BASEMENT IMPACT ASSESSMENT

FOR

PROPOSED BASEMENT WORKS

AT

8A ST CUTHBERTS ROAD
LONDON
NW2 3QL

Project No. P3897

ISSUE 1.2 – ISSUED FOR PLANNING

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DOCUMENT CONTROL SHEET

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APPENDICES

NON-TECHNICAL EXECUTIVE SUMMARY

The proposals for the new build property at 8A St. Cuthberts Road include the construction of a single storey basement. Michael Alexander Ltd have been appointed to prepare a Basement impact Assessment to address the key areas highlighted in the London Borough of Camden Planning Guidance CPG4; the potential impacts in respect of Groundwater, Surface Flow and Flooding, and Ground Stability.

SCREENING

A screening study was carried out in accordance with the flow charts in CPG4.

In respect of Groundwater, it was highlighted that at the time of Screening that the level of any potential water table was unknown.

The screening for Ground Stability highlighted that the proposed foundations would be deeper than that of the adjoining properties, and that the excavation would be within 5m of the public highway. It was also noted that the site is underlain by shrinkable London Clay soils. The impact of ground stability from the removal of trees was also to be considered.

The site was not found to be at risk of surface water flooding. It was noted that since the overall proportion of hard surface/paved external areas will not be changed by the works, the peak run-off to the sewers will not be affected.

SCOPING

As a result of the findings of the Screening study, Soil Investigations were commissioned and the scope of Impact Assessment was defined.

INVESTIGATIONS

Soil investigations including ground water monitoring have been carried out by Jomas Associates – refer their report 'Geotechnical Assessment' reference number P1118J1218 issued November 2017. The investigation comprised window sampling boreholes, installation of standpipes for measurement of groundwater, trial pits and associated geotechnical testing.

The window samples confirmed the presence of London Clay, with groundwater encountered locally in one of the boreholes. Trial pits on existing foundations found these to be of traditional corbelled brickwork type.

IMPACT ASSESSMENT

The groundwater encountered during the investigations was assessed as being 'perched' surface water lying on top of the low permeability clays, rather than the indication of a water table. Therefore since the basement does not extend below the water table it should not cause any adverse Impact in respect of groundwater levels or flows.

Given the observations in respect of differential foundation depths and the proximity of the public highway, detailed consideration of Ground Stability has been made in the Impact Assessment. An approach for construction of the basement has been described, including the temporary propping to ensure ground stability during the works and limiting of ground movements. During the works, precise monitoring will be carried out at regular intervals by a specialist monitoring Contractor to check if the behaviour is in line with the predictions of the Ground Movement Assessment.

SUMMARY

A detailed Basement Impact Assessment has being produced in accordance with the Council's requirements. As for all sites, a number of considerations have been highlighted within the Desk Study Stage of the assessment but these have been addressed by investigation and detailed studies, so that any potential impact of the basement has been effectively mitigated.

1.00 INTRODUCTION

1.01 Michael Alexander Consulting Engineers has been appointed by the building owner to prepare a Basement Impact Assessment Report to support the Planning Application for the proposed new apartment building including a single storey basement at 8A St. Cuthberts Road, London NW2 3QL.

1.02 This document has been prepared by Giovanni Sclavi BEng MSc(Hons) GIPENZ and reviewed by Isaac Hudson MEng MA (Cantab) CEng MIStructE who is a chartered structural engineer. The document has also been reviewed by Roni Savage BEng (Hons) MSc SiLC CGeol MCIWM of Jomas Associates Ltd, a chartered geologist.

1.03 The existing residential property is a detached two storey house with a Gambrel roof. We understand the building was built in the early twentieth century. In 2010 a two storey building, 8B St. Cuthberts Road, was built adjacent, providing separate residential accommodation.

1.04 The existing property is not located within a Conservation Area, and is not Listed.

1.05 The site is bounded by St. Cuthberts Road to the front, 8B St. Cuthberts Road to the left (south-west), Kingscroft Road to the right (north-east) and 2 Kingscroft Road to the rear.

1.06 The proposed works are for the demolition of the existing building to be replaced by a new three storey building with a new single storey basement extending outside the front and side of the new building footprint. This document addresses the specific issues relating to the basement construction, as described in Camden Planning Guidance CPG4.

2.00 BASEMENT PROPOSALS

2.01 The architectural proposal for the basement is shown on the following A.D.A Architectural Design Ltd drawings.

PL/01	SITE PLAN
PL/10	PROPOSED BASEMENT FLOOR PLAN
PL/11	PROPOSED GROUND FLOOR PLAN
PL/12	PROPOSED FIRST FLOOR PLAN
PL/13	PROPOSED SECOND FLOOR PLAN
PL/14	PROPOSED ROOF PLAN
PL/15	PROPOSED FRONT ELEVATION
PL/16	PROPOSED SECTION BB
PL/17	PROPOSED NORTH-EAST ELEVATION
PL/18	PROPOSED SECTION CC
PL/19	PROPOSED REAR ELEVATION
PL/20	PROPOSED SOUTH-WEST ELEVATION
PL/21	PROPOSED SECTIONS DD AND EE

2.02 The structural proposal for the new basement have been developed by Michael Alexander Engineers and shown in the Basement Impact Assessment drawings as shown in Appendix D.

2.03 The details of the existing structure and site boundaries will be subject to detailed exploratory work prior to and during the works on-site.

2.04 The design and construction of the building structure shall be in accordance with current Building Regulations, British Standards, Codes of Practice, Health and Safety requirements and good building practice.

2.05 The details of the existing building are shown on the existing drawings prepared by A.D.A Architectural Design Ltd.

PL/02	EXISTING GROUND FLOOR PLAN
PL/03	EXISTING FIRST FLOOR PLAN
PL/04	EXISTING LOFT FLOOR PLAN
PL/05	EXISTING ROOF PLAN
PL/06	EXISTING FRONT ELEVATION
PL/07	EXISTING REAR ELEVATION
PL/08	EXISTING NORTH-EAST AND SOUTH-WEST SIDE ELEVATIONS
PL/09	EXISTING SECTION AA

3.00 **SUBTERRANEAN (GROUND WATER) FLOW**

3.01 **Stage 1: Screening**

The impact of the proposed development on ground water flows is considered here as outlined in Camden Planning Guidance CPG 4. The references are to the screening chart Figure 1 in CPG4.

3.01.1 GW Q1a *Is the site located directly above an aquifer?*

No. The Camden Geological, Hydrogeological and Hydrological Study (Figure (a)) suggests the site is above an Unproductive strata.

3.01.2 GW Q1b *Will the proposed basement extend beneath the water table surface?*

To be confirmed. Perched groundwater may be found at the interface between Made Ground and the impermeable London Clay. This will be confirmed by investigation works.

3.01.3 GW Q2 *Is the site within 100m of (i) a watercourse, (ii) a well (used or disused) or (iii) a potential spring line?*

No. With reference to the Camden Geological, Hydrogeological and Hydrological Study, to Lost River of London and to the Ordnance Survey Maps (Figures (b), (c) and (d)),

(i) The nearest surface water feature is a pond approximately 750m to the north of the site.

The Hampstead pond chains are located approximately 2800m to the east from the site.
The nearest known 'lost' watercourse is the River Westbourne which ran around 330m to the south-east of the site.

(ii) From the British Geological Society 'Geoindex' the nearest known water well is on Dunster Gardens (approximately 630m south of the site).

(iii) The local geology suggests that the site is not located adjacent to a potential spring line since is not close to a strata boundary.

3.01.4 GW Q3 *Is the site within the catchment of the pond chains of Hampstead Heath?*

No. With reference to the Camden Geological, Hydrogeological and Hydrological Study, the site is not within the catchment of the pond chains on Hampstead, nor the Golder's Hill Chain.

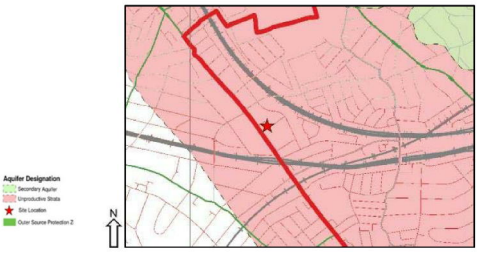


Figure (a)
Aquifer Designation Map
(Extract from Fig 8 of Camden Geological, Hydrogeological and Hydrological Study)

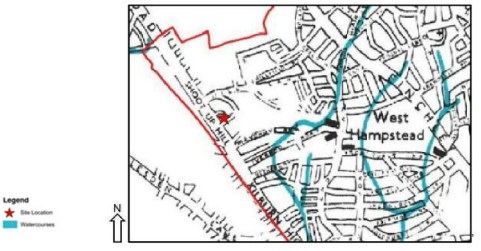


Figure (b)
Watercourses
(Extract from Fig 11 of Camden Geological, Hydrogeological and Hydrological Study -Lost Rivers of London by Barton)

3.01.5 GW Q4 *Will the proposed basement development result in a change in the proportion of hard surface/paved areas?*

No. The footprint of the proposed new basement is greater than the footprint of the existing and new houses; however the site currently almost fully paved. Refer to Appendix A, page A2

3.01.6 GW Q5 *As part of the site drainage, will more surface water (e.g. rainfall and-runoff) than at present be discharged to the ground (e.g. via soakaways and /or SUDS)?*

No. All the surface water will be collected as before.

3.01.7 GW Q6 *Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to, or lower than, the mean water level in any local pond (not just the pond chains on Hampstead Heath) or spring line?*

No. The nearest ponds are not in close proximity to the site and there is no evidence of potential spring lines close to the site.

3.01.8 On the basis of items 3.01.1 to 3.01.7 above, and in reference to Figure 1 of CPG4, The aspects that need to be carried forward to the scoping stage in respect of Ground Water Flow are:

- Whether the proposed basement extends beneath the water table surface.

3.02 Stage 2: Scoping

3.02.1 With reference to the Camden Geological, Hydrogeological and Hydrological study Appendix F2, the potential impacts which will need to be considered will include:-

- The groundwater flow regime may be altered by the proposed basement.

In response to the above issues: -

- Soil Investigations including ground water monitoring have been commissioned.

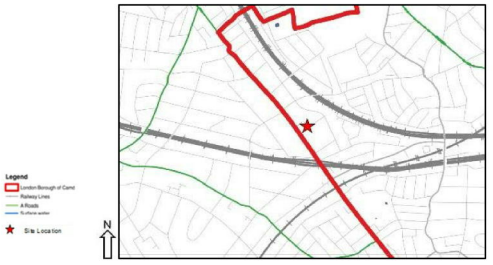


Figure (c)
Surface Water Features
(Extract from Fig 12 of Camden Geological, Hydrogeological and Hydrological Study)

Figure (d)
Waterwells (also showing Infrastructure)
(Extract from British Geological Survey)

3.03 **Stage 3: Site Investigation and Study**

3.03.1 A site investigation was carried out by Jomas Associates in October 2017 which included 4No. trial pits and 3No. window sampling. Refer to their report P1118J1218 of November 2017.

3.03.2 Groundwater was encountered in one borehole only during the investigations and in the others during return visits; one borehole was also recorded dry during the other return visits. When present the groundwater level was logged from 1.83m to 4.87m below ground.

3.04 **Stage 4: Impact Assessment**

3.04.1 A hydrogeological assessment has been carried out by a chartered geologist and is included in section 5 of Jomas Associates' report.

3.04.2 In summary it notes that no potential subterranean (groundwater) flow impacts are anticipated with the construction of the proposed development since:-

- The site is underlain by the low permeability clay strata.
- The ground water encountered during the investigations is most likely to be surface water that has percolated through the made ground and then unable to drain away through the low permeability clays.

3.04.3 It is however possible that this perched water could be encountered during the excavation within the made ground and the London Clay Formation, in quantity subject to seasonal variations; any encountered groundwater will be collected in sumps and pumped away. Provision for this will need to be reflected in the proposed construction method – refer Appendix E.

4.00 **GROUND STABILITY**

4.01 **Stage 1: Screening**

4.01.1 GS Q1 *Does the existing site include slopes, natural or manmade, greater than 7˚?*

No. The site is generally level, with a slight slope from north to south and east to west. There are no slopes >7 degrees within the site.

4.01.2 GS Q2 *Will the proposed re-profiling of landscaping at site change slopes at the property boundary to more than 7˚?*

No. The basement construction will not change the profile of the ground at the boundaries of the property.

4.01.3 GS Q3 *Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7˚?*

No. With reference to the Camden Geological, Hydrogeological and Hydrological Study and to the Ordnance Survey Maps, (refer Figure (f)), the closest slope greater than 7 degrees is a railway embankment approximately 220m to the south of the site.

4.01.4 GS Q4 *Is the site within a wider hillside setting in which the general slope is greater than 7˚?*

No. With reference to the Camden Geological, Hydrogeological and Hydrological Study and to the Ordnance Survey Maps, (refer Figure (f)), the site does not form part of a steep wider hillside setting. St. Cuthberts Road has a gentle slope down as it heads west but the slope is not greater than 7 degrees.

4.01.5 GS Q5 *Is the London Clay the shallowest strata at the site?*

Yes. With reference to Camden Geological, Hydrogeological and Hydrological Study, the site is shown to be underlain by London Clay Formation (Figure (e)).

4.01.6 GS Q6 *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?*

Yes. There are trees along the front and right hand side site boundary which will be felled as part of the proposed development.

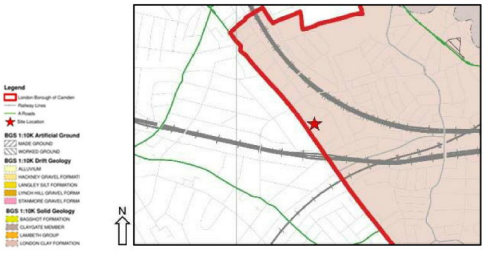


Figure (e)
Geological Map
(Extract from Fig 4 of Camden Geological, Hydrogeological and Hydrological Study)

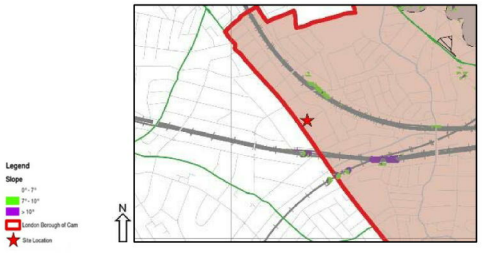


Figure (f)
Slope Angle Map
(Extract from Fig 16 of Camden Geological, Hydrogeological and Hydrological Study)

4.01.7	GS Q7	*Is there a history of seasonal shrink-swell subsidence in the local area, and/or evidence of such effects at the site?* No. The London Clay strata is usually classified as having a high volume change potential and hence can lead to seasonal shrink-swell subsidence where buildings are founded in desiccated soils. A site walkover confirmed that there is no specific evidence of subsidence having been experienced on site or in the immediate surrounding area.
4.01.8	GS Q8	*Is the site within 100m of a water course or a potential spring line?* No. With reference to the Camden Geological, Hydrogeological and Hydrological Study and to the Ordnance Survey Maps (refer Figures (b) and (c)), the site is located approximately 330m to the south-east of the subterranean River Westbourne.
4.01.9	GS Q9	*Is the site within an area of previously worked ground?* No. With reference to the Camden Geological, Hydrogeological and Hydrological Study and to the Ordnance Survey Maps (Figure (e)) the nearest recorded on the geological map are to the east along Finchley Road (approximately 1200m from the site).
4.01.10	GS Q10	*Is the site within an aquifer?* No. The Camden Geological, Hydrogeological and Hydrological Study (Figure (a)) suggests the site is above an Unproductive strata.
4.01.11	GS Q11	*Is the site within 50m of the Hampstead Heath ponds?* No. With reference to the Camden Geological, Hydrogeological and Hydrological Study, the Hampstead pond chains are located to the East approximately 2800m from the site.
4.01.12	GS Q12	*Is the site within 5m of a highway or pedestrian right of way?* Yes. The proposed basement will be less than 5m from the pedestrian footpath and highway of St. Cuthberts Road and of Kingscroft Road.
4.01.13	GS Q13	*Will the proposed basement significantly increase the differential depth of foundations relative to neighboring properties?* Yes. No.8B St. Cuthberts Road has a lower Ground Floor finished floor level than No.8A and no.2 Kingscroft Road is not anticipated to have a Lower Ground Floor or Basement therefore the new development will significantly increase the differential depth of foundations.

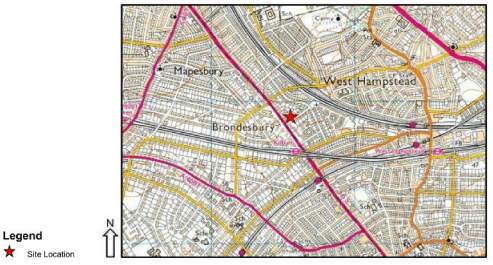


Figure (g)
Topography Map
(Extract from Ordnance Survey Mapping)

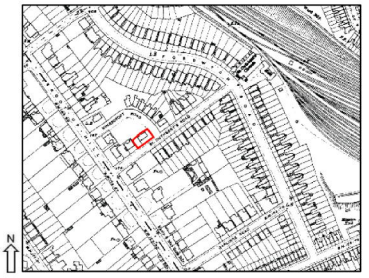


Figure (h)
1915 Map

4.01.14 GS Q14 *Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?*

No. With reference to Open Street Map (figure (i)) there are no tunnels located below the site. The nearest tunnels are about 1600m to the east of the site (Overground, Thameslink Railway, Metropolitan and Jubilee Lines).

4.01.15 On the basis of items 4.01.01 to 4.01.14 above and in reference to Figure 2 of CPG4, the aspects that should be carried forward to a scoping stage in respect of land stability are:

- The site being underlain by London Clay Formation.
- Trees being felled as part of the proposed works.
- The basement being within 5m of a pedestrian highway.
- The increase in differential foundation depths.

4.02 Stage 2: Scoping

4.02.1 With reference to the Camden Geological, Hydrogeological and Hydrological study Appendix F3, the potential impacts which will need to be considered will include:-

- The risk of damaged caused by seasonal shrink-swell of London Clay.
- The risk of swelling and loss of soil strength cause by increase ground moisture content.
- The risk of damage to the road or pavement, or any underground services buried under.
- The risk of damage to the neighbouring properties.

4.02.2 In response to the above issues: -

- A site soil and ground water investigation including hand excavated foundation inspection pits and geotechnical testing (insitu and laboratory) has been commissioned.
- An assessment of ground stability has been made.
- An outline construction method statement has been prepared.

4.03 Stage 3: Site Investigation and Study

4.03.1 The Jomas Associates' Site Investigation of October 2017 is summarised in their Geotechnical Assessment Report P1118J1218 and Ground Movement Assessment P1118J1218/rs dated November 2017. In summary of the findings: -

- A varying thickness of made ground up to 1.2 metres below ground level was encountered over London Clay to the full depth of the investigation.
- Existing foundations were conventional stepped brick footing on concrete base.
- The ground water encountered during the investigations is most likely to be surface water that has percolated through the made ground and then unable to drain away through the low permeability clays.

Figure (i)
Map of Underground Infrastructure
(Extract from Open Street Map)

4.04 Stage 4: Impact Assessment

4.04.1 The proposed basement is around 3.50m deep and will be excavated through the made ground and into the well understood London Clay stratum. Provided appropriate construction methods are employed there should be no significant impact in terms of ground stability.

4.04.2 The new basement will be constructed by underpinning the existing walls along boundary with 8b St. Cuthberts Road and by augered contiguous piling of the remaining perimeter length. This is a well-established method and used successfully on numerous single storey basements within the London Clay. Where the basement will extend outside the footprint of the existing adjoining building RC cantilevered retaining walls will be cast in sections. The section of retaining walls along the boundary with no. 8b St. Cuthberts Road and 2 Kingscroft Road will be design for the addition line load imposed by the foundations of the neighbouring property.

4.04.3 Temporary propping will be provided to minimise any local ground movements which might affect services in the pavement. An outline proposal of the temporary propping scheme and of the construction sequence has been presented on Michael Alexander drawing BIA20 (refer to Appendix D of this document).

4.04.4 The anticipated potential ground movement has been assessed by Jomas Associates using proprietary spreadsheets and commercially available software such as Oasys Pdisp and Xdisp (Refer to Jomas Associates' Ground Movement Assessment P1118J1218/rs dated November 2017).
The unloading of the ground due to the existing building demolition and basement excavation may cause some heave of the underlying clay subsoils in both short and long term. This has been considered in more detail in the Ground Movement Assessment (refer to clause 4.04.7 of this report and to Jomas Associates' Ground Movement Assessment P1118J1218/rs).

4.04.5 The new basement will not suffer from seasonal shrink swell subsidence as the depth of the proposed basement will be below the level of any tree root activity.

Ground Movements

4.04.6 Consideration has been given as to the foundation and slab levels of the adjoining properties, as described in clause 4.01.13. Where the floor levels to adjoining properties are not known, this information will be confirmed through the party wall process prior to commencement of construction.

4.04.7 To assist in determining the impact of the proposals, Jomas Associates have carried out a Ground Movement Analysis and Damage Assessment - refer section 3 of their Ground Movement Assessment report P1118J1218/rs.

4.04.8 The result of the analysis has been presented in Table 3.2 of Jomas Associates' Ground Movement Assessment report. They suggest that the damage to adjoining properties will be 'Category 0-Negligible' or worst case 'Category 1-Very Slight' as defined by Burland.

Monitoring

4.04.09 Measurement monitoring of the temporary works, Party Walls and adjoining structures will be carried out during the construction period. The precise scope of monitoring will be prepared in conjunction with the advisors to the Adjoining Owners.

4.04.10 A 'monitoring and contingency plan' has been prepared, which includes trigger values for vertical and horizontal movement and frequency of measurement. There will be an increased frequency of monitoring during the piling, underpinning and excavation works to enable mitigation to be effectively implemented if trigger values are exceeded. If 'Amber' trigger values are exceeded then the monitoring frequency will be further increased and a detailed review of construction methods will be carried. If 'Red' trigger values are exceeded then all further excavation will be stopped, and the excavation made safe before a revised plan of works can be implemented.

4.04.11 An outline construction method has been developed, which is included in Appendix D. This sets out the measures which will be taken to mitigate the impact of the works, with specific reference to avoiding any adverse impact on the pavement or buried services.

Trees

4.04.12 It is not anticipated that the removal of the existing trees will have any adverse impact on the ground stability, due to the level ground across the site. Any swelling of the soils following tree removal should only affect the footprint of no. 8A, and the affected soil will be removed during the basement excavation works.

Services and Highways

4.04.13 It is known that old brickwork Thames Water mains run under Shoot-up Hill while smaller diameter drains run along St. Cuthberts Road and Kingscroft Road; all services in the pavement will be scanned and marked prior to the commencement of the works.
The predicted maximum horizontal ground movement along the perimeter of the excavation is 5mm; the excavation itself is at least 1m away from the site boundary therefore any movement potentially experienced by the services running along the public highways will be significantly less and with nil/negligible impact.

5.00 SURFACE FLOW AND FLOODING

5.01 **Stage 1: Surface Flow and Flooding Screening**

5.01.1 SF Q1 *Is the site within the catchment of the pond chains on Hampstead Heath?*

No. With reference to the Camden Geological, Hydrogeological and Hydrological Study, the site is not within the catchment of the pond chains on Hampstead, nor the Golder's Hill Chain.

5.01.2 SF Q2 *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. On completion of the development the surface water flows will be routed in the same way as the existing condition, with rainwater run-off collected in a surface water drainage system and discharged to the combined sewer. There are Combined Sewers in Kingscroft Road and St Cuthberts Road adjacent to the site and the existing connection will be reused (refer to Appendix B, page B3).

5.01.3 SF Q3 *Will the proposed basement development result in a change in the proportion of hard surface/paved external areas?*

No. The site is currently almost fully covered by building and paved areas and in the proposed condition will be the same (refer to Appendix A, page A2).

5.01.4 SF Q4 *Will the proposed basement result in changes to the profile of inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?*

No. There will be no change from the development on the quantity or quality of surface water being received by adjoining sites as a result of the development.

5.01.5 SF Q5 *Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream water courses?*

No. The surface water quality will not be affected by the development, as in the permanent condition collected surface water will be generally be from roofs, or external hard landscaping as existing.

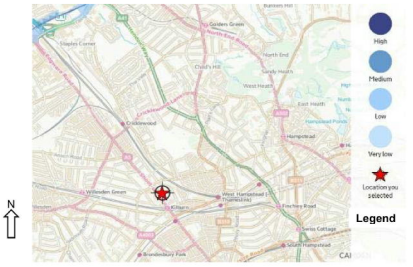


Figure (n)
Areas at Risk of Flooding from Rivers or Sea
(Extract from Environment Agency flood map)

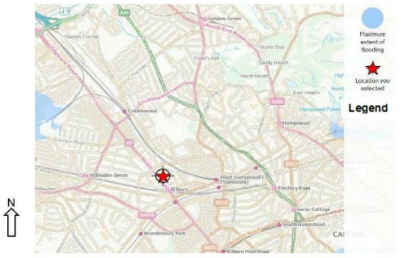


Figure (o)
Areas at Risk of Flooding from Reservoirs
(Extract from Environment Agency flood map)

5.01.6 On the basis of items 5.01.1 to 5.01.5 above and in accordance with the Figure 3 in Camden Planning Guidance CPG 4, there are no aspects that should be carried forward to a scoping stage.

5.01.7 SF Q6 *Is the site in an area known to be at risk from surface water flooding, or is it at risk from flooding, for example because the proposed basement is below the static water level of a nearby surface water feature?*

No. With reference to the EA Rivers and Sea Flood Maps (Figure (n)), the site is not located within a flood risk zone. The EA Reservoir flood map (Refer figure (o)), shows that the site is not at risk of flooding from reservoirs.

With reference to the Camden's 'Geological, Hydrogeological and Hydrological Study' Flood Map (Figure (p)) and EA surface water flooding map (Figure (q)) the site is at 'very low to low risk' of flooding (refer to Appendix B, page B3).

5.01.8 On the basis of the above and in accordance with the Figure 3 in Camden Planning Guidance CPG 4, a flood risk assessment in accordance with PPS25 is not required.

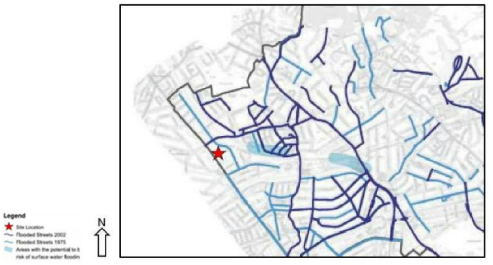


Figure (p)
Flood Map
(Extract from Fig 15 of Camden Geological, Hydrogeological and Hydrological Study)

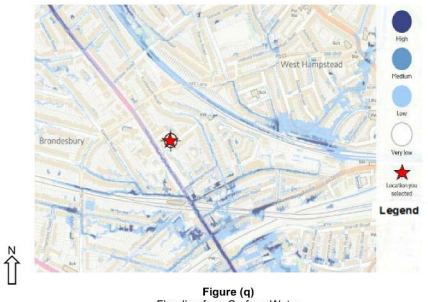


Figure (q)
Flooding from Surface Water
(Extract from Environment Agency flood map)

APPENDIX A

IMPERMEABLE AREA PLANS

KEY

Impermeable Area (building)

Impermeable Area (external)

Soft landscaping

Figure A1 - Existing Impermeable Area Plan

KEY

Impermeable Area (building)

Impermeable Area (external)

Soft landscaping

Impermeable Area (lightwells)

Figure A2 - Proposed Impermeable Area Plan

APPENDIX B

THAMES WATER RECORDS

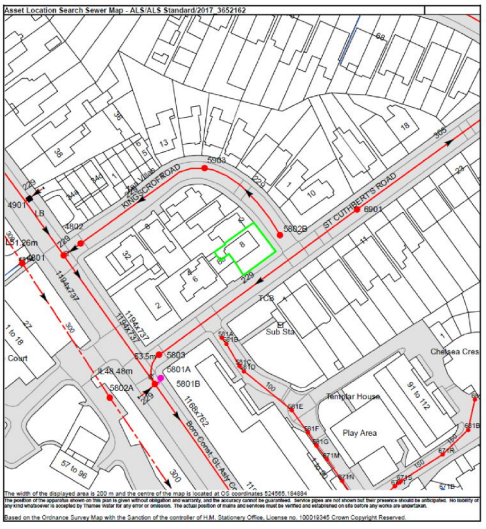


Figure B1 - Extract from Thames Water Asset Search showing a combined sewer

Figure B2 - Key to Thames Water Asset Search

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
671T	n/a	n/a
671S	n/a	n/a
671N	n/a	n/a
671M	n/a	n/a
481A	n/a	n/a
4801	55.09	41.46
4802	55.56	52.5
5802A	52.88	50.82
5801B	52.81	41.29
5803	n/a	n/a
5801A	n/a	n/a
5903	57.39	54.39
581A	n/a	n/a
581B	n/a	n/a
581C	n/a	n/a
581D	n/a	n/a
5802B	57.4	54.53
581E	n/a	n/a
581F	n/a	n/a
581G	n/a	n/a
6901	57.08	53.22
671R	n/a	n/a
681B	n/a	n/a
681A	n/a	n/a

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Figure B3 - Manhole Invert and Cover Levels

Sewer Flooding
History Enquiry

Property Searches

Michael Alexander Consulting Engineers

Percy Road

Search address supplied	8 St. Cuthberts Road London NW2 3QL
Your reference	P3897 8 St Cuthberts Road NW2 3QL
Our reference	SFH/SFH Standard/2017_3652163
Received date	**15 September 2017**
Search date	**15 September 2017**

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

Sewer Flooding
History Enquiry

Property Searches

History of Sewer Flooding

Is the requested address or area at risk of flooding due to overloaded public sewers?

The flooding records held by Thames Water indicate that there have been no incidents of flooding in the requested area as a result of surcharging public sewers.

For your guidance:

- A sewer is "overloaded" when the flow from a storm is unable to pass through it due to a permanent problem (e.g. flat gradient, small diameter). Flooding as a result of temporary problems such as blockages, siltation, collapses and equipment or operational failures are excluded.
- "Internal flooding" from public sewers is defined as flooding, which enters a building or passes below a suspended floor. For reporting purposes, buildings are restricted to those normally occupied and used for residential, public, commercial, business or industrial purposes.
- "At Risk" properties are those that the water company is required to include in the Regulatory Register that is presented annually to the Director General of Water Services. These are defined as properties that have suffered, or are likely to suffer, internal flooding from public foul, combined or surface water sewers due to overloading of the sewerage system more frequently than the relevant reference period (either once or twice in ten years) as determined by the Company's reporting procedure.
- Flooding as a result of storm events proven to be exceptional and beyond the reference period of one in ten years are not included on the At Risk Register.
- Properties may be at risk of flooding but not included on the Register where flooding incidents have not been reported to the Company.
- Public Sewers are defined as those for which the Company holds statutory responsibility under the Water Industry Act 1991.
- It should be noted that flooding can occur from private sewers and drains which are not the responsibility of the Company. This report excludes flooding from private sewers and drains and the Company makes no comment upon this matter.
- For further information please contact Thames Water on Tel: 0800 316 9800 or website www.thameswater.co.uk

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

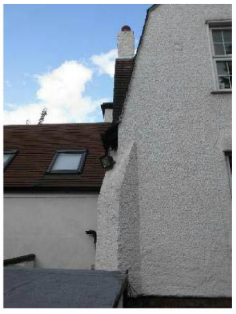
APPENDIX C
PHOTOGRAPHS

Photograph 1 – Aerial view

Photograph 2 – Aerial view

Photograph 3 – Street view

Photograph 4 – Rear boundary view with No.2 Kingscroft Road

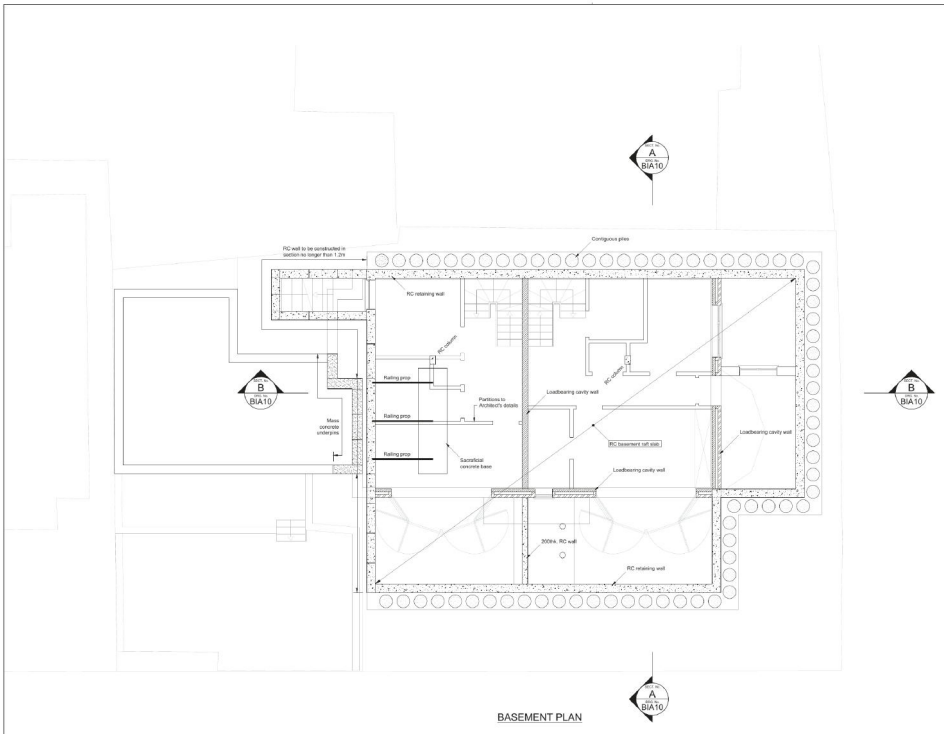


Photograph 5 – Side/Front boundary view with No.8B St. Cuthberts Road

Photograph 6 – Front paved garden view

APPENDIX D

OUTLINE STRUCTURAL DRAWINGS



BASEMENT PLAN

NOTES

1. This drawing shall be read in conjunction with all relevant Architects & Engineers drawings and specifications.
2. Do not scale any dimensions. All dimensions are in millimetres and to be checked on site.

LEGEND

- Contiguous piles
- RC retaining wall
- Load-bearing brickwork wall
- Partitions to Architect's details

Rev.	Date	Description	By
P3	16.04.18	Issued for BIA	RJC
P2	01.12.17	Issued for BIA	RJC
P1	16.10.17	Issued for comment	RJC

BIA

Architect
ADA ARCHITECTS

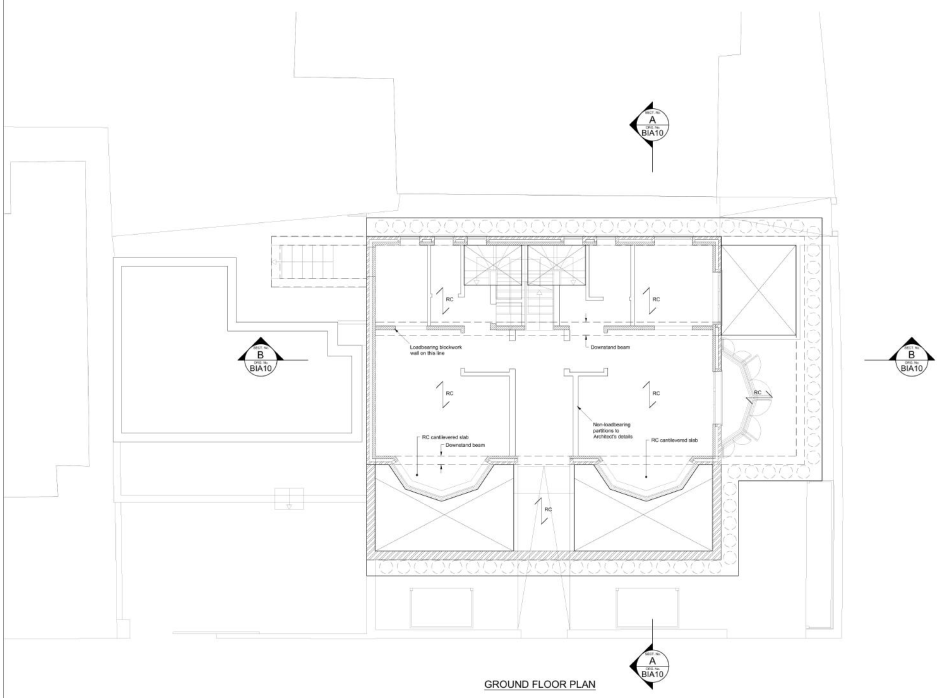
Project Title
8 ST CUTHBERTS ROAD
LONDON NW2 3QL

Drawing Title
PROPOSED
BASEMENT PLAN

Michael Alexander
Foundation House
4 Printing House
London, NC2 6BJ
tel +44 (0)20 8445 9115
e-mail ma@maengineers.com
web www.maengineers.com

Drawn	RJC	Oct. 2017
Checked	IH	Oct. 2017
Scale	1:50	Size A1
	1:100	A3

Project No.	Drawing No.	Rev.
P3897	BIA01	P3



GROUND FLOOR PLAN

0 100mm WHEN PLOTTED @ 1:1 FOR A1 100 50mm WHEN PLOTTED @ 1:2 FOR A3 200

NOTES

1. This drawing shall be read in conjunction with all relevant Architects & Engineers drawings and specifications.
2. Do not scale any dimensions. All dimensions are in millimetres and to be checked on site.

LEGEND

- External cavity wall
- Load-bearing brickwork wall
- Partitions to Architect's details
- RC — Span direction of 225thk. insitu RC slab

Rev.	Date	Description	By
P2	01.12.17	Issued for BIA	RJC
P1	18.10.17	Issued for comment	RJC

BIA

Architect
ADA ARCHITECTS

Project Title
8 ST CUTHBERTS ROAD
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Drawing Title
PROPOSED
GROUND FLOOR PLAN

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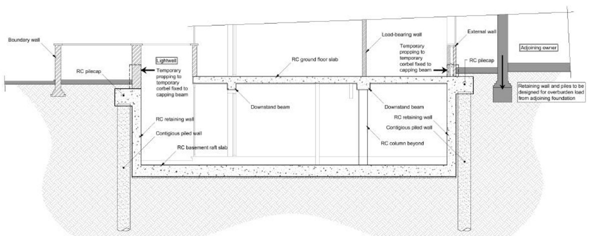
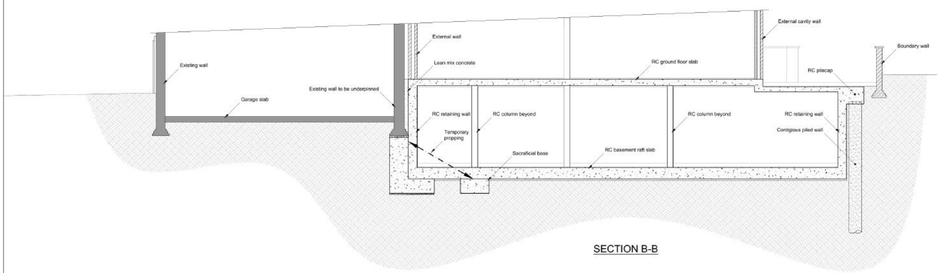
web www.maengineers.com

Drawn	RJC	Oct. 2017
Checked	IH	Oct. 2017
Scale	1:50 / 1:100	Size A1 / A3
Project No. P3897	Drawing No. BIA02	Rev. P2



SECTION A-A



SECTION B-B

0 100mm WHEN PLOTTED @ 1:1 FOR A1 100 50mm WHEN PLOTTED @ 1:2 FOR A3 200

NOTES

1. This drawing shall be read in conjunction with all relevant Architects & Engineers drawings and specifications.
2. Do not scale any dimensions. All dimensions are in millimetres and to be checked on site.

Rev.	Date	Description	By
P2	01.12.17	Issued for BIA	RJC
P1	18.10.17	Issued for comment	RJC

BIA

Architect
ADA ARCHITECTS

Project Title
8 ST CUTHBERTS ROAD
LONDON NW2 3QL

Drawing Title
PROPOSED
SECTIONS A-A & B-B

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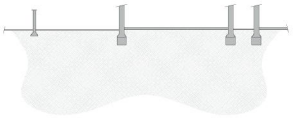
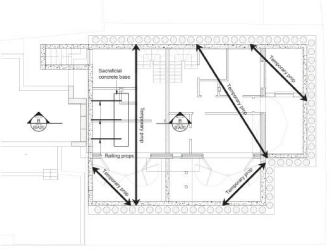
Drawn	RJC	Oct. 2017
Checked	IH	Oct. 2017
Scale	1:50 1:100	Size A1 A3

Project No.	Drawing No.	Rev.
P3897	BIA10	P2

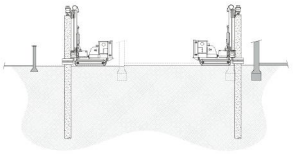


EXISTING CONDITION
Scale 1:100

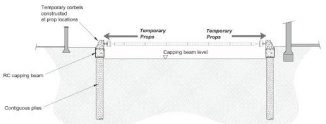
STAGE 1
(Existing building demolished)
Scale 1:100



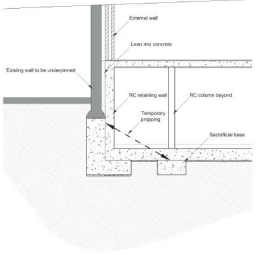
TEMPORARY PROPPING - OUTLINE SCHEME



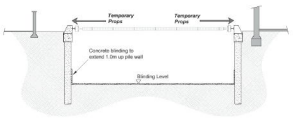
STAGE 2
(Install contiguous piles)
Scale 1:100



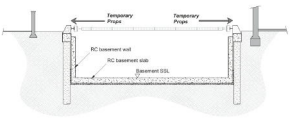
STAGE 3
(Excavate to capping beam level, install capping beam & tempoary corbels then install temporary works (walers & props))
Scale 1:100



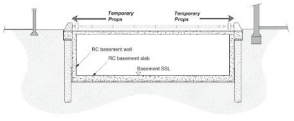
PART SECTION B-B
Scale 1:50



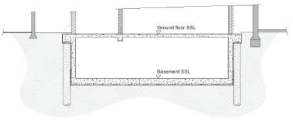
STAGE 4
(Excavate to formation level and cast concrete blinding)
Scale 1:100



STAGE 5
(Install RC basement slab and RC basement walls to underside of ground floor slab)
Scale 1:100



STAGE 6
(Install ground floor slab)
Scale 1:100



STAGE 7
(Removal of temporary props and temporary corbels and construction of ground floor walls)
Scale 1:100

NOTES

1. This drawing shall be read in conjunction with all relevant Architects & Engineers drawings and specifications.
2. Do not scale any dimensions. All dimensions are in millimetres and to be checked on site.
3. Temporary works proposals are indicative only, detailed proposals will be prepared by the contractor and submitted for party wall approval.
4. Requirements for propping will also be dictated by the detailed design of the piles, an intermediate level of propping will be considered if required.
5. Active propping will be considered to enable the prop forces to be adjusted to reflect the results of the precise movement monitoring.

Rev.	Date	Description	By
P1	13.04.18	Issued for BIA	RJC

BIA

Architect
ADA ARCHITECTS

Project Title
8 ST CUTHBERTS ROAD
LONDON NW2 3QL

Drawing Title
OUTLINE PROPPING SCHEME
& CONSTRUCTION SEQUENCE

Michael Alexander
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email mail@maengineers.com
web www.maengineers.com

Drawn	RJC	Oct. 2017
Checked	IH	Oct. 2017
Scale	1:50 1:100	Size A1 A3

Project No.	Drawing No.	Rev.
P3897	BIA20	P1

APPENDIX E

CONSTRUCTION METHOD STATEMENT

CONSTRUCTION METHOD STATEMENT

E.01 The following provides an outline Method Statement for the construction of the basement. This will be developed and finalised by the appointed Contractor, once the detailed design is complete. An outline construction programme will be prepared by the Main Contractor and included in the Construction Management Plan.

E.02 Prior to works commencing, schedules of condition will be carried out to adjoining properties as part of the party wall process.

E.03 Precise monitoring points will be fixed to the party walls and adjoining buildings in accordance with an agreed 'Monitoring and Contingency Plan'. Initial 'base' readings will be taken.

E.04 The site and adjoining pavement will be scanned and marked for services prior to the commencement of any excavation works.

E.05 A full depth trial excavation will be carried out by the Contractor prior to the commencement of the main excavation works. This will enable the Contractor to identify whether there is any perched water on the interface between the made ground and London Clay, and to check how readily the subsoil stands un-supported.

Any perched water should be collected in sumps during the excavation works and pumped.

Should the excavation sides be found locally to be unstable or there is unacceptable loss of material from the excavated face, then contingency plans will be developed, likely to include back shuttering behind the underpinning. These proposals will include measures to ensure no voids are left behind the back shuttering.

E.06 Following the demolition of the existing building the perimeter contiguous RC piles will be installed from a piling mat at close to existing ground level.

E.07 The construction will then proceed with the underpinning works to the existing party walls and with the RC cantilevering retaining walls cast in sections. This will be carried out to an agreed sequence, to ensure there is at least 2m between any two open pins. The underpinning to the walls and the RC walls cast in sections will be constructed to a typical underpinning sequence of 1,4,2,5 and 3.

E.08 The reinforced concrete capping beam will then be constructed. Lateral props will be installed at high level, spanning across the site and the across the corners of the excavation. An outline proposal of the temporary propping scheme has been presented on Michael Alexander drawing BIA20 (refer to Appendix D of this document). The detailed design of the piles, propping and method of construction will be developed in conjunction with the specialist piling and groundworks contractor.

E.09 The timing of the demolition, excavation and reconstruction works shall be to a continuous programme to minimise the heave of the clay subsoils that might result from the temporary unloading.

E.10 Bulk excavation will then commence. The underpinning and RC walls cast in section will be temporarily propped. Any minor water inflows to the basement excavation will be collected in sumps and pumped. Regular monitoring readings will be taken and compared with 'Red' and 'Amber' trigger levels.

E.11 When bulk excavation is complete to basement level, the bottom surface of the excavation will be immediately blinded.

E.12 The basement raft slab will then be constructed on top of the concrete underpin toes, to act as a permanent prop to the base of the underpinning.

E.13 Following the completion of the raft slab the RC liner walls will be constructed.

E.14 Works can then proceed with the construction of the ground floor slab.

E.15 Following completion of the ground floor slab, which acts as a permanent prop to the excavation, the propping can be removed.

E.16 The superstructure of the new building can then be progressed.

APPENDIX F

PRELIMINARY STRUCTURAL CALCULATIONS

F1.00 INTRODUCTION

F1.01 These preliminary calculations are for planning purposes only. Detailed calculations will be developed in due course in respect of Part A of The Building Regulations

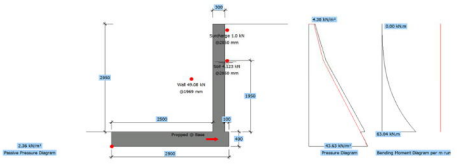
F2.00 BRITISH STANDARDS

F2.01 The following Standards will be applied in the detailed design: -

BS648	Weights of Building Materials
BS5268: Part 2	Structural use of Timber: Permissible Stress design, materials and workmanship
BS5628: Part 1	Structural use of unreinforced masonry
BS5950:Part1	Structural Steelwork-Simple & continuous construction
BS5977:Part1	Lintels: Method for Assessment of Load
BS6399:Part 1	Code of Practice for Dead and Imposed Load
BS6399:Part 3	Code of Practice for Imposed Roof Load
BS8110:Part 1	Structural use of concrete

F3.00 TYPICAL CANTILEVERING WALLS DESIGN

F3.01



Summary of Design Data

Notes	All dimensions are in mm and all forces are per meter run
Material Densities (kN/m³)	Dry Soil 19.00, Saturated Soil 21.40, Submerged Soil 11.40, Concrete 24.00
Concrete grade	fcu 40 N/mm², Permissible tensile stress 0.250 N/mm²
Concrete covers (mm)	Wall inner cover 30 mm, Wall outer cover 30 mm, Base cover 50 mm
Reinforcement design	fy 500 N/mm² designed to BS 8110: 1997
Surcharge and Water Table	Surcharge 10.00 kN/m², Water table level 1950 mm

† The Engineer must satisfy him/herself to the reinforcement detailing requirements of the relevant codes of practice

Additional Loads

Wall Propped at Base Level	Therefore no sliding check is required
† Dimensions	

Soil Properties

Soil bearing pressure	Allowable pressure @ front 100.00 kN/m², @ back 100.00 kN/m²
Back Soil Friction and Cohesion	ϕ = Atn(Tan(27)/1.2) = 23.01°
Base Friction and Cohesion	δ = Atn(0.75xTan(Atn(Tan(27)/1.2))) = 17.66°
Front Soil Friction and Cohesion	ϕ = Atn(Tan(27)/1.2) = 23.01°

Loading Cases

G_{Soil}- Soil Self Weight, G_{Wall}- Wall & Base Self Weight, Fv_{Heel}- Vertical Loads over Heel,
P_a- Active Earth Pressure, $P_{surcharge}$- Earth pressure from surcharge, P_p- Passive Earth Pressure
Case 1: Geotechnical Design 1.00 G_{Soil}+1.00 G_{Wall}+1.00 Fv_{Heel}+1.00 P_a+1.00 $P_{surcharge}$+1.00 P_p
Case 2: Structural Ultimate Design 1.40 G_{Soil}+1.40 G_{Wall}+1.60 Fv_{Heel}+1.00 P_a+1.00 $P_{surcharge}$+1.00 P_p

Geotechnical Design

Wall Stability - Virtual Back Pressure

Case 1 Overturning/Stabilising	80.308/111.255	0.722	OK

Wall Sliding - Virtual Back Pressure

Fx/(Rx$_{Stable}$+ Rx$_{Passive}$)	0.000/(17.261+0.078)	0.000	OK
Prop Reaction Case 2 (Service)	71.5 kN @ Base		

Soil Pressure

Virtual Back	63.290/100 kN/m², Length under pressure 1.713 m	0.633	OK
Wall Back	96.506/100 kN/m², Length under pressure 1.123 m	0.965	OK

Structural Design

Prop Reactions

Maximum Prop Reaction (Ultimate)	78.1 kN @ Base

Wall Design (Inner Steel)

Critical Section	Critical @ 0 mm from base, Case 2		
Steel Provided (Cover)	Main H16@200 (30 mm) Dist. H12@200 (46 mm)	1005 mm²	OK
Compression Steel Provided (Cover)	Main H12@200 (30 mm) Dist. H12@200 (42 mm)	565 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	262 mm, 1000 mm, 1005 mm², 500 N/mm², 40.0 N/mm²	249 mm	
Mr=fn(above,As',d',x,x/d)	565 mm², 36 mm, 28 mm, 0.11	108.8 kN.m	
Moment Capacity Check (M/Mr)	M 63.0 kN.m, Mr 108.8 kN.m	0.579	OK
Shear Capacity Check	F 61.8 kN, vc 0.597 N/mm², Fvr 156.4 kN	0.39	OK

Base Top Steel Design

Steel Provided (Cover)	Main H12@200 (50 mm) Dist. H12@200 (62 mm)	565 mm²	OK
Compression Steel Provided (Cover)	Main H16@200 (50 mm) Dist. H12@200 (66 mm)	1005 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	344 mm, 1000 mm, 565 mm², 500 N/mm², 40 N/mm²	327 mm	
Mr=fn(above,As',d',x,x/d)	1005 mm², 58 mm, 16 mm, 0.05	80.4 kN.m	
Moment Capacity Check (M/Mr)	M 0.4 kN.m, Mr 80.4 kN.m	0.005	OK
Shear Capacity Check	F 8.7 kN, vc 0.420 N/mm², Fvr 144.6 kN	0.06	OK

Base Bottom Steel Design

Steel Provided (Cover)	Main H16@200 (50 mm) Dist. H12@200 (66 mm)	1005 mm²	OK
Compression Steel Provided (Cover)	Main H12@200 (50 mm) Dist. H12@200 (62 mm)	565 mm²	
Leverarm z=fn(d,b,As,fy,Fcu)	342 mm, 1000 mm, 1005 mm², 500 N/mm², 40 N/mm²	325 mm	
Mr=fn(above,As',d',x,x/d)	565 mm², 56 mm, 28 mm, 0.08	142.1 kN.m	
Moment Capacity Check (M/Mr)	M 82.8 kN.m, Mr 142.1 kN.m	0.583	OK
Shear Capacity Check	F 45.4 kN, vc 0.511 N/mm², Fvr 174.8 kN	0.26	OK