GEOLOGICAL & GEOTECHNICAL SITE INVESTIGATION REPORT

ON
PROPOSED 3 STORY ELDERLY HOME

AT
PADUKKA ROAD, GODAGAMA.

PREPARED FOR
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NO.283, SIRIDHAMMA MAWATHA, DEMATAGODA,
COLOMBO 10.

Report No: 2482 (Report Date: 2025 Jan 31)

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Contents

Contents

1. INTRODUCTION 3
2. DESCRIPTION OF THE SITE 3
3. FIELD INVESTIGATION 3
4. SUB SURFACE SOIL PROFILE 4
5. STRUCTURE DETAILS AND INITIAL DESIGN 5
6. INTERPRETATION AND RECOMMENDATIONS FOR FOUNDATIONS 6
6.1 Sub-surface features of the site 6
6.2 Factors affecting the selection of foundations 6
6.3 Recommendations for Geotechnical Parameters 7
6.4 Recommendations for foundations 8

List of Figures

Figure 1 Site Location over topographic map 9
Figure 2 Site location over satellite image 9
Figure 3 Borehole locations and site layout 10
Figure 4 Borehole investigation in progress at the site 11

List of Tables

Table 1 Sub surface soil profile at BH.01 4
Table 2 Sub surface soil profile at BH.02 4
Table 3 Sub surface soil profile at BH.03 4
Table 4 Geotechnical Parameters for the soil layers encountered at BH-01 7
Table 5 Geotechnical Parameters for the soil layers encountered at BH.02 7
Table 6 Geotechnical Parameters for the soil layers encountered at BH.03 7

List of Annexes

Annex i Borehole Logs 12

GEOTECHNICAL SOIL INVESTIGATION REPORT FOR PROPOSED 3 STOREYED ELDERLY HOME PROJECT AT GODAGAMA.

1. INTRODUCTION

The client Rev. Welimada Shantha Thero and devotees proposes to construct a new 3 level Elderly home at Padukka Road, Godagama. The clients project Engineer / Project Manager requested to investigate this site by making a borehole investigation. The purpose of the soil investigation is to check the sub soil conditions which will guide to design a proper foundation for this structure.

Project Engineer requested to test this site location by making borehole test at three locations. Therefore, SOILMATTER (PVT) LTD was authorized to carry out a Geotechnical soil investigation, and they in turn requested the author to prepare a geological log report with recommendations. SOILMATTER (PVT) Ltd conducted the field investigation and prepared geological borehole logs.

2. DESCRIPTION OF THE SITE

The site where the client has proposed to construct a new building is located facing Godagama Padukka Road. It is about 400 m away from Padukka Road. Site has a downward slope from road to the rear side of the land. Exact contour survey has not done at the time of investigation. Exact Site coordinates are (6°50'59.9"N 80°02'09.8"E). Exact site location can be seen in topographic map in figure 1 and satellite image in figure 2.

3. FIELD INVESTIGATION

The investigation was conducted from 21 to 23 of December 2024. The field tests consisted of three boreholes investigation at the location as shown in Annex i.

The borehole was advanced using a hydraulically operated XY-100 model Geotechnical Drilling machine with accessories. Boreholes are marked as BH.01, BH.02, and BH.03 in annexure i. The wash boring process and auguring were used to advance the borehole and removes the cuttings at the bottom of the borehole.

At every one-meter, when and where necessary standard penetration test (SPTs) were carried out regularly in the overburden using rope and pully method. This test was carried out as specified in BS: 1377. Disturbed samples of soil inclusive of those from the SPT tube were collected regularly.

4. SUB SURFACE SOIL PROFILE

Sub surface soil strata and related SPT N values summarized in the below tables.

Table 1 Sub surface soil profile at BH.01

Depth (m)	Soil Description	SPT "N"
0.0-1.0	Silty Sandy gravels /Top soil	-
1.0-3.0	Laterite CLAY with gravels	7, 10
3.0-4.0	Sandy CLAY with gravels	17
4.0-7.0	Sandy CLAY	16, 20, 19
7.0-9.0	Silty Sand with gravels (Completely weathered rock i)	21, 36
9.0-13.00	Silty Clayey Sand (Completely weathered rock ii)	39, 42, 48
13.0-16.0	Silty Clayey Sand (Completely weathered rock ii)	51, 56
16.0-17.0	Silty Clayey Sand with quarts gravels. (Completely weathered rock iii)	>60

Ground water level was found within the depth of 4.00 m

Table 2 Sub surface soil profile at BH.02

Depth (m)	Soil Description	SPT "N"
0.0-1.0	Clayey SAND /Top soil	-
1.0-3.0	Clayey SAND	6, 7
3.0-5.0	Silty SAND (Completely weathered rock i)	21, 31
5.0-7.5	Silty SAND (Completely weathered rock ii)	34, 37
7.5-10.0	Silty SAND (Completely weathered rock ii)	40, 46

Ground water level was found within the depth of 3.30 m

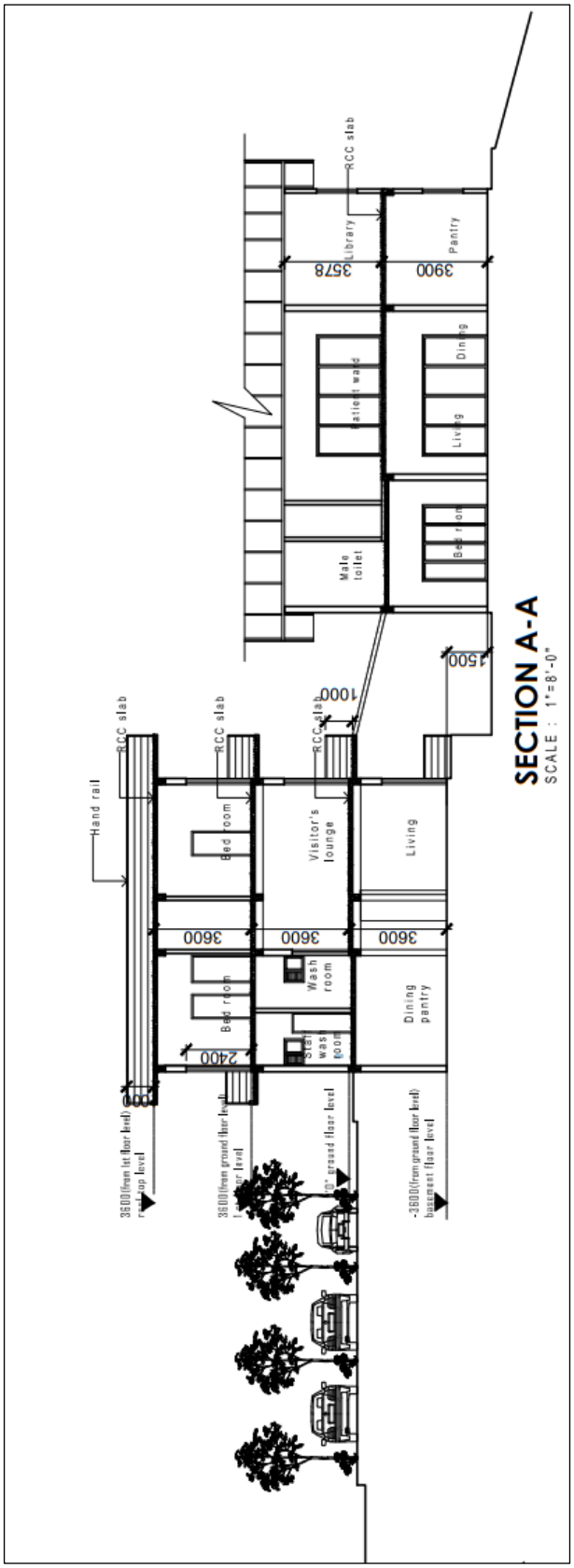
Table 3 Sub surface soil profile at BH.03

Depth (m)	Soil Description	SPT "N"
0.0-1.0	Silty Clayey SAND /Top soil	-
1.0-3.0	Clayey SAND	12, 14
3.0-9.0	Clayey Sand (Completely weathered rock i)	23, 25, 22, 26, 31
9.0-10.0	Silty SAND (Completely weathered rock ii)	40

Ground water level was found within the depth of 4.60 m

5. STRUCTURE DETAILS AND INITIAL DESIGN

Proposed structure is an elderly home building with 3 levels.



CONSULTANTS :

RAWO Design Studio (Pvt) Ltd.

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REV.	DATE	SIG.	DESCRIPTION

SCALE : 1 :100

DATE : 22 / 08 / 2024

CAD : MAHESH

DWG NO : RDS- 2024 /COUNCIL/ A 01

6. INTERPRETATION AND RECOMMENDATIONS FOR FOUNDATIONS

6.1 Sub-surface features of the site

Three boreholes, BH-01 to BH-03, had been advanced within the footprint of the proposed building adopting **a zero datum as the ground floor level** as shown in the site layout in figure 3.

Accordingly, borehole collar elevations and the Basement Floor Level can be identified as follows;

Borehole/Basement	Collar Elevation (m)
BH-01	-1.10
BH-02	-2.90
BH-03	-0.60
Basement floor level FFL (3 storey front building)	-3.60
Basement floor level FFL (2 storey rear building)	-5.10

BH-01 had been advanced and terminated at the depths of 17.0 m while BH-02 and BH-03, had been terminated at the depth of 10.0 m.

6.2 Factors affecting the selection of foundations

Primary factors affecting the selection of the foundations are:

- ***Loads and load effects to be transferred from the intended building***; An approximate maximum service column load of 400 kN was assumed. Project Designer/ Structural Consultant will be decided the actual column loading for these buildings.

- ***Subsurface conditions as encountered at the site****;* with the occurrence of stiff to medium dense soil layers extending from the depth of 1 m from the existing ground level at all borehole locations.

- ***Position of ground water level (GWL)***; which is encountered at the depth about 3.30 to 4.60 and which could be subject to seasonal variations;

- ***Site setting with respect to existing structures/amenities****;* as presented in the Report and need to protect their foundations.

6.3 Recommendations for Geotechnical Parameters

Based on the visual observation of the samples, SPT N values and the experience the undersigned have had with similar materials soil parameters shown in below tables are recommended for the encountered soil layers.

Table 4 Geotechnical Parameters for the soil layers encountered at BH-01

Position (m)		Layer Description	Ave. SPT 'N'	Ave. Shear Strength Parameters	
From	To			c'(kPa)	φ'(°)
0.0	1.0	Silty Sandy gravels /Top soil	-	-	-
1.0	3.0	Laterite CLAY with gravels	7, 10	3	24
3.0	4.0	Sandy CLAY with gravels	17	8	27
4.0	7.0	Sandy CLAY	16, 20, 19	8	27
7.0	9.0	Silty Sand with gravels (Completely weathered rock i)	21, 36	8	28
9.0	13.0	Silty Clayey Sand (Completely weathered rock ii)	39, 42, 48	10	32
13.0	16.0	Silty Clayey Sand (Completely weathered rock ii)	51, 56	11	35
16.0	17.0	Silty Clayey Sand with quarts gravels. (Completely weathered rock iii)	>60	15	36

Table 5 Geotechnical Parameters for the soil layers encountered at BH.02

Position (m)		Layer Description	Ave. SPT 'N'	Ave. Shear Strength Parameters	
From	To			c'(kPa)	φ'(°)
0.0	1.0	Clayey SAND /Top soil	-	-	-
1.0	3.0	Clayey SAND	6, 7	3	23
3.0	5.0	Silty SAND (Completely weathered rock i)	21, 31	8	28
5.0	7.5	Silty SAND (Completely weathered rock ii)	34, 37	10	30
7.5	10.0	Silty SAND (Completely weathered rock ii)	40, 46	10	35

Table 6 Geotechnical Parameters for the soil layers encountered at BH.03

Position (m)		Layer Description	Ave. SPT 'N'	Ave. Shear Strength Parameters	
From	To			c'(kPa)	φ'(°)
0.0	1.0	Silty Clayey SAND /Top soil	-	-	-
1.0	3.0	Clayey SAND	12, 14	5	25
3.0	9.0	Clayey Sand (Completely weathered rock i)	23, 25, 22, 26, 31	8	29
9.0	10.0	Silty SAND (Completely weathered rock ii)	40	10	35

6.4 Recommendations for foundations

At the outset, given the topographical and observed groundwater conditions of the site, the architectural intent envisaging a basement (with the Basement Floor elevation of about -3.60 m and -5.10 m) for the buildings are commendable.

Accordingly, the depth to the basement floor level at the different borehole locations with respect to their respective collar elevations shall be as follows;

Borehole	Depth to Basement Floor
BH-01	2.50 m below
BH-02	2.10 m below
BH-03	3.00 m below

Having noted as above and based on the factual information on the subsurface condition and other influencing factors founding the structure discussed in the preceding sections of this report, it is recommended that the foundation of the building can consist of individual pad footings connected at the plinth level or combined footings or inverted-T type strip footings.

Every footing shall be placed on the competent ground which can be adopted to occur 3 m below the borehole collar elevations at every investigated location, i.e. at BH-01 through BH-03.

The footings shall be placed as recommended above in the competent ground and can be designed for a net allowable bearing capacity of 150 kPa.

It should however be noted that adequate drainage provisions be required to keep the basement floor dry during storm events and to enjoy the benefits of the recommended shallow foundation system. With inadequate drainage provisions for the full height of the envisaged retaining walls, etc might pave way for the GWT to rise during such events leading to a wet basement floor. The Project Designer's attention is drawn in this respect.

The Project Designer is also cautioned on the possible variations of the subsurface conditions at the proposed founding locations and advised to verify the actual ground conditions taking the outcome of the investigations at boreholes already carried out as a yardstick for necessary amendments of the founding parameters, as may be necessary. For the purpose, it is suggested that the excavation for footings (or pits in their absence) be carried **at the locations of the advanced boreholes, at the outset of construction works**, to identify the different consistency and compactness of the encountered materials.

Report Prepared By

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Geological Engineer/ Engineering Geologist

Figure 1 Site Location over topographic map

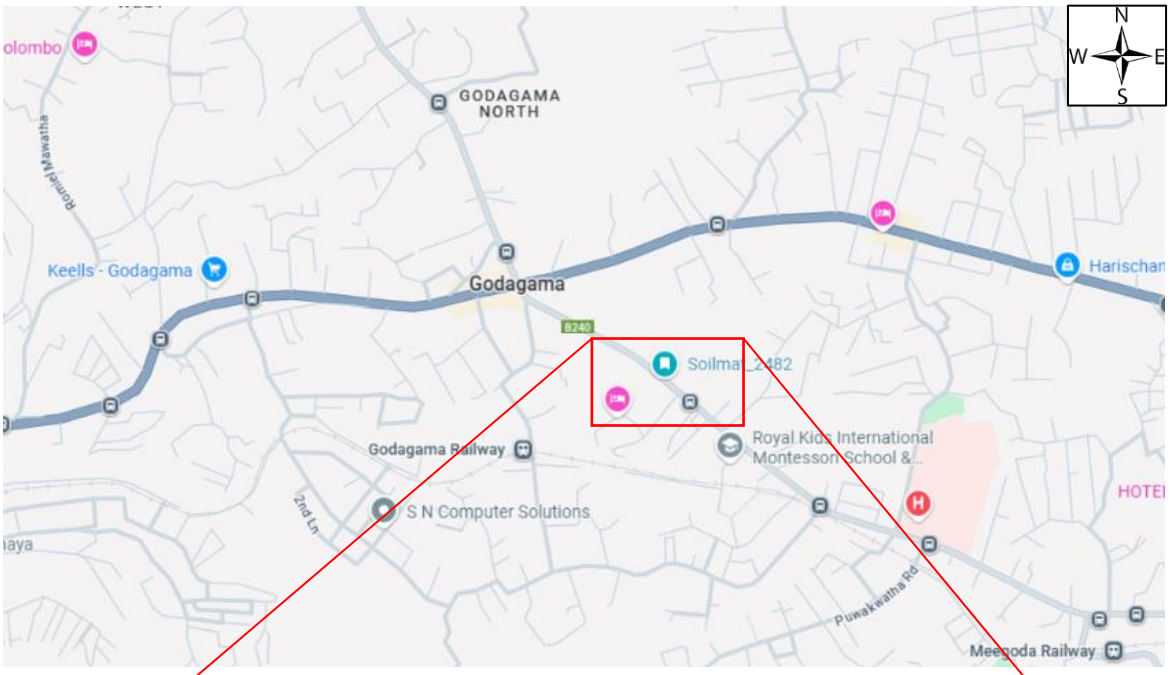
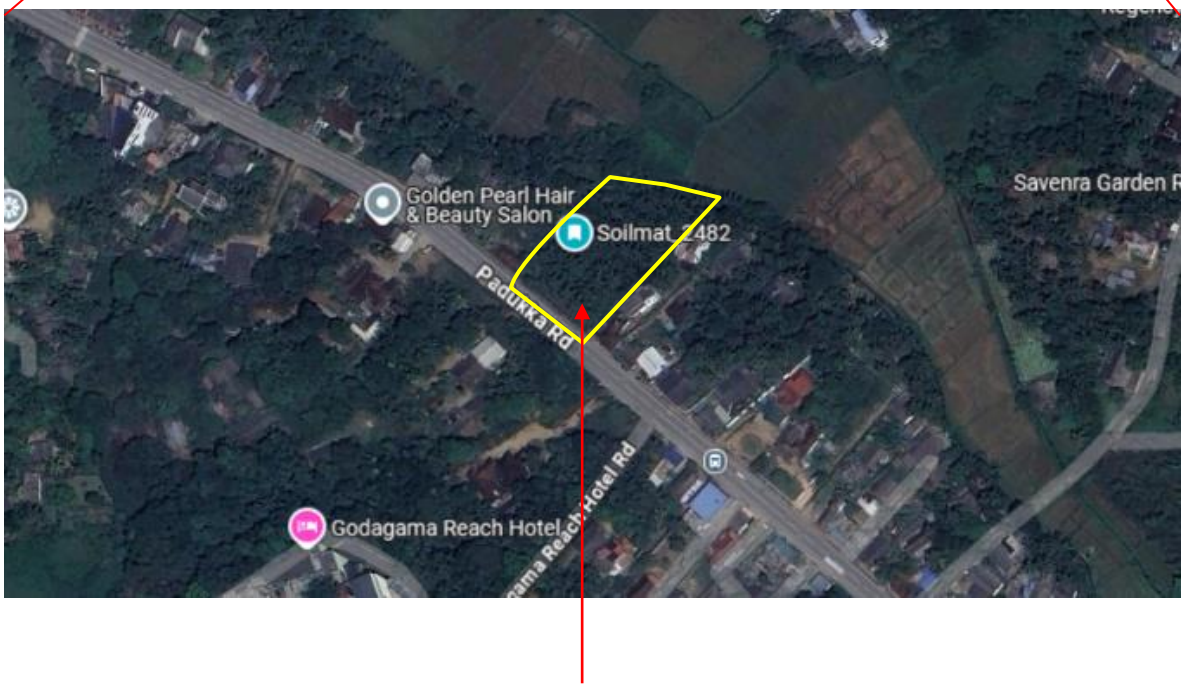


Figure 2 Site location over satellite image



Boreholes investigated area

Figure 3 Borehole locations and site layout

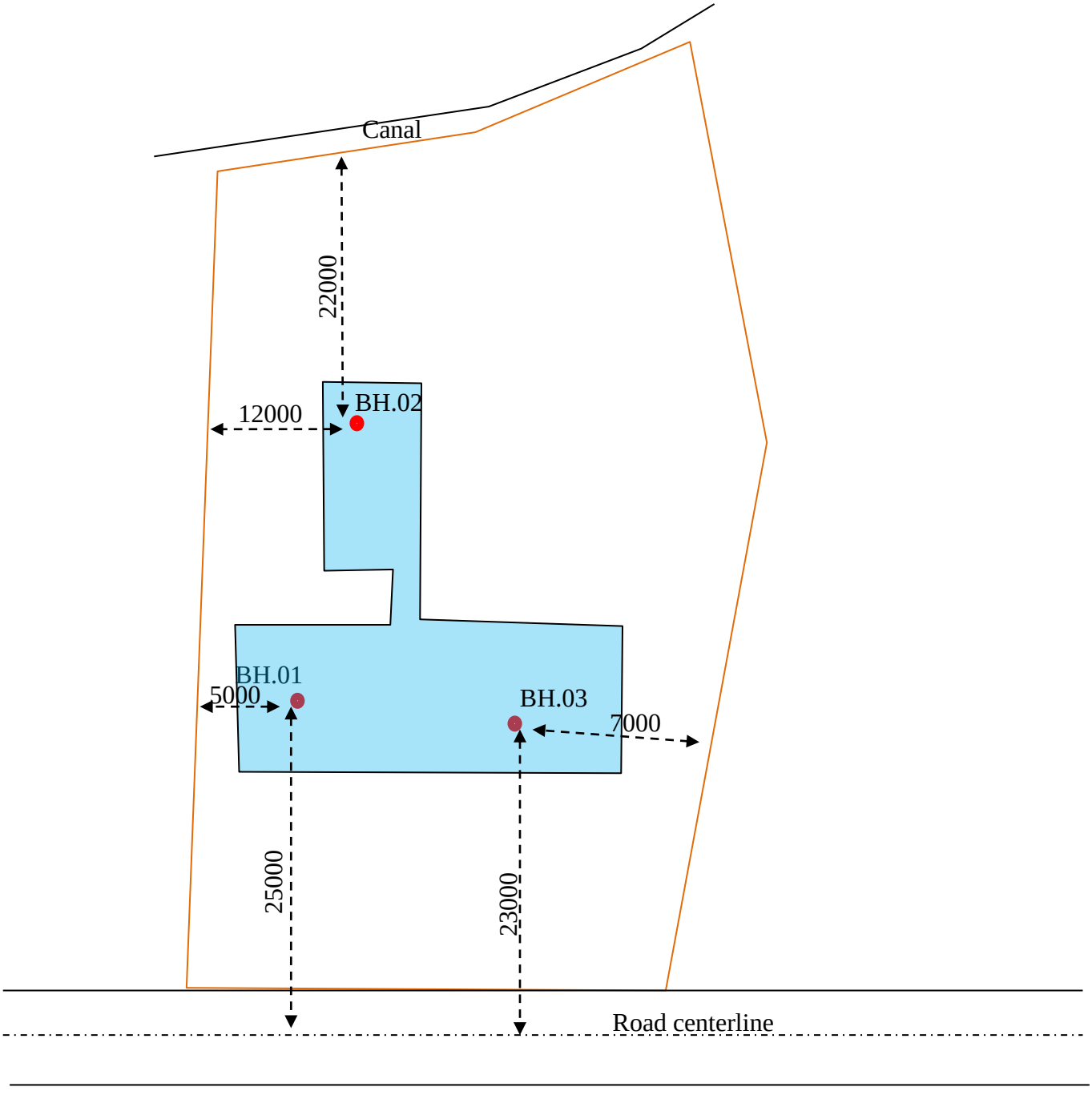


Figure 4 Borehole investigation in progress at the site

BH.01

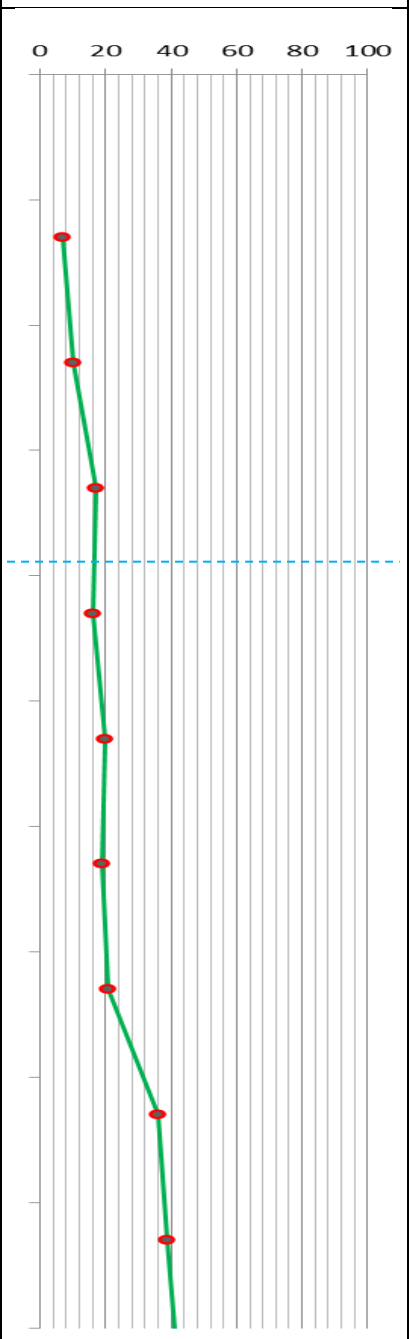
BH.02

BH.03

Annex i Borehole Logs

Location	Padukka Road, Godagama				
Project	Elderly home construction				
Client	Maha Visuddharamaya, No.283, Siridhamma Mawatha, Dematagoda, Colombo 10				
Bore Hole#	BH.01	Starting date: 21/12/2025			Ending date: 21/12/2025

Classification of the Soil / Rock	Depth (m)	Legend	Soil Symbol	SPT "N" value	Water Level: 4.00 m
Top soil Grey colored, Silty Sandy gravels.	00.00			-	
----------	01.00			03 03 04 N=07	
Mottled red Brown and yellow brown colored, Laterite Clay with quarts gravels.					
----------	02.00			03 04 06 N=10	
Laterite Clay with quarts gravels.					
----------	03.00			05 07 10 N=17	
Sandy CLAY with gravels.					
----------	**04.00**			05 07 09 N=16	
Pink colored, Sandy CLAY.					
	05.00			08 09 11 N=20	
Sandy CLAY.					
	06.00			06 09 10 N=19	
Sandy CLAY.					
----------	07.00			07 09 12 N=21	
Mottled yellow brown and milky colored, Silty Sand with gravels. (Completely weathered rock i)					
	08.00			09 17 19 N=36	
Completely weathered rock i					
----------	09.00			08 17 22 N=39	
Silty Clayey Sand (Completely weathered rock ii)					
	10.00				



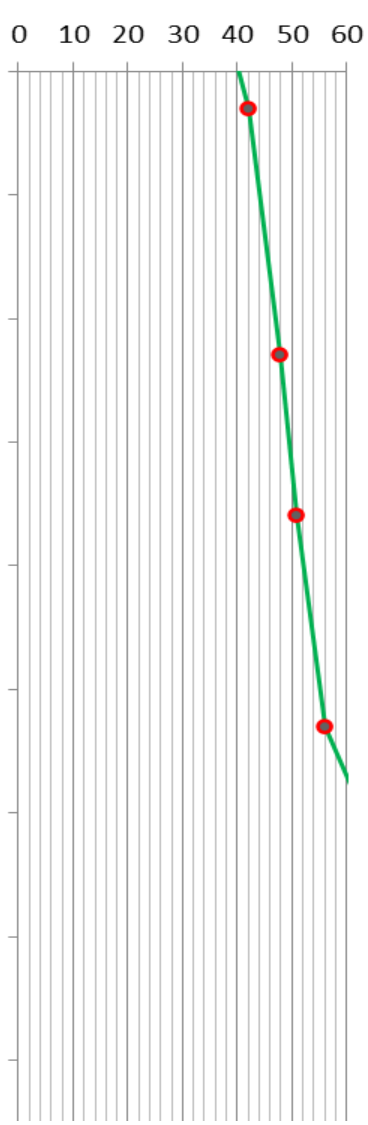
Sample/ Test key

MPS Medium Particle Size
MWR Moderately Weathered Rock
HWR Highly Weathered Rock
HB Hammer Bounced

Remarks:

Core recovery (CR)
Rock quality designation (RQD)

Location	Padukka Road, Godagama				
Project	Elderly home construction				
Client	Maha Visuddharamaya, No.283, Siridhamma Mawatha, Dematagoda, Colombo 10				
Bore Hole#	BH.01	Starting date: 21/12/2025			Ending date: 21/12/2025

Classification of the Soil / Rock	Depth (m)	Legend	Soil Symbol	SPT "N" value	Water Level:
Silty Clayey Sand (Completely weathered rock ii)	10.00			10 18 24 N=42	
	11.00			-	
	12.00			17 22 26 N=48	
Silty Clayey Sand (Completely weathered rock ii)	13.00			-	
	14.00			21 23 28 N=51	
Silty Clayey Sand (Completely weathered rock ii)	15.00			23 26 30 N=56	
----------	16.00			25 33 HB N>60	
Silty Clayey Sand with quarts gravels. (Completely weathered rock iii)	17.00				
Borehole was terminated at 17.00 m	18.00				
	19.00				
	20.00				

Sample/ Test key

MPS Medium Particle Size
MWR Moderately Weathered Rock
HWR Highly Weathered Rock
HB Hammer Bounced

Remarks:

Core recovery (CR)
Rock quality designation (RQD)

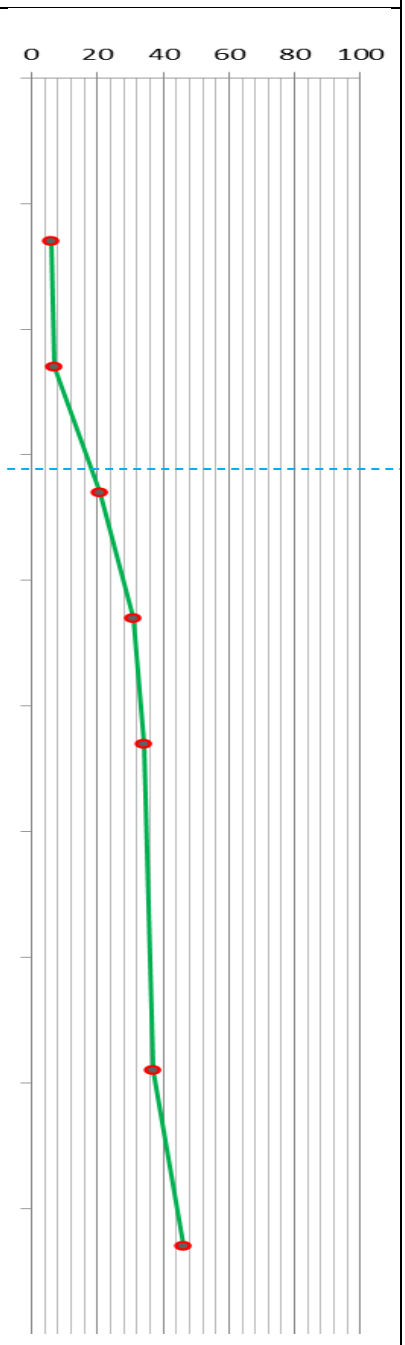
Location	Padukka Road, Godagama
Project	Elderly home construction
Client	Maha Visuddharamaya, No.283, Siridhamma Mawatha, Dematagoda, Colombo 10
Bore Hole#	BH.02

Starting date: 22/12/2025

Ending date: 23/12/2025

Water Level: 3.30 m

Classification of the Soil / Rock	Depth (m)	Legend	Soil Symbol	SPT "N" value
Top soil Grey colored, Clayey SAND.	00.00			-
----------	01.00			02 03 03 N=06
Brownish yellow colored, Clayey SAND (80 % sand)				
----------	02.00			04 03 04 N=07
Milky colored Clayey SAND (80 % quarts sand) .				
----------	03.00			05 07 14 N=21
	03.30			
Brownish yellow colored, Silty SAND (Completely weathered rock i)				
----------	04.00			10 12 19 N=31
Mottled yellow and red brown colored, Silty SAND (Completely weathered rock i)				
----------	05.00			09 16 18 N=34
Brownish yellow colored, Silty SAND. *Very coarse quarts* (Completely weathered rock ii)	06.00			10 17 20 N=37
	07.00			-
----------	07.50			11 20 20 N=40
Silty SAND (Completely weathered rock ii)	08.00			-
Silty Sand (Completely weathered rock ii)	09.00			12 22 24 N=46
Borehole was terminated at 10.00 m	10.00			



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HB Hammer Bounced

Remarks:

Core recovery (CR)
Rock quality designation (RQD)

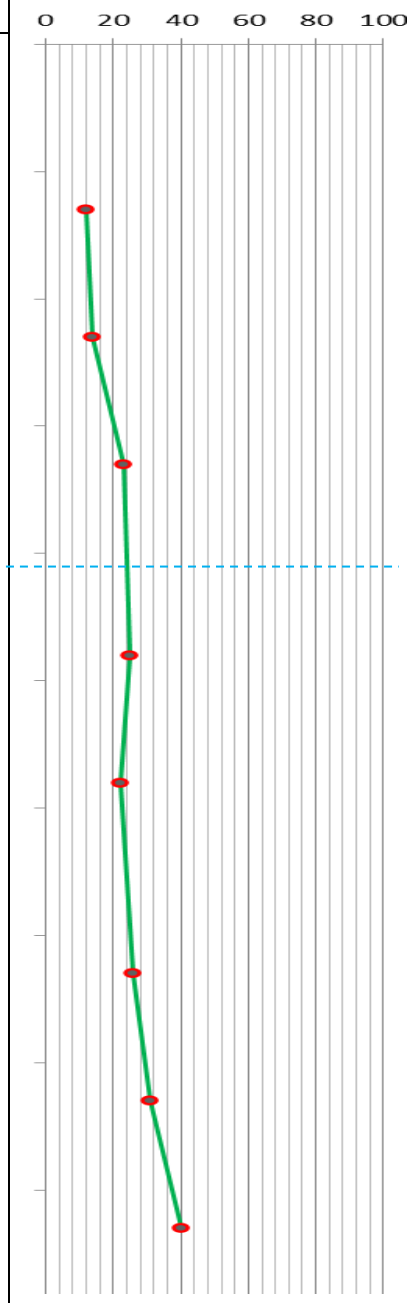
Location	Padukka Road, Godagama
Project	Elderly home construction
Client	Maha Visuddharamaya, No.283, Siridhamma Mawatha, Dematagoda, Colombo 10
Bore Hole#	BH.03

Starting date: 22/12/2025

Ending date: 23/12/2025

Water Level: 4.60 m

Classification of the Soil / Rock	Depth (m)	Legend	Soil Symbol	SPT "N" value
Top soil Grey colored, Silty Clayey SAND.	00.00			-
----------	01.00			06 06 06 N=12
Brownish yellow colored, Clayey SAND ----------	02.00			05 06 08 N=14
Red brown colored Silty Clayey SAND . ----------	03.00			10 11 12 N=23
Mottled yellow and red brown colored, Clayey SAND (Completely weathered rock i) ----------	04.00			11 12 13 N=25
Clayey SAND (Completely weathered rock i)	**04.60** 05.00			10 10 12 N=22
Clayey SAND (Completely weathered rock i)	06.00 07.00			10 12 14 N=26
Clayey SAND (Completely weathered rock i)	08.00			10 15 16 N=31
----------	09.00			12 16 24 N=40
Silty SAND (Completely weathered rock ii)	10.00			
Borehole was terminated at 10.00 m				



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