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31A BELSIZE CRESCENT, LONDON

Basement Impact Assessment – Revision E – Volume 1 of 2

31A BELSIZE CRESCENT, LONDON, NW3 5QY
Basement Impact Assessment

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31A BELSIZE CRESCENT, LONDON
Basement Impact Assessment – Revision E

31A BELSIZE CRESCENT, LONDON, NW3 5QY
Basement Impact Assessment
Revision E

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Registration of Amendments

Revision and Date	Amendment Details	Revision Prepared By	Revision Approved By
Rev. A 09.11.2022	Inclusion of Appendix G – technical note detailing Network Rail asset location	AW	CB
Rev. B 23.11.2022	Updated with final NR correspondence confirming their asset will not be impacted by the proposal	AW	CB
Rev. C 13.11.2023	Updated following Campbell Reith review	AW	CB
Rev D 05.02.2024	Inclusion of ABP calcs. – appendix J	AW	CB
Rev E 30.05.2024	Revised GMA (Appendix F)	AW	CB

1.0 NON-TECHNICAL SUMMARY

1.1 The site location is located at 31A Belsize Crescent, London NW3 5QY. A location plan is presented as Figure 1.1, below.

Figure 1.1: Location Plan

1.2 The application Site is located within the lower ground floor of a five storey (including lower ground floor and roof space) Victorian era terraced residential property of east facing aspect. A small tree is located within the front garden of the property. The area of interest is a thin finger, protruding to the front of the property. A plan detailing the Site is presented as Figure 2.1.

1.3 The proposed development is to include lowering of the existing basement area by approximately 900mm to accommodate further living space (bathroom and utility room) at the property. With allowance for insulation, heave protection and a thicker slab, it is anticipated the maximum excavation depth will be 1.20m.

1.4 The following assessments are presented:

- Desk Study;
- Screening;
- Scoping;
- Additional evidence/assessments:
  - Ground movement assessment; and
  - Consultation with adjacent infrastructure/asset owners.
- Impact Assessment.

1.5 The authors of the assessments are:

Andrew Warren BSc (Hons), MSc, FGS (15 years experience);
Colin Buchanan BSc (Hons), FGS (>30 years experience);
Sean Smeltzer, BSc (Hons), MSc, CEng, MICE (>30 years experience); and
Robert Griffiths BSc (Hons), MSc, FGS, CGeol (25 years experience).

1.6 The ground and groundwater conditions beneath the site are London Clay, with no groundwater within the near surface deposits.

1.7 The construction methods proposed are top-down, hit and miss planar wall construction with temporary props.

1.8 A structural monitoring strategy to control the works and impacts to neighbouring structures is recommended.

1.9 The BIA has assessed land stability and the impacts of the proposed development on neighbouring structures will be negligible (Burland Scale Category 0).

1.10 There are no impacts to the development or neighbouring properties from slope stability issues.

1.11 The proposed development is not within 250m of a surface watercourse. The culverted River Tyburn is indicated to be located approximately 200m west of the Site. The proposed development will not increase the percentage of hardstanding at the Site and therefore will not impact on any surface water.

1.12 Due to the presence of impermeable London Clay beneath the Site, there will be no hydrogeological impacts from the proposed development.

1.13 The BIA has identified a very low flood risk for the proposed development.

2.0 INTRODUCTION

Brief

2.1 Create Consulting Engineers Ltd (CCE) have been instructed by P-AD Architects, on behalf of Ellis Naidoo, to undertake a Basement Impact Assessment in support of a planning application for 31A Belsize Crescent, London NW3 5QY.

Planning

2.2 This Basement Impact Assessment (BIA) has been produced to support the planning application, reference: 2021/3159/P.

2.3 The BIA has been produced in accordance with the guidance laid out by Camden Borough Council in: Planning Guidance – Basements (Camden Planning Guidance, March 2018) – and the Local Plan (A5 Basements, July 2017).

2.4 The key elements are:

- Desk Study assessing the history, geology, hydrogeology, hydrology and buildings local to the Site;
- Screening;
- Scoping;
- Ground investigation;
- Ground movement assessment; and
- Impact Assessment.

Authors

2.5 The BIA has been authored by:

Andrew Warren BSc (Hons), MSc, FGS;
Colin Buchanan BSc (Hons), FGS;
Sean Smeltzer, BSc (Hons), MSc, CEng, MICE; and
Robert Griffiths BSc (Hons), MSc, FGS, CGeol.

Sources of Information

2.6 The following baseline data have been referenced to complete the BIA in relation to the proposed development:

- Geological mapping (British Geological Survey 1:50,000 solid and drift, Sheet 256, North London);

- Hydrogeological data (Magic Map: https://magic.defra.gov.uk/MagicMap.aspx);
- Current/historical hydrological data (https://www.gov.uk);
- Flood risk mapping (https://www.gov.uk);
- LB Camden, Strategic Flood Risk Assessment (produced by URS, 2014);
- LB Camden, Floods in Camden, Report of the Floods Scrutiny Panel (2013);
- LB Camden, Planning Guidance (CPG) – Basements (March 2018);
- LB Camden, Camden Geological, Hydrogeological and Hydrological Study – Guidance for Subterranean Development (produced by Arup, 2010);
- LB Camden, Local Plan Policy A5 Basements (2017);
- LB Camden's Audit Process Terms of Reference;

Existing and Proposed Development

2.7 The application Site is located within the lower ground floor of a five storey (including lower ground floor and roof space) Victorian era terraced residential property of east facing aspect, see Plate P1, Appendix B. A small tree is located within the front garden of the property. Photographs taken during the Site walkover (dated 19.05.2022), are presented in Appendix B. The area of interest is a thin finger, protruding to the front of the property. A plan detailing the Site is presented as Figure 2.1, below.

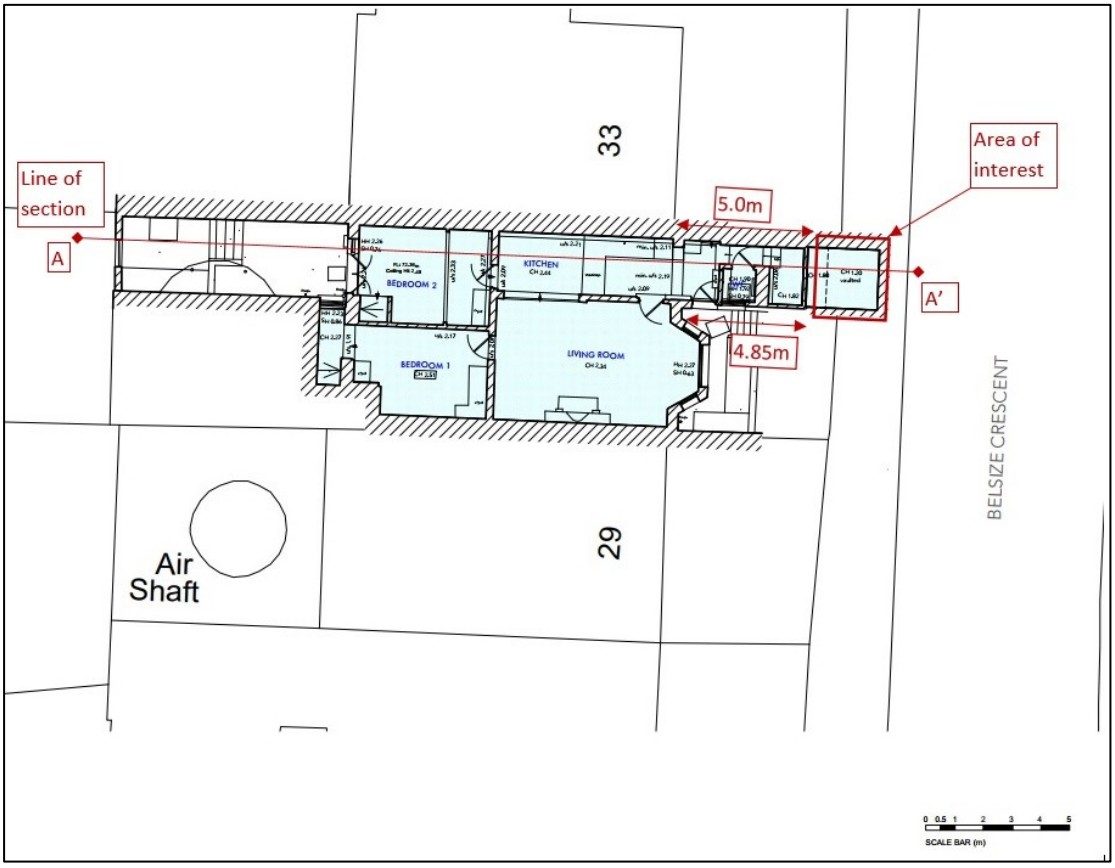


Figure 2.1: Site Plan (Extract from P-AD Architects, drawing number 7335/01 rev. B)

2.8 The adjacent properties are also Victorian in age, with lower ground floors. The general area of the Site slopes gently from north to south at an approximate angle of 4°. An air shaft associated with a Network Rail tunnel is located approximately twenty metres southwest of the proposed application. The Network Rail tunnel, trending east-west is indicated to pass directly beneath the Site.

2.9 The proposed development is to include lowering of the existing basement area (see Plate P2, Appendix C), by approximately 900mm to accommodate further living space (bathroom and utility room) at the property.

2.10 This will involve reducing a section of the existing basement space within the building footprint. Architects drawings are presented in full in Appendix A, with extracts detailing the existing layout (Figure 2.2a) and proposed layout (Figure 2.2b), below.

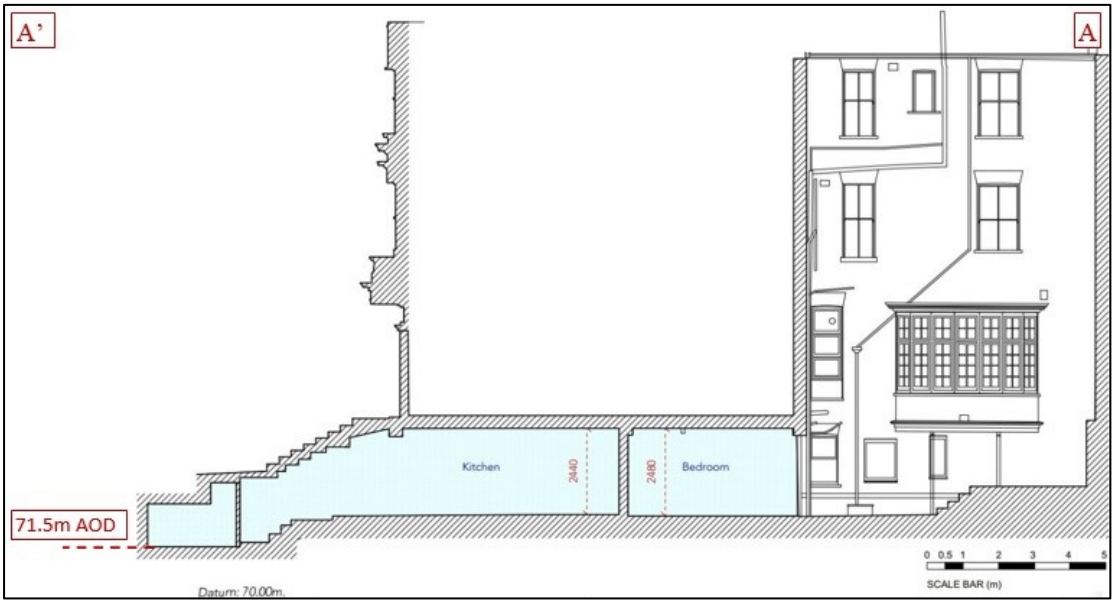


Figure 2.2a: Existing Cross-Section (Extract from P-AD Architects Drawing: 7335/04 Rev B)

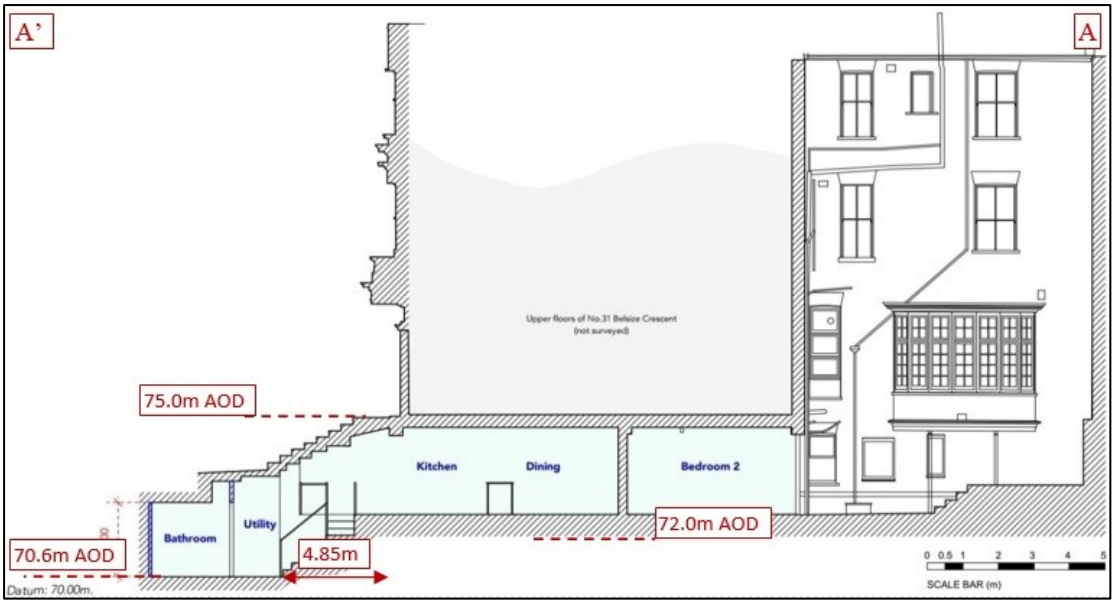


Figure 2.2b: Proposed Cross-Section (Extract from P-AD Architects Drawing: 7335/08 Rev B)

2.11 The proposed method of construction is for hit and miss underpinning of the existing wall.

3.0 DESK STUDY

Site History

3.1 A review of the historical plans for the Site indicates that at the time of the first historical plan of the area (six inch to one mile, dated 1866), the Site comprised farmland. By this time, the Network Rail tunnel and associated shaft had been constructed and residential properties were located 130m to the southeast.

3.2 The historical plan of 1894 to 1896 details the Site and surrounding area to have been developed to the current configuration.

Geology

3.3 Reference has been made to the 1:50,000 BGS plans for the Site (Sheet 256, North London, dated 2006), which indicates the Site is directly underlain by solid strata of the London Clay. However, based on the topography, there is potential for Head deposits at the Site. The British Lexicon of Named Rock Units details Head deposits as comprising poorly sorted and poorly stratified, angular rock debris and/or clayey hillwash and soil creep. Any Head deposits will therefore comprise upslope material and be of low strength.

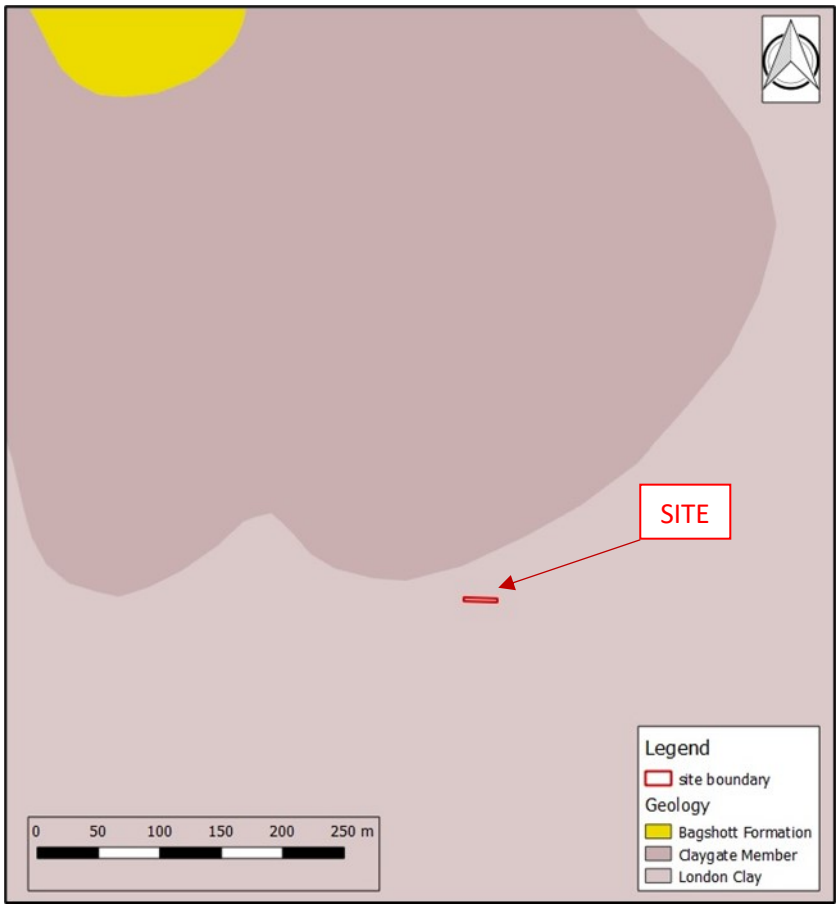


Figure 3.1: Geological Plans (Ref. British Geological Society)

Hydrogeology

3.4 The London Clay formation is classified as unproductive strata. The Environment Agency states that unproductive strata are unable to provide usable water supplies and are unlikely to have surface water and wetland ecosystems dependent on them.

3.5 The Site is not located within a source protection zone. The nearest source protection zone to the Site is an outer source protection zone, located approximately 400m south of the Site, as detailed in Figure 3.2, below.

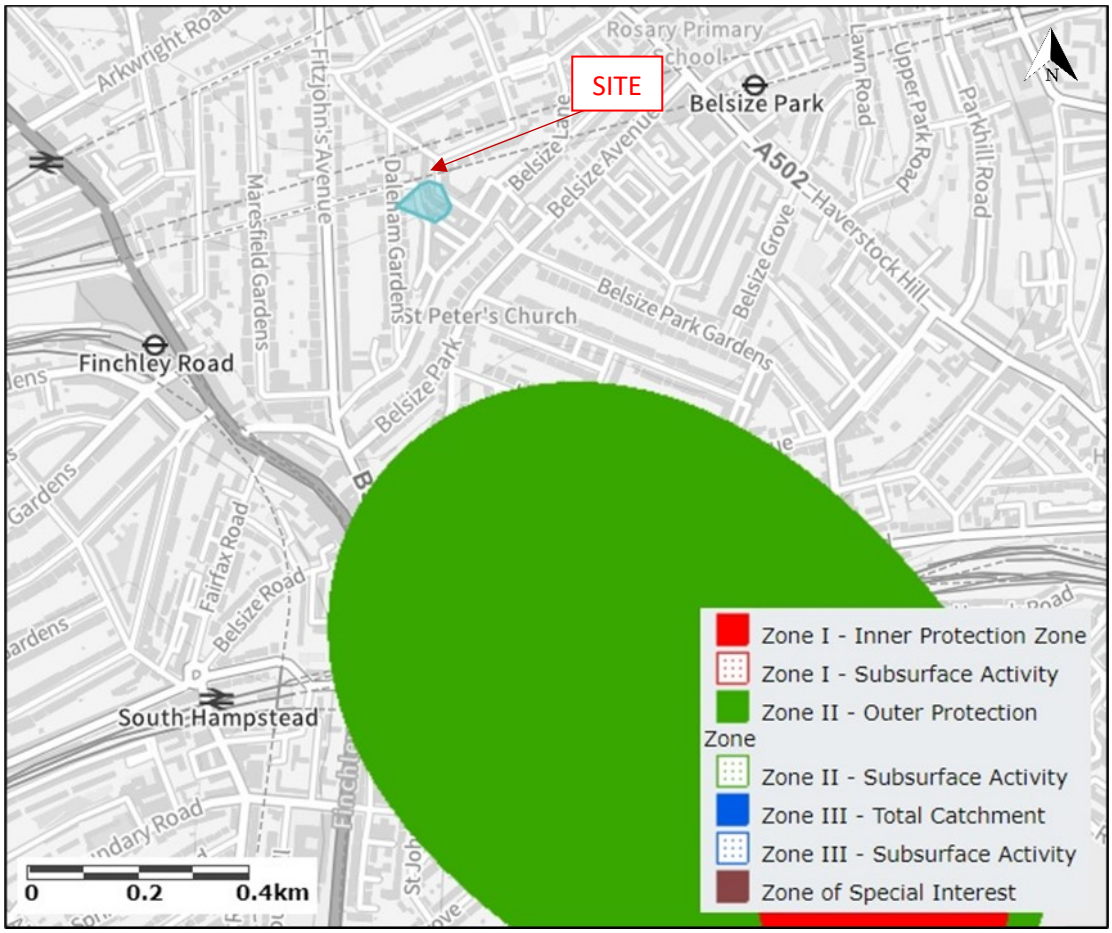


Figure 3.2: Source Protection Zone (ref. Magicmap)

Hydrology

3.6 There are no surface water bodies indicated within 250m of the Site.

3.7 The Lost Rivers of London map, an extract of which is reproduced as Figure 3.3, below indicates the Tyburn River approximately 200m west and 200m southeast of the Site.

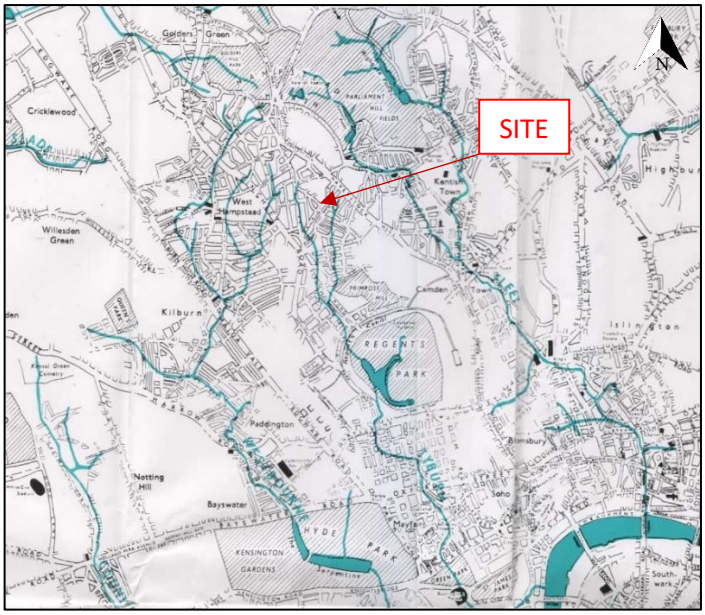


Figure 3.3: Lost Rivers of London (Barton)

3.8 The River Tyburn was culverted sometime between 1866 and 1894, when the local area was developed.

Flood Risk

3.9 A Flood Risk Assessment has been completed in accordance with the National Planning Policy Framework (2021) and Planning Practice Guidance in order to meet the requirements of a basement Impact Assessment as required in The London Borough of Camden flood risk management strategy, Campden Planning Guidance and Camden Development policies.

3.10 The assessment concluded that there are no significant sources of flooding that would warrant a more detailed Flood Risk Assessment. A number of mitigation measures are recommended to address the low risk of surface waterflooding and groundwater flooding and residual risks of flooding from public sewers, site drainage and public and internal water supply pipe work/storage. These risks can be managed by the design of the site drainage, by regular inspection and maintenance of the public and private sewer and water supply network.

3.11 A copy of this report is provided in Appendix D.

Historic Buildings

3.12 A search of the Historic England website indicates No.24 Belsize Crescent comprises a Grade II listed building, including walls and gate piers, as detailed in Figure 3.4, below.

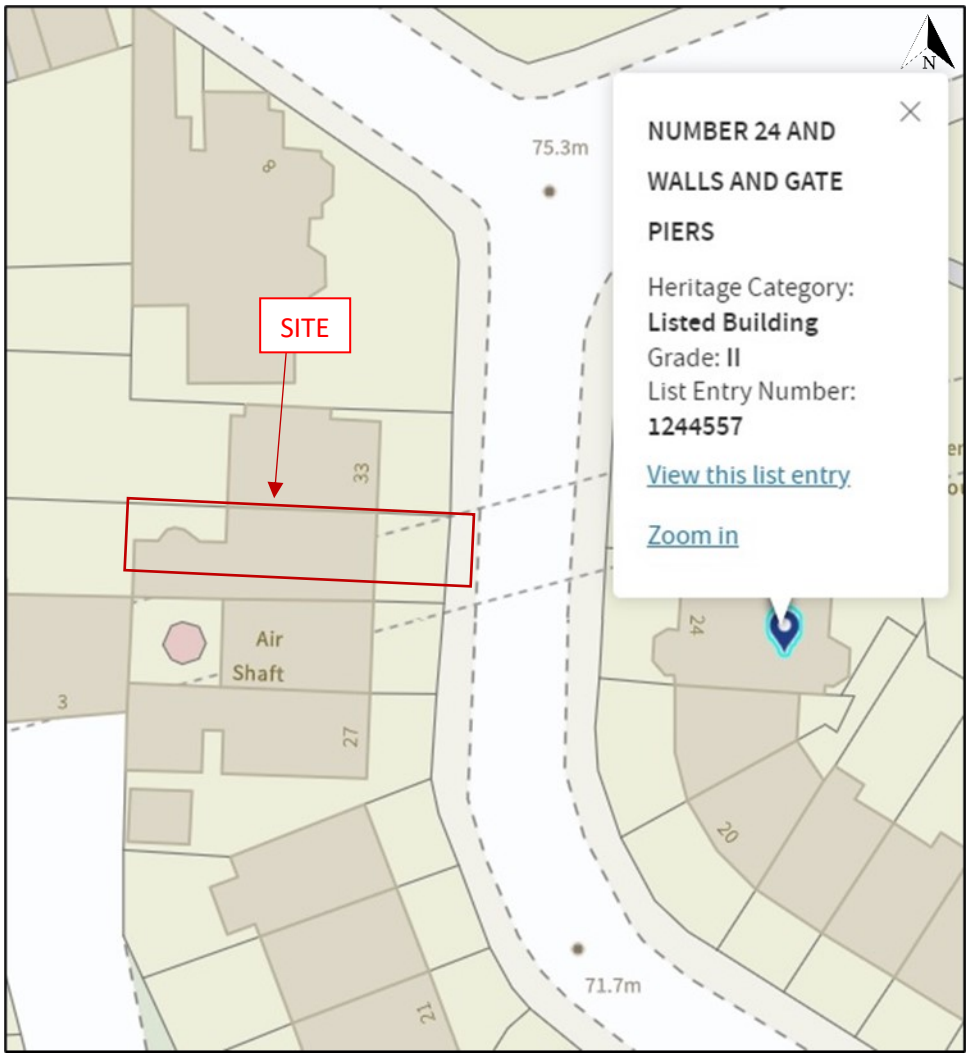


Figure 3.4: Listed Buildings (Historic England)

Utilities

3.13 Services plans, as reproduced in Appendix C indicate gas, electric, foul water and water mains within Belsize Crescent.

4.0 SCREENING

4.1 A screening process has been undertaken and the findings are described below.

Question	Response	Details
1a. Is the site located directly above an aquifer?	No	Underlying geology is unproductive strata of London Clay Formation.
1b. Will the proposed basement extend beneath the water table surface?	No	Underlying strata comprises the aquiclude, London Clay.
2. Is the site within 100m of a watercourse, well (used/disused) or potential spring line?	No	No. Closest watercourse is greater than 250m from the Site. The Site is not near a spring line as the surrounding geology is London Clay.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No	The Hampstead Heath Ponds are 900m to the northeast.
4. Will the proposed basement development result in a change in the proportion of hard surfaced/paved areas?	No	The proportion of hardstanding at the Site will not change.
5. As part of site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No	SUDS are not proposed as part of the development.
6. 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	There are no surface water features within 250m of the Site.

Table 4.1: Groundwater and Flooding Screening

Slope Stability

Question	Response	Details
1. Does the existing site include slopes, natural or man-made greater than 7 degrees (approximately 1 in 8)?	No	The local topography slopes to the south and east at approximately 4°.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7 degrees (approximately 1 in 8)?	No	No landscaping will be undertaken as part of this project.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 degrees (approximately 1 in 8)?	No	There are no railway cuttings within the vicinity of the Site.
4. Is the site within a wider hillside setting in which the general slope is greater than 7 degrees (approximately1 in 8)?	No	The local topography slopes at approximately 4°.
5. Is the London Clay the shallowest strata at the site?	Yes	See BGS Sheet 256, North London and findings of Site investigation (Section 6.0 of this report).

Question	Response	Details
6. Will any trees be felled as part of the development and/or are any works proposed within any tree protection zones where trees are to be retained?	No	No trees will be felled as part of the proposed works. And, there are no tree protection zones within the area of proposed work.
7. Is there a history of seasonal shrink-swell subsidence in the local area and/or evidence of such effects at the site?`	No	The existing lower ground floor is 1.20m below ground level and therefore outwith the zone of influence from seasonal fluctuations in moisture levels.
8. Is the site within 100m of a watercourse or a potential spring line?	No	Closest watercourse is >250m. The local geology is London Clay
9. Is the site within an area of previously worked ground?	No	Historical maps do not indicate the Site is located in an area of worked ground.
10. Is the site within an aquifer. If so, will the proposed basement extend beneath the water table such that dewatering may be required during construction?	No	Underlying geology comprises London Clay.
11. Is the site within 50m of the Hampstead Heath Ponds?	No	The Hampstead Heath Ponds are >900m to the northeast.
12. Is the site within 5m of a highway or pedestrian right of way?	Yes	The Site is located directly beneath a pedestrian right of way.
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No	The maximum excavation depth is 1.20m.
14. Is the site over (or within the exclusion zone of) any tunnels, e.g., railway lines?	Yes	See correspondence with Network Rail, Appendix G and technical note detailing tunnel location, Appendix H.

Table 4.2: Slope Stability Screening

Surface Water and Flooding

Question	Response	Details
1. Is the site within the catchment of the ponds chains on Hampstead Heath?	No	The Hampstead Heath Ponds are 900m northeast of the Site.
2. 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	Hardstanding at the Site will not change. The proposed development will not increase the footprint of the existing structure.
3. Will the proposed basement development result in a change in the proportion of hard surfaced/paved external areas?	No	Hardstanding at the Site will not change. The proposed development will not increase the footprint of the existing structure.
4. Will the proposed basement result in changes to the profile of the inflows (instantaneous and long-term) of surface water being received by adjacent properties or downstream watercourses?	No	Hardstanding at the Site will not change. The proposed development will not increase the footprint of the existing structure.
5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	No	Hardstanding at the Site will not change. The proposed development will not increase the footprint of the existing structure.

Question	Response	Details
6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk from flooding, for example because the proposed basement is below the static water level of nearby surface water feature.	No	The nearest surface water feature is greater than 250m from the Site.

Table 4.3: Surface Water and Flooding Screening

Non-Technical Summary of Screening Process

4.2 The screening process identifies the following issues to be carried forward to scoping for further assessment:

- The shallowest strata at the Site is the London Clay Formation.
- The proposed development is located directly beneath a pedestrian walkway.
- The proposed development is located directly over a Network Rail asset.
- A listed building is located approximately 10m from the proposed development.
- Below ground services are located within the adjacent road.

4.3 The other potential concerns considered within the screening process have been demonstrated to be not applicable or not significant when applied to the proposed development.

5.0 SCOPING

5.1 The following issues have been brought forward from the Screening process for further assessment:

The shallowest strata at the Site is London Clay Formation

5.2 There is potential for heave to occur as a result of excavations undertaken within the London Clay Formation. The proposed development is for a maximum excavation of 1.20m. Therefore, floor slab design will account for heave potential.

The proposed development is located directly beneath a pedestrian walkway

5.3 The existing lower ground floor is located directly beneath a pedestrian highway. The proposed development will not increase the footprint of the existing structure.

5.4 No further action required.

The proposed development is located directly over a Network Rail Asset

5.5 The technical note presented in Appendix H details the tunnel location with respect to the proposed development. And demonstrates that based on proposed elevations and tunnel elevations, the proposed development will not impact upon the Network Rail asset.

5.6 The Network Rail Asset Protection team have confirmed the proposed development will not impact upon their asset. Correspondence with Network Rail is presented within Appendix G.

Listed Building

5.7 There is potential for the proposed development to impact upon the listed building, approximately 10m west of the proposed development.

Below Ground Services

5.8 Below ground services are indicated within the adjacent road.

6.0 SITE INVESTIGATION AND ADDITIONAL ASSESSMENTS

Description of Fieldwork

6.1 Site investigation works were undertaken on 15th September 2023 and comprised:

- Drilling of 1No. windowless sample borehole (WS01) to a depth of 5.0m below ground level (bgl), to determine ground and groundwater conditions, provide soil strength information and enable the collection of soil samples for laboratory geotechnical testing;
- Installation of a groundwater monitoring standpipe and subsequent monitoring of groundwater levels; and
- Laboratory geotechnical testing of Site soils.

6.2 The soil arisings were logged by a suitably qualified Engineer, in line with the relevant British Standard (BS 5930 and Eurocode 7). The borehole log is included within Appendix E.

6.3 All works were undertaken in accordance with the CCE Health and Safety Policy and within the framework of a Health and Safety plan.

6.4 The borehole was undertaken within the front garden of the property at a level of 73.60m aOD, approximately 200mm below the adjacent footpath. An exploratory hole location plan is presented in Appendix E.

Laboratory Geotechnical Testing

6.5 Selected soil samples were subjected to testing within a UKAS accredited geotechnical laboratory. The results of this testing, along with laboratory certificates are included as Appendix E. Laboratory testing comprise:

- 2No. plastic limit tests;
- 2No. moisture content tests; and
- 3No. pH and sulphate tests.

Ground Conditions

<u>Topsoil / Made Ground</u>

6.6 Topsoil was recorded to 0.50m. The Topsoil was underlain by Made Ground to 1.40m bgl (72.2m aOD), at a level approximate to the base of the lower ground floor steps. The Made Ground was recorded as: '*soft brown black silty clay, track rounded fine to medium flint and brick.*'

6.7 A single chemical test undertaken on a sample from the Made Ground, recorded a pH of 8.1, SO_4 of 25mg/l and total sulphur of 0.058%.

Weathered London Clay

6.8 The Made Ground was underlain by soils considered to represent weathered London Clay, to the maximum extent of the borehole, 5.0m bgl (68.60m aOD). The weathered London Clay was described as: '*firm to stiff orange-brown, mottled grey silty clay*'.

6.9 Strength testing on recovered soils samples recorded material strengths in the range of 78kPa to 158kPa, as detailed in the strength dept plot, Appendix E.

Test	No. of tests	Result
Moisture Content	2	31.3% and 32.5%
Plasticity Index	2	43% and 53%
pH	2	8.1 and 8.2
SO_4	2	10mg/l and 95mg/l
Total sulphur	2	0.01%

Table 6.1: Weathered London Clay summary of geotechnical test results

6.10 Plotting the results on the plasticity chart, Appendix E, indicates the material is a clay of very high plasticity and therefore of high volume change potential.

Groundwater

6.11 During exploratory hole formation, groundwater was not encountered. Subsequent monitoring of the installed standpipe (28th September 2023) did not record groundwater.

Allowable Bearing Pressure

6.12 Based on the recorded ground conditions, the following ground model and design parameters have been determined, as summarized in Table 6.2.

Lithology	Depth to base	Y (kN/m^3)	PI (%)	C' (Kn/m^2)	Phi (°)	mv (MN/m^2)	E (MN/m^2)
Made Ground	1.4m, 72.2m aOD	17	20	24	5	-	-
Weathered London Clay	>5.0m, 68.6m aOD	18	45	98	20*	0.141	20,000
Groundwater	>4.0m bgl (69.6m aOD)						

* BS8002

Table 6.2: Ground Model Design Parameters

Design Factors

- Permanent design load: EC7 DA1b
- tan ø, 1.25
- c', 1.6
- c_u, 1.4
- q_u, 1.4

Allowable Bearing Pressure

6.13 On the basis of the ground model, the following is calculated at basement formation level:

$$q_a = \frac{1}{F}\left(c.N_c + \sigma_0.N_q + \frac{1}{2}.B.\gamma.N_\gamma\right)$$

where;
N_c, N_q and N_Υ are bearing capacity factors
c' is the cohesive strength of the soil (kN/m^2)
B is the width of the foundation (m)
Υ is the unit weight of the soil (kN/m^3)
σ_0 is the overburden pressure
F is a factor of safety against bearing capacity failure

6.14 With formation level at approximately 2.30m bgl (71.3m aOD), an allowable bearing pressure of **198kN/m^2** is calculated. The calculations for this are provided in Appendix J.

Heave

6.15 Due to the reduction in pressure from overburden, excavations in clay will result in heave. A conservative estimate of long-term heave as a result of excavations is 0.15%. Therefore, for an excavation of 1.20m, an allowance of 1.8mm heave protection should be incorporated within the slab design.

Buried Concrete

6.16 Based on the chemical laboratory test results (BRE SD1 suite) and in accordance with BRE Special Digest 1: 2005 (Concrete in Aggressive Ground), the following criteria have been determined. A total of 3No. BRE SD1 chemical suits were undertaken on soil samples from the Made Ground and London Clay horizons.

6.17 The site is classified as 'natural ground' and the local geology (weathered London Clay) is indicated to contain pyrite (i.e., sulphide) and groundwater conditions are considered to be 'static'. Laboratory chemical testing recorded water soluble sulphate concentrations in the soil of between 10mg/l and 95mg/l. Therefore, the Design Sulphate Class for the site is considered to be "**DS-1**". pH values of between 8.1 and 8.2 were also recorded. Therefore, the

"Aggressive Chemical Environment for Concrete (ACEC)" class for concrete in the ground is indicated to be **AC-1**.

Ground Movement Assessment

6.18 The existing lower ground floor at No.31A Belsize Crescent extends to the front of the building.

6.19 The proposal is to create additional living space and lower formation level by a maximum of 1.20m bgl.

6.20 Ground movement during basement construction can occur as a result of the basement construction (underpinning) and due to the excavation of soil from the basement area, which results in a bending moment on the wall from earth pressure. The methodology for calculating ground movement in CIRIA document C760 '*Guidance on Embedded Retaining Wall Design, 2017*', has been followed, with calculation sheets presented in Appendix F.

6.21 The existing foundation profile is not known – this will be determined when construction works begin and a section of the basement is broken out. Therefore, for the analysis, a worst-case scenario approach has been taken.

6.22 The maximum excavation depth will be 1.20m. The proposed method of wall construction will be by underpinning. Based on the method of construction, an estimate of 5mm vertical and horizontal movement has been determined by Campbell Reith who undertake technical reviews of BIAs for Camden Borough.

6.23 Notwithstanding, with a maximum depth of excavation of 1.20m below existing formation level and at a distance of greater than 4.80m from the proposed excavation, the façades of No.31 and 33 Belsize Crescent are outwith the zone of influence from ground movement due to basement construction, as detailed in the calculation sheets provided in Appendix F.

6.24 Ground movements as a result of basement construction are within tolerable limits and will not adversely impact upon buried services within the adjacent road.

7.0 CONSTRUCTION METHODOLOGY/ENGINEERING STATEMENTS

Existing Basement Structure

7.1 The house is part of a terrace of similar houses, although the section of basement under consideration here projects from the front of the terrace and does not include party walls on either side (Fig. 7.1). The wall on one side does form the boundary with the adjacent plot. It has been noted that the adjacent property is extending their basement below their front garden, although the extent of this work is unknown.

7.2 The proposed works impact only a portion of the existing basement, being the section below the front access path and steps, including a section which projects below the public footpath. The ground level either side of the path and steps is lower than that of the footpath (Figs. 7.2 and 7.3).

7.3 The walls are of solid brick construction. The existing foundations are not known at this stage, but are likely to be brick footings, possibly with corbels to spread the load.

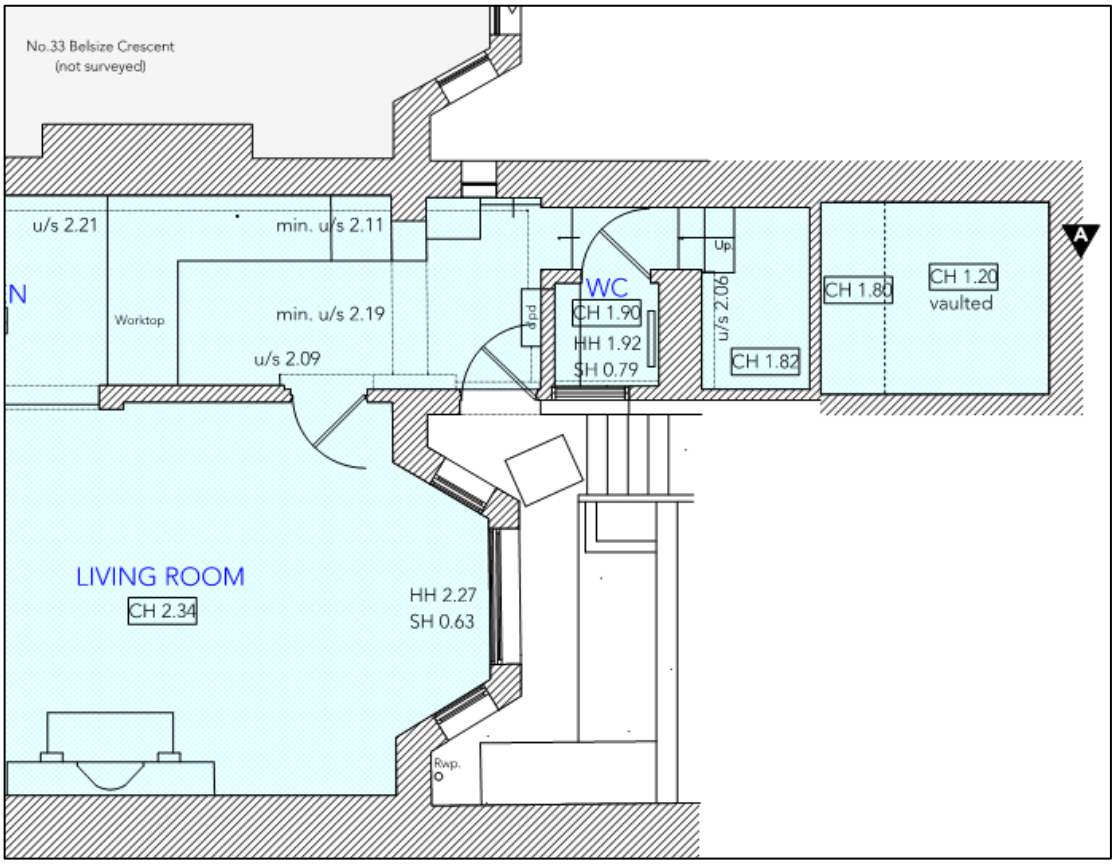


Figure 7.1: Existing basement footprint (Partial)

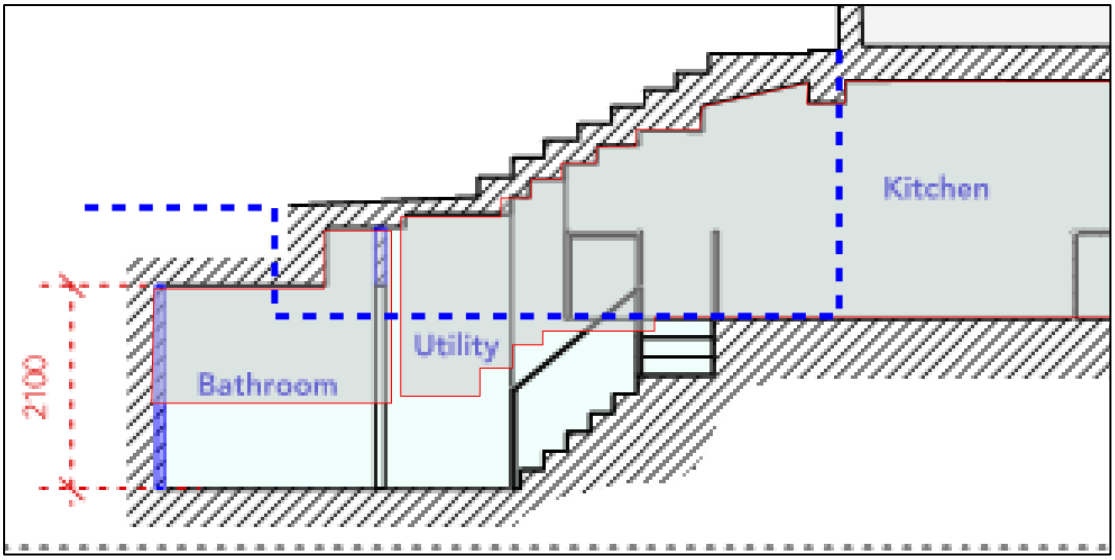


Figure 7.2: Proposed basement part long section with existing overlaid and assumed ground levels (blue dashed line)

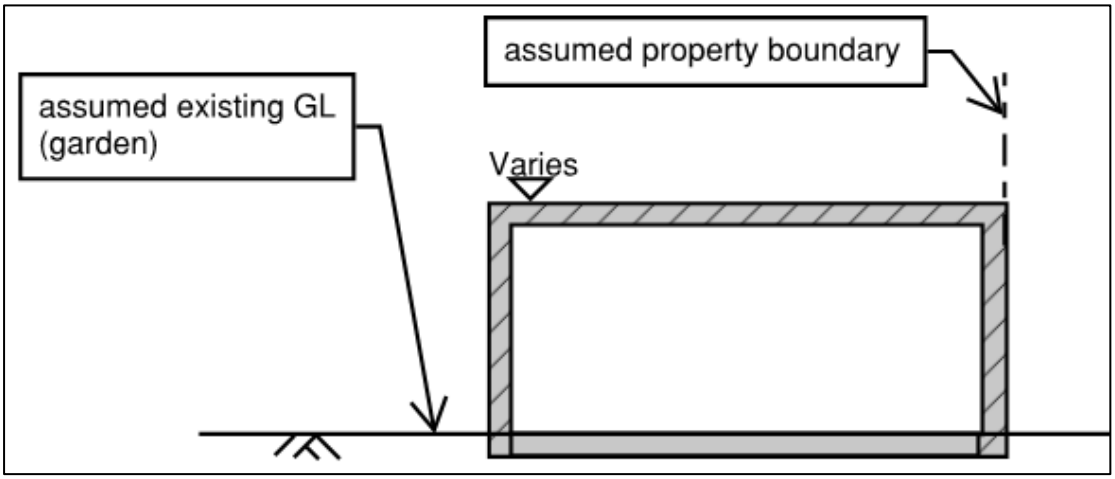


Figure 7.3: Simplified section showing existing construction

Proposed Basement Structure

7.4 The proposals are intended to lower the floor of the projecting basement portion, to improve headroom and make the space more inhabitable.

7.5 The simplest way to construct the extended basement would be to demolish the access steps and path, and to construct the new sections of basement, followed by reconstructing the portions above the garden level. However, this option has initially been rejected.

7.6 Given the desire to retain the existing path, steps, and wall, i.e., the roof and sides of the existing basement, the proposed solution is to remove the existing slab and to construct new concrete walls below the existing walls, using an underpinning type solution, followed by constructing a monolithic slab connecting the walls (Fig. 7.4). It should be noted that the

portion of reduced floor level closest to the house only extends across half the width of the basement. This must be taken into account when designing the structural works.

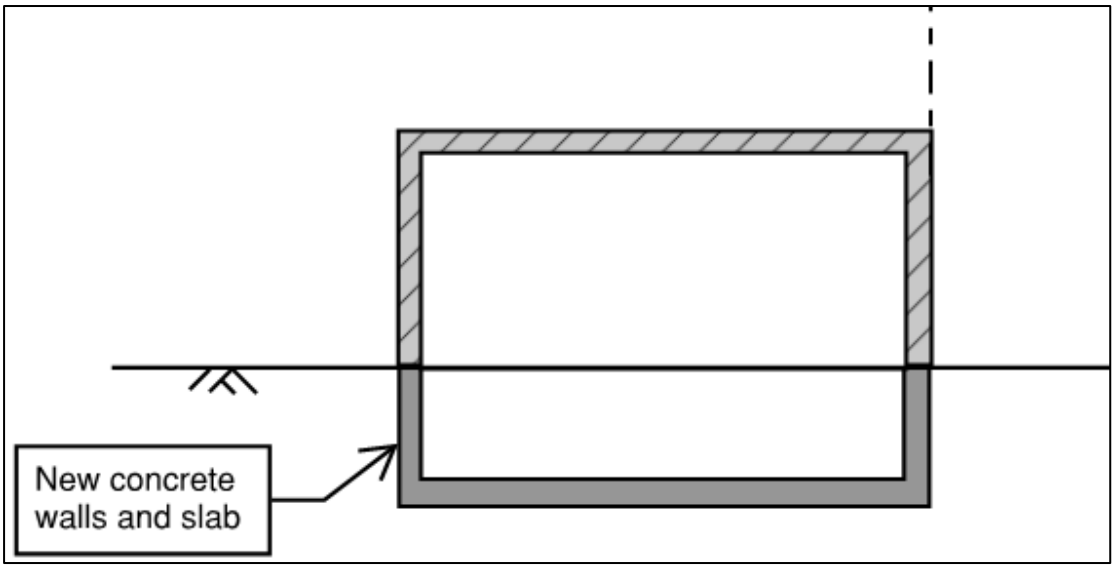


Figure 7.4: Simplified section showing proposed construction

Proposed Sequence of Working

7.7 Priority has to be given to the stability of the building at all times. There are several options for sequencing the construction of this basement extension, and the final choice will be made following discussion with the Contractor and the Structural Engineer.

7.8 Note the following elements of the structural works (Letters refer to Fig. 7.5):

A. This area of floor is dropped by a varying amount, 1, 2, or 3 steps. Construction details should be agreed on site.
B. This wall forms part of the slightly dropped floor in A. Together with the wall on the opposite side, it can either be the first or last section to be built (but see note below)
C. The floor in this area is raised slightly from the original. It should be built up off the original floor.
D. This wall will be stepped at the edge of section A and between sections 1 and 2.
E. This wall underpins part of the solid brick pier (as does part of wall D).
F. This is the end wall.

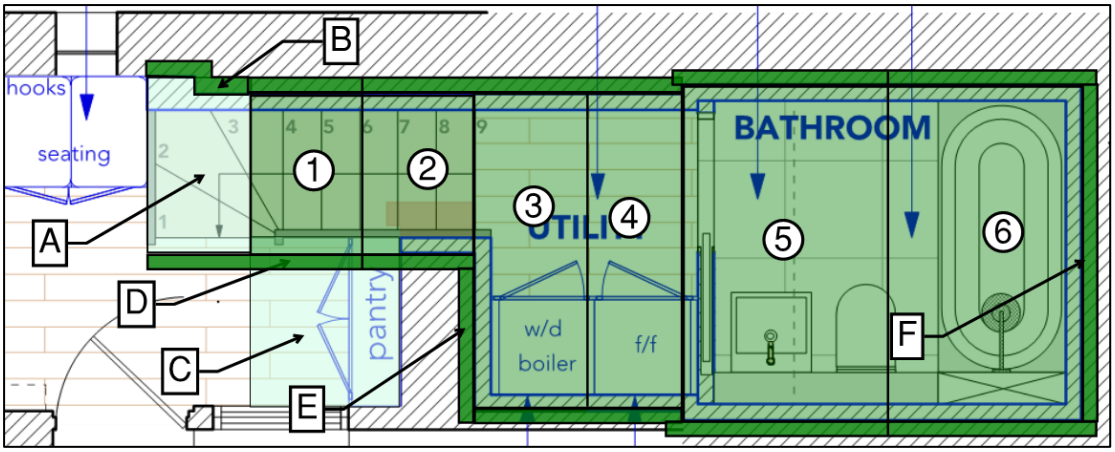


Figure 7.5: Construction sequence and structural elements

7.9 One possible sequence is outlined below:

1. Starting with section 1 (Fig. 7.5).
2. Excavate locally below and between existing walls and trim corbelled footings if necessary Note that the footings may not be corbelled masonry, and may be strip/mass concrete which would be treated in the same way. Foundation trimming should be by saw cutting and not by hydraulic breaker, to minimise potential for damage to the retained portions of the structure..
3. Construct short sections of RC slab (approx. 1.0m) across width of basement.
4. Construct retaining walls between the new slab and the existing walls.
5. Once concrete has reached sufficient strength dry pack existing walls to ensure full and even load transfer.
6. Repeat steps 1 – 4, working away from the house. Waterproofing between adjacent sections should be achieved by the use of water bars.

Note: If desired, a hit and miss sequence can be adopted, whereby sections 1 and 4 are constructed simultaneously, followed by sections 2 and 5 and finally sections 3 and 6.

7.10 Figure 7.6, below, provides a simplified section of underpinning wall and slab. Depending on the length of wall in a given section, temporary support may be required. This can be provided in one of several ways. For example, a continuous angle of PFC section can be bolted to the wall, above the excavation. If the footing is corbelled brickwork, this member should be fixed to the cut face. Temporary props would then support this member either side of each section, while it is being excavated. Once the concrete has been placed and cured, and the dry pack installed, the props can be removed and repositioned either side of the next section. Also note that this sequence does not impact the existing path between the public footpath and the house, which can be kept in use during the work. Note that temporary support may be required to the excavations formed as part of the underpinning work. The design, implementation, maintenance and removal of such temporary works are the responsibility of the Contractor under regulation 15 of The Construction (Design and Management) Regulations (CDM) and are not covered by this report.

7.11 Note that this is a simplified sequence, prepared to demonstrate viability. It may be possible to progress more than one section at the same time. In this case, at least one, and preferably two sections should be left between the sections being constructed. Any variation to the sequence proposed in section 6.9 must be agreed with the designer before implementing.

7.12 It is possible that these works will result in some movement of the building and the footpath, and that such movement will result in minor cracking to the property. This is to be expected as the load paths adjust to the new structural form. It is important that a party wall agreement and pre-start condition survey are in place before the work starts. It is also recommended that regular monitoring takes place during the construction phase, with agreed trigger points and actions.

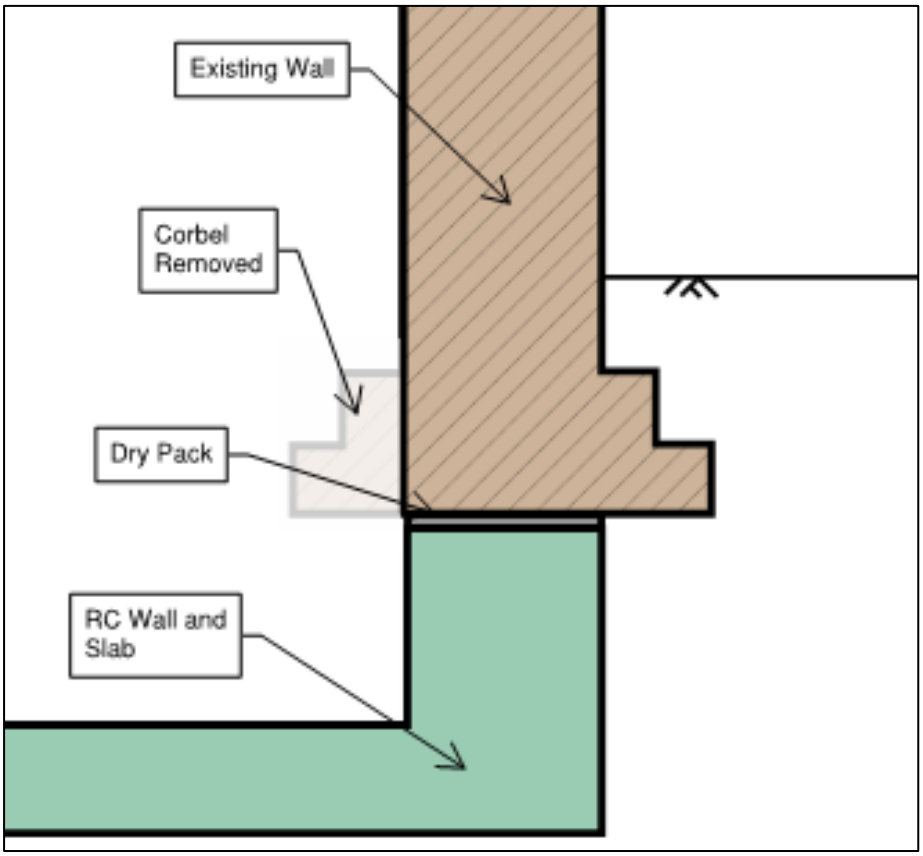


Figure 7.6: Detail of underpinning wall and slab

8.0 BASEMENT IMPACT ASSESSMENT

8.1 Based on our understanding of the Site and proposed development, the following conceptual site model (CSM) has been developed.

- Ground conditions at the Site are indicated to comprise solid strata of the London Clay Formation. Based on the local topography, there is the potential for Head deposits at the Site.
- Due to the presence of London Clay beneath the Site, groundwater is not anticipated to impact upon the proposed development.
- The local topography slopes at an angle of 4° to the south/southwest.
- The existing floor level is indicated to be at 71.5m aOD.
- Proposed finished floor level is indicated to be at 70.6m aOD. Allowing for insulation, a thicker floor slab and heave protection, anticipated formation level will be at 70.3m aOD.
- An allowable bearing pressure of 375kN/m^2 is calculated.
- A concrete classification of DS-1, AC-1 is calculated.
- The depths of neighbouring foundations/basements are indicated to be at an equivalent level to existing Site levels.
- The proposed development is located directly beneath a footpath.
- The proposed development is located directly over a Network Rail asset.
- The proposed development is relatively minor and not indicated to impact upon local infrastructure.
- Proposed mitigation is for good construction methodology.
- Residual impacts are not anticipated.
- Groundwater monitoring within the installed standpipe did not record groundwater to 4.0m bgl (69.6m aOD).

Land Stability/Slope Stability

8.2 The indicated founding strata at the Site is the London Clay Formation.

8.3 The risk of movement and damage to this development due to shrink and swell of the London Clay is negligible considering the minor depth of excavation (1.20m).

8.4 Based on the distance from the excavation to building façade, the Ground Movement Assessment has concluded that ground movements caused by the excavation and construction of the proposed development will be negligible. The Damage Impact to surrounding structures within the zone of influence has been assessed as Category 0, in accordance with the Burland Scale.

8.5 The BIA has concluded that there will not be risks or stability impacts to the development or adjacent sites due to slopes. With good construction techniques, comprising hit and miss construction, with propping prior to slab formation, residual impacts are not considered likely.

Hydrogeology and Groundwater Flooding

8.6 The BIA has concluded there is a very low risk of groundwater flooding to the proposed development.

8.7 The BIA has concluded there are no impacts to the wider hydrogeological environment from the proposed development.

Hydrology, Surface Water Flooding and Sewer Flooding

8.8 The BIA has concluded there is a low risk of surface water/sewer flooding to the proposed development.

8.9 The BIA has concluded there are no impacts to the wider hydrological environment from the proposed development.

9.0 CONSTRAINTS AND LIMITATIONS

9.1 The copyright of this report is vested in Create Consulting Engineers Limited and the Client, Ellis Naidoo. The Client, or their appointed representatives, may copy the report for purposes in connection with the development described herein. It shall not be copied by any other party or used for any other purposes without the written consent of Create Consulting Engineers Limited or the Client.

9.2 Create Consulting Engineers Limited accepts no responsibility whatsoever to other parties to whom this report, or any part thereof, is made known. Any such other parties rely upon the report at their own risk.

9.3 Create Consulting Engineers Limited has endeavoured to assess all information provided to them during this appraisal. Should additional information become available which may affect the opinions expressed in this report, Create Consulting reserves the right to review this information and, if warranted, to modify the opinions presented in the report accordingly.

9.4 The report summarises information from a number of external sources and is unable to offer any guarantees or warranties for the completeness or accuracy of information relied upon. Information from third parties has not been verified by Create Consulting Engineers Limited unless otherwise stated in this report.

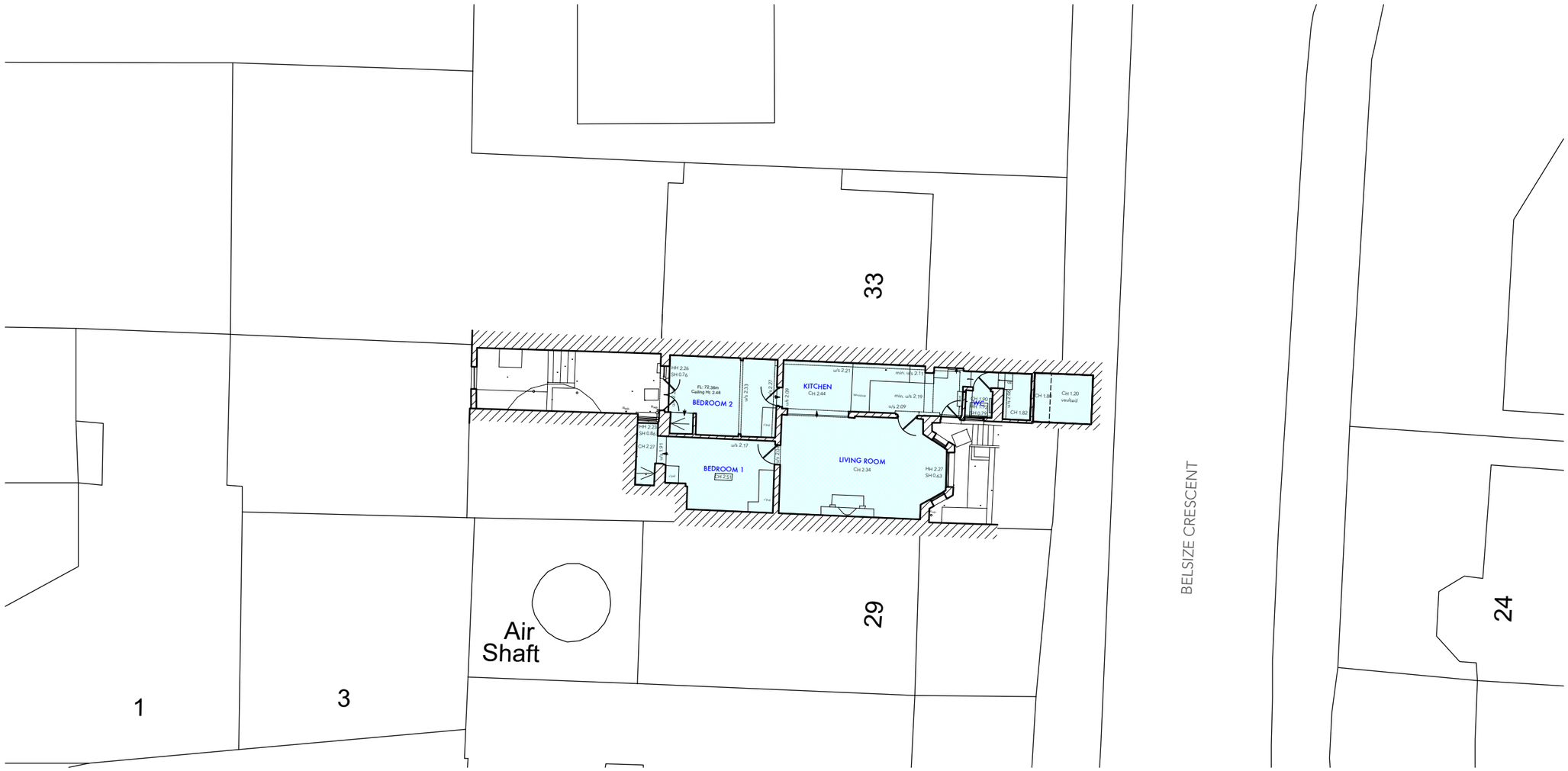
9.5 It should be noted that the risks which are identified in this report are perceived risks based on the available information at the time of writing and that the actual risks associated can only be assessed following a physical investigation of the site.

9.6 The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.

APPENDICES

APPENDIX A

ARCHITECTURAL DRAWINGS



EXISTING SITE PLAN

N

SCALE BAR (m) 0 0.5 1 2 3 4 5

WRITTEN DIMENSIONS ONLY TO BE USED
ALL DIMENSIONS ARE IN MILLIMETRES
ALL DIMENSIONS TO BE VERIFIED ON SITE
ANY INCONSISTENCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY

Job No: 7335

PLANNING

31A Belsize Crescent
London
NW3 5QY

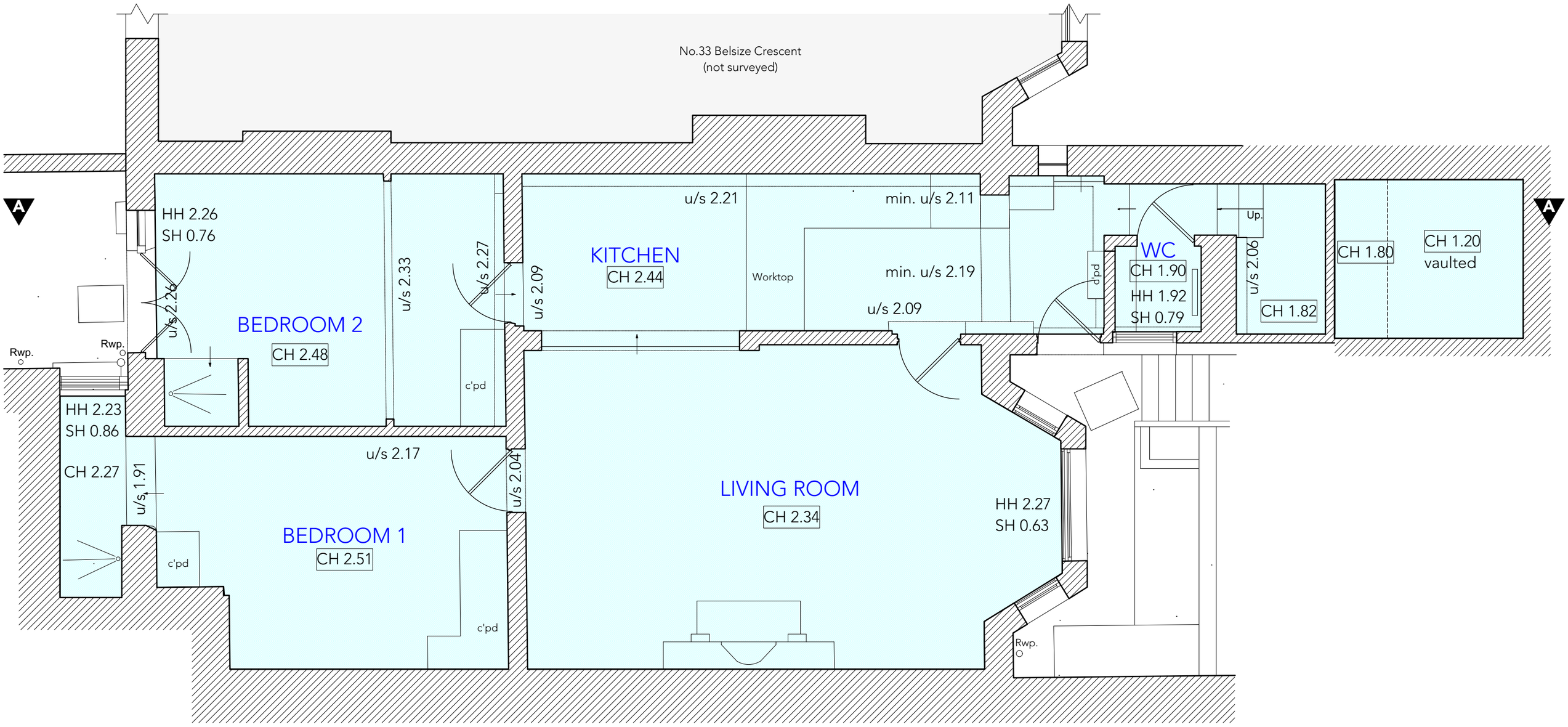
p-ad
192D Campden Hill Road,
Notting Hill Gate, London, W8 7TH
t: 0208-4590172
e: hello@pelicanad.co.uk

p-ad

Title: Existing Site Plan

Drawn by	Scale	Number	Rev
ST	1:200 @ A3	7335/01	B

EXISTING PLAN



EXISTING LOWER GROUND FLOOR

N

0 0.5 1 2

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Title	Existing Plans		
Drawn by	Scale	Number	Rev
ST	1:50 @ A3	7335/02	B

EXISTING ELEVATIONS

Datum: 70.00m.

EXISTING FRONT ELEVATION

EXISTING REAR ELEVATION

0 0.5 1 2 3 4 5

SCALE BAR (m)

WRITTEN DIMENSIONS ONLY TO BE USED
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NW3 5QY

Title: Existing Elevations

Drawn by	Scale	Number	Rev
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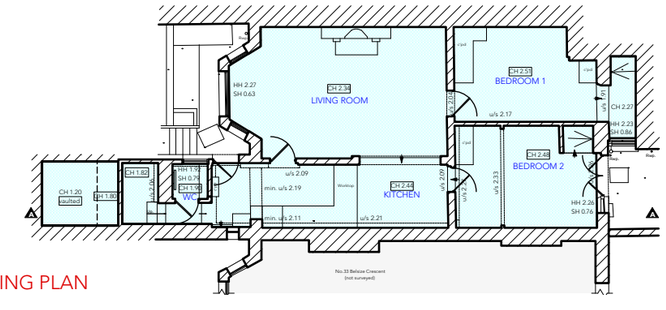
EXISTING SECTION

Datum: 70.00m.

EXISTING SECTION AA



EXISTING PLAN
1:200

0 0.5 1 2 3 4 5

SCALE BAR (m)

WRITTEN DIMENSIONS ONLY TO BE USED
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London
NW3 5QY

Title: Existing Section AA

Drawn by	Scale	Number	Rev
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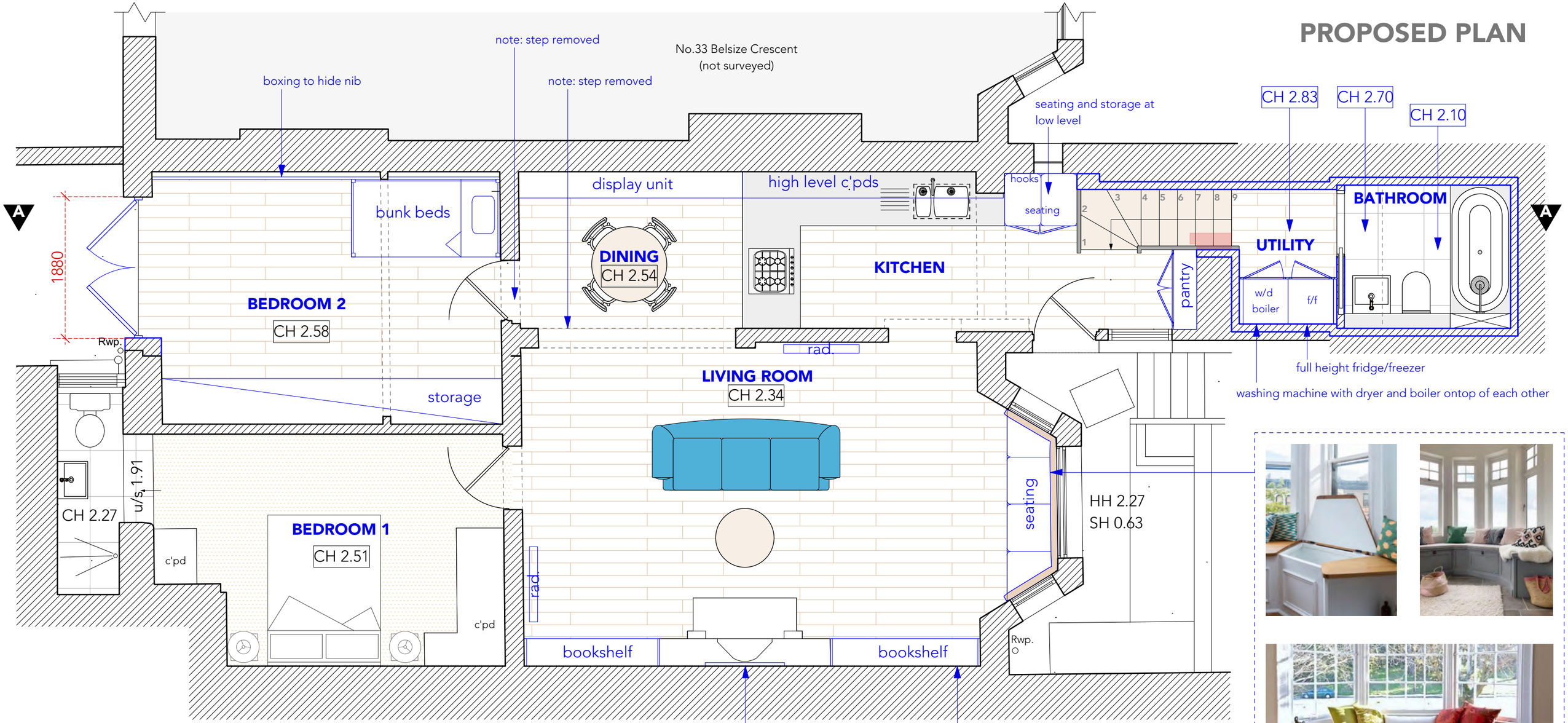
PROPOSED PLAN



PROPOSED LOWER GROUND FLOOR

bay window seat to either be open or have integrated storage

Proposal:

+ open front entrance
+ pantry relocated to kitchen area (size 4x existing)
+ boiler relocated above washing machine and dryer
+ pantry beside existing window
+ large double doors in B2
+ large storage unit in B2
+ boxing in B2 to level out protruding nib
+ bay window seating
+ display unit in dining room
+ bookshelves in living room (same width as fireplace)

EXISTING

PROPOSED

N

0 0.5 1 2

NOTE :-
TO MEET CURRENT BUILDING REGULATION A MIST SYSTEM IS REQUIRED THROUGHOUT

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ALL DIMENSIONS TO BE VERIFIED ON SITE
ANY INCONSISTENCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY

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London
NW3 5QY

Title: Proposed Plan
Drawn by: ST
Scale: 1:50 @ A3
Number: 7335/05
Rev: B

PROPOSED ELEVATIONS

Datum: 70.00m.

PROPOSED FRONT ELEVATION

NOTE: FRONT ELEVATION REMAINS UNCHANGED

PROPOSED REAR ELEVATION

0 0.5 1 2 3 4 5

SCALE BAR (m)

WRITTEN DIMENSIONS ONLY TO BE USED
ALL DIMENSIONS ARE IN MILLIMETRES
ALL DIMENSIONS TO BE VERIFIED ON SITE
ANY INCONSISTENCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY

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NW3 5QY

Title: Proposed Elevations

Drawn by	Scale	Number	Rev
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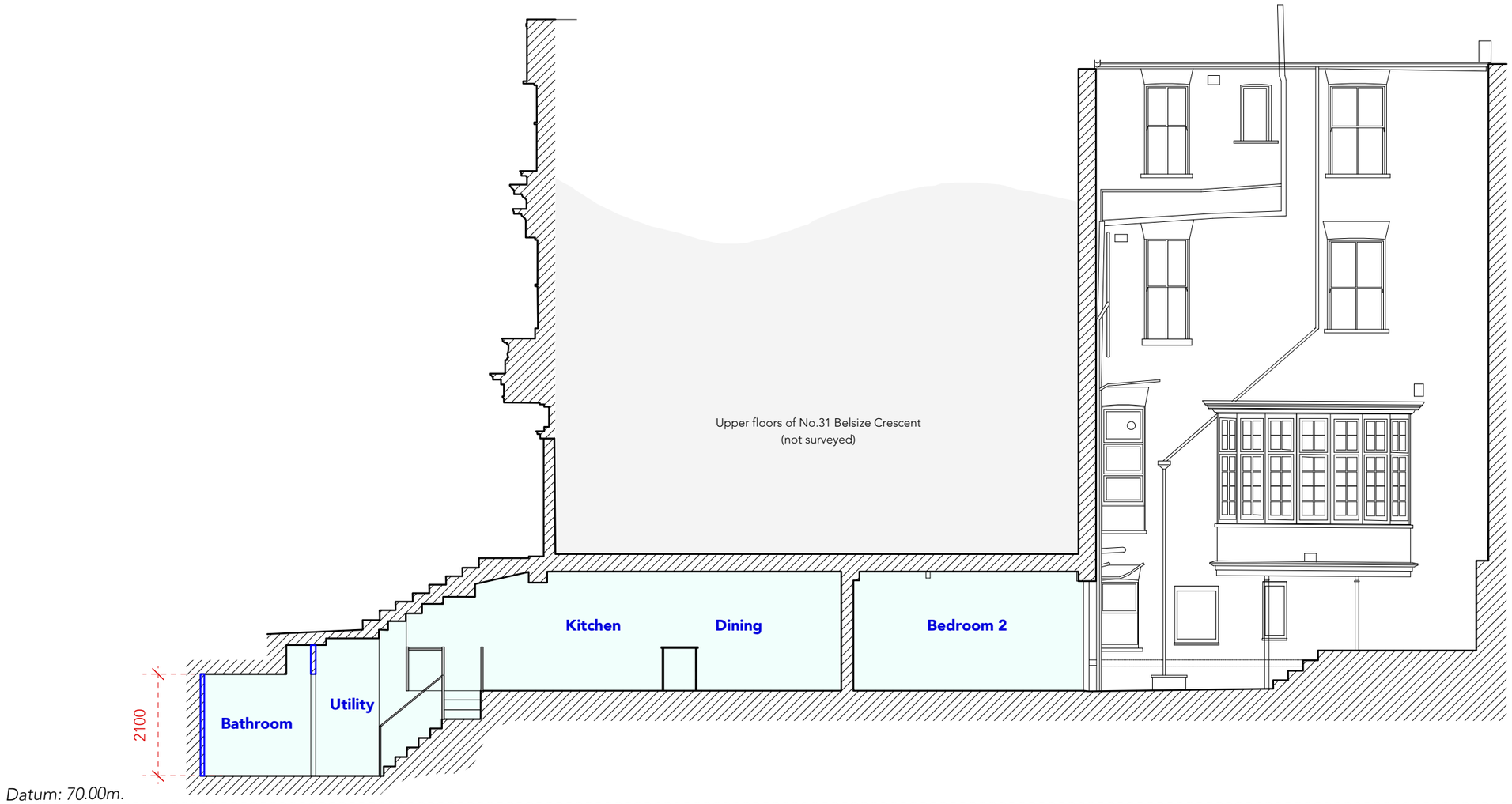
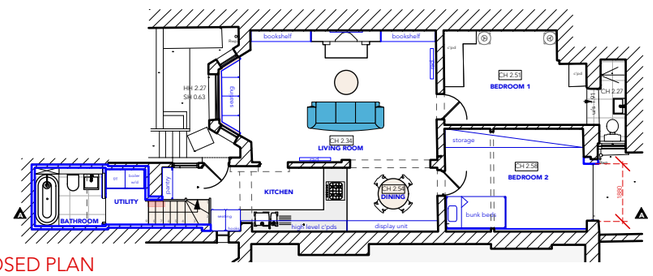


PROPOSED SECTION AA



PROPOSED PLAN
1:200

0 0.5 1 2 3 4 5

SCALE BAR (m)

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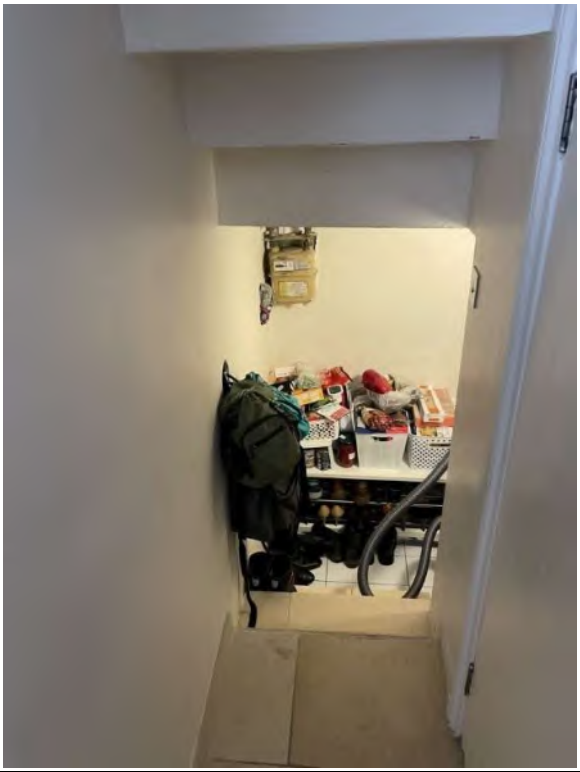
Title	Proposed Section AA		
Drawn by	Scale	Number	Rev
ST	1:100 @ A3	7335/08	B

APPENDIX B

PHOTOS

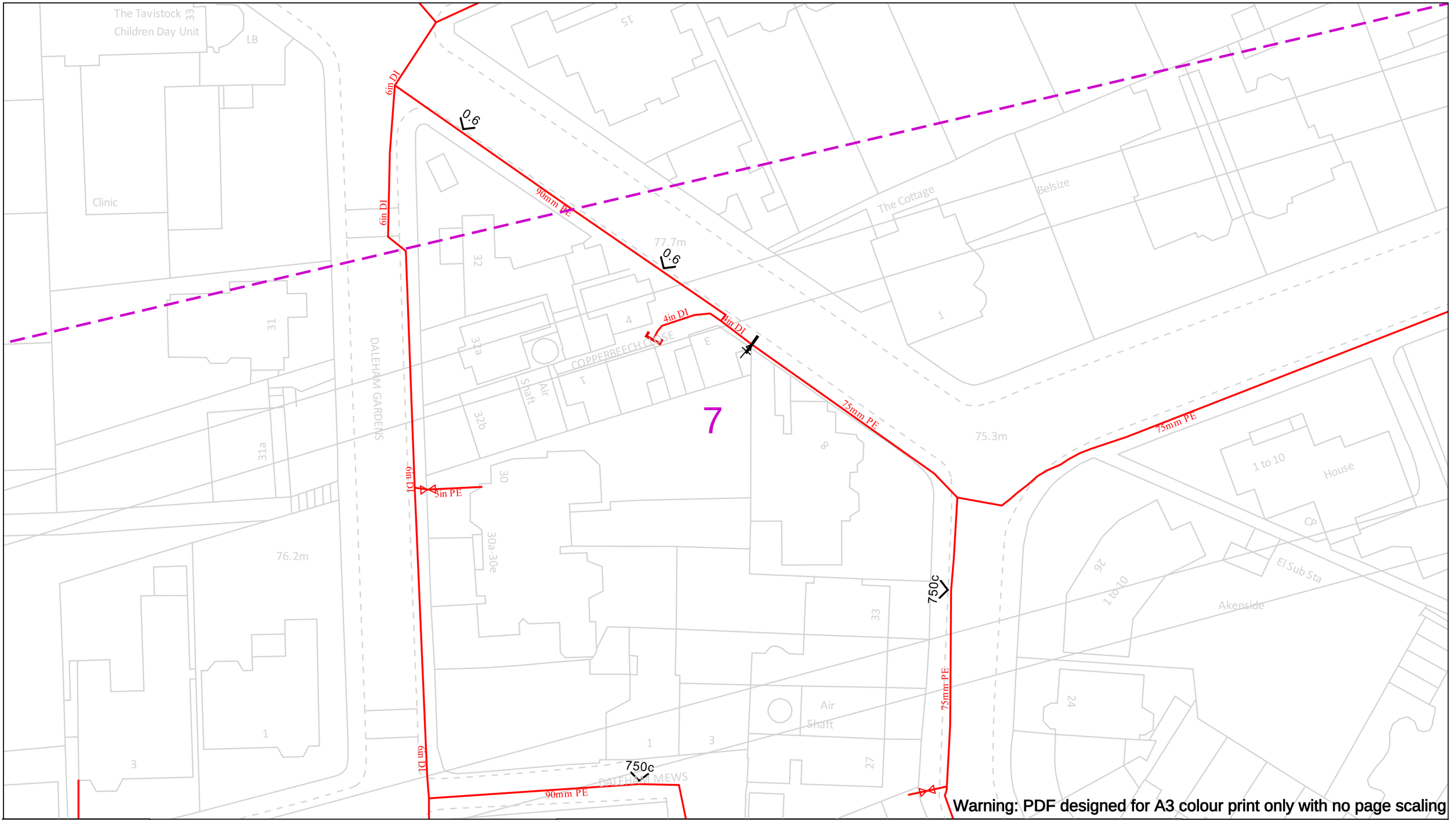
Plate P1: Building façade

Plate P2: Area of proposed development



APPENDIX C

SERVICE PLANS



Warning: PDF designed for A3 colour print only with no page scaling

Date Requested: 22/07/2022
Job Reference: 26361777
Site Location: 526647 184816
Requested by:
Miss Marie Read
Your Scheme/Reference: P22-2633

Scale: 1:500 (When plotted at A3)

View extent: 200m, 115m

IMPORTANT NOTICES

This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

In case of an emergency call 0800 111 999

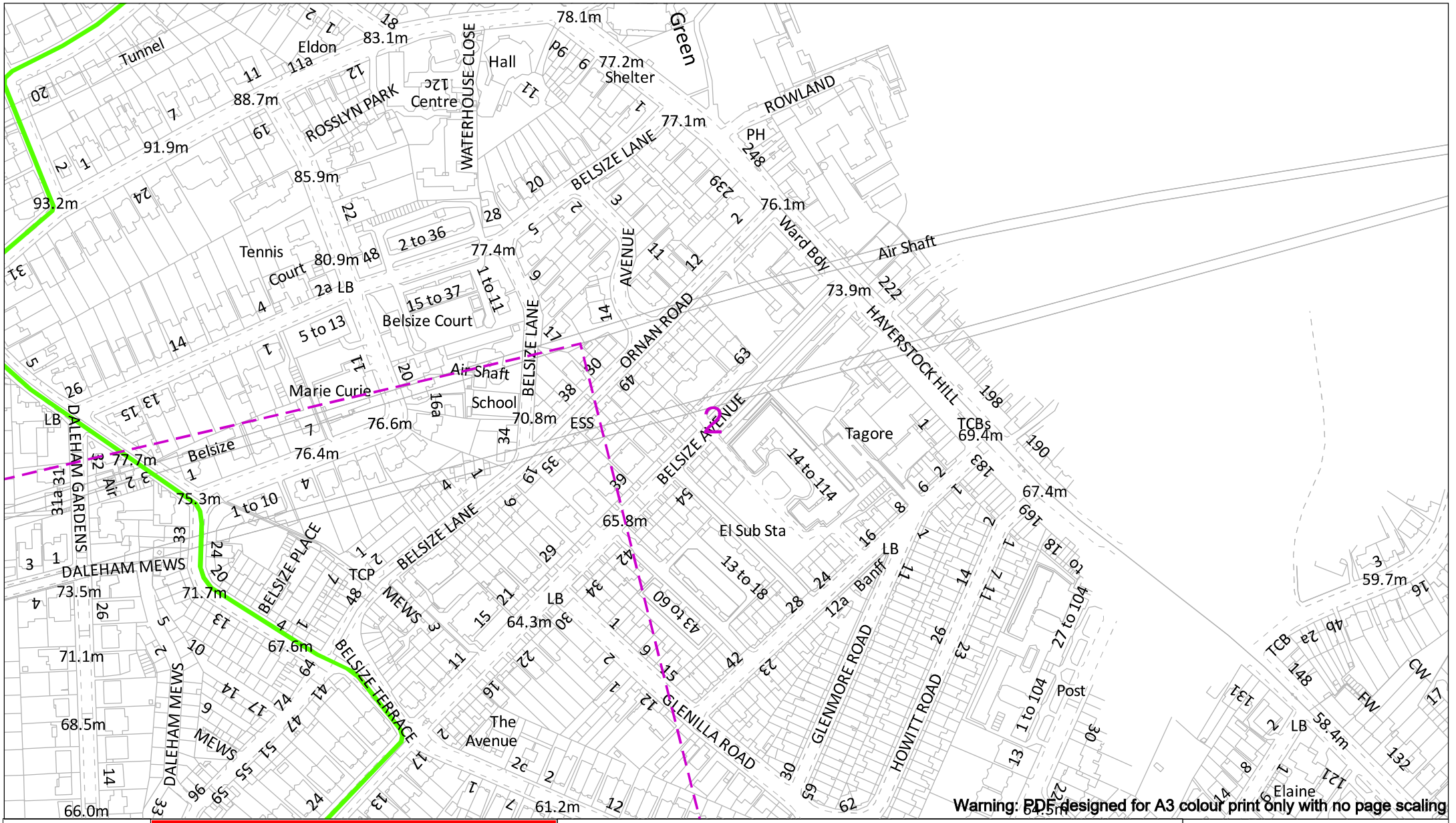
50m

Dig Sites

Area: Line:

- LP Mains
- MP Mains
- IP Mains
- LHP Mains
- Valve
- Depth of cover
- Syphon
- Diameter Change
- Material Change
- Out of Standard Service

Cadent
Your Gas Network



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EXTREME CAUTION - HIGH VOLTAGE
RISK OF DEATH OR SERIOUS INJURY

National Grid Electricity Emergency Number: 0800 40 40 90
Available 24 hours, 7 days/week. Calls may be recorded and monitored

Warning: PDF designed for colour print only with no page scaling

Date Requested: 22/07/2022
Job Reference: 26361777
Site Location: 526647 184816
Requested by:
Miss Marie Read
Your Scheme/Reference: P22-2633

Scale: 1:2500 (When plotted at A3)

IMPORTANT NOTICES

This plan shows those pipes owned by National Grid Electricity Transmission plc in its role as a Licensed Electricity Transporter (ET). Electricity cables owned by other ETs, or otherwise privately owned, may be present in this area. Information with regards to such cables should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Ancillary equipment such as cooling systems and communication cables are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by National Grid Electricity Transmission plc or their agents, servants or contractors for any error or omission. Safe digging practices, in accordance with HS(G)47, must be used to verify and establish the actual position of cables and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all persons (either direct labour or contractors) working for you on or near electricity apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

100m

Dig Sites Area: Line:

Underground Cables

Overhead Lines

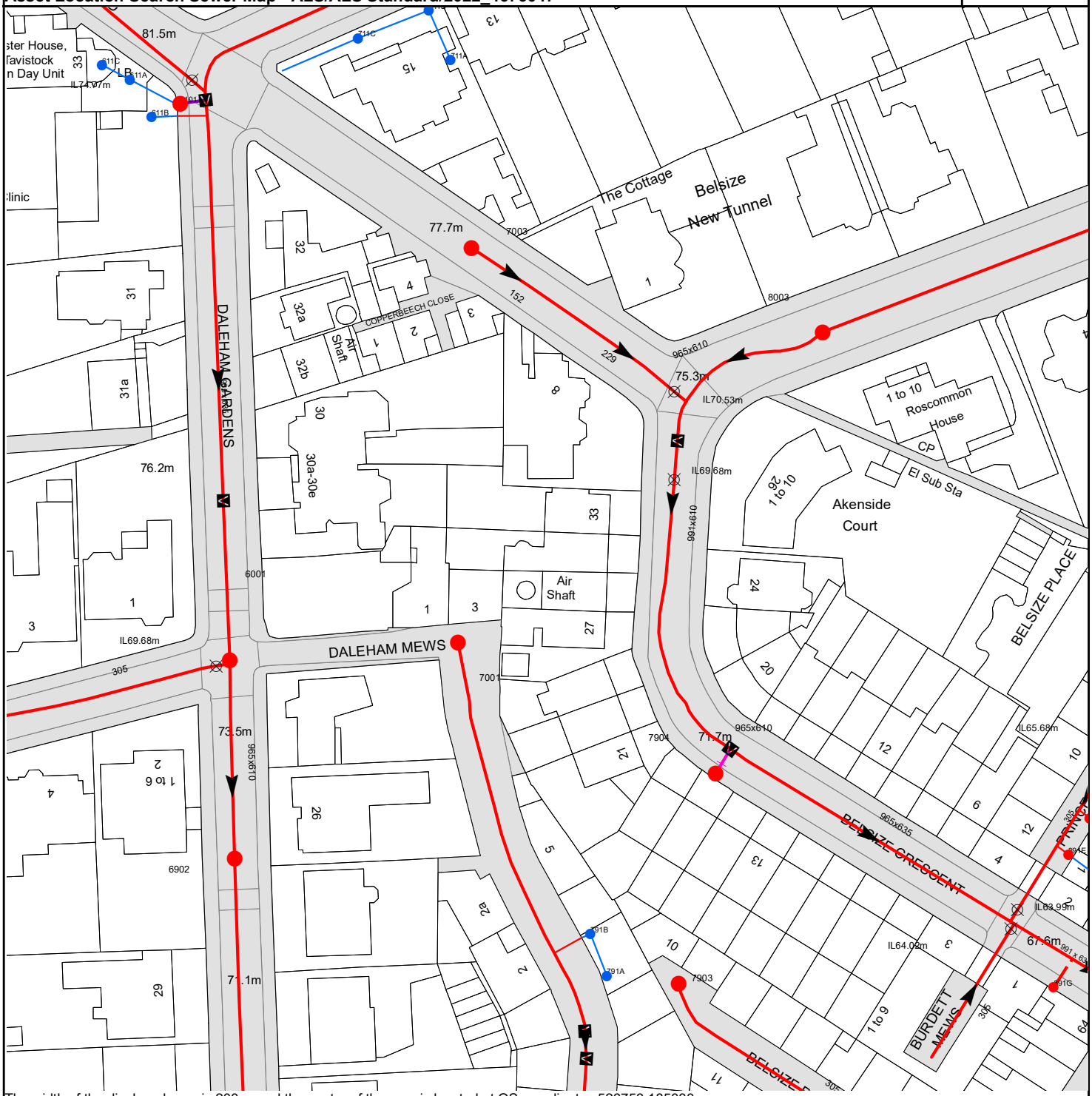
Fibre Cables

nationalgrid

NationalGrid House
Warwick Technology Park
Gallows Hill
Warwick
CV34 6DA

AssetProtection@NationalGrid.com

Asset Location Search Sewer Map - ALS/ALS Standard/2022_4676047



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 526753,185030

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.

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Inlet
- Outfall
- Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

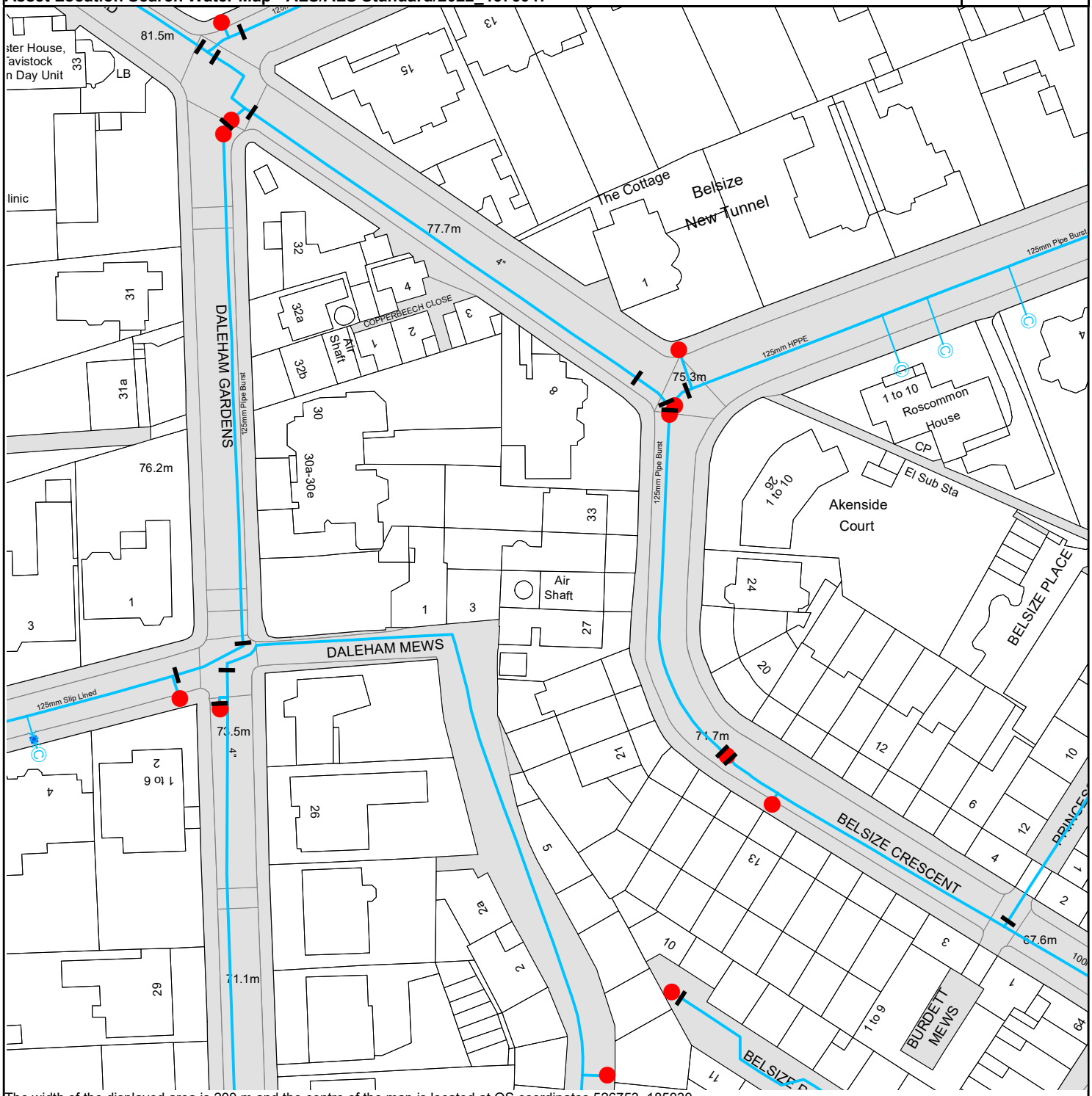
- Casement — Ducts may contain high voltage cables. Please check with Thames Water.
- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters.

Text next to a manhole indicates the manhole reference number and should not be taken as a measurement.
If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2022_4676047



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 526753, 185030.

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.

Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger
- **Casement:** Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

APPENDIX D

FLOOD RISK ASSESSMENT
AND DRAINAGE STRATEGY

Our ref: GB/CS/P22-2633/01

BY EMAIL ONLY

26 August 2022

Eilis Naidoo
31A Belsize Crescent
London
NW3 5QY

Dear Eilis,

31A BELSIZE CRESCENT, LONDON NW3 5QY – FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY

As requested, we have undertaken a desk-based Flood Risk Assessment (FRA) and Drainage Strategy for the above project. Please find a summary of our key findings below.

Project Context

31A Belsize Crescent is located in north London, to the northwest of Belsize Park. The site (Figure 1) is bound by Belsize Crescent to the east and Akenside Road to the north. The application involves various elements of conversions and extensions to the existing property. The proposed development involves the lowering of the floor level in the basement/vault area under the front garden and pavement however, excluding any of main building or surrounding areas. This will include an extension of the basement of approximately 9.0 m^2, to extend under the footpath to the front of the property. The existing and proposed plans and proposed elevations are enclosed within this report.

Objectives

To undertake a Flood Risk Assessment in accordance with the National Planning Policy Framework[1] (NPPF), updated 2021, and Planning Practice Guidance to the NPPF[2] in order to meet the requirements of a Basement Impact Assessment as required in The London Borough of Camden flood risk management strategy[3], Camden Planning Guidance (CPG)[4] and Camden Development Policies [5].

[1] NPPF accessed online (August 2022) https://www.gov.uk/government/publications/national-planning-policy-framework--2
[2] PPG accessed online (August 2022) http://planningguidance.planningportal.gov.uk/
[3] London Borough of Camden Flood risk Management Strategy accessed online (August, 2022) https://www.camden.gov.uk/documents/20142/1458280/Camden_Flood_Risk_Management_Strategy.pdf/9e739029-02e5-59c7-e9a4-64d3622f2475
[4] Camden Planning Guidance accessed online (August, 2022) https://www.camden.gov.uk/documents/20142/4823269/Water+and+Flooding+CPG+-+March+2019.pdf/c7633c7d-2b93-cb52-ee01-717fa0416e84
[5] Camden Development Policies accessed online (August, 2022)

The key policies from these local guidance documents include:

- Core Strategy Policy CS13.
- CPG 1
- CPG 4 Basements and Lightwells
- CPG Sustainability

The report will also assess the suitability of the scheme in relation to all sources of flooding, and the flood risk posed by the scheme once it is complete and operational. It will then go on to suggest mitigation measures in order to reduce any residual risks to acceptable levels, and progression of an appropriate surface and foul water drainage strategy.

Sources of Information

As part of this study, the following documents have been obtained and reviewed:

- Existing and Proposed drawings by p-ad Architects (16th May 2022);
- Thames Water Asset Plans (Received 4/7/22);
- Thames Water Sewer Flooding History Enquiry (Received 4/7/22);
- The London Borough of Camden flood risk management strategy (2013)
- Camden Local Plan (2017)
- Camden Planning Guidance (CPG)
- Camden Development Policies
- Camden Surface Water Management Plan (2013)
- Camden PFRA (2011)
- Camden Surface Water Management Plan (2011)
- Camden Strategic Flood Risk Assessment (2014)
- The London Plan: The Spatial Development Strategy for Greater London (Greater London Authority, March 2021);
- CIRIA SuDS Manual C753 (CIRIA, 2015);
- Environment Agency Website available at gov.uk (Accessed August 2022); and
- British Geological Survey GeoIndex (Accessed August 2022).
- Thames Water Asset Plans (1461588)
- Thames Water Flooding History Enquiry (1501578)
- Existing Drawings (733/01)
- Proposed Drawings (733/05)
- Indicative Foul Water Drainage Strategy (2633/02/001)
- Topographic Survey (39478_01-02_PES_RevB)

Consultation

The agencies and individuals consulted as part of this exercise to obtain records or seek input to the proposals as part of this FRA are listed in Table 1 and key records are enclosed with this report.

Consultee	Form of Consultation	Topics Discussed and Actions Agreed
Thames Water Property Searches Team	Request for Asset Plans	Clean water and wastewater asset plans were requested in order to inform the proposals at the Site.

Consultee	Form of Consultation	Topics Discussed and Actions Agreed
		The asset plans (enclosed) dated 4th July show both waste and freshwater assets in the vicinity of the Site.
	Request for Sewer Flooding History Report	A Thames Water Sewer Flooding History Enquiry dated 5th July confirms that there have been no incidents of flooding in the area as a result of surcharging public sewers.

Table 1: List of key consultations

Flood Risk to the Development (Key Findings):

Flood Zones, Flood Levels & Defence Protection – River Thames

The Site lies within the Environment Agency's (EA) Flood Zone 1, as shown in Figure 2, which is described within the NPPF Technical Guidance as having a 1 in 1000 or less annual probability of river or sea flooding (<0.1%) in any one year.

The Draft Strategic Flood Risk Assessment shows this site is not at risk of flooding in the event if a breach of the flood defences associated with the River Thames. Additionally, the Camden flood risk management strategy details that Camden is not at risk from flooding from the sea or rivers.

After considering the relevant information, the Site is therefore considered to be at a low risk of fluvial/tidal flooding and this source is not considered further in this report.

Surface Water Flooding

The EA modelled surface water mapping (Figures 3-6) show that the site is at risk from flooding during the 1 in 1000 (low risk) event only (Figure 6). During this event the flood waters reach up to 1200mm in the western extent of the site and less than 150mm in the eastern extent of the site, adjoining Belsize Crescent.

Flood risk from this source is therefore deemed to be low to medium. The site currently consists of 100% hardstanding areas, comprising of impermeable paving. However, the proposed development (detailed on enclosed plans 733/05) will not change these hardstanding areas and therefore will not increase the surface water flow into the drainage system.

As there are no proposed changes to the surfacing or external building areas, there is little opportunity to retrofit mitigation measures for this flood risk. This risk is considered to be low to medium but will not worsen as a result of the proposed development for the aforementioned reasons, therefore, this flood risk is not considered further within this report.

Groundwater Flooding

BGS mapping (Figure 7) shows the bedrock geology at the Site as the London Clay formation- clay, silt and sand. There are no superficial deposits at the location of the site.

There are several borehole records in the vicinity of the site, the nearest is 0.35 km to the southeast of the site (TQ28SE3106) which confirms the obtained bedrock record. An additional borehole record (TQ28NE449) details that bedrock was found 5 m below ground level, this was 0.82km northwest from the site. According to the Camden Flood Risk Management Strategy, the area experiences a low risk

from groundwater flooding, however according to proximal BGS borehole records to the site, water levels have not been detailed. This risk will need to be considered further and possibly mitigated due to the proposed development involving basement development/lowering.

Groundwater flooding to proposed substructures therefore remains a residual risk and appropriate mitigation measures are included later in this report.

Flood Risk from Public Sewers

Thames Water asset plans show that there are only combined sewers in the vicinity of the site, a 152 mm combined sewer flows southeast connecting to a 229 mm sewer adjoining Belsize Crescent at a manhole (IL:70.53 m) which runs south along Belsize Crescent. There are also two vents; located just to the north of the site boundary and then one further south in Belsize Crescent. There has been no history of flooding reported in the Thames Water Sewer Flooding History Report (see enclosed).

Flooding from public sewers remains a residual risk which will be mitigated through the development of an appropriate drainage strategy in addition to other mitigation measures, as outlined later in this report.

Flood Risk from Water Mains

Flood risk from this source is considered to be a residual risk, with no existing mains shown crossing the Site within the supplied Thames Water asset plans. There is a distribution main running from Akenside south along Belsize Crescent, with valves and hydrants along it. Flooding from water mains remains a residual risk with appropriate mitigation measures included later in this report.

Flood Risk from Reservoirs/Permanent Water Bodies

The site is located approximately 900 m southwest from the Hamstead Heath pond and is not located within the region affected by a breach of these ponds, flood risk mapping resultant of these ponds is shown in Figure 8. Therefore, this risk is considered negligible and is not considered any further within this report.

Flood History

A Thames Water Sewer Flooding History Enquiry confirms there have been no records of sewer flooding events at the Site (appended). A review of the local information indicates that there have been two major floods recorded in Camden in 1975 and 2002 (see Figure 5.2 in the Camden Flood Risk management strategy). The 1975 storm was caused by a severe storm that affected Gospel oak, Kentish Town, Belsize Park and Camden. The flooding was caused by poor drainage capacity at the time. The 2002 flooding was less severe but still affected many locations within Camden.

Flood Risk Summary

The Site is at a low risk of flooding from most sources, however a low to medium risk from surface water flooding is present within the site. Due to the nature of the proposals flood risks associated with groundwater flooding to substructures also remains a consideration, albeit residual risk. Residual risks are also associated with water mains, sewer surcharging and surface water.

A number of mitigation measures are recommended below to manage the risks associated with these identified forms of flooding.

Mitigation

A number of mitigation measures are recommended below to address and manage the residual risks from the identified forms of flooding:

- Finished floor levels should be raised as high as reasonably practicable;
- An appropriate foul water drainage strategy had been developed along with a management and maintenance plan for all drains assets. This has been provided below;
- Routine inspection of the public sewers, site drainage, and public and internal water supply pipe work/storage should be undertaken by Thames Water and the site owner during the construction and operational phase;
- Flow routing should be considered to ensure all surface water flows are directed away from any new building entrances.
- Consider the need for dewatering during the construction phase.
- Consider the need for waterproofing substructures and any below ground services as part of the detailed design.
- Carry out de-watering as necessary through the construction phase.
- Where proposed drainage networks are to be placed within any water bearing strata, they should be constructed such that water ingress cannot occur.

Flood Risk From the Development

<u>Existing Foul Water Drainage</u>

There is existing foul infrastructure that serves the current property on the Site, this is shown in the appended asset plans. This is assumed to currently serve the site with a private network connecting to it from the site.

<u>Proposed Foul Water Drainage Strategy</u>

Drawing 2633/02/001 illustrates that there will a proposed pipe running beneath the building leading from the new bathroom and exiting the building just west of the pantry outwards to the assumed foul/combined manhole located near the front steps of the building within the site boundary (IL: 71.14 and CL: 72.29). This is then assumed to connect to the existing public sewer located in Belsize Crescent, (See enclosed asset plans).

Given the location of the existing manholes into the public Thames Water sewer network, it is assumed that an existing connection to the public sewer is present here, however, this will need to be confirmed as part of the later design stages.

After considering the topography and invert levels available on the asset plans, it is assumed that the proposed foul water drainage will connect via gravity to the existing infrastructure in Belsize Crescent, although as above this will need to be confirmed at the detailed design stage.

Existing Surface Water Drainage

There are no existing surface water sewers in the immediate vicinity of the site according to the asset plans appended to this report. However, there is existing private drainage seen on the existing site plan topographic survey (Drawing 39478_01-02_PES_RevB). .

Proposed Surface Water Drainage Strategy

There is no proposed surface water drainage as the proposed developments will not alter the hardstanding areas of the current property. However, it is recommended that water butts should be installed in the back garden in addition to increased planting as this will act to reduce surface water runoff for the development (see Drawing 2633/02/001).

Management and Maintenance Plan

Regular inspection and maintenance of adjacent highway drainage, public and private drainage by the London Borough of Camden, Thames Water, and site management respectively, will minimise the residual risks associated with surface water/sewers.

The following maintenance schedule (Table 3) for the proposed SUDS should be adhered to in order to ensure efficient operation and to prevent failure.

Drainage Feature	Maintenance	Maintenance Period
Manholes	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for first three months, then annually.
	Check free from silt and debris and water discharging freely through.	Every 6 months
	Jet/clear out as necessary.	
	Repair / rehabilitate inlets, outlet, overflows and vents	As required
Drainage Pipework	CCTV inspection/condition survey prior to connection to the existing network.	Every 5 years
	Sewer jetting	As required

Table 3: Outline SuDS Management and Maintenance Schedule

Flood Risk from the Development/Drainage Assessment

Impact on Surrounding Areas

The proposed development will increase foul flows from the current state give the proposals include a new toilet and shower block, these will be accommodated within the foul sewer network via the existing connection which will connect to the public sewer located in Belsize Crescent and any increases in flow are not considered to be of a magnitude that would impact sewer capacity.

There will be no alterations to the current surface water drainage for the site as the proposals do not increase any hard standing areas. Therefore, the proposed development is unlikely to have a

significant impact on the local public sewer network or increase the risk of flooding to surrounding development.

Conclusions and Recommendations

We conclude that no significant sources of flooding have been identified as part of this study that warrant further consideration as part of a more detailed Flood Risk Assessment.

A number of mitigation measures are recommended to address the low risk of surface water flooding and groundwater flooding and residual risks of flooding from public sewers, site drainage, and public and internal water supply pipe work/storage. These risks can be managed by the design of the site drainage, by regular inspection and maintenance of the public and private sewer and water supply network.

Yours sincerely,

Grace Beard
Graduate Flood Risk Consultant

Graham Sinclair
Technical Director

Encs

- Constraints and Limitations
- References
- Figure 1: Site Location Plan
- Figure 2: EA Fluvial/Tidal Flood Zone Map
- Figure 3: EA Surface Water Extent
- Figure 4: EA Surface Water Flood Risk Map (1 in 30 Year Event)
- Figure 5: EA Surface Water Flood Risk Map (1 in 100 year Event)
- Figure 6: EA Surface Water Flood Risk Map (1 in 1000 Year Event)
- Figure 7: BGS Bedrock Deposit Geological Mapping and Borehole records
- Figure 8: EA Risk of Reservoir Flooding
- Thames Water Asset Plans (1461588)
- Thames Water Flooding History Enquiry (1501578)
- Existing Drawings (733/01)
- Proposed Drawings (733/05)
- Indicative Foul Water Drainage Strategy (2633_02_001)
- Topographic Survey (39478_01-02_PES_RevB)

Constraints and Limitations

Create Consulting Engineers Ltd accepts no responsibility whatsoever to other parties to whom this report, or any part thereof, is made known. Any such other parties rely upon the report at their own risk.

This report has been undertaken with the assumption that the Site will be developed in accordance with the above proposals without significant change. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the Site.

Create Consulting Engineers Ltd has endeavoured to assess all information provided to them during this appraisal. The report summarises information from a number of external sources and cannot offer any guarantees or warranties for the completeness or accuracy or information relied upon. Information from third parties has not been verified by Create Consulting Engineers Ltd unless otherwise stated in this report.

References

i. British Geological Survey GeoIndex (Accessed August, 2022).
ii. CIRIA. (2015). CIRIA SuDS Manual C753.
iii. Camden Strategic Flood Risk Assessment
iv. Camden Preliminary Flood Risk Assessment
v. Camden Local Plan (2017)
vi. Camden Planning Guidance (CPG)
vii. Camden Development Policies
viii. Camden Surface Water Management Plan (2013)
ix. Camden PFRA (2011)
x. Camden Surface Water Management Plan (2011)
xi. Camden Strategic Flood Risk Assessment (2014)
xii. The London Borough of Camden flood risk management strategy (2013)
xiii. Data.gov.uk. (2022). Flood Maps, Surface Water, Groundwater Maps and Reservoir Flood Maps. (Accessed August, 2022).
xiv. Greater London Authority. (2021) The London Plan: The Spatial Development Strategy for Greater London.

ENCLOSURES

Figure 1: Site Location Plan

Figure 2: EA Fluvial/Tidal Flood Zone Map

Source: Defra Data Services Platform (https://environment.data.gov.uk/)

Figure 3: EA Surface Water Extent
Source: Defra Data Services Platform (https://environment.data.gov.uk/)

Figure 4: EA Surface Water Depth (High Risk Event)

Source: Defra Data Services Platform (https://environment.data.gov.uk/)

Figure 5: EA Surface Water Depth (Medium Risk Event

Source: Defra Data Services Platform (https://environment.data.gov.uk/)

Figure 6: EA Surface Water Depth (Low Risk Event)

Source: Defra Data Services Platform (https://environment.data.gov.uk/)

Figure 7: BGS Bedrock Deposit Geological Mapping and Borehole records

Source: BGS Geoindex (https://mapapps2.bgs.ac.uk/geoindex/home.html)

Figure 8: EA Risk of Reservoir Flooding

Source: Defra Data Services Platform (https://environment.data.gov.uk/

Asset location search

Property Searches

Create Consulting Engineers Ltd
NORWICH
NR3 1AF

Search address supplied 31a
Belsize Crescent
London
NW3 5QY

Your reference P22-2633

Our reference ALS/ALS Standard/2022_4676047

Search date 4 July 2022

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

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

0800 009 4540

Asset location search

Property Searches

Search address supplied: 31a, Belsize Crescent, London, NW3 5QY

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Asset location search

Thames Water Property Searches

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

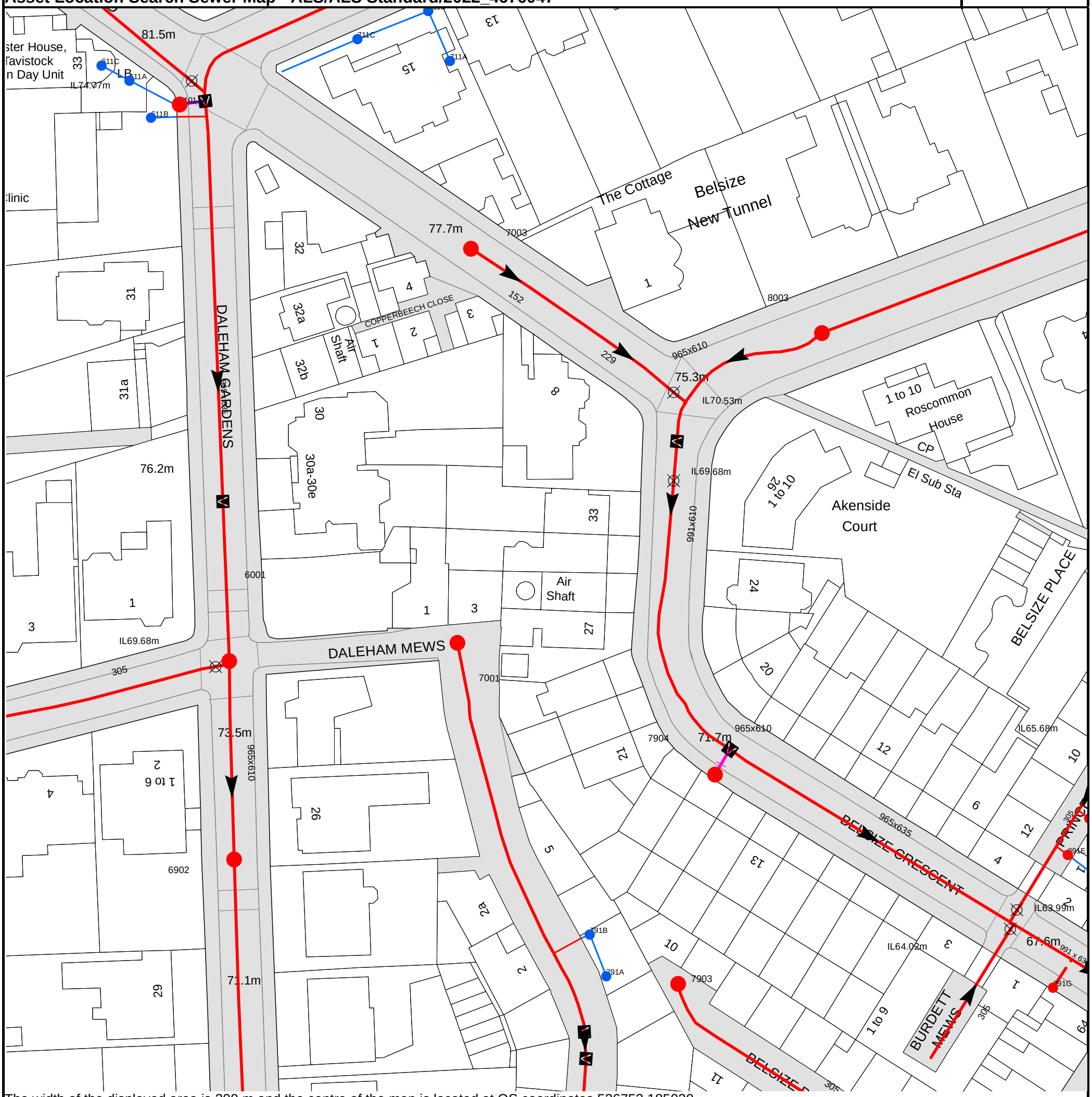
Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2022_4676047



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 526753,185030

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.

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
6902	72.66	67.74
891E	n/a	n/a
891F	n/a	n/a
7904	n/a	n/a
6001	74.76	69.43
7001	73.07	70.63
8003	75.89	71.06
7003	76.9	74
611B	n/a	n/a
6101	n/a	n/a
611A	n/a	n/a
611C	n/a	n/a
711A	n/a	n/a
711C	n/a	n/a
711B	n/a	n/a
791B	n/a	n/a
791A	n/a	n/a
7903	67.07	65.75
891G	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.

Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

Foul Sewer: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water Sewer: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined Sewer: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Storm Sewer
- Sludge Sewer
- Foul Trunk Sewer
- Surface Trunk Sewer
- Combined Trunk Sewer
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Vacuum
- Thames Water Proposed
- Vent Pipe
- Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

- Sewer
- Culverted Watercourse
- Proposed
- Decommissioned Sewer
- Content of this drainage network is currently unknown
- Ownership of this drainage network is currently unknown

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

- Air Valve
- Meter
- Dam Chase
- Vent
- Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Ancillary
- Drop Pipe
- Control Valve
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Inlet
- Outfall
- Undefined End

Other Symbols

Symbols used on maps which do not fall under other general categories.

- Change of Characteristic Indicator
- Public / Private Pumping Station
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Chamber
- Operational Site

Ducts or Crossings

- Casement

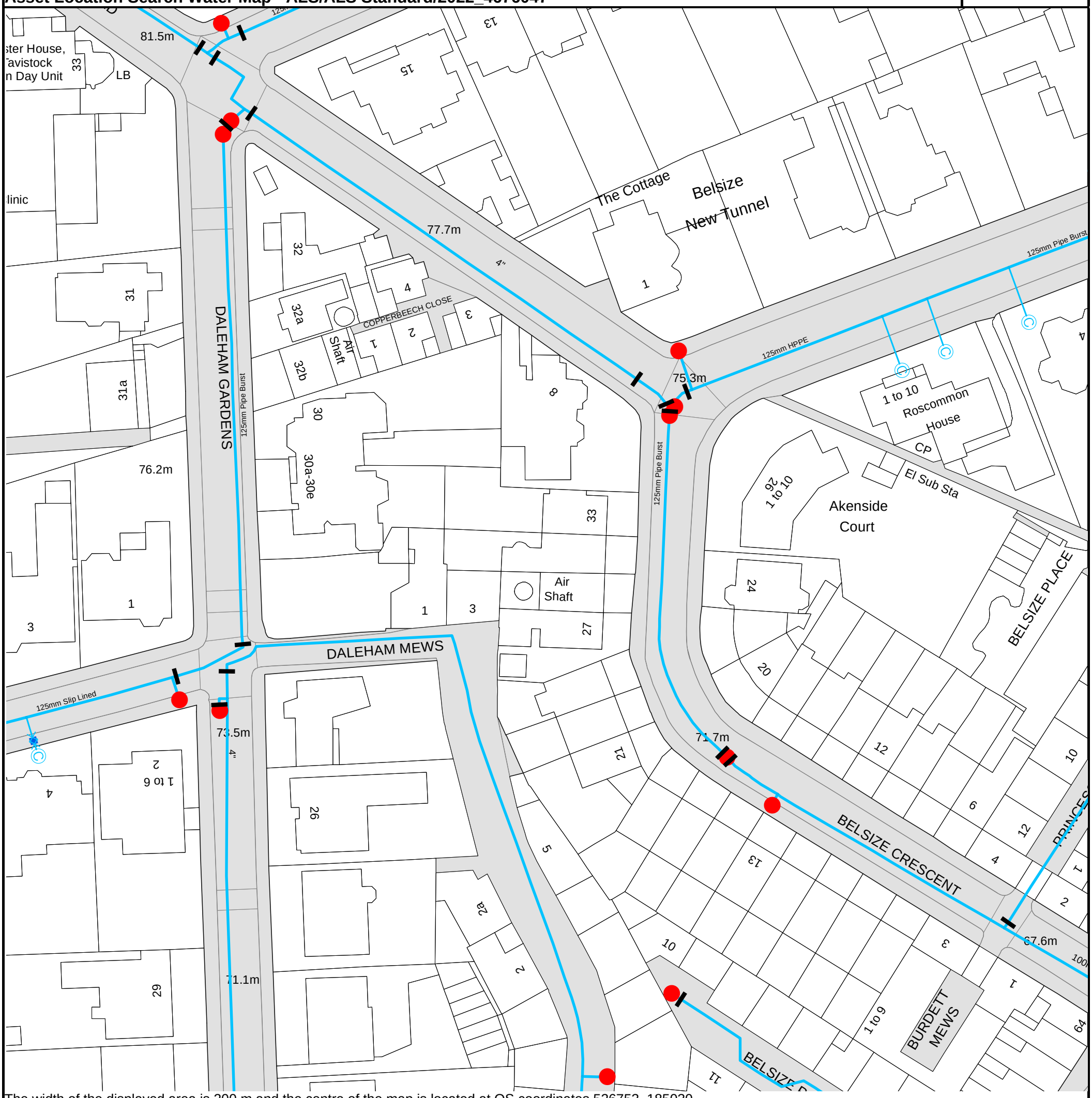
Ducts may contain high voltage cables. Please check with Thames Water.

- Conduit Bridge
- Subway
- Tunnel

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plan are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters.
Text next to a manhole indicates the manhole reference number and should not be taken as a measurement.
If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Asset Location Search Water Map - ALS/ALS Standard/2022_4676047



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 526753, 185030.

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.

Asset Location Search - Water Key

Water Pipes (Operated & Maintained by Thames Water)

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

Casement: Ducts may contain high voltage cables. Please check with Thames Water.

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0800 009 4540** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

Sewer Flooding
History Enquiry

Property Searches

Create Consulting Engineers Ltd
Norwich Norwich
Princes Street

Search address supplied	31a Belsize Crescent London NW3 5QY
Your reference	P22-2633
Our reference	SFH/SFH Standard/2022_4676049
Received date	**4 July 2022**
Search date	**4 July 2022**

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

0800 009 4540

Sewer Flooding
History Enquiry

Property Searches

Search address supplied: 31a,Belsize Crescent,London,NW3 5QY

This search is recommended to check for any sewer flooding in a specific address or area

TWUL, trading as Property Searches, are responsible in respect of the following:-

(i) any negligent or incorrect entry in the records searched;

(ii) any negligent or incorrect interpretation of the records searched;

(iii) and any negligent or incorrect recording of that interpretation in the search report

(iv) compensation payments

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Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

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

0800 009 4540

Sewer Flooding
History Enquiry

Thames Water 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.

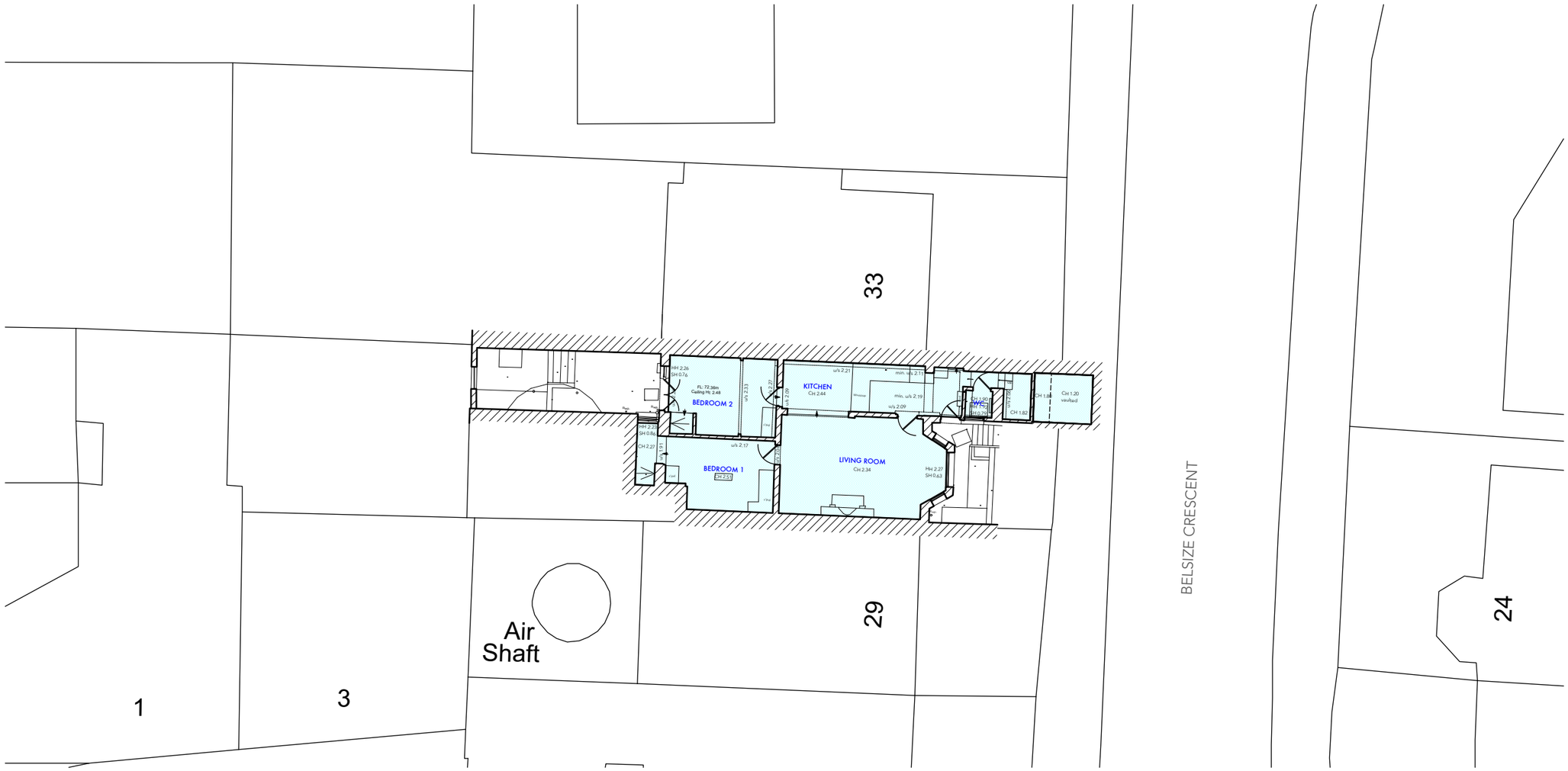
For your guidance:

- 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

0800 009 4540



EXISTING SITE PLAN

N

SCALE BAR (m) 0 0.5 1 2 3 4 5

WRITTEN DIMENSIONS ONLY TO BE USED
ALL DIMENSIONS ARE IN MILLIMETRES
ALL DIMENSIONS TO BE VERIFIED ON SITE
ANY INCONSISTENCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY

Job No: 7335

PLANNING

31A Belsize Crescent
London
NW3 5QY

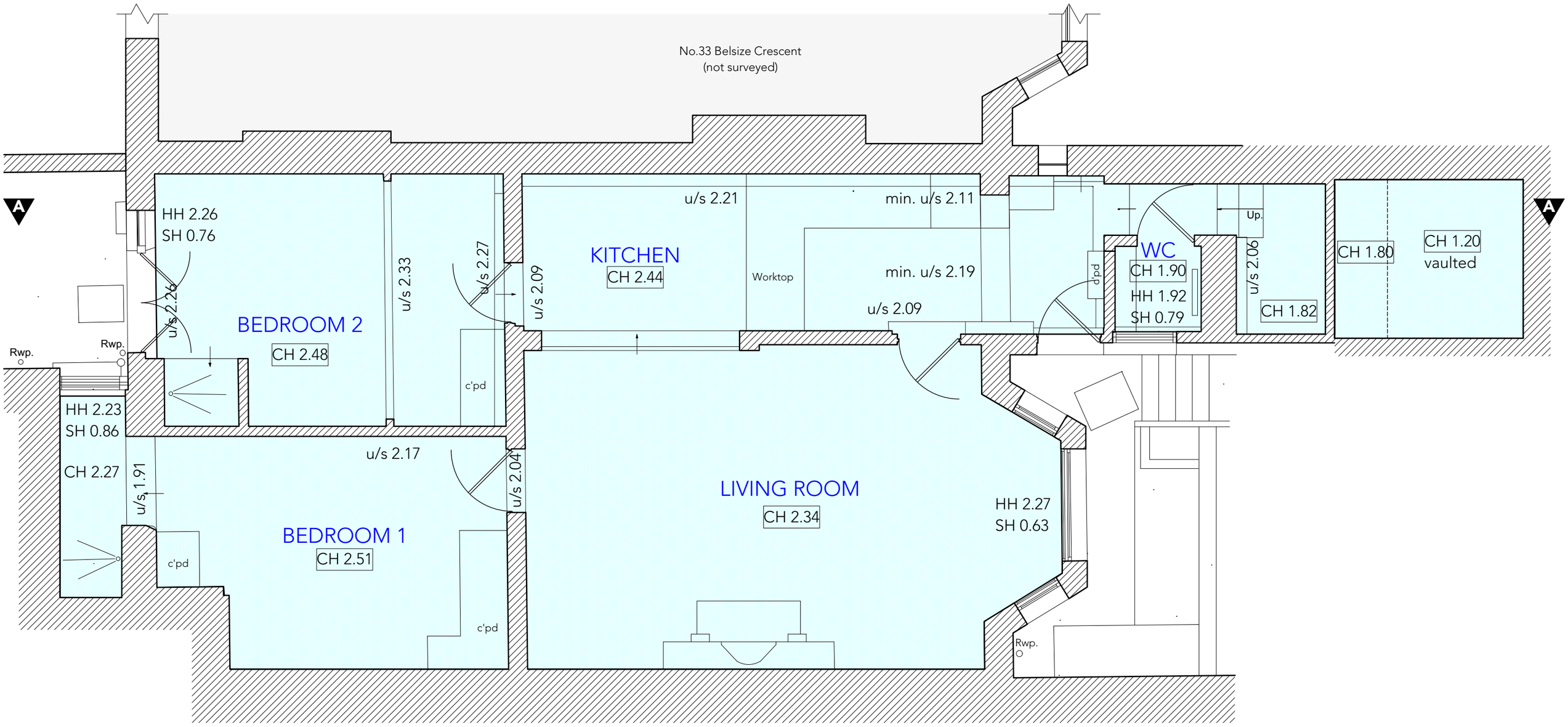
p-ad
192D Campden Hill Road,
Notting Hill Gate, London, W8 7TH
t: 0208-4590172
e: hello@pelicanad.co.uk

p-ad

Title: Existing Site Plan

Drawn by	Scale	Number	Rev
ST	1:200 @ A3	7335/01	B

EXISTING PLAN



EXISTING LOWER GROUND FLOOR

N

0 0.5 1 2

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p-ad

Title	Existing Plans		
Drawn by	Scale	Number	Rev
ST	1:50 @ A3	7335/02	B

EXISTING ELEVATIONS

Datum: 70.00m.

EXISTING FRONT ELEVATION

EXISTING REAR ELEVATION

0 0.5 1 2 3 4 5

SCALE BAR (m)

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e: hello@pelicanad.co.uk

31A Belsize Crescent
London
NW3 5QY

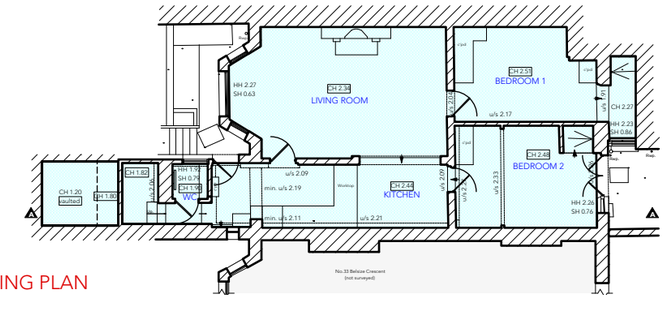
Title: Existing Elevations

Drawn by	Scale	Number	Rev
ST	1:100 @ A3	7335/03	B

EXISTING SECTION

Datum: 70.00m.

EXISTING SECTION AA



EXISTING PLAN
1:200

0 0.5 1 2 3 4 5

SCALE BAR (m)

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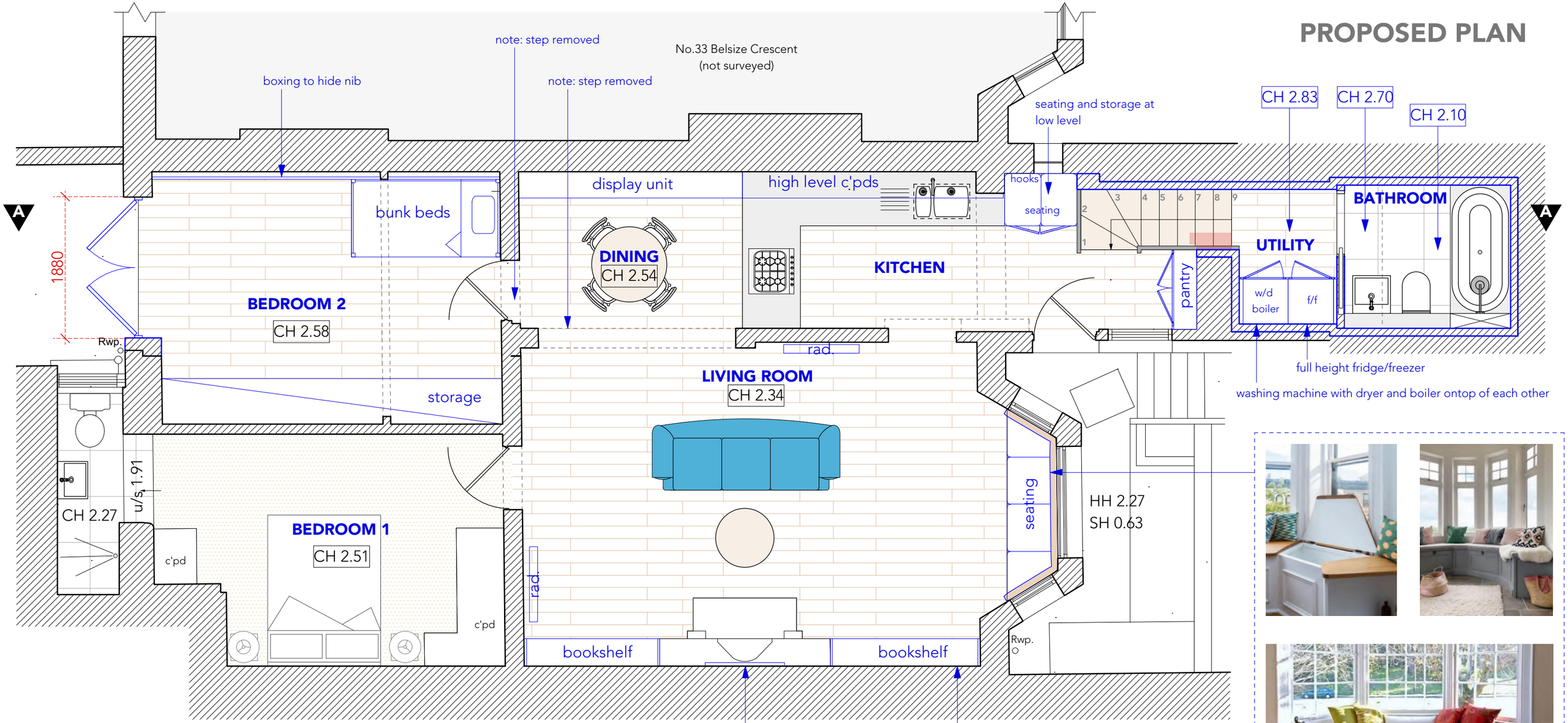
31A Belsize Crescent
London
NW3 5QY

Title: Existing Section AA

Drawn by	Scale	Number	Rev
ST	1:100 @ A3	7335/04	B

PROPOSED PLAN



PROPOSED LOWER GROUND FLOOR

bay window seat to either be open or have integrated storage

Proposal:

+ open front entrance
+ pantry relocated to kitchen area (size 4x existing)
+ boiler relocated above washing machine and dryer
+ pantry beside existing window
+ large double doors in B2
+ large storage unit in B2
+ boxing in B2 to level out protruding nib
+ bay window seating
+ display unit in dining room
+ bookshelves in living room (same width as fireplace)

EXISTING

PROPOSED

N

0 0.5 1 2

NOTE :-
TO MEET CURRENT BUILDING REGULATION A MIST SYSTEM IS REQUIRED THROUGHOUT

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31A Belsize Crescent
London
NW3 5QY

Title: Proposed Plan
Drawn by: ST
Scale: 1:50 @ A3
Number: 7335/05
Rev: B

PROPOSED ELEVATIONS

Datum: 70.00m.

PROPOSED FRONT ELEVATION

NOTE: FRONT ELEVATION REMAINS UNCHANGED

PROPOSED REAR ELEVATION

0 0.5 1 2 3 4 5

SCALE BAR (m)

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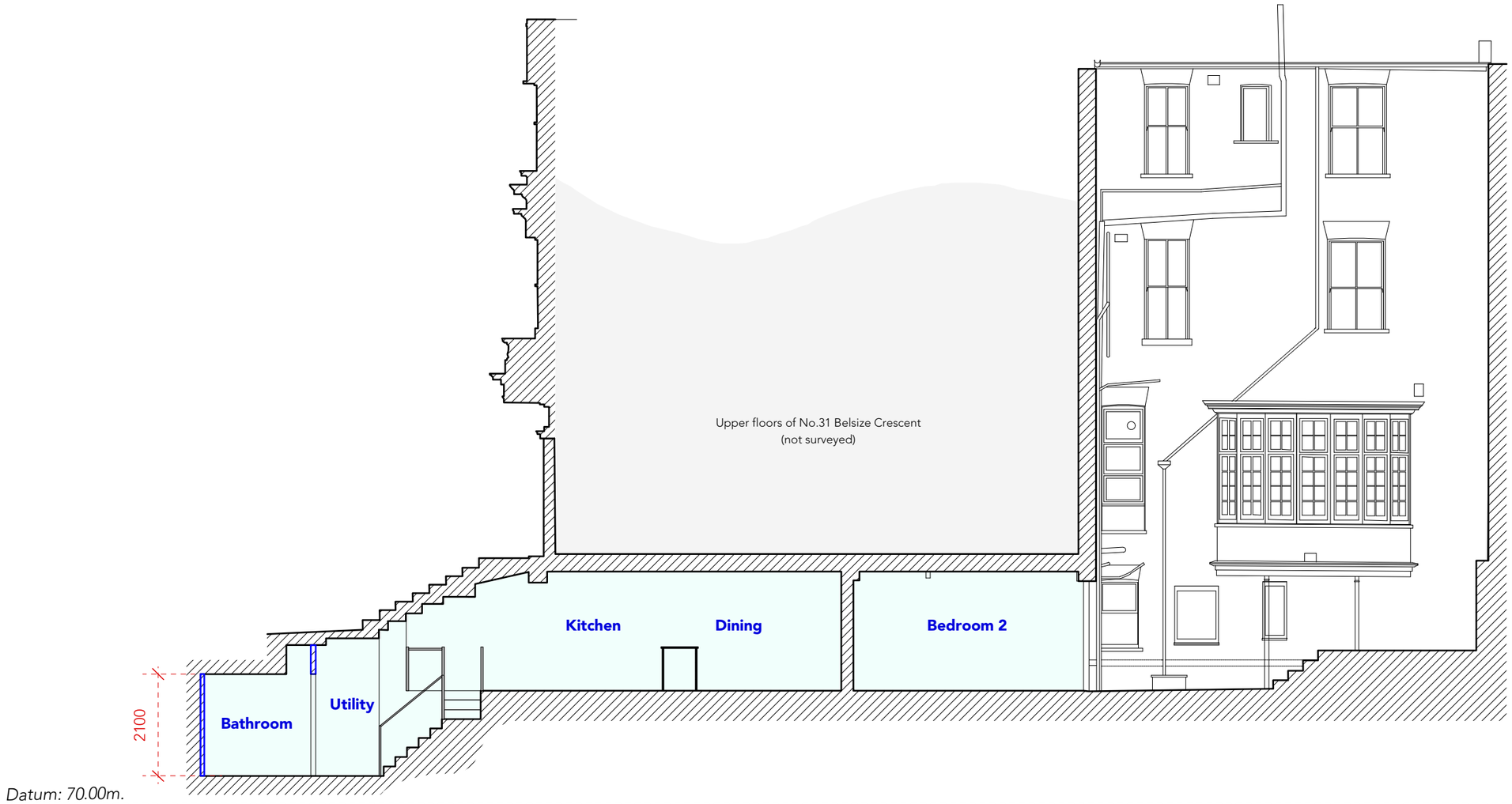
31A Belsize Crescent
London
NW3 5QY

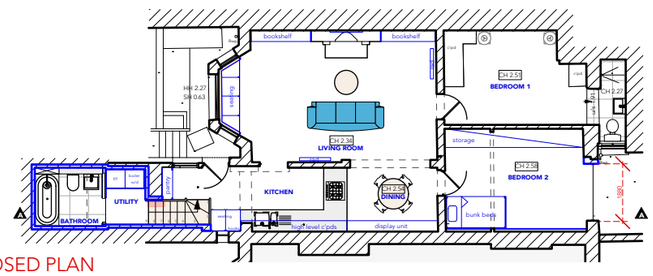
Title: Proposed Elevations

Drawn by	Scale	Number	Rev
ST	1:100 @ A3	7335/07	B

PROPOSED SECTION



PROPOSED SECTION AA



PROPOSED PLAN
1:200

0 0.5 1 2 3 4 5

SCALE BAR (m)

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PLANNING

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London
NW3 5QY

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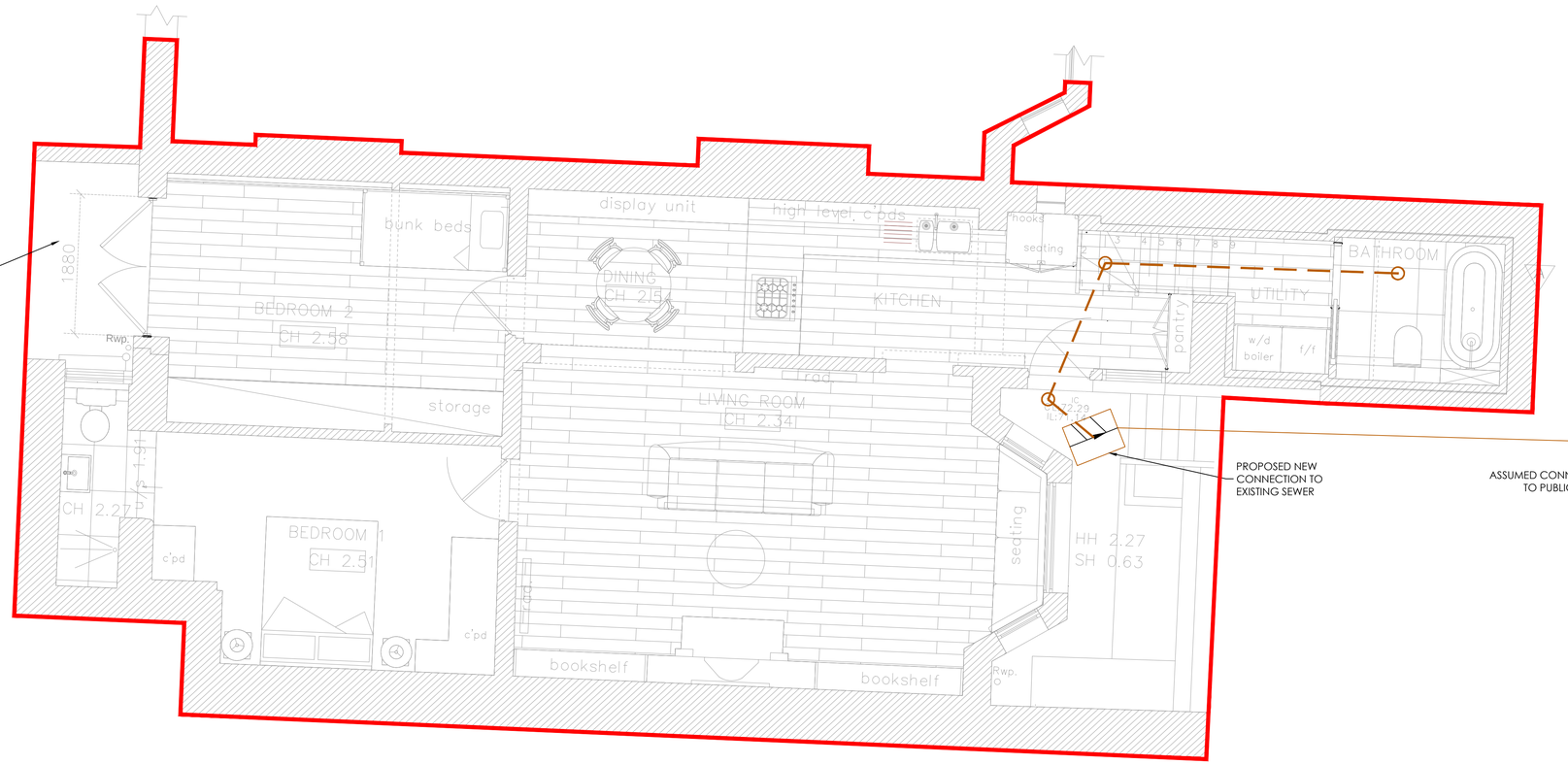
p-ad

Title	Proposed Section AA		
Drawn by	Scale	Number	Rev
ST	1:100 @ A3	7335/08	B

N
Indicative
CREATE



NOTES

1. THIS DRAWING IS BASED ON LAYOUT DRAWING ENTITLED 7335_PROPOSED DRAWING BY PAD ARCHITECTS DATED 16/05/22 AND TOPOGRAPHIC SURVEY 39478_01-02_PES_RevB BY GREENHATCH GROUP SURVEYS DATED 1/03/21.
2. MANHOLE ASSUMED TO BE FOUL OR COMBINED SEWER. THIS WILL NEED TO BE CONFIRMED AT DETAILED DESIGN STAGE.
3. POSITION OF PROPOSED FOUL SEWER SHOWN SUBJECT TO EXISTING INTERNAL BUILDING DRAINAGE.

KEY

PROPOSED FOUL WATER SEWER

APPLICATION SITE REDLINE BOUNDARY

PUBLIC FOUL WATER SEWER

REV	DATE	AMENDMENT DETAILS	DRAWN	APPROVED

PROJECT: 31 A BELSIZE CRESCENT	DATE: 10/08/22	DRAWING STATUS: INFORMATION	
	SCALE(S): 1:40	DESIGNED: GB / DRAWN: GB	
		CHECKED: TT / APPROVED: TT	
DRAWING TITLE: FOUL WATER DRAINAGE STRATEGY	JOB No: 2633		
CLIENT: EILIS NAIDOO	DRAWING No: 02/001	REVISION: A	

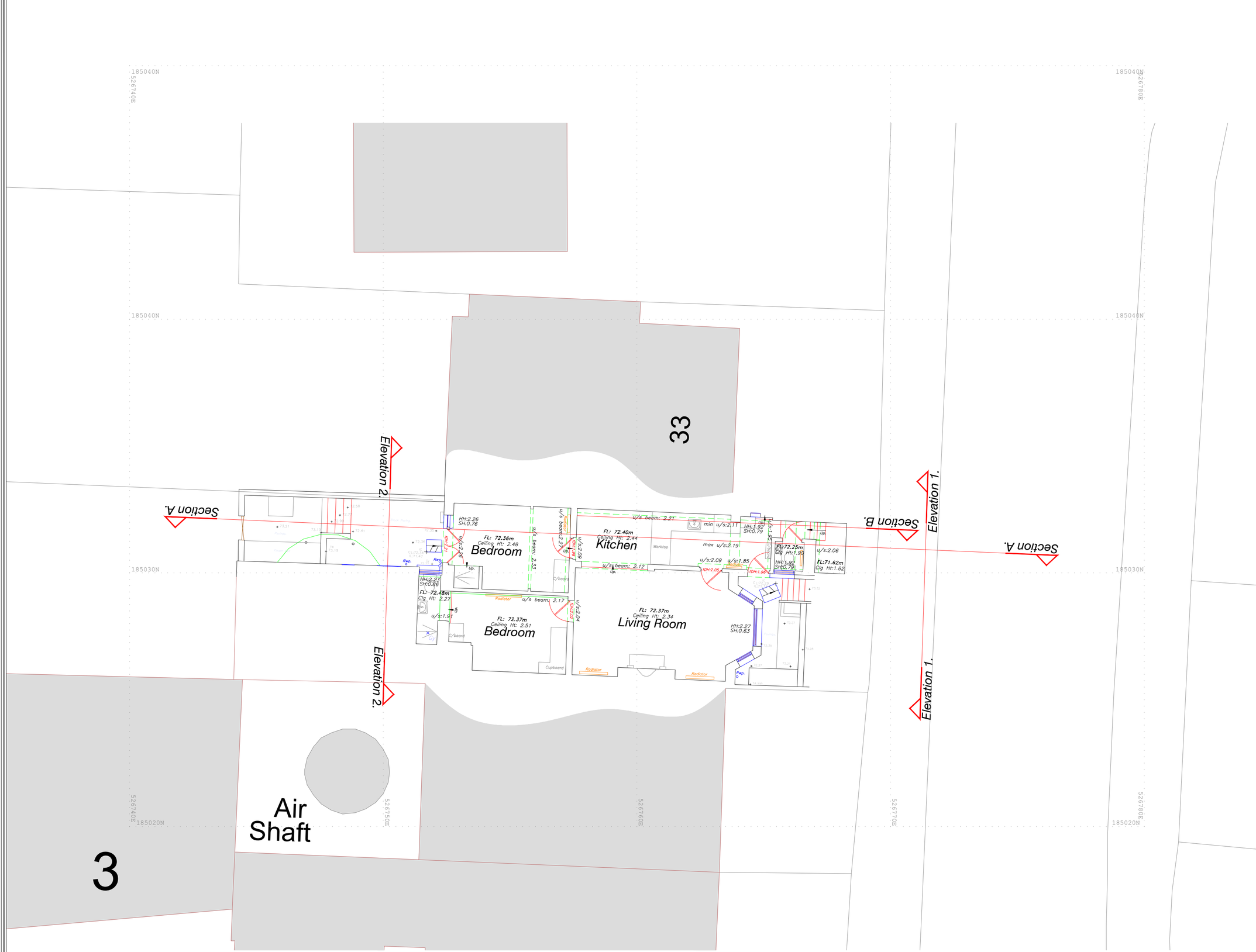
create CONSULTING ENGINEERS LTD

www.createconsultingengineers.co.uk

SCALE 1:40
0 1 2 3

ORIGINAL SHEET SIZE - A1 Landscape

DO NOT SCALE



N

OS Note:

The Ordnance Survey tile is to be used as a guide only.

OS Buildings *Surveyed Buildings*

This survey has been orientated to the Ordnance Survey (O.S) National Grid OSGB36(15) via Global Navigational Satellite Systems (GNSS) and the O.S. Active Network (OS Net)

A true OSGB36 coordinate has been established near to the site centre via a transformation using the OSTN15GB & OSGM15GB transformation models.

The survey has been correlated to this point and a further one or more OSGB36(15) points established to create a true O.S. bearing for angle orientation.

No scale factor has been applied to the survey therefore the coordinates shown are arbitrary & not true O.S. Coordinates which have a scale factor applied.

Please refer to Survey Station Table to enable establishment of the on-site grid.

Building Survey Legend:

SHt 1.00 HHt 2.12	Sill Height from FFL. Head Height from FFL.
SL 51.03m HL 52.82m	Sill Level from defined datum. Head Level from defined datum.
Susp CHt: 2.00 Struct CHt: 3.00	Suspended Ceiling Height from FFL. Structural Ceiling Height from FFL.
Susp Ceil: 30.00m Struct Ceil: 31.00m	Suspended Ceiling Level from datum. Structural Ceiling Level from datum.
IFL: 100.00m +100.00m	Internal Floor Level (General). Internal Floor Level (Specific).
Insertion Point	Insertion Point for overlay drawings of other floors or details.

Incoming Services

Elec | Gas | Water

Topographical Survey Legend:

Buildings; Overhead Cable; Wall; Concrete edge; Kerb line; Tarmac edge; Line marking; Grass verge; Drop kerb; Canopy/Overhang; Centre line; Verge; Station and Name; 100.000 Station Level; Tree / Bush / Sapling; Area of Undergrowth; Woodland; R: Ridge Level; E: Eaves Level; F: Flat Roof Level; Gate

Fence types: Intervesven; Iron Railings; Wire Mesh; Post & Rail; Post & Wire; Chain Link; Wooden Panels; Concrete Panels; Steel Palisade

IC	Inspection chamber	Bol	Bollard
Pinv	Pipe invert	IB	Illuminated bollard
Gy	Gully	Bm	Rubbish bin
Bg	Back gully	Vp	Vent pipe
Dp	Down pipe	Gli	Ground light
Pipe	Pipe above ground	Lbox	Letter box
MH	Manhole	Ldr	Ladder
WL	Water level	Sty	Stile
Fl	Flood light	IFL	Internal floor level
Lp	Lamp post	THL	Threshold level
Tp	Telegraph post	Sp	Sign post
Ep	Electricity post	TH	Triathole
Ti	Traffic light	BH	Borehole
Bus	Bus stop	ELC	Electric
Sv	Stop valve	BT	British Telecom
St	Stop tap	Cbox	Control box
Er	Earth rod	TT	Tactile
Wm	Water meter	BP	Brick paved
Gav	Gas valve	CPS	Concrete paving slabs
Av	Air valve	CVR	Cover
ICU	Unidentified inspection	IC	Inspection chamber
Wo	Wash out	Rwall	Retaining wall
Re	Rodding eye	UTL	Unable to lift
BB	Belisha beacon	TCL	Tree canopy level
CTV	Cable tv	G	Girth
Mkr	Marker post	MG	Multi girth
Gmkr	Gas marker post	Stmp	Tree Stump
Sv	Soil/fc	CL	Cover level
		IL	Invert level

Rev	Date	Description	Drawn	Q. Ref.
B	09.08.22	Cover infomration added	SJC	GH9859
A	03.03.21	Section B added	AF	GH9859

greenhatch group

- Topographical Surveys
- Site Engineering
- Utility / CCTV Surveys
- Bathymetric Surveys
- Measured Building Surveys
- 3D Laser Scanning
- 3D Revit & BIM Models
- Area, Lease & Fire Plans

Rowan House
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DE21 5DR
Tel (01332) 830044 Fax (01332) 830055
admin@greenhatch-group.co.uk
www.greenhatch-group.co.uk

St Albans	Newcastle	Central London
Unit B,The Courtyard Alban Park St Albans Hertfordshire AL4 0LA t. (01727) 854481	24 Riverside Studios Amethyst Road Newcastle Bus. Park Newcastle-U-Tyne NE4 7YL t. (01912) 736391	27 Cornwall Terrace Mews Regents Park London NW1 5LL t. (0207) 2241806

CLIENT
Ellis Mulkerrin

PROJECT
31A Belsize Crescent
London
NW3 5QY

TITLE
Existing Site Plan

SCALE	DATE
A2@ 1: 100	01.03.21
DRAWN	QUALITY REF
AF	GH9859

Level datum	See OS notes above
Grid orientation	See OS notes above
Job number	39478

Drawing No. 39478_01_P | Rev. B

Comments

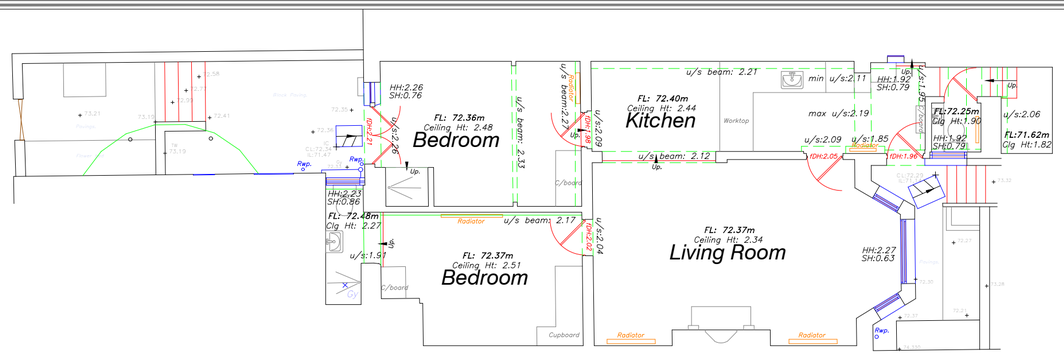
This plan should only be used for its original purpose. Greenhatch Group accepts no responsibility for this plan if supplied to any party other than the original client.

All dimensions should be checked on site prior to design and construction.

Some services may have been omitted due to parked vehicles.

Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.

Notes:



LOWER GROUND FLOOR

Datum: 70.00m.
Section B.

Datum: 70.00m.
Elevation 2.

Datum: 70.00m.
Elevation 1.

Datum: 70.00m.
Section A.

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Incoming Services: Elec | Gas | Water

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Buildings; Wall; Kerb line; Line marking; Drop kerb; Centre line; Station and Name; Station Level; Tree / Bush / Sapling; Area of Undergrowth; Woodland; Ridge Level; Eaves Level; Flat Roof Level; Gate

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Overhead Cable; Edge of Concrete edge; Tarmac edge; Grass verge; Canopy/Overhang; Verge

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Pipe	Pipe insert	IR	Illuminated bollard		
Gy	Gully	Bm	Rubbish bin		
Bg	Back gully	Vp	Vent pipe		
Dp	Down pipe	Gli	Ground light		
Pipe	Pipe above ground	Lbox	Letter box		
MH	Manhole	Ldr	Ladder		
WL	Water level	Sty	Stile		
FL	Flood light	IFL	Internal floor level		
Lp	Lamp post	THL	Threshold level		
Tp	Telegraph post	Sp	Sign post		
Ep	Electricity post	TH	Triathole		
TL	Traffic light	BH	Borehole		
Bus	Bus stop	ELC	Electric		
Sv	Stop valve	BT	British Telecom		
St	Stop tap	Cbox	Control box		
Er	Earth rod	TT	Tactile		
Wm	Water meter	BP	Brick paved		
Gas	Gas valve	CPB	Concrete paving slabs		
Av	Air valve	CVR	Cover		
ICU	Unidentified inspection	IC	Inspection chamber		
Wo	Wash out	Rwall	Retaining wall		
Re	Rodding eye	UTL	Unable to lift		
BB	Belisha beacon	TCL	Tree canopy level		
CTV	Cable tv	Gi	Girth		
Mkr	Marker post	MG	Multi girth		
Gmkr	Gas marker post	Stmp	Tree Stump		
So	Soffit	CL	Cover level		
		IL	Invert level		

Rev	Date	Description	Drawn	Q. Ref.
B	08.08.22	Cover information added	SJC	GH9859
A	03.03.21	Section B added	AF	GH9859

greenhatch group

- Topographical Surveys
- Site Engineering
- Utility / CCTV Surveys
- Bathymetric Surveys
- Measured Building Surveys
- 3D Laser Scanning
- 3D Revit & BIM Models
- Area, Lease & Fire Plans

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Newcastle: 24 Riverside Studios, Amethyst Road, Newcastle Bus. Park, Newcastle-U-Tyne, NE4 7YL, t. (01912) 736391
Central London: 27 Cornwall Terrace Mews, Regents Park, London, NW1 5LL, t. (0207) 2241806

CLIENT
Ellis Mulkerrin

PROJECT
31A Belsize Crescent London NW3 5QY

TITLE
Existing Floor Plans Elevations & Section

SCALE	DATE
A2@ 1: 100	01.03.21
DRAWN: AF	QUALITY REF: GH9859

Level datum	See OS notes above
Grid orientation	See OS notes above
Job number	39478
Drawing No.	39478_02_PES
Rev.	A

Comments

This plan should only be used for its original purpose. Greenhatch Group accepts no responsibility for this plan if supplied to any party other than the original client.

All dimensions should be checked on site prior to design and construction.

Some services may have been omitted due to parked vehicles.

Drainage information (where applicable) has been visually inspected from the surface and therefore should be treated as approximate only.

Notes:

APPENDIX E

GROUND INVESTIGATION
LOGS AND GEOTECHNICAL RESULTS

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Project: 31a Belsize Crescent
Figure Title: Exploratory Hole Location Plan
Drawing Ref. P22/2633/10
Date: 28/09/2023

Legend
site boundary
WS borehole

create CONSULTING ENGINEERS LTD

Borehole Log

Borehole No. **WS01**

Sheet 1 of 1

Project: 31A Belsize Crescent	Project No: P22-2633	Co-ords: E526769.40 N185030.50	Hole Type WS
Location: London		Level: 73.60m aOD	Scale 1:25
Client: Eilis Nadoo		Date: 15/09/2023	Logged AW

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Very soft brown black humic silty clay. With many roots 10mm to 15mm. TOPSOIL.
					0.50	73.10		
								Soft brown orange-brown black silty clay. Trace rounded fine to medium flint. Trace fine brick. MADE GROUND.
		1.10	D					
					1.40	72.20		
		1.45	HPT	85 kPa				Firm to stiff orange-brown mottled grey silty CLAY. WEATHERED LONDON CLAY.
		1.50 - 1.60	D					
		1.50	HPT	85 kPa				
		1.60	HPT	84 kPa				
		1.70	HPT	78 kPa				
		1.80 - 1.90	D					
		1.80	HPT	78 kPa				
		1.90	HPT	84 kPa				
		2.00	HPT	84 kPa				
		2.10	HPT	90 kPa				
		2.20	HPT	103 kPa				
		2.30 - 2.40	D					
		2.30	HPT	102 kPa				
		2.40	HPT	102 kPa				
		2.50	HPT	110 kPa				
		2.60	HPT	122 kPa	2.60	71.00		*2.60m - becoming stiff.*
		2.70 - 2.80	D					
		2.70	HPT	98 kPa				
		2.80	HPT	78 kPa				
		2.90	HPT	103 kPa				
		3.00	HPT	116 kPa				
		3.10	HPT	131 kPa				
		3.20	HPT	132 kPa				
		3.30	HPT	139 kPa				
		3.40	HPT	118 kPa				
		3.50	HPT	98 kPa				
		3.60	HPT	146 kPa				
		3.70	HPT	118 kPa				
		3.80	HPT	116 kPa				
		3.90	HPT	129 kPa				
		4.00	HPT	96 kPa				
		4.10	HPT	136 kPa				
		4.20	HPT	128 kPa				
		4.30	HPT	138 kPa				
		4.40	HPT	139 kPa				
		4.50	HPT	132 kPa				
		4.60	HPT	154 kPa				
		4.70	HPT	140 kPa				
		4.80	HPT	158 kPa				
		4.90	HPT	146 kPa				
		5.00	HPT	139 kPa	5.00	68.60		End of Borehole at 5.00m

1 2 3 4 5

Borehole Diameter		Casing Diameter		Chiselling		
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration

Remarks

1. WS01 terminated at 5.0m, target depth.
2. Groundwater not encountered.

AGS

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web: www.geolabs.co.uk

Create Consulting Engineers
109-112 Temple Chambers
3-7 Temple Avenue
London
EC4Y 0HP

16 October 2023
Report No : GEO/38908/01

For the attention of Mr A Warren

Date samples received	20/09/2023
Date written instructions received	22/09/2023
Date testing commenced	23/09/2023
Date of sample disposal	**13/11/2023**

Our ref **GEO / 38908**
Your Ref **P22-2633**

Project **31A BELSIZE CRESCENT**

Further to your instructions we have pleasure in enclosing the results of the tests you requested in the attached figures.

LABORATORY TEST REPORT

Item No	Test Quantity	Description
1	~	Geotechnical Test Summary
2	~	Liquid & Plastic Limits Summary
	2	Water Content
	2	Liquid & Plastic Limits
3	~	Geochemical Test Summary
	3	pH Value & Water Soluble Sulphate Content as SO4 & Total Sulphate

Any opinions or interpretations expressed herein are outside the scope of UKAS accreditation. All results contained in this report are provisional unless signed by an approved signatory. The results contained in this report relate only to samples received in the laboratory and are tested 'as received' unless otherwise stated. This report should not be reproduced, except in full, without the written approval of the laboratory. The results reported are applicable only to the test items received by the laboratory.

All the necessary data required by the documented test procedures has been recorded and will be stored for a period of not less than 6 years. This data will be issued to yourselves at your request. All samples will be disposed of after the date shown above. Written confirmation will be required to retain the samples beyond this period and a storage charge may be applied.

We trust that the above meets your requirements and should you require any further information or assistance, please do not hesitate to contact us.

Yours faithfully
on behalf of **GEOLABS Limited**

J Sturges
Operations Manager

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Location	Depth (m)	Sample Ref	Type	Description	WC %	LL %	PL %	PI %	<425 µm %	Bulk Mg/m³	Dry Mg/m³	Condition	Cell Pressure kPa	Deviator Stress kPa	Shear Stress kPa	pH	2:1 W/S SO4 g/L	W/S Mg mg/L	
WS01	1.10		D																Chemical
WS01	1.50-1.60		D	Brown and orangish brown slightly sandy CLAY. Sand is fine.	31.3	75	32	43	100										Chemical
WS01	1.80-1.90		D	Brown slightly sandy CLAY. Sand is fine.	32.5	76	23	53	100										Chemical

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by

J Sturges - Operations Manager
16/10/2023

Project Number:

GEO / 38908

Project Name:

31A BELSIZE CRESCENT
P22-2633

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BS EN ISO 17892-12 : 2018+A2:2022

SUMMARY OF LIQUID AND PLASTIC LIMIT TESTS

Location	Depth m	Sample Ref	Sample Type	Description	Water Content BS EN ISO 17892-1 : 2014 +A1:2022 %	Liquid Limit %	Plastic Limit %	Plasticity Index %	Percentage Passing 425µm %	Atterberg Classification	Test Type	Sample Condition
WS01	1.50-1.60		D	Brown and orangish brown slightly sandy CLAY. Sand is fine.	31.3	75	32	43	100	CV	1	1
WS01	1.80-1.90		D	Brown slightly sandy CLAY. Sand is fine.	32.5	76	23	53	100	CV	1	1

Test Type:
1 - 1 point 80g / 30° fall cone method.
2 - 4 point 80g / 30° fall cone method.
3 - Non plastic determination.

Sample condition:
1 - As Received
2 - Air Dried
3 - Washed & Air Dried

Checked and Approved by:

J Sturges - Operations Manager
16/10/2023

Project Number:

GEO / 38908

Project Name:

31A BELSIZE CRESCENT
P22-2633

GEOLABS

UKAS TESTING 1982

1240 - Chemical Test Summary - 38908.XLSM

SUMMARY OF CHEMICAL TESTS ON SOIL

Location	Depth m	Sample Ref	Sample Type	pH Value	Total Acid Soluble Sulphate as SO4 %	Water Soluble Sulphate as SO4 2:1 Water:Soil Extract g/l	Total Sulphur %	Water Soluble Chloride g/l	Water Soluble Nitrate g/l	Magnesium g/l	Organic Content %	Mass Loss on Ignition %	Carbonate Content %
WS01	1.10		D	8.1	0.058	0.025	-	-	-	-	-	-	-
WS01	1.50-1.60		D	8.2	< 0.010	< 0.010	-	-	-	-	-	-	-
WS01	1.80-1.90		D	8.1	< 0.010	0.095	-	-	-	-	-	-	-

Tested by Eurofins Chemtest Ltd : MCERTS / UKAS No 2183

Checked and Approved by:

J Sturges - Operations Manager
16/10/2023

Project Number:

GEO / 38908

Project Name:

31A BELSIZE CRESCENT
P22-2633

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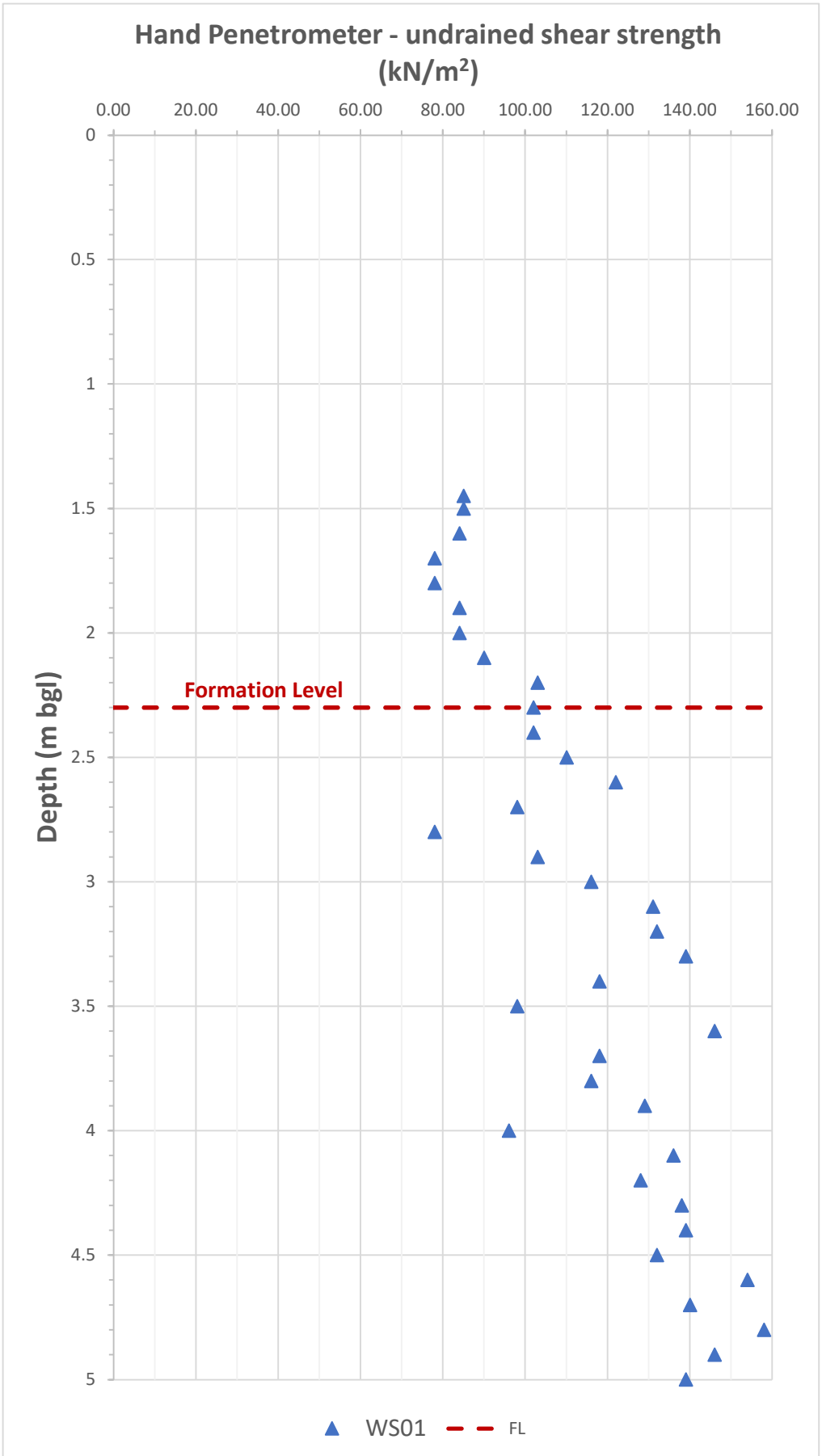
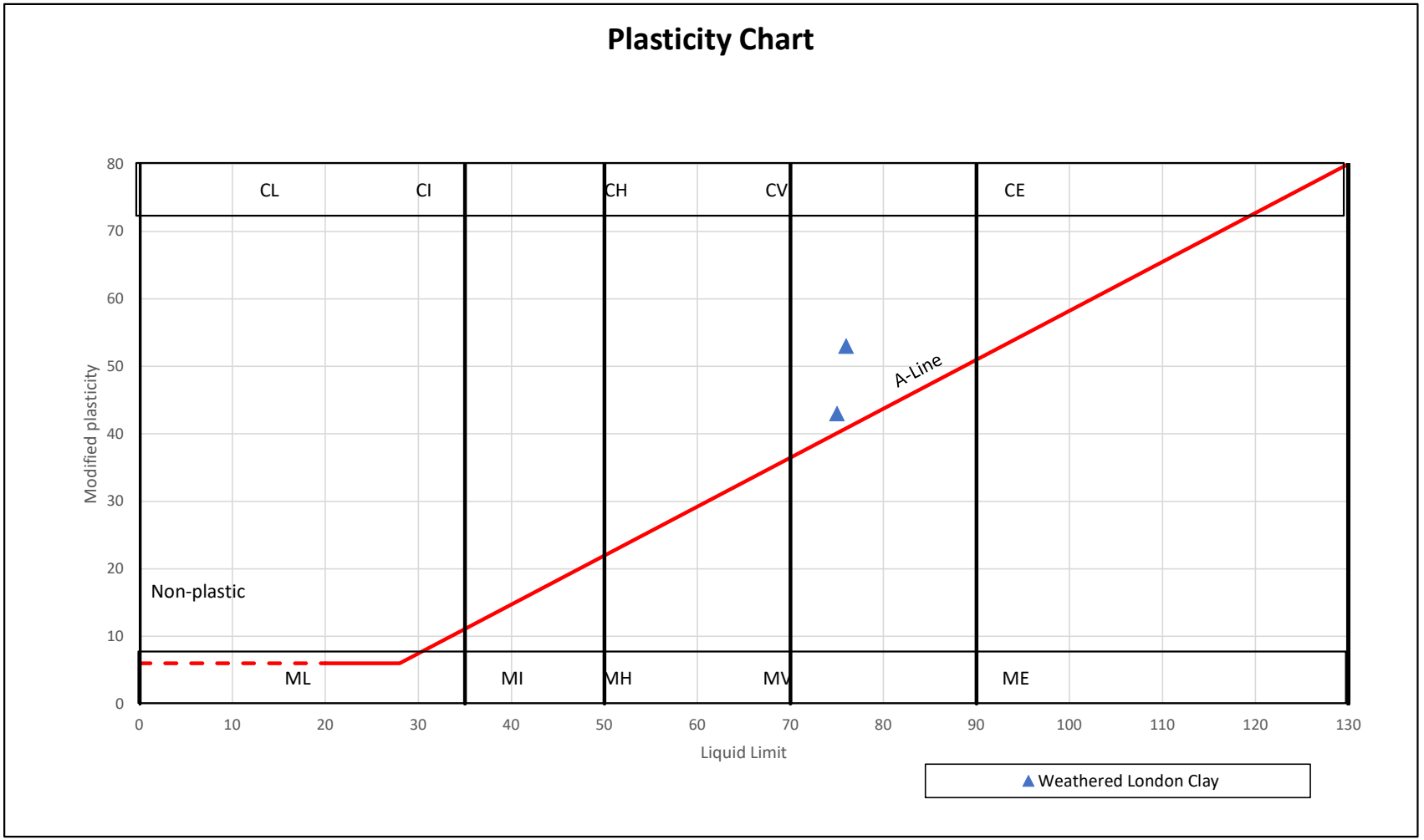


create
CONSULTING ENGINEERS LTD



Ground Gas and Groundwater Monitoring Record Sheet

JOB DETAILS

Site:	31a Belsize Crescent		**Visit No:**	1 **of** 1	
Date:	28.09.2023		**Operator:**	AW	

Monitoring Point	Time	GAS CONCENTRATIONS								FLOW DATA		VOLATILES		WELL AND WATER DATA		COMMENTS
		Methane (%v/v)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		%LEL		Flow rate (l/hr)		PID Peak (ppm)	Product thickness (mm)	Water level (mbgl)	Well Depth (m)	
		Peak	Steady	Peak	Steady	Min.	Steady	Peak	Steady	Peak	Steady					
WS01	08:15													-	4.0m	
Max		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**DRY**	**NR**	
Min		**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**0.00**	**0.00**	

ND - Not detected
NR - Not recorded
NA - Non applicable

METEOROLOGICAL AND SITE INFORMATION:

State of ground:		Dry		Moist		Wet		Snow		Frozen
Wind:		Calm		Light		Moderate		Strong	
Cloud cover:		None		Slight		Cloudy		Overcast	
Precipitation:		None		Slight		Moderate		Heavy	
Time monitoring performed:				Start				End	
Barometric pressure (mbar):				Start				End	
Pressure trend (Daily):				Falling		Steady		Rising	
Source:	GA5000								
Air Temperature (Deg. C):				Before				After	

INSTRUMENTATION TECHNICAL SPECIFICATIONS:

Ground gas meter: GA5000

Gas Range: **CH_4** 0 - 100% **CO_2** 0 - 100% **O_2** 0 - 25%

Gas Flow range: +100/-50 l/hour

Differential Pressure: (+/-) 1000 Pa

Ambient air check: **CH_4** 0.0 **CO_2** 0.1 **O_2** 20.9

APPENDIX F

GROUND MOVEMENT ASSESSMENT

CALCULATION SHEET

Project: **31A Belsize Crescent, London NW3 5QY**	Job No: P22-2633	Sheet No: 1	Rev.
Subject: **Ground Movement Assessment**	AW	Checked by: CB	
	Date: 24.05.24	Date: 28/05/2024	

Ground movement calculations for proposed lowering of basement levels
At 31A Belsize Crescent, London NW3 5QY

To accommodate the proposed lower ground floor living space, it is proposed to lower existing floor levels within a section of the property which extends beyond the front of the building.

Ground movement estimates have been made using the guide CIRIA C760: Embedded Retaining Walls Guidance for Economic Design, Gaba et al., CIRIA, 2017. Some tables and graphs are reproduced in the calculations.

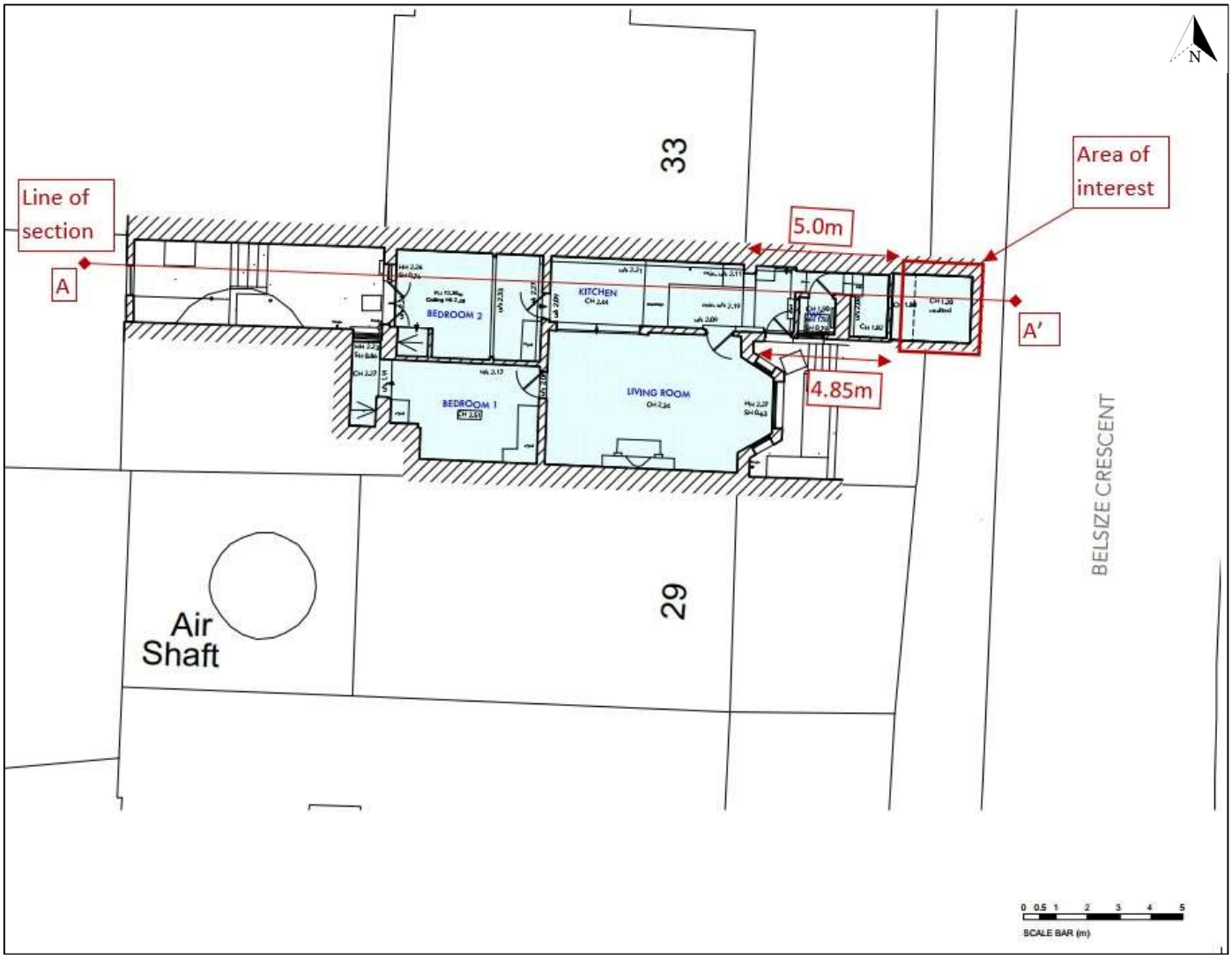


Figure 1 Site Plan

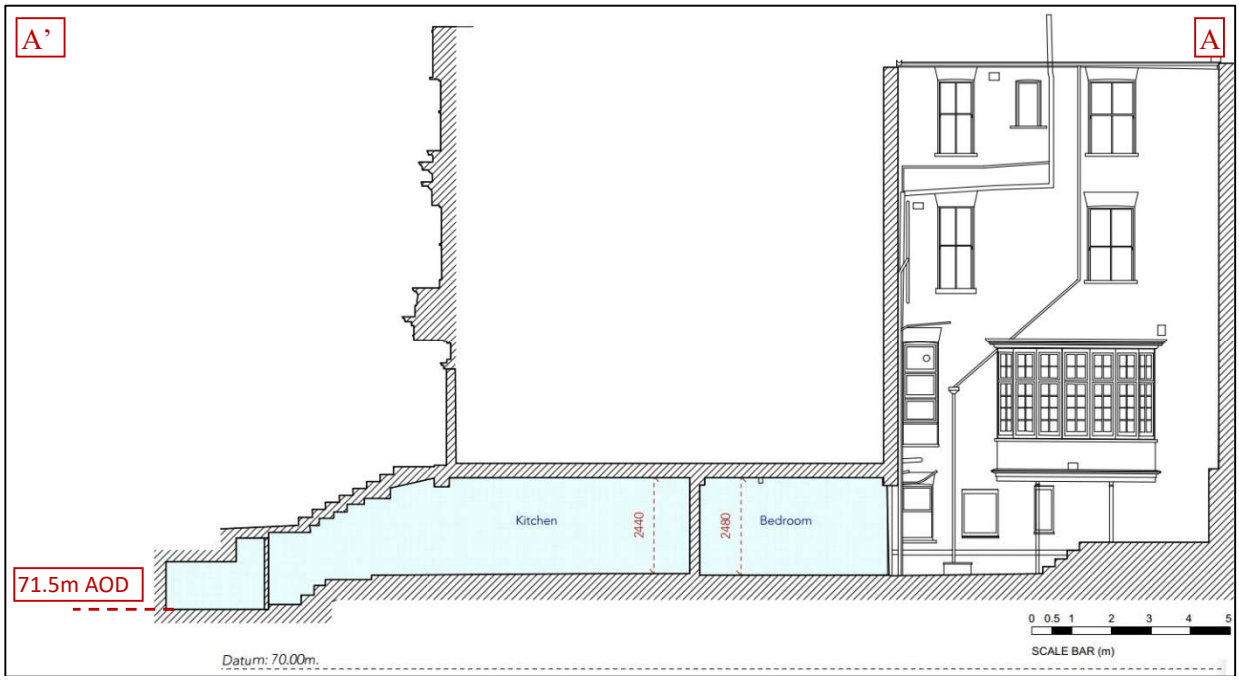


Figure 2 Existing cross-section (PAD Architects)

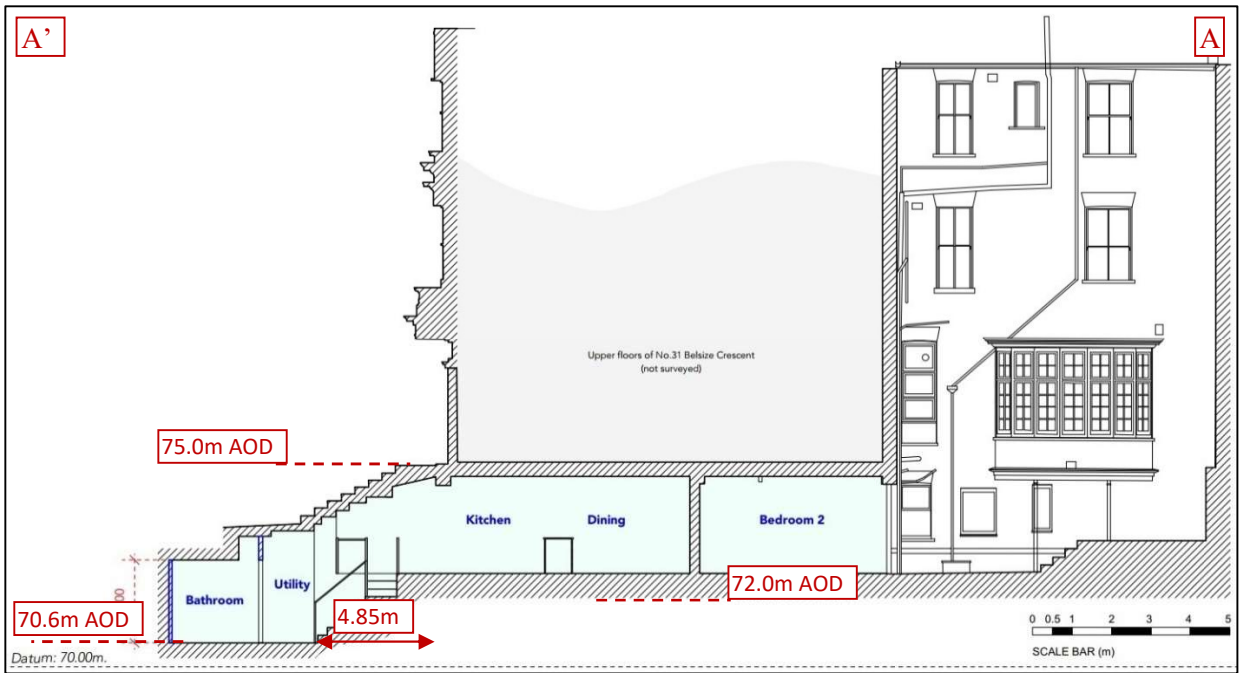


Figure 3 Proposed cross-section (PAD Architects)

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CALCULATION SHEET

CONSULTING ENGINEERS LTD

Project: **31A Belsize Crescent, London NW3 5QY**	Job No: P22-2633	Sheet No: 4	Rev.
Subject: **Ground Movement Assessment**	AW	Checked by: CB	
	Date: 24.05.24	Date: 28/05/2024	

Table 6.1 Ground surface movements due to bored pile and diaphragm wall installation in stiff clay

Wall type	Horizontal movements		Vertical movements	
	Surface movement at wall (per cent of wall depth)	*Distance behind wall to negligible movement (multiple of wall depth)*	*Surface movement at wall (per cent of wall depth)*	*Distance behind wall to negligible movement (multiple of wall depth)*
Bored piles				
Contiguous	0.04	1.5	0.04	2
Secant	0.08	1.5	0.05	2
Diaphragm walls				
Planar	0.05	1.5	0.05	1.5
Counterfort	0.1	1.5	0.05	1.5

Notes

1 Maximum surface movement occurs close to the wall and is calculated as a percentage of the pile depth/diaphragm wall trench depth, as appropriate.

2 Extent of movement is calculated non-dimensionally by dividing by the pile depth/diaphragm wall trench depth, as appropriate.

A planar wall represents the underpinned wall method of construction.

Table 6.2 Support stiffness categories (after Carder, 1995)

Support stiffness	Description/examples
High	Top-down construction, temporary props installed before permanent props at high level.
Moderate	Temporary props of high stiffness installed before permanent props at low level.
Low	Cantilever walls, temporary props of low stiffness or temporary props installed at low level.

High support stiffness is a reflection of the shallow excavation depth.

Table 6.3 Ground surface movements due to excavation in front of bored pile, diaphragm wall and sheet pile walls wholly embedded in competent ground (stiff clays)

Movement type	High support stiffness (high propped wall, top-down construction)		Low support stiffness (cantilever or low-stiffness temporary props or temporary props installed at low level)	
	Surface movement at wall (per cent of max excavation depth)	*Distance behind wall to negligible movement (multiple of max excavation depth)*	*Surface movement at wall (per cent of max excavation depth)*	*Distance behind wall to negligible movement (multiple of max excavation depth)*
Horizontal	0.15	4	0.4	4
Vertical	0.1	3.5	0.35	3.5

Notes

1 Maximum surface movement occurs close to the wall and is expressed as a percentage of maximum excavation depth in front of the wall.

2 Extent of movement is calculated non-dimensionally by dividing by maximum excavation depth.

3 Movements exclude those arising from wall installation effects.

4 Movements are for good workmanship and walls wholly embedded in stiff clays, retaining stiff clays or other competent soils.

5 Movements will be greater where soft soils are encountered at formation level (see Figure 6.14 and Appendix A6).

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CALCULATION SHEET

Project: **31A Belsize Crescent, London NW3 5QY**	Job No: P22-2633	Sheet No: 5	Rev.
Subject: **Ground Movement Assessment**	AW	Checked by: CB	
	Date: 24.05.24	Date: 28/05/2024	

CIRIA C760

The site specific borehole indicates the Site is underlain by weathered London Clay.

The existing floor level is indicated to be 71.5m AOD. The proposed floor level is indicated to be 70.6m AOD, a lowering of floor levels by 0.90m. Allowing for a thicker floor slab and increased insulation, the maximum increase in excavation is expected to be 1.20m.

Ground Surface Movement Due To Underpinning

Max depth of underpinned wall = 1.20m below existing levels.

Horizontal surface movement due to underpinning = **5mm**, as determined by Campbell Reith.

Table 6.3

Distance to negligible horizontal movement = 4 x 1.20m = 4.80m

Vertical surface movement due to underpinning = **5mm**, as determined by Campbell Reith

Table 6.3

Distance to negligible vertical movement = 3.5 x 1.20m = 4.20m

At a distance of 4.85m, the building façade is outwith the zone of influence from ground movement as a result of underpinning for the proposed basement.

Check on services within road

Predicted vertical and horizontal movements adjacent to the excavation of 5mm and 5mm respectively are within tolerable limits and will not impact upon services within Belsize Crescent.