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1 Fitzroy Road  
London, NW1

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Structural Engineering Report  
and Subterranean  
Construction Method  
Statement

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Document Control

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revision:	P1	prepared by:	William Grant	checked by:	Matthew Bolton	approved by:	Matthew Bolton
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2 -	Proposed structure GAs and sections
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Non-Technical Summary

The following report has been prepared to show that the property and neighbouring properties will be safeguarded during the works. This report follows the guidance given in the Camden Planning Guidance on Basements and Lightwells CPG4. This assessment has been prepared in accordance with the guidance given in CPG4, DP23 and DP27.

If the recommended measures and sequence of works outlined in this report are properly undertaken by a suitability qualified contractor, the development should not pose any significant threat to the structural stability of this property, the adjacent properties and surrounding grounds.

The Basement Impact Assessment (BIA) prepared by Ground Engineering Associates (GEA) concludes that the predicted damage to the neighbouring properties would be either 'negligible' or 'very slight' (category 0 and 1 as set out in CIRIA Report 580 respectively).

Elliott Wood will have an on-going role during the works on site to see that the structural works are being carried out generally in accordance with our design and specification. This role will typically involve weekly site visits at the beginning of the project and fortnightly thereafter.

1.0 Introduction

- 1.1 Elliott Wood Partnership Ltd. (EW) is a firm of consulting structural engineers approximately 120 strong operating from their offices in South West London, Central London, and Nottingham. Residential developments of all scales have been central to the workload of the practice with many in the Greater London area. In particular Elliott Wood Partnership Ltd. have been producing designs for basements to both existing and new buildings. To date this numbers approximately 500 sites many of which have been in the London Borough of Camden. Our general understanding of the development of London, its geology and unique features together with direct experience on many sites puts us in a strong position to advise clients on works to their buildings and in particular the design and construction of their basement.
- 1.2 EW were appointed by the owner of No. 1 Fitzroy Road, Mr Greg Cohen, to advise on the structural implications of the following proposed works to the property:
  - Form a new basement below the main building, and part of the front and rear gardens.
  - Reconfigure the internal layout at lower ground, ground, first and second floor levels.
  - Replace the existing side extension with a new two storey side extension
- 1.3 A desk top study and site investigation (SI) have been carried out including three boreholes and five trial pits to understand the existing ground conditions and building foundations. This has been used to inform the structural design, and the BIA produced by GEA (document reference: 2772\_J15311 - 1 Fitzroy Road - Rep Issue 1).
- 1.4 This report focuses on the proposed subterranean works as well as the measures to retain the masonry façade. It should be read in conjunction with all relevant Architect's and Specialist's supporting documents.

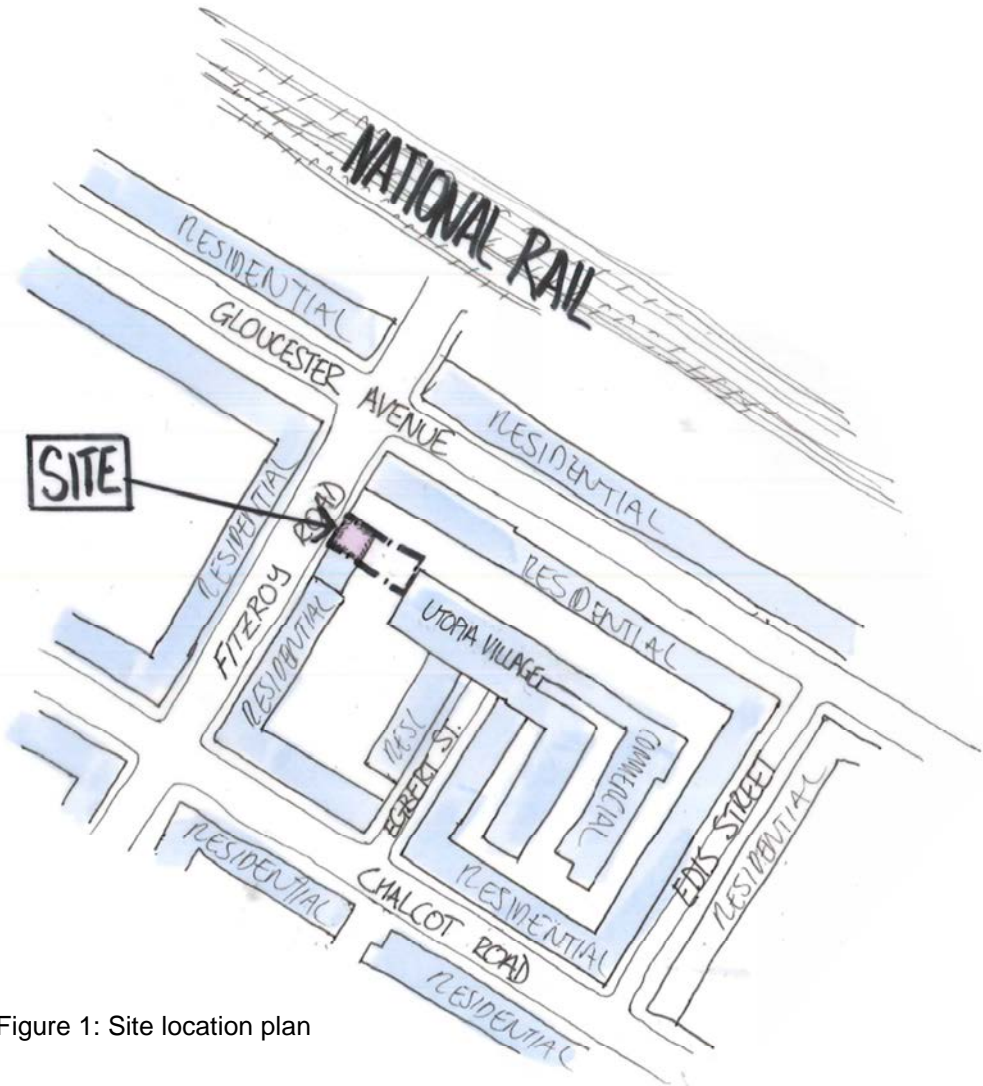


Figure 1: Site location plan



Figure 2: Front elevation

2.0 Description of Existing Building and Site Conditions

- 2.1 No. 1 Fitzroy Road is a semi-detached house constructed circa. 1867 located on the south-west side of Fitzroy Road, Camden. It shares a party wall with no. 3 Fitzroy Road.
- 2.2 The building is not listed but is within the Primrose Hill Conservation Area.
- 2.3 The existing building comprises the four storey main house (approximately 7.5m x 9m on plan), which includes lower ground floor and attic conversion, and a two storey side extension (approximately 4.5m x 5m on plan). There is a lightwell at the front of the house and 'pavement vaults' below the front driveway.
- 2.4 The building is assumed to be traditionally constructed with timber floors supported on load-bearing walls. Some of the internal walls may be load-bearing timber partition walls, particularly at the upper levels. The lower ground floor is likely to be ground-bearing concrete floor slab,
- 2.5 Trial pits have shown that the building is founded on brick corbels, with concrete strip footings below to some walls.
- 2.6 The overall stability of the building is provided by the cellular layout of the masonry walls and diaphragm action of the timber floors at each level.
- 2.7 Refer to the Arboricultural Impact Assessment Report by Indigo Surveys for information on existing trees within and adjacent to the site.

- 2.8 A CCTV drainage survey has been carried out to confirm the existing drainage layout and condition. Drainage within the site is combined use (foul and surface together) and connects to the Thames Water sewer by gravity. A public sewer was found to run through the site, from the rear south-eastern boundary connecting through to the sewer in Fitzroy Road. Refer to section 4.0 of this report for the outline drainage strategy.
- 2.9 The results of our desk study can be summarised as follows;
- The building does not appear to be in the vicinity of any historic rivers (ref: Lost Rivers of London, Nicholas Barton).
  - The site is in Flood Zone 1 so is not considered at risk of flooding (ref: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)).
  - The site is within a critical drainage area (ref: [www.camden.gov.uk](http://www.camden.gov.uk))
  - The site does not appear to be in the vicinity of any London Underground Ltd infrastructure (ref: [www.google.co.uk/maps](http://www.google.co.uk/maps)).
  - There is no record of any historical bomb damage to the property (ref: The LCC London Bomb Damage Maps 1939-1945, LTS).
- 2.9 A study of British Geological Survey (BGS) records shows that the site lies on London Clay and the water table is around 20m below local ground levels. A 20m deep and two 5m deep boreholes were carried out as part of the SI and confirmed this; showing made ground up to 3.5m deep (at the front of the property), underlain by stiff silty clays. Groundwater monitoring was carried out in the boreholes over a period of around 6 months, which measured perched groundwater between 6.67m and 0.21m below ground level.
- 2.10 The desk study carried out by GEA suggests that the site has not had a contaminative history having been occupied by residential properties throughout its development history. Historically there were a number of industrial sites in the near vicinity - refer to the BIA produced by GEA for further information regarding potential contamination.

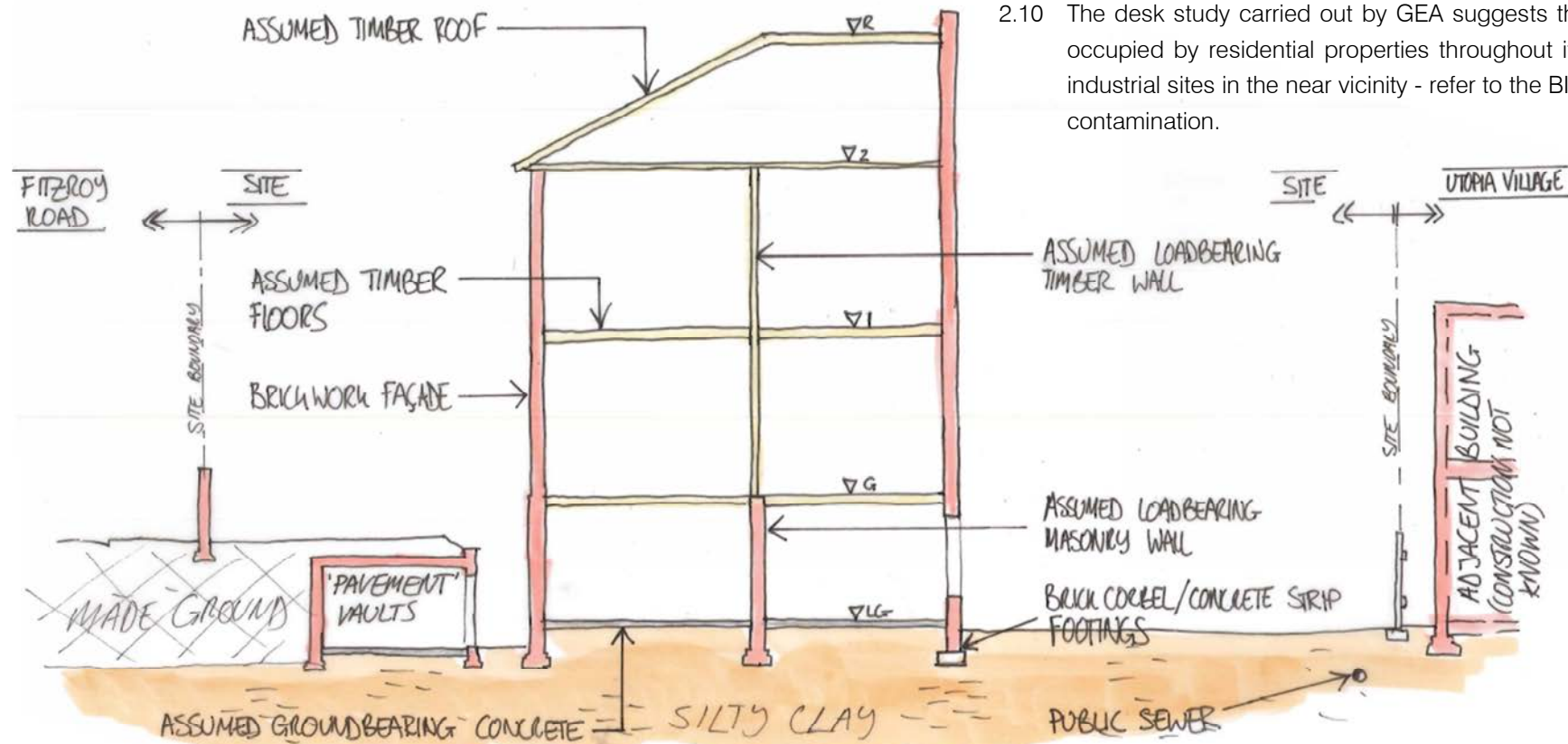


Figure 3: Long section through existing site



3.0 Proposed Alterations

- 3.1 The proposed alterations include:
- Forming a new basement below the main building, and part of the front and rear gardens.
  - Reconfiguring the internal layout at lower ground, ground, first and second floor levels.
  - Replacing the existing side extension with a new two storey extension above the new basement
- 3.2 As part of the proposals the majority of the existing roof, and brickwork façade above ground floor level are to be retained. Part of the northern façade is to be removed to provide an open plan layout between the main house and side extension. The existing masonry façades are to be re-supported on reinforced concrete (RC) beams in the ground floor slab, spanning on to RC columns and walls.
- 3.3 The new basement and lower ground floors are to be formed of a reinforced concrete (RC) box, comprising:
- RC external walls to the front, northern side and rear
  - RC underpins to the party wall with no. 3 Fitzroy Road
  - A groundbearing RC basement slab (designed against heave – refer to section 9.0 of this report)
  - A suspended RC flat slab at lower ground floor
  - A suspended RC ground floor slab with RC beams to re-support the retained façades
- 3.4 The lower ground and ground floor slabs span on to a combination of internal RC walls/columns and the external RC walls.
- 3.5 The new floor structure at first and second floor is to be timber joists spanning on to a grillage of steel beams supported off the retained masonry walls. A new load-bearing studwork partition wall at second floor level is proposed to support the retained roof at the ridge.
- 3.6 The new side extension will be formed of a cavity wall and timber joists with steel beam roof.
- 3.7 The existing public sewer running through the site is to be diverted through a trench along the east and north of the site as part of the proposals (refer to section 4.0 of this report). The existing garden party wall with Gloucester Avenue terrace buildings to the north is to be underpinned to facilitate installation and maintenance of the sewer. A new RC retaining wall at the eastern end of the garden is also proposed to allow the garden level to be lowered whilst keeping the existing sewer draining through gravity.
- 3.8 The overall stability of the building above ground level is provided by the cellular layout of the masonry walls and diaphragm action of the timber floors at each level. Horizontal forces at ground level are then transferred in to the RC box which carries loads in to the ground through diaphragm action of the walls and slabs.

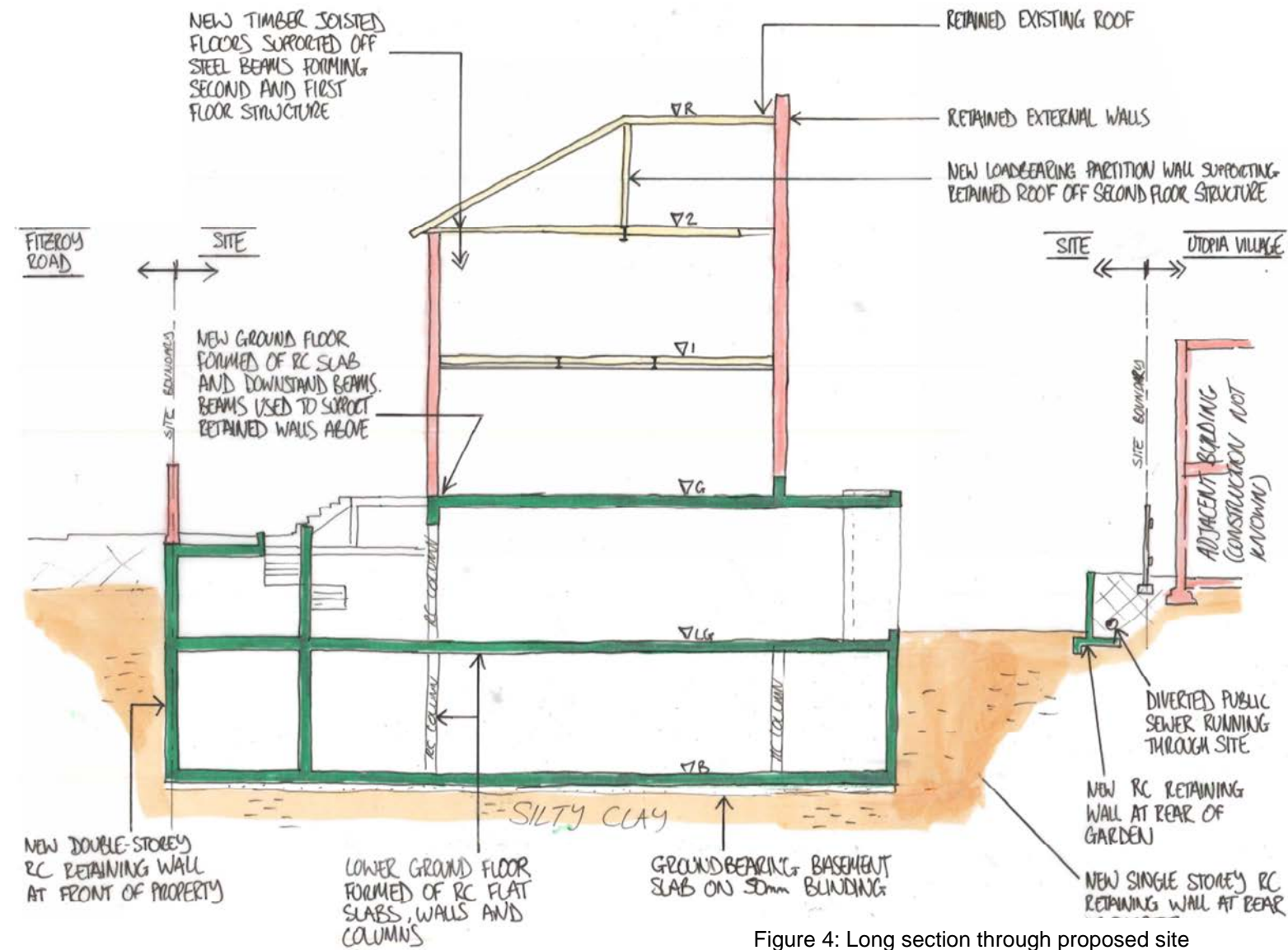


Figure 4: Long section through proposed site

4.0 Proposed Below Ground Drainage and Surface Water Discharge

- 4.1 It is proposed to divert the existing 150mm diameter Thames Water sewer through a corridor around the perimeter of the proposed structure, as shown in Drawing D5000 of Appendix 3. A minor sewer diversion application has been submitted to Thames Water and approved in principal.
- 4.2 The current proposals include green roofs which will improve the thermal performance of the building, reduce the urban heat island effect, reduce both the total and peak surface water discharge, and enhance biodiversity in the surrounding area.
- 4.3 Due to the extent of the proposed basement, all existing onsite drainage is to be removed. It is proposed to separate foul and surface water into separated networks before reconnecting back to the combined sewer system. Wherever feasible, drainage from the ground floor and above is to drain from the site via gravity. Where drainage by gravity is not possible it will need to be pumped back up to the gravity network. This is to be restricted to drainage from the basement level to minimise the volume of pumped drainage.

5.0 Flood Risk

- 5.1 The site is located within the Environment Agency's Flood Zone 1, defined as an area which has less than 0.1 per cent (1 in 1000) chance of flooding occurring each year from rivers and sea.
- 5.2 The site is less than one hectare and it is not in an area identified to be at risk from surface water flooding, as per the map in figure 3ii of London Borough of Camden's Strategic Flood Risk Assessment.
- 5.3 For these reasons, a Flood Risk Assessment is not required.

6.0 Hydrogeological Statement Summary

- 6.1 As the local ground comprises predominantly low-permeability clay soils, it does not support a "water table". Groundwater monitoring was carried out in the boreholes over a period of around 6 months, which measured perched groundwater 6.67m and 0.21m below ground level. This perched water is typically a result of high water content in the shallow clays and is not reflective of a groundwater flow you may find in permeable saturated strata. Refer to the BIA for further information on local hydrogeological conditions.
- 6.2 The BIA shows that the proposed works are unlikely to pose a risk to the hydrogeological or hydrological setting particularly as the construction is within low-permeability clay soils.
- 6.3 This is further supported by Arup's Subterranean Development Scoping Study (para 5.1), June 2008, which notes that the impact of subterranean development on groundwater flows is negligible as groundwater flows will find an alternative route if blocked by a subterranean structure.

7.0 Party Wall Matters

- 7.1 The proposed works development falls within 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. The Party Wall Surveyor will prepare and serve necessary 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 notifiable under the Act. The resolution of matters under the Act and provisions of the Party Wall Awards will protect the interests of all owners.
- 7.2 The designs for 1 Fitzroy Road will be developed so as not to preclude or inhibit similar, or indeed any, works on the neighbouring properties. This will be verified by the Surveyors as part of the process under the Act.

8.0 Ground Movement Assessment

- 8.1 No. 3 Fitzroy Road is immediately adjacent to the basement excavation, and whilst basement construction inevitably results in some ground movement, the structural design has been developed with the safeguarding of this building and other adjacent properties in mind. The size of RC wall, the temporary propping to this wall, the sequence of construction and the permanent propping to the wall have all been carefully considered and designed to control and minimise the ground movements.
- 8.2 To help quantify potential ground movements GEA have been commissioned to carry out a Ground Movement Assessment (GMA) for the proposed development. Refer to the BIA report by GEA.
- 8.3 We have produced a summary of the anticipated loads for the proposed works and these have been inputted into the ground movement assessment. The assessment takes into account both the long and short term effects of the proposed basement and it has shown that the settlement is within acceptable limits.
- 8.4 GEA have concluded that with good workmanship including stiff propping/bracing to the excavations, the proposed basement to no. 1 Fitzroy Road can be constructed without imposing more than a 'very slight' level of damage on the adjoining properties.

9.0 Heave

- 9.1 Because the proposed excavation is within the clay strata, the removal of soil will result in some heave. Ground-bearing sections of the basement slab are to be designed to resist this heave. To provide a more efficient design some sections of slab may be suspended between ground-bearing sections, with cellcore void formers below to protect against heave forces.

10.0 Structural Monitoring

- 10.1 It is anticipated that the Contractor shall provide monitoring to all structures and infrastructure adjacent to the basement excavation at the time of excavation and construction. This is to be agreed with the party wall surveyors.
- 10.2 Monitoring shall be completed as follows:
- a) One month prior to any works being started to provide a base reading.
  - b) At the start and end of every shift during the excavation and until the RC box forming the new structure from basement up to ground floor has been cast.
  - c) On a monthly basis thereafter for a 6 month period following completion of the notifiable works.

10.3 Cumulative movement of survey points must not exceed:

	Code amber trigger values	Code red trigger values
Settlement	+/-4mm	+/-8mm
Lateral displacement	+/-4mm	+/-8mm

10.4 When movement approaches critical values, the following steps are to be taken:

Code amber trigger value:

All interested parties, including the Adjoining Owner’s Surveyor and his Engineer should be informed and further actions immediately agreed between Surveyors and implemented by the Building Owner. Notwithstanding the Party Wall requirements, the Contractor is to appoint, and to have permanently on site, a suitably qualified Structural Engineer who will be responsible for the reviewing of the movement monitoring results at the start and end of each day and provide immediate advice, remedial works and design as necessary in the event of movement being noted. The Contractor is to ensure that he has 24 hour/7 days a week access to emergency support provision including but not limited to additional temporary props, needles, waling beams and concrete supply at the start of the excavation and prior to any likelihood of this trigger value being reached. If this value is reached the Contractor, and his Engineer, must without delay provide all interested parties with his plan to implement any emergency remedial and supporting works deemed necessary. The Contractor must be ready to carry out these works without delay if the movement continues and approaches the trigger value below.

Code red trigger value:

All interested parties including Adjoining Owner’s Surveyor and Engineer will be informed immediately. Works will stop and be made safe using methods and equipment agreed at the above stage. The Contractor is to ensure that the movement has stopped as a result of the implemented remedial works designed and installed at this stage. The requirements of the Party Wall Act will also ensure that, Surveyors and their advising Engineers shall then enter into an addendum Award, setting out whether or not the Building Owner’s works can re-commence and when, and if so agree additional precautions or modifications to the proposals prior to re-commencement.

11.0 Conclusion

- 11.1 The proposed development involves forming a new RC basement below an existing property and part of the front driveway and rear garden. The structure to the lower ground floor and ground floor are to be replaced with new RC slabs, beams, walls and columns. The existing roof and masonry façades are to be mostly retained, and re-supported on RC beams within the ground floor structure. The internal structure above ground floor is to be timber joists spanning on to a grillage of steel beams supported off the retained masonry walls.
- 11.2 The measures and sequence of works outlined in this report and the following Construction Method Statement are to be taken into account in the eventual design and construction of the proposed works.
- 11.3 Detailed method statements and calculations for the enabling and temporary works will need to be prepared by the Contractor for comment by all relevant parties including party wall surveyors and their engineers. Adequate supervision and monitoring is to be provided throughout the works particularly during the excavation and demolition stages.
- 11.4 EW will have an on-going role during the works on site to see that the works are being carried out generally in accordance with the design and specification. This role will typically involve weekly site visits at the beginning of the project and fortnightly thereafter. A written site visit record is to be provided to the design team, Contractor and Party Wall Surveyor following each site visit.
- 11.5 The undertaking of such projects to existing buildings is specialist work and EW will be involved in the selection of an appropriate Contractor who will need the relevant expertise and experience for this type of project.
- 11.6 If the works noted above are properly undertaken by suitably qualified Contractor, they should not pose any significant threat to the structural stability of the existing house or the neighbouring properties. We consider that if the works are carried out in this manner then the likelihood of damage to the adjacent properties and will be limited to “very slight” (i.e. Category 1 as set out in CIRIA report 580).
- 11.7 The proposed development is not expected to have a significant effect on the hydrogeological or hydrological setting.
- 11.8 The development is not within a flood risk zone so does not require a Floor Risk Assessment.

Subterranean Construction Method Statement



12.0 Subterranean Construction Method Statement

The proposed works involves the construction of a new two-storey RC box structure below a retained building façade. Some of the issues that affect the sequence of works on this project are:

- The stability of the existing building;
- The stability of adjacent buildings;
- The stability of adjacent gardens;
- Providing a safe working environment.

Refer to the Construction Management Plan (CMP), which will be produced by others, for details of hoarding, access, holding areas and the principles for the removal of spoil.

Note that the final CMP and overall sequence is to be agreed with the Contractor after final proposals have been agreed

Tree Protection methods are to be agreed and installed to all retained trees where required. Refer to the Arboricultural Impact Assessment Report prepared by Indigo Surveys.

12.1 Assumed Sequence of Construction:

Stage 1: Site set-up and enabling works

Erect a security fence and hoarding around the site, and set up a delivery/holding area.

Identify and isolate all services within the site as necessary. All below ground obstructions should also be removed to allow the works to progress.

Install monitoring system to the adjoining buildings and calibrate. The adjacent properties should be closely monitored for movements and the results logged and recorded at regular intervals throughout the works.

Demolish existing side extension.

Create temporary diversion for public sewer running through the site.

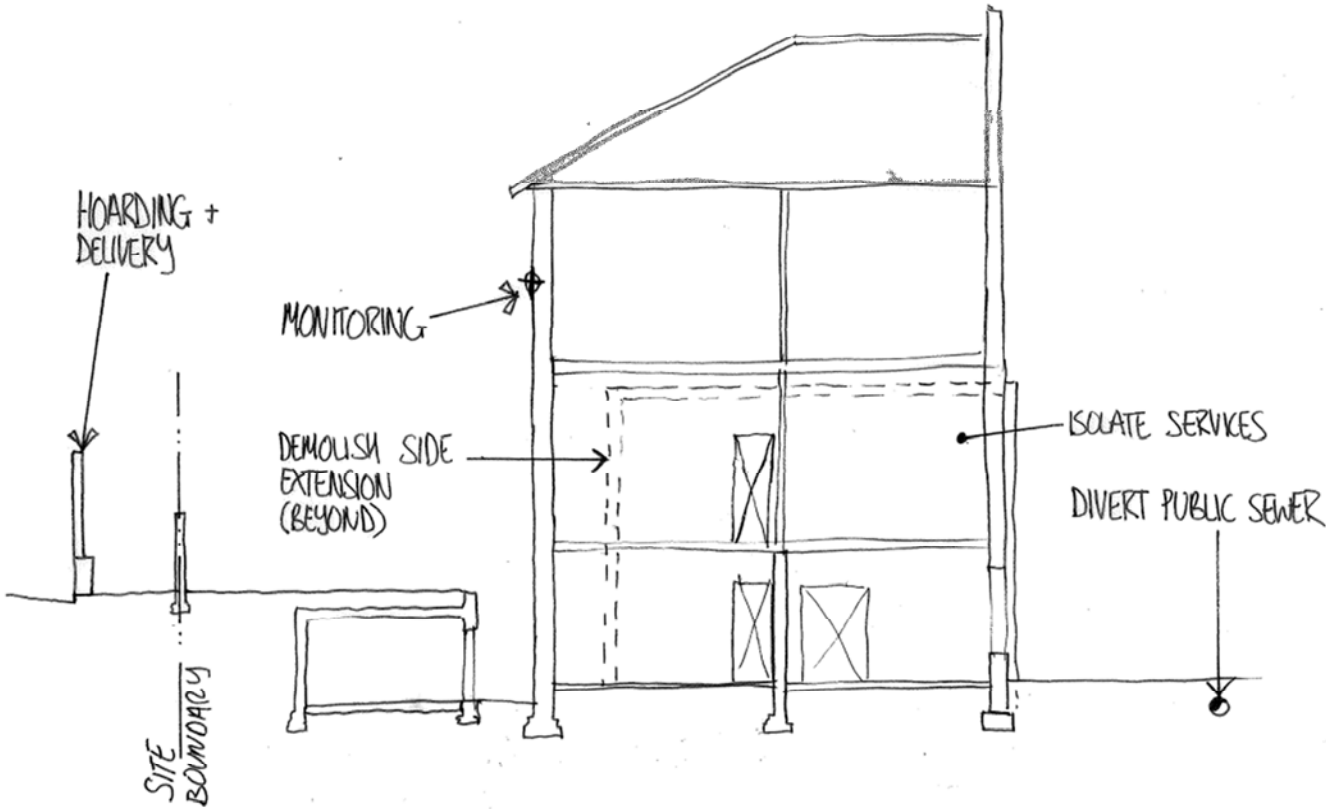


Figure 5: Assumed Sequence of Construction Stage 1

Stage 2: Underpin front driveway wall

Cast new RC wall below the front driveway wall in an underpinning sequence down to lower ground floor level to allow the existing 'pavement vaults' to be removed. Backfill the excavation after each section of RC wall has been cast. Once that section of wall has gained sufficient strength, adjacent sections can be excavated and cast.

Stage 3: Install temporary props to retained facade

Install new waling beams and props just above or below existing floor levels to provide temporary restraint to the retained facade. Brace as required.

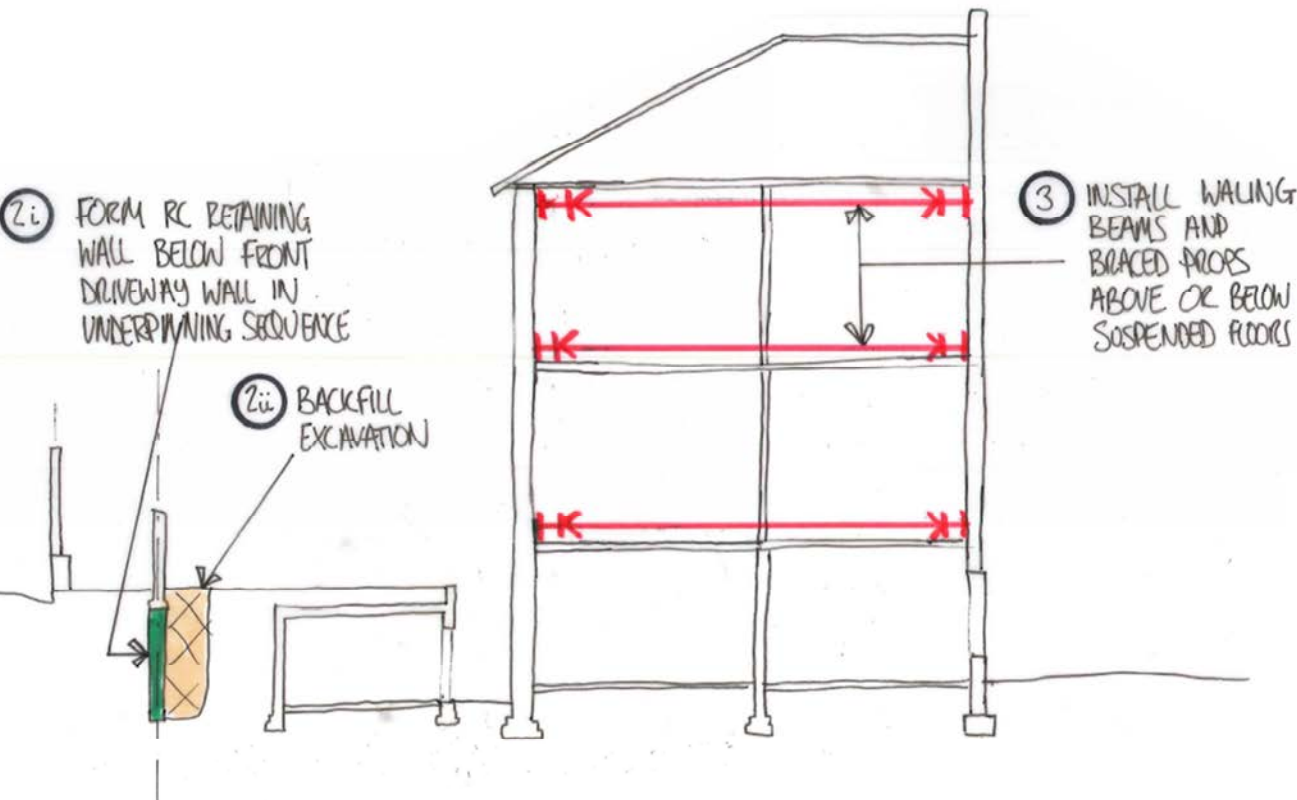


Figure 6: Assumed Sequence of Construction Stages 2-3

Stage 4: Remove existing 'pavement vaults'

Remove the existing 'pavement vaults' and excavate the front driveway down to lower ground floor level. Install waling beams and props between the new front RC retaining wall and the perpendicular walls at top and bottom of the wall (i.e. props rake on plan).

Stage 5: Remove existing floor structures

Remove the existing timber joisted floors and loadbearing walls. If the roof is supported off internal structure, install temporary beam and prop to support roof off retained masonry walls.

Stage 6: Provide access and level platform for piling rig

Break out the existing lower ground floor slab and lay blinding to provide a level platform for the piling rig. Provide access ramp to bring piling rig in. Depending on the size of the piling rig, an existing opening may need to be extended for the rig to access the building interior.

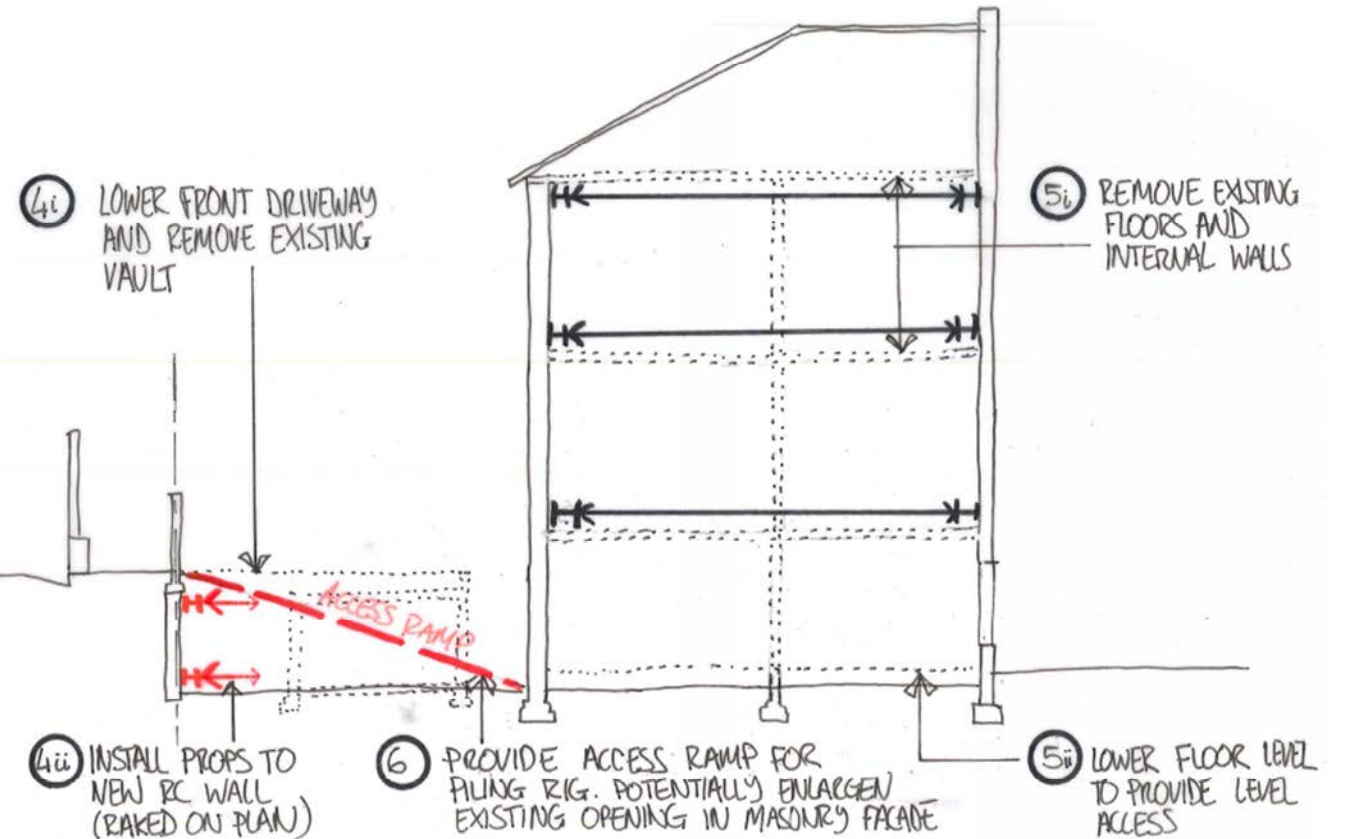


Figure 7: Assumed Sequence of Construction Stages 4-6

Stage 7: Form plunge pile

Bring mini-piling rig in to site using access ramp and form new plunge pile on each side of the retained façade walls.

Stage 8: Install needles

Install temporary needles and steel columns supported off new plunge piles. Brace as required.

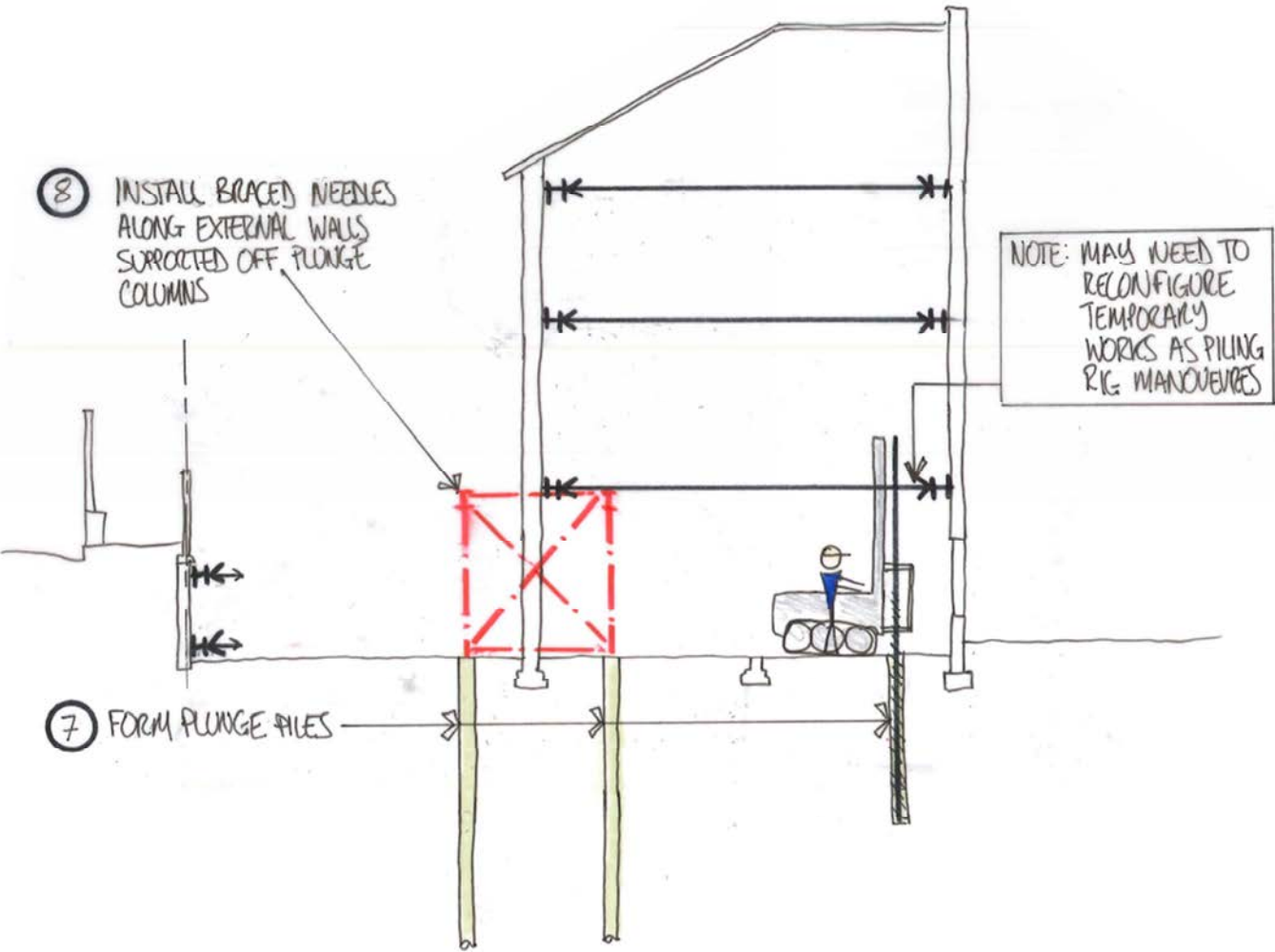


Figure 8: Assumed Sequence of Construction Stages 7-8

Stage 9: Second stage RC wall/underpin

Form second level of RC wall and underpins in an underpinning sequence, similar to Stage 2.

Stage 10: Excavate to basement level

Excavate down to proposed basement level. Install waling beams and propping during excavation to temporarily prop the RC retaining walls. The temporary propping should be preloaded to minimise lateral movements and will remain in place until the basement, lower ground floor and ground floor structures are in place and have cured sufficiently. The Contractor will be responsible for completing regular checks on all temporary work to ensure props are suitably tight

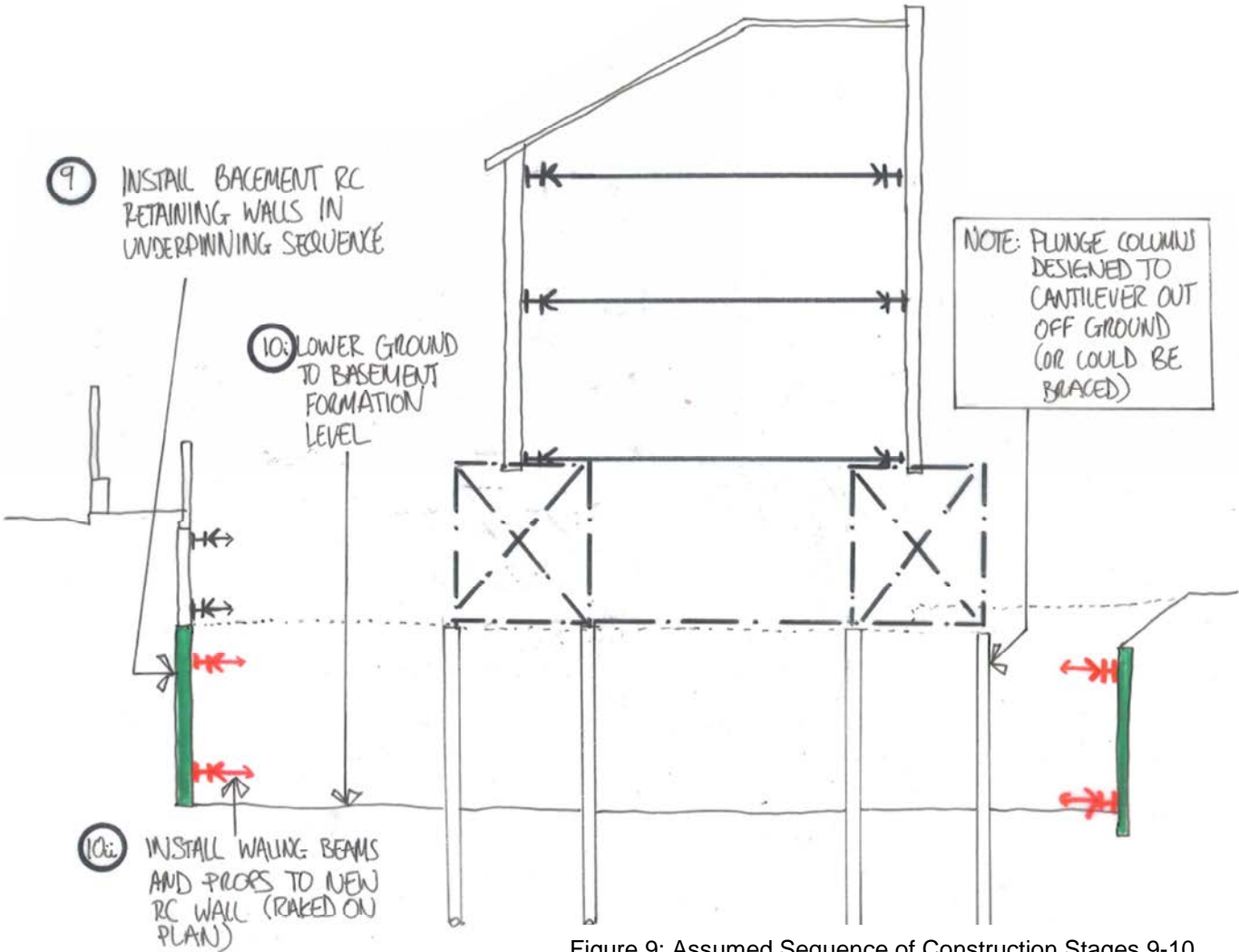


Figure 9: Assumed Sequence of Construction Stages 9-10



Stage 11: Form new basement, lower ground and ground floor RC structure

Install below ground drainage, lay blinding and cast new basement slab. Once the slab has gained sufficient strength remove temporary propping directly above, transferring horizontal loads to the basement slab. Cast basement walls and columns, and then new lower ground floor slab. Remove temporary propping adjacent to new lower ground floor slab once it has gained sufficient strength. Repeat up to ground floor level.

Stage 12: Remove plunge piles and needles

Once ground floor RC beams have been cast and gained sufficient strength to support the retained masonry walls, remove temporary needles and make good brickwork. Break down plunge piles and infill voids in basement, lower ground and ground floor slab.

Stage 13: Install new superstructure

Form new side extension. Install new steel beams and timber floors at first and second floor level within the main house. Once ply sheeting has been installed and floor is rigidly fixed to the walls, remove temporary propping at that floor level.

Stage 14: Fit out

Fit out the new structure and install permanent public sewer.

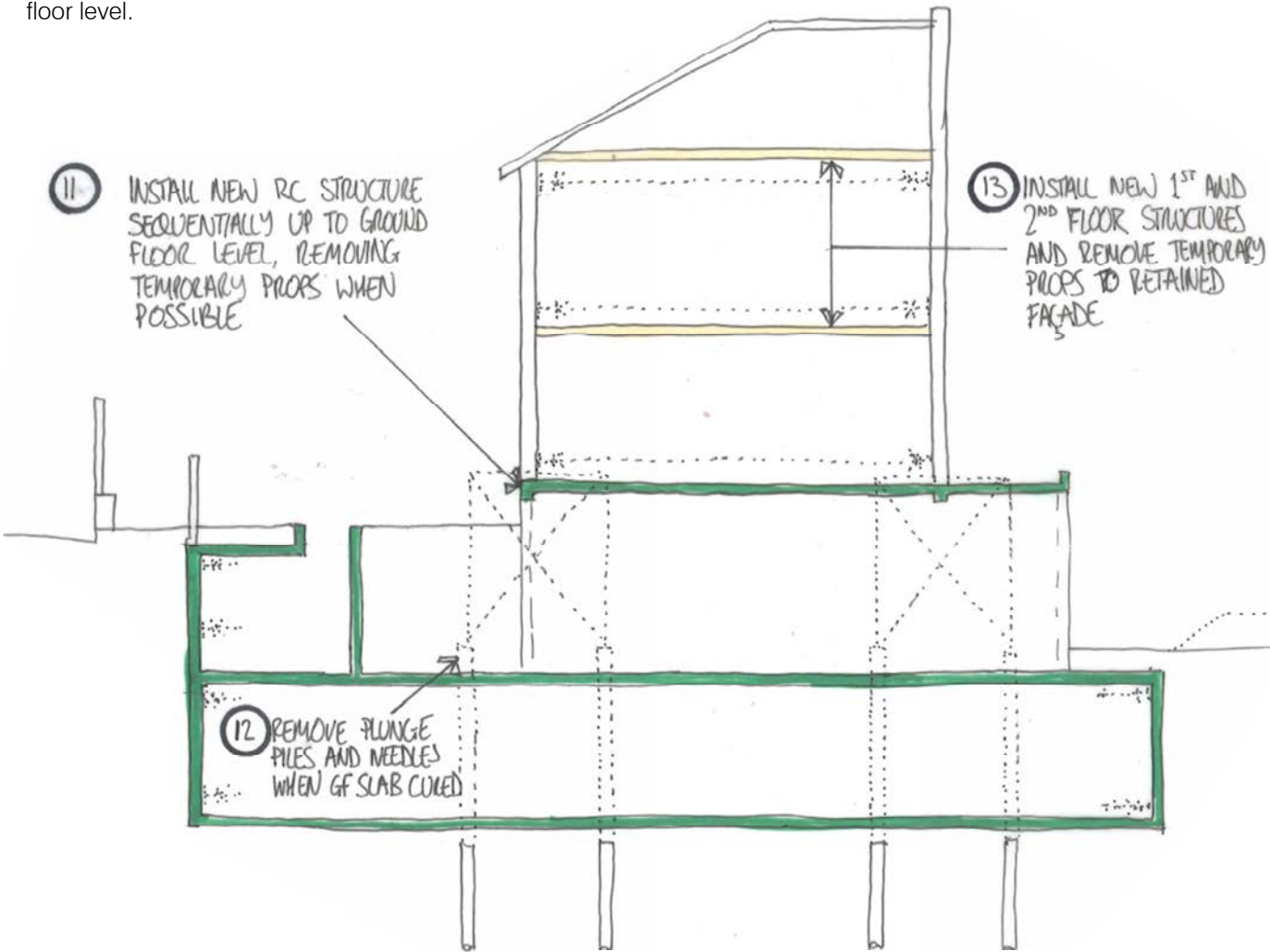


Figure 10: Assumed Sequence of Construction Stages 11-13

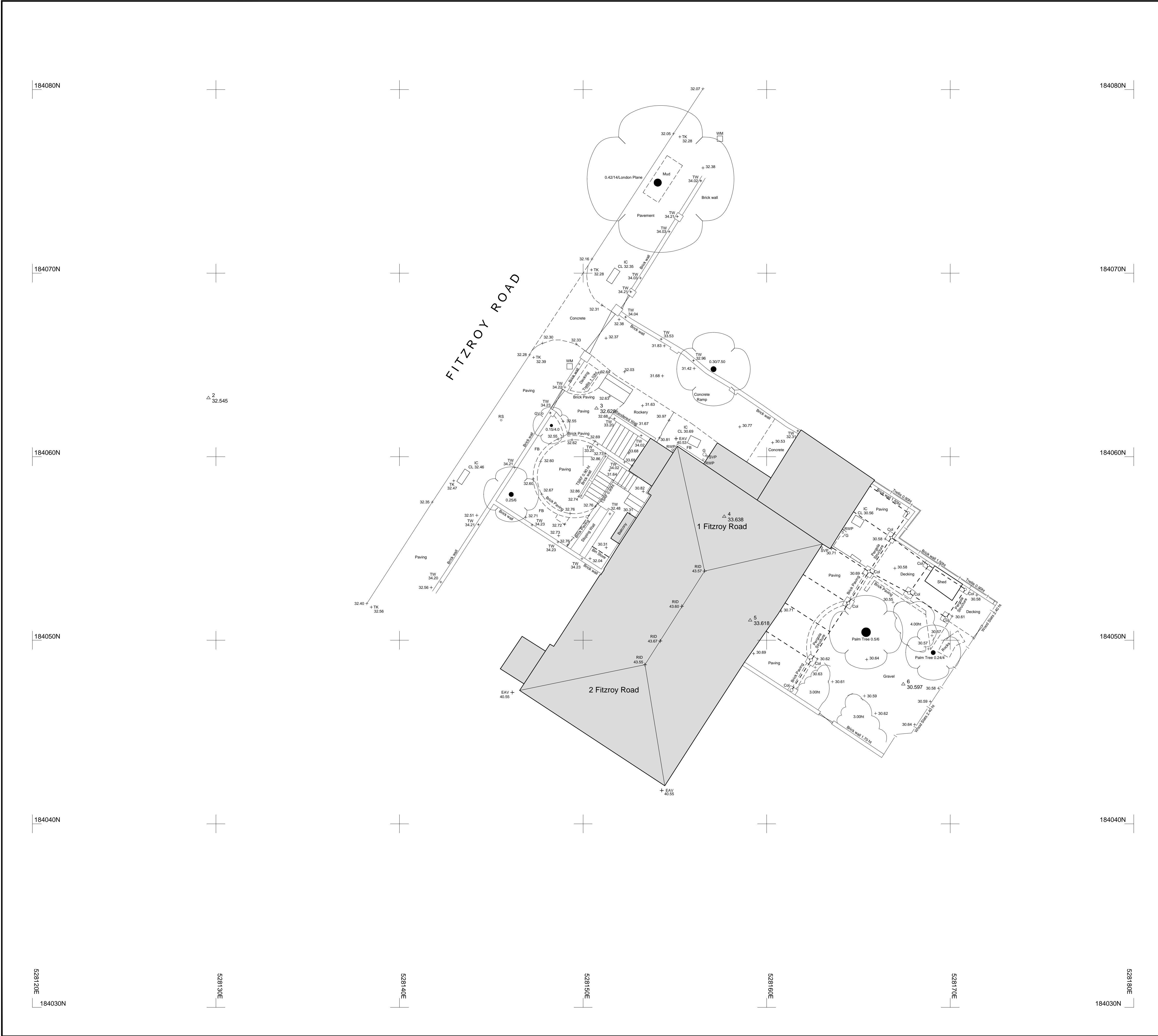
## Appendices

Appendix 1 – Measured survey drawings









Grid

N

W E

S

**LEGEND**

**BANKING** Top Bottom

**BUSHES & HEDGES**

**MARSH**

**TREES** 3T / 0.2 / 6  
No of Trunks, Height of Tree

**NOTE:-**  
SPREADS AND HEIGHTS ARE INDICATIVE ONLY

**GATES** Single Double

**RETAINING WALL** RTW

**SLOPING MASONRY**

**STILE**

**WALL** Width down to scale 0.23m

**BUILDING**

**OPEN SIDED BUILDING**

**GLASS ROOFED**

**CONTOURS** 25.50

**ABBREVIATIONS (WHERE APPLICABLE)**

AIR VALVE	AV	LETTER BOX	LB
BED LEVEL	BL	MANHOLE	MH
BELISHA BEACON	BB	MARKER	MR
BOLLARD	B	NOTICE BOARD	NB
BRITISH TELECOM BOX	BTB	NAME PLATE	NP
BRITISH TELECOM MANHOLE	BTMH	OVERHEAD WIRES	OHW
BRICKWORK	BKWK	PARKING METER	PM
BUS STOP	BS	RIDGE LEVEL	RID
CABLE TV	CATV	ROAD SIGN	RS
COVER LEVEL	CL	RODDING EYE	RE
CABLE MARKER	CM	RETAINING WALL	RTW
CONCRETE POST	CP	SLUICE VALVE	SV
DOWN PIPE	DP	STOP COCK	SC
EAVES LEVEL	EAV	SOFFIT LEVEL	SOF
ELECTRICITY CABLE PIT	ELOP	STRUCTURAL SLAB LEVEL	SSL
ELECTRICITY CONTROL BOX	ECB	TREE STUMP	ST
ELECTRICITY POLE	EP	TELEGRAPH POLE	TP
EARTH ROD	ER	TELEPHONE CALL BOX	TGB
FIRE HYDRANT	FH	TOP OF KERB	TK
FLOWER BED	FB	TURNSTILE	TS
FOOTPATH	FP	TRAFFIC LIGHT	TL
FLOOR LEVEL	FL	TOP OF WALL	TW
FLAG STAFF	FS	UNDERGROUND	UG
GAS VALVE	GV	UNABLE TO LIFT	UTL
GULLY	G	UNABLE TO SURVEY	UTS
GULLY OUTLET	GO	VENT PIPE	VP
GATE STOP	GS	WATER METER	WM
INSPECTION COVER	IC	WATER LEVEL	WL
INVERT LEVEL	IL	WASH OUT	WO
LAMP POST	LP	WASTE PIPE	WP
		WATER VALVE	WV

**BUILDING**

ACCESS HATCH	AH	WINDOW CILL LEVEL	WCL
ARCH HEAD HEIGHT	AHH	WINDOW HEAD LEVEL	WHL
ARCH HEAD LEVEL	AHL	SKYLIGHT	SL
ARCH SPRINGER HEIGHT	ASH	SOIL AND VENT PIPE	SVP
ARCH SPRINGER LEVEL	ASL	THRESHOLD LEVEL	THL
BEAM	BE	WASH BASIN	WB
BEAM HEIGHT	BH	WATER TANK	WT
BEAM HEAD LEVEL	BHL		
BEAM SOFFIT LEVEL	BSL		
COLUMN	Col		
CILL TO HEAD	C-H		
CEILING LEVEL	CL		
DOOR HEAD	DH		
DOOR HEAD LEVEL	DHL		
FIRE ALARM	FA		
FLOOR TO CILL	F-C		
FALSE CEILING	FC		
FLOOR TO CEILING HEIGHT	[F2CL]		
FINISHED FLOOR LEVEL	FFL		
HOSE REEL	HR		
ROOF LEVEL	RL		
RADIATOR	Rad		
RAIN WATER PIPE	RWP		

**BUILDING**

WINDOW CILL LEVEL	WCL
WINDOW HEAD LEVEL	WHL
SKYLIGHT	SL
SOIL AND VENT PIPE	SVP
THRESHOLD LEVEL	THL
WASH BASIN	WB
WATER TANK	WT

**FENCES**

BARBED WIRE FENCE	BWF
CORRUGATED IRON FENCE	CIF
CLOSE BOARD FENCE	CBF
CHAIN LINK FENCE	CLF
CHESTNUT PALING FENCE	CPF
FENCE POST	FPO
INTERWOVEN FENCE	IWF
IRON RAILING FENCE	IRF
LARCH LAP FENCE	LLF
POST AND CHAIN FENCE	PCF
POST AND RAIL FENCE	PRF
POST AND WIRE	PWF
STEEL PALISADE SECURITY FENCE	SPOF
TUBULAR STEEL RAIL	TSRF

REV. NOTES

DWN DATE

**ISO 9001**  
REGISTERED FIRM  
Certificate Number: GB 6562

**THE SURVEY ASSOCIATION**  
A MEMBER OF THE

**ISO 14001**  
REGISTERED FIRM  
Certificate Number: GB 11414

Notes:

Grid and levels relate to OS GPS Active Network.

**Maltby Land Surveys Ltd**

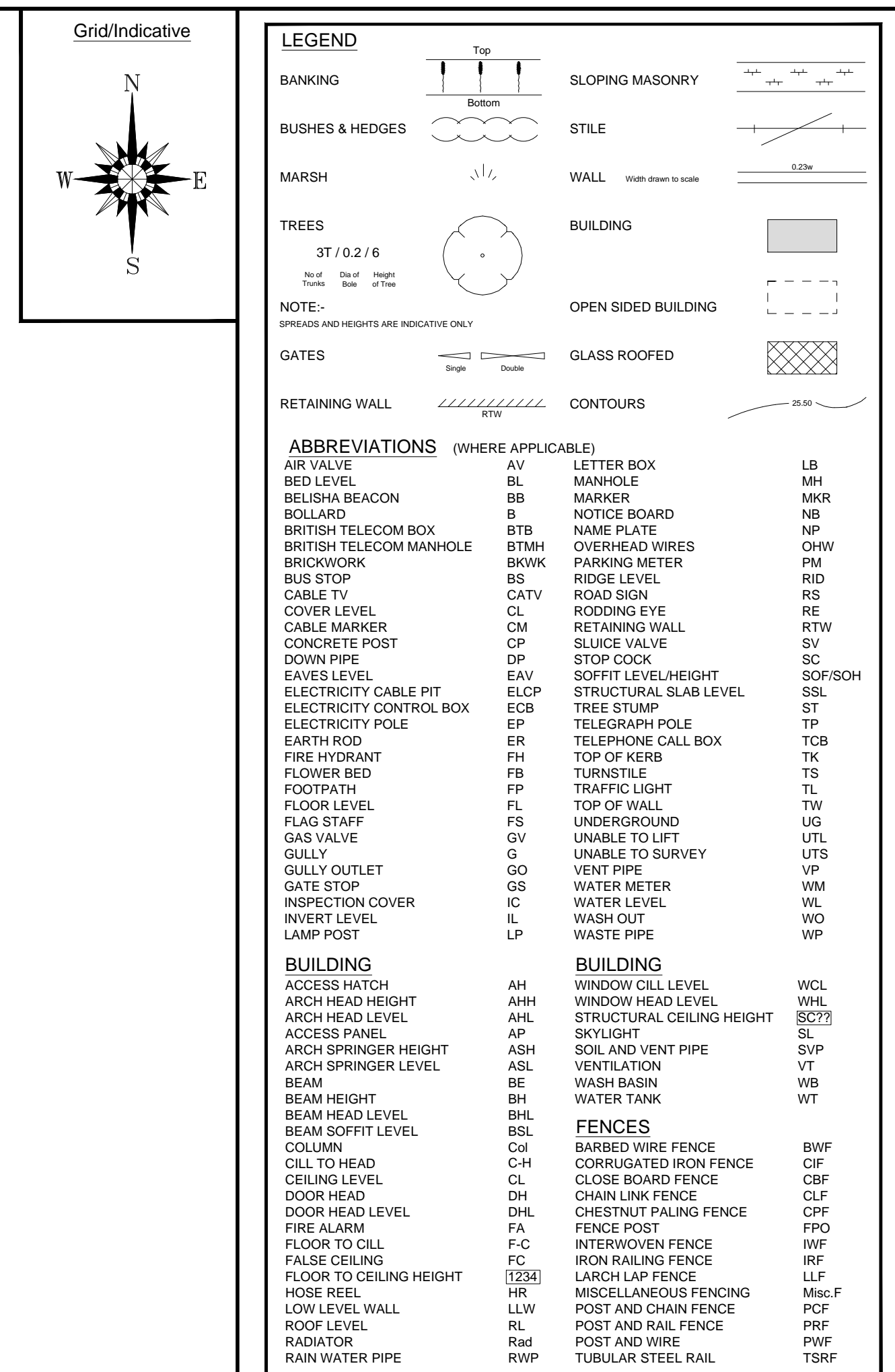
2 QUEENS ROAD  
HAYWARDS HEATH  
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E-Mail: mls@maltbysurveys.com  
WebSite: http://www.maltbysurveys.com

SURVEYED	NBJ	Ben Adams Architects
DRAWN	NBJ	
CHECKED	SJ	
SCALE		
1/100 (A1 Sheet)		

1 Fitzroy Road, London, NW1 8TU

TOPOGRAPHICAL SURVEY

Job No	Rev	Drawing Number
15/206		15/206/100
Date :	July 2015	



REV.	NOTES	DWN	DATE
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Notes:


Grid and levels relate to OS GPS Active Network.

# Maltby Land Surveys Ltd



2 QUEENS ROAD  
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SURVEYED	NBJ	Ben Adams Architects
DRAWN	YC	
CHECKED	SJM	
		SCALE
		1/50 (A1 Sheet)

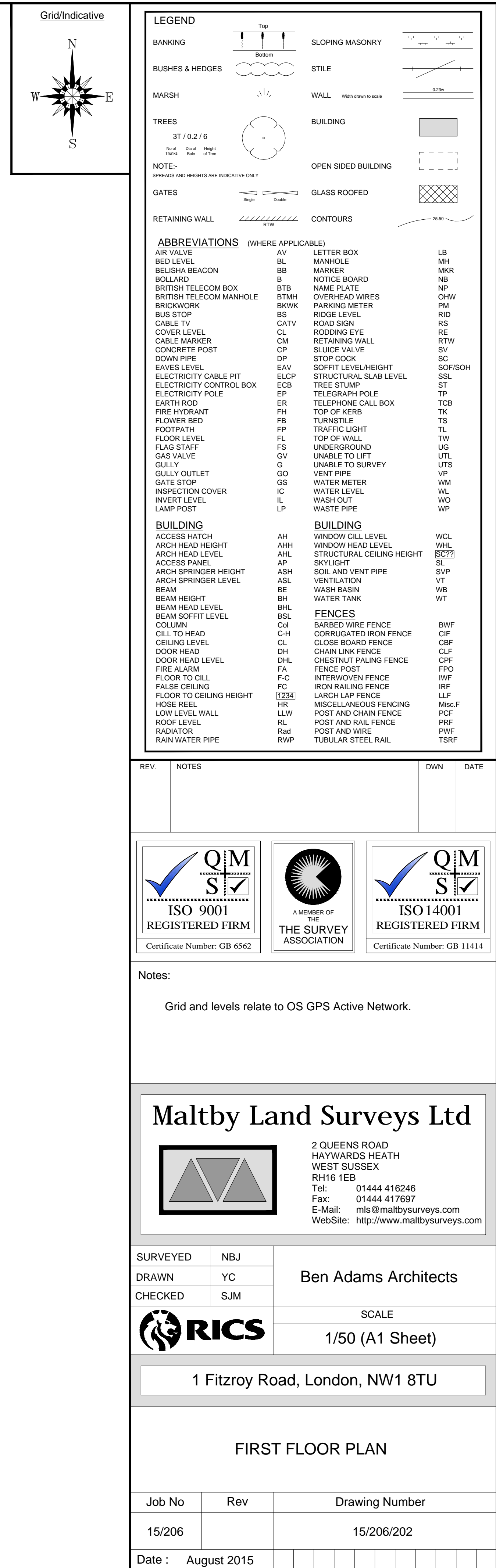
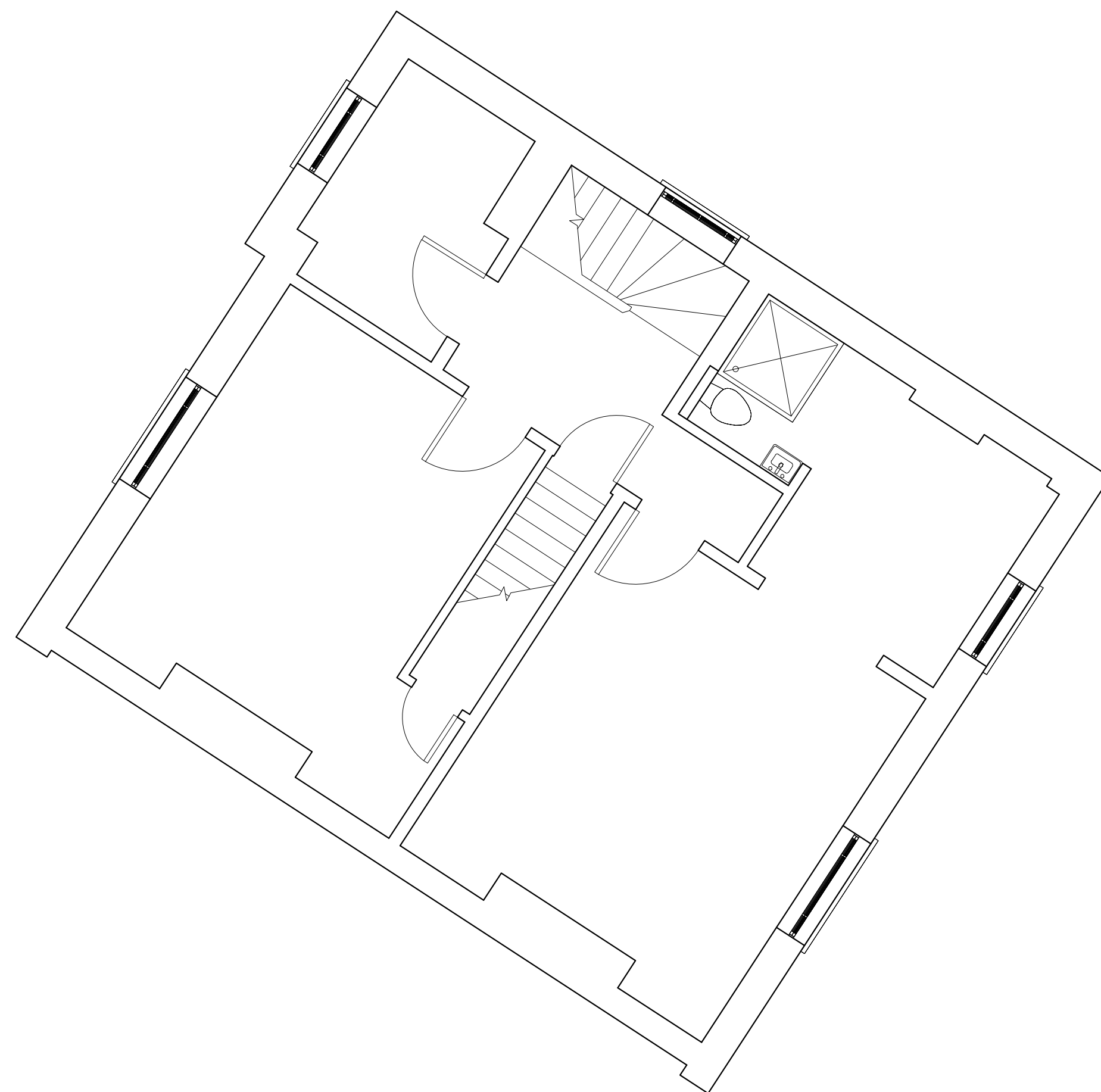
1 Fitzroy Road, London, NW1 8TU

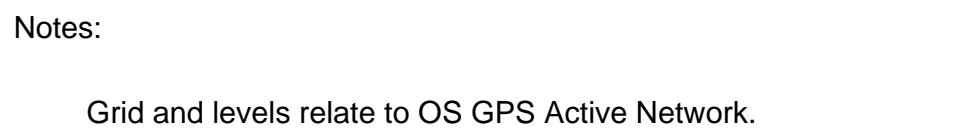
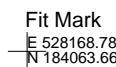
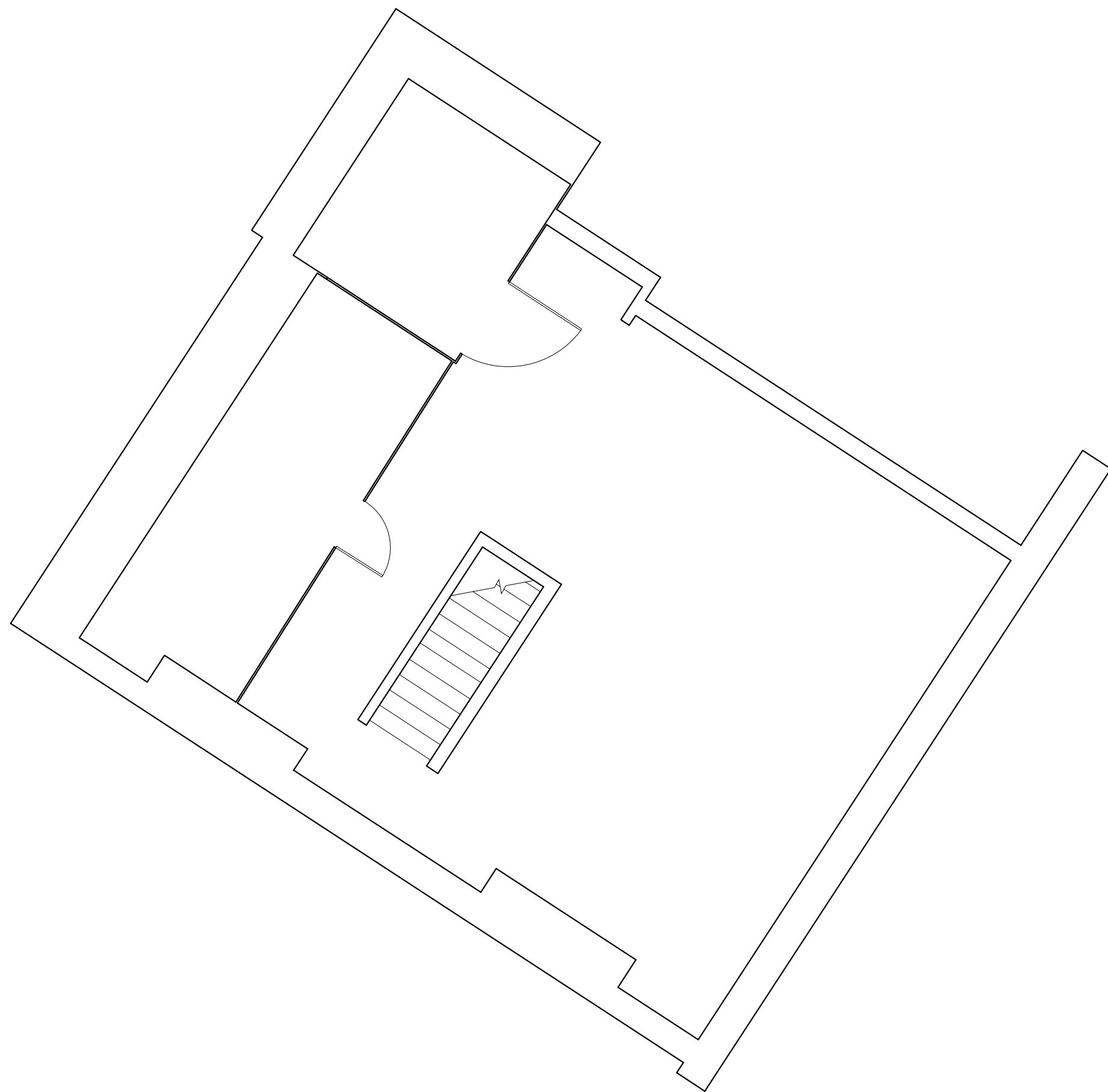
LOWER GROUND FLOOR PLAN

<b>Job No</b>	<b>Rev</b>	<b>Drawing Number</b>							
15/206		15/206/200							
<b>Date :</b>	<b>August 2015</b>								









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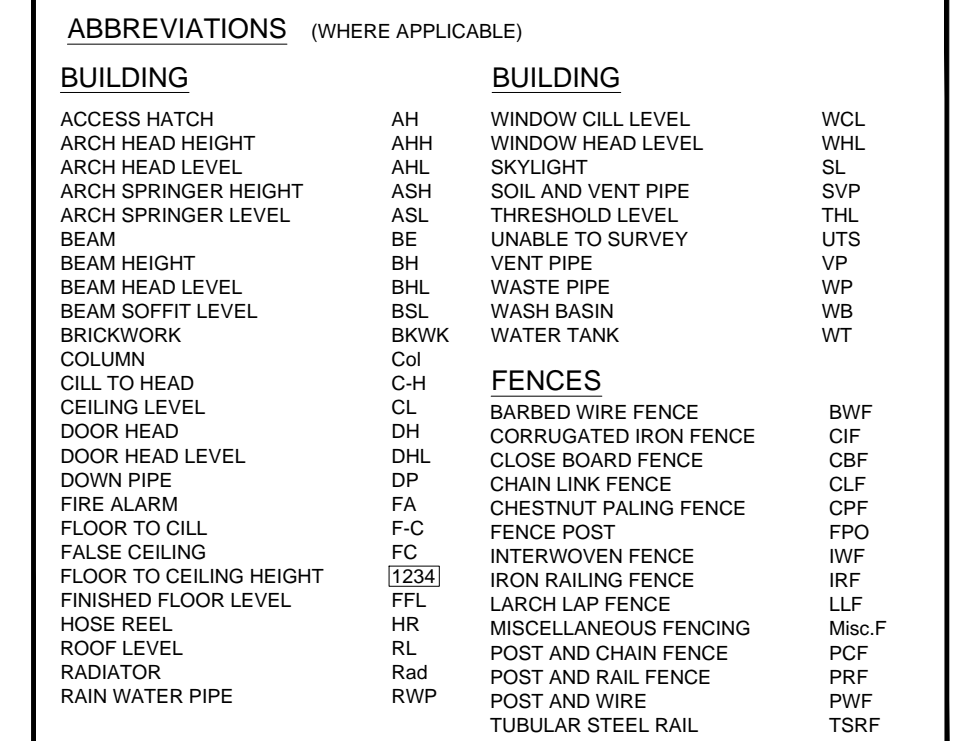
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DRAWN	YC	
CHECKED	SJM	
		SCALE
		1/50 (A1 Sheet)

1 Fitzroy Road, London, NW1 8TU

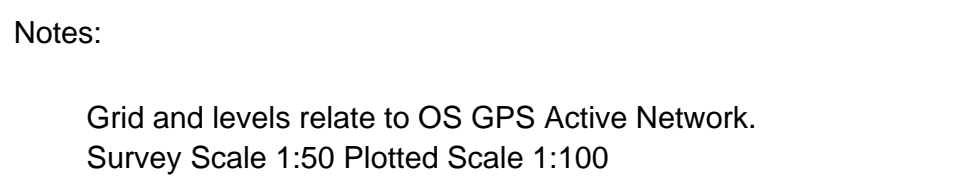
## SECOND FLOOR PLAN


[illegible]





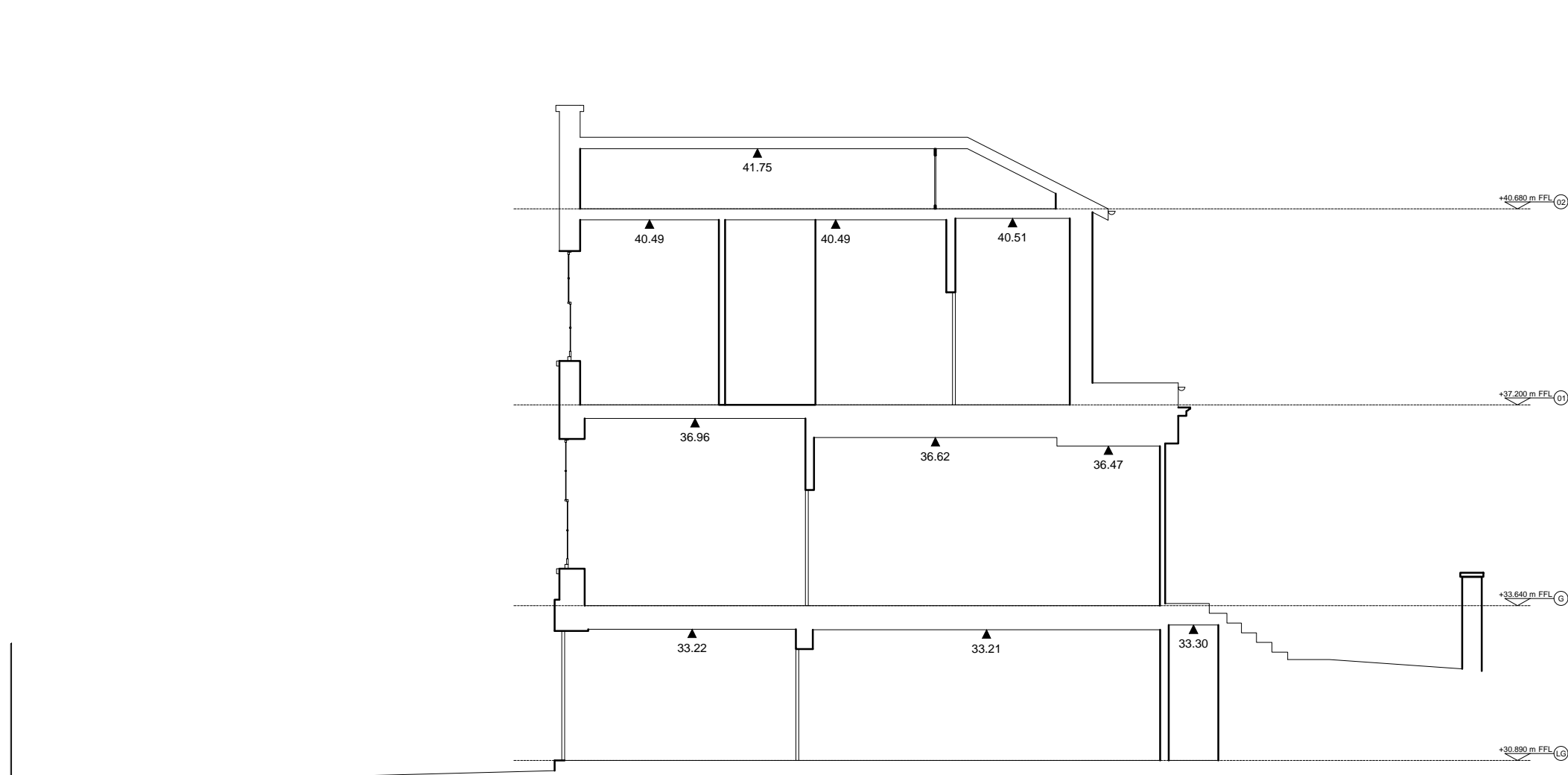
REV.	NOTES	DWN	DATE



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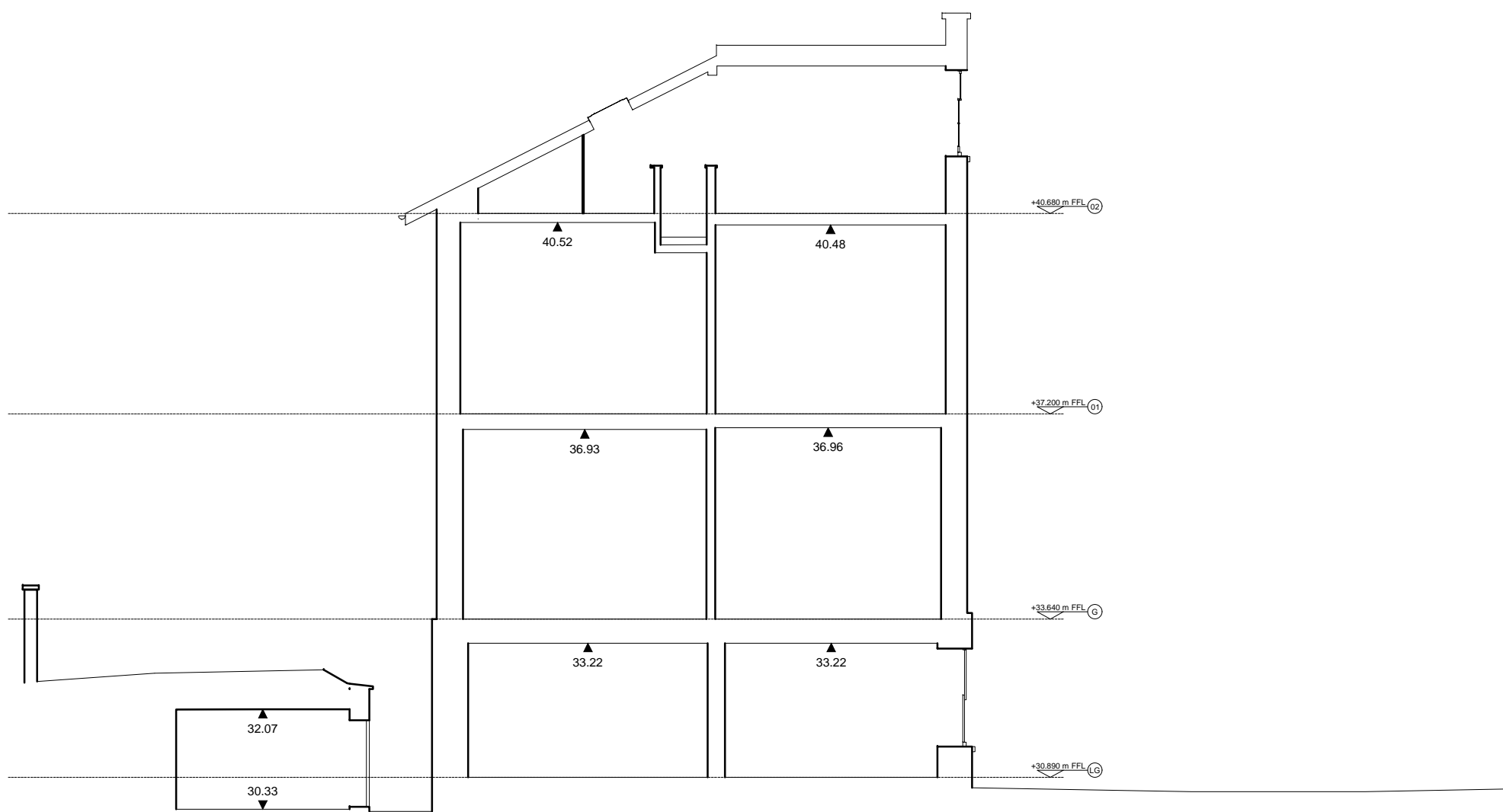
### ELEVATIONS 1,2 AND 3

Job No	Rev	Drawing Number
15/206		15/206/300
Date :	August 2015	



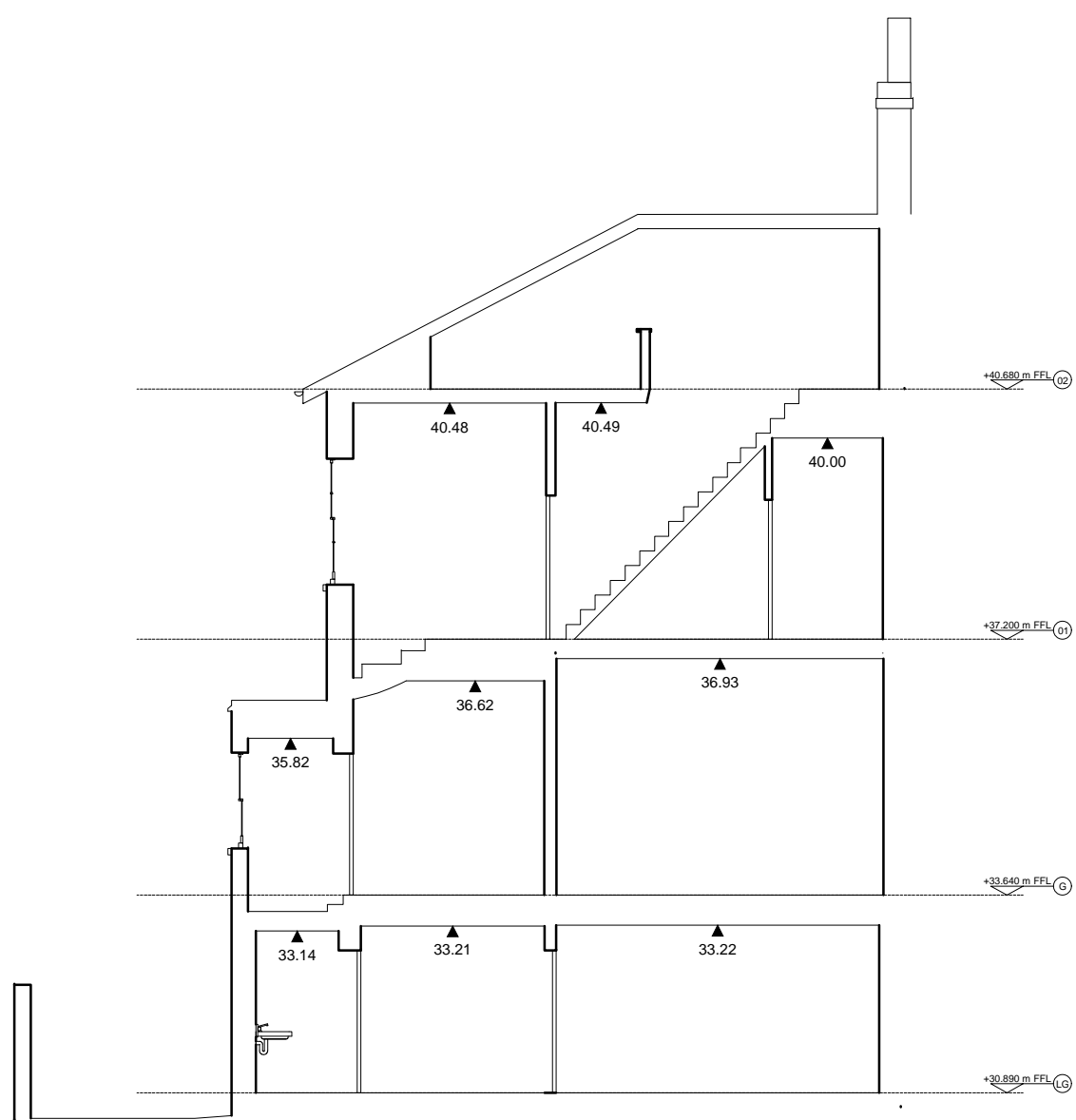
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Section A-A



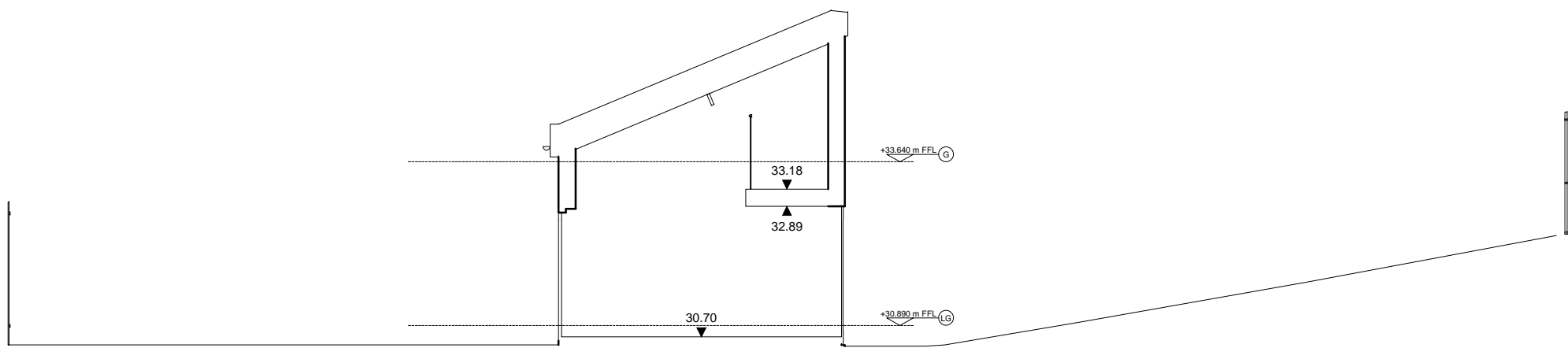
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Section B-B



Datum 29.00m

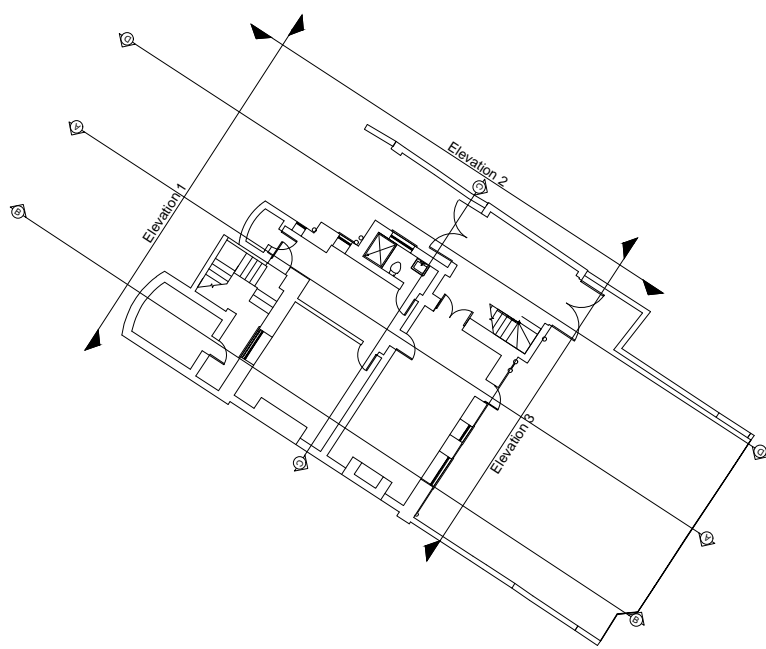
Section C-C



Datum 29.00m

Section D-D

KEY PLAN (Not to Scale)



ABBREVIATIONS (WHERE APPLICABLE)

BUILDING		
ACCESS HATCH	AH	WINDOW CILL LEVEL
ARCH HEAD HEIGHT	AHH	WINDOW HEAD LEVEL
ARCH HEAD LEVEL	AHL	SKYLIGHT
ARCH SPRINGER HEIGHT	ASH	SOIL AND VENT PIPE
ARCH SPRINGER LEVEL	ASL	THRESHOLD LEVEL
BEAM	BE	UNABLE TO SURVEY
BEAM HEIGHT	BH	VENT PIPE
BEAM HEAD LEVEL	BHL	WASTE PIPE
BEAM SOFFIT LEVEL	BSL	WASH BASIN
BRICKWORK	BKWK	WATER TANK
COLUMN	Col	
CILL TO HEAD	C-H	
CEILING LEVEL	CL	BARBED WIRE FENCE
DOOR HEAD	DH	CORRUGATED IRON FENCE
DOOR HEAD LEVEL	DHL	CLOSE BOARD FENCE
DOWN PIPE	DP	CHAIN LINK FENCE
FIRE ALARM	FA	CHESTNUT PALING FENCE
FLOOR TO CILL	F-C	FENCE POST
FLOOR TO CEILING	FC	INTERWOVEN FENCE
FLOOR TO CEILING HEIGHT	[2234]	IRON RAILING FENCE
FINISHED FLOOR LEVEL	FFL	LARCH LAP FENCE
HOSE REEL	HR	MISCELLANEOUS FENCING
ROOF LEVEL	RL	POST AND CHAIN FENCE
RADIATOR	Rad	POST AND RAIL FENCE
RAIN WATER PIPE	RWP	POST AND WIRE
		TUBULAR STEEL RAIL
		WCL
		WHL
		SL
		SVP
		THL
		UTS
		VP
		WP
		WB
		WT
		BWF
		CIF
		CBF
		CLF
		CPF
		PFO
		IWF
		IRF
		LLF
		Misc.F
		PCF
		PRF
		PWF
		TSRF

REV.	NOTES	DWN	DATE

Certificate Number: GB 6562

A MEMBER OF THE SURVEY ASSOCIATION

Certificate Number: GB 11414

Notes:

Grid and levels relate to OS GPS Active Network.  
Survey Scale 1:50 Plotted Scale 1:100

### Maltby Land Surveys Ltd

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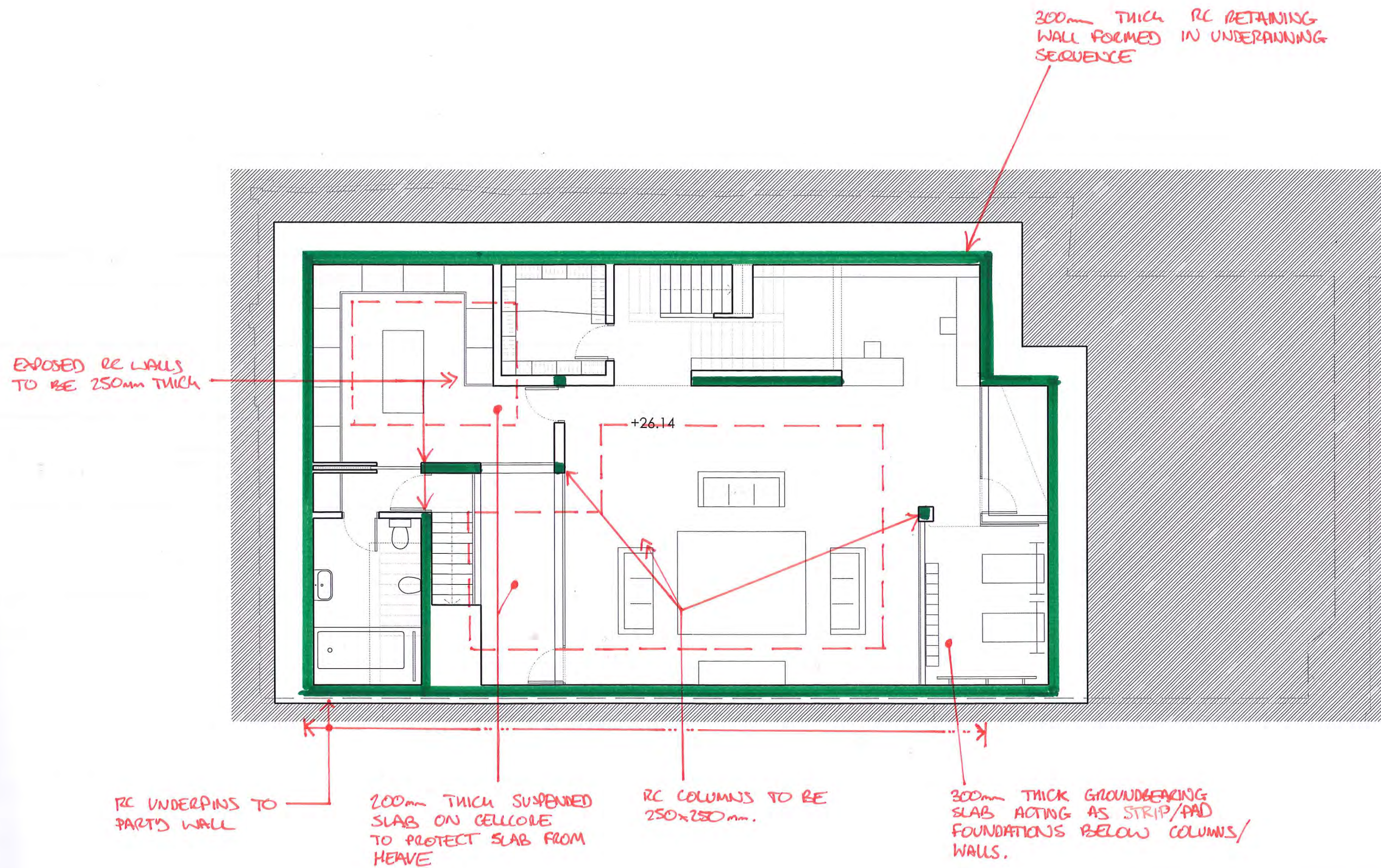
SURVEYED	NBJ	Ben Adams Architects
DRAWN	YC	
CHECKED	SJM	
SCALE		1/100 (A1 Sheet)

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SECTIONS A-A,B-B,C-C AND D-D		
Job No	Rev	Drawing Number
15/206		15/206/400
Date :	August 2015	

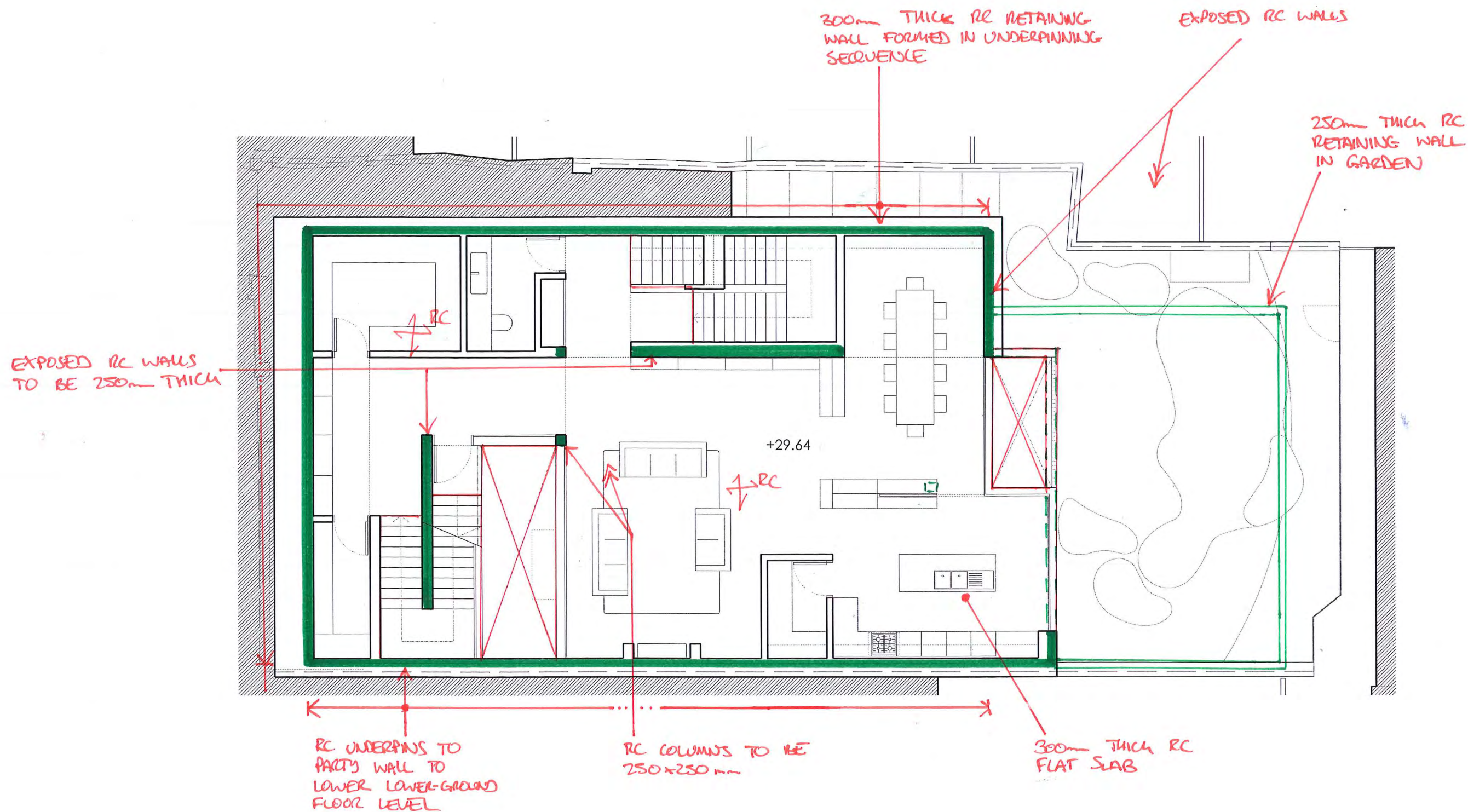
Appendix 2 – Proposed structure GAs and sections





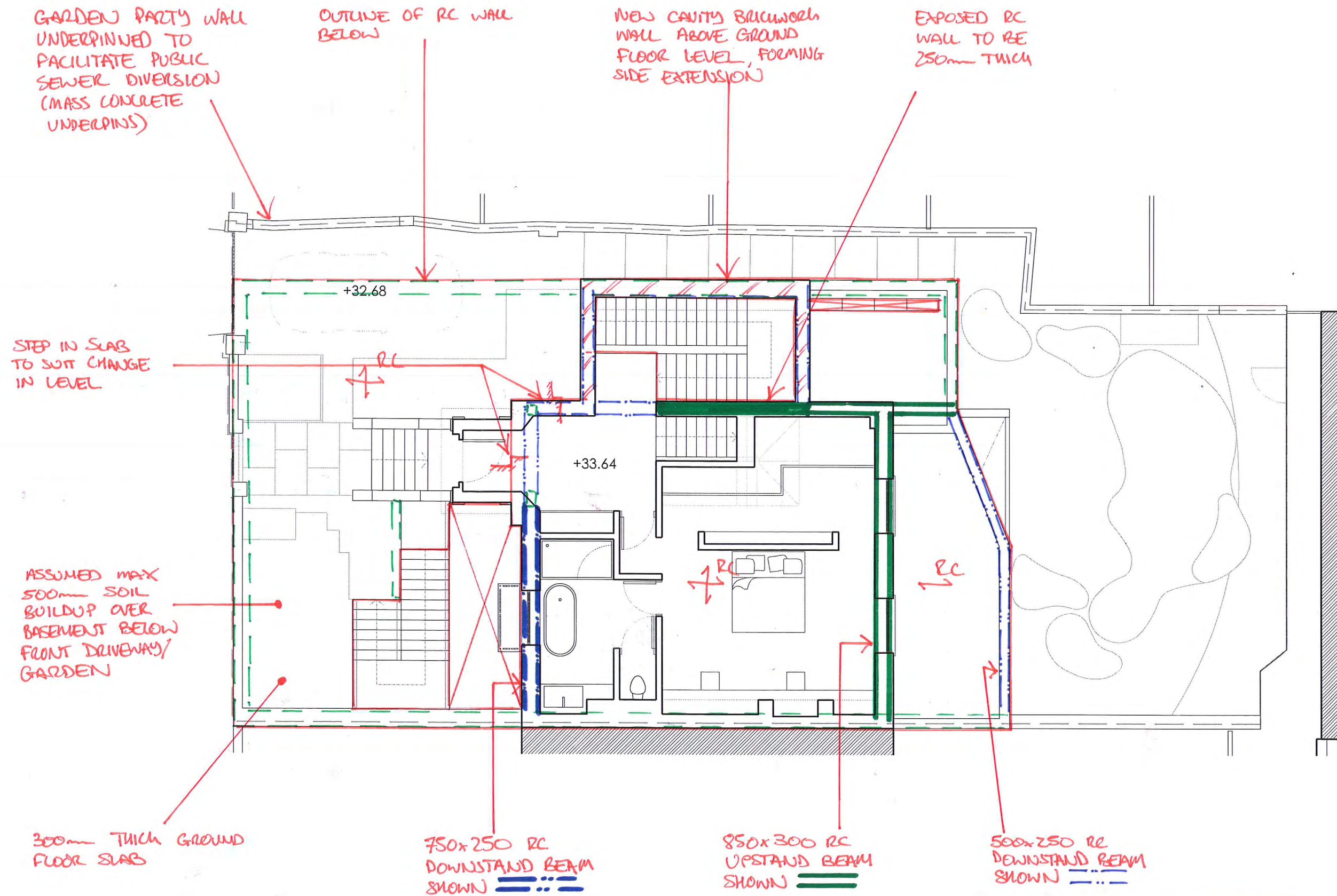
EW MARKUP 10.06.2016  
 2150568 WGr  
 BASEMENT PLAN 1:100 @ A3





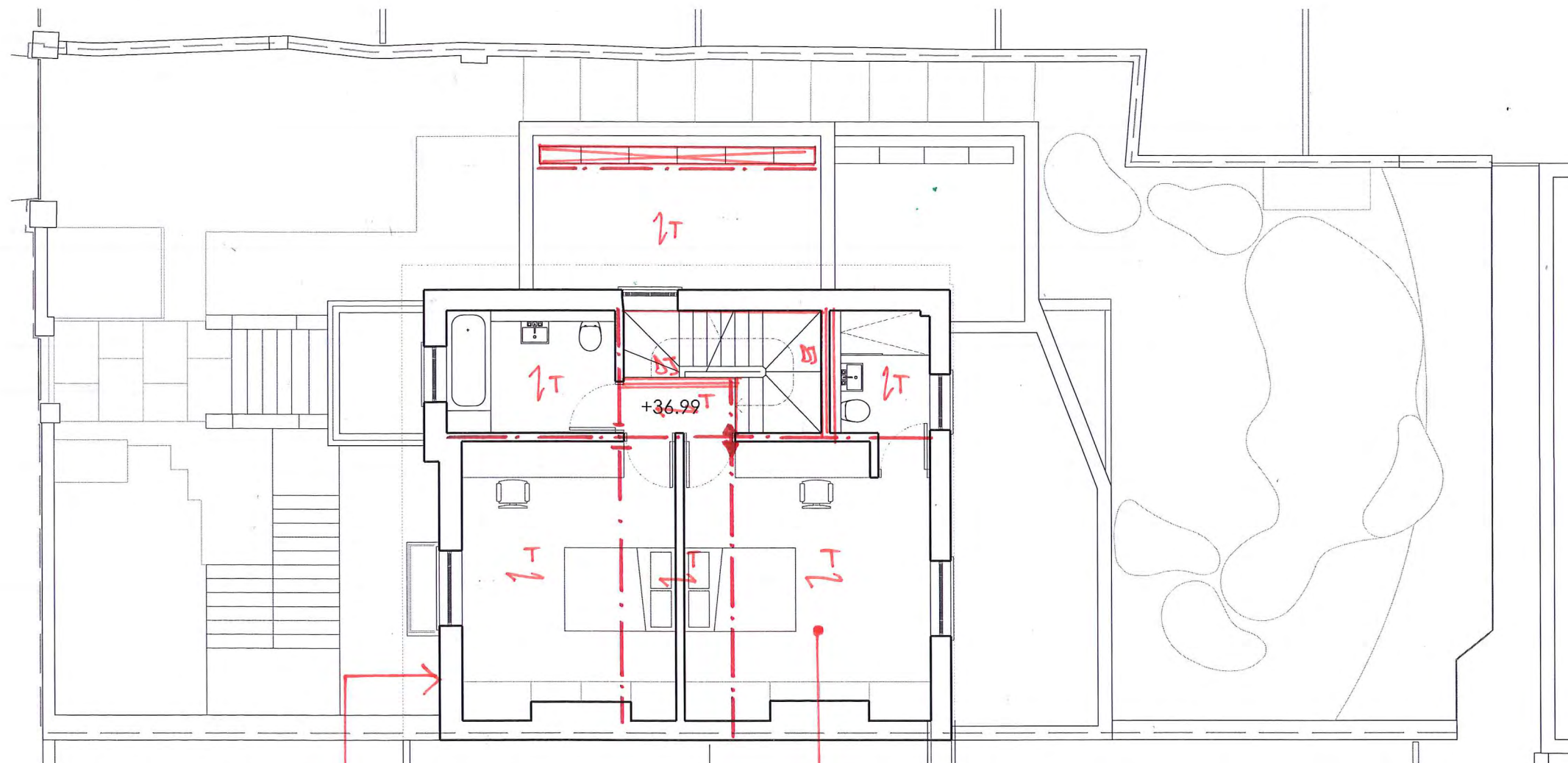
EW MARKUP 10.06.2016  
 2150568 WGr  
 LOWER GROUND PLAN 1:100@A3





EW MARKUP 10.06.2016  
 2150568 WGr  
 GROUND FLOOR PLAN 1:100 @ A3





RETAINED MASONRY  
WALL ASSUMED TO  
BE 300mm THICK

NEW FLOOR STRUCTURE  
FORMED OF STEEL BEAMS  
AND TIMBER JOISTS.  
300mm STRUCTURAL  
DEPTH

EW MARWUP 10.06.2016  
2150568 WGr  
FIRST FLOOR PLAN 1:100 @ A3