Providing Ground Solutions

Gail Rebuck

# 11 Albert Terrace Mews

*Basement Impact Assessment*

December, 2014

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|---|---|---|---|
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| Reference | CG/18147 | Revision 0 | Issue Date December 2014 |

# Contents



## FIGURES



## APPENDICES

# 1. INTRODUCTION

The client is proposing to develop 11 Albert Terrace Mews in the London Borough of Camden. This will include the excavation of a basement beneath the existing structure. The new basement floor slab will be formed at a level of generally 3.5 metres below ground level (mbgl). Card Geotechnics Limited (CGL) has been instructed to undertake a Basement Impact Assessment (BIA) for the proposed development to determine its potential effect on nearby structures and services, surface water runoff and groundwater flow.

The London Borough of Camden's guidance document *"CPG4, Basements and Lightwells*[1]*"*, requires a BIA to be undertaken for new basements in the Borough and sets out 5 stages for a BIA to "enable the Borough to assess whether any predicted damage to neighbouring properties and the water environment is acceptable or can be satisfactorily ameliorated by the developer". The five stages are set out below:

1. Screening
2. Scoping
3. Site investigation
4. Impact assessment
5. Review and decision making

This report is intended to address the screening stage of the BIA. It identifies key issues relating to land stability, hydrogeology and hydrology as part of the screening process (Stage 1).

[1] Camden Planning Guidance, CPG4, Basements and Lightwells, September 2013.

# 2. SITE CONTEXT

## 2.1 Site location

The site is located at 11 Albert Terrace Mews, London NW1 7TA. The National Grid Reference for the approximate centre of the site is 528168E, 183728N.

The site location is shown in Figure 1.

## 2.2 Site layout

The site is broadly rectangular in plan with dimensions 30m in length and 10m in width, with the length orientated in the east to west direction. The existing building comprises a modern two storey end-terrace property built circa 1970 that is broadly L-shaped, with dimensions 19.6m in length and 6m in width. A garden occupies the remainder of the site and predominantly comprises paved hard-standing, with an area of soft landscaping. The garden is surrounded by masonry walls. Street level is located 0.80m above ground floor and garden level.

The existing building comprises cavity masonry walls with render facing and floor structures are generally timber floor joists. The roof comprises a combination of trusses and joisted flat roofs. Large openings are present within a number of the walls and other rooms have structural framing supporting walls and/or floors above.

The building fronts onto Albert Terrace Mews to the south of the site, with a pavement approximately 1m in width separating the site from the carriageway of Albert Terrace Mews. The east of the site is bounded by St. Mark's Square. To the north, the rear gardens of the five storey structures of Nos. 35, 37 and 39 Regent's Park Road are located adjacent to the northern boundary wall of the site; these structures are understood to have lower ground floor levels. To the west the site is partially bounded by the party wall of some 6.0m in length with No. 10 Albert Terrace Mews, and partially bounded with a rear garden.

A brief review of local planning applications suggests that the adjoining structure is without a lower ground floor or basement level.

The site lies approximately 350m south west of a Network Rail mainline and some 20m north of a major sewer which is orientated north west to north east.

A site layout plan is presented in Figure 2.

## 2.3 Topography

Ordnance Survey topographical mapping records a spot height elevation of 33.7 metres above Ordnance Datum (mOD) approximately 40m north west of the site located within the centre of Regent's Park Road in front of No. 43 Regent's Park Road. An elevation of 34.2mOD is recorded at the junction of St. Mark's Square and Prince Albert Road approximately 70m to the south east of the site.

Locally the highest point is 64mOD recorded at Primrose Hill 540m to the north west, with local ground levels increasing towards this point. The topography reduces in level to the south and south-east of Primrose Hill towards the Grand Union Canal located 90m to the south and 115m to the east of the site. The site is situated on a downwards gradient of approximately 1 in 500 sloping towards the east.

Figure 16 of the Camden Geological, Hydrogeological and Hydrological Study[2] (CGHHS) records that the site is not located on a slope of greater than 7 degrees. Figure 17 of the CGHHS records the site as not being located within an area of significant landslide potential.

Shallow valleys are recorded some 850m west and 1km east of the site, representing relict river channels of the *River Tyburn* and the *River Fleet,* respectively.

## 2.4 Proposed development

It is proposed to excavate beneath the footprint of the property to form a new basement level at approximately 3.5m below existing rear garden and ground floor level, with the overall basement excavation being 4.3m deep from street level.

The basement will be constructed beneath the existing load bearing walls and existing foundations loads will be transferred to a deeper depth of greater bearing capacity. The

[2] Ove Arup and Partners. (2010) Camden Geological, Hydrogeological and Hydrological Study: Guidance for subterranean development. London Borough of Camden.

basement walls will be constructed from reinforced concrete using a hit and miss underpin sequence.

The basement will be 5.2m offset from the party wall to No. 10 Albert Terrace Mews and is located outside the 45$^{o}$ load spread from the foundations of the party wall. A Conceptual Site Model for the proposed development is presented in Figure 3. The structures of Nos. 35 and 37 Regent's Park Road are greater than 5m from the proposed basement (see Figure 2) and therefore are located outside the 45$^{o}$ influence zone of the basement.

It is understood that no trees are to be removed as part of the proposed works and the proposed basement structure is located outside any tree root protection zones.

Plans of the proposed development provided by the structural engineers are provided in Appendix A.

## 2.5 Site History

A brief review of the site's historical development has been undertaken using available literature and CGL's in-house resources. The findings are summarised as follows:

Mapping dated c.1870 records the site as being occupied by residential gardens associated with houses along Regent's Park Road. A *Towing Path* leading southwards to the Grand Union Canal is recorded approximately 100m to the east of the site, originating at a *Goods Depot* some 500m to the north east. The *London and North Western Railway* is located approximately 400m to the north east. *West Middlesex Water Works Reservoir* is located 400m to the west. The *Towing Path* is recorded as the Grand Union Canal from c.1890.

Mapping dated c.1913 records the site as part of the rear gardens to Regent's Park Road although Albert Terrace Mews highway has been constructed.

Four small structures are recorded within the eastern extremity of the site in c.1950. The central and western areas of the site remain part of residential gardens.

Three additional structures are recorded within the western part of the site from c.1970. No. 10 Albert Terrace Mews is shown to have been constructed.

11 Albert Terrace Mews is not recorded as having sustained damage during Second World War bombings[3], however, Nos. 35 to 41 Regent's Park Road are recorded as having sustained 'general blast damage – not structural' and St. Mark's Church located some 60m to the east of the site is categorised as 'damaged beyond repair'. The risk of unexploded ordnance (UXO) remaining on site is considered to be low.

## 2.6 Published geology

The British Geological Survey (BGS) sheet[4] of the area indicates the site to be underlain by the London Clay Formation with no record of superficial deposits.

The London Clay Formation is an overconsolidated firm to very stiff, becoming hard with depth, fissured, blue to grey silty clay of low to very high plasticity. The upper and lower parts may contain silty or fine grained sand partings. The stratum may also contain laminated, structured, nodular claystone and rare sand partings. Crystals of gypsum (Selenite) are often present within the weathered London Clay Formation. The stratum is generally horizontally bedded.

BGS basal contour mapping demonstrates the base of the London Clay Formation is present below the site to an elevation of approximately -20.0mOD, suggesting an overall thickness of approximately 55.0m. The surface of the Upper Chalk is recorded at -40.0mOD, suggesting a cumulative thickness of the Lambeth Group and underlying Thanet Formation of approximately 20.0m.

## 2.7 Unpublished geology

### *2.7.1 BGS historical borehole records*

A number of historical British Geological Survey (BGS) borehole records exist within 200m of the site boundary. Selected records and an indicative location plan are provided in Appendix B. The strata encountered within the boreholes are summarised in Table 1:

***Table 1. Summary of BGS Borehole Records***

| Stratum | Level at top of stratum (mbgl)[a] | Typical thickness (m) |
|---|---|---|
| Made Ground | 0.0 | 1.3 to 2.5 |
| London Clay Formation | 1.3 to 2.5 | 52.7 to 53.0 |

[3] London Topographical Society (2005). *Bomb Damage Maps 1939-1945*. The London City Council.
[4] British Geological Survey Sheet 256 (1993) *North London – Solid and Drift Geology* 1:50,000. Keyworth, BGS.

| Stratum | Level at top of stratum (mbgl)[a] | Typical thickness (m) |
|---|---|---|
| Made Ground | 0.0 | 1.3 to 2.5 |
| Lambeth Group | 54.3 to 55.2 | 9.1 to 10.6 |
| Thanet Formation | 64.3 to 64.9 | 3.7 to 8.5 |
| Upper Chalk | 65.2 to 119.5 | Proven to 184mbgl |

a. mbgl = metres below ground level

Borehole records indicate the geology of the surrounding area to consist of the London Clay Formation, underlain by the Lambeth Formation, Thanet Sand and Upper Chalk at depth.

A series of three boreholes at surface levels between approximately 33.5mOD and 34.5mOD were excavated along Albert Terrace, Prince Albert Road and St. Mark's Square some 120m south west, 70m south east and 45m north east of the site, respectively and recorded between 2.0 and 2.5m of Made Ground. The Made Ground was generally found to comprise concrete and hardcore over firm brown silty clay with ash and brick fragments over the London Clay Formation. The London Clay was described as firm to stiff brown silty clay with grey silty partings, becoming stiff to very stiff brown slightly fissured silty clay at depth. Occasional bands of grey claystone were encountered throughout the London Clay. A minor water seepage was recorded within one of the boreholes at a depth of 12.35mbgl and is likely to represent seepage from sand partings within the London Clay Formation.

### *2.7.2 J Pamment Site Investigations*

A site investigation was undertaken by J Pamment Site Investigations on 26 July 2011 at No. 17 Albert Terrace Mews located opposite No. 11 Albert Terrace Mews. The investigation comprised a single borehole (BH1) to 10.0mbgl.

The ground conditions encountered consisted of hard-standing over Made Ground to a depth of 0.5mbgl. The Made Ground was described as firm mid brown silty clay with occasional small pieces of brick rubble and fine gravel. The London Clay Formation was found to underlie the Made Ground and was described as firm to very stiff mid brown mottled orange grey veined silty clay with partings of orange and brown silt and fine sand to 8.5mbgl; with very stiff dark grey silty clay from 8.5mbgl to the base of the borehole. No groundwater was encountered during the investigation.

In-situ shear vane testing was undertaken as part of the investigation and shear strength values of between 66kPa and 140kPa were recorded within the London Clay.

The borehole record is presented in Appendix C.

## 2.8 Hydrogeology and hydrology

The Environment Agency[5] (EA) has produced an aquifer designation system consistent with the requirements of the Water Framework Directive. The designations have been set for superficial and bedrock geology and are based on the importance of aquifers for potable water supply, and their role in supporting surface water bodies and wetland ecosystems.

The site does not overlie a designated superficial or bedrock aquifer and is noted as being underlain by The London Clay Formation, designated a 'non-productive stratum' by the Environments Agency.

The site does not fall within a Groundwater Vulnerability Zone as indicated by EA mapping. The site is not located within a groundwater protection zone (SPZ). The closest SPZ is located some 450m west of the site centred around the former reservoir located in Primrose Hill.

The closest significant body of surface water is the Grand Union Canal located 90m to the south. Environments Agency mapping indicates the site is within a zone at of risk of flooding from reservoirs.

The site lies approximately 1km west the historical *River Fleet*. Reference to Barton's 'Lost Rivers of London'[6] indicates that the historical *River Fleet* previously flowed south and south-east from Hampstead Heath into the River Thames at Blackfriars. The former watercourse of the *River Fleet* is no longer open, having been culverted and constrained, however owing to local topography, it is considered that surface waters will drain towards the line of watercourse in a general southeast trend. This is illustrated in Figure 11 of the Guidance for Subterranean Development[3].

[5] http://www.environment-agency.gov.uk (accessed October 2014)
[6] Barton, N. (1983) *The Lost Rivers of London* Hertfordshire Historical Publications

The historical *River Tyburn* lies some 850m west of the site and arose by Fitzjohns Avenue in Hampstead. The river flowed southwards to the west of Primrose Hill and into Regent's Park, where it received a tributary from the vicinity of London Zoo.

As the London Clay Formation is identified below the site, it is assumed this forms an impermeable boundary and will form the base of an overlying groundwater table where any permeable superficial deposits permit the transit of groundwater.

Figure 15 of the Guidance for Subterranean Development[3] indicates the street was not flooded during extreme rainfall events in 1975 and 2002, however, Princes Road located 55m north east of the site was subjected to flooding in 1975.

# 3. STAGE 1 - SCREENING

## 3.1 Introduction

A screening assessment has been undertaken based on structured guidance presented in Camden Borough Council's CPG4. Responses to the questions posed by the flowcharts are presented below and where 'yes' or 'unknown' may be simply answered with no analysis required, these answers have been provided.

## 3.2 Subterranean (Groundwater) Screening Assessment

This section answers questions posed by Figure 1 in CPG4:

***Table 2. Responses to Figure 1, CPG4***

| **Question** | **Response** | **Action required** |
|---|---|---|
| *1a.* Is the site located directly above an aquifer? | No.<br>The site is underlain by the London Clay Formation, designated an unproductive stratum. | None |
| *1b.* Will the proposed basement extend beneath the water table surface? | No. | None |
| *2.* Is the site within 100m of a watercourse, well or potential spring line? | Yes.<br>The Grand Union Canal is located 90m to the south of the site. However, the basement will be constructed in the impermeable London Clay and therefore the impact to the watercourse from the proposed basement is considered to be negligible. | None |
| *3.* Is the site within the catchment of the pond chains on Hampstead Heath? | No. | None |
| *4.* Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas? | No.<br>The proposed basement will be constructed within the footprint of the existing building. | None |

| Question | Response | Action required |
|---|---|---|
| *5.* As part of site drainage, will more surface water than at present be discharged to ground (e.g. via soakaways and/or SUDS)? | No.<br>Soakaways are not likely to prove effective in the London Clay due to low infiltration rates. | None |
| *6.* Is the lowest point of the proposed excavation close to or lower than, the mean water level in any local pond or spring-line? | Yes.<br>The Grand Union Canal is located 90m to the south of the site, however the basement will be constructed in the relatively impermeable London Clay and therefore the impact to the watercourse from the proposed basement is considered to be negligible. | None |

The proposed development is underlain by the London Clay Formation, designated an 'unproductive stratum' by the EA. A review of available data has been conducted to determine groundwater conditions on site and suggests that shallow perched groundwater may be encountered within Made Ground or resting above the surface of the London Clay Formation. This is not expected to be laterally pervasive.

## 3.3 Slope/Land Stability Screening Assessment

This section answers questions posed by Figure 2 in CPG4.

***Table 3. Responses to Figure 2, CPG4***

| Question | Response | Action required |
|---|---|---|
| *1.* Does the site include slopes, natural or man-made, greater than about 1 in 8? | No. | None |
| *2.* Will the proposed re-profiling of the landscaping at site change slopes at the property boundary to greater than about 1 in 8? | No. | None |
| *3.* Does the development neighbour land including railway cuttings and the like with a slope greater than about 1 in 8? | No. | None |

| Question | Response | Action required |
|---|---|---|
| *4.* Is the site within a wider hillside setting in which the general slope is greater than about 1 in 8? | No. | None |
| *5.* Is the London Clay the shallowest stratum on site? | Yes.<br>The site is directly underlain by the London Clay Formation; however, the neighbouring properties are outside the 45° load spread from the proposed structure foundations and no trees are to be removed. | None |
| *6.* Will any trees be felled as part of the proposed development and/or are any works proposed within any tree protection zones where trees are to be retained? | No. | None |
| *7.* Is there a history of shrink/swell subsidence in the local area and/or evidence of such at the site? | Unknown.<br>The London Clay is shallow so there may be shrink/swell, however the basement will not be affected by or be influenced by this. | None |
| *8.* Is the site within 100m of a watercourse or a potential spring line? | Yes.<br>The Grand Union Canal is located 90m to the south of the site, however the basement will be constructed in the relatively impermeable London Clay and therefore the impact to the watercourse from the proposed basement is considered to be negligible. | None |
| *9.* Is the site within an area of previously worked ground? | No. | None |
| *10.* Is the site within an aquifer? | No. | None |
| *11.* Is the site within 50m of the Hampstead Heath ponds? | No. | None |
| *11.* Is the site within 5m of a highway or pedestrian right of way? | Yes.<br>Albert Terrace Mews is present immediately to the south of the site, however construction works are unlikely to impact the highway assuming good workmanship and well-constructed scheme are carried out. | None |
| *12.* Will the proposed basement significantly increase the | Yes.<br>It is understood that the adjoining property | None |

| Question | Response | Action required |
|---|---|---|
| differential depth of foundations relative to neighbouring properties? | does not currently have basement levels; however the proposed basement is beyond the zone of influence for foundations. | |
| *13.* Is the site over (or within the exclusion zone of) any tunnels? | No. | None |

A review of local topography and reference to Figure 16 of CGHHS[3] suggests that local and wider hillslopes do not exceed a gradient of 1 in 8 (approximately 7˚).

Figure 17 of the Study indicates the site is not located in an area of landslide potential. No trees are to be felled as part of the proposed works and the basement structure is located outside any tree root protection zones.

The site is directly underlain by the London Clay Formation; however, the neighbouring properties lie outside of the 45$^{o}$ load spread from the proposed basement foundations. Therefore the proposed basement will have negligible impact on the neighbouring structures.

## 3.4 Surface Flow and Flooding Screening Assessment

This section covers the main surface flow and flooding issues as set out in Figure 3, CPG4.

***Table 4. Responses to Figure 3, CPG4***

| Question | Response | Action required |
|---|---|---|
| *1.* As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off), be materially changed from the existing route? | No.<br>Existing drainage routes are unchanged | None |
| *2.* Will the proposed development result in a change in the proportion of hard surfaced/paved external areas? | No.<br>The proposed basement will be constructed within the footprint of the existing building. | None |

| | | |
|---|---|---|
| *3.* Will the proposed basement result in a change to the profile of the inflows of surface water being received by adjacent properties or downstream watercourses? | No. | None |
| *4.* Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses? | No.<br>The proposed excavation would remove the majority of any Made Ground that may be present on site and as such will not impact on water quality. | None |
| *5.* Is the site in an area known to be at risk from surface flooding, or is it at risk from flooding because the proposed basement is below the static water level of a nearby surface water feature? | No. | None |

The proposed development will remain a residential property, therefore no significant change of use is anticipated that may increase discharge loads to the existing sewer and drainage systems. The proposed basement is to be excavated beneath the existing structure and the ratio of hard-standing to soft landscaping will remain the same.

# 4. CONCLUSIONS

The findings of the screening assessment are summarised below:

***Table 5. Summary of Basement Impact Assessment requirements***

| Item | Description |
|---|---|
| 1. | *Groundwater flow*<br>None – The basement will be constructed entirely within London Clay and therefore groundwater is not expected to be encountered. |
| 2. | *Slope (land stability)*<br>None – The basement is partial, and does not directly underpin party walls. Neighbouring structures are beyond the 45$^{o}$ influence zone of the basement and therefore there is no impact anticipated. |
| 3. | *Surface flow and flooding*<br>None – The basement will be constructed entirely beneath the existing building. Therefore run-off/surface attenuation characteristics are not affected. |

There are no recorded basements directly adjacent to the proposed basement, and as groundwater flow would not be expected within the London Clay, it is expected that cumulative impacts from the construction of the basement may be negligible.

# FIGURES

Providing Ground Solutions

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# 11 Albert Terrace Mews

*Basement Impact Assessment*

December, 2014

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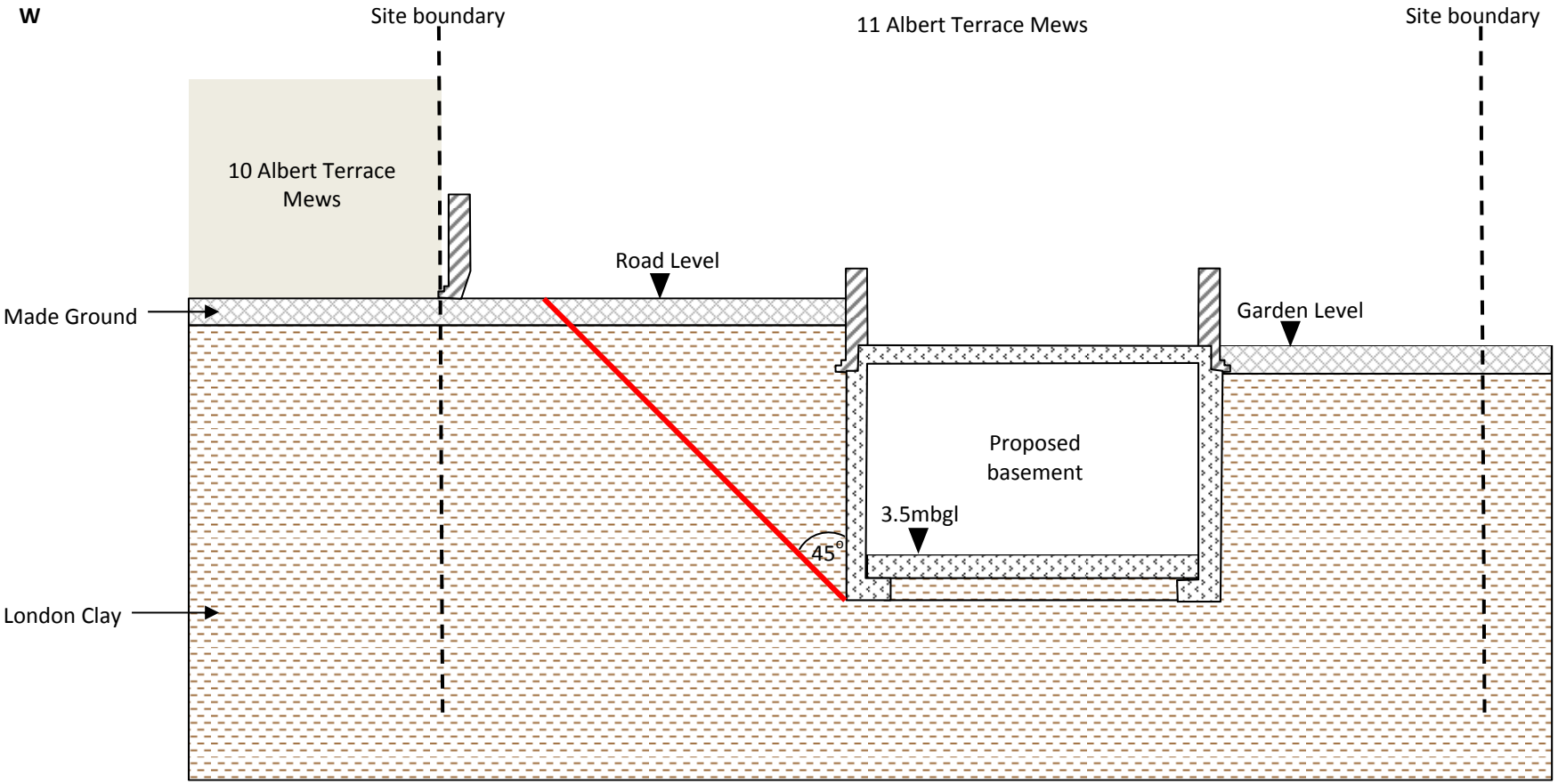
| Client | Project | Job No |
|---|---|---|
| **Gail Rebuck** | **11 Albert Terrace Mews** | **CG/18147** |
| CGL | Title<br>**Site Layout Plan** | **Figure 2** |




| Client | Project | Job No |
|---|---|---|
| **Gail Rebuck** | **11 Albert Terrace Mews** | **CG/18147** |
| CGL | Title: **Conceptual Site Model** | **Figure 3** |

# APPENDIX A

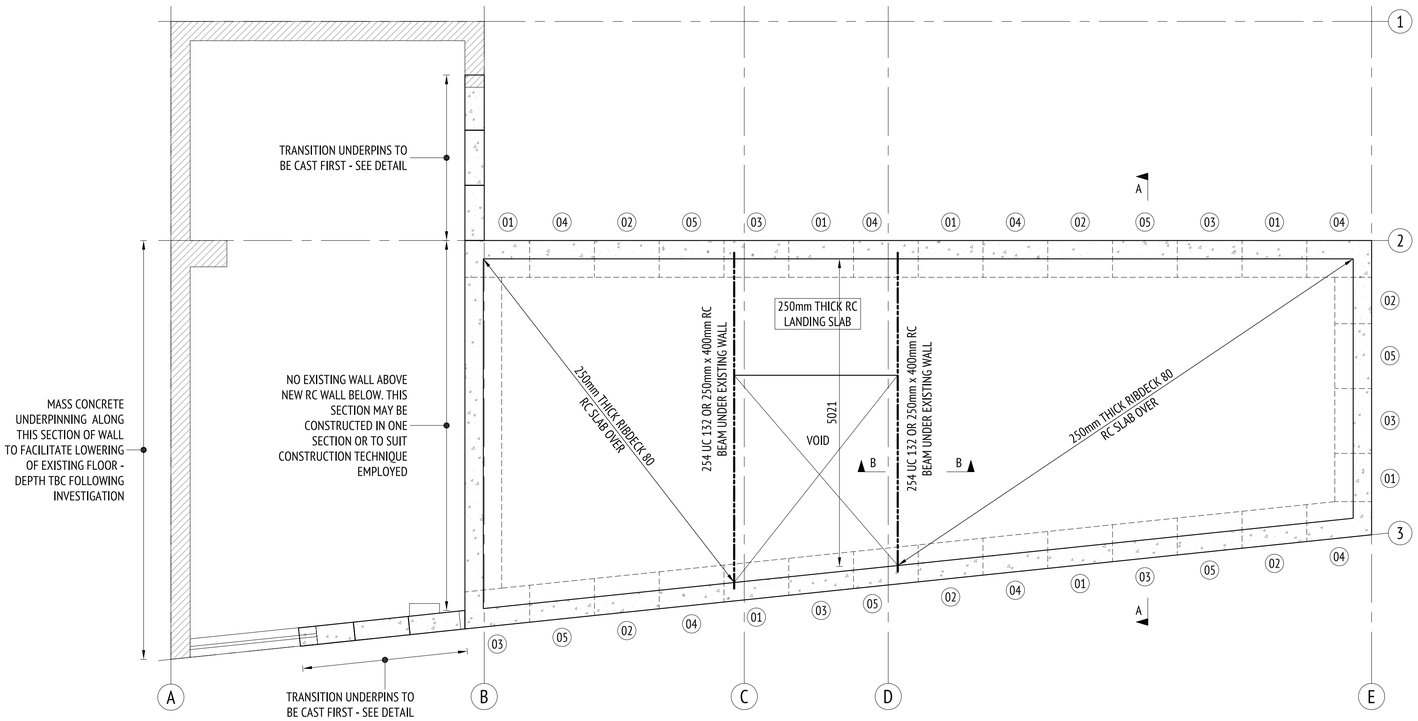
*Proposed development plans and section*

**SCALE:** AS SHOWN AT A1

| REV | DESCRIPTION | DATE |
|---|---|---|
| A | FIRST ISSUE | 23/09/14 |
| B | GRID AND RIBDECK 80 ADDED | 16/10/14 |
| | | |

JOB No: 0036 **REV**

DRAWING No: 001 **B**



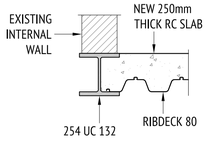

BASEMENT PLAN
SCALE 1:50

KEY

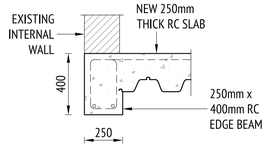
(01) INDICATES UNDERPIN SEQUENCE NUMBER

UNDERPIN SEQUENCE

1. SET-OUT BAY No 1
2. EXCAVATE TO FORMATION LEVEL UNDER EXISTING WALL. (MAX WIDTH 1.2m)
3. INSTALL REINFORCEMENT CAGE AND SUPPORT IN PLACE MAINTAINING COVER REQUIREMENTS
4. CAST CONCRETE UNDERPIN AND CURE FOR 3 DAYS
5. DRY PACK USING SAND:CEMENT MORTAR BETWEEN UNDERPIN AND EXISTING WALL. ALTERNATIVELY USE A 40N/mm² NON-SHRINK CEMENTITIOUS GROUT (FOSROC CONBEXTRA GP OR SIMILAR APPROVED).
6. MOVE TO BAY No. 2 AND REPEAT STEPS 2 TO 5 FOR REMAINING BAYS




SECTION B-B - OPTION 1
SCALE 1:20




SECTION B-B - OPTION 2
SCALE 1:20

UNDERPINNING NOTES

1. CONCRETE SHALL BE MIX C28/35 IN ACCORDANCE WITH BS8500.
2. ANY EXISTING LOOSE BRICK OR DEFECTIVE FOOTING SHALL BE CUT OUT AND MADE GOOD WITH BRICKWORK OR CONCRETE.
3. THE EXCAVATIONS FOR UNDERPINNING SHALL BE CARRIED OUT IN ISOLATED LENGTHS NOT EXCEEDING 1000mm IN THE ORDER INDICATED ON THE DRAWING OR IN AN ALTERNATIVE SEQUENCE THAT MUST BE AGREED IN ADVANCE WITH THE ENGINEER.
4. THE CONTRACTOR SHALL SUPPLY, MAINTAIN AND REMOVE ALL NECESSARY PLANKING AND STRUTTING TO ENSURE THE STABILITY OF ALL TRENCHES AND EXCAVATIONS. SLIPS AND FALLS DUE TO INADEQUACY OF THE PLANKING AND STRUTTING ARE TO BE MADE GOOD IN ACCORDANCE WITH THE ENGINEERS INSTRUCTIONS AT THE CONTRACTORS OWN EXPENSE.
5. THE CONTRACTOR SHALL GIVE THE ENGINEER AT LEAST 24 HOURS NOTICE OF WHEN THE EXCAVATIONS ARE TO BE READY FOR INSPECTION AND NO CONCRETE IS TO BE PLACED UNTIL THE WIDTH, DEPTH AND BOTTOM HAVE BEEN APPROVED BY THE ENGINEER AND THE BUILDING INSPECTOR.
6. AS FAR AS POSSIBLE THE WORK SHALL BE PROGRAMMED TO ALLOW FOR CONCRETING ON THE SAME DAY AS APPROVAL OF THE EXCAVATION.
7. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY OBSTACLES ENCOUNTERED AND THEN DEAL WITH THEM AS INSTRUCTED. CARE SHALL BE TAKEN TO WORK AROUND ALL SERVICE PIPES AND DRAINS AND PROVIDE ALL NECESSARY TEMPORARY SUPPORT AND PROTECTION TO PRESERVE THEM FROM DAMAGE.
8. ANY DAMAGE CAUSED TO SERVICES SHALL BE IMMEDIATELY NOTIFIED AND ARRANGEMENTS MADE TO MAKE GOOD THE DAMAGE AT THE CONTRACTORS OWN EXPENSE.
9. DRY PACKING:
   - SOFFIT OF FOOTING TO BE CLEANED AND SOUND.
   - SPACE TO BE BETWEEN 50 AND 125mm MIX TO BE 3:1 SHARP SAND:CEMENT WITH THE MINIMUM OF MOISTURE.
   - WORK NOT TO CARRIED OUT WITHIN 24 HOURS OF CASTING THE CONCRETE.
   - MORTAR TO BE THOROUGHLY AND FIRMLY RAMMED INTO THE SPACE BETWEEN THE TOP OF THE CONCRETE AND THE SOFFIT OF THE FOOTING SO AS TO COMPLETELY FILL THE WHOLE OF THE VOID.

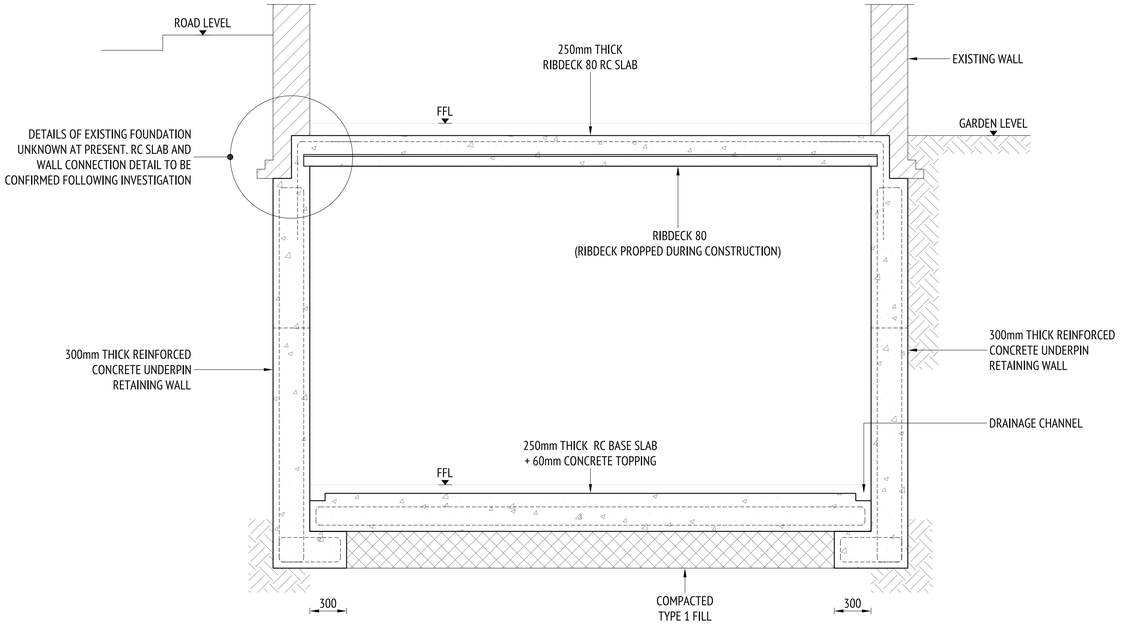
REINFORCED CONCRETE

1. CONCRETE MIX C28/35 IN ACCORDANCE WITH B.S.8500-1:
2. CONCRETE TO BE CURED BY APPROVED METHOD FOR A MINIMUM OF 7 DAYS.
3. COVER TO ALL REINFORCEMENT TO BE 50mm MINIMUM
4. REINFORCEMENT IS TO BE CUT AND BENT IN ACCORDANCE WITH B.S. 8666.
5. REINFORCEMENT GRADE 500 IN ACCORDANCE WITH B.S. 4449 (2005).
6. BAR SCHEDULES ARE TO BE CHECKED BY THE CONTRACTOR BEFORE STEEL IS ORDERED.
7. REINFORCEMENT AND FORMWORK TO BE THOROUGHLY CHECKED BEFORE CONCRETING.
8. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL TEMPORARY REINFORCEMENT, SUCH AS CHAIRS, THAT MAY BE REQUIRED.
9. ABBREVIATIONS:-

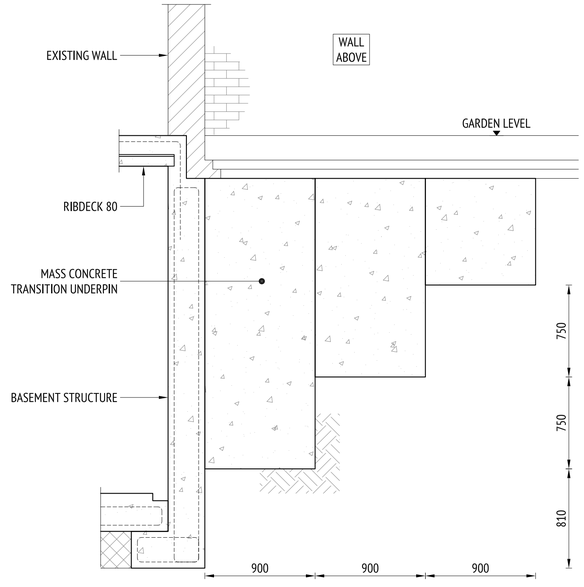
   T1/2 = TOP FACE (T1 =OUTER LAYER, T2 = INNER LAYER)
   B1/2 = BOTTOM (B1 =OUTER LAYER, B2 = INNER LAYER)
   NF = NEAR FACE (N1 =OUTER LAYER, N2 = INNER LAYER)
   FF = FAR FACE (F1 =OUTER LAYER, F2 = INNER LAYER)
   EF = EACH FACE; AB= ALTERNATE BARS;
   STG= STAGGERED BARS;
   ABR = ALTERNATE BARS REVERSED

10. LAP LENGTHS UNLESS OTHERWISE STATED TO BE MINIMUM 40 x BAR DIAMETER.

| NO BARS | DUCTILITY | BAR DIAMETER | BAR MARK | BAR SPACING | BAR LOCATION |
|---|---|---|---|---|---|
| 24 | H | 16 | 01 | 200 | NF |
| REINFORCEMENT NOTATION | | | | | |




SECTION A-A
SCALE 1:25




TRANSITION UNDERPIN DETAIL
SCALE 1:25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**PROJECT:** **ALBERT TERRACE MEWS**

**TITLE:** PROPOSED BASEMENT GA

**STATUS:** TENDER

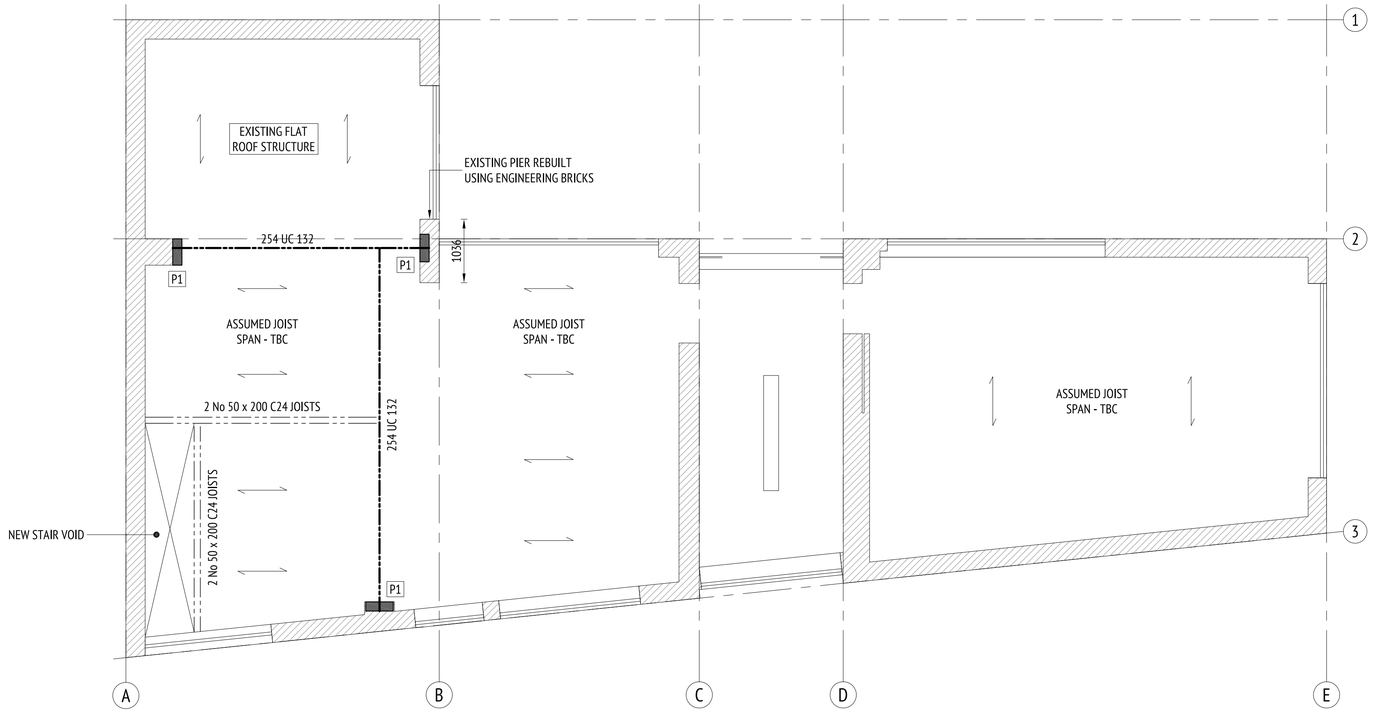
**CLIENT:** MRJ RUNDELL & ASSOCIATES

**SCALE:** AS SHOWN AT A1

| REV | DESCRIPTION | DATE |
|---|---|---|
| A | FIRST ISSUE | 23/09/14 |
| B | GRID AND RIBDECK 80 ADDED | 16/10/14 |
| | | |

JOB No: 0036 **REV**

DRAWING No: 002 B




GROUND FLOOR PLAN SHOWING STRUCTURE OVER

SCALE 1:50

KEY

P1 150mm WIDE x 450mm LONG x 225mm DEEP PADSTONE -TBC

P2 150mm WIDE x 300mm LONG x 150mm DEEP PADSTONE -TBC

GENERAL :

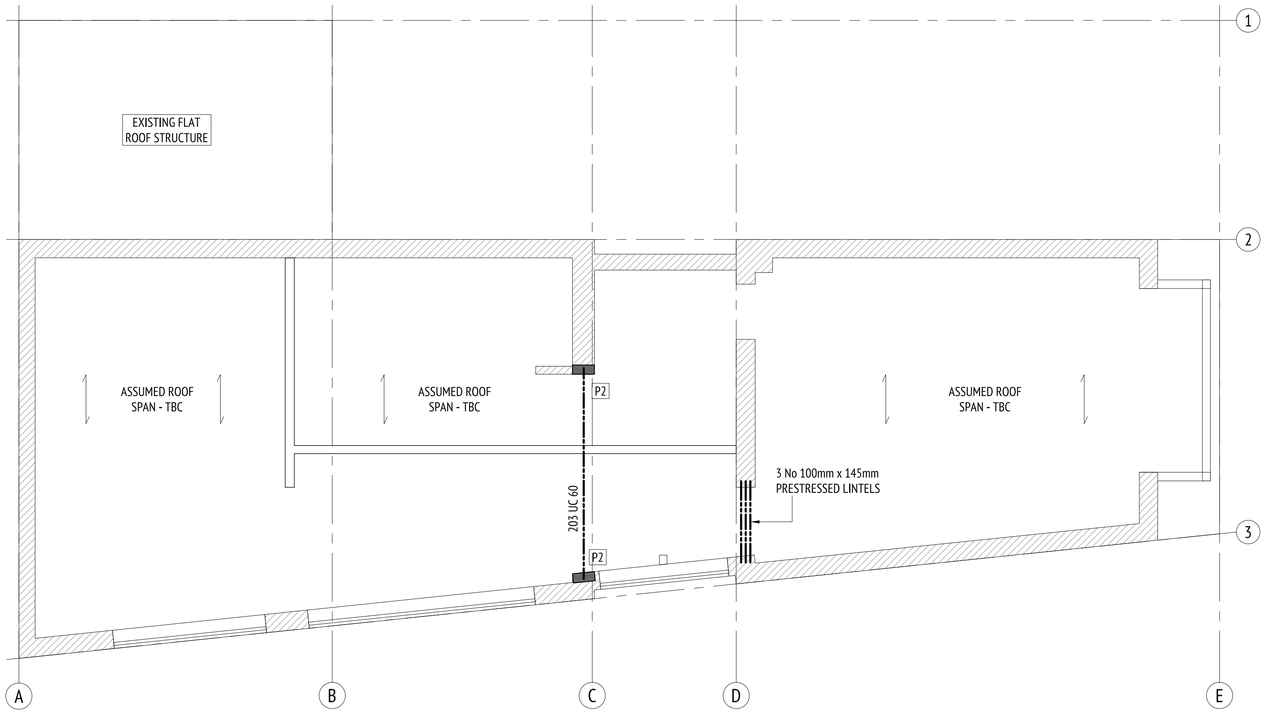
1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE NOTED.
2. ALL LEVELS ARE IN METRES ABOVE ORDNANCE DATUM.
3. ALL DIMENSIONS SHALL BE CHECKED ON SITE BY THE CONTRACTOR PRIOR TO WORK BEING CARRIED OUT
4. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE EXISTING STRUCTURE AT ALL TIMES DURING THE WORKS.
5. THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND RELEVANT STRUCTURAL SPECIFICATIONS.
6. FOR SETTING OUT OF WALLS AND FLOORS SEE ARCHITECTS DRAWINGS.
7. ALL MATERIALS USED IN THE WORKS SHALL BE TO BRITISH STANDARDS OR OTHER APPLICABLE SPECIFICATIONS.
8. ALL PROPRIETARY MATERIALS USED IN THE WORKS SHALL BE USED IN COMPLETE ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

TIMBER

1. THE WHOLE OF THE STRUCTURAL TIMBER IS TO COMPLY WITH THE RELEVANT CLAUSES OF BS EN 1995-1.
2. THE GRADE OF ALL STRUCTURAL TIMBER SHALL BE NOT LESS THAN C16 OR AS NOTED OTHERWISE ON THE DRAWINGS AND SPECIFICATION.
3. ALL TIMBER SHALL BE PRESSURE IMPREGNATED WITH PRESERVATIVE AND ALL CUT ENDS OR SURFACES SHALL BE RETREATED WITH A BRUSH APPLIED COAT OF THE SAME PRESERVATIVE.
4. PRESERVATIVE TREATMENT OF TIMBER IS TO BE IN ACCORDANCE WITH THE RECOMMENDATIONS OF BS 8417 AND BS EN 599:1.
5. THE MOISTURE CONTENT OF THE TIMBER WHEN FIXED SHALL NOT BE GREATER THAN 20% AND THE MOISTURE CONTENT SHALL NOT BE EXCEEDED AFTER ERECTION.
6. NAILS GENERALLY SHALL BE HARD DRAWN, GALVANISED WIRE.
7. HOLES FOR BOLTS SHALL BE DRILLED WITH A DIAMETER NOT MORE THAN 1.6mm GREATER THAN THE BOLT SIZE.
8. ALL BOLTS, NUTS AND WASHERS SHALL BE GALVANISED MILD STEEL AND BE MINIMUM GRADE 4.6 UNLESS NOTED OTHERWISE ON THE DRAWINGS.
9. WASHERS BEARING ON TIMBER SHOULD HAVE A DIAMETER 3 TIMES THAT OF THE BOLT AND A THICKNESS 0.25 TIMES THAT OF THE BOLT. WASHERS BEARING ON SLOPING FLANGES ARE TO HAVE THE CORRECT TAPER TO GIVE LEVEL BEARING ON THE NUT.
10. ALL JOIST HANGERS/MECHANICAL FASTENERS ETC. ARE TO BE GALVANISED MILD STEEL AND ARE TO BE FULLY NAILED/SCREWED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.
11. JOISTS ARE TO BE FULLY NOGGINED AT THE ENDS AND AT MID SPAN UNLESS NOTED OTHERWISE ON THE DRAWINGS.

STRUCTURAL STEELWORK:

1. THE WHOLE OF THE STRUCTURAL STEELWORK IS TO COMPLY WITH THE RELEVANT CLAUSES OF BS EN 1993 AND THE NATIONAL STRUCTURAL STEELWORK SPECIFICATION UNLESS MODIFIED BY THE SPECIFICATION.
2. ALL BOLTS ARE TO BE GRADE 8.8.
3. STRUCTURAL STEEL TO BE GRADE s275.
4. ALL WELDS TO BE 6mm FILLET WELDS UNLESS OTHERWISE NOTED.
5. BLAST CLEAN TO SA 2 ½.
6. SHOP APPLY 2 COATS OF RED OXIDE PRIMER.




FIRST FLOOR PLAN SHOWING STRUCTURE OVER

SCALE 1:50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**PROJECT:** ALBERT TERRACE MEWS

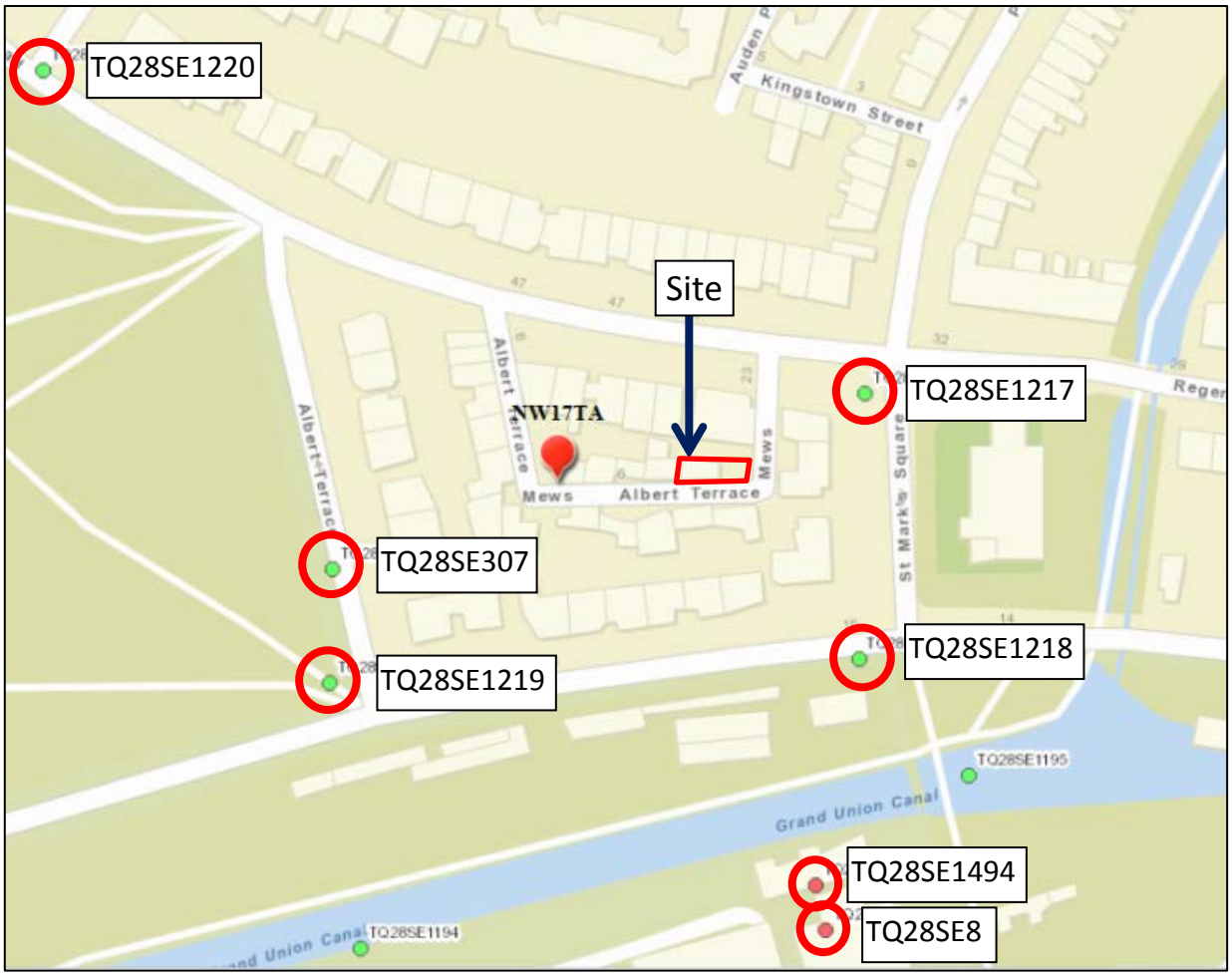
**TITLE:** PROPOSED GF & FF GA

**STATUS:** TENDER

**CLIENT:** MRJ RUNDELL & ASSOCIATES

# APPENDIX B

*BGS historical borehole records*




Not to scale.
Modified from www.bgs.ac.uk

| Client | Project | Job No |
|---|---|---|
| **Gail Rebuck** | **11 Albert Terrace Mews** | **CG/18147** |
| CGL | Title<br>**BGS historical borehole location plan** | **Appendix B** |

GEOLOGICAL SURVEY OF GREAT BRITAIN

# RECORD OF SHAFT OR BORE FOR MINERALS

(*For Survey use only*)

6-inch Map Registered No. TQ28SE/8

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner: Zoological Gardens - Regents park.

For whom made

Town or Village St. Marylebone County London.

Exact site

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

Purpose for which made

Nat. Grid Reference 28203 83608

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

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 1899.

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. |
|---|---|---|---|---|---|
| | Summary of progress. 1906 in full. p. 162 | | | 472 | 6 |
| | | | | 144.02m | |

**Regent's Park.** ZOOLOGICAL GARDENS. New Boring. 1899

Northern side of road close to the Canal Bridge, on top of the bank).

London Map 7 N.W. Height above Ordnance Datum 115 feet.

(35.05)

Sand got into the old bore-hole and made the pump useless. A new boring was made in the old well (finished 1899) and has been described by Dr. P. L. SCLATER, (*Quart. Journ. Geol. Soc.*, vol. lvi., pp. iv., v., 1900) from particulars supplied by the contractors (Messrs. ISLER & Co.), which are here reproduced, with additional remarks [from specimens].

| | | Thickness. | Depth. |
|---|---|---|---|
| | | Ft. | Ft. (m) |
| (51.82) (2.44) (4) Old well 170 feet, concrete 8 feet ... ... ... | | --- | 178 54.25 |
| [Reading Beds] | Grey sand [clayey, a few small bits of stone] ... ... ... ... | (0.30) 1 | 179 54.56 |
| | Mottled clay [brown and grey] ... | (1.52) 5 | 184 56.17 |
| | Green sand [clayey, mottled brown] | (2.74) 9 | 193 58.83 |
| | Sand [brown, fine compacted] and pebbles [dark flint, of fair size] .. | (2.44) 8 | 201 61.26 |
| [Thanet Sand] | Dead grey sand [fine, compacted] .. | (3.66) 12 | 213 64.92 |
| | Flints [some green-coated] ... | (0.30) 1 | 214 65.23 |
| [Upper Chalk] | Chalk [white] ... ... ... | (72.54) 238 | 452 137.77 |
| | Grey chalk [nearly white] ... | (6.25) 20½ | 472½ 144.02 |

The specimens of sand are all lumps, ? compacted by boring-tools.

The yield was 4,500 gallons an hour.

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

soyas along Albert Tce.

C 30.

**WELL BORING** at from Albert Rd N.W. County

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

Made by TQ 28 SE Date 1907-10.

Sunk feet. Bored feet.

Communicated by L.C.C.

Height above Ordnance Datum 114.88. Rest level of water

Yield (35-33m)

Quality (with copy of analysis on separate sheet)

TQ/28 SE/307
2807.8370
256

| GEOLOGICAL FORMATION | NATURE OF STRATA | THICKNESS Feet | THICKNESS Inches | DEPTH Feet | DEPTH Inches |
|---|---|---|---|---|---|
| | Made Ground | 5 | - | 5 | 0 (1.52m) |
| | Brown Clay. | 4 | — | 9 | — (2.74m) |
| | Claystone | - | 6 | 9 | 6 (2.90m) |
| | Brown Clay. | 26 | 6 | 36 | — (10.97m) |
| | Blue Clay. | 22 | 6 | 58 | 6 (17.84m) |
| | Claystone. | — | 6 | 59 | — (17.98m) |
| | Blue Clay | 8 | 6 | 67 | 6 (20.57m) |
| | Unbottomed. | | | | |

GEOLOGICAL SURVEY AND MUSEUM,
JERMYN STREET, LONDON, S.W. 1.

(50478X) Wt. W39783/0131 2,500 4/31 *H. J. R. & L., Ltd.* **Gp. 616**

TQ28 SE /1217

# Contract: Gloucester Avenue
Client: London Borough of Camden

## Borehole No. 3
Sheet No. 1 Of 2.
Depth 0 to 10 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location : 2821,8375

Dates : 25/10/90
29/10/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| | | | | | 0.00 | | | |
| | | | | | (0.70) | | MADE GROUND (tarmac over concrete, ash and brick fragments) | |
| | | | | B | 0.70 | | | |
| | | | S 17 | J | | | MADE GROUND (firm brown clay, ash with brick fragments) | |
| | | | | B | (1.80) | | | |
| | | | S 10 | J | | | | |
| | | | S 11 | J | 2.50 | | Firm to stiff brown silty CLAY with grey silty partings | |
| 26/10 | | | | U | | | | |
| | | | | J | | | | |
| | | | | J | (3.50) | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | J | 6.00 | | Stiff to very stiff brown slightly fissured silty CLAY | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | J | (4.50) | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | J | 10.00 | | | |
| | | | | | | | Continued | |

Operator
DOA

General Remarks:

Appendix
1

Scale
10m/sheet

Sheet No.
6

TQ28SE /1217

# Contract: Gloucester Avenue
Client: London Borough of Camden

## Borehole No. 3
Sheet No. 2 Of 2.
Depth 10 to 20 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location :

Dates : 25/10/90
29/10/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| | | | | J | 10.00 | | | |
| | | | | | (4.50) | | Stiff to very stiff brown slightly fissured silty CLAY | |
| | | | | U | 10.50 | | | |
| | | | | | | | Very stiff, dark brown/grey fissured silty CLAY | |
| | | | | J | (1.85) | | | |
| | 26/10 | Minor water seepage | C 50 | U | 12.35 | | | |
| | | | | J | (0.45) | | Grey CLAYSTONE | |
| | | | | B | | | | |
| | | | | U | 12.80 | | Very stiff dark grey fissured silty CLAY | |
| | | | | J | | | | |
| | | | | J | (2.00) | | | |
| | | | | U | | | | |
| | | | C 50 | J | 14.80 | | Grey CLAYSTONE | |
| | | | | J | 14.85 | | Very stiff dark grey fissured silty CLAY | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | J | (5.15) | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| 26/10 | | | | | 20.00 | | End of Borehole | |

Operator
DOA

Scale
10m/sheet

General Remarks:

Appendix
1

Sheet No.
7

TQ28 SE / 1218

# Contract: Gloucester Avenue

Client: London Borough of Camden

## Borehole No. 4

Sheet No. 1 Of 2.
Depth 0 to 10 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location : 2821, 8368

Dates : 29/10/90
30/10/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| | | | | B | 0.00 | | | |
| | | | | | (0.50) | | MADE GROUND (tarmac over concrete and brick fragments) | |
| | | | | B | 0.50 | | | |
| | | | S 12 | J | | | MADE GROUND (soft brown/grey silty clay with brick fragments) | |
| | | | | | (1.50) | | | |
| | | | | B | | | | |
| | | | S 7 | J | 2.00 | | | |
| | | | | | (0.50) | | Soft to firm brown and grey mottled CLAY | |
| | | | | U | 2.50 | | | |
| 29/10 | | | | J | | | Firm to stiff brown/grey mottled silty CLAY | |
| | | | | J | | | | |
| | | | | | | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | | | | | |
| | | | | J | | | | |
| | | | | | 5.50 | | | |
| | | | | U | | | Stiff brown and grey mottled slightly fissured silty CLAY | |
| | | | | J | | | | |
| | | | | | | | | |
| | | | | J | | | | |
| | | | | | | | | |
| | | | | U | (3.00) | | | |
| | | | | J | | | | |
| | | | | | | | | |
| | | | | J | | | | |
| | | | | | 8.50 | | | |
| | | | | | | | Stiff to very stiff, dark brown, fissured silty CLAY | |
| | | | | | (4.30) | | | |
| | | | | | | | | |
| | | | | | 10.00 | | | |
| | | | | | | | Continued | |

Operator
DOA

General Remarks:

Appendix
1

Scale
10m/sheet

Sheet No.
10

TQ28 SE / 1218

# Contract: Gloucester Avenue

Client: London Borough of Camden

## Borehole No. 4

Sheet No. 2 Of 2.
Depth 10 to 20 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location :

Dates : 29/10/90
30/10/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| 29/10 | | | | U J | 10.00 | | Stiff to very stiff, dark brown, fissured silty CLAY | |
| | | | | U J | (4.30) | | | |
| | | | | J | | | | |
| | | | C 50 | | 12.80 | | | |
| | | | | | (0.40) | | Grey CLAYSTONE | |
| | | | | U J | 13.20 | | Very stiff, dark grey fissured silty CLAY | |
| | | | | J | | | | |
| | | | | U J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | U J | | | | |
| | | | | J | | | | |
| | | | C 50 | B | 17.40 | | | |
| | | | | | (0.50) | | Grey CLASTONE | |
| | | | | U J | 17.90 | | Very stiff, dark grey, fissured silty CLAY | |
| | | | | J | | | | |
| | | | | U J | (2.10) | | | |
| 30/10 | | | | | 20.00 | | End of Borehole | |

Operator
DOA

General Remarks:

Appendix
1

Scale
10m/sheet

Sheet No.
11

TQ28SE/1219

# Contract: Gloucester Avenue

Client: London Borough of Camden

## Borehole No. 5

Sheet No. 1 Of 2.
Depth 0 to 10 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location : 2807, 8367

Dates : 30/10/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| | | | | | 0.00 | | | |
| | | | | | (0.40) | | MADE GROUND (road surface over hard core and brick fragments) | |
| | | | | | 0.40 | | MADE GROUND (soft grey silty clay with brick fragments) | |
| | | | S 11 | J | | | | |
| | | | | | (1.70) | | | |
| | | | | B | | | | |
| | | | S 9 | J | | | | |
| | | | | | 2.10 | | Firm to stiff brown occasionally slightly fissured silty CLAY with grey silty partings and occasional sandy pockets | |
| | | | | U | | | | |
| | | | | J | | | | |
| 31/10 | | | | J | | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | | (7.90) | | | |
| | | | | J | | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | | 10.00 | | Continued | |

Operator
DOA

General Remarks:

Appendix
1

Scale
10m/sheet

Sheet No.
13

TQ28SE/1219

# Contract: Gloucester Avenue

Client: London Borough of Camden

## Borehole No. 5

Sheet No. 2 Of 2.
Depth 10 to 20 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location :

Dates : 30/10/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| | | | | U J | 10.00 | | Stiff dark greyish brown slightly fissured silty CLAY | |
| | | | | U J U J J U J | (7.95) | | | |
| | | | C 50 | U J J J U J | 17.95<br>18.20 | | Dark brown CLAYSTONE | |
| 31/10 | | | | U J | (1.80)<br>20.00 | | Very stiff greyish brown fissured silty CLAY<br>End of Borehole | |

Operator
DOA

General Remarks:

Appendix
1

Scale
10m/sheet

Sheet No.
14

TQ28 SE /1220

# Contract: Gloucester Avenue

Client: London Borough of Camden

## Borehole No. 6

Sheet No. 1 Of 2.
Depth 0 to 10 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location : 2799,8383

Dates : 1/11/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| | | | | 8 | 0.00 | | | |
| | | | | | (0.35) | | MADE GROUND (road surface over reinforced concrete) | |
| | | | | 8 | 0.35 | | | |
| | | | | | | | MADE GROUND (firm brown clay and brick fragments) | |
| | | | | | (0.95) | | | |
| 1/11 | | | S 8 | J | | | | |
| | | | | | 1.30 | | Firm to stiff brown/grey mottled silty CLAY | |
| | | | | J | | | | |
| | | | S 10 | U | | | | |
| | | | | J | | | | |
| | | | | B | | | | |
| | | | | | (4.00) | | | |
| | | | | U | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | U | 5.30 | | Stiff to very stiff, brown slightly fissured silty CLAY | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | (4.50) | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | J | | | | |
| | | | | U | 9.80 | | Very stiff dark brown to grey fissured silty CLAY | |
| | | | | | 10.00 | | Continued | |

Operator
DOA

Scale
10m/sheet

General Remarks:

Appendix
1

Sheet No.
16

TQ28 SE /1220

# Contract: Gloucester Avenue

Client: London Borough of Camden

## Borehole No. 6

Sheet No. 2 Of 2.
Depth 10 to 20 metres.

Equipment and Methods
Light Cable Percussion Boring
150mm Diameter

Orientation : Vertical

Ground Level : m.O.D.

Coordinates :

Job Number : S90/055

Location :

Dates : 1/11/90

| Daily Prog. | Water Levels | Remarks | In Situ Tests | Samples Taken | Depth (Thick) | Reduced Level | Description | Legend |
|---|---|---|---|---|---|---|---|---|
| | | | | U J | 10.00 | | Very stiff dark brown to grey fissured silty CLAY | |
| | | | | J | | | | |
| | | | | U J | | | | |
| | | | | J | (5.20) | | | |
| | | | | U J | | | | |
| | | | | J | | | | |
| 1/11 | | | | U J | 15.00 | | End of Borehole | |

Operator
DOA

General Remarks:

Appendix
1

Scale
10m/sheet

Sheet No.
17

TQ28/56,57 E19

WELL BORING at Zoo, Regents Park County London

Geol. map 1 in. map New Series 256 6 in. map N.W.

Made by Date

Sunk Bored feet. 199

Communicated by

Height above Ordnance Datum First level of water

Yield

Quality (with copy of analysis on separate sheet)

| GEOLOGICAL FORMATION. | NATURE OF STRATA. | THICKNESS. Feet. | THICKNESS. Inches. | DEPTH. Feet. | DEPTH. Inches. |
|---|---|---|---|---|---|
| | | | | | |

Well end entrance to aquarium

7B.

ARTESIAN WELL BORED AT THE ZOOLOGICAL GARDENS REGENT'S PARK, FOR THE ZOOLOGICAL SOCIETY. 1923/4.

by Messrs R.Richards & Co. N.W.1

| STRATA. | THICKNESS. | DEPTH IN FEET. |
|---|---|---|
| Sump Hole. | 5'6" | 5'6" |
| London Clay Clay. | 53'6" | 59 |
| Reading Beds { Light Sandy Clay. | 119 | 178 |
| Reading Beds { Hard Green Sand. | 2 | 180 |
| Reading Beds { Reading Beds ( Sand & Black pebbles) | 3 | 183 |
| Thanet Sand Grey Sand. | 28 | 211 |
| Upper Middle Ch. Chalk & Flints. | 392 | 603 |

Clarified by H Dewey.

Lined with 200 feet of 12" Tubes, also 16 feet of ditto, making 216 feet in all.

Water Level 285 feet. Pumping Level 380 feet.

Supply:- 2,000 g.p.h.

5 Shots of Blasting Gelatine were fired, 1 at each of the under-mentioned depths:-

315 feet, 340, 360, 380 and 420.

(a) R.W.L. 215' July 1910 (A) NGR TQ 2820 8362
(a) " 248' Aug. 1913 (B) NGR TQ 2801 8339.

b) Surface of well Tol +115. TQ28/57

b). R.W.L. - 187½ 6/9/46.

6/9/46 HH.

* Boring noticable for quantity of $CO_2$ arising from boring. *

M. of H. notified 1/11/27

Site visited 17th July 1946
Wells sited - both at ground level
(b) in reptile house.
(a) filled in
Both observed 8th July 1946

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(B10619). Wt. 15824—S123. 2500. 11/25. Gp. 160. O

# APPENDIX C

*J Pamment Site Investigations borehole record*

# J PAMMENT SITE INVESTIGATIONS

J PAMMENT

55 Roding Leigh, South Woodham Ferrers, Chelmsford, Essex CM3 5JZ
TEL/FAX: 01245 322 115 - MOBILE: 07940 514 408

| BH No: 1 | Sheet: 1 of 1 | Ref: | Date: 26.07.11 | For: Albert Terrace Mews, London NW1 |
|---|---|---|---|---|

| Depth Mtrs. | Description of Strata | Thickness | Legend | Sample | Test Type | Test Result | Root Information | Depth to Water | Depth mtrs |
|---|---|---|---|---|---|---|---|---|---|
| G.L. | BLOCK PAVING OVER SAND. | 0.2 | | | | | | | |
| 0.2 | MADE GROUND firm mid brown silty clay with occasional small pieces of brick rubble and fine gravel. | 0.3 | | | | | Roots of live appearance to 2mmØ to 1.3m. | | |
| 0.5 | Firm mid brown mottled orange grey veined silty CLAY with partings of orange and brown silt and fine sand. | 1.5 | | D | V | 66<br>68 | No roots observed below 1.3m. | | 1.0 |
| 2.0 | | | | D | V | 78<br>80 | | | 2.0 |
| | Stiff as above. | 2.0 | | D | V | 112<br>124 | | | 3.0 |
| 4.0 | | | | D | V | 140+<br>140+ | | | 4.0 |
| | | | | D | V | 140+<br>140+ | | | 5.0 |
| | Very stiff dark brown silty CLAY with partings of orange and brown silt and fine sand. | 4.5 | | D | V | 140+<br>140+ | | | 6.0 |
| | | | | D | | | | | 7.0 |
| | | | | D | | | | | 8.0 |
| 8.5 | | | | D | | | | | 9.0 |
| | Very stiff dark grey silty CLAY. | 1.5 | | | | | | | |
| 10.0 | Borehole ends at 10.0m | | | D | V | 140+<br>140+ | | | 10.0 |

Remarks: Borehole dry & open on completion.

Key: D : Disturbed Sample M: Penetration Test by Mackintosh Probe W: Water Sample V: Vane Test