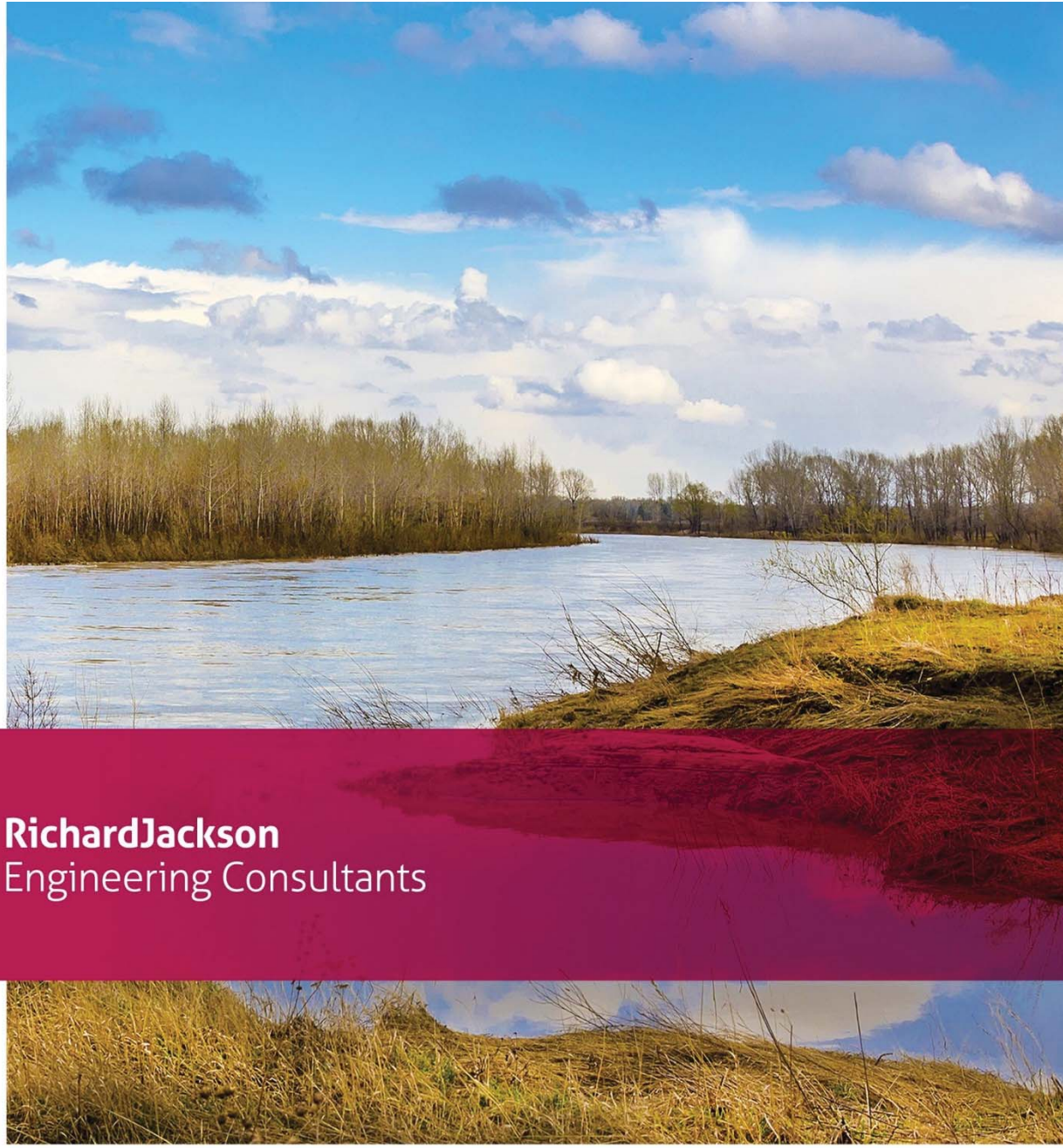

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# SITE SPECIFIC FLOOD RISK ASSESSMENT

4 Keats Grove, London, NW3 2RT

Marcus Piggott

November 2016

Project no: 51659

RichardJackson
Engineering Consultants

# Document Review Sheet: -

Document prepared by: - *Zach Collins*
on behalf of Richard Jackson Ltd

Date: - 2nd December 2016

Document checked by: - *Jag Manku*
on behalf of Richard Jackson Ltd

Date: - 2nd December 2016

Document Approved by: - *Jag Manku*
on behalf of Richard Jackson Ltd

Date: - 2nd December 2016

## Document Status

| DRAFT | FINAL |
|---|---|
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## Revision Status

| Issue | Date | Description | Prepared | Checked | Approved |
|---|---|---|---|---|---|
| - | 02/12/16 | Issue for team comment. | ZC | JM | JM |
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# Contents:-



**Appendices**

## 1. Development Description and Location

1.1. Richard Jackson Ltd has been commissioned by Marcus Piggott to undertake a Flood Risk Assessment (FRA) in accordance with the technical guidance to the National Planning Policy Framework (NPPF) to accompany a Basement Impact Assessment (BIA) for the proposed basement alterations to an existing annex building at 4 Keats Grove, London, NW3 2RT.

1.2. The property is located at Ordnance Survey grid reference 526998E, 185662N. A site location plan is shown in Appendix A.

1.3. The alterations to the existing annex building, includes the construction of a new swimming pool within the basement. The existing and proposed architectural drawings are contained within Appendix B.

1.4. The property's ground floor threshold level is approximately 18.84m above Ordnance Datum (AOD). Ground levels across the property's external areas range from 20.89m AOD at the rear of the back garden, to 18.63m AOD along the property's rear elevation. A topographical survey is contained within Appendix C.

1.5. Table 2 of the NPPF classifies residential properties as "more vulnerable" development.

1.6. As the alterations include the deepening of an existing basement, it has been deemed by the local planning authority that a BIA and FRA are required, to ensure that flood risk to the property is adequately managed, and that it does not increase flood risk elsewhere.

## 2. Definition of the Flood Hazard

2.1. There are three main sources of flooding which need to be considered:-

i. Tidal or fluvial flooding from rivers or the sea

ii. Ground water

iii. Surface water and water from sewers or other infrastructure.

2.2. There are no recorded instances of fluvial or tidal flooding at this location. The development site lies wholly within Flood Zone 1 (low probability zone), which is the area of "very low" flood risk. See Appendix D.

2.3. Groundwater flooding occurs when the water table rises. As such, groundwater flooding can happen some time after a rainfall event and can last a considerable length of time.

2.4. Extracts from the Ground Investigation report for the site are provided within Appendix E. Following review of this information, the risk of flooding from groundwater is taken to be low.

2.5. The existing above basement ground floor level is set above external levels, which assists in the safeguarding against any overland flood events, of which there have been no reported incidents either on or near to the site within the recent past, see Appendix D.

2.6. Surface water flooding occurs when the drainage capacity of the network is exceeded or fails. This can be due to the design capacity of the network being less than the return period of the rainfall event.

2.7. The Environment Agency surface water mapping shows this area to be at "very low" risk of surface water flooding, see Appendix D.

2.8. As well as the three main sources of flooding outlined above, there is also potential for reservoir failure. The Environment Agency flood mapping service also confirms the site to be at "very low" risk of flooding from reservoir failure, see Appendix D.

2.9. The North London Strategic Flood Risk Assessment (SFRA) also considers the London Borough of Camden to be at generally low risk of fluvial and ground water flooding, whilst recognising that further research is required to define the level of flood risk posed by surface water, see Appendix F.

## 3. Probability of Flooding

3.1. The Environment Agency Indicative Flood Map (Appendix D) shows that the property is in flood zone 1. This indicates that there is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year.

3.2. The probability of surface water flooding at this site is recorded by the Environment Agency mapping as very low (Appendix D).

3.3. As the basement works are not increasing the footprint of the existing building or impermeable area, surface water flood risk to the surrounding areas and watercourses will not be increased.

3.4. Reservoir flooding is highly unlikely due to the Reservoirs Act 1975 and the Flood and Water Management Act 2010, which provide a legal framework to ensure that the failure of large raised reservoirs does not occur.

## 4. Climate Change

4.1. Climate change is predicted to increase the frequency and intensity of rainfall events. This in turn will make surface water flooding more likely unless the public sewer system is upgraded in the future.

## 5. Detailed Development Proposals

5.1. Plans for the existing layout and the proposed extension can be seen in appendix B. The design of the basement includes the following flood mitigation measures:

- Provision of an internal staircase to provide access from the basement to ground floor level.

## 6. Flood Risk Management Measures

6.1. It is suggested that the deepened swimming pool construction works should be tanked to reduce the risk of groundwater ingress.

6.2. The existing annex building access and window positions are sufficiently protected from any potential minor overland surface water flooding by steps and low level walling respectively. Furthermore, the topography of the front garden is such that any flows would be directed away from the annex building.

## 7. Off Site Impact

7.1. The footprint of the annex building, and therefore the impermeable area, will not be increased. As such, the annex building basement works will not increase the risk of surface water flooding offsite or onsite.

7.2. The increase of the probability of groundwater flooding to other properties is minimal as the property is not within a groundwater protection zone and the basement is less than 50m$^2$.

## 8. Residual Risks

8.1. Should the existing receiving Thames Water network be overwhelmed during an exceedence event, the existing site levels are such that water shall be directed away from annex building threshold and windows.

## 9. Conclusions

9.1. The development is wholly within the low probability flood zone 1 and as defined by the Technical Guidance to the National Planning Policy Framework this development is classified as appropriate.

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**Appendix A**

Site Location Plan


LANE
DOWNSHIRE HILL
PW
KEATS GROVE
Mus
Liby
HEATH
HURST ROAD
SOUTH END
Ct

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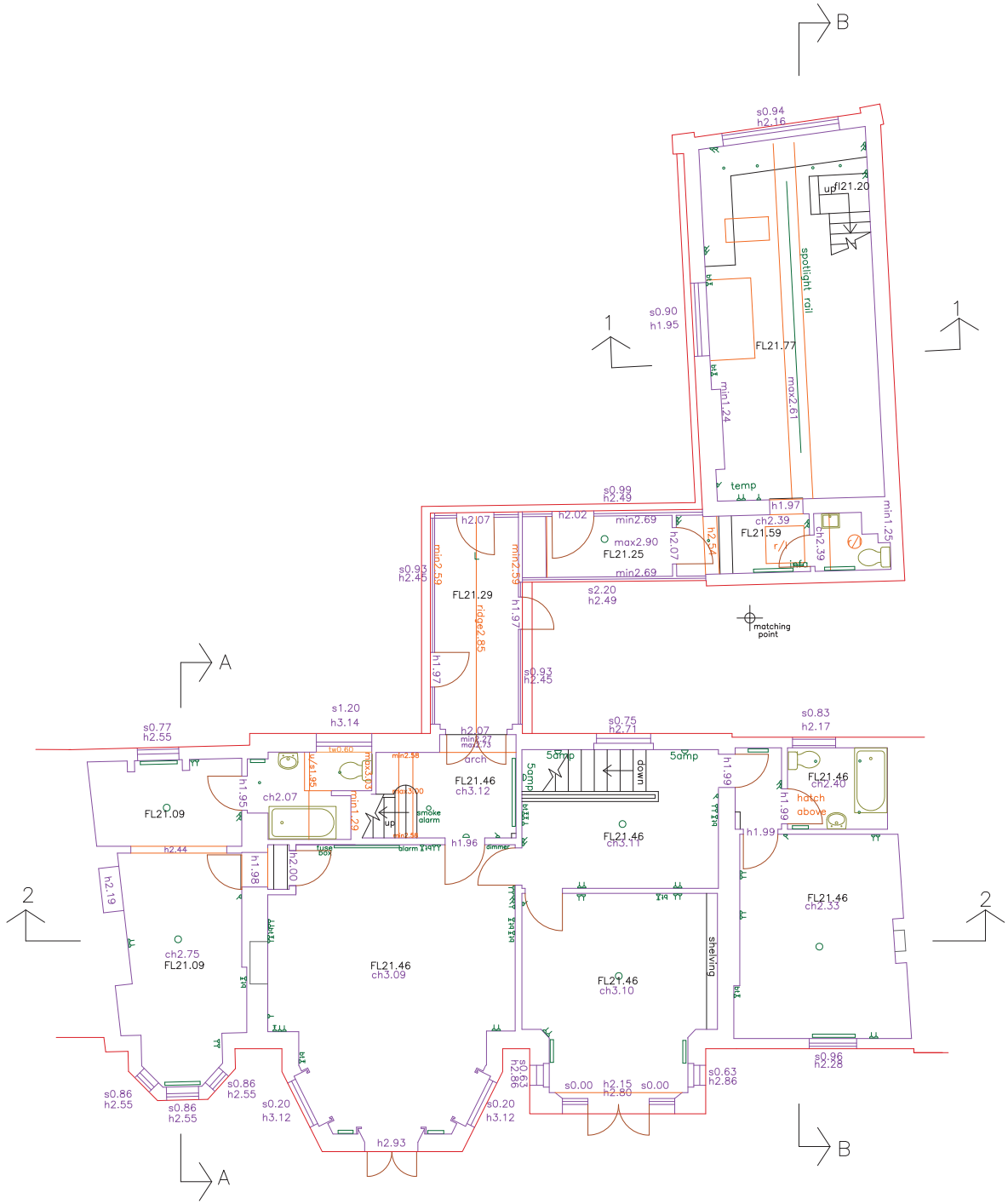
**Appendix B**

Development Site Plans




GROUND FLOOR PLAN

DO NOT SCALE FROM THIS DRAWING

DRAWING TO BE READ IN CONJUNCTION WITH ALL OTHER ARCHITECTS AND ENGINEER'S CONTRACT DRAWING & SPECIFICATIONS.
ANY DISCREPANCIES MUST BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY.
THE CONTRACTOR MUST VERIFY ALL DIMENSIONS BY SITE MEASUREMENT BEFORE ORDERING MATERIALS OR MANUFACTURING COMPONENTS.
SUBSTITUTE MATERIALS & PRODUCTS TO THOSE NAMED WILL BE ACCEPTABLE IF PROVEN TO BE OF EQUAL OR HIGHER PERFORMANCE AND NOT IN CONFLICT WITH OTHER ELEMENTS.

NOTES

REV DATE DESCRIPTION

FOR INFORMATION

JOB TITLE
Keats Grove
Hampstead

DRAWING TITLE
Ground Floor Plan
Survey

| JOB No | DWG No | REV |
|---|---|---|
| 546 | SU02 | - |
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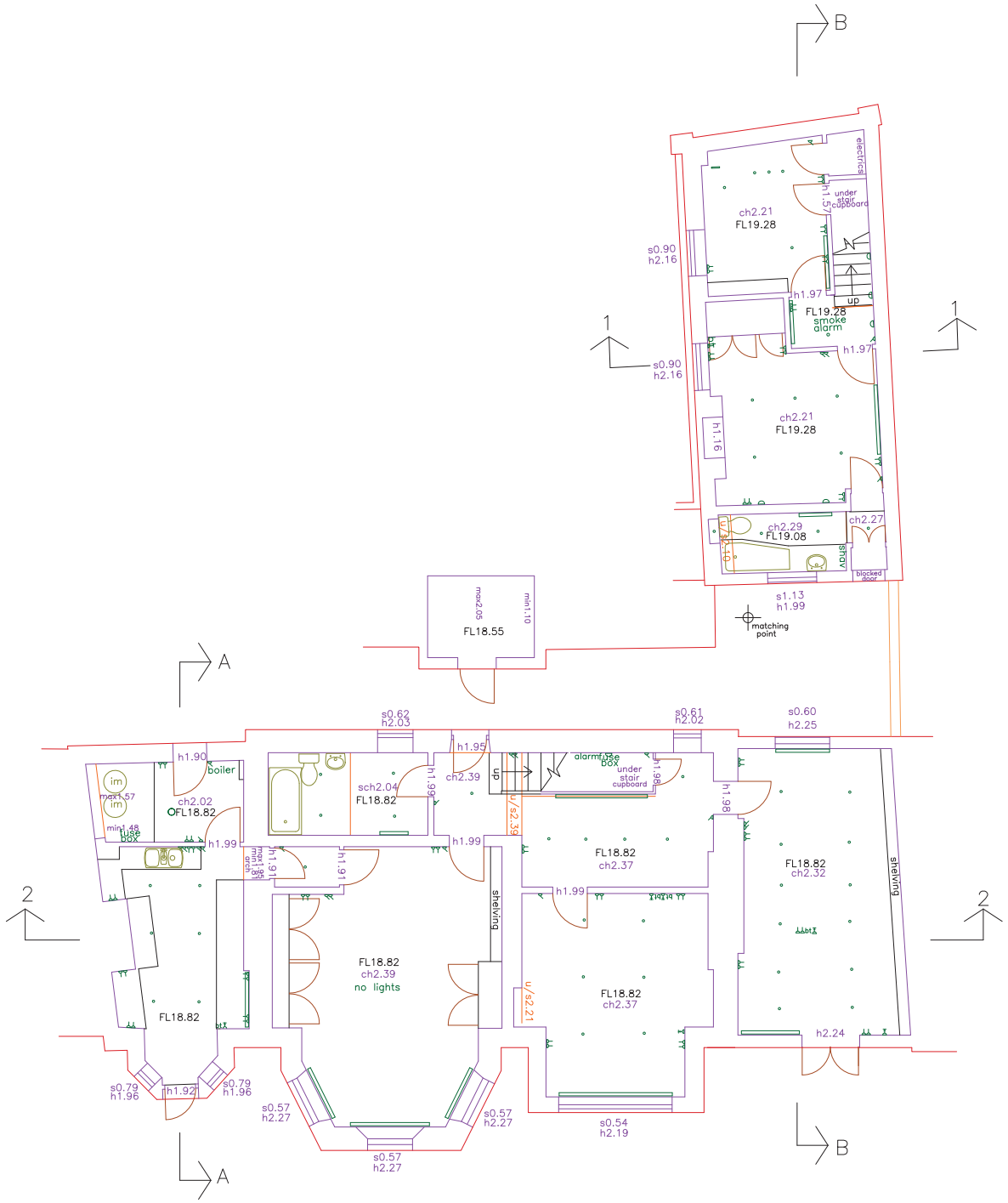
| JMc | 1:50 (1:100@A3) | Oct15 |

RICHARD GRIFFITHS ARCHITECTS
5 Maidstone Mews, 72-76 Borough High Street, London SE1 1GN
T +44(0)20 7357 8788 | F +44(0)20 7403 7887
E admin@rgarchitects.com | www.rgarchitects.com




BASEMENT FLOOR PLAN

DO NOT SCALE FROM THIS DRAWING

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NOTES

REV DATE DESCRIPTION

FOR INFORMATION

JOB TITLE
Keats Grove
Hampstead

DRAWING TITLE
Lower Ground Floor Plan
Survey

| JOB No | DWG No | REV |
|---|---|---|
| 546 | SU01 | - |

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| JMc | 1:50 (1:100@A3) | Oct15 |

RICHARD GRIFFITHS ARCHITECTS

5 Maidstone Mews, 72-76 Borough High Street, London SE1 1GN
T +44(0)20 7357 8788 | F +44(0)20 7403 7887
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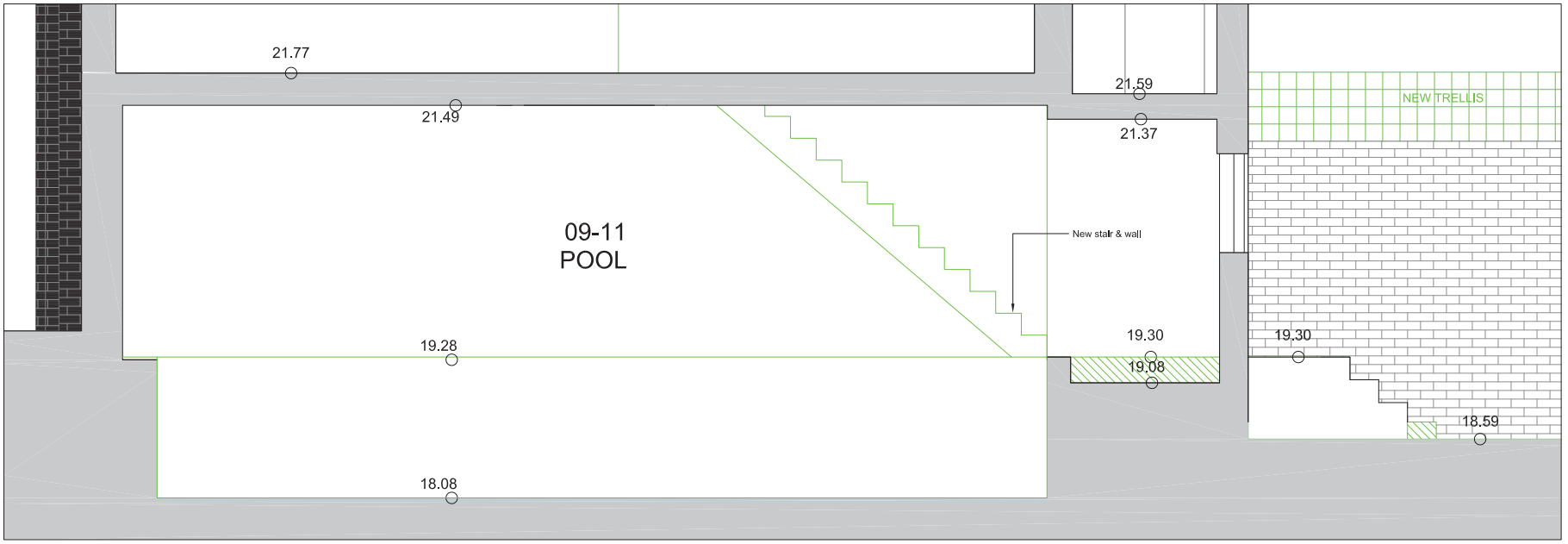


02 A06 PROPOSED POOL - SECTION

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NOTES
KEY:

Existing Wall

Consented New associated with the Application ref: 2014/7932/P

Proposed

| REV | DATE | DESCRIPTION |
|---|---|---|
| A | 20.06.16 | For Planning |

FOR PLANNING

JOB TITLE
Keats Grove
Hampstead

DRAWING TITLE
Plan & Section
Proposed Pool

| JOB No | DWG No | REV |
|---|---|---|
| 546 | A06 | A |
| DRAWN BY | SCALE (AT A1) | DATE |
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5 Maidstone Mews, 72-76 Borough High Street, London SE1 1GN
T +44(0)20 7357 8788 | F +44(0)20 7403 7887
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01 / A07 PROPOSED POOL - SECTION

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FOR PLANNING

JOB TITLE
Keats Grove
Hampstead

DRAWING TITLE
Section
Proposed Pool

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|---|---|---|
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5 Maidstone Mews, 72-76 Borough High Street, London SE1 1GN
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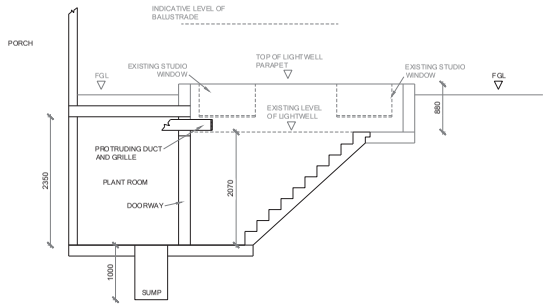


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INDICATIVE SECTION OF PROPOSED SWIMMING POOL PLANT ROOM.
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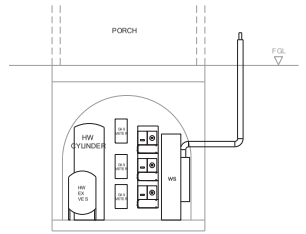


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INDICATIVE ARRANGEMENT IN EXISTING PLANT/METER ROOM.
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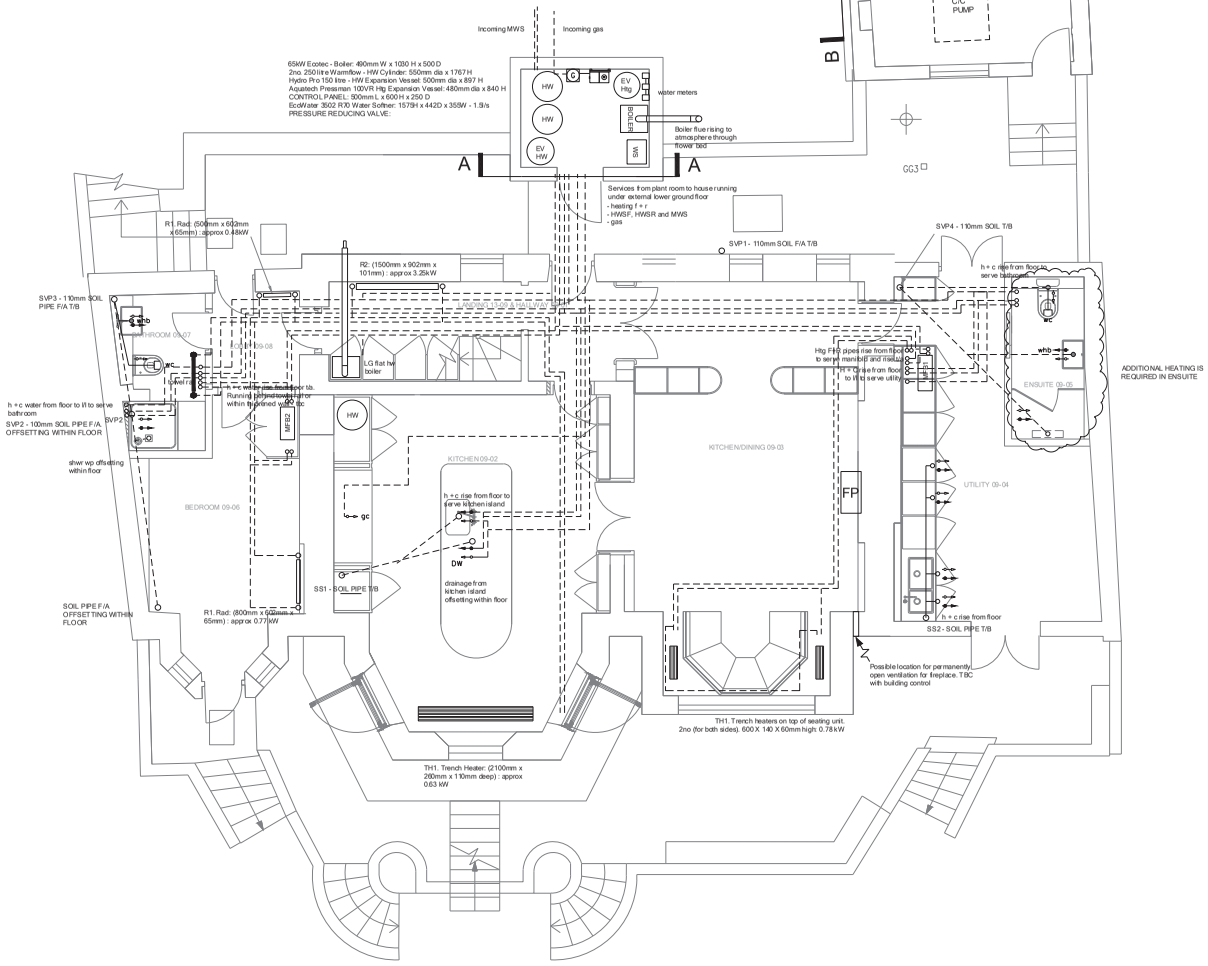


GENERAL LINE TYPES:
——— SERVICE AT LOW LEVEL
— · — SERVICE AT HIGH LEVEL & EXPOSED
— · · — SERVICE AT HIGH LEVEL & CONCEALED
– – – SERVICE BELOW FLOOR & CONCEALED
– ~ – LIGHTING SWITCH LINES ********(IF APPLICABLE)********

GENERAL ABBREVIATIONS:

| | |
|---|---|
| F/A, T/A | FROM ABOVE, TO ABOVE |
| F/B, T/B | FROM BELOW, TO BELOW |
| L/L, H/L | LOW LEVEL, HIGH LEVEL |

ABOVE GROUND DRAINAGE ABBREVIATIONS:

| | |
|---|---|
| AAV | AIR ADMITTANCE VALVE |
| BIG | BACK INLET GULLY |
| BP | BRANCH PIPE |
| CI | CAST IRON |
| FP | FLOAT PIPE |
| G | GULLY |
| LG | LINEAR GULLY |
| SP | SOIL PIPE |
| STP | STAND PIPE |
| SVP | SOIL VENT PIPE |
| VP | VENT PIPE |
| SS | STUB STACK |
| WP | WASTE PIPE |
| RE | RODDING EYE |
| RWO | RAINWATER OUTLET |
| RWP | RAINWATER PIPE |

HOT & COLD WATER ABBREVIATIONS:

| | |
|---|---|
| CWS | COLD WATER SERVICE |
| CWDS | COLD WATER DOWN SERVICE |
| HWS | HOT WATER SERVICE |
| HWSF | HOT WATER SERVICE FLOW |
| HWSR | HOT WATER SERVICE SECONDARY RETURN |
| MWS | MAINS WATER SERVICE |
| PCWS | PRESSURISED COLD WATER SERVICE |
| P/W | PIPEWORK |
| (f) | INDICATES FLOW SIDE OF HEATING DEVICE |

TRENCH HEATER
CONCEALED CONVECTOR HEATER
RADIATOR
FIRE SPRINKLER
HOT WATER POINT
COLD WATER POINT
gc GAS COOKER SUPPLY

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| C | 15/09/16 | GENERAL CHANGES. FOR COMMENT |
| B | 04/07/16 | FOR COMMENT |
| A | 06/06/16 | FOR COMMENT |

SGA Consulting Ltd.
73 Mornington Street
London NW1 7QE
tel. 020 7100 7197
web. www.sgaconsulting.co.uk

Client
MARCUS PIGGOTT

Architect
RICHARD GRIFFITHS ARCHITECTS

Project title
4 KEATS GROVE

Drawing title
LOWER GORUND FLOOR
COMBINED MECHANICAL SERVICES

| Drawn by | Date | Scale (at A1) |
|---|---|---|
| PE | MAY 2016 | 1:50 |

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