 and the 25th of February 2013.
- 1.4 The project archive will be deposited with Birmingham Museum and Art Gallery. A digital copy of the report will be sent to the English Heritage Archive. The project has been entered in the Birmingham Historic Environment Record (BHER) as: EBM 633 and in the OASIS Online Access to the Index of Archaeological Investigations as: bristola1-123624.

2. THE SITE

- 2.1 The site (centred on NGR SP 01500 82700) is located in the California suburb of Birmingham, approximately 3.5km to the south-west of the City Centre, and comprised an area of scrubby woodland and a former RSPCA Animal Centre and car dealership. The site is an irregular 2.5ha plot situated in the shallow valley of the Stonehouse Brook, which is bounded by the rear gardens of Nos. 134–180 Stonehouse Lane and a coach depot to the north, trees and scrub forming part of a country park to the west, and the B4121 (Barnes Hill) to the east. The Stonehouse Brook flows across the site in a north-easterly direction.
- 2.2 According to the British Geological Survey (BGS) the solid geology of the site comprises Carboniferous mudstone of the Alveley Member. At the northern end of the site there are superficial deposits of Mid Pleistocene diamicton – a poorly sorted deposit of glacial till (BGS 2013). Beyond the northern boundary the diamicton gives way to Mid Pleistocene glaciolacustrine deposits of silt and clay.
- 2.3 Geotechnical investigations have shown that much of the site is heavily truncated by deep, clay extraction pits, backfilled with between 5.45m and 17m of late 1950s and early 1960s landfill (Slatcher 2010, 16). The ground levels within the site range from approximately 152m aOD in the southern corner of the site to approximately 147m aOD where the Stonehouse Brook crosses the B4121.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 3.1 The site was the subject of an archaeological desk-based assessment (Slatcher 2010), a summary of which is presented below.

Prehistoric and Roman

- 3.2 Evidence of prehistoric activity in the wider area comprises two burnt mounds on the north bank of the Bourne Brook (BHER 02886 - MBM777 & 02887 - MBM778), both of which are located 0.7km to the north of the site. The only other records of prehistoric or Roman activity in the surrounding area is a Neolithic arrowhead (BHER 20156 - MBM1796) that was found near the most easterly of the burnt mounds, and a Roman coin (BHER 03318 - MBM1020) 0.8km to the south-east of the site.

Medieval

- 3.3 Historically the site lay within Northfield parish, which was focussed on a village of the same name 3.6km to the south. The site itself is likely to have been agricultural land throughout the medieval period.
- 3.4 There are remains of a 14th-century fortified manor house known as Weoley Castle (SAM Wm16) 470m to the east of the site. A 15th-century document also mentions a mill (BHER 03204 - MBM935) somewhere near Weoley Castle.

Post-medieval

- 3.5 The earliest recorded development on the site is the Dudley No. 2 Canal (BHER 05868 - MBM1982), which passes beneath the northern part of site through Lapal Tunnel (BHER 20903 - MBM2568). Dudley No. 2 Canal was built in the 1790s, in order to link the Dudley No. 1 Canal with the Worcester and Birmingham Canal at Selly Oak. The canal closed after part of the Lapal Tunnel roof collapsed 1917.
- 3.6 In 1835 Isaac Flavell acquired land on the east side of Barnes Hill (Stonehouse Farm), and by 1840 he had established the California Brickworks on the site. He also opened a public house known as the California Inn, which formed the focus for a small settlement of the same name that was clustered around the eastern entrance to the Lapal Tunnel (McKenna 1988, 7). In the 1860s the brickworks was sold to William Smart, and by the mid 1870s it was being run by James Smart.
- 3.7 In 1876-7 John Garlick (b. 1837) established a new brickworks, known as the '*Lapal Tunnel Brick Company*', on the north bank of the Stonehouse Brook, part of which lay within the site boundary. John Garlick started business in 1866 with little or no capital of his own, but by the mid 1870s he was running a successful brick and tile making business in Upper Sattley ('The Affairs of Mr. John Garlick', *Birmingham Daily Post*, 6th Jan 1883). John Garlick was a keen investor in new plant and the Lapal Tunnel works were fitted with modern brick presses and grinding machines. His investments in new plant were not always successful, and his trouble with new machinery is vividly described by Stephenson (1933):

'He boldly introduced machinery but only with disastrous results he put in machines after machine of various kinds none could be made to work satisfactorily, he was a very impulsive and quick tempered man, and became very enraged at the constant failure to get good results he proceeded to the works one Sunday morning, set about a recently installed machine with a sledge hammer, and broke it to pieces!'

- 3.8 Despite these setbacks his various businesses continued to be highly profitable, and by 1879 he had generated a profit in excess of £30,000. However, within three years his investment in the *Ashton Lower Ground Company*, and the construction of a mineral railway from Pelsall to Walsall Wood Colliery, had turned his profits into substantial losses ('The Affairs of Mr. John Garlick', *Birmingham Daily Post*, 6th Jan 1883). In an attempt to raise capital he turned the Lapal Tunnel brickworks into a limited company, known as the '*Lapal Tunnel Brick & Tile Company Ltd.*', but by the end of the year he was declared bankrupt with debts of over £56,000 ('Heavy Failure in the Building Trade', *Birmingham Daily Post*, 18th Dec 1882). To fund his investments Garlick had mortgaged the Lapal Tunnel works to the bedstead makers

John & Joseph Taunton, and in 1884 they issued instructions to liquidate the company in order to recoup their losses (*London Gazette*, 2nd May 1884). At some point the Lapal Tunnel works were acquired by Smart's Brickworks, but the site remained disused until the early 1900s.

- 3.9 Historic maps show that by 1885 clay extraction pits had been dug on both sides of the Stonehouse Brook; the larger of the two was eventually extended across most of the area between the Stonehouse Brook and Barnes Hill. This pit was linked to the brickworks by a tramway which crossed the brook near the southern edge of the site. On the north side of the Brook there was a tramway line that ran from the brickworks through a tunnel beneath Barnes Hill to a canal wharf in the California Brickworks.
- 3.10 The Lapal Tunnel brickworks re-opened sometime after 1900 and new buildings, including a new 'German' continuous-firing kiln, were built. A large new clay pit was also dug in the south-west corner of the site. Despite the investment in new buildings and plant, the brickworks did not remain open for long, and by the time the 1916 Ordnance Survey plan was surveyed (probably prior to 1914), they were disused.
- 3.11 Historic Ordnance Survey maps show that the clay pit between Barnes Hill and the Stonehouse Brook had been partially backfilled by c 1914, and completely filled by 1955. The south-western pit, which was dug in the early 1900s, was substantially enlarged between 1938 and 1955; presumably to supply clay to Smart's Brickworks, which remained in business until the 1950s (Shill 2010).
- 3.12 In the late 1950s and early 1960s the last standing remains of brickworks were demolished in order to clear the site for use as a landfill dump (Birmingham City Council 2012). The remaining clay pits were completely backfilled and most of the site was covered with deep deposits of soil and refuse. The area to the north of the Stonehouse Brook subsequently became covered with self-seeded trees, and now forms part of a country park.
- 3.13 In 1962 the area to the south of the Stonehouse Brook was redeveloped as an RSPCA Animal Centre, and by the mid-1970s the area between Nos. 134-180 Stonehouse Lane and the RSPCA Animal Centre had been developed as a garage.

4. AIMS AND METHODOLOGY

- 4.1 The fieldwork was carried out in accordance with the methodology outlined in the *Written Scheme of Investigation* (Mason 2012) and complied with the *Standard and Guidance for an Archaeological Watching Brief* (IfA 2008). The aim of the archaeological work was to record any archaeological features or deposits revealed during the course of construction work.
- 4.2 The archaeological work involved monitoring extensive areas of ground reduction, and the excavation of a diversion for the Stonehouse Brook. Subsequent foundation and service trenches were not watched as they were either dug through areas that had previously been reduced down to undisturbed geological clay, or were too shallow penetrate the deep deposits of modern landfill that covered most of the site.
- 4.3 All archaeological features were sampled, characterised and recorded in accordance with the *Site Recording Manual* (BaRAS 2009). Archaeological features were planned at scales of 1:100, 1:50 and 1:20. Sections were drawn at scales of 1:20 and 1:10. A photographic record of all features was made using 35mm monochrome and digital colour photographs.

5. RESULTS

- 5.1 The archaeological work revealed structural remains of the Lapal Tunnel Brick Works dating from the period c 1876 – 1914. A full description of all features is provided in the context summary (**Appendix 2**). Major features are illustrated on the site plan (**Figs. 1-2**). Stratigraphic relationships are shown on the site matrix (**Appendix 3**).

Site Phasing

Period 1: Pre-1876

Period 2: 1876 – 1914 Lapal Tunnel Brickworks

Period 3: Modern

Period 1

- 5.2 The natural geology of the site is red clay (context 107/505/602/811), which was quarried for use in the brickworks. At the north-eastern end of the site, near the north bank of the Stonehouse Brook, the clay was overlain by up to 0.9m of alluvial sands and gravels (105-6) that contained twigs, organic matter a single large tree trunk. These deposits extended for at least 10m to the north of the present watercourse and appear to have been deposited in a high-energy environment, possibly in the Pleistocene or early Holocene. The organic material was contaminated with hydrocarbons that had leached into the deposit from the overlying landfill deposits, and was therefore unsuitable for radiocarbon dating or environmental analysis. Layer 105 was sealed by an extensive 0.6 – 0.1m thick layer of orangey brown clay (104), which was either deposited in a pro-glacial lake environment, or during episodes flooding in the Holocene. Layer 104 was overlain by a 0.1 – 0.3m thick layer of brown silty clay (103) – probably a ploughsoil, which was in turn sealed by buried topsoil 102.
- 5.3 Elsewhere on the site the natural red clay was overlain by deposits of orangey brown (202, 405, 504 & 601) or red (808) clays that contained occasional rounded gravel and pebbles; some of which could have been re-deposited during earthmoving operations associated with clay extraction for the brickworks. A deposit of grey organic-rich sand (904) was recorded in the bed of the Stonehouse Brook, the upper parts of which were heavily contaminated with modern refuse.

Period 2

- 5.4 Four rooms of the main southern block of the brickworks and parts of a brick kiln were uncovered during the excavation of the Stonehouse Brook diversion trench; both structures are depicted on an 1881 plan, and are likely to have been built in the late 1870s.
- 5.5 The walls of the brickworks (704–5 & 718; **Plates 4 & 5**) were constructed with frogged, machine-made bricks, embossed with the name 'J. GARLICK UPPER SALTLEY'. The walls were for the most part 1 to 1 ½ bricks thick and bonded with a pink lime mortar. The westernmost room had a blue engineering-brick floor (719), the middle room had a concrete floor (703), and the easternmost rooms had orange brick floors (706-7). A raised cambered strip in the easternmost room (707) may indicate the position of a corridor. It was not possible to determine the easternmost extent of the building due to constant flooding of the trench.
- 5.6 Fragmentary remains of a brick Scotch kiln (708–10; **Plate 6**) were uncovered immediately to the west of the brickworks building. The kiln was constructed with bricks embossed with the name 'JOHN HALL & CO STOURBRIDGE'. Historic plans show that the kiln was originally approximately 5m wide and 12m long.
- 5.7 External yard surfaces were uncovered to the south and east of the brickworks. The surfaces to the east were constructed with bricks laid up to three courses thick (711–12; **Plate 7**), whilst the surface to the south comprises an extensive area of compacted clinker and slag (302).
- 5.8 Yard surface 711 overlay the fragmentary remains of a possible curving brick wall (723) and a brick manhole (722), both of which were associated with the site's use as a brickworks.
- 5.9 Remains associated with the tramway system used to transport clay around the site include a 4.8m wide and 1.6m deep cutting (204; **Plate 8**) uncovered towards the south-western end of

the site, a 14.5m wide and 2.7m deep cutting towards the eastern end of the site (112/115), and a 3.1m wide bridge abutment (900; **Plate 9**) that was exposed on the south bank of the Stonehouse Brook. Structure 900 can be identified as part of one of two tramway bridges that are first shown on the 1885 Ordnance Survey plan. The bridge appears to have remained in use until the brickworks closed. Cutting 204 is first depicted on the 1916 Ordnance Survey plan, which suggests that it was dug in the early 1900s.

- 5.10 A 0.1m thick buried topsoil layer (102) that contained a few 19th-century potsherds was uncovered beneath modern landfill deposits towards the eastern end of the site (on the north side of the Stonehouse Brook); This layer overlay a buried plough soil (103), and appears to be an early 20th-century land surface that pre-dates the site's use as a landfill dump.
- 5.11 The edges of two clay pits (207 & 813) were also uncovered, both of which were over 10m deep. Clay pit 813 was dug in the late 19th century and by c 1904 it had partially filled with water. Pit 207 was dug after c 1904. By c 1914 both pits had partially filled with water and the eastern end of pit 813 had been backfilled.
- 5.12 Brick wall foundation 404 is part of a post-1904 boundary wall that enclosed a plot of land at the eastern end of pit 813 after it had been backfilled.

Period 3

- 5.13 After the closure of the brickworks the site remained disused until the 1950s. The site was subsequently used as a landfill dump. Pit 813 was completely backfilled by the mid 1950s; pit 207 was backfilled by the early 1960s. The brickworks buildings were demolished in the early 1960s; their remains were then buried beneath a 1.5m thick layer of soil and refuse. All of the modern contexts are related to the site's use as a dump.

6. THE FINDS

- 6.1 A total of 5 marked bricks were recovered during the watching brief; 3 were recovered from structures within the brickworks, the other 2 are products of the Lapal Tunnel Brick Company. The bricks are described below. None of the bricks were retained.

Bricks from structures in the brickworks

- 6.2 The walls of the brickworks were built with machine-made frogged bricks (**Plate 10**) that measured 228 x 105 x 75mm and were marked with name 'J. GARLICK UPPER SALTLEY' (the 'J' was back-to-front). The brick can be identified as a product of John Garlick (b. 1837), founder of the Lapal Tunnel Brick Company. The fact that these bricks are machine-made indicates that he had modern brick-presses installed at his Upper Saltley premises prior to c 1876.
- 6.3 The firebricks used in the construction of a Scotch kiln (contexts 708–10) measured 235 x 102 x 80mm, were frogged and marked with the name 'JOHN HALL & CO STOURBRIDGE' (**Plate 11**). John Hall & Co. was a coal and fireclay mining, and firebrick making company that had works in Amblecote, near Stourbridge and at Brierly Hill, approximately 15km to the east of Barnes Hill. The company has existed since at least the early 1870s and remains in business today.
- 6.4 The bricks used in the construction of manhole 721 measured 224 x 102 x 82mm, were machine-made, frogged and marked 'SMARTS CALIFORNIA' (**Plate 12**), which suggest that this structure was probably built when the brickworks was re-opened as part of Smart's in the early 1900s. Smart's brickworks closed in the 1950s (Shill 2010).

Bricks made by the Lapal Tunnel Brick Company

- 6.5 Two bricks produced by the Lapal Tunnel Brick Company were recovered, one as an unstratified find, the other from layer 203. The bricks were both machine made, frogged and stamped with the letters 'LTBC^o'. One brick was plain and measured 210 x 110 x 72mm, the other was a decorative brick (**Plates 13 & 14**) that measured 230 x 75mm. Both bricks were probably produced between 1876 and 1884.

7. DISCUSSION AND CONCLUSIONS

- 7.1 The archaeological watching brief uncovered structural remains of the Lapal Tunnel Brick Company brickworks, which was established in 1876-7 and closed in 1884. The brickworks reopened for a short period in the early 1900s, but closed before the outbreak of the First World War.
- 7.2 Structural remains of the brickworks included the floors and walls of a range of large buildings. Rooms within the buildings had brick or concrete floors, and most appear to have been large clear-span spaces with few signs of any internal features. The exact function of these buildings remains unclear, but drying rooms or storage sheds seem a likely possibility. The fragmentary remains of a 'Scotch' kiln were also uncovered. Scotch kilns were freestanding rectangular, open-topped structures that had wide doorways at each end and numerous fire-holes along the long sides. This type of kiln was first used in the 17th century and remained common throughout the 19th century. The earliest available plan of the brickworks, produced in 1881, shows that there were at least 3 Scotch kilns and 2 circular 'Beehive' kilns on the site.
- 7.3 The Lapal Tunnel brickworks was established by John Garlick, who was a keen investor in new plant and machinery, and the conventional history states that he was responsible for installing a 'German' continuous-firing kiln on the site. There is however no cartographic or other evidence to support this suggestion. The 1916 Ordnance Survey plan does show a large German kiln on the site, but this was built sometime after 1900 when the brickworks were being run by Smart's, who had recently built two similar kilns on their adjacent California Brickworks. It seems likely therefore that although John Garlick had installed modern brick-making machines and built an extensive tramway network on the site, the bricks he produced with this machinery were probably fired in traditional kilns.
- 7.4 The watching brief has demonstrated that substantial structural remains of the Lapal Tunnel brickworks survive beneath approximately 1.5m of modern landfill deposits. Further remains are likely to survive beneath the country park and bus depot to the north of the present development site.

8. BIBLIOGRAPHY AND SOURCES CONSULTED

Maps and plans

1881	Plan of ' <i>Lappal Tunnel Patent Brick Works</i> ' (British Waterways Museum)
1884 – 1964	1:2500 OS plans
1887 – 1968	1:10560 OS maps
1960 – 1994	1:1250 OS plans
1980 – 2008	1:10000 OS maps

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The evaluation was managed by John Bryant (Acting Manager, BaRAS). Plans, figures, and plates in this report were prepared by Ann Linge (Design and Production Officer, BaRAS). The archaeological fieldwork was undertaken by Cai Mason, Elizabeth Charles and Mark Charles.

APPENDIX 1: Policy Statement

This report is the result of work carried out in the light of national and local-authority policies.

NATIONAL PLANNING POLICY (ENGLAND)

The *National Planning Policy Framework* (NPPF) for England published by the UK Government in March 2012 states that the historic environment, which includes designated and non-designated heritage assets, is an irreplaceable resource and, as such, should be taken into account by Local Planning Authorities when considering and determining planning applications. This is taken to form part of a positive strategy set out in the respective Local Plan (i.e. *Bristol Core Strategy*) to ensure the conservation and enjoyment of the historic environment. The assigned significance of heritage assets will be key factor in terms of their conservation.

Given their irreplaceable nature, any harm to, or loss of, a heritage asset, or heritage assets, should be clearly and convincingly justified as part of a planning application. As part of this, applicants are required to describe the significance of any heritage assets affected by a proposal, including any contribution made by their setting. Where a heritage asset, or assets, are to be harmed or lost as the result of a proposal, the applicant will be required to record and advance the understanding of the significance of that asset or assets, to include making the evidence arising publicly accessible, but this will be in proportion to the significance of the asset/assets in question. While the NPPF takes into account the historic environment as a whole, additional protection is afforded to designated heritage assets under current English Law. Any proposal that would result in harm or loss of a designated heritage asset is also required to be justified by the applicant in meeting strict criteria set out in the NPPF.

REGIONAL POLICY

The regional archaeology strategy is laid out in the *Regional Spatial Strategy for the West Midlands* Policy QE5: *Protection and Enhancement of the Historic Environment*. (2008, p.77)

LOCAL POLICY

Birmingham City Council's archaeology strategy is laid out in *Supplementary Planning Guidance: Archaeology Strategy - Building the future, protecting the past* (adopted 2003) and the *Birmingham Core Strategy 2026* (Consultation Draft December 2010), Policy SP50: *Archaeology and the Historic Environment* (2010, p. 102).

Context No.	Type	Description	Date
207	Cut	Clay pit.	1904 – 1914
300	Layer	Landfill deposit. Mixture of soft orangey brown sandy clay and black coal ash containing frequent metal, glass, brick and plastic inclusions. 0.7m thick.	Modern
301	Layer	Landfill deposit. Black coal ash containing frequent metal, glass, brick and plastic inclusions. 0.7m thick.	Modern
302	Layer	Yard surface. Compacted clinker and slag.	1876 – 1914
400	Layer	Topsoil. Friable dark brownish black silty clay. 0.24m thick.	Modern
401	Layer	Dump layer. Friable dark grey and pink silty clay containing rounded gravel inclusions. 0.78m thick.	Modern
402	Layer	Dump layer. Re-deposited natural mid-brown and orange clay. 0.23m thick.	Modern
403	Layer	Dump layer. Friable black coal dust. 0.04m thick.	Modern
404	Structure	Boundary wall foundation. One course of bricks laid as headers.	Early 20th century
405	Layer	Possible natural. Pale orange clay.	Unknown
500	Layer	Landfill deposit. Soft brown silty clay containing brick and coal inclusions. 0.2–0.5m thick.	Modern
501	Layer	Landfill deposit. Soft black ash and coal dust. 0.2–0.5m thick.	Modern
502	Layer	Dump layer. Re-deposited natural reddish brown gravelly sand. 0.2–0.5m thick.	Modern
503	Layer	Dump layer. Re-deposited natural reddish brown gravelly clay. 0.2–0.5m thick.	Modern
504	Layer	Natural. Reddish brown sandy gravel.	Unknown
505	Layer	Natural. Red clay.	Unknown
506	Layer	Landfill deposit in 813. Black coal ash containing frequent metal, glass, brick and plastic inclusions. Over 1.8m thick.	Modern
600	Layer	Dump layer. Re-deposited natural reddish brown gravelly clay. 0.2–0.5m thick.	Modern
601	Layer	Natural. Reddish brown sandy gravel.	Unknown
602	Layer	Natural. Red clay.	Unknown
603	Layer	Landfill deposit. Black coal ash containing frequent metal, glass, brick and plastic inclusions. Over 1.8m thick.	Modern
700	Layer	Landfill deposit. Light orangey brown sand and gravel containing frequent glass, brick and plastic inclusions. 0.3m thick.	Modern
701	Layer	Landfill deposit. Black coal dust. 0.46m thick.	Modern
702	Layer	Landfill deposit. Friable mid orangey brown sandy gravel containing common metal and plastic inclusions. 0.61m thick.	Modern
703	Structure	Concrete floor.	1876 – 1881
704	Structure	Wall of brickworks. Constructed with mid orange bricks (229 x 105 x 76mm) bonded with light brown cement. 0.45m wide.	1876 – 1881
705	Structure	Wall of brickworks. Constructed with mid orange bricks (229 x 105 x 76mm) bonded with light brown cement. 0.25–0.8m wide.	1876 – 1881
706	Structure	Floor of brickworks. Constructed with mid orange bricks (235 x 80mm).	1876 – 1881

APPENDIX 2: Context Descriptions

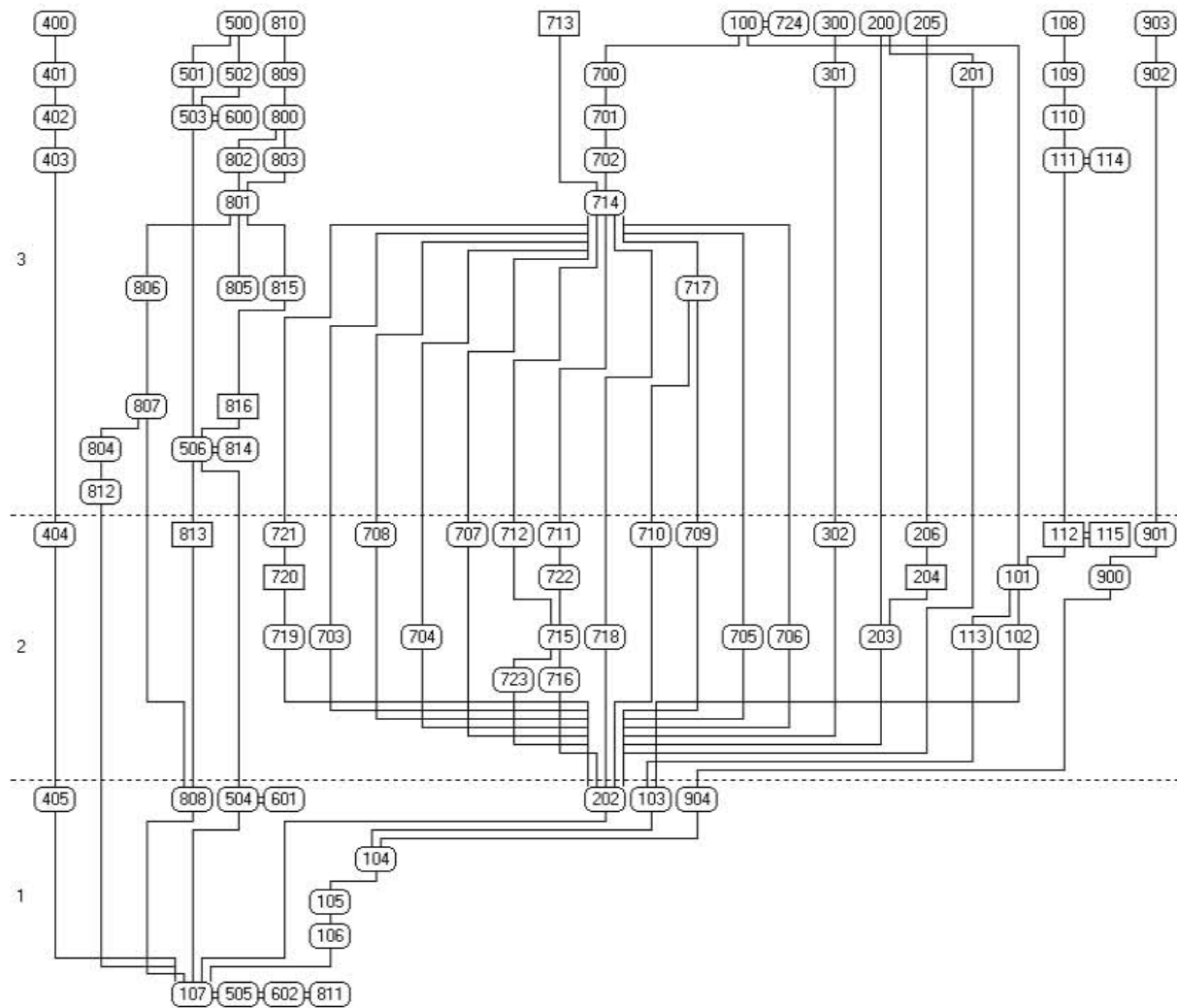
Context No.	Type	Description	Date
100	Layer	Landfill deposit. Firm dark brown to black silty clay containing frequent gravel, brick, ash and occasional glass, pottery and metal inclusions. 1.5m thick.	Modern
101	Layer	Made ground. Firm re-deposited natural pale pinkish red clay containing occasional rounded gravel inclusions. 0.6m thick.	Modern
102	Layer	Buried topsoil. Soft dark greyish brown silty clay containing occasional rounded gravel and 19th century pottery inclusions. 0.1m thick.	Early 20th century
103	Layer	Buried plough-soil/sub-soil. Soft mid-brown silty clay containing occasional rounded gravel inclusions. 0.1–0.3m thick.	Unknown
104	Layer	Natural alluvium. Firm pale orangey brown clay containing occasional rounded pebbles. 0.6–1.1m thick.	Unknown
105	Layer	Natural alluvium. Soft pale grey silty sand containing occasional organic matter and rounded gravel. 0.3m thick.	Unknown
106	Layer	Natural alluvium. Compact brownish grey sand, rounded gravel and pebbles, containing occasional organic matter, charcoal flecks, and a single large tree trunk. 0.2–0.6m thick.	Unknown
107	Layer	Natural. Firm dark red clay with flecks of pale grey clay.	Unknown
108	Layer	Tarmac. 0.1m thick.	Modern
109	Layer	Base for 108. Grey angular gravel. 0.16m thick.	Modern
110	Layer	Dump layer. Brown rusty ash containing abundant glass bottles, metal and plastic inclusions.	Modern
111	Fill	Landfill deposit in 112/115. Coal ash with abundant glass bottles, metal and plastic inclusions.	Modern
112	Cut	Tramway cutting. Linear cut with steep straight sides and a flat base. 14.5m wide, over 8m long and 2.7m deep. Same as 115.	1876 – 1881
113	Layer	Dump layer. Coal dust. 0.2m thick.	1876 – 1914
114	Fill	Landfill deposit in 112/115. Coal ash with frequent glass bottle inclusions and a newspaper dated 1957.	Modern
115	Cut	Tramway cutting. Linear cut 14.5m wide, over 8m long and 2.7m deep. Same as 112.	1876 – 1881
200	Layer	Landfill deposit. Soft dark brown to orangey brown silty clay containing frequent metal, glass, brick and plastic inclusions. 0.3–1.2m thick.	Modern
201	Layer	Landfill deposit. Soft black silty clay containing frequent metal, glass and plastic inclusions. Up to 0.7m thick.	Modern
202	Layer	Natural. Firm pale orangey brown silty clay containing occasional rounded gravel and stone inclusions.	Unknown
203	Layer	Dump layer. Firm pinkish brown silty clay containing occasional rounded to angular stone and brick inclusions. 0.4–1.6m thick.	1876 – 1914
204	Cut	Cutting for tramway. Linear cut over 4m long, 4.8m wide and 1.6m deep.	1904 – 1914
205	Layer	Fill of 204. Soft dark greyish brown and reddish brown sandy clay containing occasional brick and stone inclusions. Up to 1.4m thick.	Modern
206	Layer	Buried topsoil in 204. Soft dark greyish brown silty clay containing occasional small stone inclusions. 0.2m thick.	Early 20th century

Context No.	Type	Description	Date
707	Structure	Floor of brickworks. Constructed with dark orange frogged and unfrogged bricks (235 x 112 x 60mm) laid on-bed. Possibly a corridor.	1876 – 1881
708	Structure	Wall of brick kiln. Constructed with heat-affected light orange bricks (235 x 102 x 80mm) bonded with cement.	1876 – 1881
709	Structure	Wall of brick kiln. Constructed with heat-affected orange and yellow firebricks (235 x 102 x 80mm) bonded with cement, one of the bricks was marked 'JOHN HALL & CO STOURBRIDGE'.	1876 – 1881
710	Structure	Floor of brick kiln. Constructed with heat-affected light orange bricks (235 x 102 x 80mm) bonded with cement.	1876 – 1881
711	Structure	Brick yard surface. Constructed with dark orange bricks (215 x 100mm) laid on-bed.	1876 – 1914
712	Structure	Brick yard surface. Constructed with dark orange bricks (180 x 115 x 75mm). 2–3 courses deep.	1876 – 1914
713	Cut	Storm drain.	Modern
714	Layer	Demolition dump. Indurated black clinker. 0.16m thick.	Modern
715	Layer	Dump layer. Compact re-deposited light brown red clay and small rounded pebbles. 0.15–0.3m thick.	1876 – 1914
716	Layer	Dump layer. Friable black coal ash and coal dust. Over 0.1m thick.	1876 – 1914
717	Layer	Demolition dump. Compact yellowish orange gritty sand and brick rubble. 0.15m thick.	Modern
718	Structure	Wall of brickworks. Constructed with mid orange machine-made bricks (229 x 115 x 77mm) marked 'J. GARLICK UPPER SALTLEY' bonded with light brown lime mortar. 0.4m wide.	1876 – 1881
719	Structure	Floor of brickworks. Constructed with blue engineering bricks (255 x 127mm).	1876 – 1881
720	Cut	Construction cut of drain/manhole 721.	1900–1914
721	Structure	Drain and manhole. Constructed with machine-made bricks (224 x 102 x 82mm) marked 'SMARTS CALIFORNIA'. No mortar evident.	1900–1914
722	Structure	Drain and manhole. Constructed with dark orange bricks. No mortar evident.	1876 – 1914
723	Structure	Possible curving wall foundation. Ill-defined curvilinear feature comprising light reddish orange sandy clay mixed with bricks and cobbles.	1876 – 1914
724	Layer	Landfill deposit. Firm dark brown to black silty clay containing frequent gravel, brick, ash and occasional glass, pottery and metal inclusions. 1.5m thick.	Modern
725	Layer	Natural. Firm dark red clay with flecks of pale grey clay.	Unknown
800	Layer	Topsoil. Friable dark brownish black silty clay with occasional brick inclusions. 0.2–0.4m thick.	Modern
801	Layer	Landfill deposit/levelling layer. Compact yellowish brown clay. 0.1–0.6m thick.	Modern
802	Layer	Landfill deposit/levelling layer. Friable dark brown sandy silt and brick rubble.	Modern
803	Layer	Landfill deposit/levelling layer. Friable dark brown sandy silt and brick rubble.	Modern
804	Layer	Landfill deposit. Friable black sandy silt with frequent tarmac and brick inclusions. 0.2m thick.	Modern

Context No.	Type	Description	Date
805	Layer	Landfill deposit. Friable black sand and coal dust with metal and coal inclusions.	Modern
806	Layer	Landfill deposit. Friable black sand and coal dust with metal and coal inclusions.	Modern
807	Layer	Levelling layer. Compact re-deposited natural brownish yellow clay. 0.3–0.8m thick.	Modern
808	Layer	Soil layer. Compact natural or re-deposited natural red clay. 0.35–1.15m thick.	Unknown
809	Layer	Levelling layer. Friable grey hardcore. 0.16m thick.	Modern
810	Layer	Tarmac surface.	Modern
811	Layer	Natural. Firm orangey red clay.	Unknown
812	Layer	Soil layer. Compact yellow clay. 0.8m thick.	Modern
813	Cut	Clay pit. Extensive clay pit, over 10m deep. Same as 507.	1876 – 1914
814	Fill	Landfill in 813. Friable to firm black, brown and yellow, sand, clay with brick inclusions. Over 10m thick.	Modern
815	Fill	Fill of 816. Friable brownish red sandy clay with charcoal inclusions.	Modern
816	Cut	Pit. 7.35m wide and 2m deep. Seen in section only.	Modern
900	Structure	Abutment for tramway bridge. Constructed with machine-made bricks (230 x 100 x 70mm) Flemish-cross bonded with lime mortar.	Early 1880s
901	Layer	Backfill against 900. Compact orangey red re-deposited natural clay and sandstone rubble. Up to 0.5m thick.	Early 1880s
902	Layer	Dump layer. Friable dark brown organic sandy clay containing frequent glass, plastic, metal and brick inclusions.	Modern
903	Layer	Dump layer. Compact reddish brown re-deposited clay containing brick and rubble inclusions. Up to 0.38m thick.	Modern
904	Layer	Alluvial deposit in streambed. Friable grey organic sand. Over 0.1m thick.	Modern

APPENDIX 3: Matrix

Stratify project - Barnes Hill - p.1



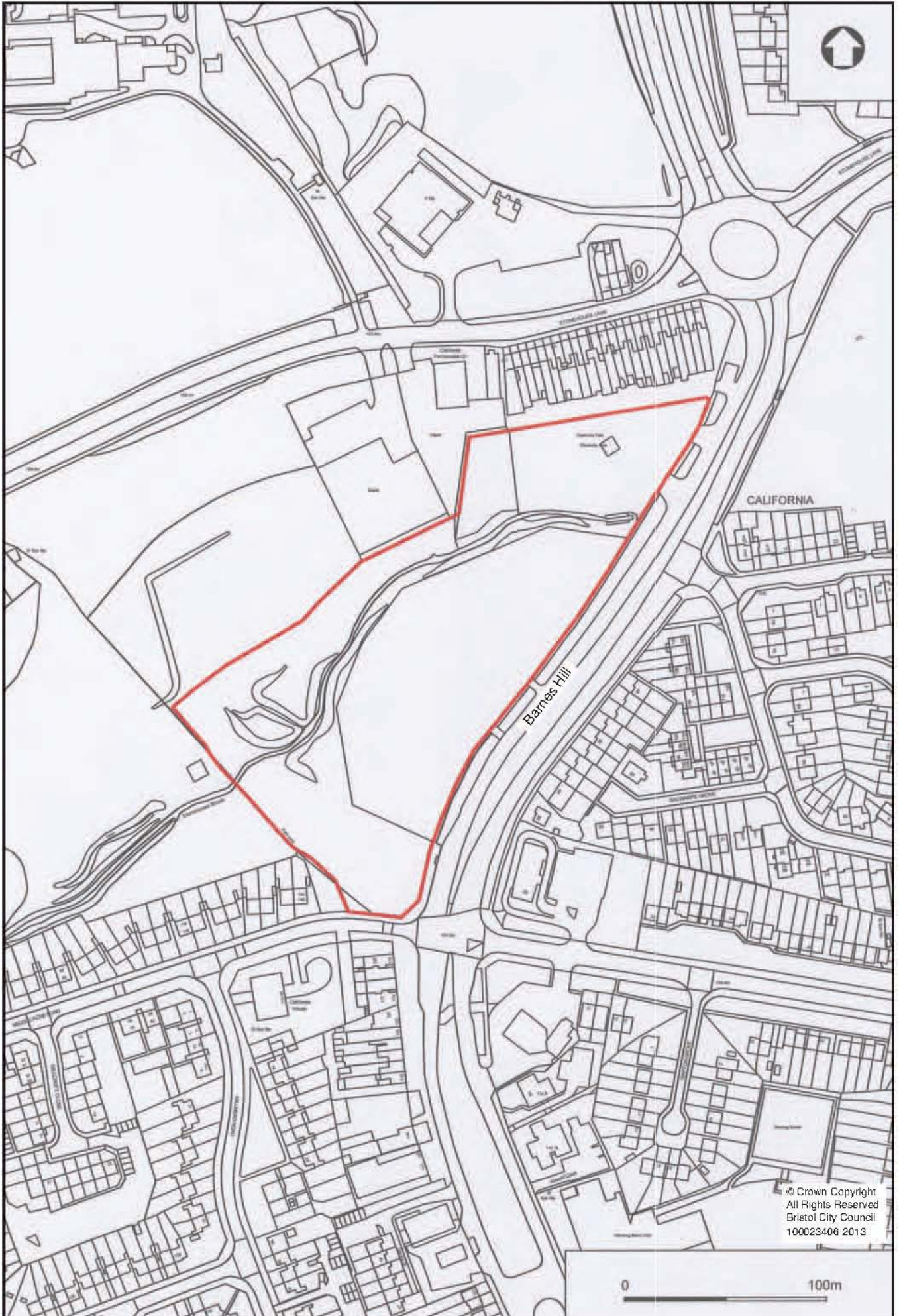


Fig.1 Site location plan, scale 1:2500

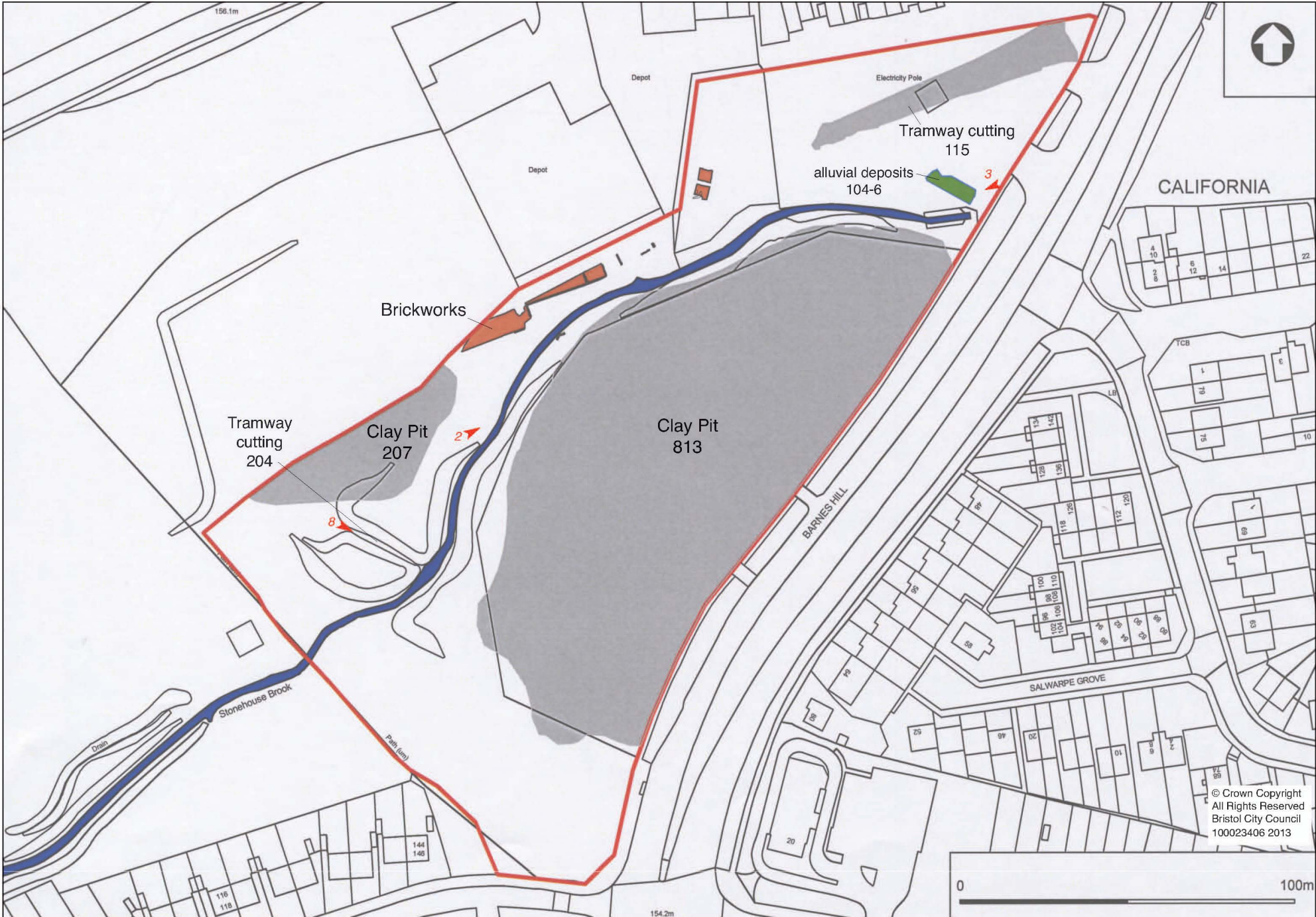


Fig.2 Site plan showing plate directions, scale 1:1500

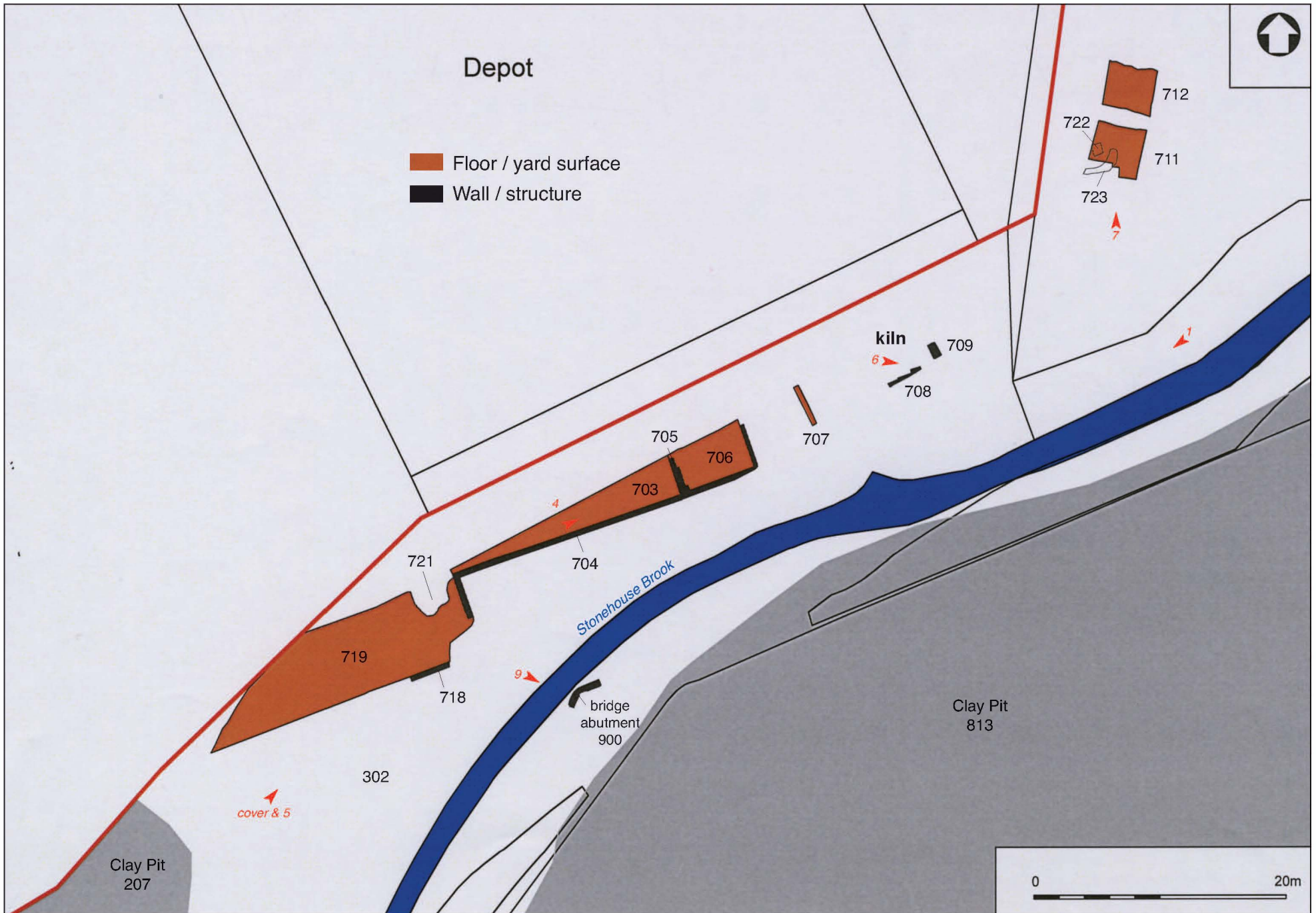


Fig.3 Plan of brickworks structures showing plate directions, scale 1:400

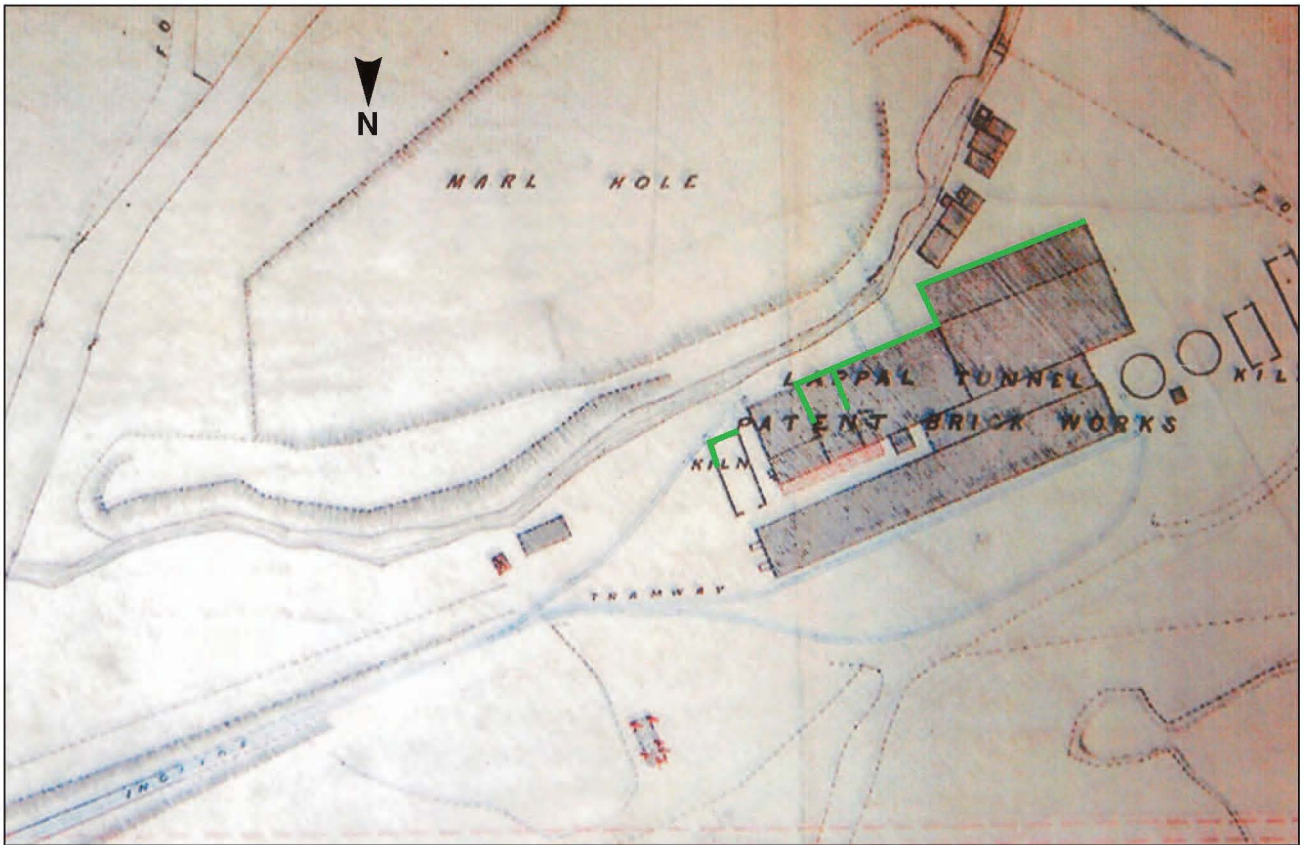


Fig.4 1881 plan of the 'Lappal Patent Brick Works' (green lines indicate walls uncovered during the watching brief)

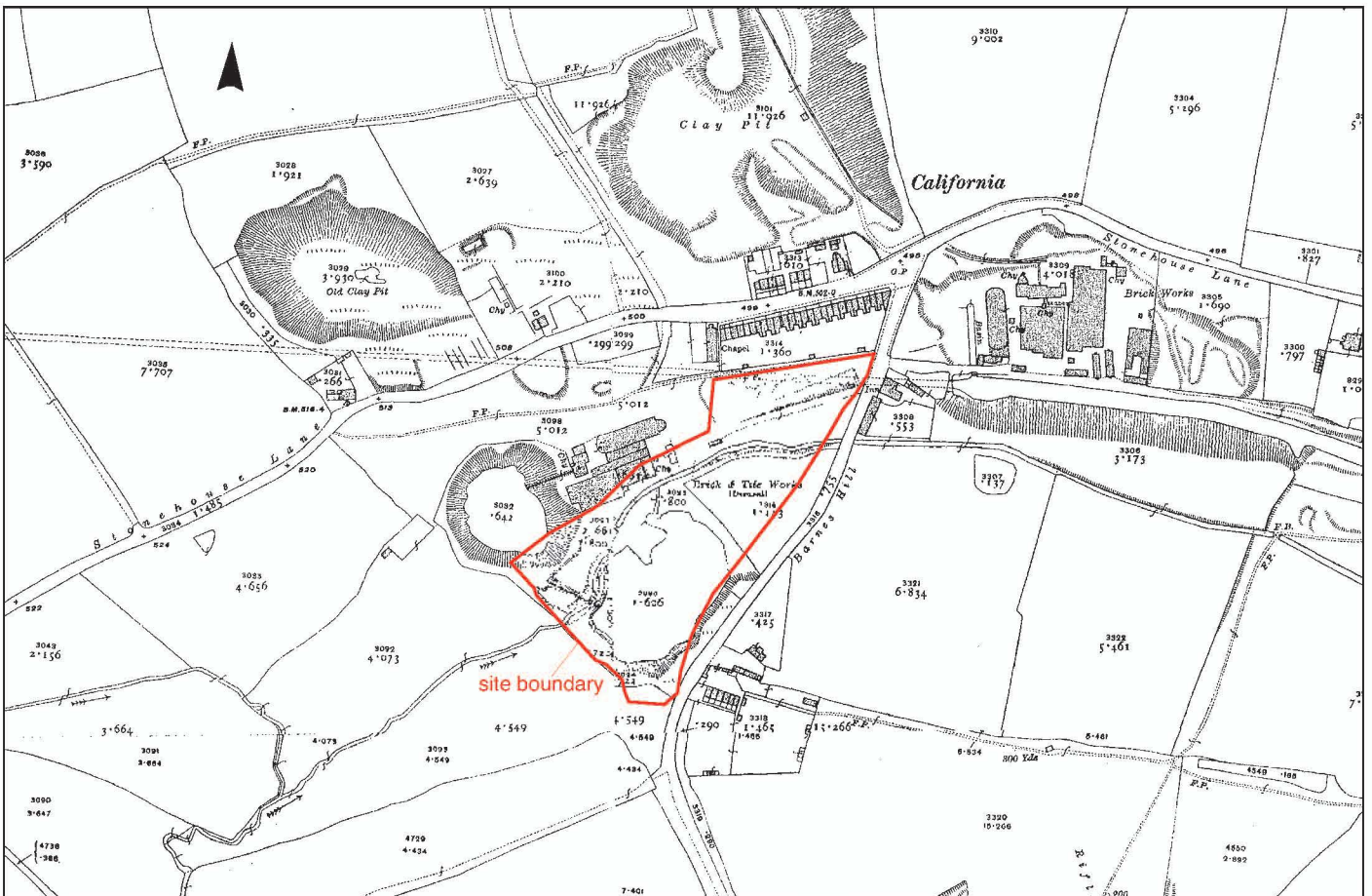


Fig.5 1916 OS plan (surveyed c 1914), original scale 1:2500



Plate 1
The Stonehouse Brook
during initial clearance
work, looking south-west



Plate 2
Temporary diversion of
the Stonehouse Brook,
looking north-east



Plate 3
Permanant diversion of
the Stonehouse Brook,
looking south-west



Plate 4 Brickworks structures 703-6, looking north-east



Plate 5 Brickworks structures 718-9, looking north-east



Plate 6
Kiln structures 708-10,
looking east



Plate 7
Brickyard surfaces 711-12,
looking north



Plate 8 Tramway cutting 204, looking east



Plate 9
Tramway bridge abutment 900,
looking south-east



Plate 10
Brick marked J. GARLICK
UPPER SALTLEY,
recovered from wall 718



Plate 11
Brick marked JOHN HALL
& CO. STOURBRIDGE
recovered from kiln
structure 709



Plate 12
Brick marked SMARTS
CALIFORNIA, recovered
from structure 721



Plate 13 Brick marked LTBCo recovered as an unstratified find



Plate 14 Decorated face of LTBCo brick