

APPENDIX C
Archaeological
Specification and
Written Scheme
of Investigation
approved under
the Southern
Infrastructure Works
submission

Argent (King's Cross) Ltd

King's Cross Central

Archaeological Written Scheme of Investigation -
Specification

Southern Infrastructure

June 2008

This report takes into account the particular instructions and requirements of our client.
It is not intended for and should not be relied upon by any third party and no responsibility is
undertaken to any third party.

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1 Introduction

1.1 Objective of this Specification

Application is being made for gaining consents for constructing new infrastructure and enabling works, to be achieved throughout the area south of the Regent's Canal in the King's Cross Central (KXC) scheme. The 'Southern Infrastructure' works are to support the construction of new roads and development within the individual development blocks. The works exclude the construction of basements.

Volume 2, Part 10 of the Environmental Statement submitted with the outline planning application comprises the Cultural Heritage Specialist Report. It includes an account of the known archaeological conditions within KXC, and determines the archaeological potential. It discusses mitigation objectives incorporated within the development proposals based on anticipated effects.

This specification provides the strategy for archaeological investigation and mitigation of the potential effects of excavation for inserting new infrastructure facilities, as reported in the Environmental Statement. It commits to undertaking appropriate works and directs the contents of the Written Scheme of Investigation provided by the commissioned archaeological contractor. As such, this specification fulfils in part the requirements of Condition 56 of the outline planning permission 2004/2307/P. The archaeological works will respond to 'Reserved Matters Conditions'.

This specification does not address the above-ground recording and monitoring of the built heritage assets, as explained further in Section 1.2 below.

The archaeological mitigation for this area of KXC will be followed by other detailed applications and mitigation for the individual development plots.

1.2 Planning Conditions

Conditions 55 and 56 of the outline planning permission require respectively programmes of 'Building Recording and Analysis' and 'Archaeological Investigation and Mitigation' to be carried out during the implementation of the scheme.

In compliance with these conditions, building recording and analysis is to be carried out in advance of development. These works are separately addressed via IHCM building recording and analysis specifications.

On this basis, this specification considers only the archaeological effects of the proposed Enabling and Permanent Works for the Southern Infrastructure.

Condition 56 (Archaeological Investigation and Mitigation) requires:

"The implementation of a programme of archaeological work in accordance with a written scheme of investigation".

For the Southern Infrastructure scheme, an Archaeological Watching Brief process is considered to be the appropriate mitigation measure, as identified within the Environmental Statement. This specification sets out the strategy proposed for the Archaeological Watching Briefs, which will be in place during the engineering works. The programme of archaeology will apply throughout the southern infrastructure area of KXC.

In respect of addressing Planning Condition 55 a separate specification has been prepared by IHCM, and the two documents require there to be documentation linkages between above- and below-ground heritage resources.

1.3 Summary History of the Site

The area south of the Regent's Canal comprises several distinctive sub-areas, resulting from the 19th and 20th century history of development. Between the sub-areas is a series of roads. The southern part of KXC is within the King's Cross and Regent's Canal Conservation Areas.

Regent's Canal

The canal opened in 1820. It is set in a slight cutting with retaining wall features including elements of bridges, buildings and phases of purely retaining walls. At the northern end of the canal abutting the KXC site is the twin-chamber St Pancras Lock. One access arm off the canal was later cut into its south bank to give access into the gas works; this has been subsequently infilled.

Gas Works

Pancras Gasworks was built as the principal works of the Imperial Gas Light and Coke Company. When opened in 1824 it was the finest and largest gasworks in the world. The works was sited alongside the Regent's Canal; it used coal initially delivered to the works by the canal, and then later via a railway viaduct carrying coal wagons across the Regent's Canal from the Goods Yard to the north. The gas was produced in large retort houses. This was then stored in the gasholders on the site, which acted as reservoirs so that an adequate supply of gas was always available when required. The Gas Light and Coke Co. acquired the Imperial company in 1876. Maps indicate three main phases of development – particularly noticeable in the number and disposition of the gas holding tanks. Key identified buildings include: retort houses; crushing house; scrubbing plant; tar sumps; store rooms; coal holding areas; stables; and offices. Associated with the gas holders were numerous wells.

The consumption of gas was steadily climbing throughout the second half of the 19th century, in response to London's rising population and prosperity and falling costs in the making of gas. Proportionate increases in gas storage capacity were needed to meet peak demands at all the company's works. With connection by trunk mains to the company's huge Beckton gas works supplementing local production, several of the Pancras gasholders came to be enlarged in the 1880s. By 1900 the works occupied 11 acres (4.6 hectares), of which more than half was devoted to gas storage.

The famous gasholder 'Triplet' has been dismantled to make way for the new London and Continental Railways St Pancras International terminus, and its structural elements are stored to the immediate north-west of Gas Holder No. 8. Gas Holder No. 8 was designed by John Clark, the engineer of the Pancras works, and its ironwork was built by Westwood and Wrights in 1883. Both they and Clark had been responsible for the 'telescoping' of the three 'Siamese Triplet', Gas Holders Nos. 10, 11, and 12, completed in 1880. The brick tank of No. 8, set deeply into in the ground, had been constructed c.1853 for a previous gas holder, and was now deepened by 2 feet to 28 feet (8.5 m), still considerably less than the exceptional 55 feet (16.8 m) depth of the tanks of the triplet group. So the new bell of No 8 was given three telescopic 'lifts', within a guide frame some 83 feet (25.3 m) tall, compared with the two lifts, within guide frames 108 feet (32.9 m) tall, of the reconstructed triplet group. With different proportions, the Guide Frame of No. 8 has only two tiers of columns and girders compared with the three tiers of the triplet group.

Although No. 8 is the only gasholder still standing today on the gasworks site, it may be noted here that in 1886-7 two other gasholders were enlarged and two more were added, with a new style of guide frame in lattice girder construction (with resemblance to the wind girders of St Pancras Station train shed). There were then no fewer than nine substantial gasholders on the site, seven of which remained until the commencement of the CTRL works in 2001. Developed piecemeal on a constricted site, the holders were smaller and more attuned to the urban setting than some other London gasholders of the period. They presented a remarkable townscape.

Pancras Gasworks ceased to make gas in 1904, but the gasholders continued in use, storing town gas piped from other gasworks. In the 1970s town gas was replaced by natural gas brought ashore from the North Sea, although again the gasholders continued in use. All of the surviving St Pancras gasholders were decommissioned and purged of gas in 2000.

Residential Landscape

South of the Gas Works landscape a roughly triangular area started off as mixed residential and commercial development, largely occupied by tightly-packed two-storey terrace brick houses in generally narrow streets with small rear yards containing 'privies', although Upper Edmund Street, serving the station and soon afterwards the Great Northern Hotel, was wider. This road was later

renamed Cheney Street, and subsequently Cheney Road. South of the German Gymnasium was a ‘Printing Works’ and ‘Cartridge and Percussion Cap Manufactory’.

Culross Buildings

Along Battlebridge Road Culross Buildings were constructed in 1891-2 by the Great Northern Railway as rented accommodation for its workers and others displaced by the enlargement of King’s Cross Station into the Milk Dock area immediately to the south.

The main block is a long range of four storeys of dwellings above a non-residential basement. There are 40 dwellings in five sections, each having a walk-up open-fronted central staircase. Elevations are of yellow stock brick with red brick bands, pilaster strips, and other decorative features. The staircases also served the flat roofs with brick parapets, providing space for clothes-drying and children’s play.

The two-storey Culross Hall at the eastern end of the range served as a mission hall, and has a pitched slated roof. At the western end of the main block is a smaller two-storey block, 41 Battlebridge Road, on the corner of the currently-diverted Pancras Road, at one time also used as a mission hall, at present with a flat roof but possibly originally pitched.

The dwellings in the three easternmost sections are larger than in the two westernmost sections, accommodation being provided for families of different sizes.

Stanley Buildings

To the east of St Pancras Station, on land bounded on the west by Old St Pancras Road, and now diverted, five blocks of small flats were constructed in 1864-5 by the Improved Industrial Dwellings Company, as low-rent ‘philanthropic’ housing. Named after Edward Henry Stanley, the company’s director, they were intended to provide safe and hygienic accommodation for industrial artisans and their families, and were amongst the earliest examples of this type of housing in London. They provided completely self-contained accommodation, and originally comprised five similar five-storey brick-built blocks with four dwellings on each floor, each containing a living-room, one or two bedrooms, a wash-house, and a WC Access was via an external open staircase and balconies. The flat roofs provided drying space and secure playing areas for children. Subsequently, the four dwellings on each floor were merged into two, and ownership of the blocks was passed to the local authority, the London Borough of Camden.

Four of the five original blocks have been destroyed or demolished, by bombing during World War II, for road improvements and Channel Tunnel Rail Link (CTRL) works, and most recently by the KXC scheme. The one surviving block, Nos. 21-30 (Stanley Buildings South) is currently boarded up.

German Gymnasium

The German Gym was probably the first purpose-built public gymnasium in the United Kingdom, opened in 1865 by the German Gymnastic Society. It was designed by E A Grüning in a distinctly Germanic style using yellow stock brick with complex architectural detailing in red brick ‘specials’.

Following recent demolitions associated with the construction of the Channel Tunnel Rail Link (CTRL), only the main hall remains - a rectangular block some 26 m by 23 m, originally a single volume with a gallery, but now retaining later additions completely infilling the first floor. It has a double-pitch gabled roof, originally slated, and carried on notable 18 m span bolt-laminated timber arches on cast iron columns, with bolt-heads formed into hooks to support climbing ropes.

The building has been internally modernised as a visitor centre.

Railway Landscape

Bordering the KXC site south of Regent’s Canal and with many elements within is a residual historic landscape. In 1863 the Great Northern Railway, having already established its large passenger terminus at King’s Cross Station, constructed three single-track tunnelled connections with the newly-built Metropolitan Railway to the south. Two were on the east side of the station and one on the west, within

the Enabling Works area – the **Hotel Curve Tunnel**, on a descending line diverging westwards towards the westbound Metropolitan Railway between the Great Northern Hotel and King’s Cross Station Western Range building. This tunnel was last used by railway trains in the late 1970s.

Subsequent congestion of the station platforms led to the construction in 1875 of two further tracks with platforms outside the western wall of the main station, to serve local suburban traffic. This area, with its own independent roof, was known as **King’s Cross Local**.

Continuing pressure on both passenger and freight accommodation led to further expansion to the west of the station. The area was cleared of its original housing, and at a reduced ground level was occupied instead by dock sidings for milk, horses, and carriages.

The southern part of this area, now known as the **Milk Dock site**, having previously been cleared and then occupied as a construction site for the Underground Station Redevelopment, has again now been cleared. North of this has also been cleared and used as a surface car park. Much of the former railway building fabric in this area has consequently been demolished and removed, although the flank walls of the Hotel Curve Tunnel remain, together with vestiges of other building fabric. The tunnel now accommodates utility services.

The **Great Northern Hotel** was built in 1853-4 by the Great Northern Railway to serve passengers using its adjacent King’s Cross terminus. The original building is some 55 m long and 15 m wide with a basement, ground floor, four upper floors and a further attic floor in the double-pile hipped roof. It is curved on plan, responding to the then-existing street layout and with its main entrance on the station side. Construction is generally of yellow stock brick, with stucco on external elevations. Internally, construction is largely ‘fireproof’, with stone staircases and landings. Floors comprise timber boards and joists over brick arches that span onto iron beams and brick walls, with plaster ceilings supported by timber joists.

Two extensions, each of two storeys, were added c. 1900 to provide additional toilet and washing facilities. These are located against the convex south-western façade abutting Pancras Road and on the north-western end façade. Most of the hotel perimeter is bounded by a lightwell area, with numerous cellars leading off this below the surrounding pavements and roadways. The area is protected by iron railings and balustrade.

At the present time the hotel is unoccupied and its main entrance abuts the site for the new below-ground Northern Ticket Hall of King’s Cross / St Pancras Underground Station, on which construction work is proceeding. Several of the hotel cellars have been wholly or partially removed or filled with foam concrete to accommodate the Ticket Hall footprint and to support construction plant.

1.4 The Character of the Engineering Works for the Proposed New Southern Infrastructure

The engineering works for the new infrastructure south of Regent’s Canal will likely include:

1. Trial pitting to establish the precise location of services and obstructions buried in the ground and to assess the landscape for ground contamination.
2. Sinking of one or more bore holes to provide design data in respect of ground conditions and foundation designs.
3. Construction and forming of temporary works including pile probing, guide walls and propping of excavation faces.
4. Piling by one or a combination of techniques to from retaining walls to sides of the new roads and where new basements and other excavations will be formed.
5. Cut and fill earthworks to the base of ground contamination and potentially to new formation levels. The earthworks will include the removal and treatment of any contaminated soils encountered.
6. Repositioning and insertion of shallow and deep buried services including:
 - Water mains.

- Sewers.
- Gas mains.
- Electricity cables.
- Telephone and other communication cables.

7. Laying of road sub-base materials and associated temporary and permanent pavement and surface landscaping.

The nature of these works is described in greater detail in Section 2 of this document.

1.5 Archaeological Watching Brief Process

A series of Archaeological Watching Briefs will accompany the engineering works, providing archaeological information to satisfy the aforementioned planning Conditions. Section 3 of this specification defines an Archaeological Watching Brief.

Paragraph 10.8.1 and Table 10.8 of the Environmental Statement sets out the mitigation measures proposed. It confirms that Archaeological Watching Briefs would be in place where any engineering ground works would occur.

The Watching Brief will conform to standards required by the Institute of Field Archaeologists and the guidelines of the Greater London Archaeological Advisory Service of English Heritage. The Archaeological Contractor shall be a member of the Institute of Field Archaeologists. The Watching Brief(s) does not preclude the need for archaeological excavation.

The archaeological officer of English Heritage for the London Borough of Camden, will monitor the site and post-site works on behalf of English Heritage and the London Borough of Camden.

IHCM (International Heritage Conservation and Management) is the Archaeological Consultant to the Employer for this work, Argent (King’s Cross) Limited.

Note

This specification is one of a series prepared for undertaking Archaeological Watching Briefs in the King’s Cross Central scheme. (The first two were drafted for Stanley Buildings and Pancras Road). They have common content in regard to general requirements for site and post-site works, with specific requirements for each development site for satisfying the likely site specific planning Condition for archaeology.

2 Details of Engineering Works

The design for the construction of the Southern Infrastructure is detailed and shown within other submission documents. Works to achieve this scheme will comprise those referred to in Section 1.4 above. These works are explained below.

2.1 Trial Pitting and Borehole Investigations

It is likely that the engineering designs for the new construction will require a programme of geotechnical investigations. These would aim to investigate the shallow ground conditions (made ground and alluvium) with observation trial pits.

The location of the pits would result from the carrying out of an engineering desk study and then be related to where there are concerns and questions in respect of insertion of temporary and permanent new works and ground contamination. The pits would likely be 1-4 m deep and shored so the pits can be hand logged.

One or several boreholes are anticipated to provide geotechnical data about the soil formations and hydrology, and as such would likely be more than 20 m deep.

2.2 Removal of Old Foundations and Obstructions

The new Southern Infrastructure is to be formed in an area of complex ground conditions resulting from more than 200 years of development and change, the latest (modern) phase of which, until recently cleared, included an arrangement of portacabin facilities for the Underground construction site, now removed. These were located in the Milk Dock site, formerly part of King’s Cross Station.

It is expected that the following types of old/redundant features may be present:

- Backfilled basements.
- Basement walls.
- Brick and concrete foundations likely to be of various forms and sizes.
- Wells and cess pits (open or backfilled).
- Metal water, gas and hydraulic power pipes.
- Sewer brick/stoneware pipes.
- Backfilled WWII bomb craters.
- Older road fabrics.
- Elements of commercial/industrial plant.
- Deep undifferentiated fill related to construction.
- Modern services of the present facilities on and passing through KXC.

Where ground works have been undertaken for CTRL and LUL these have found many such types of features. The watching brief findings are awaiting publication, so the data can be integrated with that expected from Argent’s Southern Infrastructure archaeological works.

2.3 Treatment of Contaminated Soils

Given the industrial and commercial history of King’s Cross, it is possible that there are still localities of ‘hot-spots’ of soil contamination. The contamination, if it is related to 19th century industrial processes, may have a heritage interest, especially where such contamination is associated with structural remains and where the contamination may need treatment. Treatment could include on-site encapsulation and / or removal off site.

2.4 Cutting off of Live Services

The new works will be preceded by the cutting off of live but redundant services, in order to allow diversions and new infrastructure works to be achieved.

2.5 Repositioning of Shallow and Deep Buried Services

The construction of the proposed Southern Infrastructure will necessitate diversion of existing buried services and insertion of new ones, related both to existing buildings and street functions and also in anticipation of future redevelopment. Shallow infrastructure works may be located above soil formations of archaeological interest. Similarly, services inserted in trenches below 0.5 m deep, and in areas where there may be physical obstructions and ground contamination, could traverse through archaeologically interesting ground conditions.

2.6 Installation of Infrastructure and Structural Components

The scheme proposed is for the Southern Infrastructure facilities to be set underground with access via an arrangement of manholes and underground chambers. It is likely that excavation would extend some 4 m below present ground level lowest slab level to reach the assumed formation level.

The works will also include cut and fill within the proposed development plots, to achieve a pre-development ground surface and this may involve the removal of buried and surface obstructions and forming of temporary works. The works will be mainly related to creating a safe working environment supporting both engineering construction but also the required archaeological attendance objectives.

The excavation for these works will have the most effect on potential archaeological remains, those identified in the Environmental Statement; they are generally classed of local value.

The following engineering impacts are anticipated following site preparation works:

- Phased construction of temporary or permanent retaining walls and including piling for structural purposes.
- Phased bulk excavation of made ground and shallow natural soils to new formation level.

Given the removal of all made ground within the basement envelope, an archaeological mitigation programme is required.

3 Archaeological Objectives of the Watching Briefs

3.1 Definitions

3.1.1 Archaeological Watching Brief

An Archaeological Watching Brief, as recommended by the Institute of Field Archaeologists (IFA, 1994), refers to:

“A formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons within a specified area or site on land or underwater where there is the possibility that archaeological deposits may be disturbed or destroyed. The programme will result in the preparation of a report and ordered archive.”

In all cases, the watching brief is intended:

“to allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development or other potentially disruptive works.”

“to provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support a treatment to a satisfactory and proper standard.”

“to establish and make available information about the archaeological resource existing on a site.”

The Institute stresses that an Archaeological Watching Brief is not intended to reduce the requirement for excavation or preservation of known or probable deposits, and is intended only to guide, not to replace, any requirement for contingent excavation or preservation of possible deposits.

3.1.2 Archaeological Heritage Value

Based on the understanding of the history of the area as considered and presented in the Environmental Statement, the archaeological mitigation strategy will be to undertake Archaeological Watching Briefs as defined above. The strategy responds to the anticipated archaeological features having minor to moderate heritage value, as defined in Table 10.2 of the Environmental Statement.

3.2 General Archaeological Watching Brief Objectives at King’s Cross Central

The Archaeological Watching Brief(s) will collect and interpret data from the many site-based engineering components of the Southern Infrastructure scheme, as described in Sections 1.4 and 2 of this document. The archaeological objectives will be related to:

1. Determining the character of the site and landscape prior to first-phase industrial development, including information about the rural topography with evidence of Prehistoric to Post-Medieval land use, the exploitation of soils for brick making, and early commercial and residential development as part of the rapidly expanding early 18th century urban fabric of London.
2. The mid 18th to early 19th century ‘early’ urban land uses prior to the insertion of the great mid 19th century railway buildings and associated railway facilities.
3. Early 19th century to mid 20th century land-uses of the Gas Works particularly related to the surviving above-ground elements, of remains showing ‘industrial processes’ and of the functional relationships to the Regent’s Canal.
4. The character of foundations and soils of mid to late 19th century, related to residential and commercial occupation and continual urban change processes.
5. Adding archaeological data to that obtained for CTRL and LUL development works that have been taking place for the last few years at King’s Cross and St Pancras.
6. The Watching Brief will also provide specialist advice to the Developer (Argent), the Engineer, and the Principal Engineering Contractor on made ground and historic engineering features during the site works, if and when discoveries are made. The Archaeological Watching Brief will

monitor site works to reduce the chance of accidental damage occurring to retained heritage buildings.

7. Updating Archaeological Watching Brief objectives from time to time, responding to findings and interpretation discussions between all concerned parties.
8. A report on the findings is planned to be issued within several months following the completion of site works.

3.3 The Archaeological Watching Brief Programme

3.3.1 Landscape Documentation Prior to Engineering Works

Prior to engineering works locally occurring, there shall be a programme of hard landscaping documentation. This heritage programme shall mainly relate to the identification and recording of old street surfaces including basaltic and granitic setts, kerbs, paving and drain/manhole covers. There may locally survive old landscape surfaces within the development plots. Older buried landscape surfaces are anticipated and shall be recorded when encountered during ground works. The opportunity shall be taken to locate and document other landscape surface heritage features as discovered.

3.3.2 Salvage

Prior to ground works occurring the heritage documentation of the hard landscaping and other inspections by IHCM shall be used to assess the requirement to salvage historic material. Salvage shall be identified to the engineering contractor prior to site works and who shall systematically log them to an agreed method as removed and then transport them to an approved secure salvage store. At the present time the salvage is likely to include surface bound basaltic and granitic setts, kerb stones, stone paving and metal drain/manhole covers. Some buried historic construction materials are anticipated and will be required to be salvaged, but this cannot be prescribed until encountered.

3.3.3 During Engineering Site Investigations

It is likely that the Archaeological Watching Brief will initially be for the engineering site investigation(s) into existing services, and this work will inform future archaeological site-based tasks.

3.3.4 During Removal of Ground Obstructions

An Archaeological Watching Brief will be required immediately following removal of the present hard landscaping. This material, typically asphalt or concrete of thickness probably varying between 50mm and 0.5m, is assumed to be formed of modern materials of no heritage value, as defined in Table 10.2 of the Environmental Statement.

The major phase of archaeological site works will relate to those works below the present hard landscaping and areas where CTRL has impacted on the older ground conditions. Hard obstructions are most likely to be the more substantial foundations of former industrial buildings. Some railway-related features and foundations therefore may have a heritage interest. Soft spots would include backfilled basements of former residential buildings, cess pits and wells, these likewise having a heritage documentation value. At the present time it is not possible to be precise as to where such local features are likely to occur.

The removal of the obstructions and replacement with engineered fills would be mechanically achieved, and would therefore affect the ground around the treatment locations.

4 Actions by the Archaeological Contractor Prior to and During the Development Programme

The entire area is within the King's Cross Conservation Area. All statutory requirements relating to work with listed structures and in a Conservation Area are to be complied with.

To satisfy Archaeological Watching Brief requirements, the appointed Archaeological Contractor shall:

1. Provide a Written Scheme of Investigation (WSI) for IHCM, for onward submission to the London Borough of Camden and English Heritage. This shall be approved in writing prior to any development work starting on site.
2. Provide a Health & Safety Plan under CDM Regulations and work to it.
3. Obtain an archaeological site code.
4. Be fully familiar with the heritage documentation undertaken by IHCM in the Environmental Statement produced for Argent (King's Cross) Limited – to be provided at tender.
5. Be familiar with archaeological site works carried out for CTRL and LUL at King's Cross and St Pancras.
6. Be familiar with the conditions attached to the Planning, Listed Building and Conservation Area Consents associated with the King's Cross Central development.
7. Coordinate the fieldwork programme with Argent, the Engineer, IHCM and the English Heritage archaeological officer representing the London Borough of Camden.
8. Attend, unless otherwise agreed, all works that penetrate below the present hard landscape surfaces.
9. Generally advise the Principal Engineering Contractor on made-ground and structural features within it, related to the site history potentially spanning Prehistoric to Modern times. Advise on archaeological value of the heritage assets, with an assumption that only remains (including building fabric) of no and low value may be penetrated/removed without the agreement of IHCM and/or Camden/English Heritage.
10. Observe and document, from ground level, machine excavation without shoring and hand digging undertaken by the Principal Engineering Contractor.
11. Descend at agreed times pits and areas less than 1.2 m deep without shoring, and deeper pits with shoring, to observe, explore, photograph and document made ground and alluvial soil formations, structural remains of the various buildings and other archaeological remains.
12. Provide advice to the Principal Engineering Contractor on backfilling and reinstatement, ensuring protection of archaeological features and accurate historic reinstatement respectively.

5 Provisions to be Made by the Archaeological Contractor after the Site Works

The following requirements are to be satisfied by the Archaeological Contractor:

1. Provision of a factual and interpretive report on the site works in respect of made ground and alluvial soil formations, structural remains, artefacts and ecofacts. The report shall conform to methods prescribed by 'MAP2', Management of Archaeological Projects draft 2 (English Heritage, 1991) and by English Heritage Greater London Division (English Heritage, 1998, Archaeological Guidance Papers 3 and 4). The report shall contain text, drawings and photographs as appropriate.
2. Provision of each agreed report in draft one month following the completion of site works, and the final reports one month after receiving comments on the drafts from IHCM.
3. Provision of a completed 'Online Access to the Index of Archaeological Investigation' form (OASIS form) to English Heritage.
4. Lodging of the site paper archive with the Museum of London. Artefacts are to be retained by the landowners or their nominated agency pending consideration of the potential for museum displays.
5. The documents and archive from the Southern Infrastructure works will be used with similar from the other development plots to result in an holistic analysis and publication/report on the heritage of KXC.

6 Provisions by the Principal Engineering Contractor and Developer in Support of the Archaeological Site Works

6.1 General Developer Provisions

1. Office and temporary accommodation for the Archaeological Contractor.
2. Male and female washing and lavatory facilities for the Archaeological Contractor.
3. Secure storage for the Archaeological Contractor.
4. CDM Co-ordinator.
5. Contract Manager.

6.2 General Contractor Provisions

1. Production of investigation and construction method statements that reference the integration of archaeological site works.
2. Right of legal entry to the site and preparation of the site ready for archaeological attendance.
3. All electricity and lighting necessary for archaeological equipment and working conditions.
4. Site induction to ensure safe working methods by archaeologists and approved visitors.

6.3 Technical Contractor Provisions

1. Allow inspection of and provide technical advice on services drawings.
2. With the Engineer or other client representative define all possible constraints that have to be taken into account and including those related to:
 - Listed buildings.
 - Conservation Areas.
3. Dispose of the spoil from the agreed archaeological working areas, if and when necessary.
4. Provide geotechnical advice and information to aid archaeological works and interpretation programme.
5. Prepare and undertake break-out of 20th century structures and soils agreed with the Archaeological Consultant.
6. Provide all supportive works to excavations deeper than 1.2 m, where access is required and the excavation faces are not battered.
7. Break out all unnatural obstructions impeding archaeological works when requested by the Archaeological Contractor.
8. Provide, if necessary, tent covers over evaluation areas to be dug in winter conditions where very sensitive archaeological resources are encountered.
9. Provide labour for moving spoil away from evaluation areas, pits and trenches.
10. Provide labour for protecting archaeological surfaces when temporary works are being set in place, and for working pumps, etc.
11. Undertake all required reinstatement of the excavation areas incorporating as necessary special protective materials over important/fragile archaeological resources (Terram and/or sand).

7 The Archaeological Contractor Nominated for the Watching Brief

The Archaeological Contractor proposed for the archaeological Watching Brief is:

Helen Hawkins and / or Gary Brown

Pre-Construct Archaeology Ltd

Unit 54 Brockley Cross Business Centre

96 Endwell Road

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London SE4 2PD

Tel: 020 7732 3925

Fax: 020 7732 7896

Or, alternatively, the Watching Brief may be undertaken by IHCM to satisfy special client requirements.

8 References

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WRITTEN SCHEME OF INVESTIGATION

FOR A PROGRAMME OF

ARCHAEOLOGICAL WATCHING BRIEFS

DURING

ENGINEERING WORKS FOR THE NEW INFRASTRUCTURE

SOUTH OF REGENT'S CANAL

KING'S CROSS CENTRAL

LONDON BOROUGH OF CAMDEN

FOR

IHCM
on behalf of

Argent (King's Cross) Limited

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1 INTRODUCTION

1.1 This archaeological Written Scheme of Investigation outlines the methodology for a programme of archaeological watching briefs on the engineering works for the new infrastructure south of Regent's Canal, King's Cross Central. The watching briefs will monitor: the digging of trial pits for the location of services, the subsequent excavations for their removal and relocation, taking of boreholes, formation of temporary works, cut and fill excavations for contamination remediation and the works associated with creating temporary pavements and roads.

1.2 The site is bounded to the west and south by Pancras Road and to the north by Regent's Canal and east by King's Cross Station.

The Proposed Development

1.3 The "Southern Infrastructure" works are to support the construction of new roads and development within the individual development blocks. The detailed design for the construction of the Southern Infrastructure is detailed within other submission documents. Works to achieve this scheme will comprise those referred to below:

- Trial pitting and borehole investigations, aiming to investigate the shallow ground conditions (made ground and alluvium) with observation trial pits, and geotechnical data about the soil formations and hydrology with boreholes. Their location will result from the carrying out of an engineering desk study and then be related to where there are concerns and questions in respect of insertion of temporary and permanent new works and ground contamination. The pits would likely be 1-4 m deep and shored so the pits can be hand logged. The boreholes are anticipated to be more than 20 m deep.
- The new Southern Infrastructure is to be formed in an area of complex ground conditions resulting from more than 200 years of development and change, the latest (modern) phase of which can be presently observed and includes an arrangement of portacabin facilities for the LUL construction sites and which are in the process of removal. These were located in the Milk Dock site, formerly part of King's Cross Station. It is expected that the following types of old/redundant features/obstructions may be present and will need to be removed:
 - Backfilled basements.
 - Basement walls.
 - Brick and concrete foundations likely to be of various forms and sizes.
 - Wells and cess pits (open or backfilled).
 - Metal water, gas and hydraulic power pipes.
 - Sewer brick/stoneware pipes.

- Backfilled WWII craters.
 - Older road fabrics.
 - Elements of commercial/industrial plant.
 - Deep undifferentiated fill related to construction.
 - Modern services of the present facilities on and passing through KXC.
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- Given the industrial and commercial history of King's Cross, it is possible that there are still localities of 'hot-spots' of soil contamination. The contamination, if it is related to 19th century industrial processes, may have a heritage interest, especially where such contamination is associated with structural remains and where the contamination may need treatment. Treatment could include on-site encapsulation and / or removal off site (the excavation for which would require an archaeological watching brief) .
 - The new works will be preceded by the cutting off of live but redundant services, in order to allow diversions and new infrastructure works to be achieved.
 - The construction of the proposed Southern Infrastructure will necessitate diversion of existing buried services and insertion of new ones, related both to existing buildings and street functions and also in anticipation of future redevelopment. Shallow infrastructure works may be located above soil formations of archaeological interest. Similarly, services inserted in trenches below 0.5 m deep, and in areas where there may be physical obstructions and ground contamination, could traverse through archaeologically interesting ground conditions.
 - The scheme proposed is for the Southern Infrastructure facilities to be set underground with access via an arrangement of manholes and underground chambers. It is likely that excavation would extend some 4 m below present ground level lowest slab level to reach the assumed formation level. The works will also include cut and fill within the proposed development plots, to achieve a pre-development ground surface and this may involve the removal of buried and surface obstructions. The excavation for these works would have the most effect on potential archaeological remains, those identified in the Environmental Statement; they are generally classed of local value.
 - The following engineering impacts are anticipated following site preparation works:
 - Phased construction of temporary or permanent retaining walls.
 - Phased bulk excavation of made ground and shallow natural soils to new formation level.

1.4 An archaeological watching brief will be conducted on all below ground works and will aim to collect and interpret data revealed, especially regarding the following topics of heritage concern:

- The character of the site and prior landscape, including information about the rural topography with evidence of prehistoric to post-medieval land-use;
- The preparation, infilling processes and materials used across the sites for all previous phases of development;
- Ground surface features of all ages exposed at the location of the below ground disturbances;
- Identification and documentation of any newly discovered buried structural features;
- An evaluation of the investigated surface and below ground structures and made ground for inputting into ongoing heritage related studies;
- More generally, the archaeological watching brief will monitor the construction works to reduce the chance of accidental damage occurring to any previously unknown significant archaeological remains.

1.5 The proposal will follow IFA guidelines, and the methodologies set out in English Heritage (GLAAS) Guidance Papers for standards and practices in archaeological fieldwork watching briefs and assessment and evaluation reports.¹

¹ English Heritage, Greater London Archaeology Advisory Service, "Archaeological Guidance Papers: 1 Written Schemes of Investigation; 2 Desk-Based Assessments; 3 Standards and Practices in Archaeological Fieldwork in London; Archaeological Reports; 5 Evaluations", revised June 1998.

2 THE WATCHING BRIEFS

2.1 All works will be in accordance with IFA and English Heritage guidelines. Pre-Construct Archaeology is a 'Registered Archaeological Organisation' with the Institute of Field Archaeologists.

2.2 All works will be carried out in accordance with the Written Scheme of Investigation-Specification².

2.3 Archaeological Watching Briefs will be in place where any engineering ground works would occur which would encounter made ground from the 19th Century or earlier, or River Fleet Alluvium.

2.4 On completion of the fieldwork proper provision has been made for a full report outlining the results of the watching brief.

² IHCM on behalf of Argent Ltd. February 2008 *Southern Infrastructure: Written Scheme of Investigation-Specification* unpublished client report

3 GROUNDWORKS

Method Statement

3.1 The Principal Contractor will break out the areas of proposed groundworks. The objective of the watching brief is to allow trained archaeologists to identify, record and retrieve (as far as possible) archaeological remains that may be uncovered in the course of the development programme.

3.2 All methodologies set out here are understood as being possible where minimal contamination is present in areas of the site. Staff will wear standard PPE but will wear gloves and suits as appropriate.

3.3 All items identified as Treasure will be removed to a safe place and reported to the local coroner according to the procedures relating to Treasure Act 1996. Where removal cannot be effected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft.

3.4 If significant archaeological remains are encountered in a pit excavation, with the agreement of the Engineer, digging will stop at the pit to allow the archaeological remains to be recorded and then excavated by the archaeologist if they are not to be preserved *in situ*. Further excavation will then proceed until the desired depth is achieved. The horizontal and vertical trench faces will be cleaned before recording and evaluation.

Access and Safety

3.5 Reasonable access to the site will be granted to representatives of the London Borough of Camden and other representatives of English Heritage who wish to be satisfied, through site inspections, that the archaeological works are being conducted to proper professional standards and in accordance with the agreements made.

3.6 All relevant health and safety legislation, regulations and codes of practice will be respected. The groundworks contractor will be responsible for overall health and safety on the site.

Recording Systems

3.7 A unique-number site code system will be agreed with the Museum of London.

3.8 The recording systems adopted during the investigations will be broadly compatible with those most widely used elsewhere in the Borough. Where there is any doubt as to the appropriate recording technique the Museum of London recording manual will be used.

3.9 The site archive will be organised so as to be compatible with the other archaeological archives produced in the Borough. Individual descriptions of all archaeological strata and features excavated and exposed will be entered onto prepared *pro-forma* Watching Brief Recording Sheets. If complex stratigraphy or structures are encountered, *pro-forma* Single Context Recording Sheets will be used. Sample recording sheets, sample registers, findings recording sheets, accession catalogues, and the photography record cards will follow the

Museum of London equivalents. This requirement for archival compatibility extends to the use of computerised databases.

3.10 A 'site location plan' indicating the site north and based on current Ordnance Survey data (reproduced with the permission of the Controller of HMSO) will be prepared. The location of the OS bench marks used and the site TBM will also be indicated.

3.11 A record of the full extent in plan of any archaeological deposits encountered will be made; these plans will be on polyester based drawing film, will be related to the site grid and at a scale of 1:10 or 1:20. 'Single context planning' will be used on deeply stratified sites. The results will be digitised.

3.12 Sections will be drawn to scale or measured sketches will be made according to the relative safety of individual observation pits.

3.13 The OD height of all principal strata and features will be calculated and indicated on the appropriate plans and sections, following transfer of information from the engineering contractor.

3.14 If the site complexity is such as to justify its use the 'Harris Matrix' stratification diagram will be used to record stratigraphic relationships. This record will be compiled and fully checked during the course of the excavations.

3.15 A photographic record of the investigations will be prepared. This will include black and white prints and colour transparencies (on 35mm film), illustrating in both detail and general context the principal features and finds discovered. The photographic record will also include 'working shots' to illustrate more generally the nature of the archaeological operation mounted.

Treatment of Finds

3.16 Different sampling strategies may be employed according to the perceived importance of the deposit or feature under investigation. Close attention will be given to sampling for date and structure. Sample size should take into account the frequency with which material is likely to occur.

3.17 All finds retrieval policies of the Museum of London will be adopted and all identified finds and artefacts will be retained unless the Museum of London policy states otherwise.

3.18 All finds will be treated in a proper manner and will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in the United Kingdom Institute for Conservation's '*Conservation Guidelines No.2*' and the Museum of London's '*Standards for the Preparation of Finds to be Permanently Retained by the Museum of London*'. All metal objects will be x-rayed and then selected for conservation.

3.19 Artefacts are to be retained by the landowners or their nominated agency until such times as major development are achieved within King's Cross Central and when artefact potential for museum display within the site can be considered.

Reports and archives

3.20 A report will be written up summarising the results of the archaeological watching brief on the trial pits and trenches and incorporating the data from the borehole and augered window sample surveys. The site and area historical, archaeological and geological background, site methodologies, results and any recommendations for further work will be set out and illustrated as appropriate. Copies of the report will be submitted to English Heritage, the Borough's Planning Department, the Local Studies Library and the client via the archaeological consultant.

3.21 The integrity of the site archive will be maintained. The finds and records will be available for public consultation. Appropriate guidance set out in the Museum and Galleries Commission's '**Standards in the Museum Care of Archaeological Collections**' (1992) and the Society of Museum archaeologist's draft '**Selection and Retention and Dispersal of Archaeological Collections**' (1992), will be followed in all circumstances.

3.22 If the finds are not to be donated to the appropriate Museum, arrangements will be made for a comprehensive record of all relevant materials (including detailed drawings, photographs and descriptions of individual finds), which can instead constitute the archaeological archive.

3.23 The minimum acceptable standard for the site archive is defined in the '**Management of Archaeological Projects 5.4**' and '**Appendix 3**'. It will include all materials recovered, (or the comprehensive records of such materials as referred to above) and all written, drawn, and photographic records relating directly to the investigations. It will be quantified, ordered, indexed, and internally consistent before transfer to the Museum of London. It will also contain a site matrix, a site summary and brief written observations on the artefactual and environmental data.

3.24 United Kingdom Institute for Conservation guidelines for the preparation of excavation archives for long-term storage (1990) will be followed.

3.25 A short summary of the results of the work, even if negative, will be submitted to the Greater London SMR and NAR (using the appropriate archaeological report forms), and for publication in the appropriate academic journals including the 'Excavation Round-Up' of the **London Archaeologist**. Such publications will meet the minimum requirements set out in Appendix 7, '**Management of Archaeological Projects**' 1991, and derive from a 'phase 2 review' as defined in the same document. An OASIS form will also be submitted. The findings will be integrated, at some point in the future, with the results from other schemes within KXC, ensuring a holistic understading of the site's history is achieved.

4 RESOURCES AND PROGRAMMING

4.1 Accommodation, as well as welfare facilities and tool storage, will be required for the watching brief archaeologist. It is assumed that these will be provided by the Principal Contractor at or near the site.

4.2 The site investigation, ground works and watching briefs will be inspected and monitored by Richard Hughes, IHCM, on behalf of the client and by Diane Walls, English Heritage (GLAAS), on behalf of the Borough. Inspection arrangements will be made for site visits by Diane Walls as deemed necessary for monitoring the investigations.

4.3 The Health and Safety policies of Pre-Construct Archaeology Limited will be followed and in accordance with all statutory regulations. Full acknowledgement will be made to existing site policies and procedures. A general health and safety method statement for the King's Cross work has been prepared by PCA and provided to the archaeological consultant.

4.4 The archaeological works will be supervised by a member of staff who has undertaken similar exercises.

5 TIMETABLE

5.1 The engineering site investigation is planned to be undertaken early in 2008.

5.2 The programme of works is currently unknown and therefore the duration of the watching brief commission cannot be confirmed but is likely to be in several phases responding to the sequence of ground penetrating works.

