4.2 Based on its stem diameter and using the British Standard calculation method a Root Protection Area (RPA) of 222 sq.mtrs. would be the minimum requirement. Given the current built form and associated site constraints it is reasonable to both offset and re-configure this area to capitalise on the undeveloped land to the north and west of the tree – See appendix 1. This places the nearest point of the root protection area at 3.35 metres from the centre of the tree; at this distance any root severance associated with the construction works on the application site would be limited to non-structural roots i.e. *would not affect the stability of the tree*. In fact, the nearest that excavation work is likely to occur will be 5.0 metres from the centre of the tree.

4.3 A further consideration in regard to the proposed development is the common law right of abatement, whereby any landowner can legitimately undertake works to a neighbour's tree to prune back both overhanging branches and encroaching roots in order to abate a nuisance, providing they offer the arisings back to the tree owner. Whereas we are not suggesting that this type of drastic action would be necessary or indeed advisable in this context it remains a point of common law that potentially overrides the statutory tree protection in place, providing that any such work does not result in the decline, death or destruction of the tree.

5.0 Arboricultural Impact Assessment

5.1 Based on the proposed and approved site layout plans we have made the following assessments and conclusions:

5.1.1 Providing that no excavation works are undertaken within 3.35 metres of the base of tree T1 the impact upon the tree resulting from the development proposals will be negligible; the stability of the tree will not be compromised and the potential rooting area, although suffering a net loss, should remain sufficient to maintain the tree's health & vitality. (*The depth and type of foundation construction is largely irrelevant once intrusive excavation of any description of more than 350mm has taken place, since the majority of a tree's roots exist and function in the top 600mm of soil*).

5.1.2 Notwithstanding the above, any negative impact upon a tree as a result of unavoidable root severance can be adequately mitigated by careful treatment of such roots where they are greater than 25mm diameter – See section 6.0. (*The type of piled foundation proposed will effectively sever any obstructing roots as it progresses with only minor damage to roots; more conventional excavation/ground works have the capacity to shatter roots and thereby introduce soil/air borne pathogens*).

6.0 Recommendations

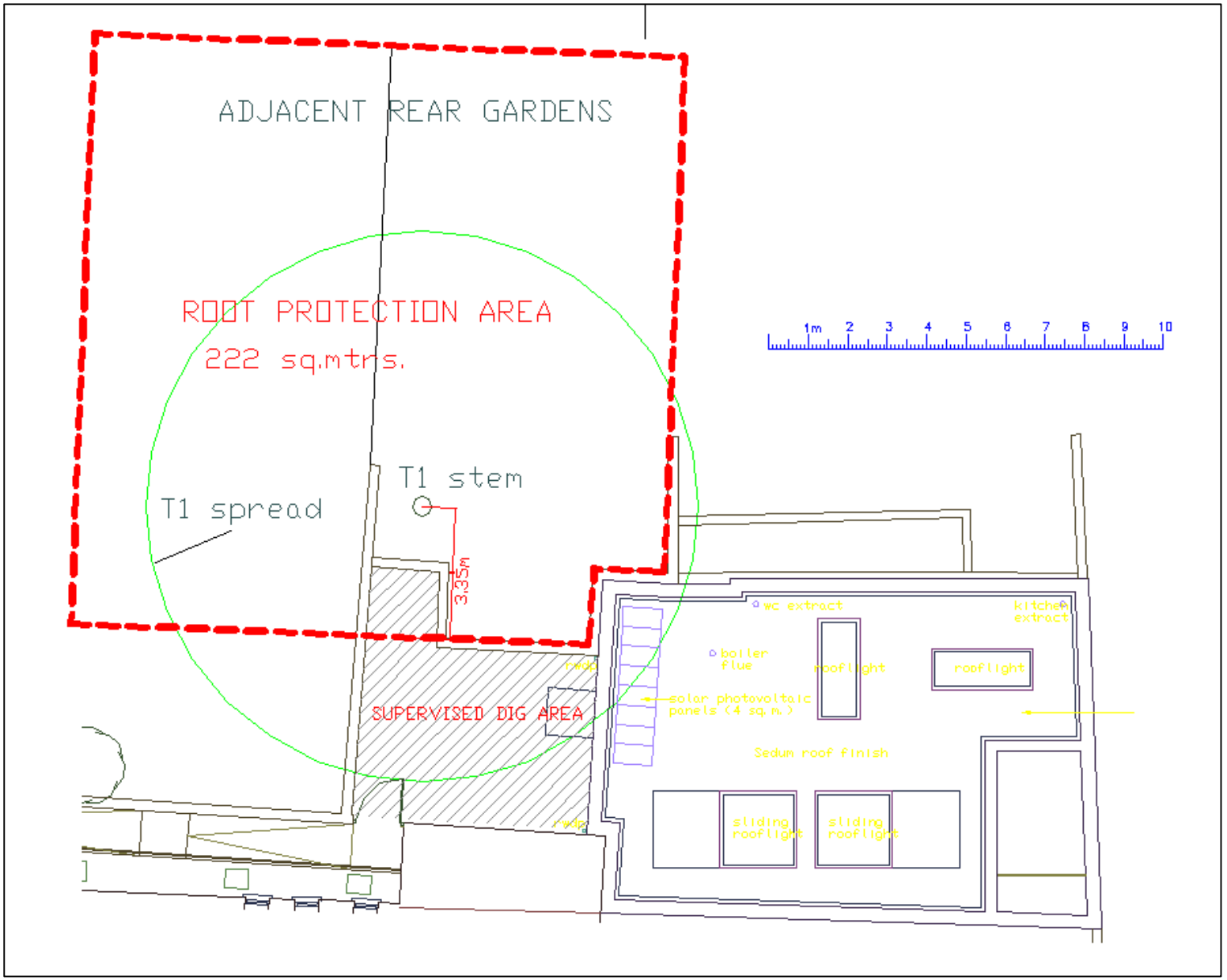
6.1 Although the type of foundation design that is proposed for the main structure would not facilitate a watching brief in respect of root treatment, any excavation works that take place at the west end of the site (see appendix 1 & Fig.3) should be undertaken under the direct supervision of the appointed arboriculturist, who can advise on the most appropriate methods of severing and/or protecting tree roots that may be encountered. Such advice cannot be given pre-emptively, but should be scheduled to coincide with commencement of the relevant ground works.

Fig.3 View of site, showing area in which arboricultural supervision will be required during any excavation or ground works i.e. within red line

7.0 Statutory Obligations

- Works to trees (including root pruning) which are covered by Tree Preservation Orders [TPOs] or are within a Conservation Area [CA] require permission or consent from your Local Planning Authority [LPA]. *Full planning consent will override the need for a separate application.*

APPENDIX 1 : Proposed site plan / Tree Protection – Garden House at 1, Ellerdale Road NW3 (*Do not Scale*)

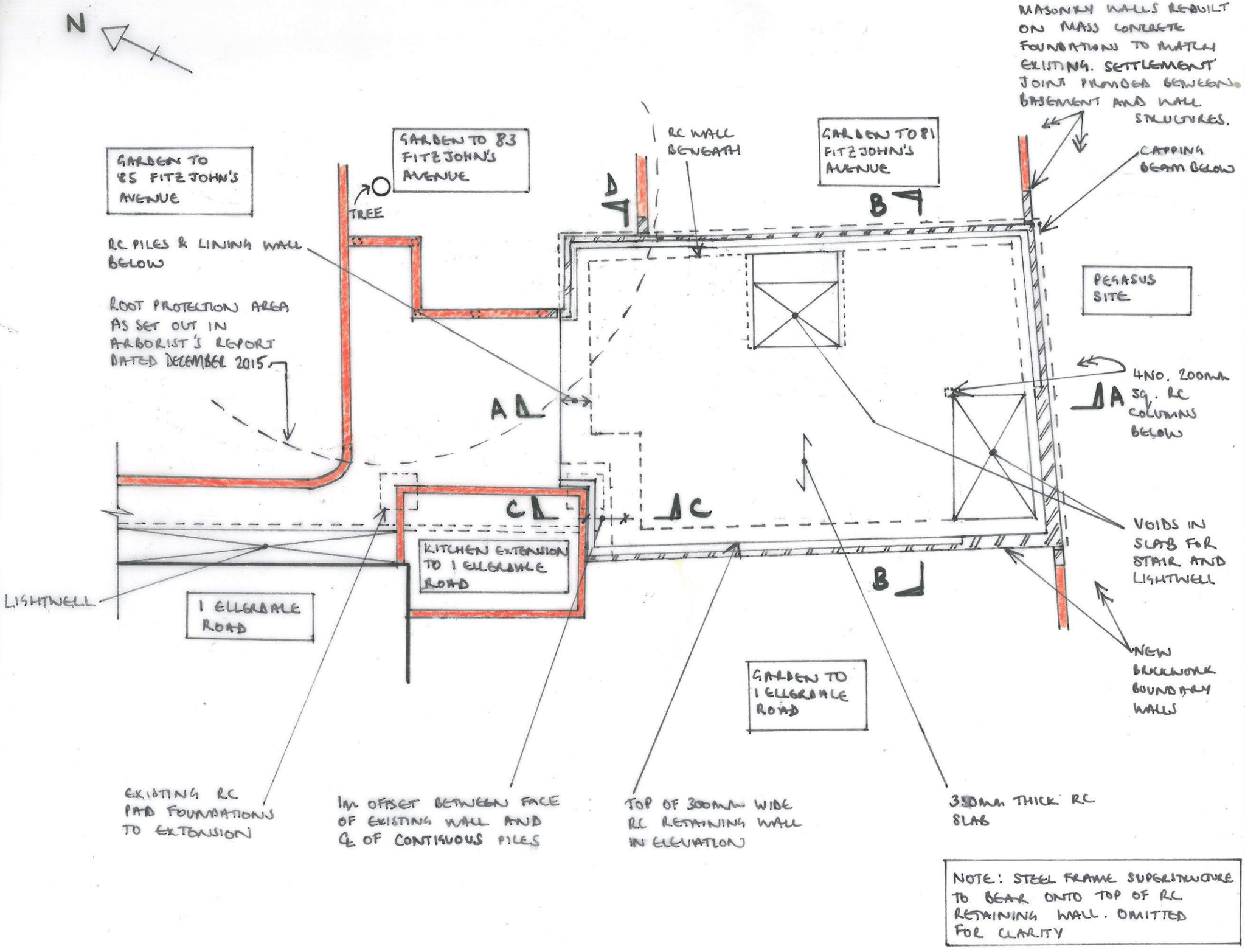


Appendix 2

Table 1 : Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			Dark Red
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A Trees of **high** quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	Light green
Category B Trees of **moderate** quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	Mid blue
Category C Trees of **low** quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of 150mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	Grey

Appendix I – proposed structure drawings



NOTE: STEEL FRAME SUPERSTRUCTURE TO BEAR ONTO TOP OF RC RETAINING WALL. OMITTED FOR CLARITY

notes

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-	25.11.15	ISSUED WITH REPORT	HB

job
GARDEN HOUSE ELLERDALE ROAD

title
PROPOSED GROUND FLOOR PLAN

drawn: HB
checked: SRe
date: NOV '15
scale (original - A3): 1:100

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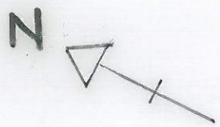

200mm THICK RC WALLS

INDICATIVE LAYOUT OF MINI PILE FOUNDATIONS TO GARDEN WALL TO No. 83 FITZJOHN'S AVENUE

FOUNDATIONS TO BOUNDARY WALLS ABOVE

450mm THICK RC GROUND BEARING SLAB

4No. 250mm Sq. RC COLUMNS

400mm ϕ CONTIGUOUS PILE RETAINING WALL WITH 250mm THICK RC LINING WALL AROUND PERIMETER OF BASEMENT.

SUMP FOR DRAINAGE TO M&E ENGINEER'S DETAILS - EXACT SIZE AND POSITION TBC

OUTLINE OF No. 1 ELLERDALE ROAD ABOVE

notes

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	26.11.15	ISSUED WITH REPORT	HB

job
GARDEN HOUSE ELLERDALE ROAD

title
PROPOSED BASEMENT PLAN

drawn	checked
HB	SBe
date	scale (original - A3)
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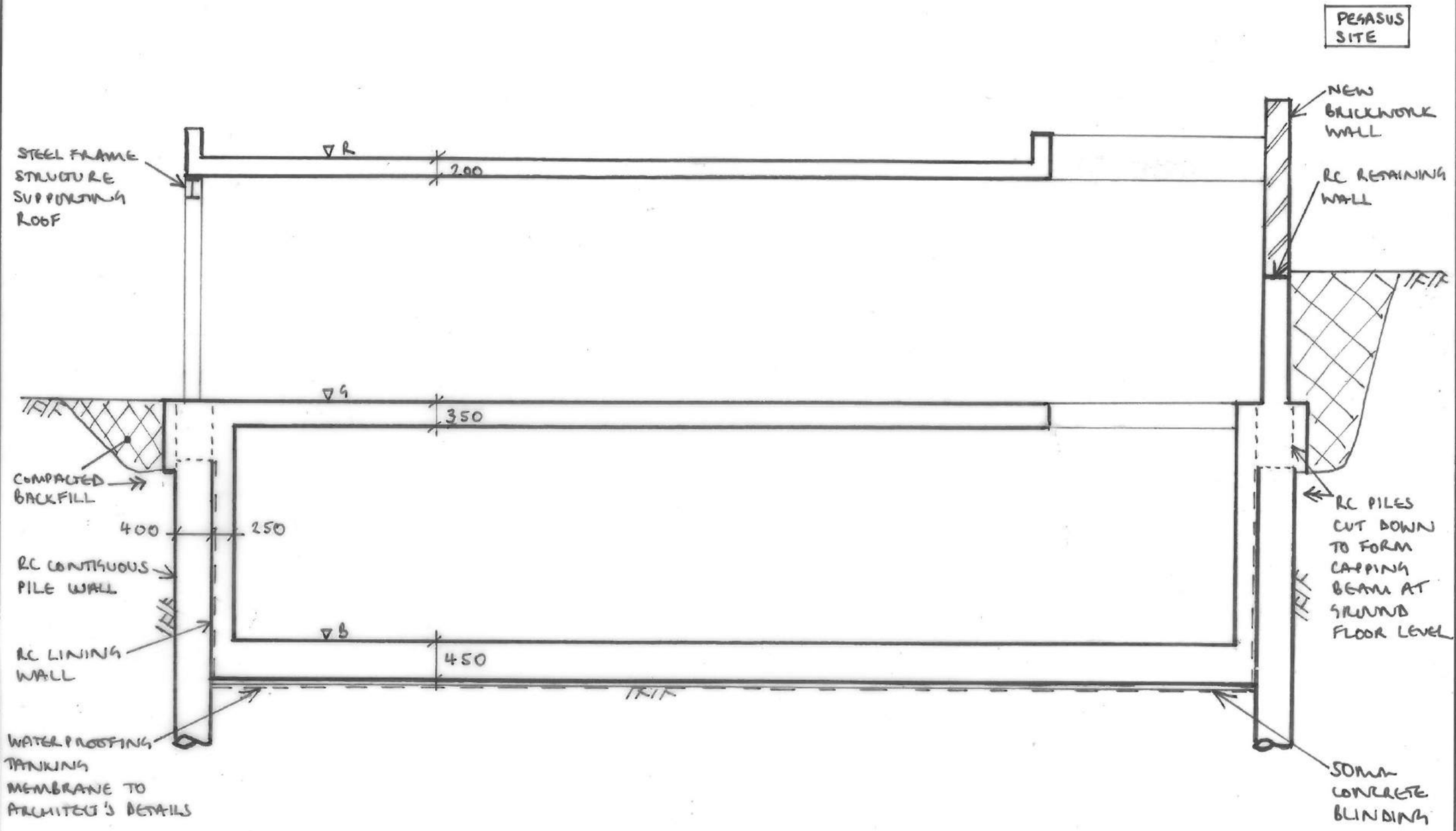

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	26.11.15	ISSUED WITH REPORT	HB

job
GARDEN HOUSE
ELLERDALE ROAD

title
SECTION A-A

drawn HB | checked SBe
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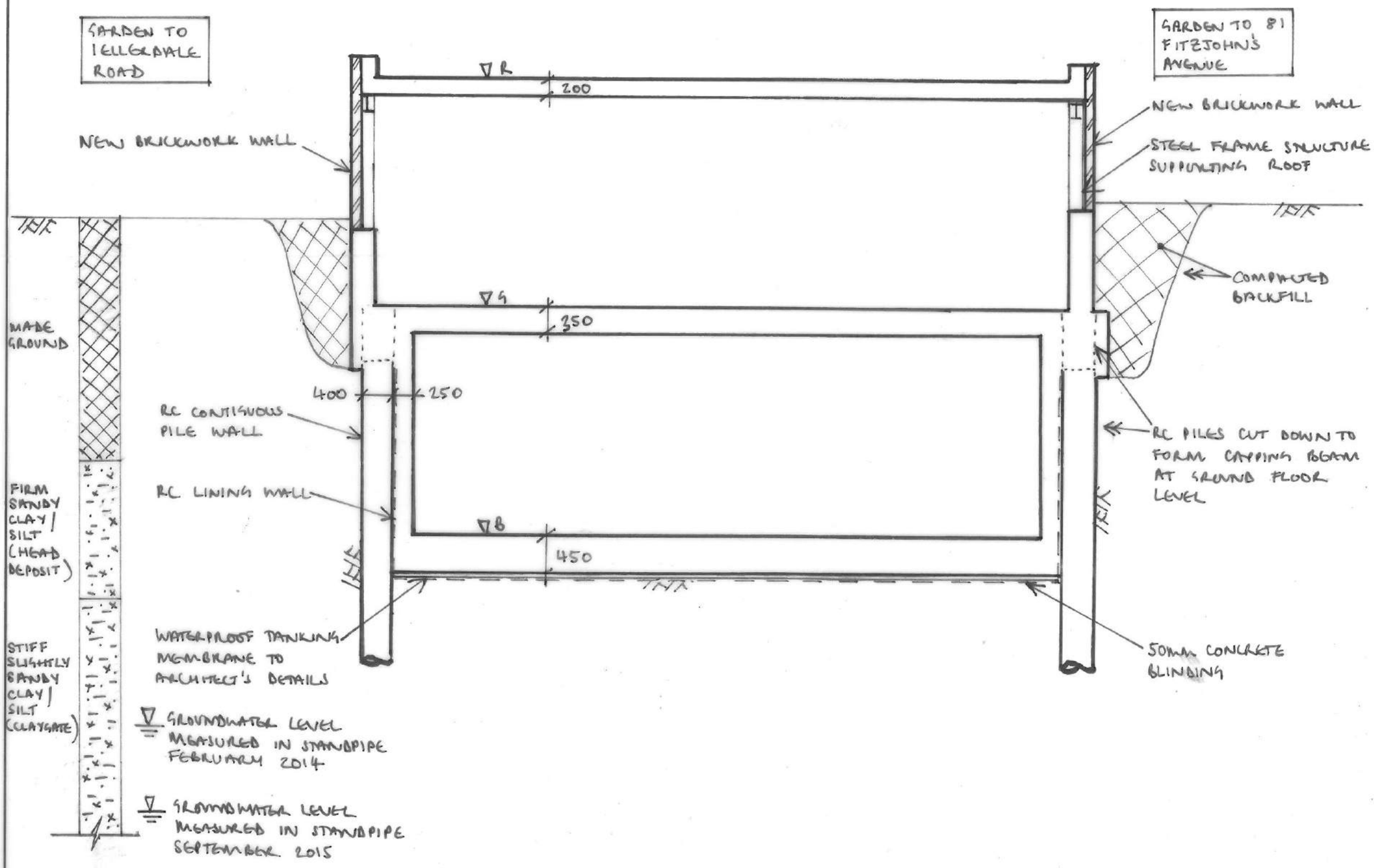

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	26.11.15	ISSUED WITH REPORT	HB

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GARDEN HOUSE
ELLERDALE ROAD

title
SECTION B-B

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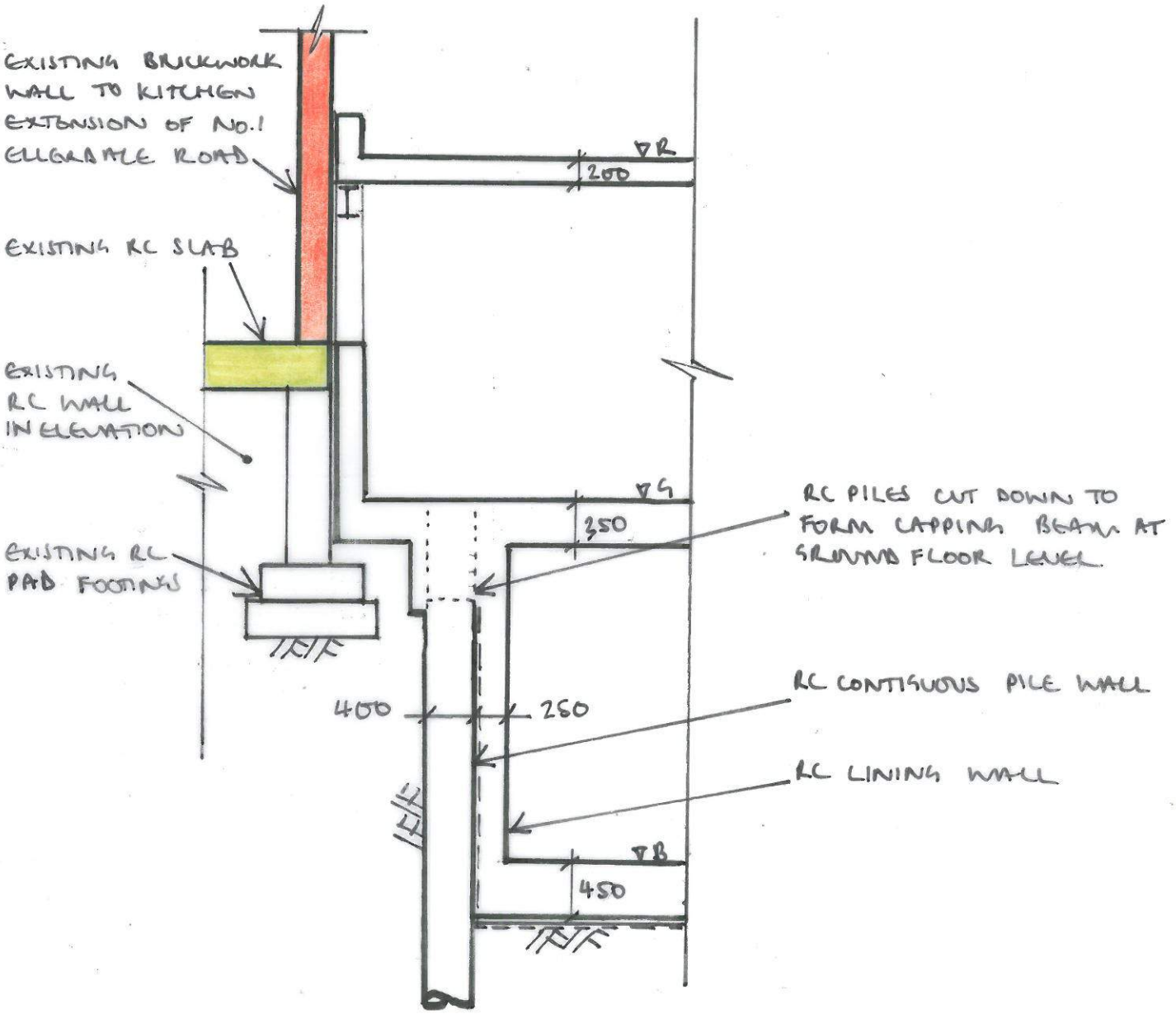
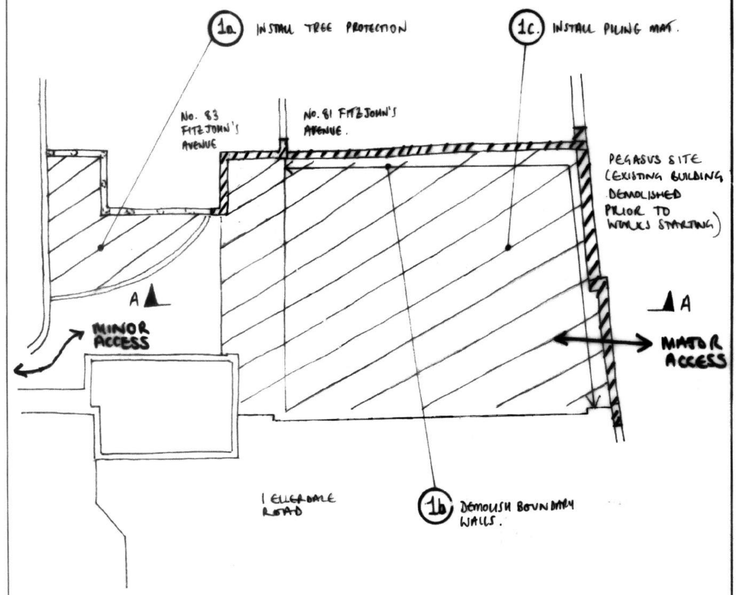


–	04.12.15	ISSUED WITH REPORT	FGG
	26.11.15	ISSUED WITH REPORT	HB

date: NOV '15	drawn: HB	checked: SBe	scale (original - A4): 1:50	Alan Baxter
job: GARDEN HOUSE ELLERDALE ROAD	dwg.: SECTION C-C	drg. no.: 1706/02/54	rev.	75 Cowcross Street London EC1M 6EL tel 020 7250 1555 email aba@alanbaxter.co.uk www.alanbaxter.co.uk

Appendix J – sequence of construction drawings

1. ENABLING WORKS



PLAN
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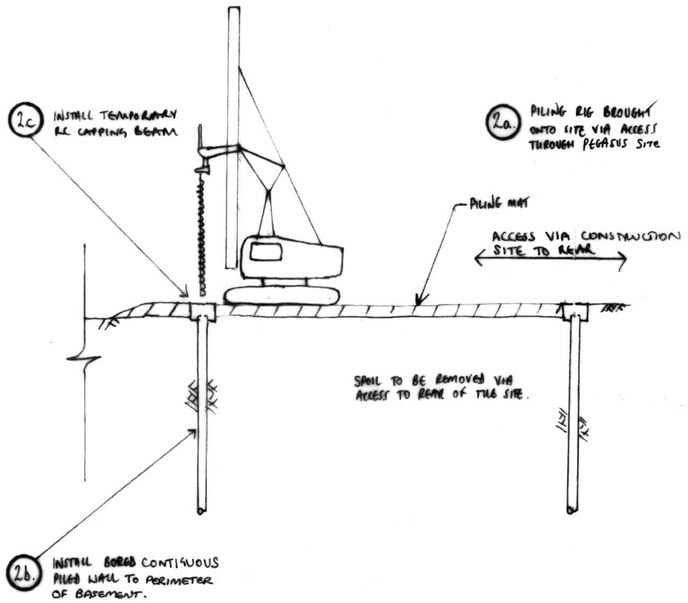
2. PILING



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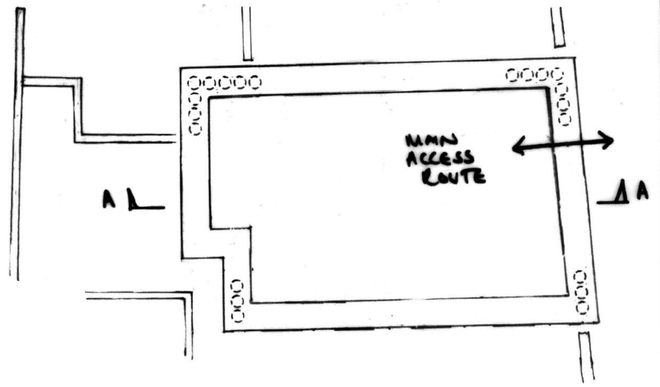

PLAN
(1:100)

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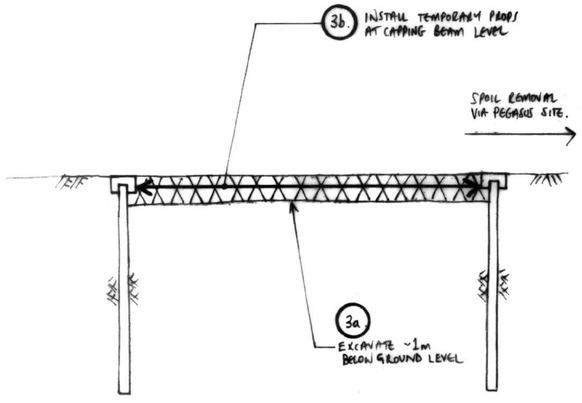
3. THE CONTRACTOR SHALL ENSURE THE STABILITY OF ALL THE BUILDINGS IS MAINTAINED AT ALL STAGES OF CONSTRUCTION. HE SHALL DESIGN, INSTALL AND MAINTAIN ALL NECESSARY TEMPORARY WORKS.

3. EXCAVATE & PROP



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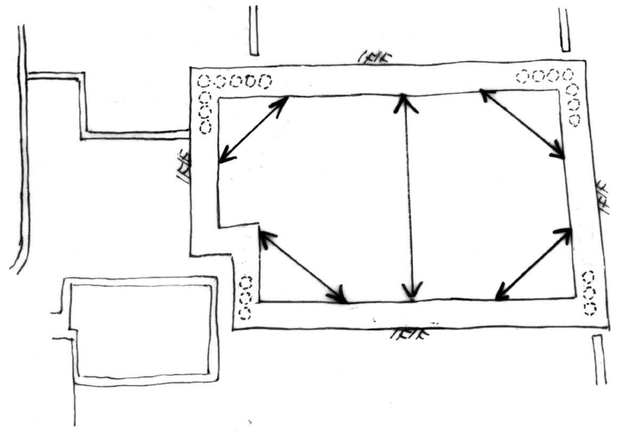
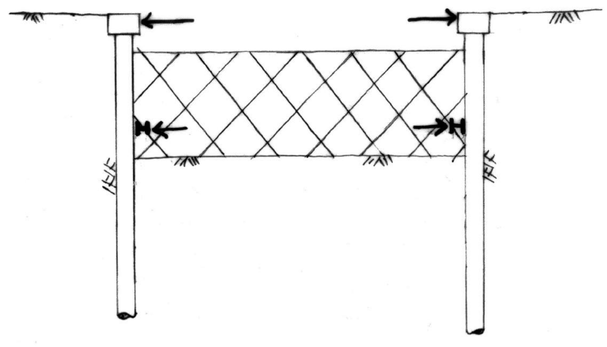


PLAN
(1:100)

4. FURTHER EXCAVATION & PROPPING



4a. EXCAVATE
4b. INSTALL WALING BEAM
4c. INSTALL TEMPORARY PROPS
4d. COMPLETE EXCAVATION TO FORMATION LEVEL.

SECTION A-A
(1:100)

A	9.12.15	ISSUED WITH REPORT	FGO
–	26.11.15	ISSUED WITH REPORT	HB

job
GARDEN HOUSE
ELLERDALE ROAD

title
SEQUENCE OF CONSTRUCTION SHEET 1 OF 2

drawn	checked
DK	SBe
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OCT '15	AS SHOWN

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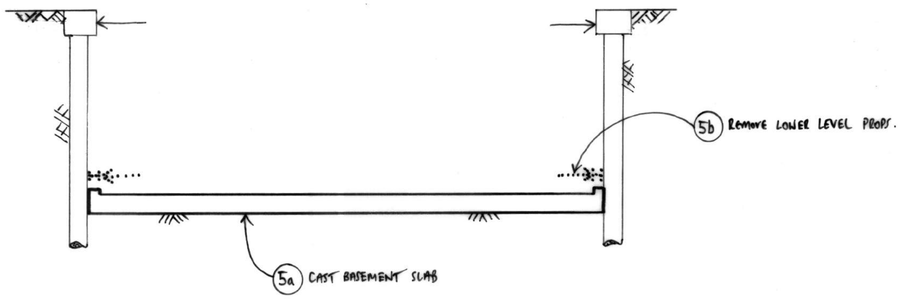
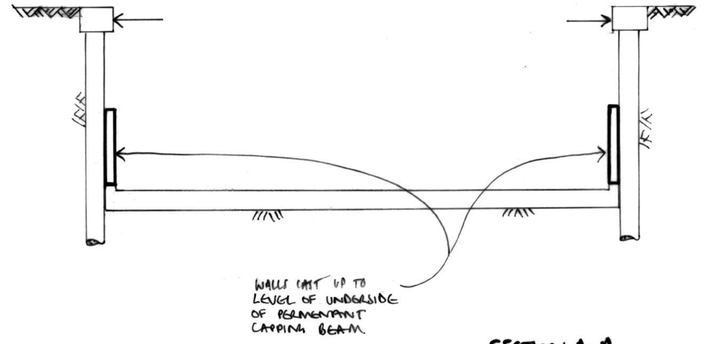
dgg. no. 1706/02/60 rev. A

(5) CAST BASEMENT SLAB



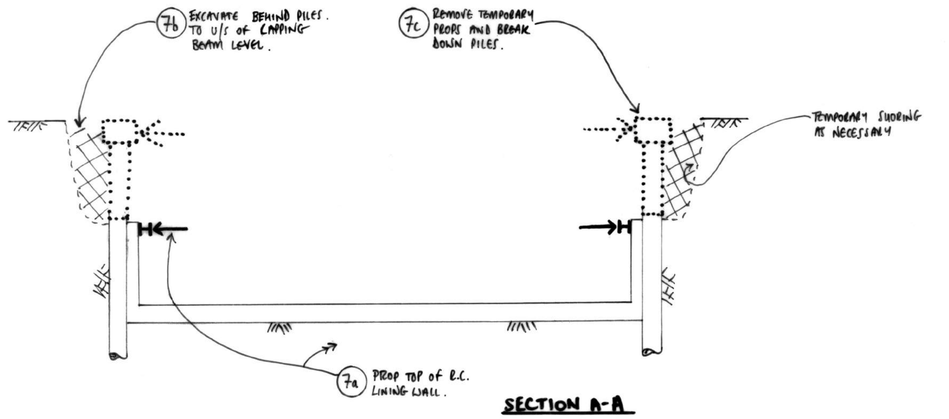
SECTION A-A

(6) CAST R.C. LINING WALLS



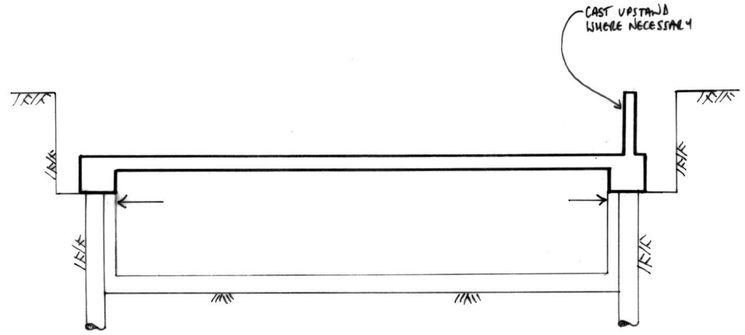
SECTION A-A

(7) BREAK DOWN PILES



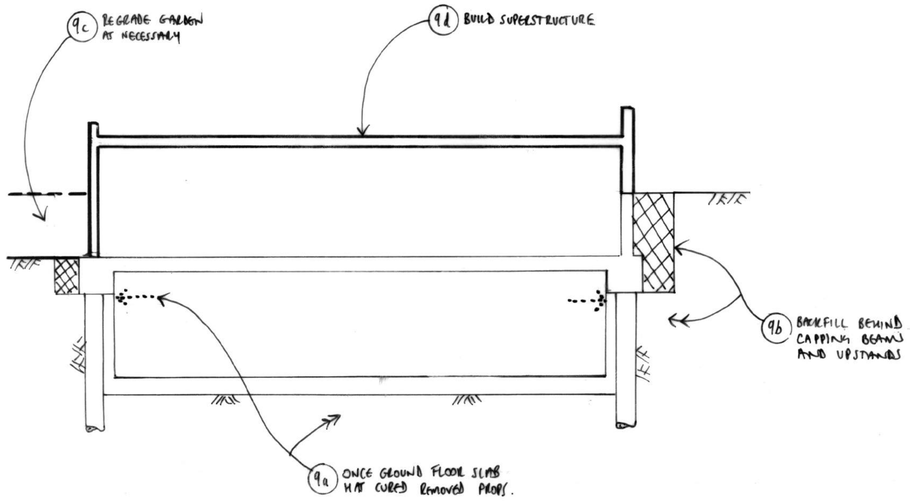
SECTION A-A

(8) CAST CAPPING BEAM AND G.F. SLAB



SECTION A-A

(9) BUILD SUPERSTRUCTURE



SECTION A-A

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	4.12.15	ISSUED WITH REPORT	FGO
—	26.11.15	ISSUED WITH REPORT	MB

job
GARDEN HOUSE
ELLERDALE ROAD

title
SEQUENCE OF CONSTRUCTION
SHEET 2 of 2

drawn: DK
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Appendix K – calculations

The calculations have been prepared by Fraser Godfrey (MEng) and checked by Simon Bennett (MEng MICE MIStructE

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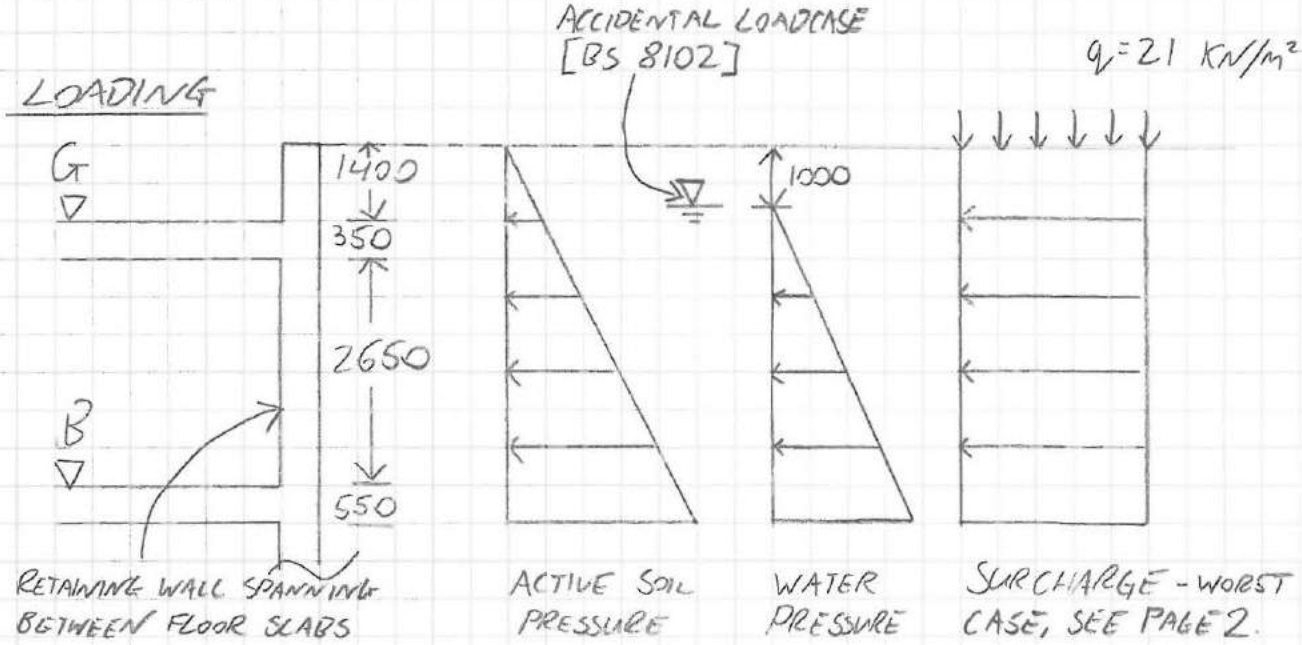
Date	Job no.	Sheet
NOV 2015	1706/02	1/5
Engineer FE.		
Checked by SB		

Project: ELLERDALE ROAD

DESIGN OF BASEMENT RETAINING WALL AT PLANNING STAGE TO BS 8002

THE RETAINING WALL STRUCTURES TO THE BASEMENT WILL COMPRISE A BORED CONTIGUOUS PILED WALL WITH A LINING WALL

LOADING



DESIGN THE RETAINING WALL FOR WORST CASE I.E. NO VERTICAL LOADS

SOIL PROPERTIES - FROM SI REPORT DATED MARCH 2015

γ_s = 20KN/m³

K_a = 0.39

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Date	Job no.	Sheet
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Engineer FGo		
Checked by SBe		
Project ELLERDALE ROAD		

SINGLE STOREY

SURCHARGE DUE TO EXTENSION TO 1 ELLERDALE ROAD

	DEAD KN/m²	LIVE KN/m²
GROUND SLAB (300mm)	7.2	
DOMESTIC LOAD.		1.5
TIMBER ROOF + FINISHES	1.0	
SNOW LOAD + ACCESS		0.75
WALLS (0.2m THICK, 2.5m HIGH, 15m LONG) AREA OF EXTENSION = 17m²	$\frac{24 \times 0.2 \times 2.5 \times 15}{17}$	
	= 10.6	
TOTAL LOAD	= 21.05 KN/m²	

∴ TAKE SURCHARGE VALUE OF 21 KN/m²

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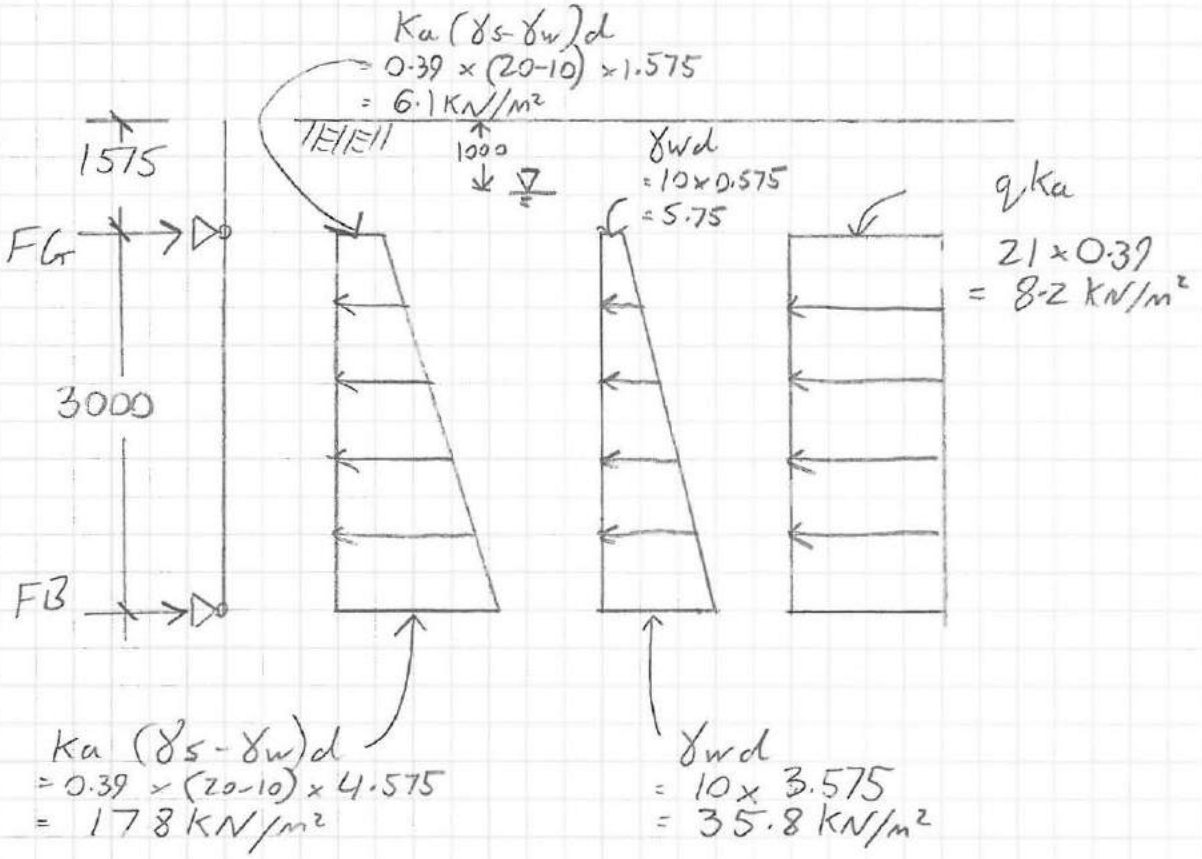
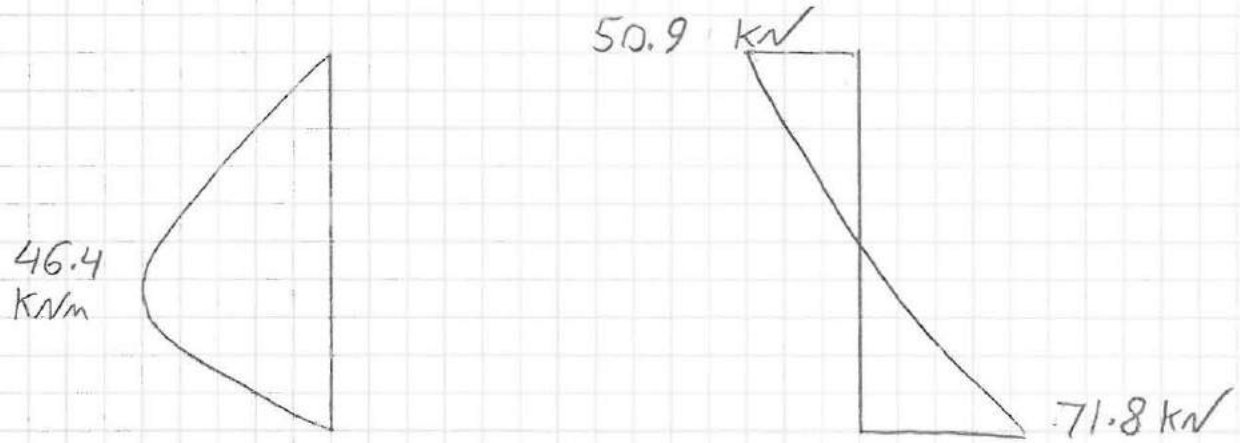
NOV 2015	1706/02	3/5
Engineer FGo		
Checked by SBe		
Project ELLERDALE ROAD		

MODEL BASEMENT RETAINING WALL AS SIMPLY SUPPORTED VERTICAL BEAM SPANNING BETWEEN SUPPORTS G, AND B SLABS



QSE RESULTS



BENDING MOMENT

SHEAR FORCE

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Checked by SBe		
Project ELLERDALE ROAD		

SIMPLIFIED HAND CALC CHECK

MODEL LOADS AS UDL OVER THE WHOLE LENGTH

AVERAGE UDL = $\frac{6.1+17.8}{2} + \frac{35.8+5.75}{2} + 8.2$

= 11.95 + 20.8 + 8.2

= 40.9

$M = \frac{wl^2}{8} = \frac{40.9 \times 3^2}{8}$

= 46 kNm ∴ OSE SEEMS REASONABLE

PILE DESIGN TO BS8110

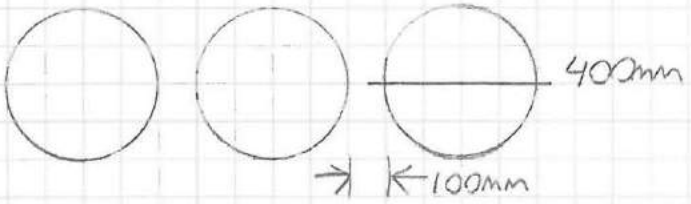
DESIGN PILE TO RESIST AN UNFACTORED MOMENT OF 46.4 kNm/m

CHARACTERISTIC ANGLE OF FRICTION $\phi = 26°$ [SI REPORT]

USE FACTOR OF SAFETY OF 1.4 (CONSERVATIVE AS CAN USE 1.2 FOR HYDROSTATIC PRESSURES) [TABLE 2.1]

DESIGN MOMENT: 46.4 × 1.4 = 65 kNm/m

PROVIDE A 400mm ϕ PILE WITH 100mm GAPS



DESIGN MOMENT / PILE

$65 \times \frac{500}{1000}$

= 32.5 kNm PER PILE

Project	Spreadsheets to BS 8110	The Concrete Centre		
Client	Advisory Group		Made by: FGo	Date: 26-Nov-15	Page: 5/5
Location	Columns at A1, A2 etc	The Concrete Centre™	Checked: SRL	Revision:	Job No: 1706-02

COLUMN CHART FOR CIRCULAR COLUMNS TO BS 8110:2005

Originated from 'RCC54.xls' v3.1 on CD

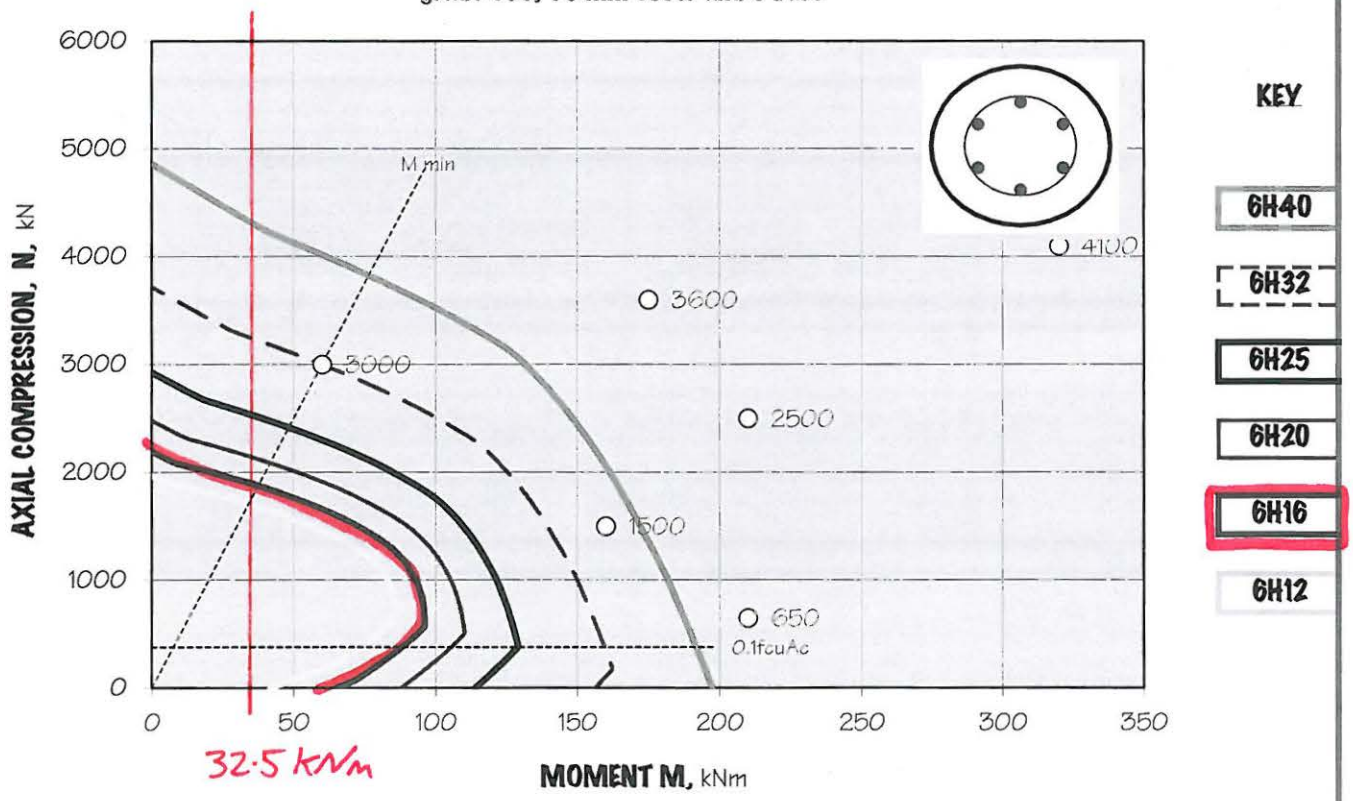
MATERIALS

	fcu	30	N/mm²	γm	1.15	steel	Cover	75	mm
	fy	500	N/mm²	γm	1.5	concrete	h agg	20	mm
	steel class	A							
SECTION	h	400	mm	with	6	bars			

BAR ARRANGEMENTS

Type	Bar Ø	Asc %	Link Ø	Bar c/c	Nbal (kN)	Nuz (kN)	Checks
H	40	6.00	10	99.5		4861	ok
H	32	3.84	8	105.8	185	3717	ok
H	25	2.34	8	109.4	402	2925	ok
H	20	1.50	6	114.1	512	2478	ok
H	16	0.96	6	116.2	626	2192	ok
H	12	0.54	6	118.3	765	1970	ok

N:M INTERACTION CHART for 400 diameter column, grade C30, 75 mm cover and 6 bars



LOADCASES

Load case	N (kN)	M (kNm)		Load case	N (kN)	M (kNm)	
1	650	210	No Fit	4	1500	160	6 H40
2	4100	320	No Fit	5	2500	210	No Fit
3	3000	60	6 H40	6	3600	175	No Fit

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Date	Job no.	Sheet
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Engineer FGo		
Checked by SBe		
Project ELLERDALE ROAD		

BUILDING DAMAGE ASSESSMENT IN ACCORDANCE WITH CIRIA C580

FOLLOWING THE METHOD SET OUT IN THE FLOW CHART IN FIGURE 2.14 (P.2)

A CONTOR MAP HAS BEEN DRAWN (SEE P.3) TO DETERMINE THE STRUCTURES WITHIN THE ZONE OF INFLUENCE

THE DAMAGE TO THE BUILDINGS WILL BE DETERMINED BY CALCULATING THE STRAINS THE GROUND MOVEMENTS EXERT ON THE BUILDINGS, IN ACCORDANCE WITH BOX 2.5 AND FIGURE 2.18

THE FOLLOWING STRUCTURES HAVE BEEN IDENTIFIED AS BEING WITHIN THE ZONE OF INFLUENCE
THERE LENGTHS AND HEIGHTS ARE SHOWN BELOW IN ACCORDANCE WITH THE PROCEDURE SET OUT IN BOX 2.5 OF FIG. 2.14

CONTOR	BUILDING	L(M)	H(M)	L/H
1m	a/ KITCHEN EXTENSION TO 1 ELLERDALE RD	5	3	1.7
0m	b/ GARDEN WALL	4	1.5	2.7
5m	c/ 1-3 ELLERDALE ROAD	13	12	1.1
15m	d/ 79-87 FITZJOHN'S AVENUE	15	12	1.3
20m	e/ COACH HOUSE	13	10	1.3
20m	f/ 14-16 PRINCE ARTHUR ROAD	15	12	1.3
30m	g/ 5 ELLERDALE ROAD	20	12	1.25

BUILDINGS a/, b/ AND c/ WILL BE ASSESSED SEPARATELY AS THEIR FOUNDATIONS ARE KNOWN TO EXTEND BELOW THE GROUND LEVEL

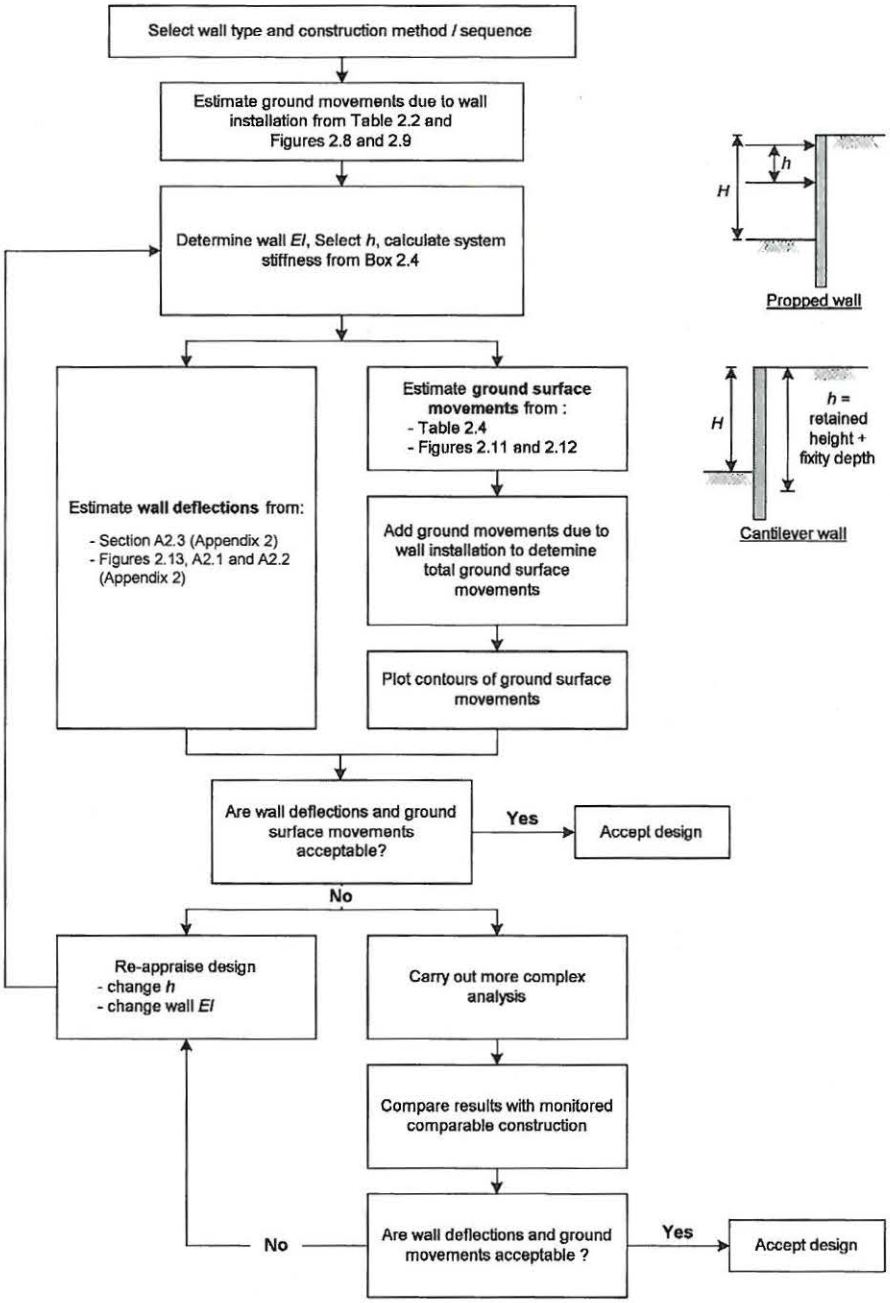

Figure 2.14 *Procedure for prediction of wall deflections and ground surface movements*

Estimates of wall deflections and associated ground surface movements should follow the procedure shown in Figure 2.14. Case-history-based empirical methods of prediction are to be preferred to use of complex analyses, unless such analyses are first "calibrated" against reliable measurements of well-monitored comparable excavations and wall systems. Table 2.4, in conjunction with Figure 2.11, can be used to estimate *ground surface movements associated with walls wholly embedded in stiff clay*. Figure 2.12 can be used for walls wholly embedded in sands. Preliminary estimates of *wall deflection* can be obtained from Figure 2.13 and from Section A2.3 in Appendix 2. This will depend upon the system stiffness, ρ_s, and the factor of safety against base heave. System stiffness is defined in Box 2.4. The reader is referred to CIRIA publication C517 (1999), Appendix 4, for a good definition and explanation of base stability.