

BASEMENT IMPACT ASSESSMENT

29 DUCKS HILL ROAD

NORTHWOOD

HA6 2NW



APRIL 2021

1.0 INTRODUCTION

- 1.1 This document constitutes the construction approach and methodology for forming the new basement for the proposed development at 29 Ducks Hill Road. The document is produced by Parmarbrook Urban Limited, Consulting Structural Engineers, at the request of Seabrook Architects to accompany the Planning application.
- 1.2 This Basement Impact Assessment is based upon drawings produced by Seabrooks Architects submitted for planning approval to the London Borough of Hillingdon reference; PP-08584646v1 75478/APP/2020/905.

2.0 EXISTING SITE

- 2.1 The existing building is currently a single house dwelling.

3.0 PROPOSED DEVELOPMENT

- 3.1 The development involves the conversion of the single dwelling into 7 self-contained flats
- 3.2 The scope of the development is shown on Seabrooks Architects drawings as submitted as part of the planning application noted above.
- 3.3 It is proposed to construct the basement retaining walls and slab using in situ reinforced concrete construction techniques. The excavation of the soil will require temporary earth support, prior to the construction of the slabs and walls. This will be provided by a contiguous piled concrete wall to rear and 2 flank sides of the basement. The existing rear wall of the property will be underpinned to an agreed hit and miss sequencing forming the 4th side of the basement. The underpinning will be carried out prior to the main excavation of the basement.
- 3.4 These proposed methods of construction have been employed successfully on subterranean developments in many London Boroughs and it is considered that the proposed works will have no impact on the structural stability of the existing and adjoining buildings.
- 3.5 The subterranean development will be a Grade 3 water-resisting basement to provide a “dry environment” suitable for ventilated usage under BS 8102. The waterproofing details will be to a specialist’s specification, which will provide a 10-year warranty for the waterproofing works. It is understood that a Type A membrane will be provided on the internal face of the reinforced concrete basement. Additionally, a Type C wall and floor cavity waterproofing system with additional vapour barriers will be installed within the basement.

4.0 SITE INVESTIGATION AND GROUND CONDITIONS

The geological strata based on site investigations carried out at 38 and 40 Ducks Hill Road (see Appendix A) and can be summarised as follows;

- Top Soil
- Overlying
- Reading Beds, comprising stiff red brown and grey Clay 0.1m - 2.8m
- Overlying
- Reading Beds, comprising very dense brown medium Sand 2.8m – 8.3m
- Reading Beds, comprising very dense grey, gravelly medium Sand 8.3m – 13.5m

4.1 Groundwater levels will be approximately 40 metres below ground level (See Appendix D). Some perched water maybe encountered in the excavations.

4.2 Any perched groundwater in the excavations if encountered will be removed by conventional internal pumping methods from open sumps.

4.3 A site investigation would be recommended prior to construction and should include the following;

- Recommendations for basement and foundation design, following consultation with the Engineer, including observations on the suitability of various types of temporary propping.
- Estimates of the short- and long-term settlements relevant to the various founding solutions considered.
- Recommendations for retaining wall design, following consultation with the Engineer, including observations on the suitability of various types of retaining wall.
- Recommendations on remediation measures for soil contamination and identification of hazards to be considered for handling and disposal of excavated material in relation to current practice and legislation

5.0 STRUCTURAL DESIGN

5.1 The works will be designed in accordance with current British Standards Codes of Practice, including but not limited to:

BS6399: Loading
BS8004: Foundations
BS8110: Concrete
BS5950: Steelwork
BS5628: Masonry
BS5268: Timber

6.0 ROBUSTNESS

- 6.1 The Building Regulations Approved Document A requires that buildings are sufficiently robust to sustain a limited extent of damage or failure, without collapse in the event of an accident.
- 6.2 The new development are four storey single occupancy properties (basement, ground, first and second floors) and defined as Building Class 2A.
- 6.3 Compliance with the robustness requirements for Building Class 2A is achieved by providing effective horizontal ties to all supporting floors and walls as described in the British Standards Codes of Practice.
- 6.4 Temporary stability of the basement construction will be provided by the contiguous piled wall, with deflections limited at the top of the wall to comply with BS 8000 Part1: 1989 and any other approved documents.
- 6.5 Permanent stability of the Basement walls will be provided by a propped reinforced concrete cantilevered wall, designed to BS8110

7.0 TEMPORARY WORKS

- 7.1 The contractor is entirely responsible for all the temporary works from possession of the site until practical completion.
- 7.2 The contractor shall design, install and maintain all necessary temporary works.
- 7.3 The contractor shall submit detailed proposals for the temporary works to the Contract Administrator/ Architect and Parmarbrook Urban at least 10 working days before commencing the works. The proposals shall include temporary works supports and a sequence of construction and shall be supported by calculations that have been carried out by a suitable Structural Engineer.
- 7.4 All temporary works to the side of excavations for new foundations shall be designed in accordance with BS 8000 Part 1: 1989 and any other approved documents.
- 7.5 All scaffolding required, whether for access or support, shall be designed for purpose, in accordance with relevant British Standards (e.g. BS 5973), and shall meet all requirements of The Construction (H, S & W) Regulations 1996.
- 7.6 The Contractor shall prepare a detailed method statement and sequence of construction for basement the works, at least ten working days before commencing the works.
- 7.7 Parmarbrook Urban shall review Contractor's temporary works, method statements and sequences of construction of all works on site.

8.0 CONSTRUCTION METHOD STATEMENT (GENERAL)

- 8.1 The subterranean basement development will be constructed by a competent and experienced Contractor.
- 8.2 The property is located within a residential area. The Contractor must employ appropriate methods of construction to minimise noise and nuisance to neighbours as far as reasonably practicable.
- 8.3 Access is only available from Ducks Hill Road.
- 8.4 The Contractor shall obtain all necessary licences and approvals in respect of work on site, for example parking bay suspensions, yellow line dispensations and skips, disposal of specified wastes and noise notices.
- 8.5 The Contractor shall ensure that all plant or materials temporarily stored on the Public Highway/footway does not cause an obstruction or hazard to third parties.
- 8.6 The Contractor will be responsible for all matters in respect of loading, unloading, access, etc, and he shall agree all such matters with the Local Authority and Client. The Contractor shall ensure that safe access routes are provided along the public footway during loading/unloading operations if applicable

9.0 CONSTRUCTION METHOD STATEMENT – BASEMENT WORKS (REFER TO APPENDIX B DRGS 2047/01-06 inc.)

- 9.1 Prior to the construction of the basement work, partial demolition to the rear property is to be carried out and all necessary temporary propping of the remainder of the building must be in place and inspected by the engineer prior to any work proceeding beyond this stage.
- 9.2 It is anticipated that basement excavation will be formed by installing a contiguous concrete piled wall to the rear and two flank sides of the basement footprint, providing temporary support to the soil during the excavation process.
- 9.3 After the installation of the contiguous piles wall, the main rear wall of the property will be underpinned to an agreed sequence. Each pin will be designed as self-supporting in the temporary case.
- 9.4 Once the underpinning is complete the excavation of the main basement to formation level can be carried out and blinded with concrete blinding.
- 9.5 The basement slab is then cast with kickers to form the concrete loadbearing walls.
- 9.6 The walls are then cast to the underside of the proposed ground floor slab. With the internal blockwork walls following this element.
- 9.7 When the concrete walls reach their required strength and the blockwork wall complete, then the ground floor slab can be cast. This slab will act as a horizontal prop to the concrete retaining walls in the permanent case.
- 9.8 The superstructure can then be built in the traditional manner from ground floor level upwards.

10. FLOOD RISK

- 10.1 Referring to the Environment Agency Database the site is in Flood Zone 1. Flood Zone 1 is outside the extent of extreme flooding and the annual risk is less than 1:1000. (See Appendix C for records)
- 10.2 The proposed basements are expected to be constructed entirely within the Sand soils and above the ground water table, which will allow the free flow of ground water and therefore the impact of the basement on the groundwater regime at the site will be insignificant. The ground water table for this site is approximately 40 metres below ground level. (See Appendix D for adjacent deep borehole)

11. GROUND WATER FLOODING AND DRAINAGE RISKS

- 11.1 As the site investigations carried out at 38 and 40 Linksway did not indicate the presence of any ground water at 13.5m (bottom of boreholes) and that the desk top study highlighted that the site was in flood zone 1, with no flooding risk, the proposed basements therefore, will be constructed entirely within the Sand soils and above the ground water table, which will allow the free flow of ground water. It is considered therefore the impact of the basement on the groundwater regime at this site will be insignificant.

12. SUDS STATEMENT

- 12.1 There are surface water and foul sewers in the roadway, the depths of these sewers at this stage are unknown. A CCTV test will be carried out to establish the existing invert levels.

In order to serve any waste/foul drainage requirement to the proposed Basement area a packaged sewage pumping chamber would be required to discharge the ground floor gravity drainage system.

The proposed method of surface water disposal would be to discharge to the surface water sewer within the Roadway, via an attenuation system, utilizing storage crates.

Due to the low permeability of the Clay, soakaways for the disposal of surface water would be considered unsatisfactory and a surface water attenuation system would be required.

The allowable discharge rate from the surface water attenuation system would be agreed with Thames Water Developer Services.

The site surface water system would be designed where practical to include SUDS recommendations; a 1:100-year storm event +40 % for climate change, whilst restricting stormwater run-off to 50% of pre-development levels, as required by the London Plan.

APPENDIX A: SITE INVESTIGATION DATA

gssurveys.com				Borehole Log				Borehole No. BH 1	
Project Name: 38-40 Ducks Hill Road				Project No. P16009		Co-ords:		Sheet 1 of 2	
Location: Northwood, HA6 2SB				Level:		Hole Type CP		Scale 1:50	
Client: Mr Vijen Shah				Dates: 05-08-2016		Logged By			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.40	D		0.10		TOPSOIL dark brown sandy gravelly clay with roots Soft to firm brown with grey mottling silty CLAY	1	
		2.00	SPT	N=10 (1,2/2,2,3,3)	2.80		Stiff reddish brown and grey mottled slightly fissured CLAY	2	
		4.00	SPT	N=15 (2,2/3,3,4,5)				3	
		6.00	SPT	N=47 (5,6/9,10,12,16)				4	
								5	
								6	
								7	
								8	
		9.00	SPT	67 (5,10/67 for 225mm)	8.30		Very dense brown medium SAND	9	
								10	

Continued on Next Sheet

Remarks								
---------	--	--	--	--	--	--	--	---

gssurveys.com				Borehole Log				Borehole No. BH 1	
Project Name: 38-40 Ducks Hill Road				Project No. P16009		Co-ords:		Sheet 2 of 2	
Location: Northwood, HA6 2SB				Level:		Hole Type CP		Scale 1:50	
Client: Mr Vijen Shah				Dates: 05-08-2016		Logged By			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50	SPT	50 (46 for 75mm/50 for 225mm)	10.50		 Very dense grey gravelly medium SAND. Gravel is black and brown coarse rounded		11
		12.00	SPT	50 (78 for 75mm/50 for 225mm)					12
		13.50	SPT	50 (41 for 75mm/50 for 225mm)	13.60				13
							End of Borehole at 13.60m		14
									15
									16
									17
									18
									19
									20
Remarks									

gssurveys.com				Borehole Log			Borehole No. BH 2	
Project Name: 38-40 Ducks Hill Road				Project No. P16009		Co-ords:		Sheet 1 of 2
Location: Northwood, HA6 2SB				Level:		Hole Type CP		
Client: Mr Vijen Shah				Dates: 06-08-2016		Scale 1:50		
Client: Mr Vijen Shah				Dates: 06-08-2016		Logged By		
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.05			Paving slab
					0.35			MADE GROUND dark grey topsoil with brick fragments
		0.50	D					Soft to firm brown with grey mottling silty CLAY
		1.00	D					
		1.20	SPT	N=6 (1,1/1,1,2,2)				
		1.20	SPTL					
		1.20	S					
		1.70	D					
		2.00	U					
		2.50	D		2.80			
		2.70	D					
		3.00	SPT	N=10 (1,2/2,2,3,3)				Stiff reddish brown and grey mottled slightly fissured CLAY
		3.00	SPTL					
		3.00	S					
		3.80	D					
		4.00	U					
		4.50	D					
		5.00	SPT	N=18 (2,3/3,4,5,6)				
		5.00	SPTL					
		5.00	S					
		6.00	U					
		6.50	D					
		6.90			6.90			
		7.50	SPT	N=80 (6,6/80 for 250mm)				
		7.50	SPTL					
		7.50	S					
		9.00	SPT	56 (7,12/56 for 225mm)				
		9.00	SPTL					
		9.00	S					
								Very dense brown medium SAND
								Continued on Next Sheet

Remarks		
---------	--	---

gssurveys.com				Borehole Log				Borehole No. BH 2	
Project Name: 38-40 Ducks Hill Road				Project No. P16009		Co-ords:		Sheet 2 of 2	
Location: Northwood, HA6 2SB				Level:		Hole Type CP		Scale 1:50	
Client: Mr Vijen Shah				Dates: 06-08-2016		Logged By			
Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 10.50	B SPT	32 (5,14/32 for 225mm)	10.30			Very dense grey gravelly medium SAND. Gravel is black and brown coarse rounded	11
		12.00 12.00	B SPT	50 (48 for 75mm/50 for 225mm)					12
		13.50 13.50	B SPT	50 (39 for 75mm/50 for 225mm)	13.60				13
								End of Borehole at 13.60m	14
									15
									16
									17
									18
									19
									20
Remarks									

gssurveys.com				Borehole Log				Borehole No. BH 3	
Project Name: 38-40 Ducks Hill Road				Project No. P16009		Co-ords:		Sheet 1 of 2	
Location: Northwood, HA6 2SB				Level:		Hole Type CP		Scale 1:50	
Client: Mr Vijen Shah				Dates: 23-08-2016		Logged By			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		0.20	D		0.20			TOPSOIL dark brown sandy gravelly clay with roots	
		0.60	D					Firm to "stiff" brown with grey mottling silty CLAY with roots	
		1.00	D						
		1.20	U						
		1.70	D		1.70				
		1.90	D					Stiff reddish brown and grey mottled slightly fissured CLAY with occasional coarse yellow sandy partings	
		2.00	SPT	N=9 (1,2/2,2,2,3)					
		2.00	SPTL						
		2.00	S						
		2.70	D						
		3.00	U						
		3.50	D						
		3.80	D						
		4.00	SPT	N=27 (3,4/4,6,8,9)					
		4.00	SPTL						
	4.00	S							
	4.80	D							
	5.00	U							
	5.50	D							
	5.50	D		5.70					
	6.00	SPT	N=57 (3,6/8,11,16,22)						
	6.00	SPTL					Very dense brown and grey medium SAND		
	6.00	S							
	7.50	SPT	74 (5,7/74 for 225mm)						
	7.50	SPTL							
	9.00	SPT	56 (8,12/56 for 225mm)						
	9.00	SPTL							
				10.00					

Continued on Next Sheet

Remarks 50 mm diameter standpipe installed to 6.0 m		
--	--	--

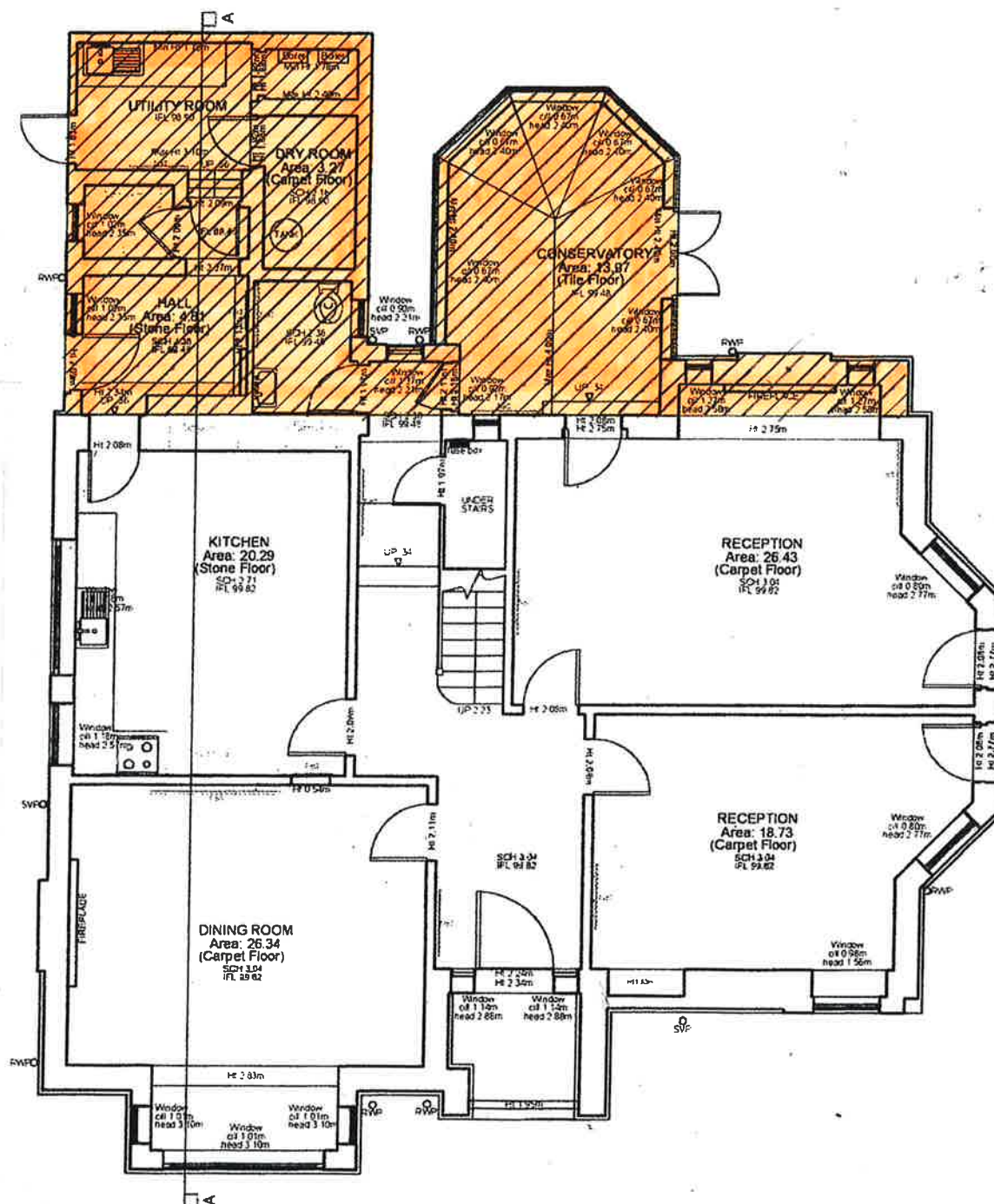
				Borehole Log				Borehole No. BH 3 Sheet 2 of 2	
Project Name: 38-40 Ducks Hill Road				Project No. P16009		Co-ords:		Hole Type CP	
Location: Northwood, HA6 2SB				Level:		Scale 1:50			
Client: Mr Vijen Shah				Dates: 23-08-2016		Logged By			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 10.50	B SPT	50 (8,18/50 for 225mm)				Very dense grey gravelly medium SAND. Gravel is black and brown coarse rounded	11
		12.00 12.00	B SPT	50 (49 for 75mm/50 for 225mm)				12	
		13.50 13.50	B SPT	50 (62 for 125mm/50 for 225mm)	13.50			13	
								End of Borehole at 13.50m	14
									15
									16
									17
									18
									19
									20

Remarks 50 mm diameter standpipe installed to 6.0 m									
--	--	--	--	--	--	--	--	---	--

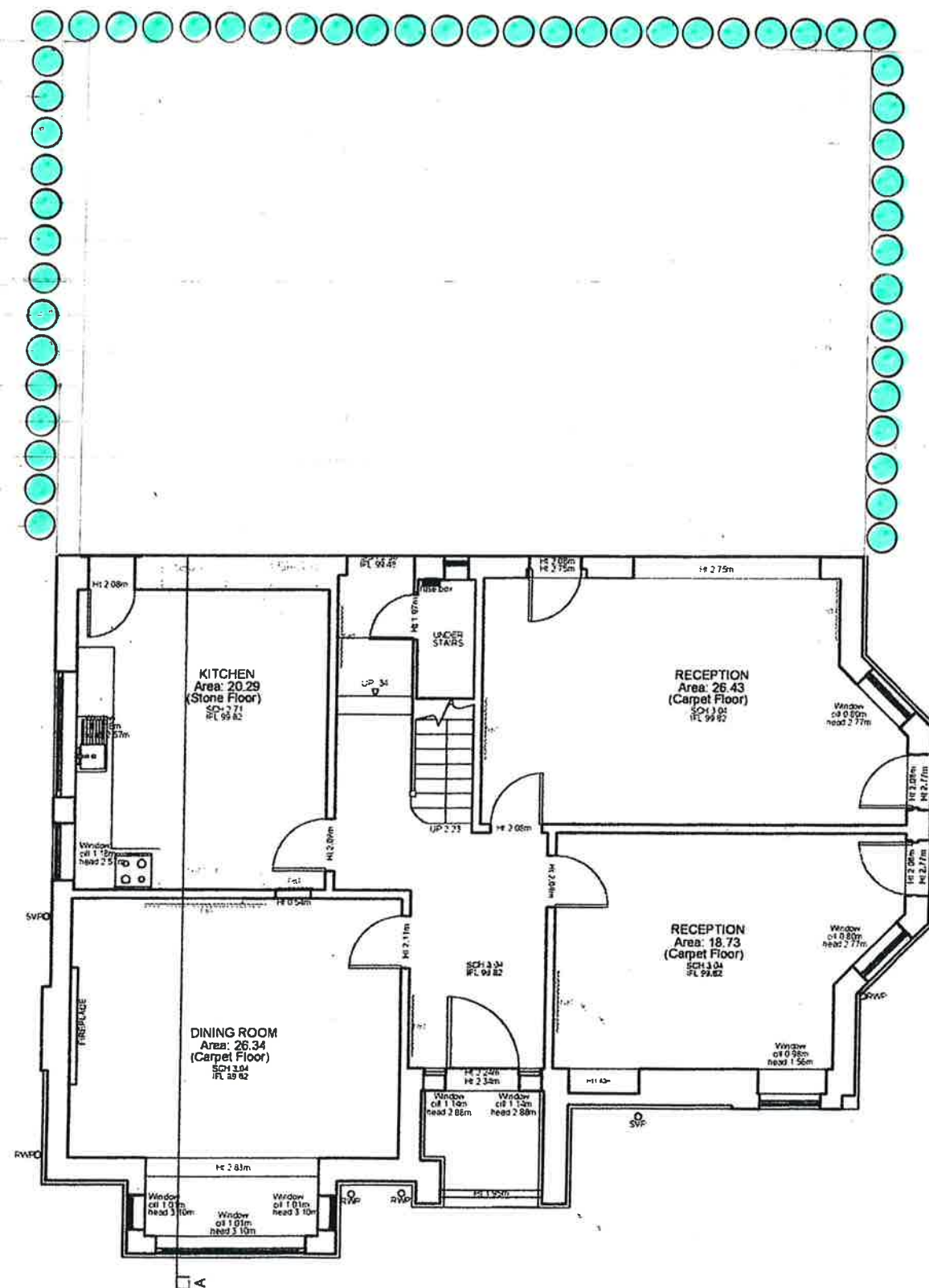
APPENDIX B: CONSTRUCTION SEQUENCE

STAGE 1
DEMOLISH REAR
BUILDINGS



PLAN

REV	DATE	DESCRIPTION	BY
AMENDMENTS			
Project:			
20 DUCKS HILL ROAD			
Title:			
BASEMENT CONSTRUCTION SEQUENCE STAGE 1			
Client:			
Architect:			
Designed: AH			
Drawn: AH			
Checked: DE			
Date: MAY 20			
Project No: 2047			
Scale: 1:100			
Drawing No: 01			
Revision:			



PLAN

STAGE 2
INSTALL CONTIGUOUS
PILED WALL

parmarbrook
URBAN

43A Ninfeld Road, Bexhill on Sea, East Sussex TN39 5AE

Tel: 01424 215572
M: 07946 150256
E-mail: tony@parmarbrook.com

REV	DATE	DESCRIPTION	BY
AMENDMENTS			

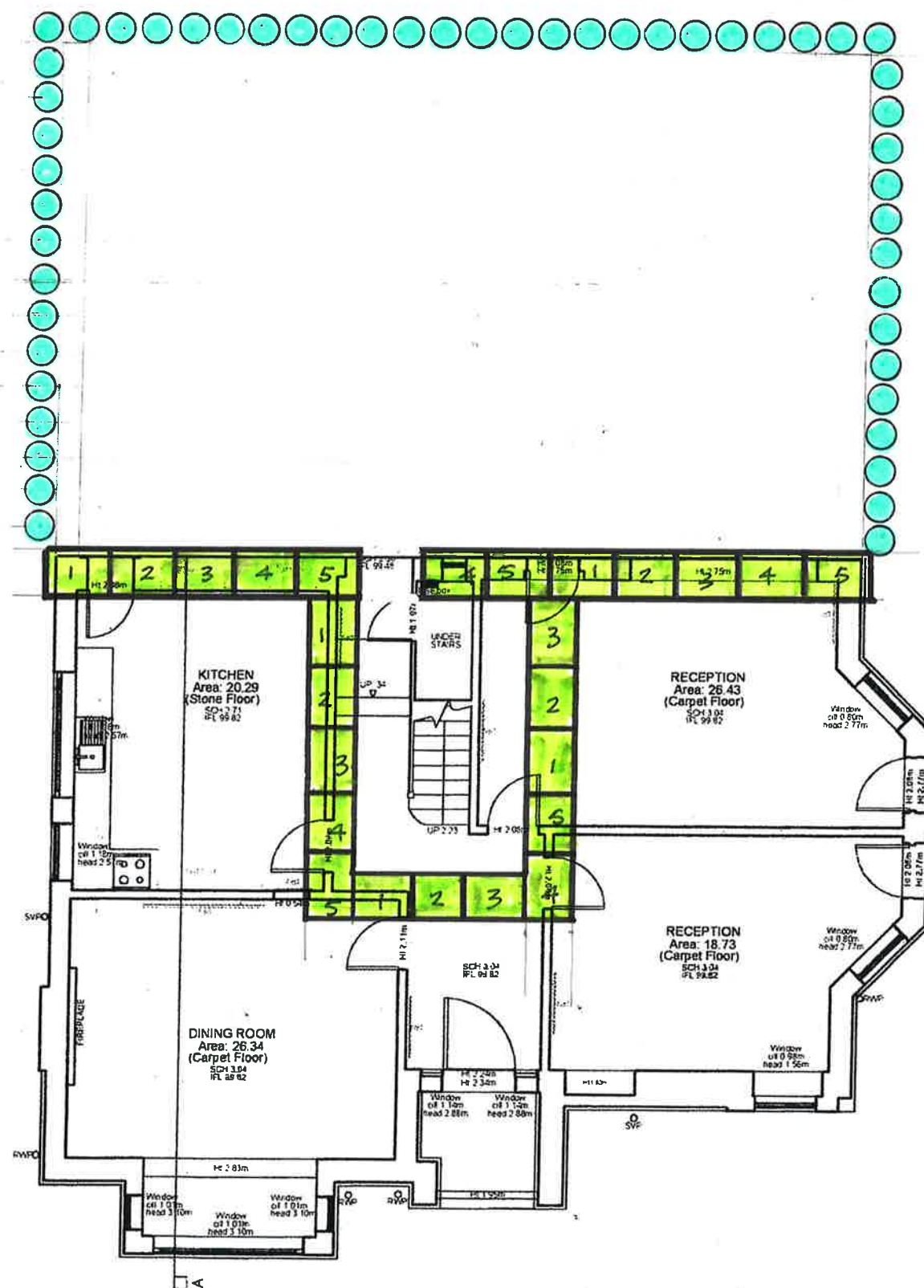
Project:
20 DUCKS HILL
ROAD

Title:
BASEMENT CONSTRUCTION
SEQUENCE STAGE 2

Client:

Architect:

Designed: AH	Drawn: AH
Checked: DB	Date: MAY 20
Project No: 20A7	Scale: 1:100
Drawing No: 02	Revision:



PLAN

STAGE 3
UNDERPIN EXISTING
WALLS

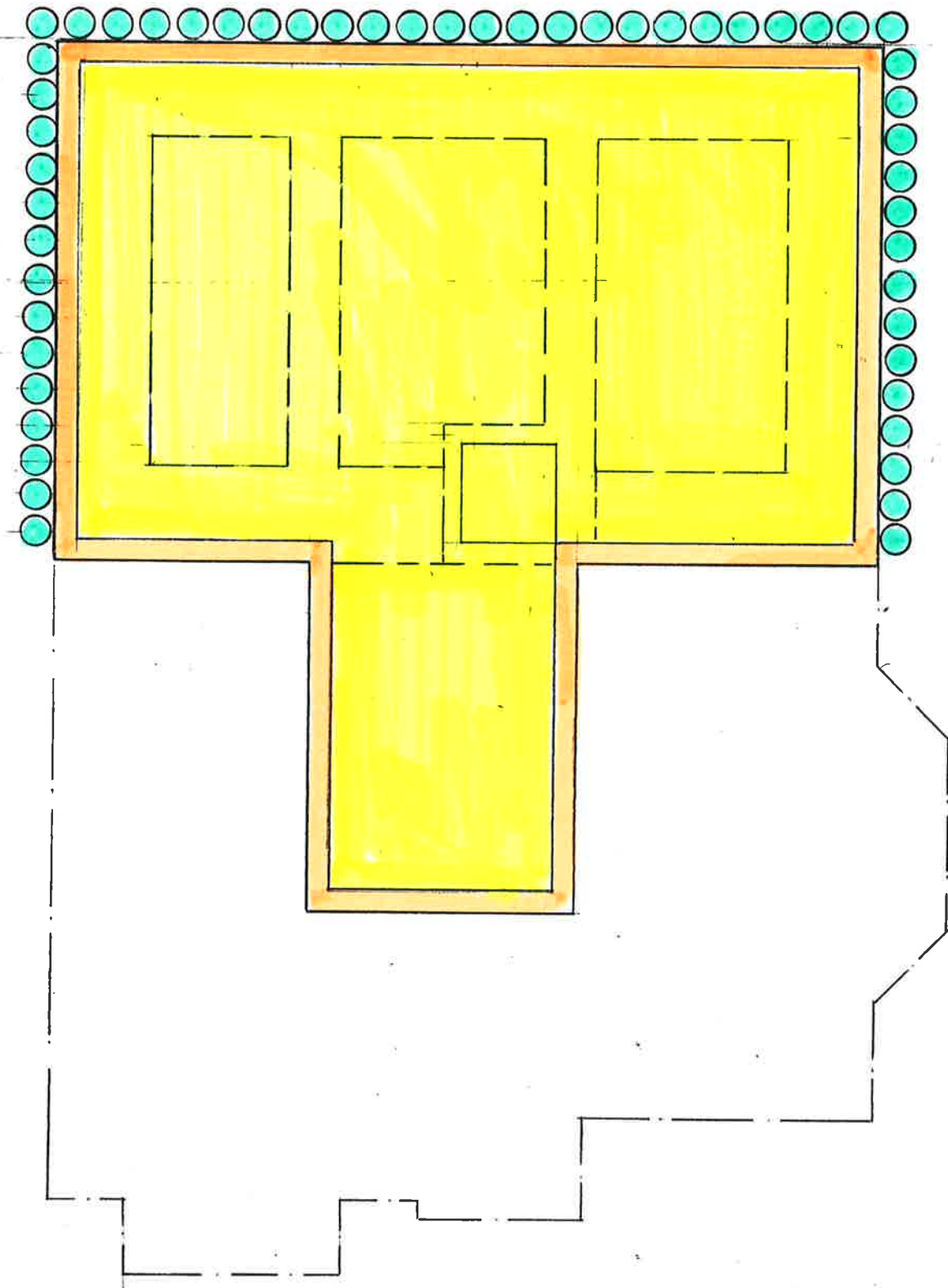
parmarbrook

URBAN

43A Ninfild Road, Bexhill on Sea, East Sussex TN39 5AE

Tel: 01424 215572
M: 07946 150256
E-mail: tony@parmarbrook.com

REV	DATE	DESCRIPTION	BY
AMENDMENTS			
Project:			
20 DUCKS HILL ROAD			
Title:			
BASEMENT CONSTRUCTION SEQUENCE STAGE 3			
Client:			
Architect:			
Designed: AH			
Drawn: AH			
Checked: DB			
Date: MAY 20			
Project No: 2047			
Scale @ A3: 1:100			
Drawing No: 03			
Revision:			



PLAN

STAGE 4

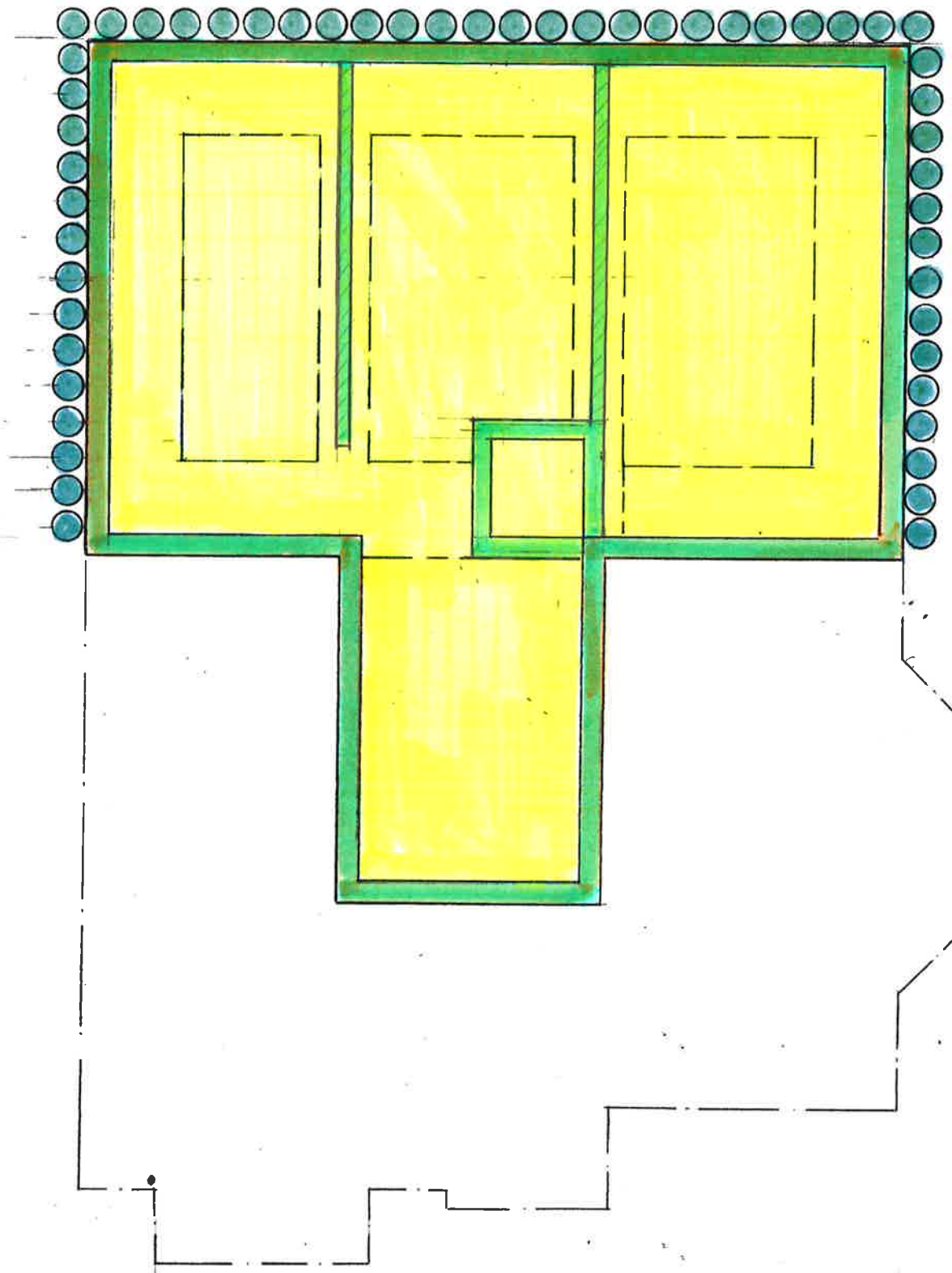
- EXCAVATE TO FORMATION LEVEL
- CAST BASEMENT SLAB AND WALL KICKERS

parmarbrook
URBAN

43A Ninfield Road, Bexhill on Sea, East Sussex TN39 5AE

Tel: 01424 215572
M: 07946 150256
E-mail: tony@parmarbrook.com

REV	DATE	DESCRIPTION	BY
AMENDMENTS			
Project:			
20 DUCKS HILL ROAD			
Title:			
BASEMENT CONSTRUCTION SEQUENCE STAGE 4			
Client:			
Architect:			
Designed: AH			
Drawn: AH			
Checked: DB			
Date: MAY 20			
Project No: 2047			
Scale @ A3: 1:100			
Drawing No: 04			
Revision:			



PLAN

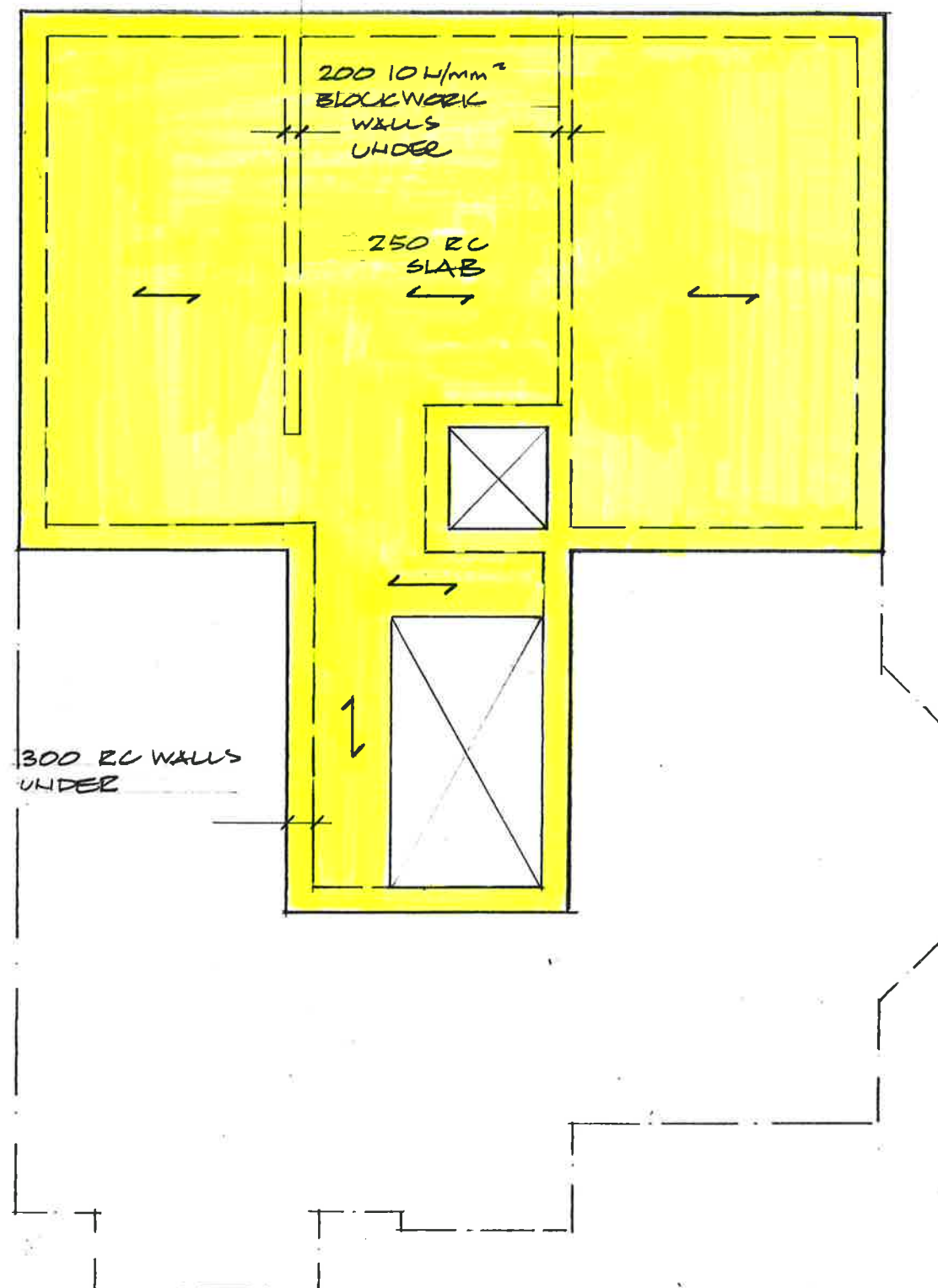
STAGE 5
CONSTRUCT LOADBEARING
WALLS TO UNDERSIDE OF
GROUND FLOOR SLAB

parmarbrook
URBAN

43A Ninfeld Road, Bexhill on Sea, East Sussex TN39 5AE

Tel: 01424 215572
M: 07946 150256
E-mail: tony@parmarbrook.com

REV	DATE	DESCRIPTION	BY
AMENDMENTS			
Project: 29 DUCKS HILL ROAD			
Title: BASEMENT CONSTRUCTION SEQUENCE STAGE 5			
Client:			
Architect:			
Designed: AH			
Drawn: AH			
Checked: DB			
Date: MAY 20			
Project No: 2047			
Scale @ A3: 1:100			
Drawing No: 05			
Revision:			



STAGE 6
CAST GROUND
FLOOR SLAB

GROUND FLOOR PLAN

parmarbrook
URBAN

43A Ninfield Road, Bexhill on Sea, East Sussex TN39 5AE

Tel: 01424 215572
M: 07946 150236
E-mail: tony@parmarbrook.com

REV	DATE	DESCRIPTION	BY
AMENDMENTS			
Project:			
20 DUCKS HILL ROXO			
Title:			
BASEMENT CONSTRUCTION SEQUENCE STAGE 6			
Client:			
Architect:			
Designed: AH			
Drawn: AH			
Checked: DB			
Date: MAY 20			
Project No:			
Scale @ A3: 1:100			
Drawing No: 06			
Revision:			

APPENDIX C: FLOOD RISK DESK TOP STUDY

Flood map for planning

Your reference
29 Ducks Hill

Location (easting/northing)
508194/191676

Created
15 Apr 2021 17:33

Your selected location is in flood zone 1, an area with a low probability of flooding.

This means:

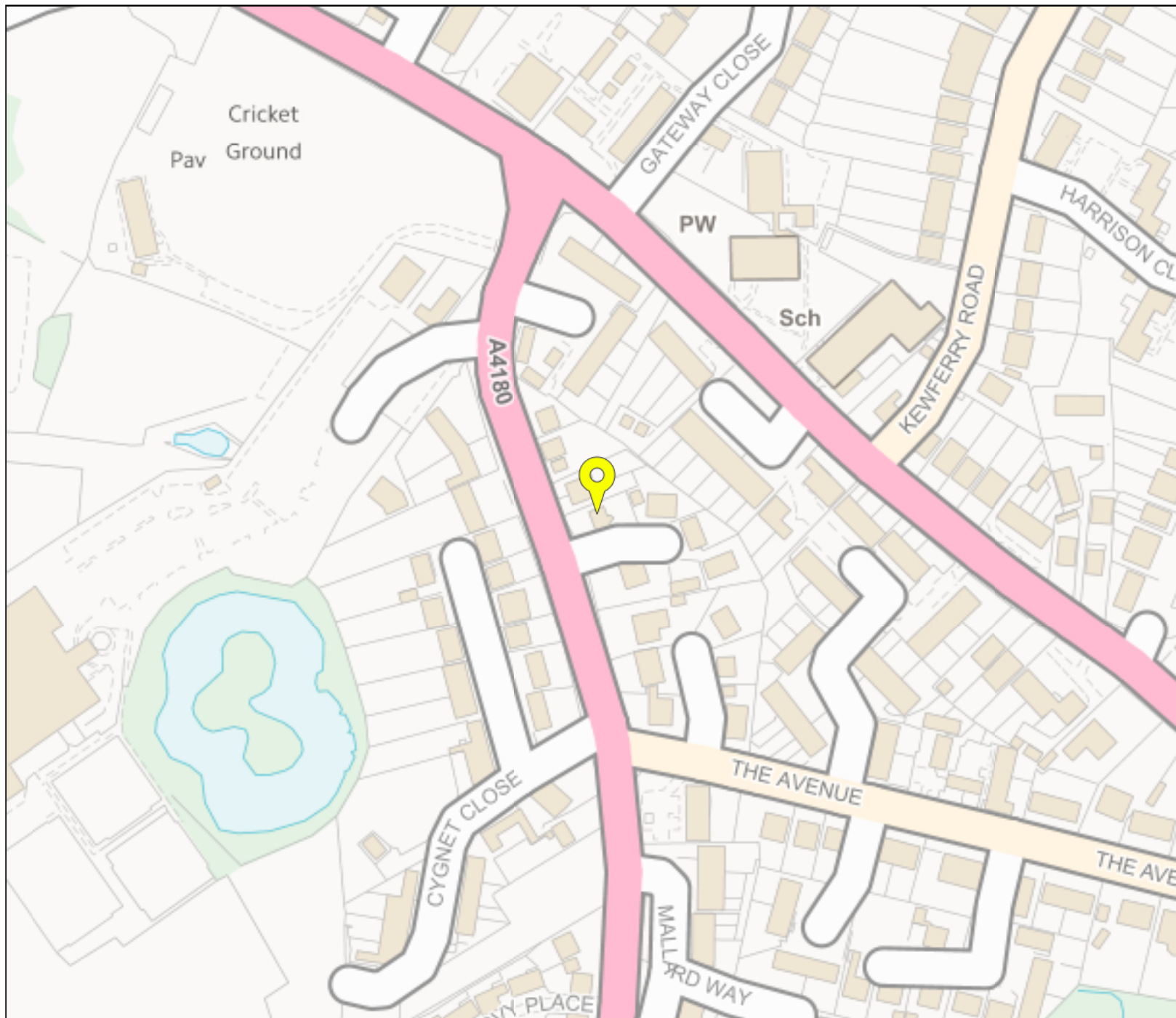
- you don't need to do a flood risk assessment if your development is smaller than 1 hectare and not affected by other sources of flooding
- you may need to do a flood risk assessment if your development is larger than 1 hectare or affected by other sources of flooding or in an area with critical drainage problems

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

The Open Government Licence sets out the terms and conditions for using government data.
<https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>



Flood map for planning

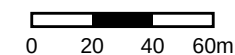
Your reference
29 Ducks Hill

Location (easting/northing)
508194/191676

Scale
1:2500

Created
15 Apr 2021 17:33

-  Selected point
-  Flood zone 3
-  Flood zone 3: areas benefitting from flood defences
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Flood storage area



APPENDIX D: DEEP BOREHOLE YOUNGWOOD FARM

RECORD OF WELL (SHAFT OR BORE)

250/330

TQ08/96
For Survey use only
N.

250/330

British Geological Survey

Licence No.

At Youngswood Farm
Ducks Hill Road
Town or Village RUISLIP

County Middlesex Six-inch quarter sheet 9 NE/E
For TQ0782 8979 State whether owner, tenant, builder,
contractor, consultant, etc.:—

Address (if different from above).....
Level of ground surface above sea-level (O.D.) 27.3 ft.
If well-top is not at ground level, state how far { above: ft.
below; ft.
SHAFT 130 ft.; diameter ft.; Full details of headings (dimensions and directions)

BORE ft.; diameter of bore: at top ins.; at bottom ins.
Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.).....

Water struck at depths of ft. below well-top.

Rest level of water 130 ft. ^{above} below well-top. Suction at ft. Yield on hours' test
pumping at galls. per with depression to ft. below well-top.
Recovery to rest-level in mins. Capacity of pump g.p.h. Date of measurements 1910.

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:
Make and/or type Motive power
Capacity gallons per hour. Suction at ft.
Amount pumped galls. per day. Estimated consumption galls. per week.
Well made by Date of well
Information from Field visit & Field sketch

ADDITIONAL NOTES

ANALYSIS (please attach copy if available)

Note on Field Sketch "130' to water"

shaft, disused and covered over with sheet of corrugated iron and rubble. Could be opened but at present inaccessible for measurement. Small boy who recently discovered the well said there was no water in it when he threw stones down. O.D. 27.3.

Visited & noted on Middlesex 9 NE/E Sheet 2-9-59.

LOG OF STRATA OVERLEAF.

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.	Section 6.	Date Received	1" O.S. Map No.	Site marked on 1" Map	(use symbol on 6" Map)
--	------------	------------------	--------------------	--------------------------	---------------------------