



15 [

Appendix 15.1
Desk Study Appraisal

ADAMS KARA TAYLOR

84-88 UPPER RICHMOND ROAD, EAST PUTNEY, LONDON

DESK STUDY APPRAISAL

Crossfield Consulting Limited
The Granary, White Hall Farm,
Long Itchington, Warwickshire,
CV47 9PU, United Kingdom

August 2007
Report No. CCL01582.BD93

Tel: 01926 815678 Fax: 01926 815222
Email: mail@crossfield-consulting.co.uk

CONTENTS

1. INTRODUCTION
2. THE SITE
3. DESK STUDY ENQUIRIES
4. PUBLISHED GEOLOGY
5. ASSESSMENT OF GROUND CONDITIONS
6. RECOMMENDATIONS FOR GROUND INVESTIGATIONS
7. SUMMARY

REFERENCES

GENERAL NOTES

- | | | |
|-------------|---|-----------------------------|
| TABLE 1 | - | Conceptual Site Model |
| FIGURE 1 | - | Site Location Plan |
| FIGURE 2 | - | Site Plan |
| APPENDIX I | - | Extracts of Historical Maps |
| APPENDIX II | - | Desk Study Information |

1. INTRODUCTION

Crossfield Consulting Limited has been commissioned by Adams Kara Taylor to undertake a Desk Study Appraisal of a site which occupies 84-88 Upper Richmond Road, East Putney, London. The site is currently occupied by two office blocks, one six-storey and one nine-storey. It is proposed to redevelop the site by the construction of two tower blocks, one twenty two-storey and one fifteen-storey, linked by a single storey lower ground floor level car park. The proposed development is predominantly for residential purposes, although some commercial units are proposed along the lower levels.

The desk study includes a review of historical and geological maps of the area, together with an appraisal of information from regulatory authorities. The report presents the results of the study, together with an assessment of the ground conditions, the potential for contamination to be present and possible foundation solutions.

It is considered that the report complies with Planning Policy Statement 23 and with guidance provided by the Environment Agency.

2. THE SITE

2.1 Location

The site is located at 84-88 Upper Richmond Road, East Putney, London, immediately to the north of East Putney railway station, as shown on Figure 1. The National Grid Reference for the site is TQ 244 749. A plan of the site is shown on Figure 2 and indicates that Upper Richmond Road forms the southern site boundary. A railway bridge and a timber merchant mark the eastern site boundaries. A railway bridge and a builders' merchant mark the western site boundaries. A railway cutting lies to the north of the site.

2.2 Site Description

This site description is based on the current Ordnance Survey Plan, aerial photographs and photographs supplied by the Client. A site reconnaissance has not been carried out by staff from Crossfield Consulting Limited.

The site is an irregular shaped plot of land with an area of approximately 0.50 ha. The general area appears to slope down towards the northwest. The majority of the site is relatively flat, although the site is at a slightly lower elevation than Upper Richmond Road and the southern section of the site slopes down to this lower level.

The eastern section of the site (84 Upper Richmond Road) is currently occupied by a six-storey office block with an attached, low-rise squash court building.

The western section of the site (86-88 Upper Richmond Road) is currently occupied by a nine-storey office block.

Car parking areas surround the current site structures, with trees and landscaped areas present along the northern and southern site boundaries.

2.3 Site History

The site history has been researched with reference to old editions of the County Series and National Grid Ordnance Survey Plans obtained from the British Library, London. Extracts from a selection of these plans are presented in Appendix I. The plans indicate the following development has taken place on and around the site.

The County Series Plan, dated 1871, shows the site to be open land. Upper Richmond Road is shown to the south of the site and the railway line had been constructed to the north of the site at this time.

By 1897, the site had been developed for residential purposes, with three properties indicated along Upper Richmond Road. By this time, East Putney railway station had been developed to the south of the site and the railway bridges had been constructed along the eastern and western site boundaries. Residential development is shown in the surrounding area.

The County Series Plan, dated 1916, shows the site to have remained relatively unchanged, although an orchard/wooded area is shown in the northeastern section of the site. Small commercial structures had been constructed immediately to the west of the site by this time.

By 1930, the site and surrounding area remained relatively unchanged, although the orchard/wooded area was no longer indicated in the northeastern section of the site. Immediately to the east of the site a commercial premises had been constructed.

The map, dated 1952, shows that two rectangular structures had been constructed in the northern part of the site. Immediately to the east of the site the commercial premises had been extended. In the surrounding area, to the east and southeast of the site, several works, warehouse and garages are indicated.

By 1967, the residential properties in the southwestern section of the site had been demolished and the current-day tower block had been constructed in the western section of the site. The rectangular structure in the eastern section of the site had been extended by this time.

Between 1967 and 1994, the residential property and rectangular structure in the eastern section of the site had been demolished and the current-day tower block had been constructed in this section of the site.

The site has remained relatively unchanged since 1994.

3. DESK STUDY ENQUIRIES

Enquiries were made to the Envirocheck Environmental Database, the Environment Agency Web Site and the British Geological Survey regarding the site and surrounding area. Information obtained from these enquiries is presented in Appendix II and summarised below.

There are no recorded contaminated land register entries and notices, hazardous substance consents, radioactive consents, pollution incidents to controlled waters, water industry referrals or integrated pollution controls (IPC) authorisations within a 250 m radius of the site.

There is one facility with a local authority pollution prevention and control within a 250 m radius of the site. This relates to a fuel filling station recorded 53 m to the south of the site.

There are no current or former landfill sites, within a 500 m radius of the site.

Active commercial activities recorded within the vicinity of the site include a builders' merchants immediately to the west of the site and a garage 38 m to the east of the site.

The Envirocheck Environmental Database indicates that the site lies on non-aquifer strata. The Environment Agency search shows that this site does not lie within a groundwater Source Protection Zone. The Envirocheck Environmental Database indicates that there are two recorded abstraction licenses within a 1 km radius of the site. The nearest of these is recorded 963 m to the north of the site, where groundwater is abstracted for spray irrigation purposes. There are no recorded discharge consents within a 250 m radius of the site. The site does not lie within an indicative flood plain as defined by the Agency.

Borehole records obtained from the BGS indicate the area to the northwest of the site to be underlain by 1 m of loose, sandy, silts over a sequence of stiff clays and medium dense, sands and gravels. Stiff, grey, silty, clays (London Clay) are recorded below 4.5 m depth.

Immediately to the southeast of the site, ground conditions are recorded to comprise a thickness of Made Ground over dense sands and gravels with gravelly clay horizons. Firm grey clays are recorded below 3.0 m. Perched groundwater has been identified within the sand and gravel horizons.

Reference to the BGS Technical Report WP/95/2, the site lies within an area where there is a "Low" radon potential, defined as having <1 % of dwellings exceeding the action level.

4. PUBLISHED GEOLOGY

Reference to the British Geological Survey 1:50,000 Scale Geology Sheet No 270 (South London) shows the site to be underlain by superficial Head deposits, described as silts, sands and clays with variable gravel over London Clay strata. Worked Ground and Made Ground, associated with the railway lines, is indicated within the surrounding area.

5. ASSESSMENT OF GROUND CONDITIONS

5.1 Ground Conditions

Buried foundations, services and other obstructions associated with the former and current site structures should be anticipated beneath the site.

Ground conditions at the site are expected to comprise a limited thickness of Made Ground, as a result of site development, over variable Head deposits. London Clay strata are expected to be present at depths greater than 3 m below the site.

Shallow, localised, perched groundwater may be present within the Made Ground and Head deposits beneath the site. Groundwater is likely to be present at depth beneath the site below the low permeability London Clay strata.

5.2 Environmental Assessment

The site has been developed since before 1897. The site was used for predominantly residential purposes until around the 1960s when office blocks were built on the site.

Based on the site history and information from the regulatory authorities, there has been no recorded waste disposal and no industrial activities at the site.

Metal compounds may be present if ashly Made Ground exists locally beneath the site.

In close proximity to the eastern site boundary is a timber merchants but it is not known whether timber treatment has been undertaken at the site. If timber treatment has been carried out on this adjacent site, then there is the potential for semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs) and organotin compounds to have entered the shallow perched groundwater beneath the timber merchants and migrated on to the site.

Historically a motor repair company also existed to the east of the site. Potential contaminants associated with vehicle maintenance and repair, include heavy metals and fuel oils. Therefore, there is the potential for spillages to have entered the shallow perched groundwater beneath the motor repair premises and migrated on to the site.

There are no recorded current or former landfill sites indicated within the vicinity of the site and precautions against the ingress of radon gas are not required for this development.

The available information has been used to produce a preliminary Conceptual Site Model for this site, in accordance with CIRIA C552 (2001) and BS 10175 (2001), and this is presented in Table 1.

In order to comply with statutory requirements, control risks to construction workers and to neighbours/general public during site development, it will be necessary to inspect the existing structures prior to demolition for the possible presence of materials containing asbestos. Dust should be controlled during the development works.

In close proximity to the eastern site boundary is a timber merchants and, historically, a motor repair company existed in this area. There is the potential for mobile contaminants to have entered the perched shallow groundwater beneath these sites and migrated towards the site. However, due to the anticipated variable nature and permeability of the underlying Head Deposits, it is considered unlikely that significant migration will have taken place and significant impactation beneath the site is considered unlikely to have occurred.

Due to the nature of the proposed development, it is likely that any shallow Made Ground or impacted materials are likely to be removed during basement construction. However, if materials are not removed from site, the presence of these materials will not have an adverse effect on end users as the proposed development will be hard surfaced and/or covered by buildings and an effective barrier will be present between the end users and the shallow materials. The construction of a lower ground floor level beneath the site is likely to restrict further groundwater migration beneath the site.

During site redevelopment, groundworkers may be exposed to the shallow materials beneath the site and it is recommended that workers involved in groundworks should avoid dermal contact with the soils.

Based on the information currently available, it is considered that the proposed development should not be constrained by issues relating to contaminated land or soil gases.

5.3 Assessment of Ground Stability

The site is not located within an area affected by past mining or quarrying. Therefore, associated issues of ground stability are not applicable to the development.

5.4 Assessment of Basement Construction

It is proposed to redevelop the site by the construction of two tower blocks, one twenty two-storey and one fifteen-storey. It is understood that the two blocks will be linked by a single-storey lower ground floor level car park. To enable the construction of the lower ground floor, retaining structures will be a required.

Due to space restrictions along the site boundaries and due the potential for shallow perched groundwater to be present within the underlying Head deposits, it is considered that the use of temporary slopes will not be possible for this site. It is considered that permanent sheet piled retaining walls will provide the most suitable retaining structures for this site. Sheet pile walls will provide support and limit the ingress of any localised perched groundwater within the Made Ground and/or Head deposits. The sheet pile wall may be made watertight and left exposed or it may be used as a permanent shutter to a reinforced concrete retaining wall, cast inside the basement, which would also permit load to be carried from the superstructure.

As an alternative to sheet pile walls, contiguous bored piled walls may be used. These will provide support to the excavation and may also support parts of the superstructure but will not provide a watertight seal. If contiguous bored piled walls are used, there will be a requirement to provide a collector drain behind any internal wall, constructed within the basement.

Basement construction is likely to require the removal of materials from below the site to a suitably classified landfill. Analytical laboratory testing will be required to aid waste classification. Made Ground and any impacted materials removed from site are likely to be classified as 'non-hazardous' waste. Clean natural strata should be classified as 'inert' waste.

5.5 Assessment of Foundations and Ground Floor Construction

Due to the nature and likely structural loading of the propose development, a piled foundation solution is likely to be required for the proposed development. It is considered that large diameter bored piles are likely to offer the most suitable foundation solution.

Ground bearing floor slabs may be utilised. Depending on the depth of the excavation, heave precautions may be required.

6. RECOMMENDATIONS FOR GROUND INVESTIGATIONS

It is recommended that a ground investigation be carried out to confirm the ground and groundwater conditions beneath the site.

The ground investigation should be designed to provide information on the ground and groundwater conditions beneath the site, to provide information for foundation design and to enable an environmental assessment to be undertaken. It is considered that the ground investigation should utilise light cable percussion boreholes where access is available and window sampling where access is limited.

The investigation will enable an assessment to be completed of the shallow and deeper ground conditions beneath the site and enable groundwater monitoring stations to be installed to confirm groundwater conditions. Geotechnical laboratory testing should also be undertaken on soil samples recovered from the site to aid foundation design. Analytical laboratory testing could also be undertaken on soil samples recovered from the site to enable an environmental assessment to be carried out and to aid waste classification for materials that are to be removed from site. Costs for this investigation may be up to £17,000.

7. SUMMARY

It is proposed to redevelop a site at 84-88 Upper Richmond Road, East Putney, London with the construction of two tower blocks, one twenty two-storey and one fifteen-storey. It is understood that the two blocks will be linked by a single storey lower ground floor level car park. The proposed development is predominantly for residential purposes, although some commercial units are proposed along the lower levels. The site has previously been used for residential and office purposes. In close proximity to the eastern site boundary is a timber merchants and historically a motor repair company existed in this area.

Ground conditions at the site are expected to comprise a limited thickness of Made Ground, as a result of site development, over variable Head deposits. London Clay strata are expected to be present at depths greater than 3 m below the site. Shallow, localised, perched groundwater may be present within the Made Ground and Head deposits beneath the site.

The site is not associated with previous industrial usage or waste disposal activities but there is the potential for mobile contaminants to have migrated on to the site from timber merchants and/or historically the motor repair company. However, it is considered likely that any impacted materials present beneath the site will be removed during construction of the lower ground floor level of the proposed development. Therefore, the site should not be constrained by issues relating to contaminated land or soil gases.

To enable the construction of the lower ground floor, retaining structures will be required. It is considered that permanent sheet piled retaining walls will provide the most suitable retaining structures for this site. As an alternative to sheet pile walls, contiguous bored piled walls may be used.

Due to the nature and likely structural loading of the propose development, a piled foundation solution is likely to be required for the proposed development. It is considered that large diameter bored piles are likely to offer the most suitable foundation solution.

Ground bearing floor slabs may be utilised. Depending on the depth of the excavation, heave precautions may be required.

It is recommended that a ground investigation be carried out to confirm the ground conditions and groundwater conditions beneath the site.

REFERENCES

BRE (1999) BR211 – *Radon: Guidance on Protective Measures for New Dwellings Construction* Research Communications for the department of the Environment, Transport and the Regions.

BSI (2001) BS 10175 – *2001 Code of Practice for Investigation of Potentially Contaminated Sites* British Standards Institution

CIRIA (2001) *CIRIA C552 – Contaminated Land Risk Assessment: A guide to Good Practice* Construction Industry Research Association

DoE (1995) *DoE Industry Profiles: Road vehicle fuelling, service and repair, garages and filling stations* Department of the Environment HMSO

DoE (1995) *DoE Industry Profiles: Timber products manufacturing works* Department of the Environment HMSO

Environment Agency (2004) *Model Procedure for the Management of Land Contamination CLR 11* EA

Environment Agency (2005) *Environment Agency Guidance on Requirements for Land Contamination Reports* EA

Office of the Deputy Prime Minister (2004) *Planning Policy Statement 23: Planning & Pollution Control* HMSO

GENERAL NOTES

1. This report is provided as a preliminary site appraisal only, in the context of the stated development proposals and should not be used in a different context. Further geotechnical assessment, and possibly detailed investigations, will be required prior to finalisation of ground related designs.
2. Where any data supplied by the Client or by other external sources, including previous site investigation data, have been used it has been assumed that the information is correct unless otherwise stated. No responsibility can be accepted by Crossfield Consulting Limited for inaccuracies within the data supplied by others.
3. Any assessments made in this report are based on the ground conditions indicated by the trial pits and desk study. Variations in ground conditions may occur between exploratory hole locations and there may be special conditions appertaining to the site which have not been revealed by the investigation and which have not been taken into account in the report. The assessment may be subject to amendment in the light of additional information becoming available.
4. The report is provided for the sole use by the Client and is confidential to the Client's professional advisers. No responsibility whatsoever for the contents of this report will be accepted to any person other than the Client.
5. The copyright of this report and other plans and documents prepared by Crossfield Consulting Limited is owned by them and no such report, plan, or document may be reproduced, published or adapted without their written consent. Complete copies of this report may, however, be made and distributed by the Client as an expedient in dealing with matters relating to its commission.
6. New information, improved practices and legislation may necessitate an alteration to the report in whole, or in part, after its submission. Therefore with any change in circumstances or after the expiry of one year from the date of the report, the report should be referred to Crossfield Consulting Limited for re-assessment and, if necessary, re-appraisal.

TABLES

TABLE 1

CONCEPTUAL SITE MODEL

<p>Potential Contaminant Source</p>	<p>Potential Migration Routes</p>	<p>Receptors and Assessed Pollutant Linkage</p>
<p>Solids <i>Toxic heavy metals:</i> Potential source if ashy Made Ground present beneath the site <i>Phytotoxic metals:</i> Potential source if ashy Made Ground present beneath the site <i>Petroleum Hydrocarbons:</i> No potential on-site source. Potential off-site source from motor repair company and/or timber merchants <i>Volatile Organic Compounds:</i> No potential on-site source. Potential off-site source from motor repair company and/or timber merchants <i>Semi Volatile Organic Hydrocarbons:</i> No potential on-site source. Potential off-site source from motor repair company and/or timber merchants</p> <p>Liquids Potential for impacted perched groundwater from beneath motor repair company and/or timber merchants to migrate on to site. Groundwater expected to be present at depth below low permeability London Clay strata</p> <p>Gases <i>Landfill gases:</i> No source <i>Radon:</i> Site is within an area of low radon potential – No significant source</p>	<p>Movement of Solids Ingestion of soil or inhalation of dust. Pathway is present during construction but will be limited following development due to the presence of buildings and hardstanding external areas. Impacted materials likely to be removed during construction of lower ground floor.</p> <p>Release into Liquid Phase Metal solubility generally low at typical soil temperature and pH. Mobile and soluble petroleum hydrocarbons and volatile organic compounds may be present within the soils. Hard cover barrier will limit surface water infiltration. Variable permeability strata present beneath the site. Impacted materials likely to be removed during construction of lower ground floor.</p> <p>Movement of Liquids Migration restricted by variable nature and permeability of Head deposits. Further on site migration restricted following construction of lower ground floor.</p> <p>Release into Gas/Vapour Phase Not applicable (no source)</p> <p>Movement of Gases Not applicable (no source)</p>	<p>Human Health <i>End Users:</i> No pollutant linkage <i>Construction Workers:</i> Possible pollutant linkage <i>Adjacent Properties:</i> Possible pollutant linkage during development</p> <p>Buried Structures & Services <i>Plastic pipes for potable water:</i> No pollutant linkage <i>Other structures and services:</i> No pollutant linkage</p> <p>Landscape and Garden Areas No pollutant linkage</p> <p>Controlled Waters No pollutant linkage</p> <p>Human Health- Soil Gases No pollutant linkage</p>

NOTE: The above conceptual model is based on CIRIA C552 (2001) and BS 10175 (2001).

FIGURES