Form

42 ELSWORTHY ROAD, LONDON, NW3 3DL

STRUCTURAL ENGINEER'S METHOD STATEMENT Job No: 172843

Date: December 2018

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Revision: P2

Residential

Commercial

Conservation

Retail

Education

Art

Hotels

Period

Document Issue Register

Revision	Date	Initials			Comments
		Author	Checker	Director	
DRAFT	29/06/18	CF	NS	PG	Initial Issue
P1	06/08/18	CF	NS	PG	BIA added
P2	18/12/18	CF	NS	PG	BIA updated

Contents

Preamble

This report has been prepared by Form Structural Design Ltd on the instructions of the project architects, MWA Architects, acting on behalf of the client, Daniel Austin. .

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ABOUT FORM SD

Form has undertaken over 300 projects involving subterranean development, both new build and retrospective, using numerous techniques and sequences of construction. This extensive design, site and local geology/hydrology experience has positioned the practice as one of London's leading subterranean engineering design consultants.

Many of our subterranean projects are in the London Boroughs of, Westminster, Camden, and RBKC, making us familiar with the most recent requirements of subterranean development.

Form has designed multi-level basements using techniques including open dig, underpinning (mass and 'L' shaped R.C. special foundations), temporary and permanent steel sheet piling, temporary and permanent concrete piled retaining walls, top down construction and tunnelling.

TERMS OF REFERENCE

We were appointed in March 2017 2016 by our client, Daniel Austin to prepare a supporting Structural Design Statement in support of a Planning Submission for the refurbishment of 42 Elsworthy Road.

Executive Summary

The proposal complies with the requirements set out in Camden Council and Camden policies and we, therefore, conclude that the proposals meet all the requirements for the construction to be designed to safeguard the structural stability of the existing building, nearby buildings and other infrastructure including London Underground tunnels and the highway. Specifically, we can confirm that:

- The property was built sometime before 1890.
  There is no known information or evidence of bomb damage from WWI or WWII on this particular site.
- Create's ground investigation found that there are no unusual geological, hydrological or structural concerns which need to be addressed. The water table is believed to be below the existing lower ground level. This report confirms that the existing geology is capable of supporting the loads and the construction techniques to be imposed.
- There will be no adverse effect on the surrounding soil, and the proposed works will not initiate any slope instability. This is ensured by the design of earth retaining structures in both the permanent and temporary works.
- The proposed development and the associated construction processes and temporary works have no adverse impact on the structural integrity and natural ability for movement of the existing and surrounding structure, surrounding basements or utilities. The proposed structure does not apply any loads onto the surrounding existing structures and surrounding basements.
- The installation of underpinning as described in this report can cause localised small settlements of the existing walls above. However, these movements are typically very small and suppressed by the stiffness of the above structures and those adjoining.
- The proposal will have no impact on the structural stability of the existing and adjoining buildings. This is ensured in both the permanent state and for the duration of the site works. Respectively, the permanent and temporary works will be designed to sustain the loads applied by the existing structures.
- The proposals do not increase the extent of the existing impermeable hard-standing across the site and on this basis the total amount of water entering into the sewer system as a result of the development will not increase.
- The Metropolitan line tube tunnel runs just over 90m to the West of the site. London Underground asset protection department have confirmed the agreed works will not affect their assets
- Any necessary diversion of the existing combined sewer will be designed to modern day standards as determined by the Mechanical and Electrical Engineer for the project. All services that are required to pass through the new structure will be sleeved and articulated accordingly to allow for future movements and settlements of the surrounding structure.
- There are no trees in the vicinity of the proposed excavation. The proposals; access/unloading of plant and materials will not impact on any trees.
- There will be no impact on any other services or global ground water levels and flows.
- This report, together with the construction sequence and sketches submitted with it provide the engineering solution of the proposed construction.

The permanent and temporary works will be designed to relevant Eurocodes. The temporary works and the method of works will be developed such that the effect on the neighbours is minimised.

1 Introduction

This report has been prepared as a supporting document to the planning application for the redevelopment of the property at 42 Elsworthy Road. The proposals for the site involve:

- Construction of a new basement with a swimming pool below the foot print of the building, including lightwells.
- Three storey extension to the left of the structure.
- Internal superstructure modifications as indicated on the proposed drawings.

This report presents an outline structural scheme for the construction of the proposed scheme and alterations to the superstructure including a detailed construction sequence that clearly describes each individual stage of the build from beginning to end.

2 Planning Policy

The table below provides a non-technical executive summary covering key aspects of Camden Basements Planning Policy. The key aspects have been divided into specific headings for ensure all requested information has been provided for the planning application.

Extract Descriptions of Key Aspects from Camden Planning Policy	Reference Location within this Report	Compliance to Camden Policy
A. The **Desk Study** information and an analysis of the findings in relation to the proposals. A thorough desk study has been completed and presented in the Construction Method Statement main text, it includes: a. The site history; b. The age of the property; c. The site survey; d. The geology and ground conditions – overall sections should be drawn using information obtained from the site investigation and British Geological Society borehole logs; e. Historic River Courses; f. Underground Infrastructure; i. Services; ii. Drains; iii. Tunnels; iv. Nearby basement developments in the area have been considered.	 Section 3.5 Section 3.5 Section 3.1 Section 4.1, 4.2 Section 4.6 Section 3.6 Section 3.6 Section 3.8 Section 5.3	✓
B. An appraisal of the **existing building structural arrangement** including previous alterations and any obvious defects, asses the condition and location of **adjoining buildings. Opening up works** to investigate the existing structure**.**	Section 3.1, 5.3	✓
C. Assessment of a **site investigation** which is demonstrated to be relevant to the site together with **trial pits** showing existing foundations and the material they are founded on, for all walls which may be impacted by the proposed scheme. If **groundwater** is present, levels are to be monitored for a period of time.	Sections 4 and Appendix B	✓
D. Details of the engineering design which is advanced to detailed proposal stage a. Ground conditions and ground water; b. Existing trees and infrastructure; c. Drainage; d. Flooding; e. Structural engineering general arrangement and details; drawing showing underpinning, piled walls etc	 Sections 4.1, 4.4 Sections 3.9 Section 3.6 Section 4.7 Appendix A	✓
E. An analysis of the **upper aquifer** (when it exists) and how the basement may impact any groundwater flow.	Section 4.5	✓
F. Details of **flood risk, surface water flooding, critical drainage areas** and how these have been addressed in the design. A full flood report assessment to represent areas determined to be at risk.	Section 4.7	✓
G. An Assessment of **movement** expected and the effect of adjoining or adjacent properties, covering both short term and long-term effects. Design and construction to limit damage to all buildings to a maximum of Category 2 as set out in CIRA Report 580	Section 5.3 and Appendix C	✓
H. Details of **sequences of construction** and **temporary propping** of the construction of the proposed basement to demonstrate how the basement can be built to prevent movement exceeding those predicted. It should be shown how **horizontal** and **vertical loads** are supported and balanced at all stages of construction and consider the interaction between permanent and temporary works.	Section 5.7 and Appendix A	✓

3 Site Information

3.1 Existing Building

The site comprises a six-storey building, including lower ground floor and lift, comprising 3 self-contained residential units. The site has a lard garden area to the rear of the building.

3.2 Key Constraints

The following factors need to be considered during the design development of the foundation solution and position.

3.2.1 Foundations of Retained Existing Buildings

The form and size of the existing foundations may impact the current scheme. Strip foundations under the existing buildings are expected.

3.2.2 Obstructions

The presence of obstructions in the ground such as concrete boulders, buried pile foundations and old slabs are to be expected. The presence of these may lead to cost increases and delays to the foundation construction programme. G.P.R survey should be carried out to identify buried services or other obstructions to reduce risk.

3.3 Existing Structures Demolition

The site is occupied at present by the original building, 6 storeys high, including lower ground floor and loft. It is proposed to demolish the non-original extension to the west flank as well as excavate a new basement beneath the footprint of the building. Structural works are also required at the upper floors to allow for the reconfiguration of the three self-contained units.

A demolition plan will be prepared as part of the demolition specifications at a later stage.

Northeast Boundary

To the northeast of the boundary lies 40 Elsworthy Road. This house is not attached, although it lies approximately 900mm away (**Figure 4**).

Northwest Boundary (Rear)

The northwest of the building, beyond the large garden lies 2 Lower Merton Rise

Southwest Boundary

To the southwest of the building lies the extensive garden of the site. Beyond this, lies Lower Merton Rise and the walkway. This road joins Elsworthy Road here, with the site lying within the corner junction.

Southeast Boundary (Front)

To the southwest of the structure Elsworthy Road and the walkway. This road is the main area of the Elsworthy Conservation Area.

Figure 1: *Existing Building Areal View*

Figure 2: *Boundary Conditions of the Front of the Property*

3 Site Information

Figure 3: *View of the Southwest of the Property from Lower Merton Rise*

Figure 4: *View of Boundary Condition between the Property and 40 Elsworthy Drive (RHS)*

3 Site Information

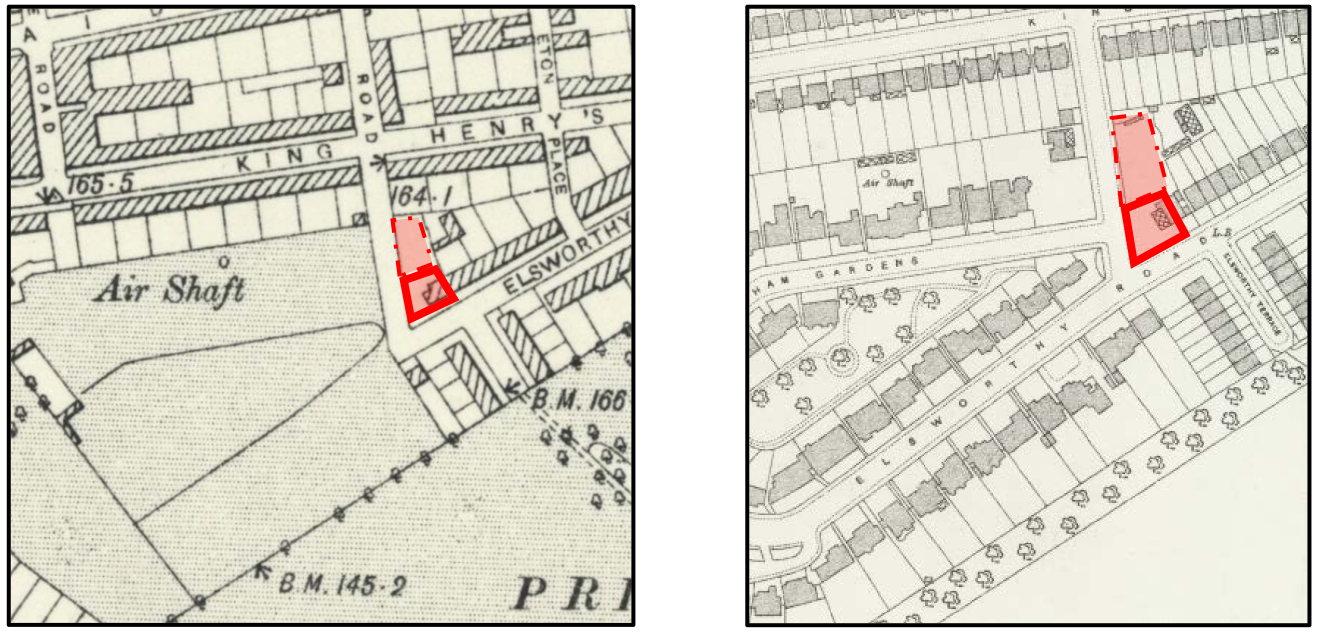
3.4 Site Location

The site is located on Elsworthy Road at the junction between Lower Morten Road and Elsworthy Road. Although the building itself is not listed, it does lie within the Elsworthy conservation area.

Figure 5: *Site Location*

3.5 Site History

From historic maps, it can be seen that the site used to be much bigger, with large grounds with small buildings at the far end. The site was split since 1914 and now two new houses have been built within the dotted areas shown in **Figure 6**, and the solid red area is now the size of the site of 42 Elsworthy Road.



London VI.NE: 1891 – 1894 1:10,560

OS 25 Inch Series: 1892 – 1914 1:10.560

Figure 6: *Historical Maps of The Site from 1866-1953 to 1970.*

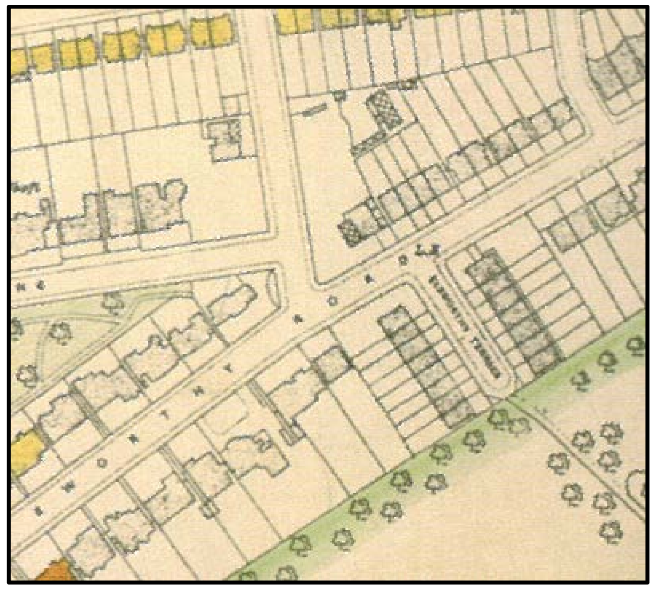


Figure 7: *WWII Bomb Damage Map*

As can be seen in **Figure 7**, the building and surrounding buildings did not suffer bomb damage in WWII.

3 Site Information

3.6 Existing Services

3.6.1 Mains Water

The Thames Water Asset Search shows that Thames Water owns the water mains lines in the vicinity of the existing property. The route is shown in **Figure 8** and also runs along Elsworthy Road and Lower Merton Rise. If the site levels remain as existing, it is likely that the mains water supply will not need to be diverted.

***Figure 8:** Thames Water Mains Route Map*

3.6.2 Underground Drainage

A Thames Water Asset Search has been carried out and identified that the property is served by a combined sewer which runs along Elsworthy Road and Lower Merton Rise, shown in **Figure 9**. The proposals do not increase the extent of the existing impermeable hard-standing across the site and on this basis the total amount of water entering into the sewer system as a result of the development will not increase. The below ground drainage design will be developed further during the design development stages.

***Figure 9:** Thames Water Sewer Route Map*

It is expected that surface water and foul will be drained by utilising the existing gravity fed system where possible, and the minimal amount of water entering the basement level via the cavity drain system will fall to a sump below the new Basement slab level. From the sump it will then be positively pumped to the outfall. A non-return valve will be installed at the main outfall to ensure the lower slab areas are not flooded by the combined sewer system in times of sustained heavy rainfall.

Figure 10 indicates an example of a typical duel sump pump by Delta for ground water ingress in the cavity drain system. The final design and specification of the cavity drainage and sumps used will be confirmed by a Waterproofing Specialist.

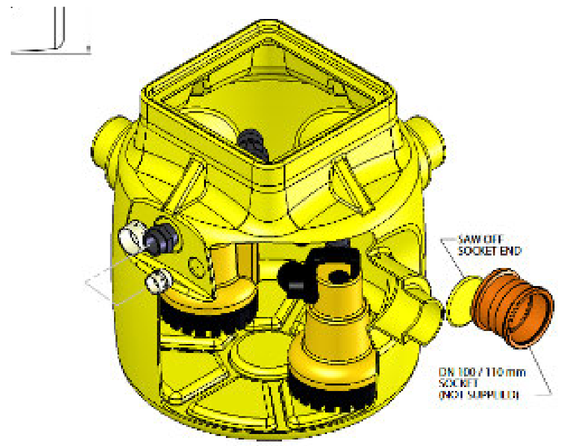


***Figure 10:** Example of Ground Water Seepage Pump, Delta Dual V3 Sump (2018)*

3.6.3 Gas and Electrical

A full utilities search has been carried out by Cadent Gas ltd. This report is within the Create Consulting report in **Appendix B**. They identified any Cadent Gas ltd. Or National Grid Electrical Transmission and Gas plc. apparatus that are within the vicinity of the development. The apparatus that has been identified as being in the vicinity of your proposed works is:

- Low or Medium pressure (below 2 bar) gas pipes and associated equipment. (As a result, it is highly likely that there are gas services and associated apparatus in the vicinity)
- Electricity Transmission underground cables and associated equipment

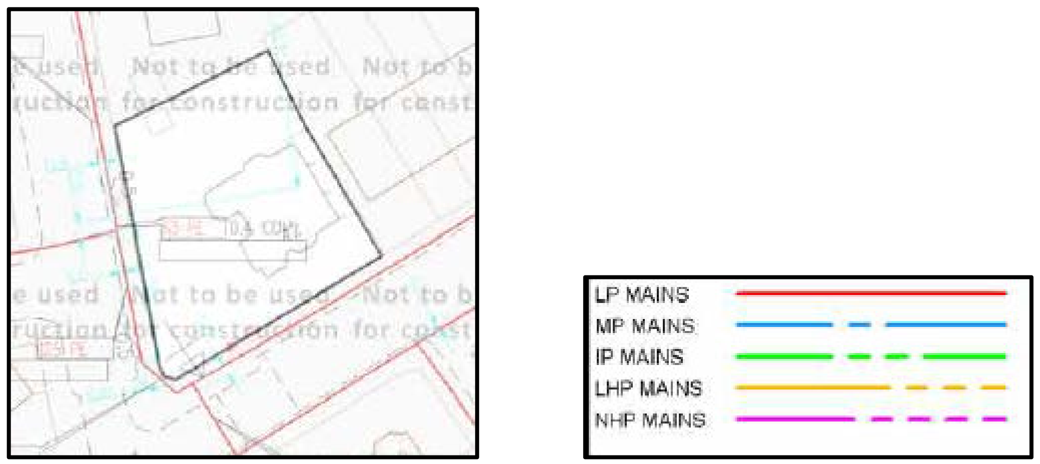


***Figure 11**: Cadent Gas ltd Asset Location Map*

3 Site Information

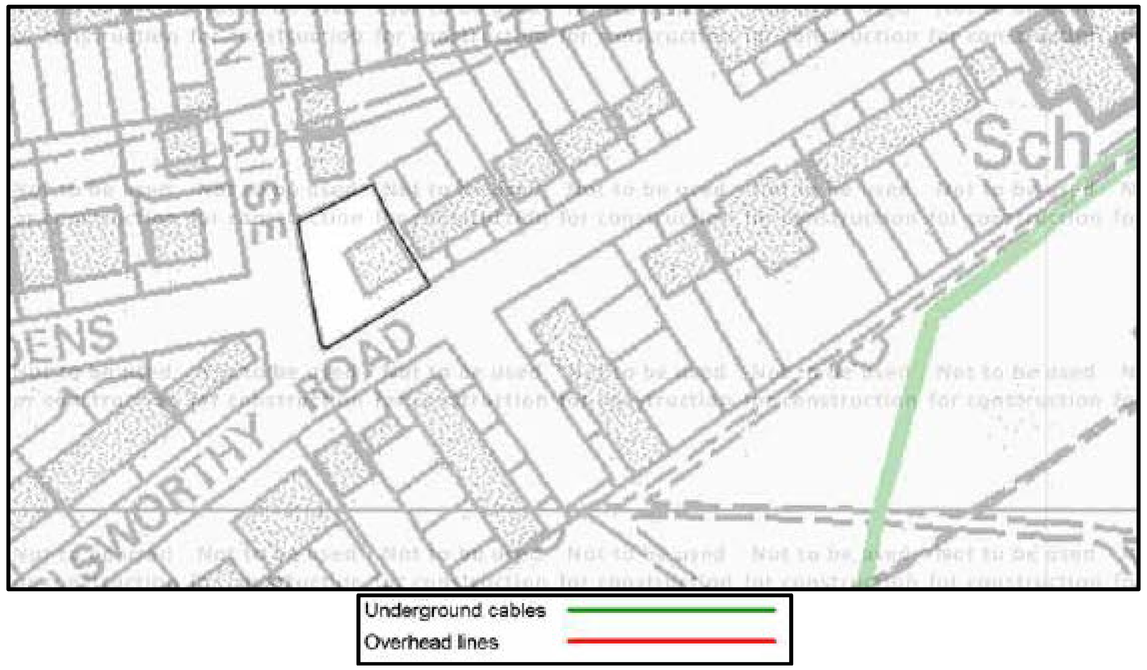


Figure 12: *National Grid Underground Cables and Overhead Lines Map*

The UK Power Network map in **Figure 13** shows the location of electricity lines and electrical plant belonging to them. This map shows they own property within the site and within the vicinity of the site. The full report and map can be found in the Create Consulting Report in **Appendix B**.

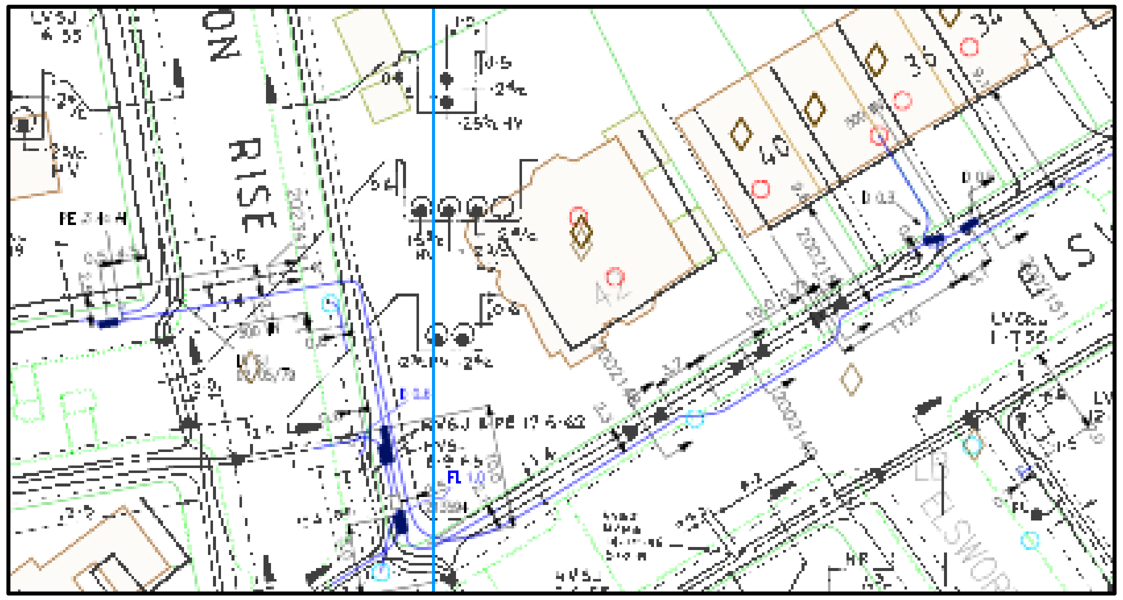


Figure 13: *UK Power Networks Electric Lines and Electrical Plant Map*

3.6.4 Telecommunications

BT Openreach was contacted to investigate if any of their lines or property was in the vicinity of the development. The map in **Figure 14** shows that BT Openreach provides services to the existing building and that their lines run along Elsworthy Road and Lower Merton Rise, surrounding the site.

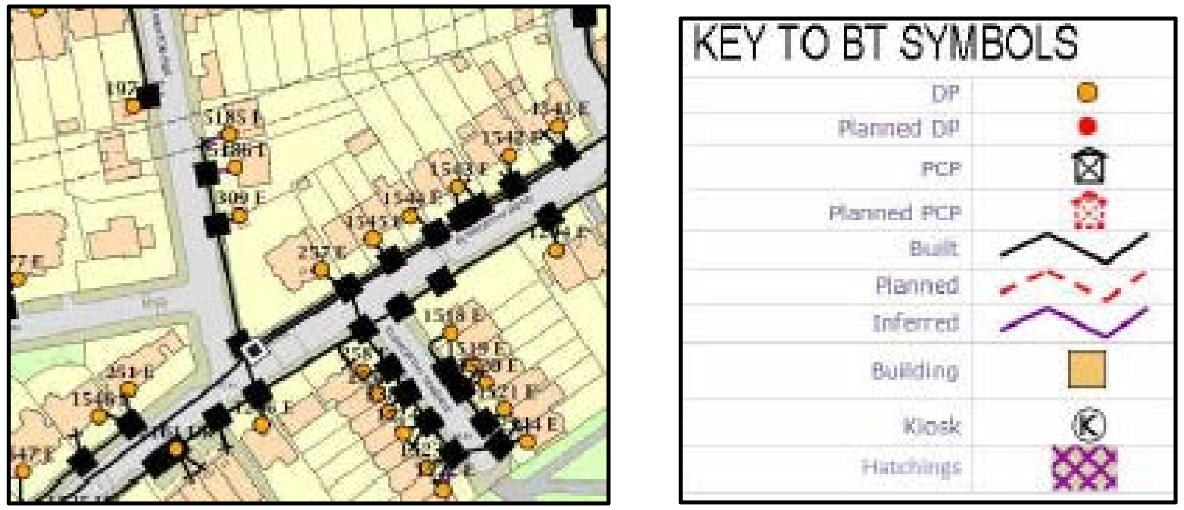


Figure 14: *BT Openreach Asset Map*

3.7 Existing Infrastructure

3.7.1 Local Highways and Access

The site is located on Elsworthy Road, a minor road running along the north of Primrose Hill.

A traffic management plan is to be produced by the appointed contractor and submitted to the Project Manager and Local Authority for approval prior to works commencing.

3 Site Information

3.8 Underground Structures

3.8.1 Crossrail 1 and Crossrail 2

The safeguarding route for Crossrail 1 is located approximately 2.5km south of the site and the safeguarding route for Crossrail 2 is located approximately 3km to the southeast of the site. Due to these large distance, the construction works will not impact the development and, therefore, Crossrail will not need to be informed.

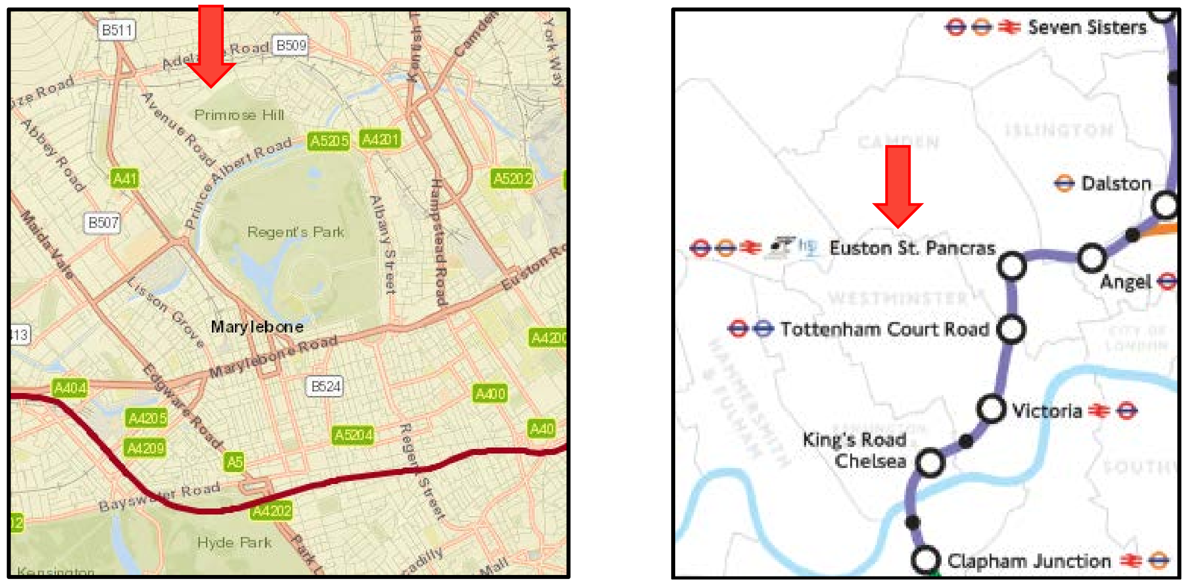


Figure 15: The site in relation to the Crossrail 1 and Crossrail 2 routes, respectively

3.8.2 London Underground

A desktop study has confirmed that the nearest underground line is the Metropolitan Line, approximately 90m from the site (**Figure 16**, RHS) and London Underground asset protection department have confirmed the agreed works will not affect their assets. The London Overground tracks (**Figure 16**, LHS) are closer and Network rail were consulted and confirmed the location of their assets and confirmed they would not be affected by the works.

***Figure 16:** Distance from the site to the closest point of the Metropolitan Line and the Overground, respectively*

3.9 Arboriculture

A full arboriculture assessment has been undertaken and it has been determined that the proposed basement works both during construction and as a final proposal will not affect the existing retained trees around the site.

4 Ground Conditions

4.1 Geology

With reference to British Geological Survey (BGS) the site is underlain by the bedrock, London Clay Formation, clay, silt, and sand. No superficial deposits are located at the site. A full site investigation was carried out by Create Consulting Engineers between 3rd and 5th July 2017. This can be found in **Appendix B**. 2no. cable percussion boreholes to a maximum depth of 15 metres and 2No. windowless sampler boreholes to a maximum depth of 5 metres were drilled. The results are summarised below in **Table 1**.

Table 1: *Summary of Borehole Logs*

Summary of Borehole Logs	Distance BGL (m)
TOP SOIL Brown organic topsoil and lawn	0 to 0.10-0.150m
MADE GROUND Friable reworked clay with sand, silt, and gravel, red brick and red tile fragments, and locally with chalk fragments	0.10-0.150 to 1.3-1.5m
LONDON CLAY Medium brown firm to stiff silty CLAY (weather London Clay) with the occasionally rounded gravel	1.3-1.5 to 9-11m
LONDON CLAY Stiff blue-grey silty clay (London Clay)	9-11 to 15m (end of borehole)

During drilling, no groundwater was encountered in any of the boreholes. Standing ground water (perched groundwater) was recorded at levels of between 3.74m bgl and 8.40m bgl.

Slope Stability

The BIA carried out by Create Consulting ltd. Identified no slope stability impacts and found that the site is generally level in relation to the surrounding land and adjacent properties. Excavation stability and water ingress, however, must be considered.

4.2 Ground Contamination

Create Consulting's report shows that no obvious or olfactory signs of contamination were observed during the fieldwork undertake. The made ground was predominantly comprised of reworked friable clay with sand and gravel and red brick fragments and no groundwater was encountered, therefore, unlikely to have water-based contaminants.

Samples were analysed in a laboratory and the results show that concentrations of all potential contaminants are significantly below the site-specific limits for a site with a residential end use, except for lead. High concentrations of lead were found in 3 out of 4 of the samples collected, including samples taken from shallow depth. The concentrations of lead identified in the made ground are not considered suitable for a residential (with private garden) end use and a clean cover system will be required to mitigate any potential risk to future residents.
Asbestos was not detected in any of the samples when screened.

4.3 Gas

The ground gas of the site was monitored which involved the measurement of concentrations of methane, carbon dioxide, oxygen, carbon monoxide and hydrogen sulphide gases collected within the monitoring well, followed by measuring and monitoring the gas flow rate. The ground gas concentrations measured from the boreholes confirmed the absence of detectable methane, slightly elevated carbon dioxide (between 1.3 and 3.9% by volume), and slightly depleted oxygen concentrations.

Taking the worst gas screening value, the highest concentration of gas with the highest flow rate, the value was significantly below the gas screening criteria where gas protection measures would be required.

4.4 Hydrogeology

The site hydrogeology can be summarised as follows:

- The site is not located in an Environment Agency (EA) flood risk zone from rivers or the sea.
- The London Clay Formation has been classified as a non-productive stratum (formerly non-aquifers) and is considered to have a low sensitivity and permeability It comprises of rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.
- The site not located within an Environment Agency Source Protection Zone (SPZ).
- There are no licensed surface water abstractions within 1km of the site.
- As groundwater levels do vary in elevation due to seasonal fluctuations. the contractor will be expected to confirm the ground water level prior to starting works on site. They will also be expected to consider suitable remediation measures should water be encountered during the excavations and general substructure works.

4.5 Hydrology

As shown in **Figure 17**, the lost River Tyburn used to flow within close proximity of the site. A culvert has been left approximately 150m to the west of the site.

Figure 17: *Proximity of the Lost River Tyburn to the site*

4 Ground Conditions

4.6 Flooding

4.6.1 Tidal and Fluvial

The Environment Agency classifies the site as being in Flood Zone 1, Figure 18, meaning there is a low probability of flooding. A flood risk assessment does not need to be carried out for developments in Flood Zone 1. The proposed development can therefore be constructed and operated safely in flood risk terms and is therefore appropriate development in accordance with the National Planning Policy Framework. There are no records of any tidal or fluvial flooding in the local area.

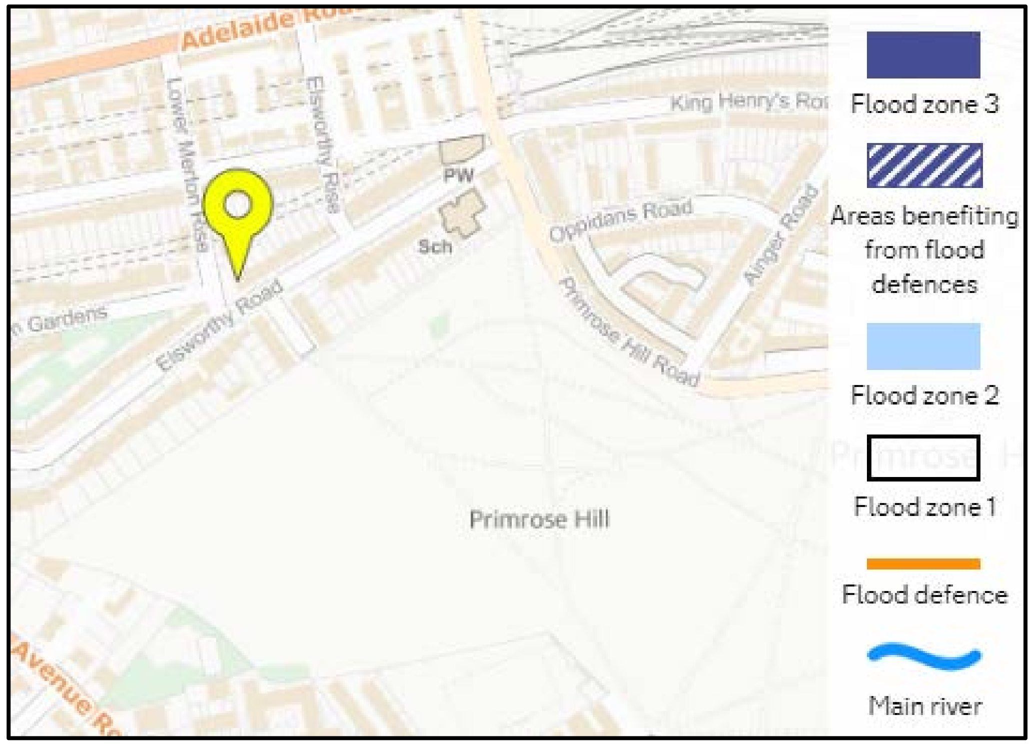


Figure 18: *The Environment Agency Rivers and Sea Flood Risk Map*

4.6.2 Reservoir Flooding

The site is not within the extent of the flood area due to reservoirs; therefore, this will not be a concern during construction.

4.6.3 Sewerage Flooding

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

4.6.4 Surface Water

The Flood Risk Statement identifies the site is at 'low' risk of flooding from surface water run-off. Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast. In addition, local features can greatly affect the chance and severity of flooding.

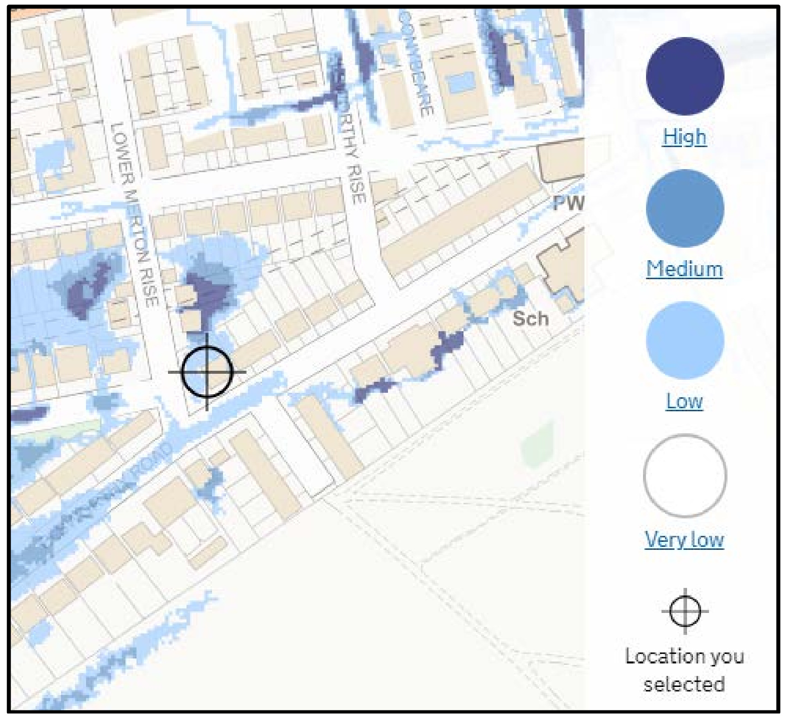


Figure 19: *The Environmental Agency Surface Water Flood Risk Map*

5 Development Proposals

5.1 Sub-Structure & Basement Construction

It is proposed to construct a basement extension below the house, with a lower section for a swimming pool. The basement will have straight edges to form lightwells to the basement where the lower ground floor facade steps in and out above. Alterations to the superstructure are minor, these include the construction of a new three storey RC extension to the left from basement to first floor level, and some very minor rearrangement of internal walls at the rest of the floors.

The structural proposals are described within the report and on the drawings contained within **Appendix A**. They have been developed by Form-SD in conjunction with the architects to address the specific site constraints and characteristics including:

- The ground conditions
- The support to the proposed superstructure above
- The stability of the neighbouring properties
- Health and Safety considerations
- The physical site constraints

Due to the close adjacency of the neighbouring properties and the sensitivity of the site location within a residential area the design has been developed to minimise noise and dust. There are a number of simple general measures that the contractor will be expected to undertake to minimise the impact of the site operations including:

- For all operations identify working method that use equipment or modes of operation that produce less noise.
- Reduce the need for noisy assembly practices by assembling off site where possible.
- Keep noisy plant as far away as possible from the site boundaries.
- Adopt working hours to restrict noisy activities to certain periods of the day.
- Minimise the drop height into hoppers, lorries or other plant.

The demolition, excavation, and associated vehicular activities have been identified as particularly sensitive and the following precautions will be taken to minimize noise and vibration.

The basement will be formed of a contiguous piled wall to retain the soil for the basement excavation. Within this wall the RC liner walls and a 450mm RC raft slab will form the basement box. Beneath the existing structure, RC underpins will be used to form the basement. For the full construction sequence and layouts of the proposed structure, refer to **Appendix A.**

5.2 Temporary Works Systems and Principals to be Used

It is proposed to support the existing structure on a system of sacrificial piles, steel runner beams and needles in order to allow a laterally propped open-dig method. Spoil will be removed via a conveyer to a skip within a suspended parking bay. The new columns and walls can then be constructed to lower ground floor level. Props will likely need to be relocated during this process in a safe sequence agreed with the contractor. Once the new lower ground floor slab has been cast and cured the superstructure walls can be re-supported off the slab. All props can then be removed as the lower ground floor slab provides both vertical and lateral support to the existing stricture and adjacent properties.

The contiguous piled wall and capping beam will be designed as a propped cantilever with capping beam laterally supported by temporary props during excavation. In the permanent condition the capping slab will act as a diaphragm to restrain the head of the piles and walls. The piles will be designed to span between capping slab and basement. Piling will likely be undertaken using a mini piling rig. The underpins will require temporary propping prior to installation of the basement slab and liner wall.

The reinforced and mass concrete underpins will be installed in two stages as the depth is too great for the pins to safely be constructed in one lift. A sacrificial toe will be installed at the base of the first stage underpin in order to minimise settlement. Each pin will need to be propped at levels noted on the drawings until the floor and ceiling slabs are in place to provide permanent lateral restraint. No ground water is expected; however, the contractor should have a plan in place for de-watering should any water ingress be experienced.

All of the works, particularly the sub-structure, are to be carried out in a manner which minimises any noise, vibration, and dust that may affect the neighbouring properties. The engineer will make a site visit at each of the points detailed above in the sequence of construction. The ground works and piling contractors will provide detailed method statements for the works and temporary propping to the basement for approval by the engineer prior to commencement of the works.

5.3 Basement Impact Assessment

A Basement Impact Assessment (BIA) was carried out in August 2018 by Create Consulting. They found that although perched water was found at 3.74m and 8.40m bgl, ground water is below 10.0mbgl. The basement does not extend below 10.om bgl, therefore construction of the basement will not affect the ground water flow, nor will cumulative development affect the ground water flow in the area. The BIA also concludes that there will be no risks or stability impacts to the development or adjacent sites due to slopes. The full BIA can be found with the SI in **Appendix B**.

5.4 Potential Ground Movement and Monitoring of Adjoining Properties

A Ground Movement Assessment (GMS) was carried out by Card Geotechnics Limited (CGL) in December 2018 as a supplementary document for Create's BIA. This determines the impact of the new basement on the surrounding neighbouring buildings, as well as the existing retained house above. Summarised below is the findings of the assessment as well as monitoring methods to continually assess the damage. The full GMA and with the monitoring and mitigation strategies can be found in **Appendix C**.

The GMA key findings are summarised as follows:

- The maximum damage at no. 40 Elsworthy Road on the Building Damage Classification Table based on Boscardin and Cording / Burland et al. (**Appendix D**) is Category 1 'very slight' damage.
- The maximum settlement deflection across the footpath to the front of the house is anticipated to be 0.5mm, and the maximum horizontal movement is 1.65mm. These movements are negligible.
- The maximum settlement deflection across the highway to the front of the house is anticipated to be 0.5mm, and the maximum horizontal movement is 1.13mm. These movements are negligible.

Typical damage for Category 1 is indicated to comprise: 'Fine cracks that can be easily treated during decoration. Perhaps isolated slight fracture within building. Cracks in external brick work visible upon inspection'.

The GMA recommends conducting a full condition survey of the existing house and the neighbouring property. Movements can then be monitored regularly during construction and for a designated time period after. A structural monitoring strategy to control the works and impacts to neighbouring structures will comprise a digital level to detect settlement at ground floor and a Total Station to record the three-dimensional position of the retro targets fixed to the party walls. Control stations will be installed outside of the site. These recorded movements will be checked against predefined trigger levels. If in the amber category, the structural engineer should be notified, if a value is above the red trigger level, all work must immediately stop and the structural engineer notified.

We have extensive experience of underpinning and will visit the site periodically during the works to ensure it is being carried out to our specifications.

6 Site Management

This section of the report has been produced at planning stage and before the main contractor has been fully appointed. It sets out the systems and procedures that the Contractor will utilise in controlling the construction operations on site, to ensure progress of the project in the most safe and efficient manner possible and to minimise impacts on the local environment and surrounding amenity.

In addition to any planning conditions Tendering contractors will be made aware of the contents below.

Once planning permission is granted, the appointed contractor will be fully responsible for the management of the site and it will be deemed necessary to submit a Construction and Traffic Management Plan prior to the commencement of site activities.

6.1 General Practice

Construction operations are likely to have impact on residential amenity on a day to day basis. The contractor will be expected to minimise the impact that the construction process could cause to the Local Environment and the neighbouring community. All care will be taken not to cause the primary environmental nuisances, noise and dust pollution. Below are actions that will be carried out to abate these problems.

Reduction in noise disruption will be achieved by:

- Coordinated delivery times to avoid peak traffic times.
- Ensuring all plant has sound reduction measures (mufflers, baffles or silencers)
- Strict adherence to the site working hours.

Reduction in dust pollution and other airborne debris will be achieved by:

- Ensuring that all materials transported to and from site are in enclosed containers or fully sheeted.
- During dry periods the works are to be damped down to control the generation of dust.
- Ensuring materials have a minimum of packaging.
- Ensuring all polystyrene and similar lightweight materials are weighted down
- Making sure all dust generating materials are adequately packaged.

In addition to the above provisions the following measures will be taken to reduce any further negative effects on the environment:

- Ensuring all contaminants kept on site are safely stored with the necessary procedures put in place for leaks and spillages etc.
- All temporary lighting, whether for the construction itself or for construction traffic, will be directional to ensure minimal light spillage across the site. The lighting will only be used as necessary during operational working hours.

Environmental issues are taken very seriously and the Contractor will be expected to employ good management practices to minimise the effects of noise and dust on the environment and local community.

6.2 Excavation of Soil

The soil will be excavated and transferred to normal 7m skips kept within a suspended parking bay in front of the house. The excavation will be undertaken by small excavators and transferred to the skip to the front of the site using conveyors through the front lightwell. The footpath and street adjacent to the site will be cleaned each evening. The frequency of vehicle movement will be confirmed by the chosen contractor and approved by the council before works commence. Further information on the management of site activities is detailed in the Construction Management Plan.

All of the works, particularly the sub-structure, are to be carried out in a manner which minimises any noise and vibration that may affect the neighbouring properties.

The engineer will make a site visit at each of the points detailed in the sequence of construction. The ground worker will provide detailed method statements for the works and temporary propping to the basement for approval by the engineer prior to commencement of the works.

6.3 Waterproofing and Drainage systems

The reinforced concrete liner walls will be designed as a water retaining structure in accordance with BS 8007 and detailed with hydrophilic strips at all concrete joints in order to prevent water ingress. An internal cavity drainage system will also be included in order to ensure a dry, grade 3 environment complying with BS 8102.

Sump pumps and drainage will be required to remove any water ingress from the cavity drain system and these will be designed by an appointed M&E consultant. Section 6 goes into further detail about waterproofing systems for the subterranean level.

6.4 Demolition, Recycling, Dust/Noise Control & Site Hoarding

6.4.1 Demolition and Dust Control:

The demolition works are to take place within the hoarded confines of the site. Any scaffolding on the site perimeter is to be clad with monoflex sheeting above the 6-foot plywood hoarding line to minimise any dust or debris from falling onto the neighbouring streets.

Materials such as stock-bricks, re-useable timbers, steel beams etc are to be recycled where possible.

To minimise dust and dirt from demolition, the following measures shall be implemented:

- All brickwork and concrete demolition work is to be constantly watered to reduce any airborne dust.
- Demolished materials are to be removed to a skip placed in front of the site which will be emptied daily.
- The pavement to the front of the property is to be washed and cleaned down each day.
- Any debris or dust / dirt falling on to the street and public highway will be cleared as it occurs by designated cleaners and washed down fully every night.

Building work which can be heard at the boundary of the site will not be carried out on Sundays and Bank Holidays and will be carried out within working hours as agreed with the council.

6.4.2 Rubbish Removal and Recycling:

An important part of the site management process involves site cleansing, rubbish removal, and recycling.
To reduce and manage site waste:

- All material removed from site is to be taken to waste recycling stations and separated for recycling where possible. Records of the waste recycling will be provided by the recycling stations.
- Waste types to facilitate recycling activities.
- All Duty of Care and other legal requirements are complied with during the disposal of wastes.

6 Site Management

- Suppliers are to be consulted to determine correct / appropriate disposal routes for waste products and containers.

It will be the responsibility of each contractor to keep the site area under his control safe from build-up of rubbish.

6.5 Superstructure

6.5.1 Main House – Steel Frame

The external structure of the main house is being retained. Internal walls are being altered to reconfigure the three self-contained units, therefore, steel beams and columns are required to support the timber floors and internal walls. The main stability of the building is being provided by a steel frame along the spine wall through the centre of the main house. The lift shaft will be constructed of blockwork masonry from the lower ground floor to the upper floors and will be concrete at basement level.

6.5.2 West Flank Extension - Concrete Frame

The two-storey extension to the west flank of the building will be a concrete frame comprising a concrete stability frame at the juncture between the main building and the extension. The rest of the extension will be constructed of RC columns and RC flat slabs.

6.6 Construction Management

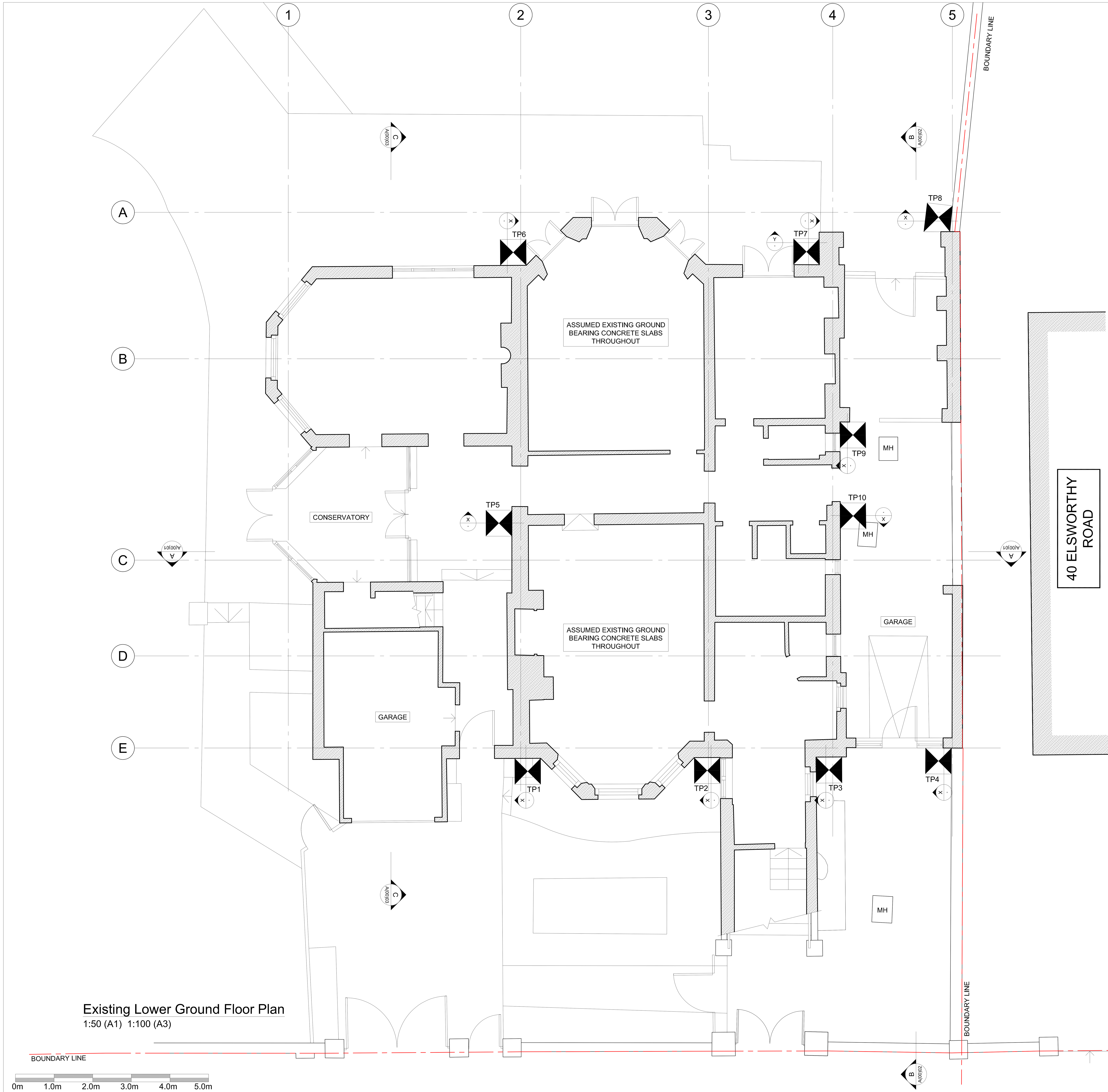
A construction management plan is to be submitted with this application.

Appendix A

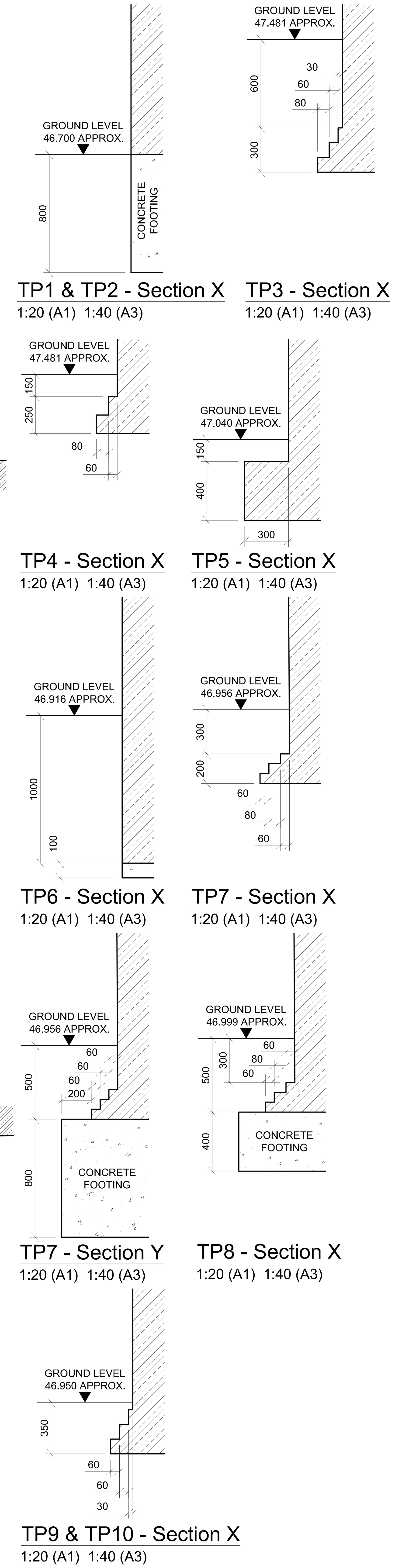
Preliminary Form Structural Drawings

Document No.	Title	Revision
172843 - L(00)01	Existing Lower Ground Floor Plan	P1
172843 - L(00)02	Existing Ground Floor Plan	P1
172843 - L(00)03	Existing First Floor Plan	P1
172843 - L(00)04	Existing Second Floor Plan	P1
172843 - L(00)05	Existing Third Floor Plan	P1
172843 – L(23)06	Existing Roof Floor Plan	P1
172843 – A(00)01	Existing Cross Section A-A	P1
172843 – A(00)02	Existing Cross Section B-B	P1
172843 – A(00)03	Existing Cross Section C-C	P1
172843 – L(23)-01	Proposed Pool Plant Level Floor Plan	P1
172843 – L(23)00	Proposed Basement Floor Plan	P1
172843 – L(23)01	Proposed Lower Ground Floor Plan	P1
172843 – L(23)02	Proposed Ground Floor Plan	P1
172843 – L(23)03	Proposed First Floor Plan	P1
172843 – L(23)04	Proposed Second Floor Plan	P1
172843 – L(23)05	Proposed Third Floor Plan	P1
172843 – L(23)06	Proposed Roof Floor Plan	P1
172843 – A(28)01	Proposed Cross Section A-A	P1
172843 – A(28)02	Proposed Cross Section B-B	P1
172843 – A(28)03	Proposed Cross Section C-C	P1
172843 – A(30)01	Outline Construction Sequence – Cross Section A-A Stage 1 – As Existing	P1
172843 – A(30)02	Outline Construction Sequence – Cross Section A-A Stage 2	P1
172843 – A(30)03	Outline Construction Sequence – Cross Section A-A Stage 3	P1
172843 – A(30)04	Outline Construction Sequence – Cross Section A-A Stage 4	P1
172843 – A(30)05	Outline Construction Sequence – Cross Section A-A Stage 5	P1

Document No.	Title	Revision
172843 – A(30)06	Outline Construction Sequence – Cross Section A-A Stage 6	P1
172843 – A(30)07	Outline Construction Sequence – Cross Section A-A Stage 7	P1
172843 – A(30)08	Outline Construction Sequence – Cross Section A-A Stage 8	P1
172843 – A(30)09	Outline Construction Sequence – Cross Section A-A Stage 9	P1
172843 – A(30)010	Outline Construction Sequence – Cross Section A-A Stage 10 – As Proposed	P1



Existing Lower Ground Floor Plan
1:50 (A1) 1:100 (A3)



Notes

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THE CONTRACTOR IS TO VERIFY ALL DIMENSIONS ON SITE BEFORE COMMENCING WORK. ALL ERRORS AND OMISSIONS ARE TO BE REPORTED TO THE ENGINEER.

THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES ENGINEERS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.

KEY

WALL TYPES

- EXISTING WALL.
- EXISTING WALL TO BE REMOVED.
- NEW 20N/mm² BRICKWORK IN DESIGNATION (iii) MORTAR U.N.O.
- NEW 7N/mm² MEDIUM DENSE BLOCKWORK IN DESIGNATION (iii) MORTAR U.N.O.
- NEW LOADBEARING TIMBER STUD PARTITION. 75x100 C24 STUDS AT 400c/c WITH 12mm WBP PLY BOTH SIDES U.N.O.
- NEW NON LOAD BEARING PARTITION.
- LOAD BEARING WALL UNDER.
- NEW BRICKWORK TO BE FULLY TOOTHED IN AND PACKED UP TO EXISTING BRICKWORK.
- W — STAINLESS STEEL WALL EXTENSION PROFILES.

ALL MASONRY BELOW DPC LEVEL TO BE FROST RESISTANT AND IN DESIGNATION (i) MORTAR.

LEGEND

- EXISTING BEAM UNDER.
- NEW BEAM UNDER.
- DENOTES ASSUMED SPAN OF EXISTING TIMBER JOISTS T.B.C. ON SITE.
- DENOTES SPAN OF EXISTING TIMBER RAFTERS T.B.C ON SITE.
- DENOTES SPAN OF NEW 50x225 C24 TIMBER JOISTS AT 400c/c WITH 18mm WBP PLY FULLY SCREWED AND GLUED TO TOP U.N.O.
- DENOTES SPAN OF NEW 50x150 C24 TIMBER RAFTERS AT 400c/c U.N.O.

NOT FOR CONSTRUCTION

Rev.	Date	Amendment	Drawn	Chkd
P1	17.07.18	PRELIMINARY ISSUE	SMR	P.G

Drawing Status: PRELIMINARY

Form

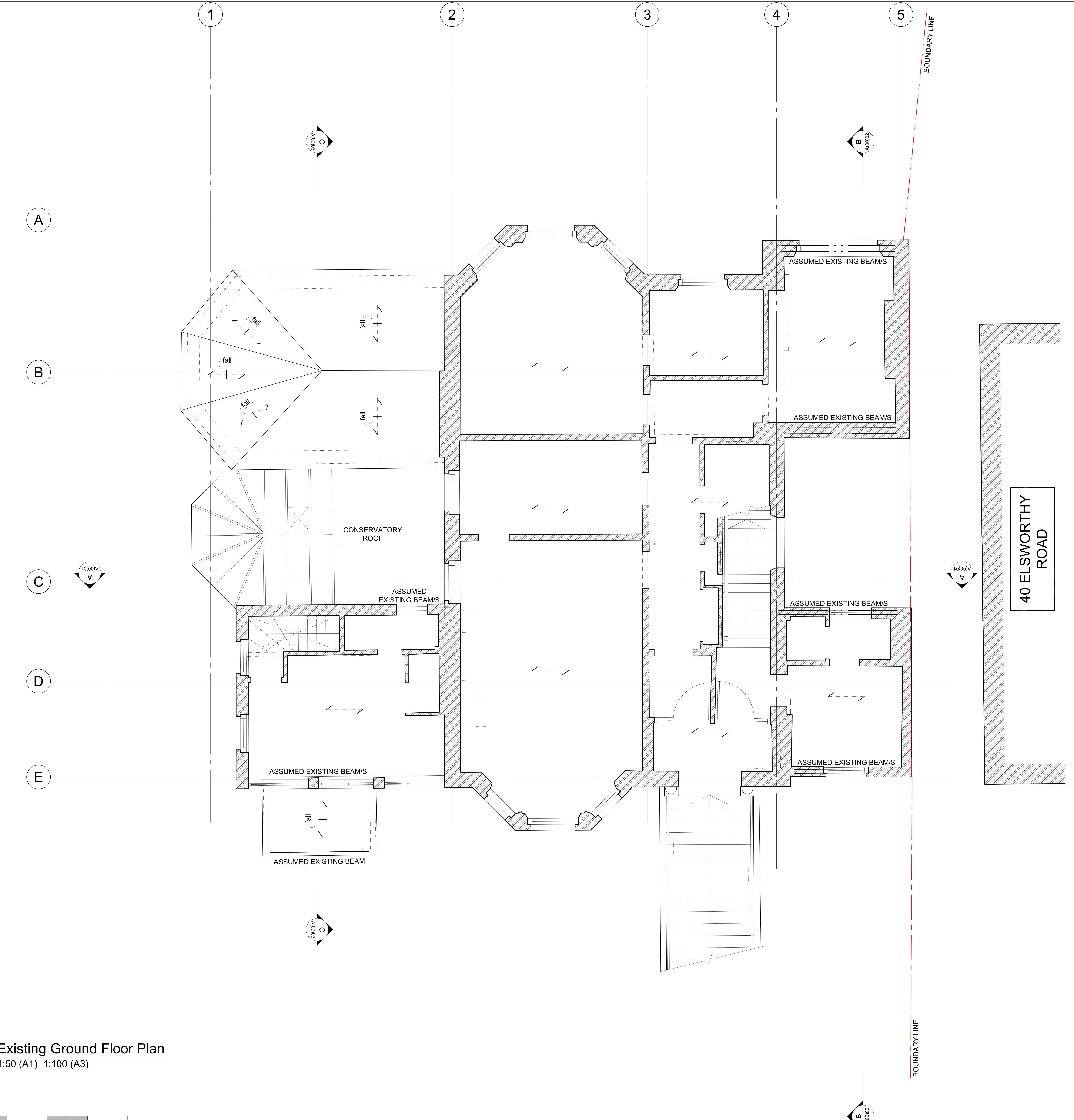
Job Title
42 ELSWORTHY ROAD
LONDON
NW3 3DL

Drawing Title
EXISTING LOWER GROUND FLOOR PLAN

Form Structural Design Ltd 77 St John Street London EC1M 4NN
T:020 7253 2893 E:studio@form-sd.com W:www.form-sd.com

Date	Scale	Drawn	Checked
June 18	1:50 (A1)	SMR	PG

Job No.	Drawing No.	Revision
172843	L(00)01	P1



Existing Ground Floor Plan

1:50 (A1) 1:100 (A3)

0m 1.0m 2.0m 3.0m 4.0m 5.0m

Notes

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- NEW NON LOAD BEARING PARTITION.
- LOAD BEARING WALL UNDER.
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Job No.	Drawing No.	Revision
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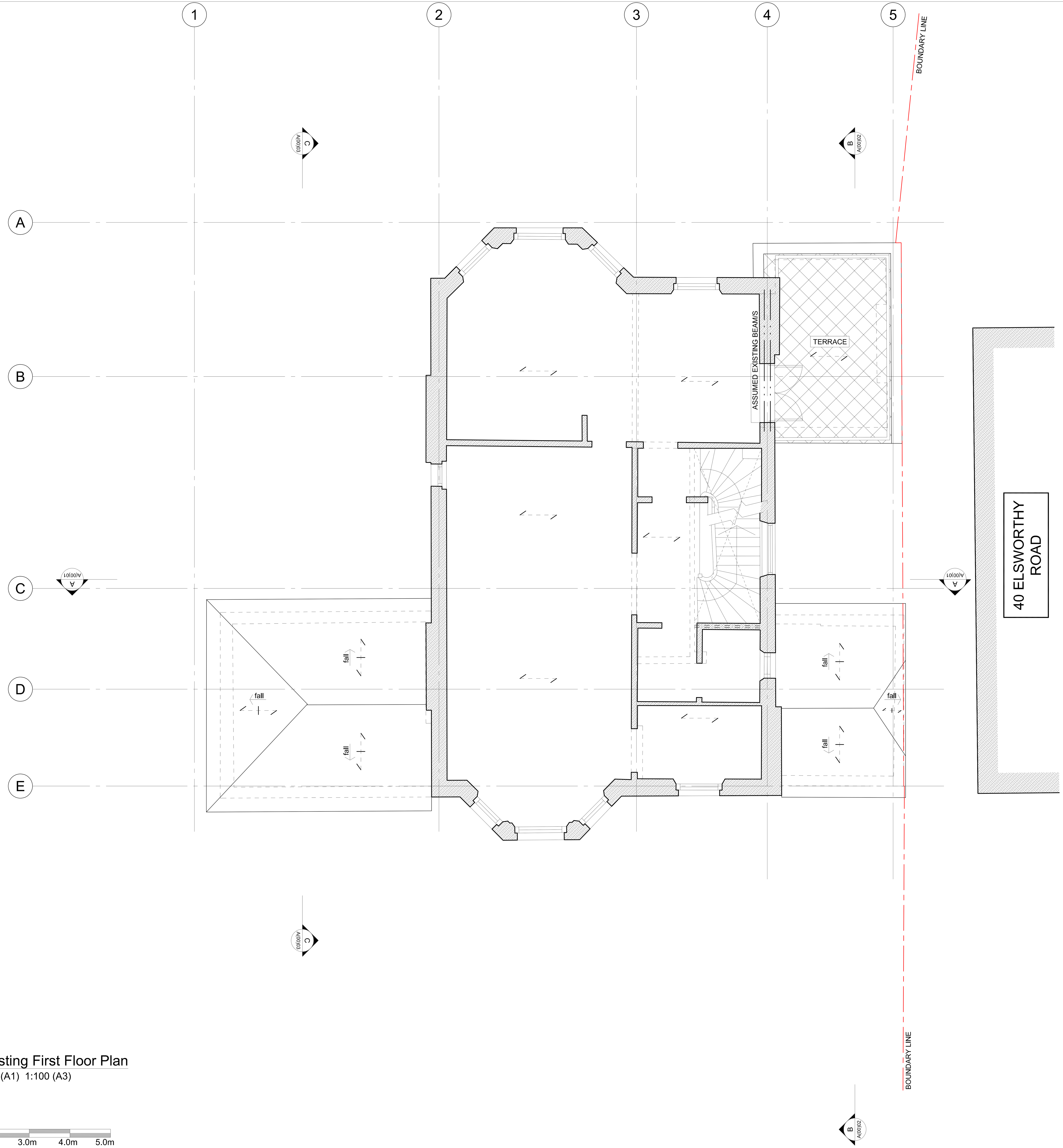

Existing First Floor Plan
1:50 (A1) 1:100 (A3)

0m 1.0m 2.0m 3.0m 4.0m 5.0m

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NEW NON LOAD BEARING PARTITION.

LOAD BEARING WALL UNDER.

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LEGEND

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Drawing Title
EXISTING FIRST FLOOR PLAN

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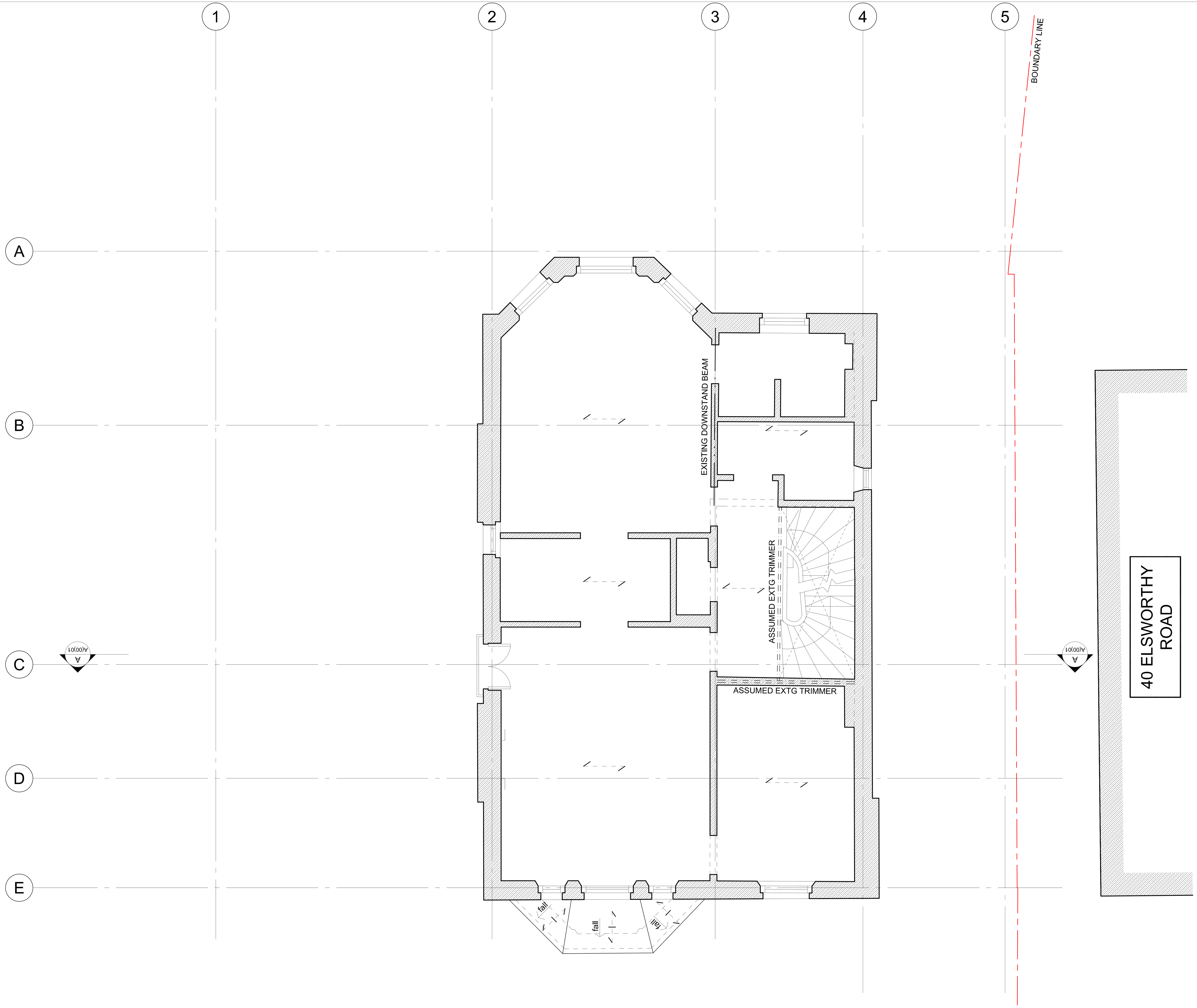

Existing Second Floor Plan

1:50 (A1) 1:100 (A3)

0m 1.0m 2.0m 3.0m 4.0m 5.0m

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EXISTING SECOND FLOOR PLAN

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