COCHRANE CONSTRUCTION CONSULTANTS

161 ARLINGTON ROAD
LONDON NW1 7ET

Basement Impact Assessment

Project Ref	S 2930
Rev	--
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Email: ccconsultw4@gmail.com

NON TECHNICAL SUMMARY

Cochrane Construction Consultants (CCC) have been appointed by Asli and Taylan Karagul to advise on the structural implications of proposed structural refurbishment of 161 Arlington Road NW1 7ET.

This Basement Impact Assessment looks at the site of 161 Arlington Road in relation to the planning application for the proposed refurbishment of the property. These proposed works include demolition and construction of an enlarged rear extension, which involves enlargement of the existing basement built c1992. Under Camden's Basement CPG the latter works requires a Basement Impact Assessment.

This report should be read in conjunction with the separate Desk Study and Basement Impact Assessment - Screening & Scoping Reports.

- The Desk Study Report reviews the information available on the existing site, including historical development, the nature of the existing building and the buildings adjacent, geological, and hydrological nature of the site, infrastructure, and services.
- The Screening & Scoping Report sets out the scope of works that will be required to address the requirements of Camden's Local Plan (2017) and CPG on Basements (January 2021) and is based on the flowcharts given in the Camden geological, hydrogeological and hydrological study / CPG – Basements.

The property lies within London Borough of Camden, Camden Town ward. It lies within LBC's Camden Town Conservation Area and is a Grade II listed. The site postcode is NW1 7ET, National Grid reference TQ288837.

The Environment Agency's Flood Risk for Planning shows the site to lie within Flood Zone 1, with the long term flood risk maps showing the site has a very low probability of flooding (fluvial, pluvial, reservoirs and groundwater). The site does not lie within any of LBC critical drainage areas or local flood risk zones and records show no history of flooding in the area – Thames Water and LBC Flooded Street List.

There is a very low flood risk and as the site is in Flood Zone 1 and less than 1 hectare (site area approx. 0.11hectare) a sequential test and separate Flood Risk Assessment are not required.

The property was constructed in the 1830s as part of a terrace at the northern end of Arlington Road which extended from No 155-169. The terrace north of No161 was demolished in the 1930s to allow construction of the adjacent Church and Presbytery. It previously underwent significant alterations in 1987 and 1992 with planning records showing it was converted into a single residence from shop and flat c1987, and extended c1992 when a mansard and rear extension were added. The latter extending over basement and ground floors with a terrace at first floor level. The refurbishment works appear to have completely rebuilt the internal structure to No161 as no original structure has been found in investigation works, no period features are present, and the floors are level.

Located to the south of 159, this property is similar to No161 and part of the original terrace. It appears largely as built, still three storey over basement with the hipped roof still present.

On the north side sits The Lady of Hal Church. Built in 1933 the church comprises a four storey block at the front, housing offices, the main hall at the rear and a two storey link building. It is this link building which adjoins the site of the new extension to No161. Structurally the front and link buildings appear to comprise reinforced concrete floors supported on load bearing walls and columns. The church has a basement, but it is located away from the proposed extension.

The proposed extension is located at the rear of No161, on the site of an existing extension which is to be demolished and increases the size of the basement to the full size of the ground floor extension and adds a lightwell at the rear to provide natural light and ventilation. The extension will have habitable rooms at basement and ground floor levels and a outside terrace at first floor similar in size to the existing.

Site investigations reveal that the site sits on London Clay with a thin layer of topsoil present in the garden behind. Trial pits reveal that existing foundations to No161 and the adjacent buildings bear onto the London Clay at depths ranging from 480mm below basement floor level (Nos 159 & 161), to 680mm for the rear church link building, to 1010mm on the flank wall to No161 adjacent the church which was previously underpinned during the construction of the church.

Settlement assessment of the proposed extension shows that it will have negligible impact on the foundations to the adjacent buildings with the Damage Impact has been assessed as Category 0 in accordance with the Burland Scale.

REVISION HISTORY

Revision	Date	Purpose /Status	Author	Reviewed
00	08/04/2024	Initial Issue	BC	

AUTHOR

This report has been prepared by:

Brian Cochrane

BEng, CEng, MIStructE

Cochrane Construction Consultants Limited

February 2024

LIMITATIONS

This report has been produced by Cochrane Construction Consultants (CCC) for a specific client to meet their specific brief and has been prepared with reasonable skill, care and diligence under the terms our appointment as affected by limitations of scope, time and resources as required by the client. It is intended for the sole use and benefit of the Client and should any part of this report be relied upon by a third party, that party does so entirely at their own risk and CCC disclaims any liability to such parties.

The observations and conclusions described within this report are based solely on the agreed scope of work and no liability is taken for matters outside of this scope. The report draws on third party information, and where it does so no liability can be accepted for any inaccuracies, or changes with time in that information.

CONTENTS

1.0) INTRODUCTION

This report details the Basement Impact Assessment (BIA) carried out by Cochrane Construction Consultants Limited (CCC) for 161 Arlington Road Camden, London NW1 7ET (the 'site'), on behalf of our clients, Asli and Taylan Karagul.

The BIA has been prepared in support of a planning application to be made to the London Borough of Camden in relation to the property at 161 Arlington Road, a single domestic residence. The proposed works involve the general refurbishment of the property, structural alterations, demolition of a rear extension and basement, and the construction of a new rear extension including larger basement and lightwell.

This BIA has been prepared in accordance with the following:

- Camden Planning Guidance – Basements 2021,
- Arup's Camden Geological, Hydrogeological and Hydrological study - Guidance for Subterranean Development, 2010
- The Camden Local Plan 2017, in particular policies A5-Basements, and CC3-Water and Flooding apply.

The BIA provides information on the site and location, the existing buildings and their stability, the proposed works, the impact of the proposed works on neighbouring properties, the hydrology of the site and its impact on the drainage and surface water regime.

This report should be read in conjunction with the following CCC documents prepared as part of this planning submission:

- Desk Study Report
- Basement Impact Assessment – Stage 1: Screening & Scoping Report

This report summarises the findings of the above reports and reference should be made to the original reports for full details of the matter considered and the supporting information.

The Executive Summary contains an overview of key findings and conclusions. However, no reliance should be placed on it without the whole report having been read as other sections of the report may contain information which puts into context the conclusions noted within the Executive Summary.

2.0) LEGISLATIVE STATUS OF PROPERTY

Arlington Road lies within Camden Town ward in the London Borough of Camden.

The property, along with the adjacent buildings at 157 and 159, is Grade II listed (List Entry Number: 1272258).

The site lies within LBC's Camden Town Conservation Area.

The property shares a party wall with No 159 Arlington Road. The arrangement on the church side is more complex, with a double wall structure to the front four storey building but a party wall in two storey link section, between the front building and the main hall, where the flank wall has been enclosed upon since c1992.

3.0) PROPOSED WORKS

The current proposals for 161 Arlington Road include:

i) general refurbishment of the property, including the removal of the spine wall at ground floor,
ii) demolishing the existing extension full height,
iii) Constructing a new basement extension, extending full width of the site and projecting beyond the existing extension line by approximately 1.4m to form a new lightwell. The floor level in the new extension will be 350mm below existing.
iv) Removal of the main rear wall at ground and first floors to give access between the existing building and new extension.

Drawings showing the proposed scheme are included in the appendices.

4.0) DESK STUDY

The following sections give a summary of the information in the Desk Study Report on the wider site, the location and the buildings. For further detail and supporting information reference should be made to the report. Where useful the relevant sections and figures within other reports are given.

4.1. Site Location

Arlington Road is in the London Borough of Camden, situated to the east of Primrose Hill at the northeast corner of Regent's Park. Arlington Road is situated on the west side of Camden High Street, to which it runs parallel, from Mornington Crescent in the south to Jamestown Road (adjacent the Regents Canal) in the north.

The site postcode NW1 7ET, National Grid reference TQ288837.

The location is shown on the following map.

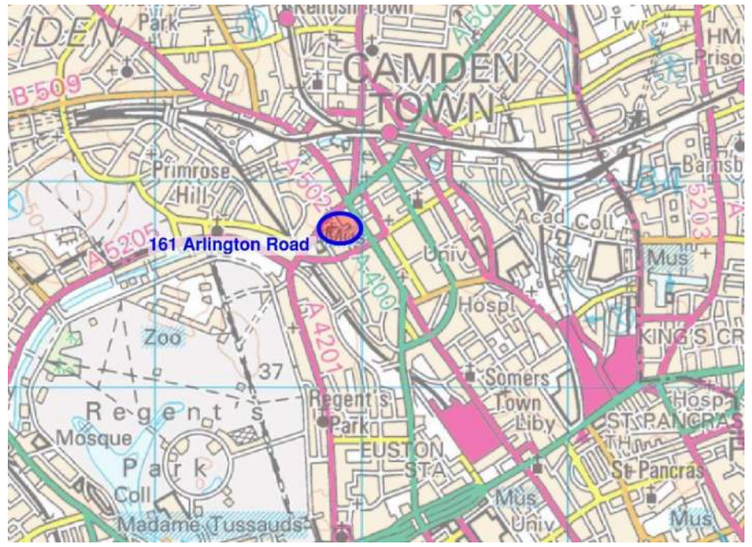


Figure 1: Site Location

4.2. Site Topography

The site lies on the eastern slope of the high ground from Hampstead to Primrose Hill, Ordnance Survey gives the street level adjacent the site to be 29.4mOD, with the area falling to the northeast, towards the valley of the River Fleet. The average slope of the area is 1.4 degrees, defined as a 'very gentle slope', and is significantly less than the slope of 7 degrees as set by Arup in the CGHHS as maximum angle for slope stability in London Clay where groundwater is close to the surface.

There are no major cuttings in the vicinity (the nearest are the railway lines to the southwest) and therefore slope stability is not an issue.

4.3. Site Geology

The British Geological Survey map (Geology Map Sheet TQ28SE – Solid & Drift Edition) for the area indicates the site is underlain by the London Clay Formation.

This has been confirmed by an on-site borehole. A copy of the factual report is included in the appendices.

This presents potential issues due to the seasonal movement in the clay because of changes in moisture content. However, as the proposed basement founds at depth, is outside the main building, there are no large trees in the vicinity and the garden to No161, like that in No159, is largely hardstanding which will limit changes in the moisture content of the clay and consequently restrict the amount of movement in the clay.

4.4. Site Hydrology

As typical of the inner city the surrounding locality is highly developed with over 90% of surface covered by hardstanding (highways, buildings, and paved areas).

The 161 Arlington Road site, with a site area of 110m^2 (0.11 hectare), is largely impermeable with the front lightwell having a concrete slab, and the existing garden to the largely paving on a concrete subbase. Planting within the garden, approximately 10m2, exists around the rear of the garden and is to remain as existing.

The proposed scheme does not alter the permeability of the site with the new rear extension replacing existing concrete paving in the garden. Any rainwater run-off will be collected and disposed via the sewer system as currently happens.

Figure 2: Existing Rear Gardens to Nos 159/ No161 Showing Hardstanding

a) Surface Water Features

There are no natural surface water features within 100m of the site, with the nearest being the man-made The Regent's Canal 400m to the north,

The courses of two of London's 'Lost Rivers' run near the site. The River Fleet in the valley to the east of the site, from its headwaters on Hampstead passed north of Camden Town tube station before following the line of Lyme Street and St Pancras Way on its way to the Thames at Blackfriars. At its nearest its course is 420m from the site. The river has been culverted and incorporated into London's drainage infrastructure since c1812.

To the west, the Tyburn runs through the west side of Regents Park, where it supplies the boating pond, 1.3km from the site.

As there are no smaller ponds in the area, and surface water features are distant from the site they will have no impact.

b) Groundwater

The site sits on London Clay, which The Environment Agency (EA) classifies as 'Unproductive Strata' due to its negligible permeability no significant groundwater flow is expected to occur beneath the site. There may be a porewater pressure differential, but this will naturally dissipate down the slope.

Local boreholes or monitoring standpipes did not encounter groundwater near the surface. The deeper borehole at Camden Town borehole (BGS) reported a water table 91m below ground level in the chalk (the lower aquifer).

The site topography means the pre water pressure will have a 'gradient' downhill away from the site and groundwater will not be an issue for the site.

c) Aquifer & Groundwater Vulnerability

The site does not lie on an established aquifer. As established in section 3.3 the geology underlying the site is London Clay classified as Unproductive Strata with low permeability that have negligible significance for water supply or river base flow.

The Groundwater Vulnerability Map indicates that the site is not located within a Groundwater Source Protection Zone. A source protection zone is located 1km west of the site, this is assumed to pick up the Barrow Hill abstraction point, which ceased in 2012, or that supplying Regents park and London Zoo.

The proposed works do not affect these abstraction points or the underlying aquifer and therefore this is not an issue for the site.

d) Water Wells

From BGS Geoindex map of well locations, the nearest well to the site is located at 25 Carol Steet, 260m from the site. Thie well at Carol Street is 109m deep and draws water from the chalk lower aquifer beneath the London Clay.

The well will not be affected by the proposed works.

4.5. Historical Development of The Site

Arlington Road is initially laid out from the south, at Mornington Crescent, in the early 1800s before the present day setting out was completed in the mis 1820s. The original properties along the eastern side of

Arlington Road date from the early 1800s and were part of the growth of Camden High Street, from which they were accessed via passages such as Underhill Street. The development on the west side of the street occurs later, and dates from the 1830s and 1840s, prior to which the land on the west was still in use as pasture.

The site at No161 Arlington Road and its relation to the surrounding buildings is shown on the following map extract, with each of the properties considered in more detail below.

Figure 3: Site Plan showing Adjacent Properties

a) No 161 Arlington Road

The existing property at 161 Arlington Road is located on the west side of the street just south of the junction with Parkway and was constructed as part of a terrace in the 1830s and linked to development of Parkway, unlike the properties further south on the west side which were constructed in the 1840s.

Inspection of the original buildings which remain and historical maps, the northern terrace extended from No155 to No 169, with the buildings being three storey over basement with front and rear lightwells serving the basement rooms. Brick vaults accessed from the from lightwell extended under the pavement. The buildings were of traditional construction with timber floors and a London butterfly roof supported off the external and central spine walls. The properties have a single window on each floor, with the entrance at ground floor set adjacent the southern party wall.

No161 differs from the remaining original properties in having a shopfront at ground floor and was, prior to 1987, a shop at basement and ground floor and a separate flat above which had a separate entrance. Whether this is original, or a later alteration is not known, but a historic photograph from 1977 show this arrangement.

From planning records, the shop and flat were converted into a single residence c1987, and extended c1992 when a mansard and rear extension were added. The latter extending over basement and ground floors with a terrace at first floor level. The refurbishment works appear to have completely rebuilt the internal structure to No161 as no original structure has been found in investigation works, no period features are present, and the floors are level.

Refer to Desk Study Report for further information on the development of the site and No 161.

4.6. Adjacent properties

There are three buildings adjacent the site at No 161 Arlington Road:

a) 159 Arlington Road

Located south of No161, this property is part of the original terrace and appears largely as built, with the original butterfly roof still present. From initial observation this building appears to be largely original. The building has a rear lightwell, partially infilled adjacent No157 to provide garden access for the ground floor. To the rear an existing brick lightwell exists adjacent the rear elevation, which founds below the existing basement level (see site investigation).

Planning records indicate that c 1976 the property was split into a basement flat with a maisonette, with a rear extension built into the rear lightwell c2004 to provide garden access to the ground floor flat.

The property shares a party wall with No161.

b) Our Lady of Hal RC Church

Built in 1933 the church sits on the site of the demolished 163-165 Arlington Road, while the Presbytery next to the church is a later construction and appears to have been built in the early 1950s on the site of Nos167-169.

The Church building comprises three parts. To the front is a four-storey block over partial basement on the north side away from No161, to the rear the main church hall with no known basement, and between a two storey link block. To the rear of No161 a single storey side extension to the church contains a side chapel while midway along the garden a single storey gives access to the lightwells between the main church hall and the garden wall between the church and No161.

No record drawings of the original construction are held by the church and based on observation the church appears to be a framed building with reinforced concrete floors. The main external staircase from ground to first floor is located adjacent the No161 party wall with masonry walls on either side which appear to be load bearing. The presbytery on the right-hand side of the church, was constructed later and is four storey over full basement.

The party wall arrangement to the church side has two different sections. On the main front building there is a double wall structure between No161 and the taller front building of the church, while at the rear the c1992 extension to No161 enclosed on the wall to the link section.

c) Ort House / 126 Albert Street

The island site to the rear of the houses along Arlington Road was the site of Park Chapel School from the 1870s until after WWII, when the site was redeveloped as the Curry and Paxton's optical works. These buildings were demolished, and the site redeveloped again c1972 to the current office use.

The current building is a modern fully framed building which includes a large basement, which does not extend near No161. The building is separated from No161 by an outside space and the rear garden of No161.

d) Adjacent Basements

From visual inspection of the buildings along Arlington Road, Parkway and Albert Street, the majority have basements as evident in the presence of lightwells and smoke vents.

The following table summarises the buildings immediately around 161 Arlington Road with regards to the presence of existing basements.

Building	Description	Basement Depth
161 Arlington Road	Existing residential building	Existing basement 2210mm below ground floor/pavement Proposed basement2750mm bgf below ground floor/pavement
Our Lady of Hal	Church built c1933, Presbytery constructed later (1950s).	Built on site of No163-169, assumed to have basement similar to No161. pavement.
	Church - partial basement plantroom under centre of front 4 storey building to church.	Plantroom on northern side, approx. 2700mm below ground floor 2500mm below pavement
	Presbytery has full basement under building.	Full basement as church
159 Arlington Road	Existing residential building	As No161 existing
157 Arlington Road	Existing residential building	As No161 existing
147-155 Arlington Road	Five buildings refurbished c1996. Basement floor lowered.	2600mm below ground floor 2200mm below pavement
142-152 Arlington Road	Building converted from electricity sub-station to community c1979, converted to residential c2018.	Basement 3300mm below ground floor / pavement level
154-160 Arlington Road	Residential building rebuilt c2004	Basement 3000mm below ground floor / pavement
128 Albert Road	Warehouse converted into mixed use A3 / residential c1994	Basement 30m from rear wall of No161, 2700mm below ground floor
Ort Centre /126 Albert Street	Offices built c1972	Basement 21m from rear wall of No161, basement lvl 28.3m, approx. 2.4m below Arlington Road pavement.

This shows that No161 is surrounded by basements which are similar or deeper than the existing basement No161.

4.7. Utilities - Sewers and Services

Thames water records indicate that the existing sewer (1524x940 with an invert level of 7.2m below street level) and water mains run within Arlington Road. The age of the building means it is likely that other utilities will also run within the pavement and roadway.

4.8. Infrastructure And Tunnels

No known tunnels or other major infrastructure runs within the site boundary of 161 Arlington Road or within 50m of the site.

To the east of the site, approximately 100m away, the Northern Line tube tunnels run under Camden High Street with the Deep level bomb shelters from WWII set under. An air shaft and access to the shelters are located in Stanmore Place approximately 60m to the east of the site.

To the west of the site the railway lines into Euston run in a cutting approximately 240m from the site. The proposed HS2 tunnel to Euston will follow the railway lines.

The Thames Water Ring Main runs to south of the site (between Barrow Hill and Islington, but at a depth of 80m is not affected by the proposed works.

The site lies outside the zone of influence and safeguarding zones for the tube and railway tunnels near the site.

4.9. Flooding and Flood Risk

The site is with the London Borough of Camden but does not lie within any of LBC critical drainage areas or local flood risk zones and records show no history of flooding in the area – Thames Water and LBC Flooded Street List.

The Environment Agency's Flood Risk for Planning shows the site to lie within Flood Zone 1, with the long term flood risk maps showing the site has a very low probability of flooding (fluvial, pluvial, reservoirs and groundwater).

There is a very low flood risk and as the site is in Flood Zone 1 and less than 1 hectare (site area approx. 0.11hectare) a sequential test and full Flood Risk Assessment are not required.

5.0) SCREENING AND SCOPING

The following section give a summary of the Screening and Scoping Report, setting out the results of the Screening Flowcharts and associated Scoping Assessment. For further information refer to the Screening and Scoping Report.

5.1. Screening Assessment

The initial Screening assessment returned the following results:

Screening Checklist for Subterranean (Groundwater) Flow

None

Screening Checklist for Slope Stability

Question 5 - Is the London Clay the shallowest strata at the site?

Response: Yes, ground conditions on the site and local area comprise a thin layer of made ground/topsoil (400mm thick) over London Clay to depth.

(DTS Fig 12-17 & Site investigation)

Question 12 - Is the site within 5m of a highway or pedestrian right of way?

Response: Yes, the pavement to Arlington Road forms the eastern boundary of the property and is separated from the house by the front lightwell.

The rear extension (basement extension) is approximately 8.5m from the back of the pavement and the proposed works will not affect the pavement or public highway.

(Refer to drawing S 2930 S001)

Screening Checklist for Surface Water and Flooding

None

5.2. Scoping Assessment

Question 5 - Is the London Clay the shallowest strata at the site?

This question relates to fact that London Clay has a high shrinkage potential and suffers seasonal movement because of changes in its moisture content and buildings which found in London Clay can suffer from structural movement (subsidence and heave) due to this.

We have inspected the property at No161, and visually inspected the buildings adjacent and no indications of any significant ground movement is evident with the front and back facades showing no visible distortion indicating structural movement.

The basement to the proposed rear extension sits outside the existing building and its formation level will bear onto the same geological strata at a similar level, the new formation level will be approximately 500mm lower than existing foundation levels. Therefore, as there are no large trees nearby and the garden to No161, like that in No159, is largely hardstanding which will help prevent changes in the moisture content of the clay.

While there will be some shallow underpinning required to the existing walls surrounding the new basement there will be minimal structural interaction between the new basement and the existing foundations to No161 and adjacent properties this will be minimal and dealt with by shallow underpinning to avoid ground loss.

Considering the above, this matter will not be considered further as the issues will be dealt with applying with common procedures for foundations in clay.

Question 12 - Is the site within 5m of a highway or pedestrian right of way?

As noted in our response the proposed basement at the rear of the property, approximately 8.5m from the public highway, with the formation to the new basement only slightly lower than those to the existing building.

On this basis the proposed basement will have no impact on the public highway and pavement and no further consideration is required.

6.0) SITE INVESTIGATION

6.1. Visual Inspection and Investigation

Visual inspections of the property at No161 and those adjacent have been undertaken to establish the nature and arrangement of the buildings and identify any existing defects. In addition, a visual inspection of the adjacent church hall building has been carried out to allow the nature of the structure and its arrangement to be determined in the absence of any drawings of the original building.

As established in the Desk Study the original building was originally built in the 1830s but was extensively refurbished c1987 when the separate shop and flat were combined into a single residence, and again c1992 when a mansard and rear extensions were added.

From our inspections and limited opening up works it appears that much, if not all, of the original structure has been replaced. This is evident, not only where the structure has been exposed, but also in that the floors and ceilings are level and the absence of original period features.

The rear extension, added c1992, consists of a basement extension with concrete slab over which extends beyond the basement and carries the timber framed conservatory structure. The nature of the basement walls is not known, but blockwork is visible at the head in several areas and a reinforced blockwork option, such as Stepoc blockwork is possible.

Generally, the building and those adjacent are in good condition with no signs of structural movement or distress present. The existing structure to No161 is summarised on drawings S2930 / E001-E009 included in the appendices.

The garden wall between Nos159 and 161 has moved and has distinct lean and bulging. This appears to be an historic problem as the wall has been partly rebuilt and piers added previously.

6.2. Geotechnical Investigation

Geotechnical investigations were undertaken on 12 February 2024 to confirm the ground conditions on site and the nature of the existing foundations. A copy of the factual report is included in the appendices.

A borehole, carried out in the rear garden, confirmed the ground conditions to comprise topsoil/made ground over London Clay to depth with shear strengths of 124/130kPa at the proposed formation depth. The ground conditions confirm the geology maps and local boreholes referred to in the Desk Study.

The trial pits to existing walls, see the Site Investigation Report and drawing E 009, revealed the following:

a) 159 Arlington Road – main house

Trial pit (TP1) gave the existing formation level of the party wall to be 360mm below existing basement floor level. The existing floor build up was 50mm finishes on 100mm unreinforced concrete slab on 130mm hardcore.

b) 159 Arlington Road – rear retaining wall

Trial pit (TP4) confirmed that the wall to the existing lightwell at the rear of No159 to be brickwork founding 1580mm below the path level, this equates to 480mm below existing basement floor level. This is assumed to be the original wall separating the rear lightwells with the No161 side backfilled in building rubble when the rear extension to No161 was built.

c) Church – main house

Trial pit (TP2) confirmed that the original foundations to the front and side walls were similar to that on No159, founding at 350mm and 410mm below basement floor level. However, the party wall has also been underpinned to a depth of 1010mm below ffl, the underpinning also projects significantly (varies but 150mm min) beyond the original corbel. The underpinning is assumed to have been carried out when the church was constructed C1933.

d) Church – link block

The trial pit to the rear link block was dug in the plant room in the existing basement extension to No161. The wall and floor in the plant room have a cement render finish (assumed to be waterproofing) and the existing wall floor junction has 130mm chamfer The trial pit reveals the footing to be a corbelled brick footing (with another corbel within the chamfer) on mass concrete strip with a formation level 680mm below existing basement ffl.

6.3. Groundwater

No groundwater was found in the site borehole or other boreholes in the locality. Water was encountered in trial pit TP2 (front church side) but it is believed that this is from leaking drains and will be investigated at the start of the works and repaired.

7.0) BASEMENT CONSTRUCTION AND METHODOLOGY

7.1. Proposed Basement

The proposals allow for the demolition of the existing rear extension and basement and construction of a new rear extension over a basement which occupies the full footprint of the ground floor extension. The existing extent and proposed basement are shown on the existing and proposed drawings included in the appendices. The following sections show the general arrangement of the new basement.

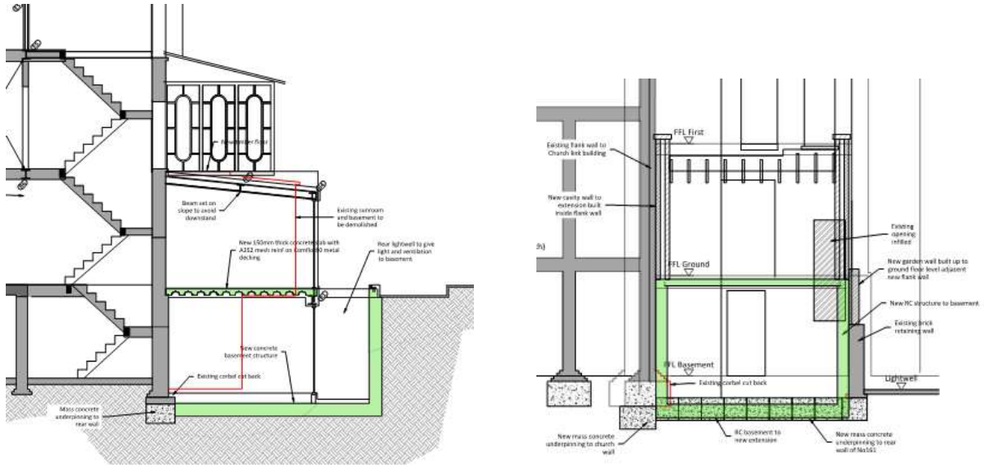


Figure 4: Proposed Rear Extension & Basement

The new basement will be constructed as a reinforced concrete 'box' bearing onto the underlying London Clay. The formation level of the new basement will be at a similar level to the existing foundations to the adjacent buildings (Nos159, No161 and the church) with the proposed formation being approximately 200mm below the existing formations as determined by the site investigation.

7.2. Ground Conditions and Geotechnical Parameters

Fastrak Report 27798 included a borehole carried out at garden level which confirmed the soil strata on the site to be topsoil/made ground over brown London Clay. The borehole is included below:

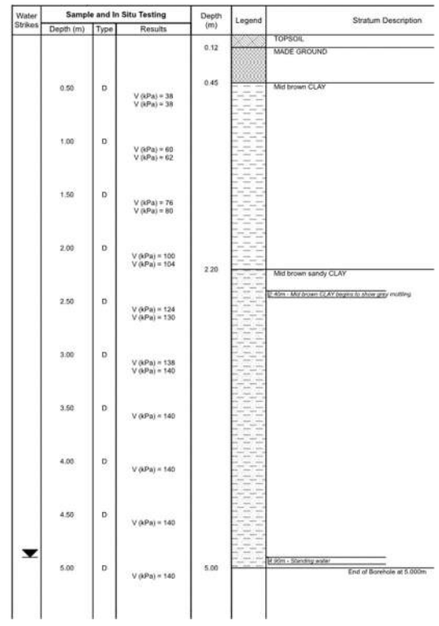


Figure 5:Site Borehole

Based on the site borehole the Conceptual Site Model for the site are summarised as follows:

- The site is level.
- Made ground / topsoil to 0.45m depth below ground level(bgl) (rear garden).
- Mid brown Clay (weathered London Clay) to 5m bgl, becoming sandy at 2.2m bgl.
- Some water was encountered at 4.9m bgl. The depth of the proposed basement excavation is taken as 3.5m below rear garden level and ground water is not expected to be encountered in the works.

For the design of the new basement and retaining walls the following effective stress parameters will be adopted in the design:

Soil Parameters		
Cohesion	C'	0kN/m^2
Angle of Shearing Resistance	ϕ'	23 degree
Density of London Clay	γ	20 kN/m^3
Density of water	γ_w	10 kN/m^3
Other Parametrs		
Design Surcharge	q	5 kN/m^2
Density of Concrete		24 kN/m^3

7.3. Basement Construction

It is proposed to construct the new basement by battering back the soil faces adjacent the new basement. This will require the demolition and rebuilding of the existing garden walls adjacent the rear of the new basement as shown on drawing S 001. At the front of the basement the circumstance is different as the basement area is surrounded by existing walls, comprising the wall to the lightwell to the rear of No159, the rear wall to No161 and the wall to the church link building. The site investigation has confirmed that these walls all found at the same level as the rear wall to Nio161.

As the new basement is set down 350mm below the existing basement floor level in the main house underpinning may be required to these existing walls to avoid undermining them during the construction. This will be confirmed on site.

The new basement will be cast monolithically with the only joints being between the slab and walls and at one-meter centres vertically as the wall will need to be cast in limited pours to avoid overloading the existing walls adjacent. The concrete to the new basement will incorporate waterproof additive and all joints will have double hydrophilic water stops to prevent water penetration.

Internally the new basement walls will be lined with a Delta liner, or similar water-proof membrane, to prevent water and moisture penetration. A dry liner wall and slab will be constructed inside of the waterproof membrane incorporating insulation as well as providing protection to the waterproofing. The insulation will need to carry across the slabs to prevent cold bridging.

The proposed structure is shown on drawings S 2930 / S 001- S008 included in the appendices.

7.4. Party Wall Matters

The proposed works fall under the scope of the Party Walls Act 1996. Procedures under the Act will be dealt with in full by the Employer's Party Wall Surveyor, who will prepare and serve necessary all Notices under the provisions of the Act and agree Party Wall Awards in the event of disputes.

The Contractor will be required to provide the Party Wall Surveyor with appropriate drawings, method statements and other relevant information covering the works that are notable under the Act. The resolution of matters under the Act and provisions of the Party Wall Awards will protect the interests of all owners.

The designs for No161 Arlington Road will be developed so as not to preclude or inhibit similar, or indeed any, works on the adjoining properties. This will be verified by the Surveyors as part of the process under the Act.

7.5. Construction Sequence

The construction sequence assumed in the design is shown on drawing TW001 and TW 002 and is as follows:

Stage 0 Existing Building

- Existing drainage surveyed, layout and condition confirmed.
- Absence of asbestos confirmed (built 1987)

Stage 1 Site Preparation and Initial Demolition

- It is assumed that the contractor will use the front basement of the main house as site accommodation. The impact of the proposed works on the existing drainage means that temporary welfare facilities may be required.
- Existing extension striped out and services capped.
- Existing conservatory dismantled and ground floor slab demolished.
- Temporary propping installed to existing basement walls if required.
- Demolish garden walls adjacent new basement as shown on S 001

Stage 2 Completion of Demolition

- Existing basement walls and slab demolished

Stage 3 Excavation

- Excavate for new basement leaving berm around front and sides and battering back

Stage 4 Underpinning

- Underpin existing walls (rear wall of No161, lightwell wall to No159, and church link building.
- Underpinning to be undertaken in 1-5 hit and miss sequence. Underside of existing foundations to be cleared of all dirt and loose debris.
- Fully dry-pack between new underpin and underside of existing foundations.
- Once underpinning completed cast site blinding over new basement area.

Stage 5 Cast Basement Slab

- Install new below slab drainage.
- Fix reinforcement to basement slab and cast slab. Starter bars to walls to be cast into slab.

Stage 6 Cast Basement Walls

- Wait until slab cured
- Cast basement walls. Formwork to walls to be stabilised using temporary props fixed back to new slab.
- Tie bars to ground floor slab to be cast into top of wall.

Stage 7 Construct Ground Floor Slab

- Install beam B1 and place permanent metal decking.
- Fixed reinforcement and cast new ground floor slab

Stage 8 Backfill

- Once basement walls completed and cured backfill around new basement
- Backfill using excavated material compacted in 225mm deep layers

Stage 9 Construct Superstructure

- Construct new walls to ground floor extension, install new roof beams and timbers.
- Install new platform to first floor conservatory (by others).
- Apply finishes and waterproofing to roof.

Stage 10 Rebuild Garden Walls

- Rebuild garden walls on new mass concrete foundation. Wall to stop, and be tied to, new extension for stability. Adjacent new extension rebuild garden wall in ½ brick wall to hide new concrete structure.

Stage 11 Completion

- Fit out and complete new extension.

7.6. Ground Settlement

As the new basement sits outside the footprint of the existing building it will have negligible impact on the existing walls, as would happen with retrofit basements. An assessment of the anticipated settlement / heave for the new basements is given below.

Front	Immediate Settlement	1.53mm
	Consolidation Settlement	2.02mm
	Total Settlement	**3.55mm**

		Heave	**Settlement**	**Total**
Rear	Immediate Settlement	-4.32	3.55	-0.77
	Consolidation Settlement	-1.86	1.53	-0.33
	Total Settlement	**-2.46**	**2.02**	**-0.44**

From the above the construction of the new basement will have negligible impact on the existing foundations and adjacent buildings. Referring to the Burland Scale for damage this equates to 'category 0 – negligible' with no or aesthetic damage.

7.7. Temporary Works

Based on the sequence of works set out below and visual inspection of the adjacent buildings the temporary works requirements required for the construction of the new basement extension will be limited to local propping during various stages of the works, e.g. stability of the new basement walls during casting.

However, as the sequence proposed assumes the demolition and rebuilding of the garden walls which will require Party Wall Agreement and may be subject to change as part of this process.

7.8. Monitoring During Excavation and Construction

The Contractor shall provide visual inspection and monitoring to all structures and infrastructure adjacent to the basement excavation at the time of excavation and construction.

Monitoring proposals/requirements will be confirmed with the Contractor and adjoining Owner's Surveyor prior to works.

As the impact of the proposed works have negligible impact on the adjacent buildings it is assumed that visual inspection and fixed monitoring points, such as tell tales, will be sufficient on this project with the existing lightwell walls to No159 and the link building to the church to be monitored during the demolition, excavation and basement construction phases.

7.9. Noise, Vibration and Dust

As far as practically possible, the contractor is to adopt methods that ensure that construction impacts such as noise, vibration and dust are kept to acceptable levels for the duration of the works.

In particular the contractor shall avoid noisy work during the time of services in the church.

7.10. Impact on Adjacent Properties

From our assessment of the adjacent properties the proposed works will have no significant impact on them structurally. There will be some short-term disturbance and disruption during the works, but this will be minimised liaison between the contractor and adjacent properties.

The scope of the works require a Party Walls Award to be agreed with the adjacent properties and any issues can be highlighted and dealt with at this stage.

7.11. Trees

No trees will be affected by the proposed extension.

8.0) BASEMENT IMPACT ASSESSMENT

The Conceptual Site Model (CSM), based on the Desk Study Report and site specific geotechnical investigation, shows the site is level, it has a very gentle fall to the north east, and found on the London Clay, which continues to depth, and is overlain on the site by a thin layer of made ground/topsoil.

Some water seepage was found at 4.9m below ground level. This is assumed to be a perched water table as no other boreholes in the area found ground water to depth up to 10m.

Site investigations have confirmed that the existing foundations to No161 found into the London Clay 360mm below existing basement floor level. This level is consistent on all walls in No161, and also applies to No159 which is contemporary with No161. The retaining wall to the rear lightwell founds at a similar depth, approximately 480mm below existing basement floor level.

The church building founds into the London Clay at a slightly deeper level, 680mm below basement floor level. This deeper formation also meant that the flank wall adjacent the church was underpinned, to a depth of 1000mm below basement floor level, when the church was constructed in 1933.

The proposed basement is at the rear of the property, approximately 11m from the back of the public pavement, with a finished floor level set 350mm below the existing basement floor level. This means the proposed

formation is approximately 320mm below the underside of the existing foundations. And as a consequence, shallow underpinning of approximately 600mm will be required to the existing foundations adjacent the new basement.

8.1. Land Stability/Slope Stability

The site investigation confirms that the proposed basement will bear into the London Clay, which underlies the site to depth. A settlement assessment indicates that the proposed basement will generate a maximum total settlement of 3.55mm. As the underpinning is the only works to the foundations to the adjacent buildings and the settlement of the new basement is focused in the area outside the existing buildings, settlement in clay tend to be and located towards the centre of the new slab, it will have negligible impact on the foundations to the adjacent buildings with the Damage Impact has been assessed as Category 0 in accordance with the Burland Scale.

8.2. Flooding and Flood Risk

The site is with the London Borough of Camden but does not lie within any of LBC critical drainage areas or local flood risk zones and records show no history of flooding in the area – Thames Water and LBC Flooded Street List.

The Environment Agency's Flood Risk for Planning shows the site to lie within Flood Zone 1, with the long-term flood risk maps showing the site has a very low probability of flooding (fluvial, pluvial, reservoirs and groundwater).

There is a very low flood risk and as the site is in Flood Zone 1 and less than 1 hectare (site area approx. 0.11hectare) a sequential test and full Flood Risk Assessment are not required.

APPENDIX A – EXISTING STRUCTURE

COCHRANE
CONSTRUCTION
CONSULTANTS

Email: ccconsultw4@gmail.com
Tel: 07793200529

DRAWING ISSUE SHEET

Project No	Page
S 2930	1

Project: 161 Arlington Road, Camden NW1 7ET

Date	Rev	By
Feb-24		BC

DATE OF ISSUE (WITH REVISION AS SHOWN)

DWG. No.	DRAWING TITLE	SIZE	ORIG.	23/02/2024	08/04/2024
	Existing Structure				
E 001	Existing Site Location Plan	A1	1:50	/	/
E 002	Floor Plans - Basement & Ground Floor	A1	1:50	/	/
E 003	Floor Plans - First & Second Floor	A1	1:50	/	/
E 004	Floor Plans - Third Floor & Roof	A1	1:50	/	/
E 005	Section A-A	A1	1:50	/	/
E 006	Elevation B-B: Church Party Wall	A1	1:50	/	/
E 007	Elevation C-C: No159 Party Wall	A1	1:50	/	/
E 008	Rear Elevation D-D & Section E-E	A1	1:50	/	/
E 009	Trial Pit Information	A1	1:20	/	/
E 010		A1	1:50		

DISTRIBUTION LIST		
CLIENT:		
ARCHITECT: Kubilay Karginoglu	1	
PROJECT MANAGER:		
M&E		
		1
CONTRACTOR:		
MEDIA TYPE:	E	E
ISSUE STATUS:	P	I

PURPOSE OF ISSUE:- P - Preliminary, A - Approval, T - Tender, C - Construction, I - Information, R - Record
MEDIA TYPE: P - Print, E - Electronic, D - Disk E

General Notes

No.	Revision/Issue	Date
--	*Planning Issue* -	08/04/2024
--	*Preliminary Issue* - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

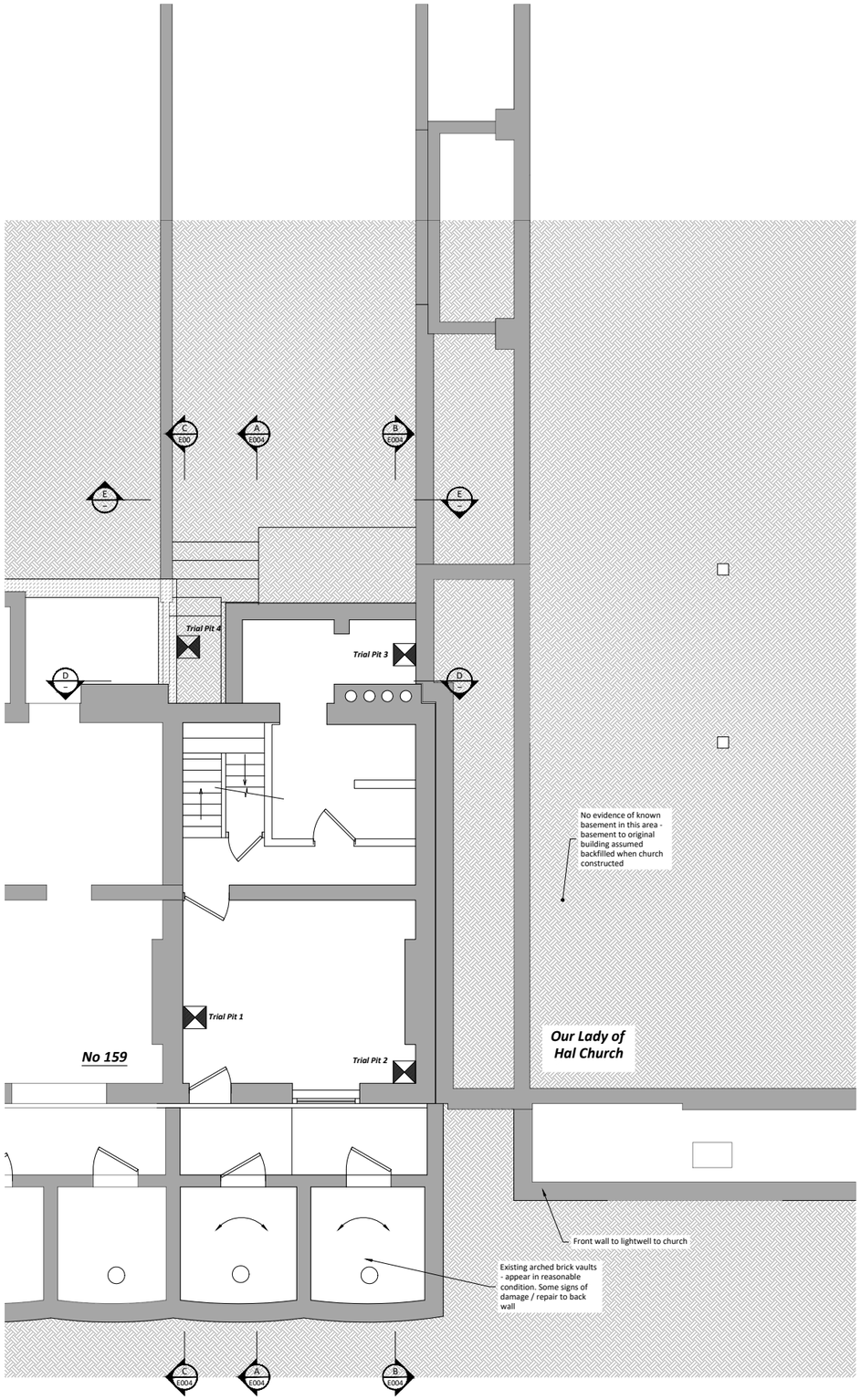
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Existing Site Plan

Drawn	BC
Date	20.01.2024
Scale	1:50 @ A1 1:100 @ A3
Project	S 2930
Sheet	E 001
Rev	--



EXISTING - BASEMENT

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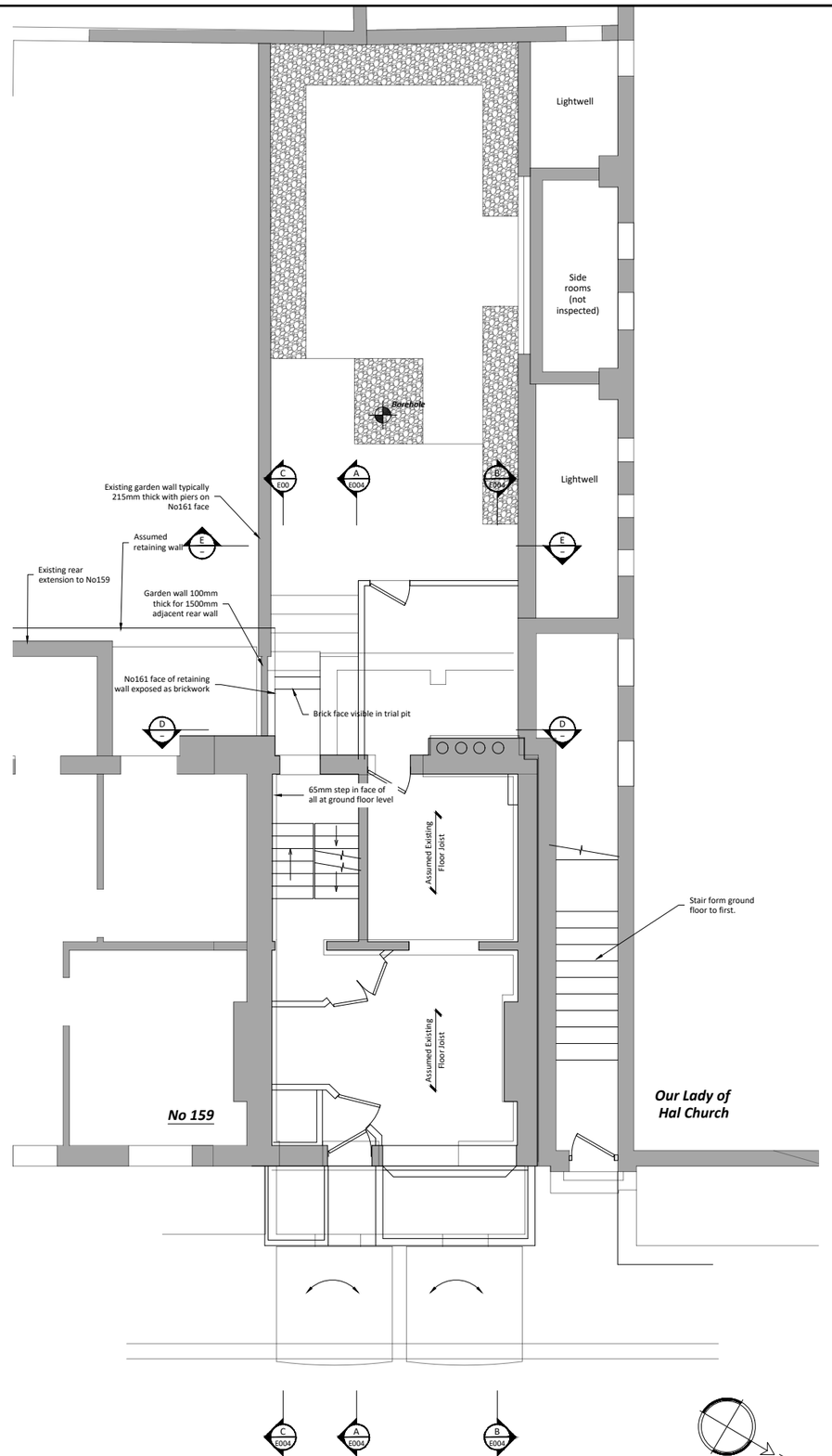


EXISTING - GROUND FLOOR

Scale: 1:50

General Notes

No.	Revision/Issue	Date
--	*Planning Issue* -	08/04/2024
--	*Preliminary Issue* - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529

Email: ccconsultw4@gmail.com

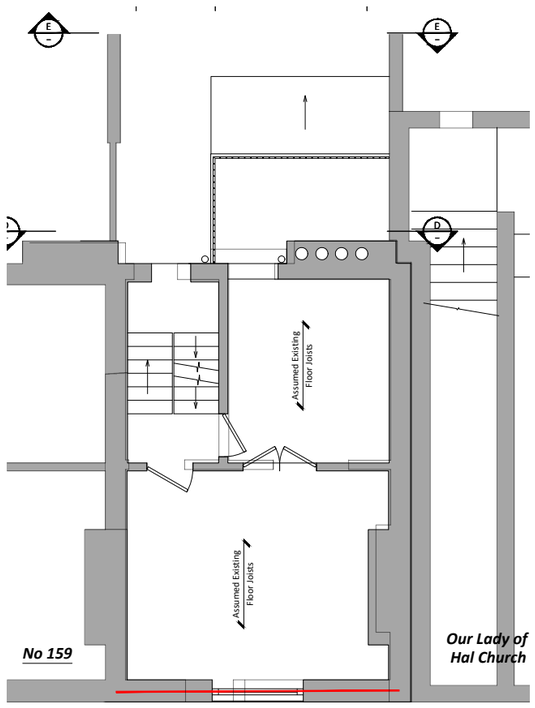
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Existing Structure
Floor Plans
Basement & Ground Floor

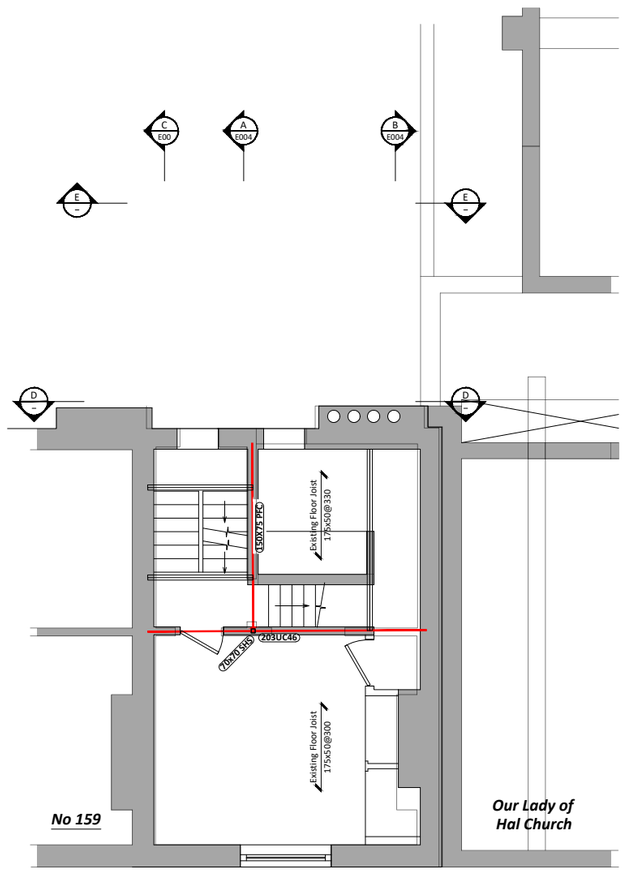
Drawn: BC	Project: S 2930
Date: 20.01.2024	Sheet: E 002
Scale: 1:50 @ A1, 1:100 @ A3	Rev: ##



C E004 A E004 B E004

EXISTING - FIRST FLOOR

Scale: 1:50



C E004 A E004 B E004

EXISTING - SECOND FLOOR

Scale: 1:50

General Notes

No.	Revision/Issue	Date
--	*Planning Issue* -	08/04/2024
--	*Preliminary Issue* - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

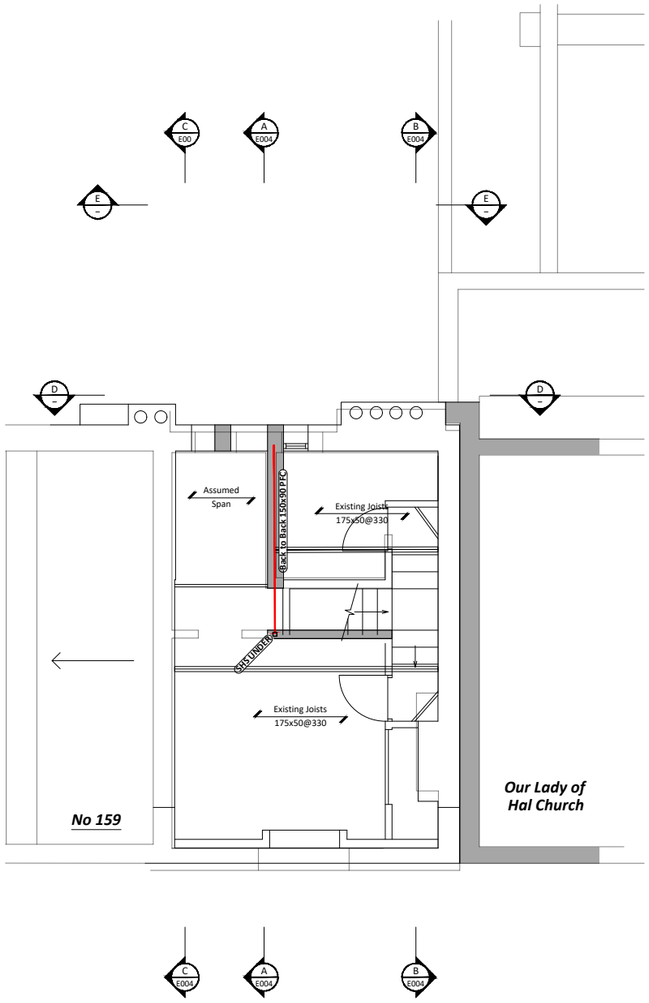
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

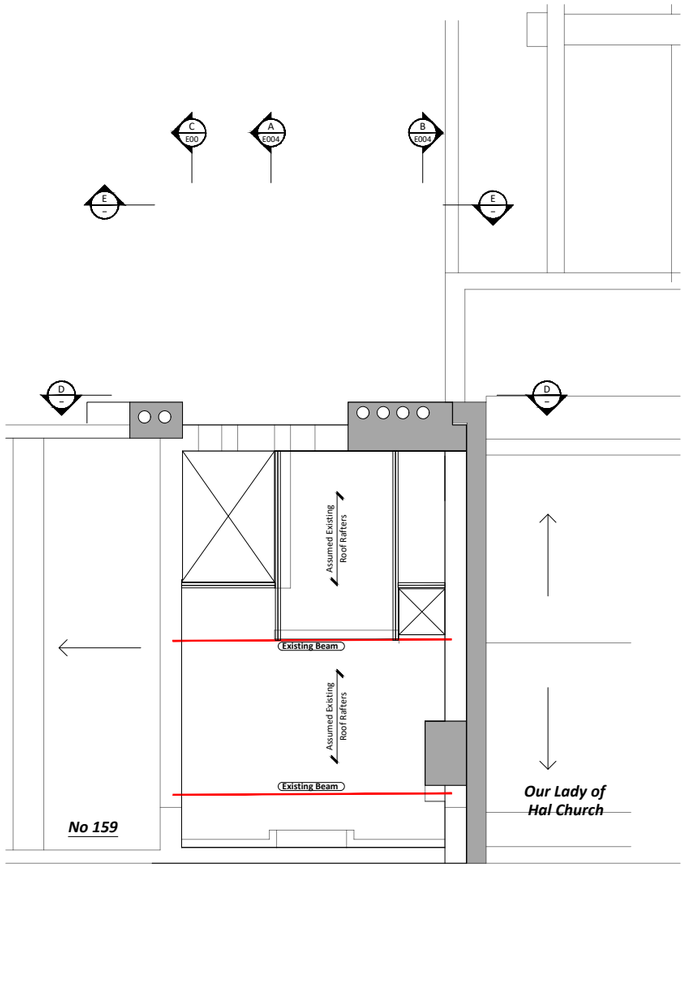
Existing Structure
Floor Plans
First & Second Floor

Drawn: BC	Project: S 2930
Date: 20.01.2024	Sheet: E 003
Scale: 1:50 @ A1, 1:100 @ A3	Rev: --



EXISTING - THIRD FLOOR

Scale: 1:50



EXISTING - ROOF PLAN

Scale: 1:50

General Notes

No.	Revision/Issue	Date
--	*Planning Issue* -	08/04/2024
--	*Preliminary Issue* - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

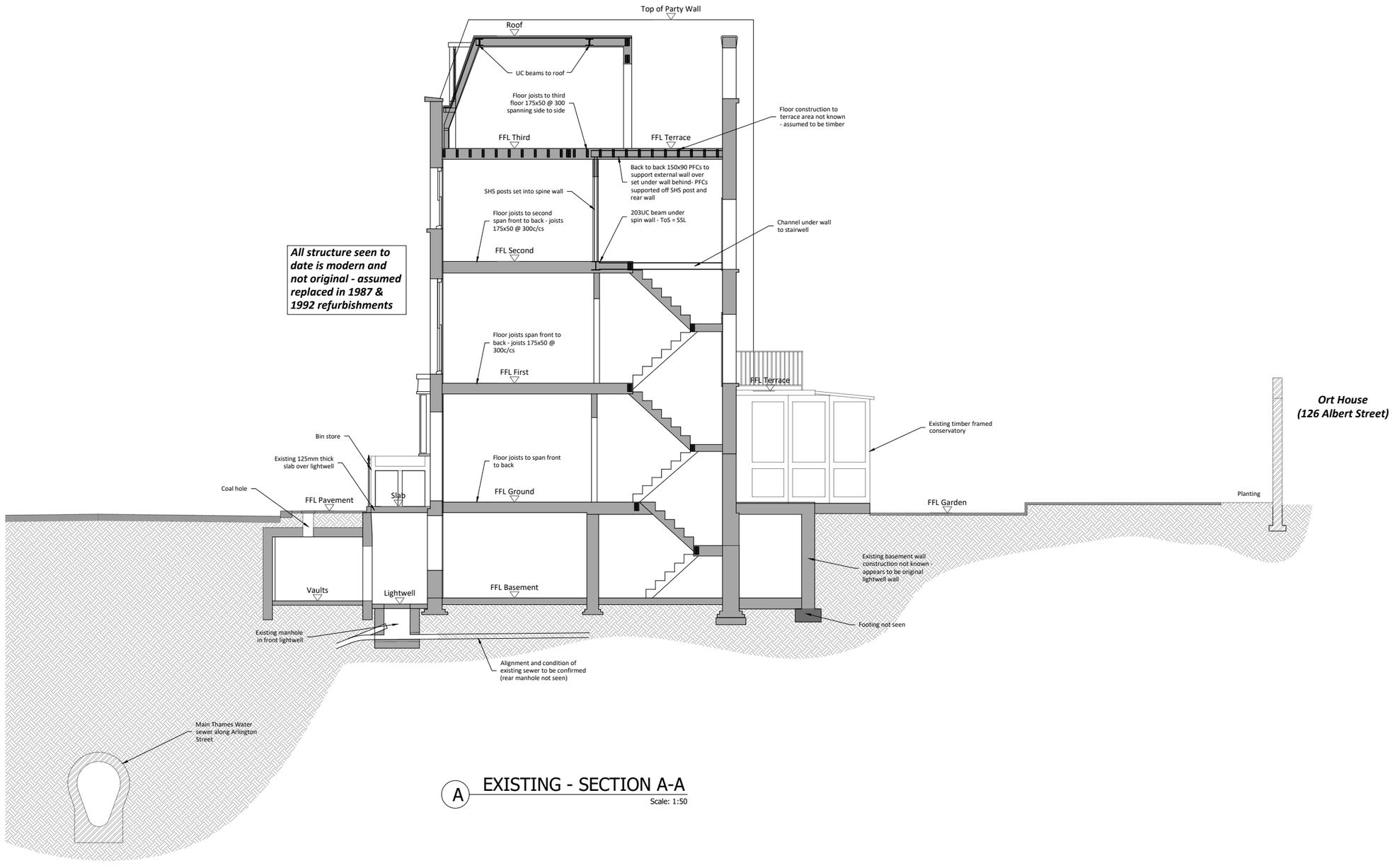
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Existing Structure
Floor Plans
Third Floor & Roof

Drawn: BC	Project: S 2930
Date: 20.01.2024	Sheet: E 004
Scale: 1:50 @ A1, 1:100 @ A3	Rev: --



All structure seen to date is modern and not original - assumed replaced in 1987 & 1992 refurbishments

A EXISTING - SECTION A-A

Scale: 1:50

General Notes

No.	Revision/Issue	Date
--	***Planning Issue*** -	08/04/2024
--	***Preliminary Issue*** - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

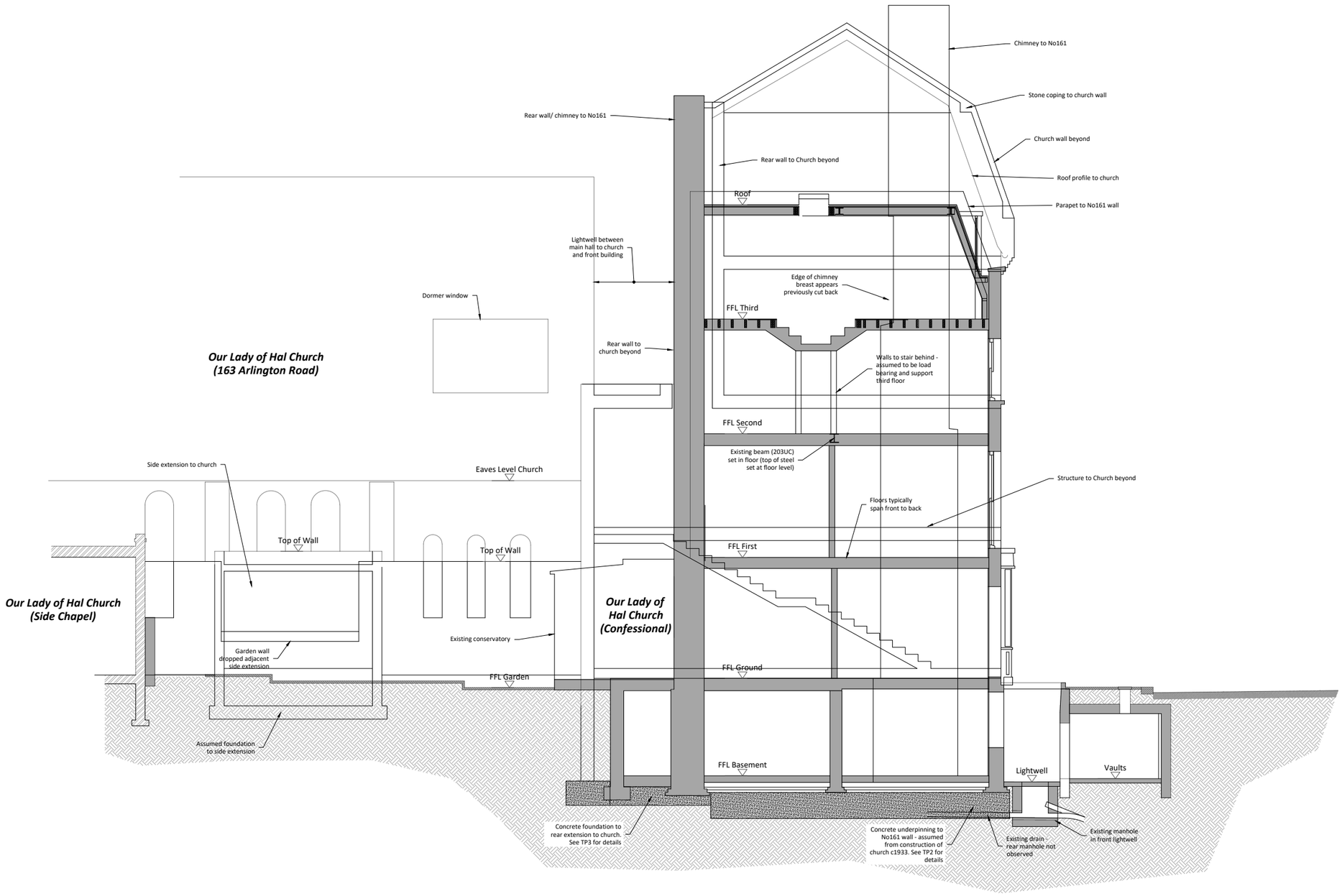
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Existing Structure
Section A-A

Drawn: BC	Project: S 2930
Date: 20.01.2024	Sheet: E 005
Scale: 1:50 @ A1, 1:100 @ A3	Rev: --



B EXISTING - ELEVATION B-B

Scale: 1:50

General Notes

No.	Revision/Issue	Date
--	***Planning Issue*** -	08/04/2024
--	***Preliminary Issue*** - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

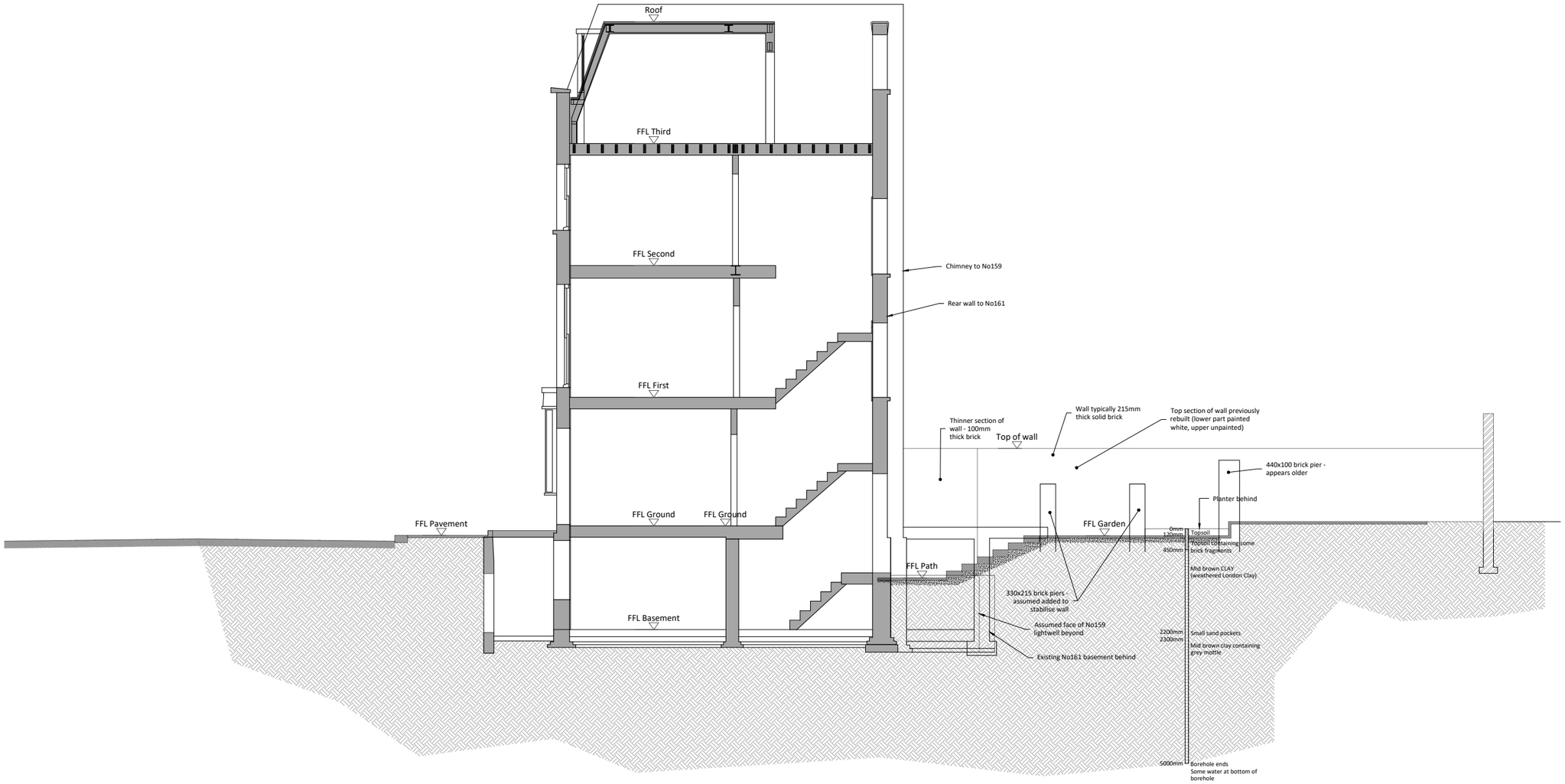
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Existing Structure
Elevation B-B - Church Party Wall

Drawn	BC
Date	20.01.2024
Scale	1:50 @ A1 1:100 @ A3
Project	S 2930
Sheet	E 006
Rev	--



C EXISTING - ELEVATION C-C

Scale: 1:50

General Notes

No.	Revision/Issue	Date
--	***Planning Issue*** -	08/04/2024
--	***Preliminary Issue*** - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

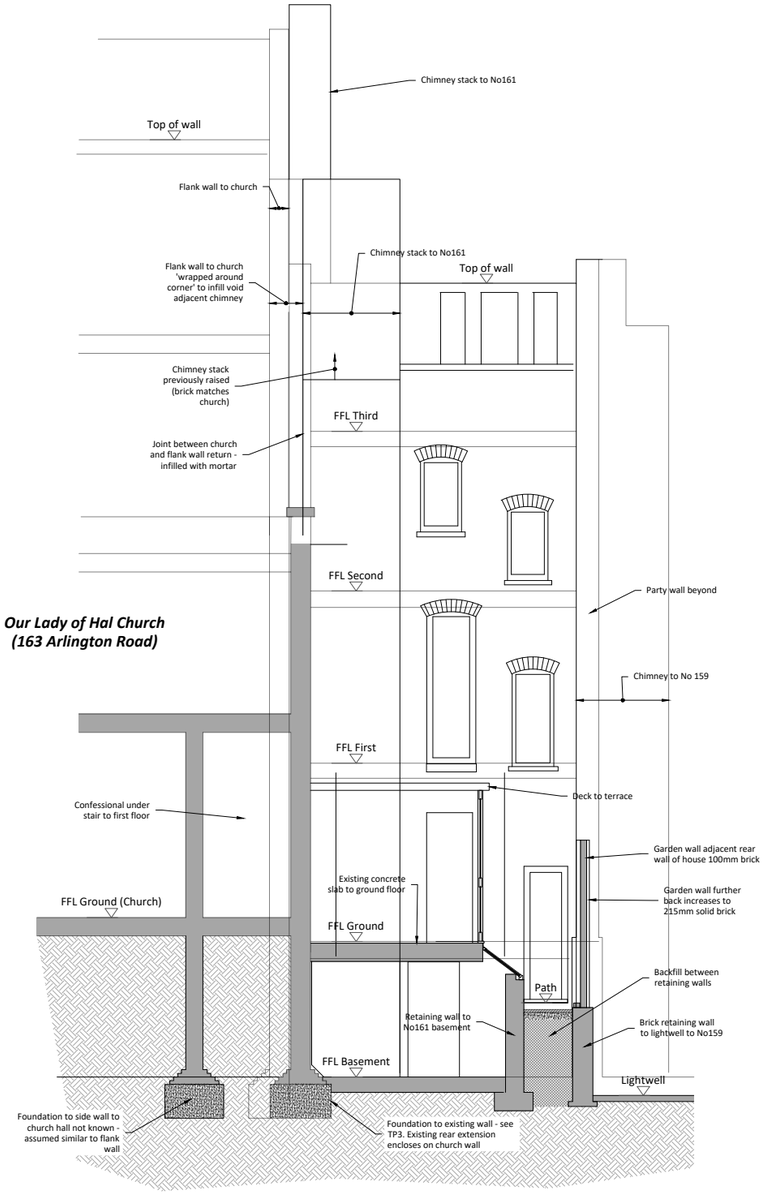
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Existing Structure
Elevation C-C - No159 Party Wall

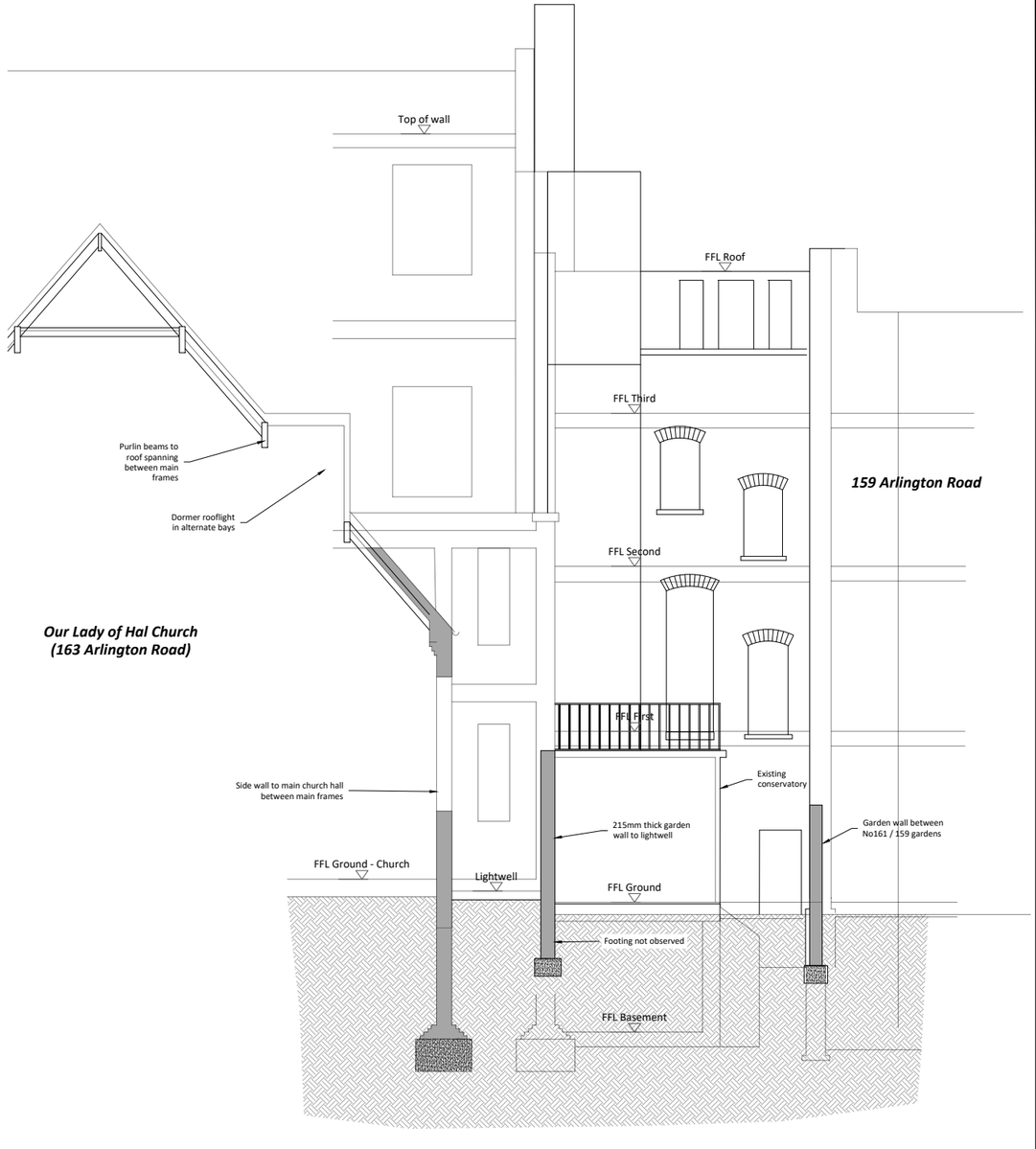
Drawn: BC	Project: S 2930
Date: 20.01.2024	Sheet: E 007
Scale: 1:50 @ A1, 1:100 @ A3	Rev: ##



Our Lady of Hal Church (163 Arlington Road)

2 EXISTING - REAR ELEVATION D-D

Scale: 1:50



Our Lady of Hal Church (163 Arlington Road)

159 Arlington Road

2 EXISTING - SECTION E-E

Scale: 1:50

General Notes

No.	Revision/Issue	Date
--	***Planning Issue*** -	08/04/2024
--	***Preliminary Issue*** - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

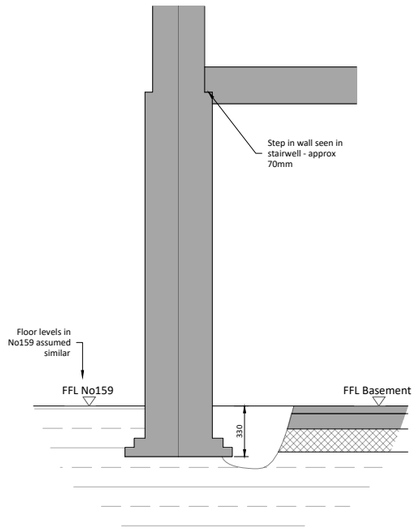
Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

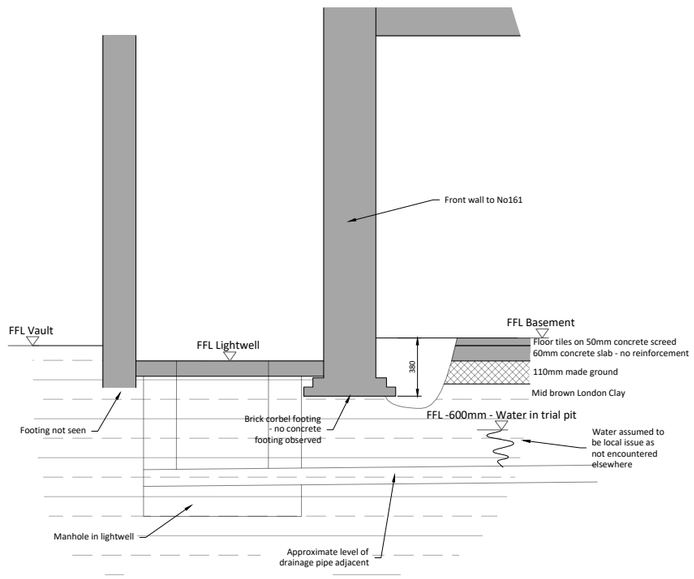
Existing Structure
Rear Elevation D-D & Section E-E

Drawn	BC
Date	20.01.2024
Scale	1:50 @ A1 1:100 @ A3
Project	S 2930
Sheet	E 008
Rev	--



TP1 - No159 PARparty WALL

Scale: 1:20



TP2 - FRONT WALL

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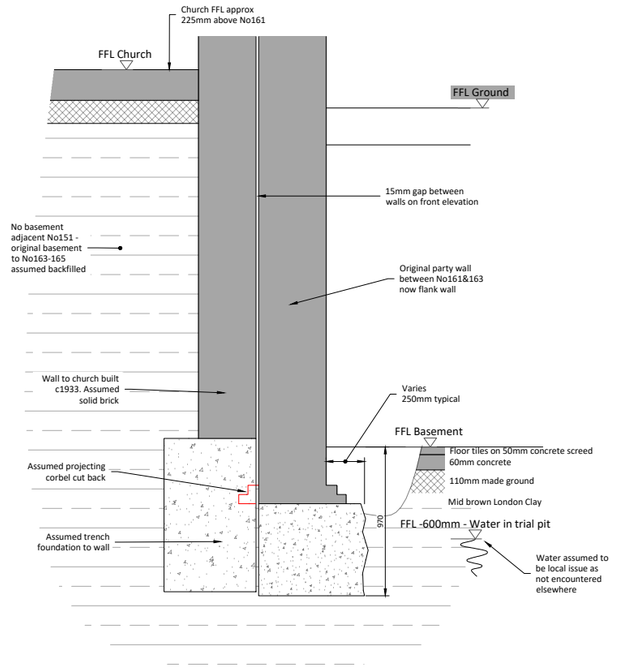

TP2 - CHURCH (FRONT)

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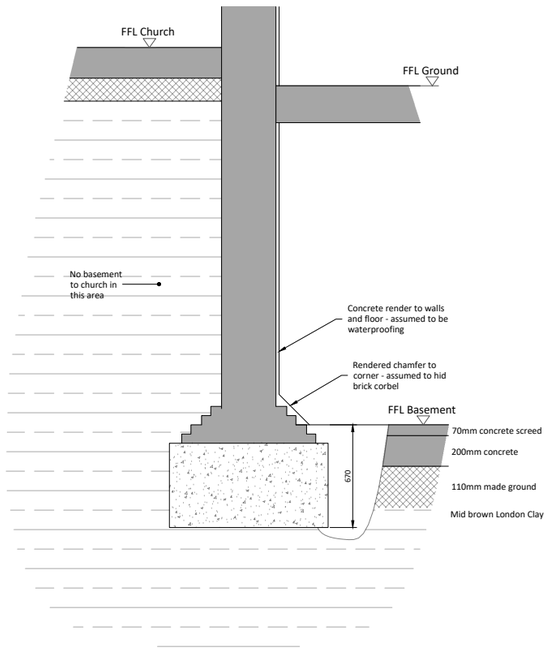

TP3 - CHURCH (REAR)

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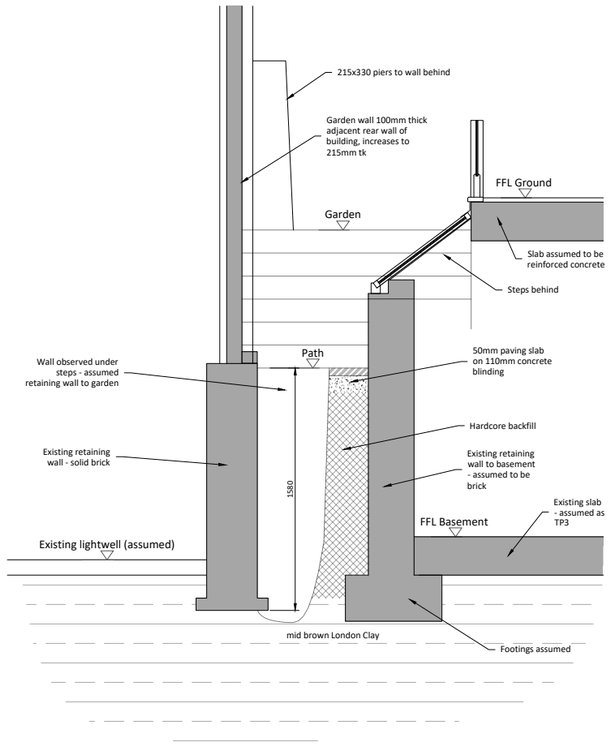

TP4 - No159 REAR LIGHTWELL

Scale: 1:20

General Notes

No.	Revision/Issue	Date
--	***Planning Issue*** -	08/04/2024
--	***Preliminary Issue*** - Pre Planning App Advice Submission	23/02/2024

COCHRANE CONSTRUCTION CONSULTANTS

Mob: 07793200529
Email: ccconsultw4@gmail.com

Client

Project Name and Address

161 ARLINGTON ROAD
LONDON NW1 7ET

Existing Structure
Trial Pit Information

Drawn	BC
Date	20.01.2024
Scale	1:20 @ A1 1:40 @ A3
Project	S 2930
Sheet	E 009
Rev	-

APPENDIX B – PROPOSED STRUCTURE