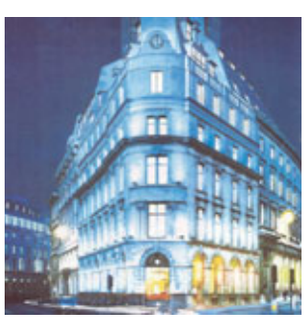
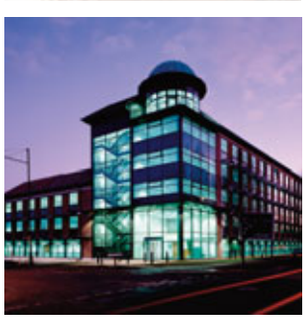
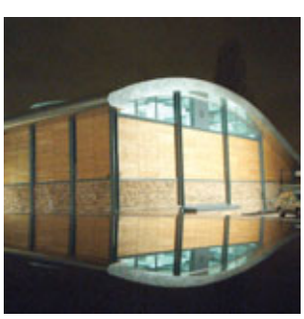
SINCLAIRJOHNSTON

CONSULTING CIVIL AND STRUCTURAL ENGINEERS







STRUCTURAL ENGINEER'S REPORT IN SUPPORT OF THE PLANNING APPLICATION FOR THE CONSTRUCTION OF A NEW BASEMENT AT:

RADLETT HOUSE
LONDON
NW8 6 BT

Thomas Musson BEng CEng MIStructE
Sinclair Johnston & Partners Limited
93 Great Suffolk Street
London
SE1 0BX
Tel: 020 7593 1900
Fax: 020 7593 1910
E-mail: tmusson@sinclairjohnston.co.uk

7641/TM/Rev B **AUGUST, 2011**

I N D E X

1.0 INTRODUCTION

2.0 STRUCTURAL DESCRIPTION OF THE EXISTING PROPERTY

3.0 THE SITE AND HYDROLOGY

4.0 PROPOSED STRUCTURAL WORK

5.0 CONSTRUCTION METHODS

6.0 BOUNDARY MATTERS

7.0 CONCLUSIONS

APPENDICES

A. STRUCTURAL SKETCHES

B. STRUCTURAL CONSTRUCTION SEQUENCE

C. COMPANY ACCREDITATION

RADLETT HOUSE, NW8

1.0 INTRODUCTION

1.1 This structural report has been prepared to support the planning application for the construction of a new basement extension beneath the existing property and extending under the garden at Radlett House, NW8. The report outlines the structural design philosophy and the anticipated construction methodology for the proposals. It presents structural information and interpretation regarding the existing building, the site, the ground conditions and the boundary aspects in relation to the new development.

1.2 This report forms part of a wider framework of reports intended to satisfy Camden Planning Policy DP27 Basements and Lightwells. It is also intended to satisfy the requirement for a Basement Impact Assessment (BIA) as described in Camden Planning Guidance CPG4 for land stability.

1.3 For information relating to the Basement Impact Assessment for surface flow and flooding and subterranean (groundwater) reference is to be made to the following reports produced by Potamus Consultings :-

- Drainage Assessment 0034/LH/09-2011-0030 dated September 2011
- Hydrogeological Risk Assessment 0034/LH/09-2011/0029 dated September 2011

1.4 This report is to be read in conjunction with all Architect's drawings and reports submitted with the Planning Application.

1.5 Information relating to the ground conditions presented in this report is taken from the site investigation undertaken for the proposed Radlett House pool house agreed under planning application reference 2010/6316/P.

2.0 STRUCTURAL DESCRIPTION OF THE EXISTING PROPERTY

2.1 The existing property comprises a three storey, detached residential property arranged over ground and first floors with the second floor within the pitched roof.

2.2 The property was built in 2007. The structure comprises load bearing masonry walls with timber suspended upper second floor and a suspended beam and block floor at ground and first floor levels. The roof is constructed in timber with isolated steel members.

2.3 The existing building is supported on a combination of piled foundations and deep mass concrete footings.

2.4 The property has a garden to the front and rear. The garden is bounded by masonry walls and fencing. The site is generally level.

3.0 THE SITE AND HYDROLOGY

3.1 Radlett House is located at the end of Radlett Place, NW8, and is located in the Borough of Camden and sits within the Elsworthy Conservation Area.

3.2 The site is bounded to the north by Primrose Hill park, to the east by Radlett Place and 1 Radlett Place and to the south and west by properties fronting Avenue Road.

3.3 A site investigation has been undertaken for the proposed pool house, agreed under planning application reference 2010/6316/P. The ground profile comprises a small depth of made ground overlying London Clay to depth.

3.4 The underlying London Clay acts as an impermeable barrier restricting the downward flow of shallow groundwater. There should, therefore, be no need for dewatering or similar ground water control measure. The shallow clay can result in some perched groundwater within the shallow depth of made ground. From experience gained from other nearby developments this perched groundwater should not present any undue problems in relation to the proposals.

3.5 The site is situated within the Environment Agency's Flood Zone 1. The site is therefore at little or no risk from fluvial flooding. The site is also defined as being at negligible risk of groundwater flooding.

3.6 The site is not located within a radon affected area.

3.7 As confirmed by the British Geological Survey "slope instability problems are unlikely to be present. No special actions are required to avoid problems due to landslides". A site walk over has confirmed that there are no significant slopes on or adjacent to the site.

3.8 As stated in Potamus' hydrogeological risk assessment the site is "situated on unproductive strata comprising low permeability stratum with negligible significance for water supply or river base flow."

3.9 An historic culvert runs from south to north across the site. As discussed in Potamus' hyrogeological risk assessment it is believed that this culvert once ran from the Serpentine, in Hyde Park, onto Kensington Gardens and Saint Ange's Well. However, it is now unlikely to be in use and, if present, silted up or dry. Further investigations are to be undertaken to ascertain the whether the culver is still present and if so its location, invert levels and condition.

4.0 PROPOSED STRUCTURAL WORK

4.1 The structural proposals comprise the construction of new basement extension, with part sub-basement, under the existing house and extending into the front garden.

4.2 Drawings showing the proposed basement structure are included in Appendix A.

4.3 The existing building is to be retained during construction. This will be supported on reinforced concrete underpinning to allow the basement to be excavated.

4.4 The basement within the garden is to be formed using a reinforced concrete sub-structure. A contiguous bored piled wall will be used to retain the earth in the temporary case.

4.5 The basement is to be designed in accordance with BS 8102:2009 'Code of practice for protection of below ground structures against water from the ground'. Lateral water pressures and flotation uplift pressures due to ground water are to be calculated on the finding of the site investigation undertaken for the proposed pool house agreed under planning application 2010/6316/P. The ground slab is to be designed to resist the hydrostatic flotation forces. Tension piles are to be provided in the two storey basement element.

4.6 The proposed deepest basement level is approximately 9.0m below existing ground level. Therefore, the resulting removal of the overburden due to the excavation will result in heave of the underlying clay. These heave forces are to be resisted by the deep ground bearing rafts and the tension piles to the two storey basement element.

4.7 The ground floor slab to the basement within the garden is to be designed to withstand the loadings imposed by an intensive green roof typical of a landscaped residential garden.

4.8 The above structural proposals are proposed to ensure that the structural stability of the existing building, neighbouring properties and surrounding land is maintained during and post construction.

5.0 CONSTRUCTION METHODS

5.1 Traditional, well established construction techniques will be used throughout.

5.2 The anticipated sequence of works is presented in Appendix B.

5.3 Piling is to be undertaken using rotary bored techniques to reduce vibration and noise issues. If required a restricted access piling rig would be used to allow piling to be constructed adjacent to site boundaries and the existing property.

5.4 Underpinning would be constructed in reinforced concrete cast in short 900mm bays in a traditional 1,3,5,2,4 sequence. Thus ensuring the stability and integrity of the existing walls.

5.5 The proposals require the excavation of a single storey basement with sub-basement. This will require spoil being transported off site to a licensed landfill. Wagons would park on site and be loaded by means of mechanical excavators.

5.6 Delivery of concrete will be via road. Concrete trucks would park within an onsite loading/unloading bay and the concrete pumped or skipped to the required location on site.

5.7 Should a crane be required to serve the basement during construction a luffing jib crane would be positioned so as to provide adequate radius position for unloading and distributing construction materials across the site. This type of crane would avoid the 'oversail' of the site boundaries.

5.8 A strict traffic management system would be adopted to cover all aspects of vehicle and pedestrian movements to and from site. Vehicle movements would be strictly planned and coordinated to ensure that congestion to the surrounding highways is not aggravated. All site traffic would be spray cleaned prior to leaving the site, in accordance with the local Highways standard requirements.

5.9 During detailed design due regard is to be given to minimising site waste through design for reuse and recovery, design for off-site construction, design for material

optimisation, design for waste efficient procurement and design for deconstruction and flexibility.

5.10 The Contractor is to manage construction waste in accordance with 'The Site Waste Management Plans Regulations 2008' and other relevant legislation. As such the Client/Contractor will be required to provide a site waste management plan identifying how waste will be managed and reduced during construction.

5.11 All work is to be undertaken by a competent Contractor with experience in this form of construction and working on restrict sites. As required by Camden CPG4 all construction processes are to be in accordance with the Considerate Constructors Scheme standards.

6 BOUNDARY MATTERS

6.1 As the works involve excavation close to the site boundary lines the works will be subject to the Party Wall etc., Act 1996 will be required.

6.2 The proposals comprise the excavation for a single storey basement with part sub-basement. The reinforced concrete underpinning, the bored piled embedded wall and permanent reinforced concrete box are to be designed to resist all lateral earth, surcharge and ground water pressures and are to be sufficiently stiff to ensure lateral deflections are kept within well defined and acceptable limits. The proposed form of construction is well established and has been used successfully on many similar developments in similar ground conditions.

6.3 During construction suitably designed lateral temporary waling and propping will be installed to support the temporary works piled walls and restrict ground movements.

6.4 Trial pits will be excavated prior to beginning the works to confirm all existing party wall foundation details and arrangements.

7 CONCLUSIONS

7.1 It is proposed to construct a new single storey basement with sub-basement under the existing property and extending into the front garden at Radlett House, NW8. The sub-structure is to be a combination of reinforced concrete underpinning to the existing property and a bored concrete piled wall with a reinforced concrete box to the basement within the garden.

7.2 The structural proposals will be executed using well established construction techniques that have been used successfully on many similar developments in similar ground conditions. The method of construction has been chosen to ensure that the structural stability of the existing building, neighbouring properties and surrounding land is maintained during and post construction.

7.3 The permanent structure is to be designed to resist all lateral earth, surcharge and hydrostatic loads to ensure that ground movements are limited to acceptable values and to mitigate against the risk of damage to nearby properties. Similarly the bored piled wall is to be designed and propped during construction to minimise lateral movements in the temporary case.

7.4 The location, geology and topography of the site and surrounding area are such that slope instability problems are unlikely to be present. Therefore, no special actions are required to avoid problems due to landslides.

7.5 A proposed construction sequence is provided in Appendix B. This shows that the works can proceed in a safe and logical manner. An onsite loading/unloading bay is to be formed to allow site traffic to park directly on site; thus keeping the private access road clear.

7.6 The design and works will be developed and undertaken in accordance with the Building Regulations, Party Wall ect,. Act 1996, CDM Regulations 2007 and all other H&S legislation.

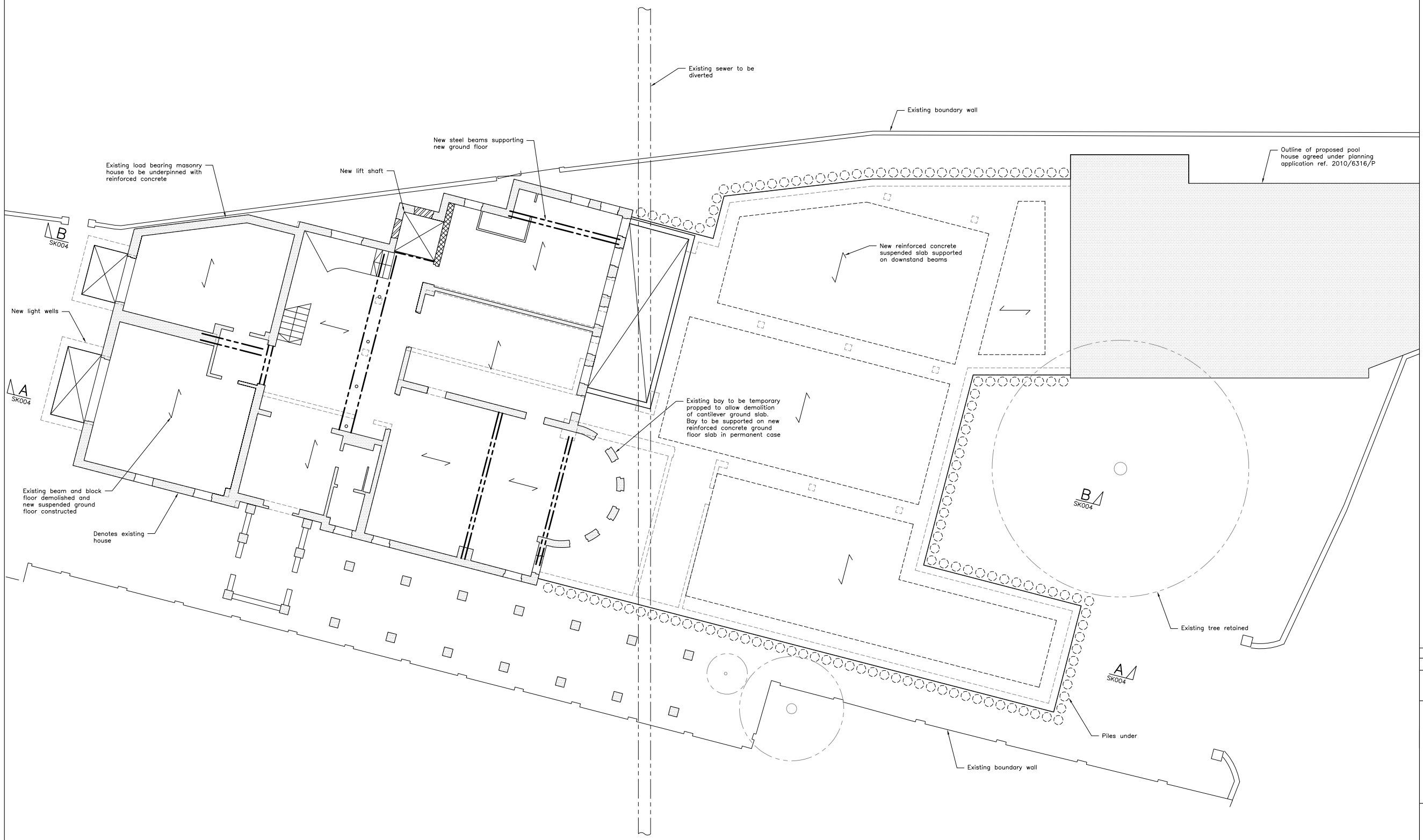
7.7 The proposed works are to be executed by a competent Contractor with experience in the chosen form of construction and working on restricted sites. As required by Camden CPG4 all construction processes are to be in accordance with the Considerate Constructors Scheme standards.

THOMAS MUSSON BEng CEng MIStructE

RADLETT HOUSE, NW8

APPENDIX A

STRUCTURAL SKETCHES



NOTES:

1. All structural engineering drawings are to be read with the specification and with all relevant Architect's and Service Engineer's drawings and specifications.
2. Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to intended scale this bar should be 50mm long @ A1 or 25mm long @ A3:
3. All dimensions are in millimetres and levels in metres.

Rev	Date	Issued	Amendment
–	30.08.11	TJM	Issued for inclusion in the planning report.

Status *PLANNING*

SINCLAIRJOHNSTON

Consulting Civil & Structural Engineers

93 Great Suffolk Street
London SE1 0BX
T: 020 7593 1900
F: 020 7593 1910
www.sinclairjohnston.co.uk

RADLETT HOUSE, NW8

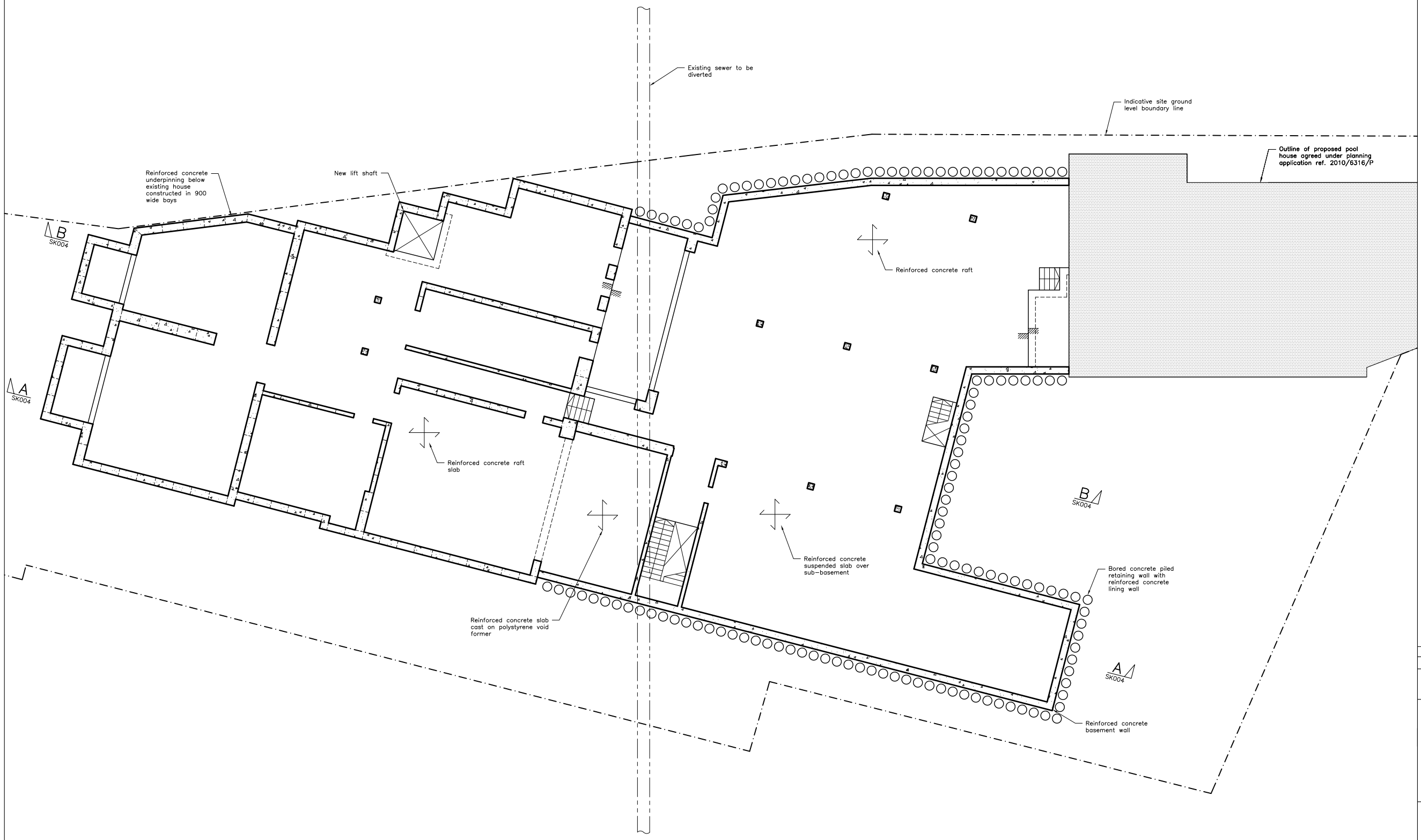
GROUND FLOOR PLAN

Drawn T Musson

Scale 1:100 at A1

Drawing No. 7641/SK001

Rev –



NOTES:

1. All structural engineering drawings are to be read with the specification and with all relevant Architect's and Service Engineer's drawings and specifications.
2. Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to intended scale this bar should be 50mm long @ A1 or 25mm long @ A3:
3. All dimensions are in millimetres and levels in metres.

Rev	Date	Issued	Amendment
–	30.08.11	TJM	Issued for inclusion in the planning report.

Status: *PLANNING*

SINCLAIRJOHNSTON

Consulting Civil & Structural Engineers

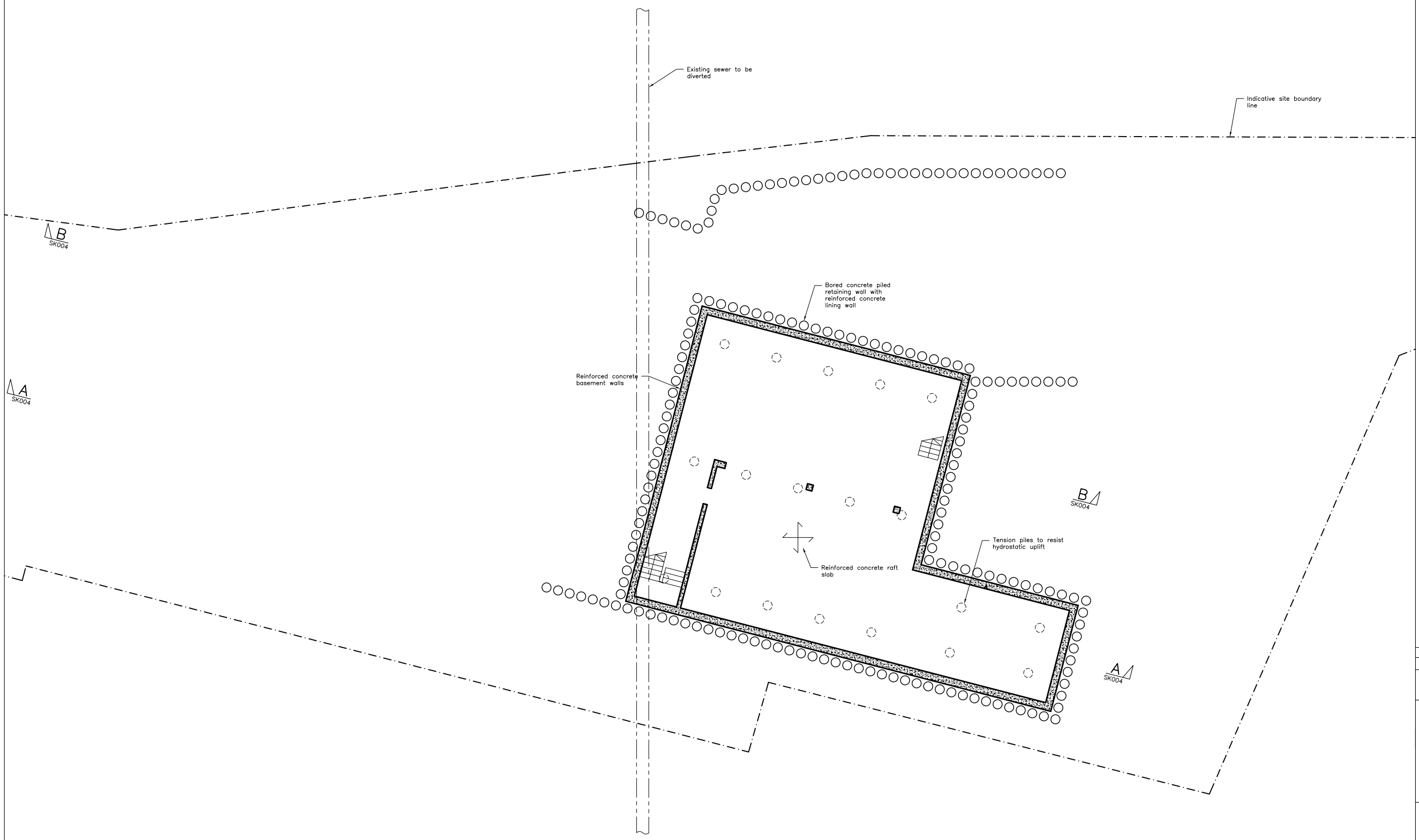
93 Great Suffolk Street
London SE1 0BX
T: 020 7593 1900
F: 020 7593 1910
www.sinclairjohnston.co.uk

RADLETT HOUSE, NW8

BASEMENT PLAN

Drawn T Musson | Scale 1:100 at A1

Drawing No. 7641/SK002 | Rev –



NOTES:

1. All structural engineering drawings are to be read with the specification and with all relevant Architect's and Service Engineer's drawings and specifications.
2. Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to intended scale this bar should be 50mm long @ A1 or 25mm long @ A3:
3. All dimensions are in millimetres and levels in metres.

Rev	Date	Issued	Amendment
–	30.08.11	TJM	Issued for inclusion in the planning report.

Status *PLANNING*

SINCLAIRJOHNSTON

Consulting Civil & Structural Engineers

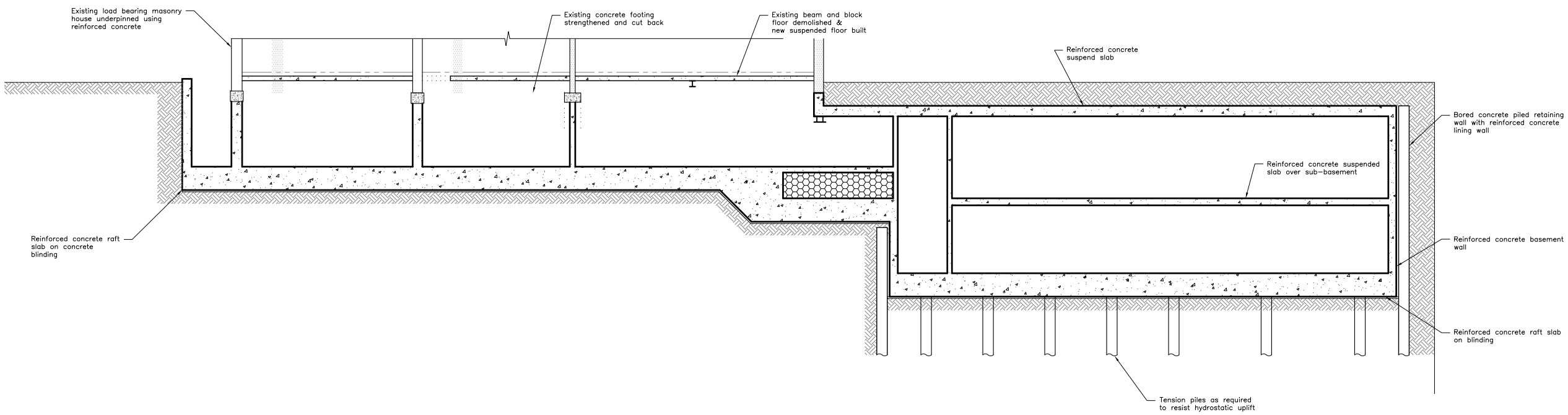
93 Great Suffolk Street
London SE1 0BX
T: 020 7593 1900
F: 020 7593 1910
www.sinclairjohnston.co.uk

RADLETT HOUSE, NW8

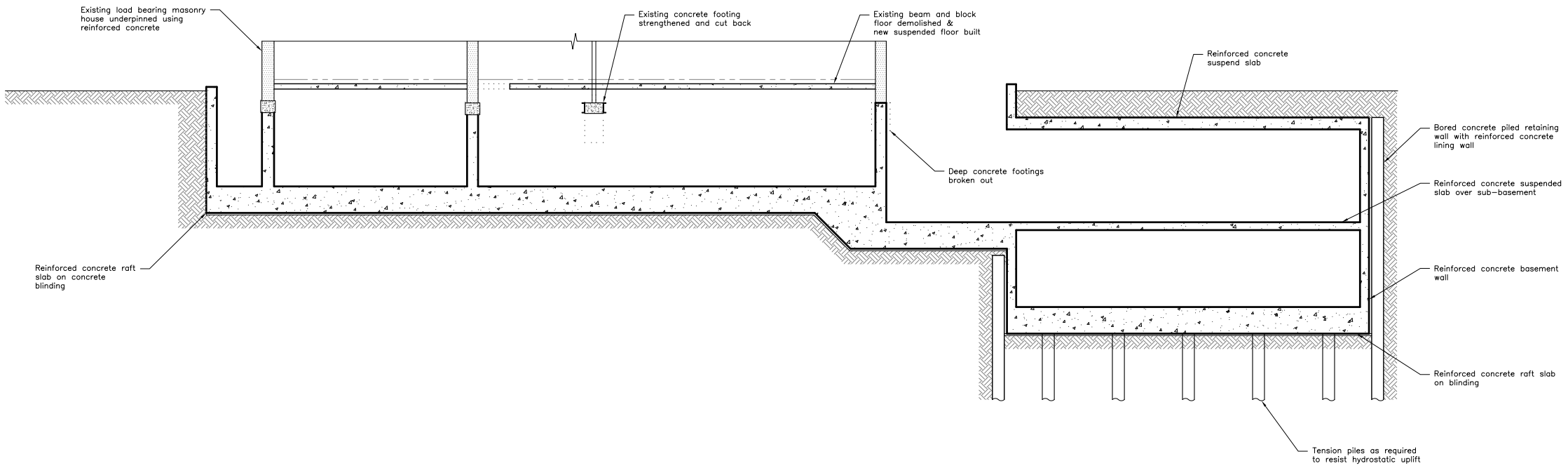
SUB BASMENT PLAN

Drawn T Musson | Scale 1:100 at A1

Drawing No. 7641/SK003 | Rev –



SECTION A–A



SECTION B–B

NOTES:

1. All structural engineering drawings are to be read with the specification and with all relevant Architect's and Service Engineer's drawings and specifications.
2. Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to intended scale this bar should be 50mm long @ A1 or 25mm long @ A3:
3. All dimensions are in millimetres and levels in metres.

Rev	Date	Issued	Amendment
–	30.08.11	TJM	Issued for inclusion in the planning report.

Status *PLANNING*

SINCLAIRJOHNSTON

Consulting Civil & Structural Engineers

93 Great Suffolk Street
London SE1 0BX
T: 020 7593 1900
F: 020 7593 1910
www.sinclairjohnston.co.uk

RADLETT HOUSE, NW8

FULL BUILDING SECTIONS SECTION A–A & B–B

Drawn T Musson | Scale 1:100 at A1

Drawing No. 7641/SK004 | Rev –

RADLETT HOUSE, NW8

APPENDIX B

ANTICIPATED CONSTRUCTION SEQUENCE

RADLETT HOUSE, NW8

ANTICIPATED CONSTRUCTION SEQUNCE

This document is to be read in conjunction with Sinclair Johnston & Partners 'Structural Engineer's Report in Support of the Planning Application' dated August 2011.

1.0 Contractor to take possession of the site and set up site welfare facilities and site offices.

2.0 Contractor to demolish all non-load bearing ground floor partitions and ground floor suspended beam and block floor.

3.0 Contractor to install piling mat and install piling.

4.0 Contractor to construct underpinning to existing house. Underpinning to be constructed in a traditional 1,3,5,4,2 sequence, with bays backfilled as work progresses. Contractor to provide adequate shoring to excavations. #

5.0 Contractor to prop existing bay window

6.0 Once the underpinning is complete the Contractor is to excavate basement under the existing house and construct the basement raft slab.

7.0 Contractor to excavate basement within the garden. Contractor to install walling beams and propping to piling as excavation progresses. Contractor to construct reinforced concrete lining wall as excavation progresses.

8.0 Once excavation is complete construct basement raft slabs and reinforced concrete basement structure.

RADLETT HOUSE, NW8

APPENDIX C

COMPANY ACCREDITATION

SINCLAIRJOHNSTON

Sinclair Johnston & Partners Limited

Consulting Civil and Structural Engineers.

The Practice was established in 1983 to provide high quality, independent, professional advice on building structures.

Based in London we provide services on projects throughout the British Isles. specialising in complex projects requiring innovation and a high degree of investigation, understanding and design.

The philosophy of the Practice is one of teamwork providing 'Excellence in Design.'

Our portfolio includes a diverse range of projects from new build and alterations to historic buildings. New build projects include retail developments, offices, schools, hospitals, doctor's surgeries and exclusive residential developments. Specialist structural engineering advice is provided on the appraisal, repair and alterations of historic buildings and Scheduled Ancient Monuments.

Sinclair Johnston & Partners Limited
Consulting Civil & Structural Engineers
93 Great Suffolk Street
London
SE1 0BX
Tel. 020 7593 1900
Fax. 020 7593 1910
Web. www.sinclairjohnston.co.uk

SINCLAIRJOHNSTON

Pile Foundation, Hampton Hill

William Ellis School, Hampstead

Galvanised Steel Hanger Connection
Wimbledon Bridge, Wimbledon

Our services include:

- Conservation Engineering
- Foundation Engineering
- Reinforced Concrete Design
- Steelwork Design
- Masonry Design
- Timber Engineering
- Investigation and Reports
- Litigation Support
- Acquisition and Investment Inspections and Reports
- Development Monitoring and Advice

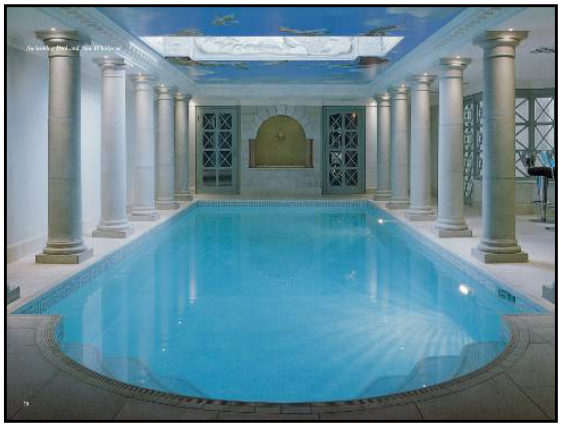
.

Sinclair Johnston & Partners Limited
Consulting Civil & Structural Engineers
93 Great Suffolk Street
London
SE1 0BX
Tel. 020 7593 1900
Fax. 020 7593 1910
Web. www.sinclairjohnston.co.uk

SINCLAIRJOHNSTON

Basements

Smith Street, SW3: Two storey basement under existing house on very tightly constrained site with neighbouring 6 storey buildings.



Tregunter Road, SW10: Project to link house and lodge into single dwelling by adding basement sports complex under garden between the two.

Norland Square, W11: contentious planning application for large basement extending under and beyond this Grade II listed house approved after input from Sinclair Johnston & Partners Ltd mitigated neighbours' concerns regarding adjoining houses and nearby large trees.

Sinclair Johnston & Partners are advising on a large number of residential and commercial scale basement projects. These range from simple underground extensions within the footprint of the existing structure to basements several storeys deep and extending beyond the building itself and under the surrounding grounds, possibly linking several buildings together.

Our work in this field falls into two main areas:

- Structural design and method statements for underpinning, temporary propping and construction.
- Structural reports in support of planning applications.

In any project of this nature, thorough investigation of site conditions is crucial, especially as many projects around London occur in tightly constrained sites with large buildings either side and, in some places, tunnels for the London Underground below. Our long term experience in this work enables us to establish the structural situation early in the design process and advise accordingly.

Sinclair Johnston is a member of the Pyramus & Thisbe Club and is able to act as party wall surveyor in these projects.

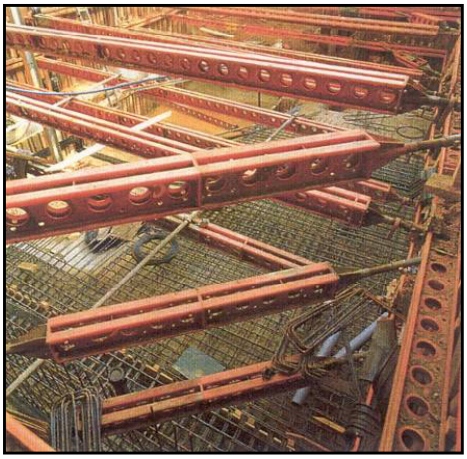
Client: **Miscellaneous.**

Sinclair Johnston & Partners Limited
Consulting Civil & Structural Engineers
93 Great Suffolk Street
London
SE1 0BX
Tel. 020 7593 1900
Fax. 020 7593 1910
Web. www.sinclairjohnston.co.uk

project sheet

SINCLAIR JOHNSTON

Excavations



Propping to temporary retaining wall.

King post construction and temporary propping

Contiguous bored pile retaining wall and capping beam.

There are several methods of providing secure temporary propping to excavations. Usual practice is for the final details and procedures to be worked up by the selected contractor into a method statement which is agreed by the structural engineer.

Raking struts may be of heavy timber or mild steel sections or, more usually, of purpose-made, heavy duty props by Mabey or RMD. Selection of propping method depends on soil conditions, depth of proposed excavation, surcharge from adjoining buildings and access for piling rigs and other heavy equipment.

Sinclair Johnston & Partners Limited
Consulting Civil & Structural Engineers
93 Great Suffolk Street
London
SE1 0BX
Tel. 020 7593 1900
Fax. 020 7593 1910
Web. www.sinclairjohnston.co.uk

Sinclair Johnston
and Partners Limited

93 Great Suffolk Street
London
SE1 0BX

t. 020 7593 1900
f. 020 7593 1910
email@sinclairjohnston.co.uk
www.sinclairjohnston.co.uk