Phase I Geo-Environmental Assessment
11-13 St Pancras Way, London, NW1 0PT

The Unite Group Plc & Travis Perkins (Properties) Ltd

July 2010

WSP

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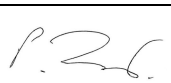
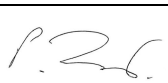
Signature				
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Executive Summary

WSP Environment and Energy (WSPEE) were instructed The Unite Group Plc & Travis Perkins (Properties) Ltd (the Client) to undertake a Phase I Geo-Environmental Assessment at 11-13 St Pancras Way, London, NW1 0PT (the Site).

Overview

The published geology for the area and a review available borehole logs in the vicinity of the site indicates that the site is underlain by Made Ground (worked ground), London Clay, Lambeth Group, Thanet Sands and White Chalk deposits. In addition, a shallow gravel unit was recorded in one of the borehole logs which may be representative of channel deposits associates with the historical course of the River Fleet.

The Lambeth Group and Thanet Sands/White Chalk are classified as a Secondary (A) and Principal Aquifers respectively. The Secondary (A) aquifer is not currently utilised in the vicinity of the site but may be utilised in the future. The main groundwater resource is considered to be the Principal Aquifers of the Thanet Sands / White Chalk. The indentified groundwater bodies are overlain by a significant thickness of low permeability cohesive deposits.

The nearest surface water body is the Grand Union Canal and this is utilised locally as a non-potable resource.

The site setting is considered to be of a low/moderate environmental sensitivity.

Contamination Considerations

The site was utilised historically as a stables, engineering depot and timber yard but more recently the site has been used as a builders merchants (Travis Perkins). Surrounding land has included a mixture of industrial, commercial and residential uses with several potential off-site sources of contamination identified within 500m of the site.

The presence of Worked / Made Ground beneath the site has the potential to generate ground gases and volatile vapours

WSPEE have identified a **low/medium** risk of possible source-pathway-receptor pollutant linkages being present; which should be assessed further by undertaking an intrusive investigation.

Geotechnical Considerations

Foundation solutions, ground floor slab and concrete design for site development would be dependent on the site specific ground conditions. Based on the current information and likely column loads for a nine storey building a piled foundation solution is considered most likely.

Observations during the site walkover survey suggest that there is potential for buried foundations associated with former buildings to be present beneath the site. In addition, the presence of a basement structure in the building adjacent south could impact the proposed development.

Recommendations

It is recommended that an intrusive investigation is undertaken to define ground conditions to assess ground and groundwater contamination risks (both in terms of onsite risks and risks posed to offsite sources from onsite conditions) and to provide parameters for geotechnical design.

Please Note: This summary forms part of WSP Environment and Energy Phase I Geo-Environmental Assessment (ref.: 12041745/001) and as such this should be read in conjunction with the full report.

1 Introduction

1.1 AUTHORISATION

WSP Environment and Energy (WSPEE) was instructed by The Unite Group Plc & Travis Perkins (Properties) Ltd (the Client) to undertake a Phase I Geo-Environmental Assessment at 11-13 St Pancras Way, London, NW1 0PT (the Site). The site location and site layout plans are provided in **Appendix A**.

1.2 OBJECTIVES

The principal purpose of undertaking the assessment is to highlight geo-environmental considerations, predominantly with respect to ground, ground gas and groundwater conditions, which may potentially arise as issues associated with the redevelopment of the site.

1.3 PROPOSED DEVELOPMENT

The proposed development has not been finalised but it is understood to include the construction of a nine storey residential structure with a builder merchants (Travis Perkins) occupying some of the ground floor. Sketched development plans are included in **Appendix A**.

1.4 SCOPE OF WORKS

This Phase I Geo-Environmental Assessment has been designed to provide information relating to:

- Detailed assessment of current site status through a walkover survey;
- Collation of historical maps and assessment of former land uses on and surrounding the site;
- Collation of information on site and surrounding hydrological features, hydrology, neighbouring land use, ecologically sensitive uses, geology, etc;
- Informal enquiries with relevant geo-environmental regulators including the Local Authority (Contaminated Land Officer) the Environment Agency and Petroleum Officer;
- Highlight environmental consideration / risks, predominantly with respect to ground, groundwater and ground gas conditions, which may potentially arise as liabilities associated with the redevelopment of the site
- Analyse the significance of potential environmental risks identified in the context of the proposed site use via the source-pathway-receptor pollutant linkage approach and presentation of the findings in a conceptual site model;
- Provide a preliminary geotechnical assessment of existing ground conditions at the site in relation to the proposed development , to provide an indication of possible foundation solutions and the assessment of the potential for aggressive ground conditions, variable engineering properties and potential construction risks;
- Assessment of the significance of potential environmental risks identified in the context of the site use; and
- Presentation of findings in a non technical executive summary, with clear conclusions and recommendations.

1.5 BASIS OF ENVIRONMENTAL RISK ASSESSMENT

This assessment has been undertaken with due regard to Contaminated Land Guidance documents issued by the Department for Environment, Food and Rural Affairs (and its predecessors) including CLR 11 Model Procedures for the Management of Land Contamination, the British Standards Institute (the BSi) and the Royal Institution of Chartered Surveyors (RICS). The methods used follow a risk-based approach, with the potential environmental risk assessed qualitatively using the 'source-pathway-receptor pollutant linkage' concept introduced in the Environmental Protection Act 1990.

Specific comment is made regarding the site's status under the Contaminated Land Regime implemented on the 1st April 2000 as Part IIA of the Environmental Protection Act 1990, and the actual or potential designation of the site as 'Contaminated Land' as defined in Section 78A(2). Unless specifically stated as relating to this definition, references to 'contamination' and 'contaminants' relate in general terms to the presence of potentially hazardous substances in, on or under the site.

In addition, consideration has been given to a wide range of related topics including (where appropriate): environmental processes; current and foreseeable environmental legislation; the practices and duties of environmental regulators; the health and safety of occupiers and neighbours as affected by contamination; effects on the structure of buildings; and financial implications. References to risk classifications are made according to the following definitions:

- **Low Risk** – it is unlikely that the issue will arise as a liability/cost for the owner of the site;
- **Medium Risk** – it is possible that the issue could arise as a liability/cost for the owner of the site. Further work is usually required to clarify the risk; and
- **High Risk** – it is likely that the issue will arise as a liability/cost for the site owner.

1.6 LIMITATIONS

The general limitations to the assessment are outlined in **Appendix E**.

2 Site Information

2.1 SITE DETAILS

Site Address	11-13, St Pancras Way, London, NW1 0PT
National Grid Reference	529570, 183690
Area	Approximately 0.48 hectares
Site Location	The site is located in a mixed residential, commercial and industrial area of central London (Somers Town), approximately 300m north west of St Pancras International Rail Station.
Current Site Use	The site is currently occupied by Travis Perkins builders merchants.

2.2 SITE RECONNAISSANCE

A walk over survey of the site was carried out by a representative of WSPEE on 23rd April 2010 which included internal and external areas of the site. The following key observations were made during the site reconnaissance, with a photographic record provided as **Appendix B.**

Site Description	The site occupies an approximately rectangular area running from south to north along St Pancras Way (see **Photo 1**). It currently comprises a builders merchant (Travis Perkins) that includes two site buildings to the north and south of the site respectively. Customer car parking is situated in the central area between the two buildings and employee car parking is situated to the south of the southern building where a vehicle wash down area is also situated. Walkways run along the western site boundary and a timber yard occupies the external area to the north of the northern site building where a fixed loading crane is also situated (see **Photo 2**). The southern site building comprises a hire shop and warehouse and is a brick and metal clad construction over two levels. The northern site building comprises a warehouse for the storage of timber. Within the northern site building evidence of previous building structures were noted in the form of a brick wall and reinforced steel joists 'cut off' at ground surface. At the southern site boundary a retaining wall was noted with an approximate 2m drop from ground level to the basement of the adjacent property. Both internal and external areas are laid with concrete hard standing.
Trees	No trees were observed on site.
Topography	The site appeared to be flat and level.
Bulk Materials Storage	An approximately 2,000 litre capacity Above Ground Storage Tank (AST) was observed adjacent to the customer site access gate. The AST comprises an intrinsically bunded plastic tank raised on a wooden pallet. No drip tray was present but there were no obvious signs of surface staining (see **Photo 3**). Within the customer car parking area bricks, plastic pipes, gravel and sand are stored in bulk (see **Photo 4**). Propane gas containers are stored in the external areas adjacent to the south eastern corner of the southern site building.

Polychlorinated Biphenyls (PCBs)	No electricity sub-stations were noted on-site.
Ozone Depleting Substances (ODS)	No air conditioning units were noted during the site walkover.
Waste Management (Non Hazardous)	A general waste skip was observed on the wall adjacent to the customer site access gate. Site management indicated that wastes were collected approximately once a week by an appropriately licensed contractor (see **Photo 3**). Cardboard and plastic are collected once a week and stored at the head office prior to recycling.
Waste Management (Hazardous)	Used car batteries and a plastic drum containing 'dampcheck' chemicals (used in wall cavities) were noted in the external area to the west of the southern site building. These items were adjacent to a roof drainage down pipe and cover (see **Photo 5**). Two 200 litre steel drums containing 'oily rags' and 'paint spillage' were noted in the external area adjacent to the north west of the southern site building (see **Photo 6**). The site management confirmed that when required these items are disposed of off-site as hazardous waste by an appropriately licensed contractor.
Drainage	Specific details regarding the on-site drainage were not reviewed during the site walkover survey. However, there was evidence of drainage provision with gulley covers noted in the concrete hard standing and one drain in the southern site area was noted to be possibly blocked (see **Photo 7**). The site manager also indicated that there was an interceptor included within the drainage for the wash down area in the south of the site. It should be noted that best practice dictates that vehicle washing areas that include the use of detergents should be directed into the foul drains and not the surface water drains.
Asbestos Containing Materials (ACMs)	Site management confirmed that there is an Asbestos Management Plan (AMP) for the site relating to a Type 2 Survey (10th September 2004). This was note reviewed as part of the site walkover. However, based on historical mapping information, it is understood that the current site buildings were constructed between pre 1970 and pre 1982. ACMs were not entirely banned in the UK until 24th November 1999 under the Asbestos (Prohibitions) (Amendment) Regulations 1999 (although very limited exclusions still applied). Therefore there is the potential for ACMs to be present in the building. Under Regulation 4 of the Control of Asbestos Regulations 2006, the duty holder must establish whether ACMs are present and what condition they are in, and manage the ACMs on an on-going basis (using a suitable AMP).

2.3 SURROUNDING LAND USE

The following land uses were noted surrounding the site:

North	College Grove with eight storey student accommodation beyond.
East	St Pancras Way with St Pancras Hospital and a sorting office beyond.
South	Homeless shelter comprising a three storey brick building with a 2m deep basement.
West	Four storey brick building with the Royal Veterinary College beyond.

3 Historical Land Use

3.1 REVIEW OF HISTORICAL PLANS

A study of historical maps has been undertaken to identify any potentially contaminative former land uses. The following table provides a summary of this information and selected historical maps are provided in **Appendix C**.

Dates	On-site	Off-site
Pre 1875 to Pre 1876	Stables	'Kings Road' adjacent east Royal Veterinary College adjacent west. Ale store approximately 10m east. Railway siding running into Ale store approximately 10m east Residential properties adjacent north west. Playing card and stationary manufacturers – approximately 20m north west. St Pancras Workhouse approximately 15m south east. St Giles burial ground (disused) approximately 90m south east. Regents Canal approximately 150m north east
Then Pre 1896 to Pre 1916	No change	Mineral water manufacturer ('Idris Factories') approximately 80m north west. St Giles burial ground now annotated as 'St Pancras Gardens.' St Pancras Workhouse now annotated as 'St Pancras House.' Playing card and stationary manufacturers now annotated as 'Camden Works.'
Then Pre 1916 to Pre 1953	No change	'Camden Works' now annotated as 'Britannia Works.' Warehouse adjacent south. Electricity sub-station associated with St Pancras hospital approximately 20m south east. Kings Road now annotated as 'St Pancras Way.'
Then Pre 1953 to Pre 1971	Now annotated as 'GPO Engineering Depot' and comprising a single site building.	Ale store now annotated as 'warehouse.' Idris Factories now annotated 'GPO Garage & workshops'
Then Pre 1971 to Pre 1984	Now annotated as 'Timber Yard' with two site buildings similar to the current site layout.	Britannia works now annotated as 'warehouses'
Then Pre 1984 to Pre 1994	No change.	Ale store now annotated as 'sorting office.'
Pre 1994 to Present	No change	Warehouses to north of site (former Britannia works) now student accommodation.

3.2 ADDITIONAL INFORMATION

Reference to '*The Lost Rivers of London',* Nicholas Barton, 1992, indicates that historically the River Fleet flowed in a southerly direction along the approximate line of St Pancras Way in the vicinity of the subject site. Therefore it is possible that river channel deposits and/or shallow groundwater may be encountered beneath the site.

3.3 PLANNING HISTORY

WSPEE has reviewed the planning history for St Pancras Way held on the London Borough of Camden website. Nine planning applications have been identified for a number of uses including, building refurbishment, tree trimming, change of use and a residential extension. None of the submissions relate to the site and only one planning submission is within the vicinity of the site (7, St Pancras Way), which is detailed below:

Reference Number	Application Date	Proposed Development	Decision
2009/3917/P	21/09/09	Erection of a single storey side extension at block A, installation of rooflights and reinstatement of windows at blocks A and B, various elevational alterations and new entrance gates, in connection with the change of use from a scrap metal yard (Sui Generis) to business use (Class B1) and one live-work unit (Sui Generis).	Registered – no decisions

4 Regulatory Information & Consultations

4.1 REGULATORY DATABASE

The following environmental data has been obtained from a summary of information databases reported in Envirocheck Report (ref. 30937095_1_1) dated 19th April 2010.

Environmental Data	On-Site	Within 250m	Within 500m	Details
Discharge Consents	0	0	0	Not Applicable (N/A)
Local Authority Pollution Prevention Controls (LAPPC)	0	1	1	These relate to dry cleaning located 127m south and 464m south west respectively.
Local Authority Pollution Prevention and Control Enforcements	0	0	0	N/A
Pollution Incidents to Controlled Waters	0	1	1	These relate to Category 3 (Minor) incidents where the receiving water has not been specified.
Registered Radioactive Substances	0	14	1	The majority of the authorisations have been superseded by a substantial or non-substantial variation. However the closest (26m South) Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) operated by the Royal Veterinary College.
Licensed Waste Management Facilities (Locations)	0	1	6	The closest is located approximately 6m south of the site and relates to metal recycling (mixed).
Registered Waste Treatment/Disposal Site	0	1	3	The closest is located approximately 20m south of the site and is categorised as a scrap yard and is operated by the same company as the metal recycling facility detailed above.
Contemporary Trade Entries	3	20	75	The scrap yard / metal recycling facility detailed above is recorded as being inactive. Active entries include St Pancras Hospital (90m SE) commercial cleaning services (94m SW) and clothing and fabric manufacturing (108m north).

4.2 CONTAMINATED LAND OFFICER

The contaminated land officer has been contacted with regard to obtaining environmentally pertinent information for the site. At the time of writing this report the information had not been received. Once this information has been received the report will be updated accordingly and a copy of the correspondence is attached in **Appendix D**.

4.3 PETROLEUM OFFICER

The London Fire & Emergency Planning Authority has been contacted with regard to obtaining information relating to petroleum storage at the site. At the time of writing this report the information had not been received and a copy of the correspondence is attached in **Appendix D**.

4.4 ENVIRONMENT AGENCY

The Environment Agency has been contacted in regard to obtaining environmentally pertinent information for the site. At the time of writing this report the information had not been received and a copy of the correspondence is attached in **Appendix D**.

5 Environmental Setting

5.1 GEOLOGY AND HYDROGEOLOGY

Geology

The British Geological Survey (BGS) Map No. 256 (North London) (1:50 000 Series) shows the following geological sequence to underlie the site:

Geological Unit	Description	Aquifer Status*
London Clay Formation	Undivided clay, silty in part; lower part sandy in east	Non Productive
Lambeth Group	Mottled clay with sand and pebble beds	Secondary (A)
Thanet Sand	Fine grained sands	Principal
White Chalk Formation	Micritic limestone with flint nodules and interbedded calcareous mudstone in lower part.	Principal

* Environment Agency Website

In addition the BGS map indicates that there are areas of worked ground adjacent to the western site boundary.

BGS Records

The following records have been obtained for boreholes within proximity of the site and the logs are provided in **Appendix D**:

Registered BH No. / National Grid Reference / Location / Date	Summary of Geology		Groundwater Observations (mbgl)
	Unit	Depth Range (m bgl)	
TQ28SE/11 / 29389, 83895 / Junction St Pancras Way & Pratt St / No Date TQ28SE/10 / 29280, 83586 / St Pancras Borough Baths / 1901 TQ28SE/11/ 29641, 83582 / St Pancras Hospital / 1809 TQ28SE/282 / 2943, 8392 / Fire Brigade Station / No Date TQ28SE/313 / 2943, 8370 / King St / 1907 TQ28SE/314 / 2957, 8378 / St Pancras Town Hall / 1907 TQ28SE / 2924, 8375 / Curneek St / 1962 TQ28SE / 2929, 8367 / Curneek St / 1962 TQ2854 / ? / St Pancras Hospital / 1871 TQ2853 / 2941, 8390 / Pratt St / 1940	Made Ground Gravel* Yellow Clay (London Clay) Blue Clay (London Clay) Mottled Clay (Reading Formation) Sandy Loam (Woolwich Formation) Greensand (Upnor Formation) Grey Sand (Thanet Sand) Chalk (White Chalk)	0.0 – 1.37 1.2 – 6.0* 0.61 – 7.16 3.04 – 29.26 15.24 – 40.54 38.40 – 42.06 40.54 – 43.28 42.66 – 49.07 49.07 - ND	Approximately 65m to 77m

* Only recorded in logs for St Pancras Hospital.

The available borehole records are generally consistent with the published geological record. However, it is notable that Made Ground deposits have been recorded in the two locations situated within the subject site. In addition, the log for St Pancras Hospital suggests that there is a gravel unit within the upper 6m bgl which has not been recorded on any of the other exploratory hole logs. This may be erroneous but could also be indicative of the river channel deposits associated with the historical course of the River Fleet.

Radon Potential

The ground conditions are not considered by the Health Protection Agency to present a radon risk as less than 1% of homes are above the radon actions levels and no radon protection measures are necessary.

Ground Stability Hazards

The following ground stability hazards have been identified by the BGS on-site:

Ground Stability Feature	Hazard
Landslide	Very Low to Low
Shrinking or Swelling Clay	Moderate

Groundwater Abstractions

The following groundwater abstraction has been recorded within 500m of the site:

Abstraction Licence No.	Abstraction Use	Distance (m)	Direction
28/39/39/0222	Mineral Products: General use relating to Secondary Category (High Loss)	440m	Northeast

The Contaminated Land Officer search should detail the existence of unlicensed (private) abstractions within the area and this will be updated on receipt. The site is not located within an Environment Agency groundwater Source Protection Zone (SPZ).

5.2 HYDROLOGY

The nearest surface water feature to the site is located approximately 150m north east and the site is not located within an area affected by flooding. However, as outlined in Section 3.2 the historical course of the River Fleet runs adjacent to the east of the site.

Surface Water Abstractions

There is one surface water abstraction recorded within 500m of the site as detailed below:

Abstraction Licence No.	Abstraction Use	Distance (m)	Direction
28/39/39/0172	Environmental: Non-remedial River/Wetland Support: Make-Up or Top Up Water (Grand Union Canal At Camley Street Nature Park, London)	152m	Northeast

5.3 RESOURCE POTENTIAL

Surface Water

The nearest surface water feature is the Grand Union Canal which is as detailed in the previous sections is utilised for ‘top-up’ water. Although this is not a sensitive use (e.g. potable use) but the surface water in the Grand Union Canal should be considered as a local resource. In addition reference to the relevant River Basin Management Plan indicates that the Grand Union Canal is classified as having a Moderate ecological quality in the vicinity of the site.

Groundwater

The Worked Ground and London Clay deposits beneath and surrounding the site are considered to have a low resource potential. There is some potential for any localised river channel deposits that may be present to be utilised as a resource but this is considered to be limited. In addition the Lambeth Group deposits are classified as a Secondary (A) Aquifer and as such would be considered important as a local scale resource. There are no records of the formation being utilised at present but it is considered to have a future resource potential.

The main groundwater resource is considered to comprise the Principal Aquifer of the Thanet Sands / White Chalk[1] which is overlain by significant thicknesses of cohesive deposits.

5.4 SURROUNDING FEATURES

The following sensitive land uses have been recorded within a 1km radius of the site:

Feature	Direction
Residential accommodation (some with gardens)	Adjacent north and northwest
Royal Veterinary Hospital & St Pancras Hospital	Adjacent west and approximately 30m southeast respectively.
Camley Street Nature Park	316m southeast

5.5 ENVIRONMENTAL SENSITIVITY

Overall, the site setting is considered to be of **low/moderate** environmental sensitivity, due to the following reasons:

- The site is located in a mixed commercial/residential area;
- The Camley Street Nature Park is located within 500m of the site;
- The site is underlain by a Non Productive Aquifer comprising the London Clay Formation;
- The Grand Union Canal is located within 500m of the site and is utilised as a resource and has a moderate ecological status;
- There are no licensed potable groundwater abstraction licenses within 500m of the site;
- The site is not located within an Environment Agency groundwater Source Protection Zone (SPZ).

[1] These deposits are considered to be in hydraulic continuity

6 Preliminary Conceptual Site Model

6.1 INTRODUCTION

The objectives of the pollutant linkage assessment process are to:

- determine the sources of contamination (if present);
- identify specific chemicals of potential concern (if present);
- identify possible contaminant migration pathways;
- identify possible receptors (e.g. soil, groundwater, humans and third parties) which could be affected, including their relative potential sensitivity to contaminants given their nature of exposure; and,
- construct a conceptual model for the site which clarifies the mechanisms by which the site may present a risk, highlighting those sources of risk which will require further assessment and those which can be eliminated.

The conceptual model, provides a description of three elements i.e.

- the actual and probable nature, extent and location of contaminants, i.e. the SOURCE term;
- the potential existing and reasonably foreseeable future on-site and off-site RECEPTORS to contamination; and,
- the likely migration PATHWAYS by which contaminants may reach such receptors.

Such information enables the development of plausible POLLUTANT LINKAGES between sources of contamination and receptors, and thus an estimation of the risks that may be present. The typical chemicals associated with the identified land uses have been referenced within DEFRA R&D Publication CLR8: Potential Contaminants for the Assessment of Land and this information has been used to inform our conceptual site model.

6.2 PLAUSIBLE POLLUTANT LINKAGE

6.2.1 Plausible Pollutant Linkage

The following table provides an overview of the potential pollutant linkages identified from on-site and off-site sources:

Potential contaminant sources	Associated contaminants*	Potential migration pathways	Sensitive receptors
On-Site			
▪ Historical site use (stables, engineering depot & timber yard); ▪ Current site use – builders merchants; ▪ Above ground Storage Tank (AST); and ▪ Made Ground / worked ground;	▪ Metals and inorganics including asbestos, cyanide and pH; ▪ Total petroleum hydrocarbons (TPH); ▪ Polycyclic Aromatic Hydrocarbons (PAHs); ▪ Volatile Organic Compounds (VOC's); ▪ Phenols ▪ Polychlorinated Biphenyls (PCBs); & ▪ Volatile Vapours & ground gas.	*Human Health* **Inhalation** of volatile vapours/ ground gases; **Direct contact** with soil and groundwater; **Ingress** into potable water supply pipes.	Future Site Users (Assumed residential); Construction & Maintenance Staff;
		Controlled Waters **Leaching** into groundwater; & **Lateral migration**	<u>Groundwater:</u> Secondary & Principal Aquifers <u>Surface Water</u>: Grand Union Canal

		Built Environment **Permeation** into plastic pipes; **Direct Contact** with aggressive ground and/or groundwater	Below ground service; potable supply pipes & building service entry points Building fabric; Potential degradation of concrete foundations & below ground structures.
		Ecological	Camley Street Nature Park
Off Site			
■ Former Ale Store; ■ Railway siding; ■ Former Garage & Workshops; ■ Hospital; and ■ Former 'works' & warehousing	■ Metals and inorganics including asbestos and pH; ■ TPH; ■ PAHs; ■ VOC's ■ PCBs; & ■ Volatile Vapours & ground gas.	**Migration** of groundwater or gas onto site.	*On-Site Controlled Waters* Groundwater; (Secondary & Principal Aquifers). Future Site Users (Residential); Construction & Maintenance Staff;

7 Geotechnical Considerations

7.1 GENERAL

Schematics of the proposed development are provided in **Appendix A.** The general redevelopment includes the following:

- A nine storey mixed residential property with a commercial/industrial use retained at ground floor level. It is understood that the development will not include a basement.

The exact details of the redevelopment, including required loads are unknown at the time of writing this report.

7.2 VARIATION IN GROUND CONDITIONS/SOIL PARAMETERS

The BGS geological map for the area and available BGS borehole logs in the vicinity of the site have been reviewed and are in general agreement, indicating that the site is underlain by Made Ground / Worked Ground overlying the London Clay Formation to approximately 15m to 30m bgl. Beneath the London Clay the Lambeth Group, Thanet Sands and White Chalk deposits have been recorded.

In addition, one of the borehole logs (St Pancras Hospital) suggests that there is a gravel unit within the upper 6m bgl which has not been recorded on any of the other exploratory hole logs. This may be erroneous but could also be indicative of the river channel deposits associated with the historical course of the River Fleet.

At the time of writing this report no engineering specifications relating to foundation, slab and pavement design have been provided.

7.3 FOUNDATIONS

Based on the proposed nature of the development (nine storey structure) and the potential column loadings, it is likely that piled foundations would be the most appropriate foundation solution. The flexibility of adopting alternative foundations will be dependent on the column loads, tolerable settlements and the underlying ground and groundwater regime.

7.4 ADJACENT BASEMENT

A basement is present immediately to the south of the proposed development and the following should be considered:

- A geotechnical assessment will be required to establish the impacts any site excavations / ground movements may have on the stability of the retaining wall and railway line. This will be dependent on the development proposals and the proximity of the development to the railway line, however, a ground movement assessment and structural assessment may be required;
- Confirmation of the structural condition of the building, basement and retaining wall. It is recommended liaison with local Building Control is undertaken to obtain historical drawings / information of the form and extent of the structure and its foundations;
- Structural monitoring of the adjacent building maybe required.
- Stability of the retaining wall and foundations in the short and long term will need to be considered.

The above items are dependent on the development proposals, proximity to the structure, the form of the structure, its foundations and the condition of the structure.

Given the presence of worked ground to the west of the site, deeper areas of Made Ground may be encountered at the site and intrusive investigation works should be completed to assess the potential associated risks.

7.5 OBSTRUCTIONS

Given the history of the site and observations during the site walk over survey, buried obstructions would be anticipated. It is recommended that any former foundations should be identified and removed where possible. It is noted that there are likely to be services running beneath the site. A detailed strategy for obstruction removal should be considered to ensure that abnormal costs are appropriately managed.

7.6 SHALLLOW GROUNDWATER

The groundwater conditions beneath the site are unknown and although the London Clay would not be anticipated to be fully saturated, groundwater may be present as follows:

- Within discrete sand layers and micro fissures within the London Clay;
- As perched water within the Made Ground on top of the London Clay;
- Associated with any channel deposits associated with the proximal historical course of the River Fleet.

Groundwater present beneath the site may affect the preferred foundation solution and affect the feasibility of undertaking excavations (where these may require dewatering).

7.7 CHEMICAL ATTACK ON BURIED CONCRETE

Potentially aggressive ground conditions e.g. adverse pH and sulphate levels may be present. Any buried concrete at the site should be design in accordance with Concrete in Aggressive Ground, BRE Special Digest 1:2005 (Third Edition).

7.8 FLOORS SLABS

It is understood that no basements are proposed as part of the new development.

Published BGS information suggests that Made Ground deposits may be present beneath the site. Historical development of the site suggests that the ground beneath the site may have been disturbed as a result of onsite activities. Ground bearing floor slabs could be adopted at this site. Should significant thicknesses of Made Ground be present beneath the site or the risk posed from ground gas is significant, it may be more appropriate to consider suspended floor slabs for the proposed development.

8 Environmental Risk Assessment

8.1 RISK ASSESSMENT MATRIX

Having evaluated the information gathered during this desk study and described in the previous sections, WSPEE has produced the following assessment of risk primarily focused on contaminated land issues:

ISSUE		RISK CATEGORY	REASON
Contamination Potential:	Potential for significant on-site contamination	**Medium**	Several potential sources of current and historical contamination have been identified at the site.
	Potential for contaminants migrating off the site	**Low/Medium**	Whilst several sources of contamination have been identified across the site it is considered that there is limited potential for migration via underlying geology due to the relatively impermeable nature of the London Clay Formation underlying the site. However, if present, perched groundwater within Made Ground Deposits beneath the site has the potential to allow lateral migration offsite.
	Potential for contaminants migrating onto the site	**Low/Medium**	Several potentially contaminative land uses have been identified within proximity to the site. The presence of London Clay deposits would reduce the potential for contaminants migrating onto the site. However, if present, perched groundwater within Made Ground Deposits beneath the site has the potential to allow lateral migration offsite.
Other Liability Issues:	Potential for 'other' environmental issues to give rise to liabilities	**Low/Medium**	Site management have indicated that an Asbestos Management Plan is available for the site. Although not specifically assessed within this report, observations suggest that the site drainage system could be in a state of poor repair.
Environmental Consequences	Risk of Pollution of Controlled Waters	**Low**	Several potential sources of contamination have been identified associated with the site. However, the site is underlain by the London Clay Formation and the nearest surface water feature is approximately 150m northeast of the site.
	Risk of Damage to Property	**Low/Medium**	There is potential for ground gas generation and aggressive ground associated with the potential Made Ground deposits beneath the site.
	Risk of Harm to Human Health	**Low**	Given that hard standing covers the majority of the site the current risks to human health are limited. Risks to future site end users and construction workers will be triggered by redevelopment of the site and is likely to require further consideration.

ISSUE		RISK CATEGORY	REASON
Business Consequences:	Likelihood of designation as Contaminated Land under EPA 1990	**Low**	A response from the Contaminated Land Officer at the London Borough of Camden is pending. Once the information from the enquiry is received, this risk assessment will be amended accordingly.
	Likelihood of Site Investigation Works Required for Redevelopment	**Medium/High**	Details of ground, groundwater and ground gas conditions, services and underground structures beneath the site are currently unknown. A ground investigation to would be required to characterise the ground contamination and geotechnical conditions prior to any redevelopment works.
OVERALL RISK		**LOW/MEDIUM**	

9 Conclusions & Recommendations

9.1 CONCLUSIONS

The published geology for the area and a review available borehole logs in the vicinity of the site indicates that the site is underlain by Made Ground (worked ground), London Clay, Lambeth Group, Thanet Sands and White Chalk deposits. In addition, a shallow gravel unit was recorded in one of the borehole logs which may be representative of channel deposits associates with the historical course of the River Fleet.

The Lambeth Group and Thanet Sands/White Chalk are classified as a Secondary (A) and Principal Aquifers respectively. The Secondary (A) aquifer is not currently utilised in the vicinity of the site but may be utilised in the future. The main groundwater resource is considered to be the Principal Aquifers of the Thanet Sands / White Chalk. The indentified groundwater bodies are overlain by a significant thickness of low permeability cohesive deposits.

The nearest surface water body is the Grand Union Canal and this is utilised locally as a non-potable resource.

Potential for Ground Contamination

The site was utilised historically as a stables, engineering depot and timber yard but more recently the site has been used as a builders merchants (Travis Perkins). Surrounding land has included a mixture of industrial, commercial and residential uses with several potential off-site sources of contamination identified within 500m of the site.

The presence of Worked / Made Ground beneath the site has the potential to generate ground gases and volatile vapours

WSPEE have identified a **low/medium** risk of possible source-pathway-receptor pollutant linkages being present; which should be assessed further by undertaking a Phase II intrusive investigation.

Geotechnical Considerations

Foundation solutions, ground floor slab and concrete design for site development would be dependent on the site specific ground conditions. Based on the current information and likely column loads for a nine storey building a piled foundation solution is considered most likely.

Observations during the site walkover survey suggest that there is potential for buried foundations associated with former buildings to be present beneath the site. In addition, the presence of a basement structure in the building adjacent south could impact the proposed development.

To identify options for foundation solutions and slab design an intrusive site investigation is recommended to assess the engineering properties of the underlying stratum, and confirm the ground gas and groundwater regime.

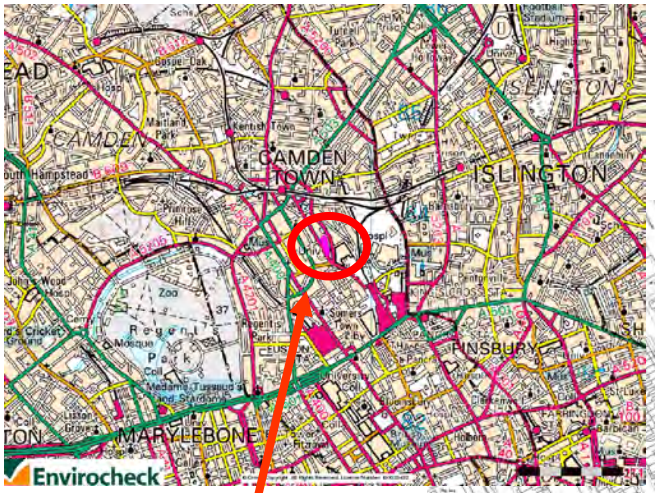
9.2 RECOMMENDATIONS

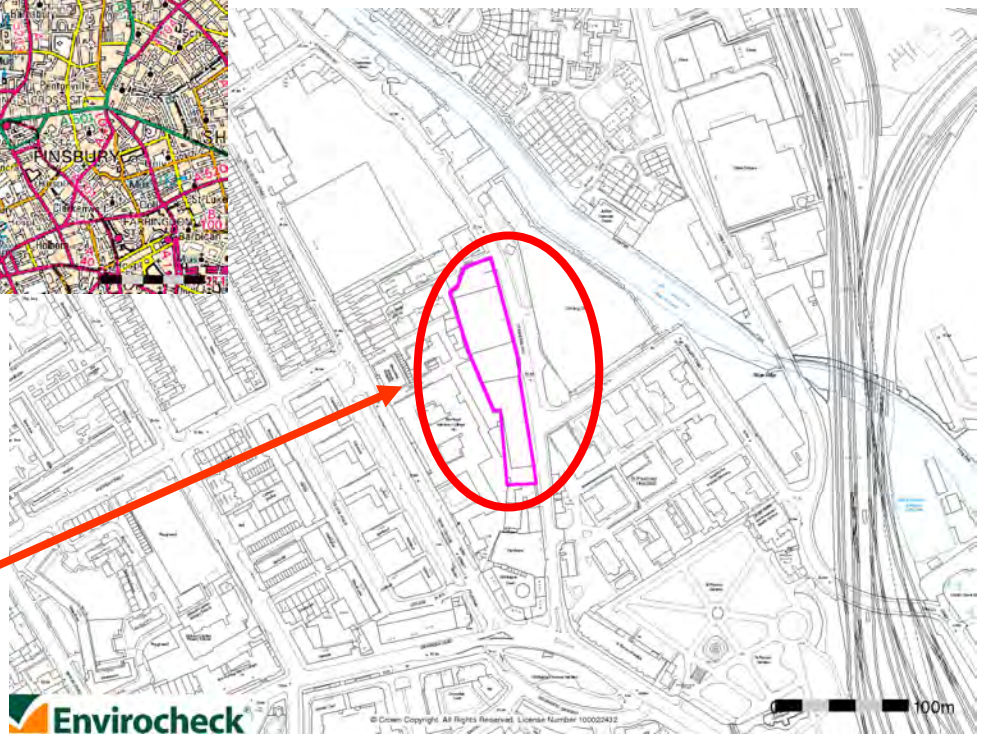
Based on the information reviewed, it is recommended that an intrusive investigation is completed at the site and that it includes the following items:

- An assessment of the site specific ground and groundwater conditions;
- An assessment of the presence of ground and groundwater contamination beneath the site;
- Information relating to the aggressive nature of the underlying ground conditions;
- Confirmation of the ground, groundwater and ground gas regime to better determine the most suitable slab design.
- Determine the thickness of Made Ground beneath the site, together with the determination of potential bearing capacities and soil properties should be confirmed with a suitable site specific ground investigation.

- In the short term to mitigate potential pollution incidents which may occur on or off site to environmental receptors an assessment of the onsite drainage system are recommended.
- In relation to the basement in the building on the southern site boundary, it is recommended that further desk study is completed prior to undertaking a site specific investigation.

Appendix A Site Location Plan & Proposed Development Schematic





Site Location

DO NOT SCALE

NOTES:

O Approximate site location

N

WSP Environmental UK Limited
WSP House, 70 Chancery Lane, London, WC2A
Tel: +44 (0) 020 314 5000 Fax: +44 (0) 020 314 5005
http:// www.wspgroup.com

CLIENT: Unite Group Plc

PROJECT: St Pancras Way

TITLE: Site Location Plan

SCALE@SIZE:	ISSUE:
NTS	FINAL
DESIGN/DRAWN:	DATE:
PIL	April 2010
PROJECT No:	DRAWING No:
12041745-001	Figure 1

Appendix B Photographic Record

Photo 1: View South along St Pancras Way

Photo 2: Loading Crane in timber yard

DO NOT SCALE

NOTES:

O Approximate site location

N

WSP Environmental UK Limited
WSP House, 70 Chancery Lane, London, WC2A
Tel: +44 (0) 020 314 5000 Fax: +44 (0) 020 314 5005
http:// www.wspgroup.com

CLIENT: Unite Group Plc

PROJECT: St Pancras Way

TITLE: Photographic Record

SCALE@SIZE:	ISSUE:
NTS	FINAL
DESIGN/DRAWN:	DATE:
PIL	April 2010
PROJECT No:	DRAWING No:
12041745-001	

Photo 3: AST adjacent to site entrance

Photo 4: Materials storage in customer car parking area.

DO NOT SCALE

NOTES:

O Approximate site location

N

WSP Environmental UK Limited
WSP House, 70 Chancery Lane, London, WC2A
Tel: +44 (0) 020 314 5000 Fax: +44 (0) 020 314 5005
http:// www.wspgroup.com

CLIENT: Unite Group Plc

PROJECT: St Pancras Way

TITLE: Photographic Record

SCALE@SIZE:	ISSUE:
NTS	FINAL
DESIGN/DRAWN:	DATE:
PIL	April 2010
PROJECT No:	DRAWING No:
12041745-001	

Photo 5:
Empty battery storage near drainage down pipe

Photo 6:
Hazardous material storage

DO NOT SCALE

NOTES:

O Approximate site location

N

WSP Environmental UK Limited
WSP House, 70 Chancery Lane, London, WC2A
Tel: +44 (0) 020 314 5000 Fax: +44 (0) 020 314 5005
http:// www.wspgroup.com

CLIENT: Unite Group Plc

PROJECT: St Pancras Way

TITLE: Photographic Record

SCALE@SIZE:	ISSUE:
NTS	FINAL
DESIGN/DRAWN:	DATE:
PIL	April 2010
PROJECT No:	DRAWING No:
12041745-001	

Photo 7:
Possible
blocked drain

DO NOT SCALE

NOTES:

O Approximate site location

N

WSP Environmental UK Limited
WSP House, 70 Chancery Lane, London, WC2A
Tel: +44 (0) 020 314 5000 Fax: +44 (0) 020 314 5005
http:// www.wspgroup.com

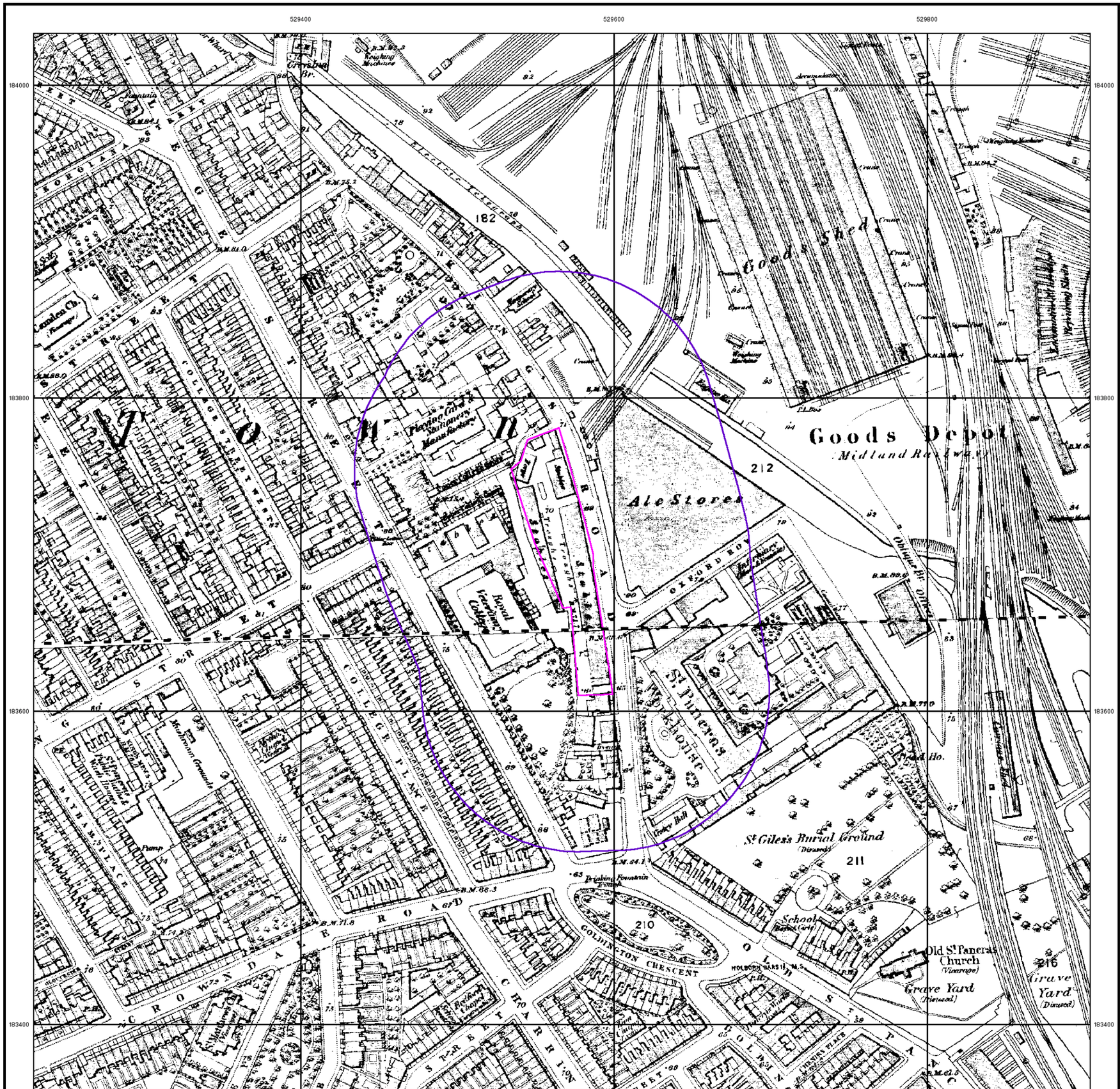
CLIENT: Unite Group Plc

PROJECT: St Pancras Way

TITLE: Photographic Record

SCALE@SIZE:	ISSUE:
NTS	FINAL
DESIGN/DRAWN:	DATE:
PIL	April 2010
PROJECT No:	DRAWING No:
12041745-001	

Appendix C Selection of Historical Maps



0 100 m

Envirocheck®

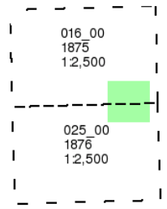
London

Published 1875 - 1876

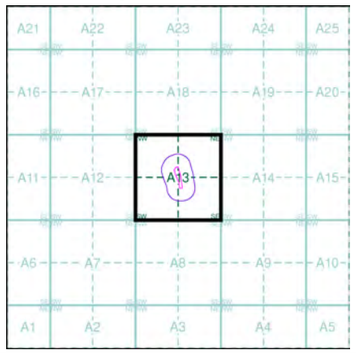
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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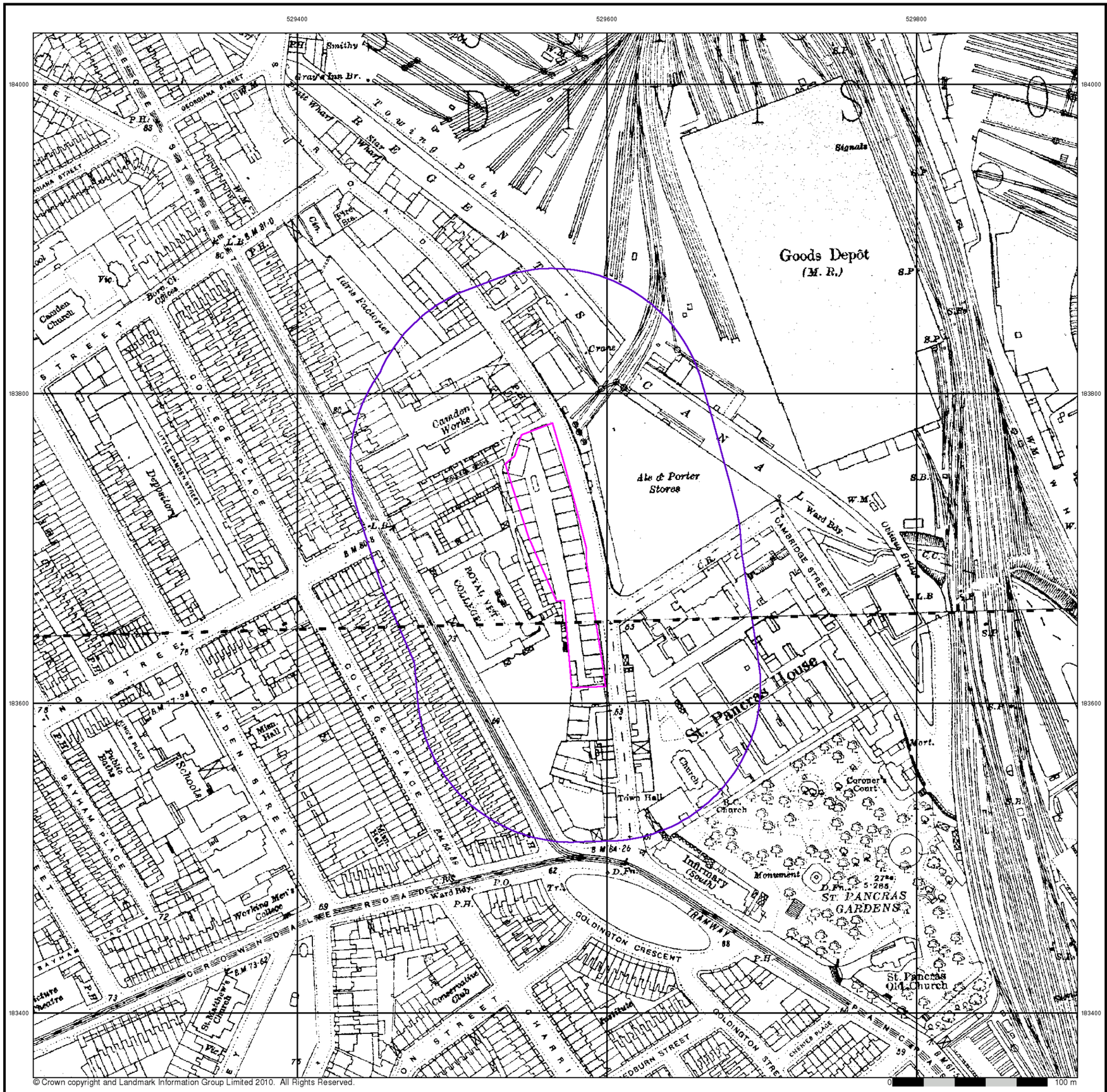
Customer Ref:	12041745.001
National Grid Reference:	529570, 183690
Slice:	A
Site Area (Ha):	0.48
Search Buffer (m):	100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Envirocheck®

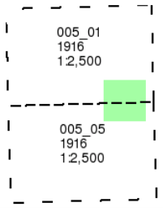
London

Published 1916

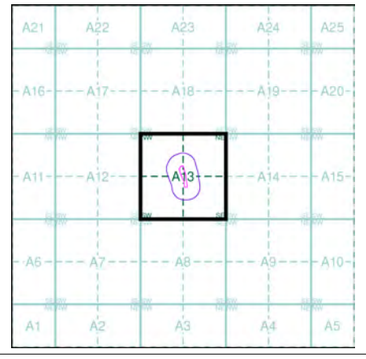
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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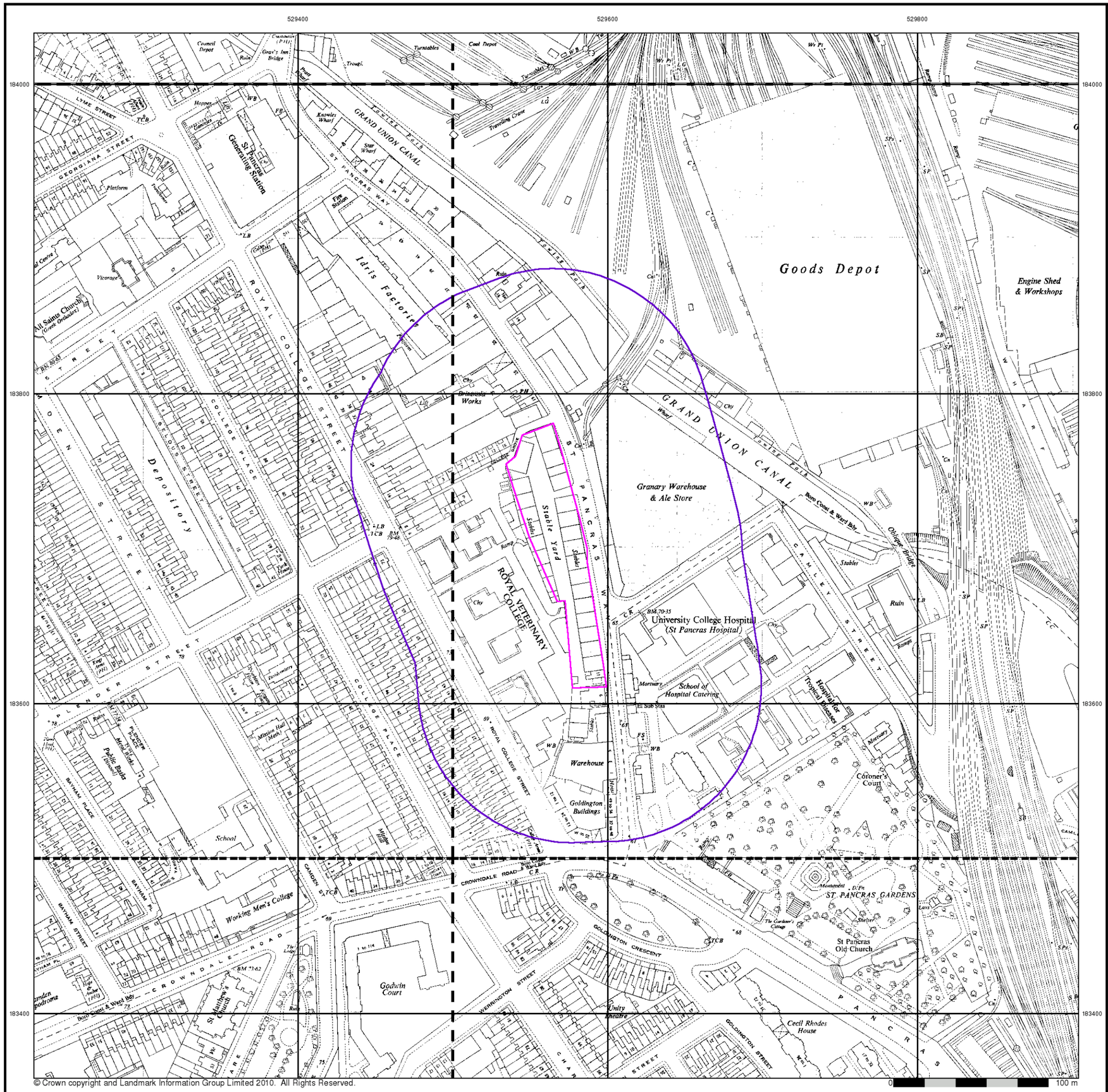
Customer Ref:	12041745.001
National Grid Reference:	529570, 183690
Slice:	A
Site Area (Ha):	0.48
Search Buffer (m):	100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Envirocheck®

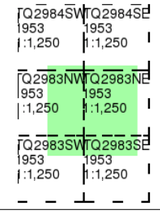
Ordnance Survey Plan

Published 1953

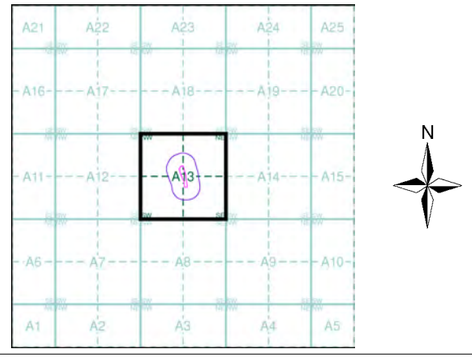
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

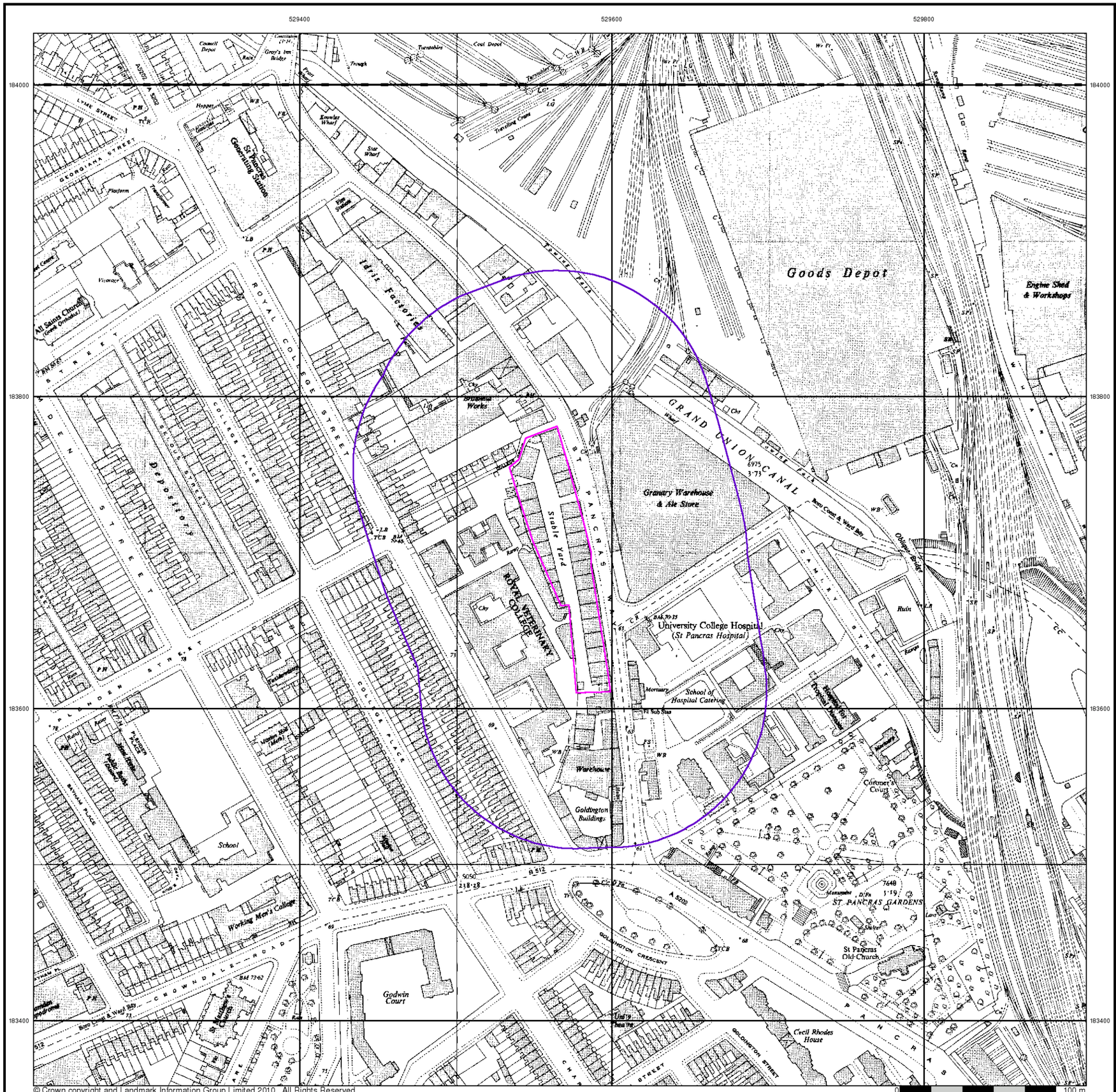
Order Number:	30937095_1_1
Customer Ref:	12041745.001
National Grid Reference:	529570, 183690
Slice:	A
Site Area (Ha):	0.48
Search Buffer (m):	100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Envirocheck®

Ordnance Survey Plan

Published 1954

Source map scale - 1:2,500

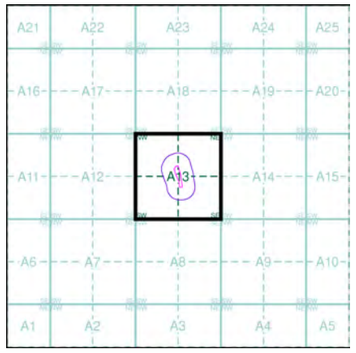
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

TQ2984
1954
1:2,500

TQ2983
1954
1:2,500

Historical Map - Segment A13



Order Details

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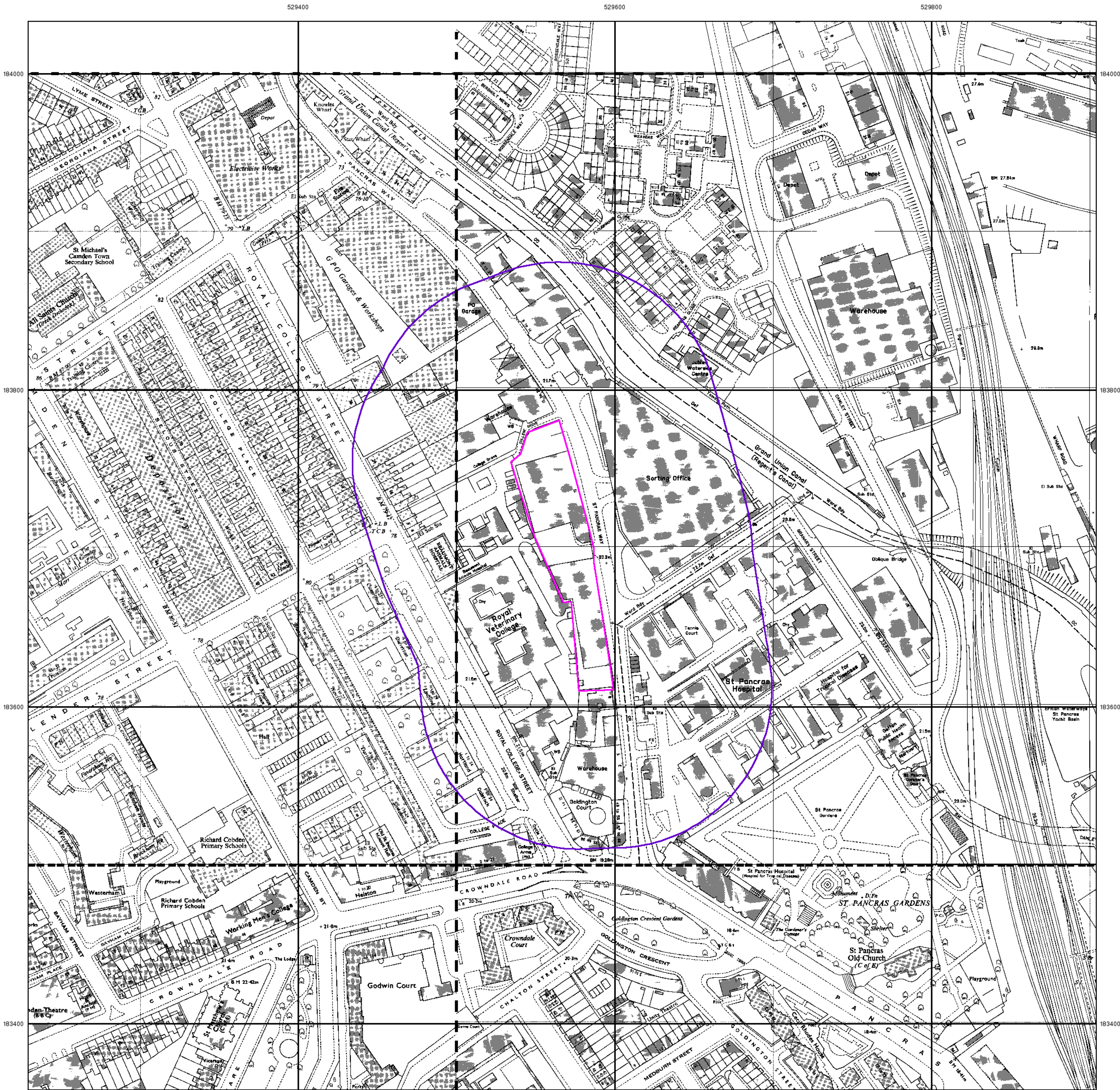
Customer Ref:	12041745.001
National Grid Reference:	529570, 183690
Slice:	A
Site Area (Ha):	0.48
Search Buffer (m):	100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Envirocheck®

Ordnance Survey Plan

Published 1968 - 1988

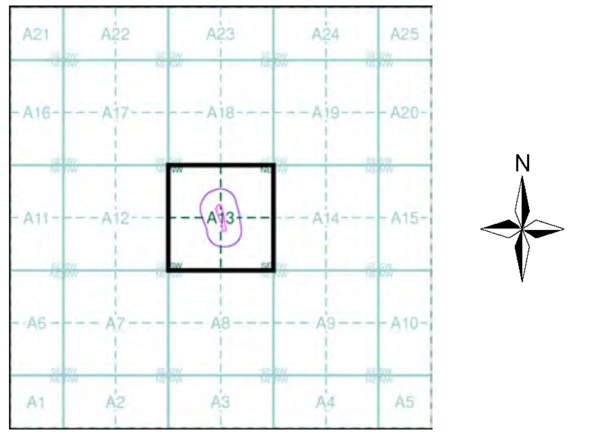
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

	TQ2984SE 1985 1:1,250
TQ2983NW 1968 1:1,250	TQ2983NE 1988 1:1,250
TQ2983SW 1972 1:1,250	TQ2983SE 1978 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 30937095_1_1
Customer Ref: 12041745.001
National Grid Reference: 529570, 183690
Slice: A
Site Area (Ha): 0.48
Search Buffer (m): 100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT

Landmark Information Group

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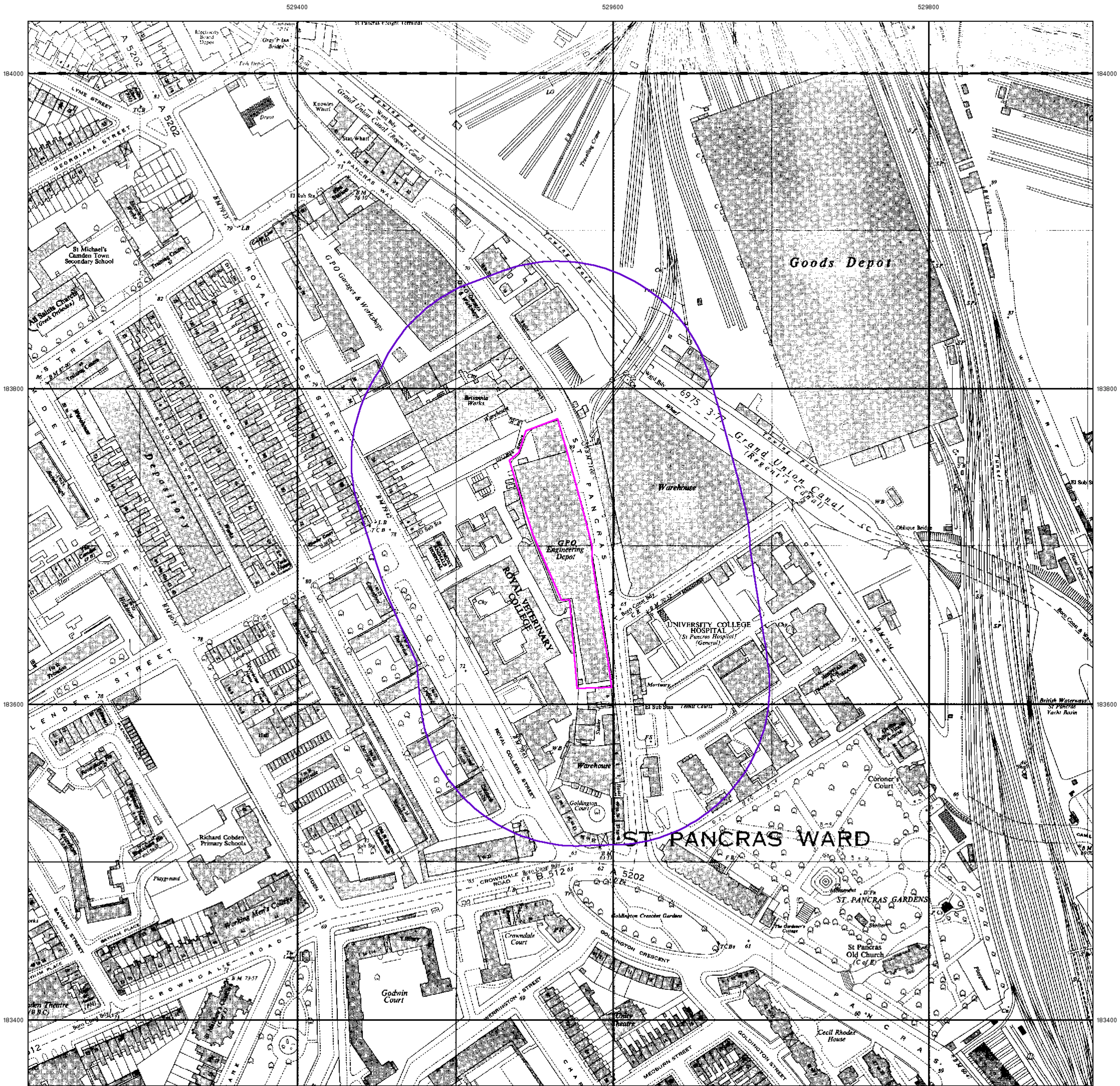
Web: www.envirocheck.co.uk



Envirocheck®

Ordnance Survey Plan

Published 1970 - 1971

Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

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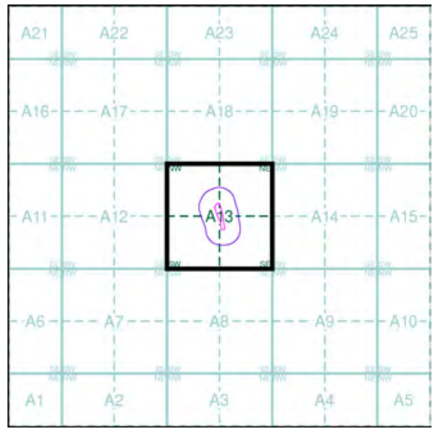
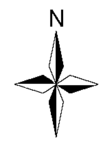
1:2,500

TQ2983
1971
1:2,500

Historical Map - Segment A13





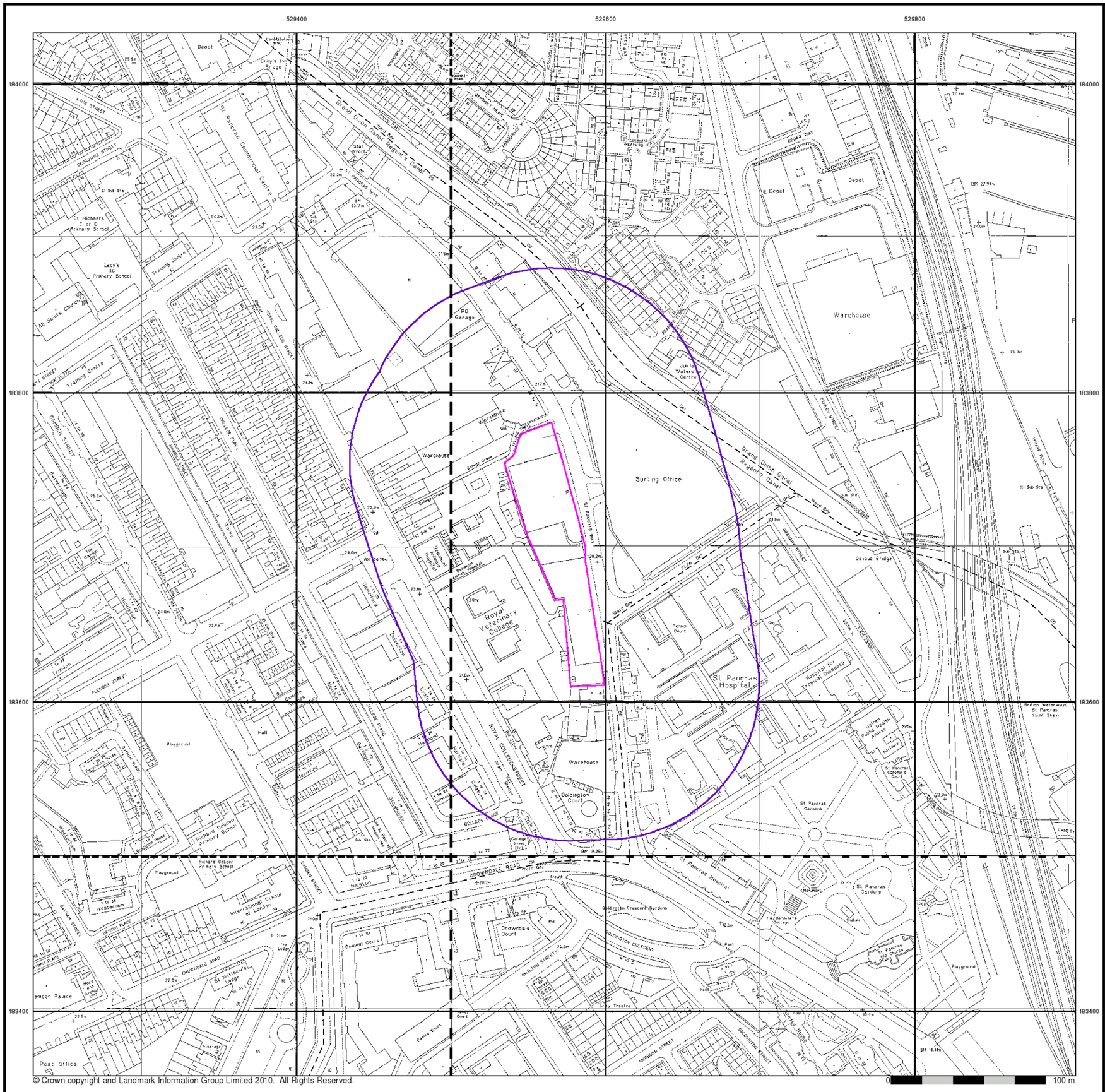
Order Details

Order Number: 30937095_1_1
Customer Ref: 12041745.001
National Grid Reference: 529570, 183690
Slice: A
Site Area (Ha): 0.48
Search Buffer (m): 100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Envirocheck®

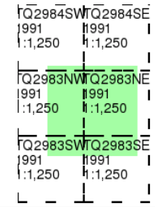
Large-Scale National Grid Data

Published 1991

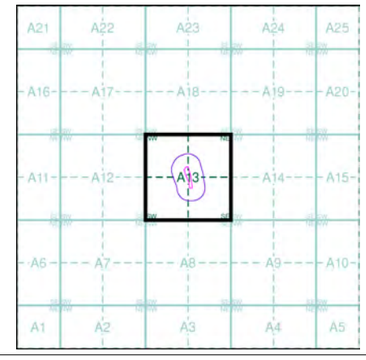
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13

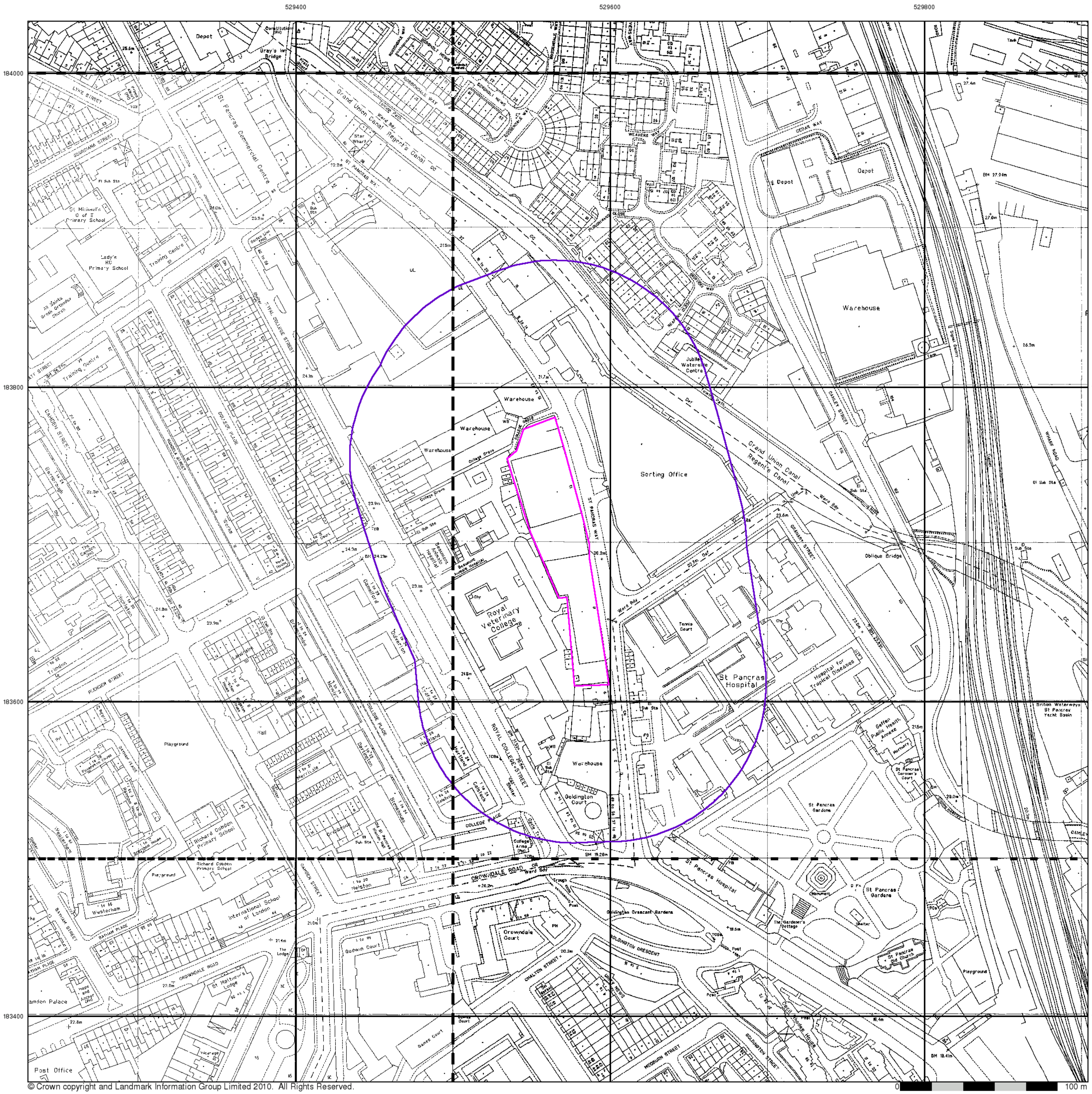


Order Details

Order Number:	30937095_1_1
Customer Ref:	12041745.001
National Grid Reference:	529570, 183690
Slice:	A
Site Area (Ha):	0.48
Search Buffer (m):	100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT



Envirocheck®

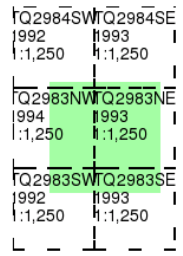
Large-Scale National Grid Data

Published 1992 - 1994

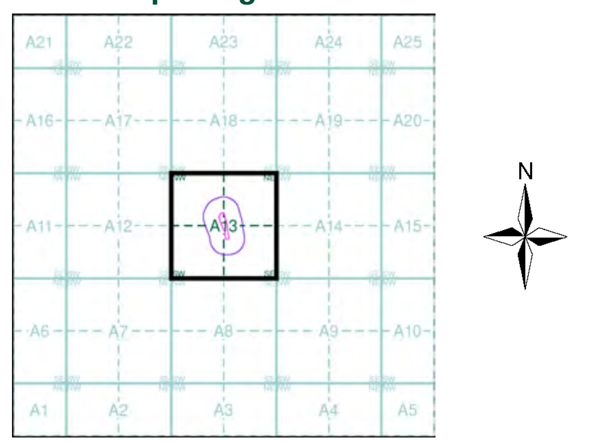
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 30937095_1_1
Customer Ref: 12041745.001
National Grid Reference: 529570, 183690
Slice: A
Site Area (Ha): 0.48
Search Buffer (m): 100

Site Details

Travis Perkins Trading Co Ltd, 11-13 St. Pancras Way, LONDON, NW1 0PT

Landmark Information Group

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Appendix D Regulatory & Non-regulatory Information

TERRESEARCH LIMITED

BOREHOLE NO. 5 TQ 285[illegible]

NGR 2929 8367

Contract Name Carmook Street

Report No. [illegible]

Client W. V. Zinn & Associates

Site Address Camden [illegible]

Address For Metropolitan Borough of Paddington.

Standing Water Level None

Water Struck

Ground Level 80.58

Diameter 8"

Method of Boring Shell/Auger

Start 13.12.62 Finish 14.12.62

Remarks:

Description of Strata	Thickness	Depth	Disturbed Samples	'U' Cores and 'N' P. Tests
Made ground	4'0"	4'0"	J4952 1'0"	
Light brown clay	6'0"	6'0"	J4953 4'0" J4955 7'6"	U4954 5'0"
Brown mottled clay	5'0"	15'0"	J4951 13'6"	U4956 10'0"
Dark brown clay	13'0"	28'0"	J4959 17'6" J4961 22'0" J4963 28'0"	U4958 15'0" U4960 20'0" U4962 25'0"
Blue clay	5'0"	33'0"		U4964 31'6"
TOTALS	33'0"	33'0"		

NOTES: 1. Descriptions

TERRESEARCH LIMITED

BOREHOLE NO. 2 TQ 28 SE

NGR 29248375

Contract Name Curnock Street

Report No. S. 502/12

Client W. L. Zinn & Associates

Site Address Camden Street

Address for the Metropolitan Borough of Paddington

Standing Water Level Nil

Water Struck Nil

Ground Level 87.05

Diameter 8"

Method of Boring Shell/Auger

Start 11.12.62 Finish 12.12.62

Remarks:

Description of Strata	Thickness	Depth	Disturbed Samples	'U' Cores and 'N' P. Test
Made ground	3'0"	3'0"	J4939 1'0"	
Light brown clay	7'0"	10'0"	J4940 3'0" J4941 5'0" J4942 7'6"	
Brown mottled blue clay	10'0"	20'0"	J4944 13'0" J4946 18'0"	U4943 10'0" U4945 15'0"
Dark brown clay	10'0"	30'0"	J4948 23'0" J4950 27'0"	U4947 20'0" U4949 25'0" U4951 28'6"
TOTALS	30'0"	30'0"		

C 37.

WELL BORING at NW Hampstead 4000yds N. of St Pancras Town Hall County

Geol. map 1 in. map New Series 6 in. map 7. N.W.

Made by TQ 28 SE Date 1907-10. TQ28SE/314

Sunk feet. Bored feet. 2957.8378

256

Communicated by L.C.C.

Height above Ordnance Datum 70·84. Rest level of water

Yield (21·59m)

Quality (with copy of analysis on separate sheet)

GEOLOGICAL FORMATION	NATURE OF STRATA	THICKNESS Feet	THICKNESS Inches	DEPTH Feet	DEPTH Inches
	Macadam & Made Ground.	2	—	2	0 (0·61m)
	Brown Clay.	21	3	23	3 (7·09m)
	Blue Clay Unbottomed.				

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(50478X) Wt. W39733/0131 2,500 4/31 H. J. R. & L., Ltd. Gp. 616

C.36

WELL BORING at In Kings St. midway between College Place & Gt College St. N.W. County

Geol. map 1 in. map New Series 6 in. map 7 N.W.

Made by TQ 28 SE Date 1907-10 TQ/28SE/313

Sunk feet. Bored feet.

2943.8370
256

Communicated by L.C.C.

Height above Ordnance Datum 79·72. Rest level of water

Yield (24·28m)

Quality (with copy of analysis on separate sheet)

GEOLOGICAL FORMATION	NATURE OF STRATA	THICKNESS		DEPTH	
		Feet	Inches	Feet	Inches
	Made Ground.	4	6.	4	6 (1·37m)
	Yellow & Brown Clay.	19	—	23	67·16m)
	Blue Clay.	Unbottomed			

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TQ/28SE/282

2943.8392

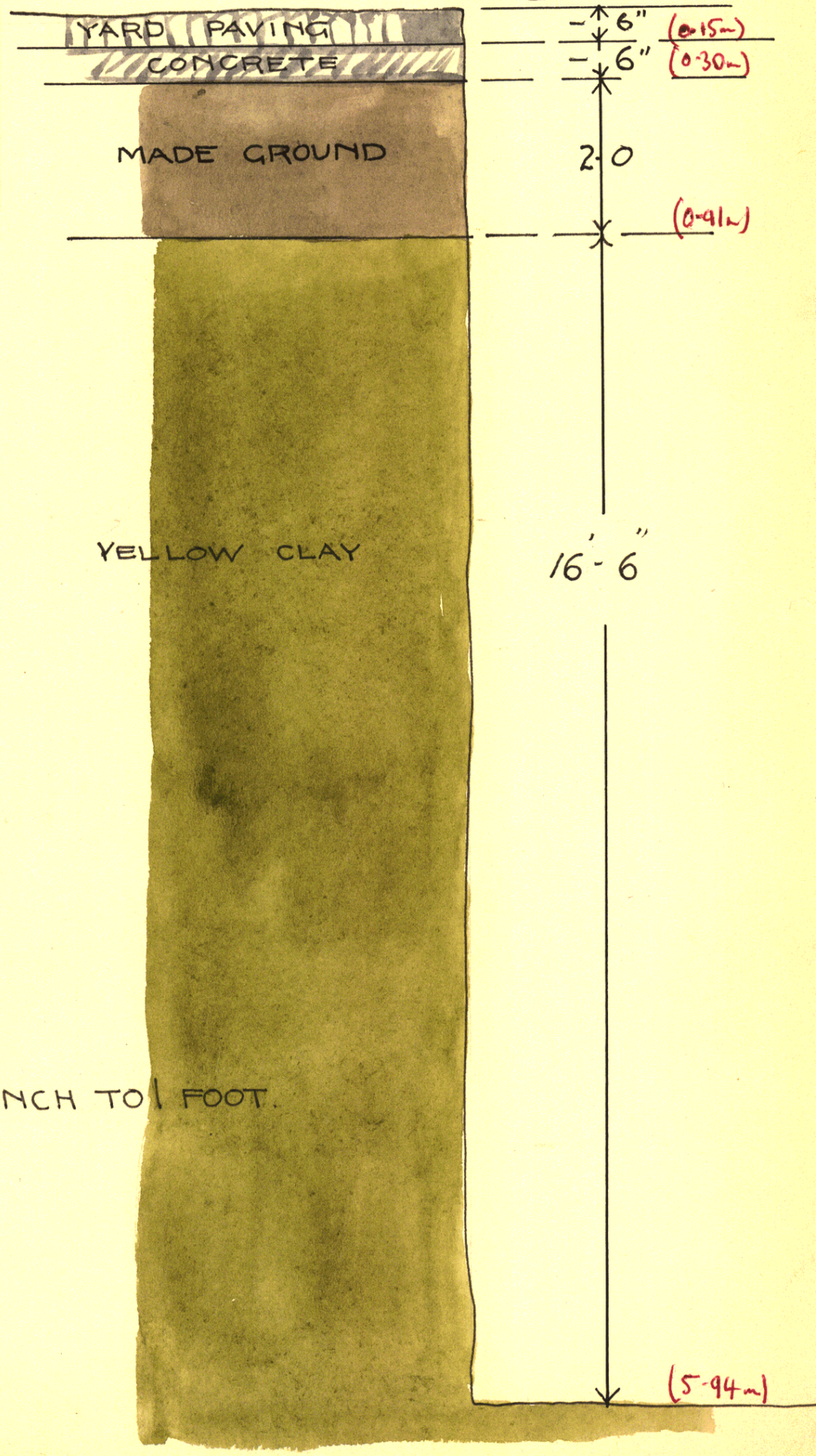
256.

7 NW
: N 5 NW

49 Kings Road
St Pancras
NW 1

FIRE BRIGADE STATION
CAMDEN TOWN N.W.

SECTION No 186



SCALE ½ INCH TO 1 FOOT.

GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(*For Survey use only*)
6-inch Map Registered No.
TQ28SE/11

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner: Workhouse St. Pancras (hospital)

Nat. Grid Reference 29641.83582

For whom made

Town or Village St. Pancras. County London.

Exact site

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Water

1" N.S.Map No.	1" O.S.Map No.	Confidential or not
265		

Ground Level at shaft bore relative to O.D. If not ground level give O.D. of beginning of shaft bore

Made by Date of sinking 1809

Information from Date received

Examined by

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(*For Survey use only*) Geological Classification	Description of Strata	Thickness Ft.	Thickness In.	Depth Ft.	Depth In.
	London wells p. 68. abstract. (19.81m)			221	67.36m
	c St. Pancras. King's Rd., The Workhouse. Lond. 7 NW (d. 4). (39.62) Well O.D. 65. Depth 221. Made 1809. Water—130. Shaft throughout. Yield 8,000. Information 1911.				

(5412) Wt.32837/PS.154 2m 10/64 G.W.B.Ltd. Gp.863

[TQ28SE BJ 11 .]

GEOLOGICAL SURVEY OF GREAT BRITAIN

RECORD OF SHAFT OR BORE FOR MINERALS

(*For Survey use only*)
6-inch Map Registered No.
TQ28SE/10

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner: St. Pancras Borough Baths.

Nat. Grid Reference 29280.83586

For whom made

Town or Village St. Pancras. County London

Exact site { Attach a tracing from a map, or a sketch-map, if possible.

1" N.S.Map No.	1" O.S.Map No.	Confidential or not
256		

Purpose for which made

Ground Level at shaft / bore relative to O.D. If not ground level give O.D. of beginning of shaft / bore

Made by Date of sinking 1901

Information from Date received

Examined by

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(*For Survey use only*) Geological Classification	DESCRIPTION OF STRATA	Thickness Ft.	Thickness In.	Depth Ft.	Depth In.
	London wells pp 141-142			400	(121.92 m)

1. St. Pancras Borough Baths. King Street.
85 feet above Ordnance Datum. (25.91 m)
Made by Messrs. Le Grand & Sutcliff in 1901; Communicated by W. W. Blair, Esq., Borough Engineer. (22.56)
Diameter of bore 11½ inches. Water-level 74 feet below O.D. Supply 8,000 to 9,000 gallons an hour. Water-level 108 feet below O.D. in 1910. (32.92m)
London Map 7, N.W. (d. 4.).

		Thickness. Feet.	Depth. Feet.
	Made ground	(0.91) 3	3 (0.91)
[London Clay.]	Yellow Clay	(6.71) 22	25 (7.62)
	Blue clay	(0.91) 3	28 (8.53)
	Claystones	(0.30) 1	29 (8.84)
	Blue clay	(19.20) 63	92 (28.04)
[Woolwich Beds.]	Mottled clay	(12.50) 41	133 (40.54)
	Sandy green clay	(2.74) 9	142 (43.28)
[Thanet.]	Grey sand	(5.79) 19	161 (49.07)
	Flints	(0.30) 1	162 (49.38)
	Chalk and flints	238	400 (121.92)

(72.54)

(5412) Wt.32837/PS.154 2m 10/64 G.W.B.Ltd. Gp.863

Institute of Geological Sciences

RECORD OF SHAFT OR BOREHOLE

6-inch or 1:10 000 Map Registration No.

TQ/28SE/9

Name and Number of Shaft or Borehole:

National Grid Reference

29389 83895

For whom made

Town or Village *County* London.

1-in or 1:50 000 New Series Map No.

256

Enter 'C' if Confidential

Exact site (reference to a fixed point on 1-in or 1:50 000 Map)

Idris & Co. Junction of St. Pancras Way. and Pratt St. Camden Town.

Purpose for which made

Ground level at shaft / bore relative to O.D. ——— *m. If not ground level give O.D. of beginning of shaft / bore* ——— *m.*

Made by *Date of sinking*

Information from L C C. *Examined by*

Specimen Numbers and Additional Notes

Geological Classification	Description of Strata	Thickness *metres*	Depth *metres*
	Yellow clay.	4.42	4.42
LC	Blue clay.		29.26 96'
	Mottled clay.		35.36
WRB	Sandy Loam.		38.40
	Greensand.		42.06
TAB	Grey sand.		46.03 151'
	Chalk and Flints.		53.34
	Chalk.		59.13
CK	Chalk and Flints.		110.95
	Chalk Boulders.		118.26
	Hard Chalk.		125.20
	Steel lining tubes driven 24 feet into the		
	Chalk.		
	Water pumped from a depth of 233 ft. 6 inches.		

IGS 2439 (1789) 10 000 2/79

256/424 C 32

C82.

1

IDRIS. Pratt St TQ28/53

Site visited 1 Aug. 1946.

Two wells ~~sealed~~ 1963. NGR TQ 2941 8390.

Rf. W.H.W. p8. (a) ~~long~~ used only very spasmodically
will produce 3-4,000 gals. p.h.
10' below groundlevel.

Rf. R.L.W. p.52. (b) 8,000 g.p.h.
water level 200
Well top 10' below ground level.

Anal (old; not 1946.)

Iron & Aluminium Oxide ——	1.4 gr./gal
Calcium	0.756 " " "
Magnesium	0.4 " " "
Sodium & potassium	15. " " "
SO_4	9.39 " " "
Chlorine	6.9 " " "
Nitric acide	0.07 " " "
CO_3 sodium carbonate	10.92 " " "

Oxy. absorbed in 5 mins .008
" " 4 hrs. .009

Free ammonia p.p.m. .63.
Albuminoid ammonia .0002

Total H. c. 4 degrees
P.H c. 2-3 "

Total alkilinity 30 gr./gal.

[illegible] Aug 1946

12,000 g.p.h. in 1940. ? both wells.

256/424

TQ28/53

J. Kerr Colwell. F.I.C.

30th March, 1938.

REPORT upon two samples of WATER collected by Mr. C.H. Wordsworth from Messrs. Idris Premises, Pratt Street, N.W.1. The samples were marked No.1 BIG WELL No.2 SMALL WELL and taken on the 21st March, 1938.

CHEMICAL ANALYSIS

	Parts per 100,000	
	BIG No.1. B.	SMALL No.2. A.
Saline Ammonia	0.0338	0.0444
Albuminoid Ammonia	0.0002	0.0002
Oxygen absorbed in 4 hours at 80°F.	0.044	0.052
Nitrogen as nitrates	0.050	0.050
Nitrites	nil	nil
Chlorine	10.5	10.5
Hardness Total	5.0	5.0
Do. Permanent	2.5	1.5
Total Solids	66.0	75.0

A microscopic examination revealed the presence of some mineral and vegetable debris, in both samples.

Both samples were clear and free from smell.

BACTERIOLOGICAL EXAMINATION.

Number of organisms per c.c. growing on gelatine at room temperature in 4 days (20°C.)	3	100
Liquefying organisms	3	31
Number of organisms per c.c. growing on agar at blood heat in 48 hours (37° C.)	1	absent from 1 c.c.
Bacillus Coli	absent from 100 c.c.	absent from 100 c.c.

OPINION.

Both these waters are in a satisfactory condition at the present time.

Yield 12,000 g.p.h. 1940.

2: 424
TQ 28/53

		ft.	ins.
256/424	London Clay	96	0
	Woolwich + Reading Beds (Reading Type)	42	0
	Thanet Sand	13	0
	Upper Chalk	259	9

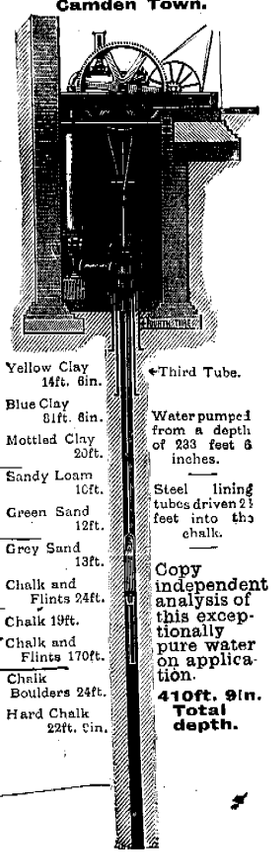
[illegible]. 1976

Camden Town

PURITY

In what you Drink

One of the IDRIS ARTESIAN Bored Steel Lined tube Wells in the Pump Room at Camden Town.



WATER stored in lead or zinc lined cisterns and passing through considerable lengths of lead piping becomes contaminated with lead.

The Water used in the manufacture of the Idris beverages nowhere comes in contact with lead. Pure block tin piping with joints of pure tin is used for conveying the various Waters under pressure, while our patent glass tubing conveys the prepared flavourings for Lemonade, Ginger Ale, etc., from our Laboratories to the Syphon and Bottle Filling Factories.

In drinking *Table Waters* the greatest care should be exercised in procuring waters manufactured from an uncontaminated source. The *"IDRIS"* Brand is prepared from water which is perfectly free from organic contamination, being obtained from their own deep Artesian Wells which yield an abundant supply of water of an exceedingly pure character, admirably suited for the manufacture of Aerated Waters.

The public are particularly *cautioned* against purchasing *cheap Mineral Waters* which are frequently prepared by those who have neither the necessary premises, plant, nor knowledge required for manufacturing Aerated Waters of a pure character.

IDRIS & Co. use the purest materials obtainable; everything used in the manufacture of their specialities is subjected to a strict chemical analysis by a qualified analyst. In fact, every improved process that modern chemistry can suggest is adopted.

IDRIS TABLE WATERS are supplied by Royal Warrant of Appointment to H.M. THE KING.

IMPORTANT NOTICE.

See that OUR TRADE MARK "IDRIS" is on all Syphons and Bottles

PRICE LIST.

	SYPHONS per doz.	BOTTLES per doz.
SODA WATER ...		
POTASH WATER		
SELTZER WATER		
LEMONADE		
GINGER BEER, Brewed		
GINGER ALE		
LITHIA WATER ...		

256/424 TQ 28/53

J. Kear Colwell. F.I.C.

C/32

C/32

4

31st May, 1938.

REPORT upon two samples of WATER collected by Mr. C.H. Wordsworth from Messrs. Idris Premises, Pratt Street, N.W.1. The samples were marked No.1 SMALL WELL No.2 BIG WELL and were taken on 23rd May, 1938. (J.K.C. present).

CHEMICAL ANALYSIS

	Parts per 100,000	
	SMALL No.1.	BIG No.2.
Saline Ammonia	A 0.0464	B 0.0592
Albuminoid Ammonia	0.0004	0.0004
Oxygen absorbed in 4 hours at 80°F.	0.032	0.032
Nitrogen as Nitrates	0.048	0.007
Nitrites	Trace	Trace
Chlorine	10.4	10.5
Hardness Total	5.0	4.5
Do. Permanent	1.0	2.0
Total Solids	69.0	73.0

Both samples were clear and free from smell.

A microscopic examination revealed the presence of a few mineral and vegetable fragments in each sample.

BACTERIOLOGICAL EXAMINATION.

Number of organisms per c.c. growing on gelatine at room temperature in 4 days (20°C.)	2	221
Liquefying organisms	absent from 1 c.c.	36
Number of organisms per c.c. growing on agar at blood heat in 48 hours (37°C.)	absent from 1 c.c.	30
Bacillus Coli	absent from 100 c.c.	absent from 100 c.c.

OPINION.

The sample of water from the Small Well is in excellent condition, and although that from the Big Well is not quite so good there is no indication of serious contamination.
Both may be used for dietetic purposes.

256/424 C38

(5)

WATER EX/IDKGS [illegible]-WELL

Chemical Analysis	parts per million
Total solids	700
Alkalinity (calculated as $NaHCO_3$)	450
Carbon dioxide (as CO_2)	120
Chlorides (as Cl)	100
Total hardness (as $CaCO_3$)	100
Permanent hardness (as $CaCO_3$)	30

pH :- 7.6

Water Temperature 55° 58°F

20.11.'51.

NGRC

BOREHOLE RECORDS

ADJUSTMENT FORM

QUARTER SHEET TQ 28SE

BH REGISTRATION NUMBER 1426 — 1598.

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

Appendix E Notes on Limitations

Notes on Limitations

For

Geo-Environmental and Geotechnical Consultancy Services

General

WSP Environmental Limited has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from WSP Environmental Limited; a charge may be levied against such approval.

WSP Environmental Limited accepts no responsibility or liability for:

a) the consequences of this document being used for any purpose or project other than for which it was commissioned, and

b) this document to any third party with whom an agreement has not been executed.

Phase I Environmental Audits

The work undertaken to provide the basis of this report comprised a study of available documented information from a variety of sources (including the Client), together with (where appropriate) a brief walk over inspection of the site and meetings and discussions with relevant authorities and other interested parties. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only to the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP Environmental Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.

It should be noted that any risks identified in this report are perceived risks based on the information reviewed; actual risks can only be assessed following a physical investigation of the site.

Phase II Environmental Audits

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, and ground and groundwater conditions to allow a reasonable risk assessment to be made. The objectives of the investigation have been limited to establishing the risks associated with potential human targets, building materials, the environment (including adjacent land), and to surface and groundwater.

The amount of exploratory work and chemical testing undertaken has necessarily been restricted by the short timescale available, and the locations of exploratory holes have been restricted to the areas unoccupied by the building(s) on the site and by buried services. A more comprehensive investigation may be required if the site is to be redeveloped as, in addition to risk assessment, a number of important engineering and environmental issues may need to be resolved.

For these reasons if costs have been included in relation to site remediation these must be considered as tentative only and must, in any event, be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The number of sampling points and the methods of sampling and testing do not preclude the existence of localised "hotspots" of contamination where concentrations may be significantly higher than those actually encountered.

The risk assessment and opinions provided, inter alia, take in to consideration currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.

Geo-environmental Investigations

The investigation of the site has been carried out to provide sufficient information concerning the type and degree of contamination, geotechnical characteristics, and ground and groundwater conditions to provide a reasonable assessment of the environmental risks together with engineering and development implications.

If costs have been included in relation to site remediation these must be confirmed by a qualified quantity surveyor.

The exploratory holes undertaken, which investigate only a small volume of the ground in relation to the size of the site, can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions apparent at the site of each of the exploratory holes. There may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.

The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that groundwater levels will vary owing to seasonal, tidal and weather related effects.

The scope of the investigation was selected on the basis of the specific development proposed by the Client and may be inappropriate to another form of development or scheme.

The risk assessment and opinions provided, inter alia, take in to consideration currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values.