

## TECHNICAL NOTE

<b>Project no:</b>	221111
<b>Project:</b>	Salisbury Square, Old Hatfield
<b>Date:</b>	18 Apr 2024
<b>Author:</b>	Pete Boal
<b>Subject:</b>	Proposed CFA Piling Depth – Planning Condition 8

### 1.0 INTRODUCTION

Planning application 6/2021/3422/MAJ Condition 8 requires submission of an Intrusive Ground Investigation, Risk Assessment and Method Statement in relation to excavations of foundations (piling) in respect to risk of contamination of groundwater or establishment of vertical pathways for contamination.

### 2.0 PREVIOUSLY SUBMITTED INFORMATION

RSK have provided an intrusive Ground Investigation Report 1922048 R02 (02). This establishes CFA piling as an appropriate structural foundation to the proposed buildings, as indicated on the Conisbee structural foundation drawings (300mm / 450mm diameter CFA piles indicated).

RSK have also provided a Piling Works Risk Assessment RSK 1922048 R03 (00) which summarises the Geology, Hydrology and Contamination Status of the site and presents the Proposed CFA Piling Strategy and Piling Works Risk Assessment in respect to the proposed works. The included Hazard Assessment establishes that there is Low Risk of establishing pollution pathways for non-displacement CFA Piles.

The RSK reports confirm that the chalk bedrock relating to the lower aquifer was encountered at 17m below ground level.

The piling works risk assessment allows for the scenario where CFA piles reach 20m length, i.e. in the upper part of the chalk, above the water table, and concludes that the risk of introducing pollution pathways is very low both during construction and after construction. Refer to extract of report below.

The proposed end bearing piles will be constructed down through the Made Ground to end bear within either the superficial deposits or if necessary, in a limited number of cases, the initial unsaturated zone of the White Chalk (<20 m depth). Though the actual individual pile depths remain to be finalised, the pile toes will remain above the water table.

Detected contamination	Potential risks associated with piling works	Risk rating / mitigation / justification
Potential presence of bromate / bromide contamination within the Principal Aquifer	Potential introduction of vertical migration pathway to upper gravels in Secondary Aquifer	<p>The risks to introduce the migration pathway is considered very low. The upward migration of the bromate / bromide contamination (if present) is unlikely considering the piles will not extend in to the water table within the Principal Aquifer during construction. Following construction, even if groundwater levels fluctuate within the Principal Aquifer, there is no situation where levels could rise to such an extent to reach the upper gravels. Consequently, there is no process by which bromate (if present) could migrate upward in the permanent condition to contaminate the upper gravels within the Secondary Aquifer.</p>

In section 4.1 of the Piling Works Risk Assessment, RSK advise that non-displacement CFA piling is considered to be a strongly suitable technique given the characteristics of the underlying geology and hydrology.

### 3.0 PROPOSED PILE DESIGN

The main Contractor Boom Construction Limited (BCL) have provided a CFA pile design from R W Hill, which is appended to this technical note.

The pile design confirms that pile toe depths are at relatively shallow depth:

- Mixed use building max pile length noted as 15.7m (P69).
- Townhouses max length noted as 13.8m (HP15).

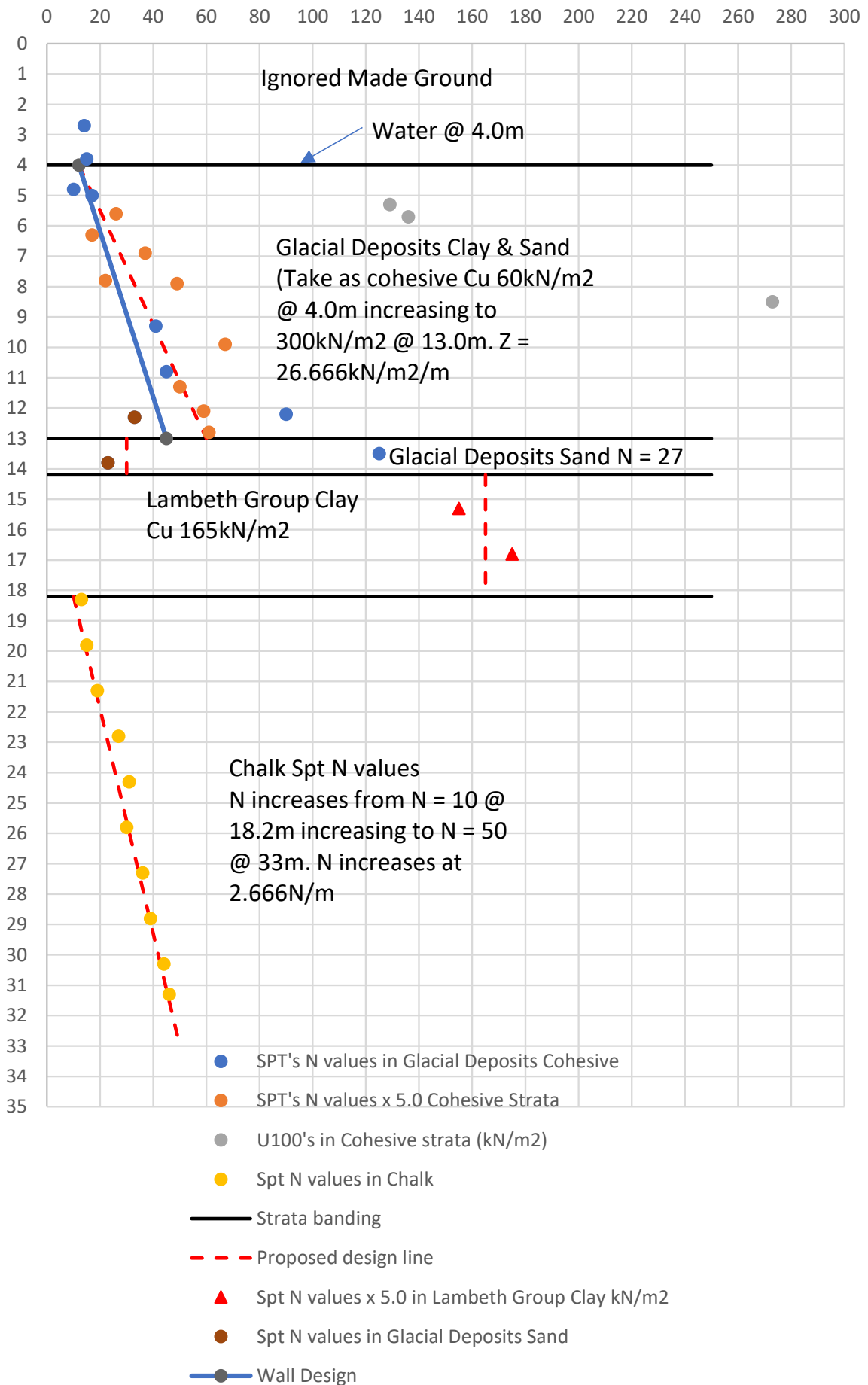
The proposed pile lengths result in the toe of the piles being less than 17m below ground level, which means that the pile excavation will not penetrate into the chalk bedrock. The risk of introducing pollution pathways is therefore even lower than that established by RSK for piles of

greater length (up to 20m length).

Given the proposed piling depths of less than 17m bgl, and the proposed CFA piling technique, the proposed pile design can be taken to be in accordance with the principles of the RSK Piling Works Risk Assessment. As such, the risk of introducing pollution pathways can be considered to be very low both during construction and after construction.

## APPENDIX A – PILING DESIGN

# Salisbury Square, Old Hatfield, Herts AL9 5AD





Project: [ ]

Project No: Rpq11279

File: [ ]

Revision: [ ]

Based on: [ ]

PR - 19.70 m ADD

CHALK PILE STATIC DESIGN SHEET

(C.F.A. PILES C574 & PR086)

Comp Tension

Depth Interval 0.5, Input By: BGM, Revisd By: [ ], Chalk By: [ ], Approved For: [ ], Construction: [ ], Date: [ ]

Model Factor table with values for F of S (shaft) and F of S (base) ranging from 1.0 to 3.0.

Main design table with columns for Depth, Soil, Chalk, Sand, Clay, N.S.F., Effective, F.O.S. case 1, F.O.S. case 2, F.O.S. case 3, C.F.A. Piles, and Tension. Includes data for various soil types and pile capacities.

Notes: 1. The Unit Base figures are limited to values given in PR11. 2. Where 'N' in chalk < 5 + d, use PR11. Where 'N' in chalk generally exceeds 20 + d, use PG6. [d = depth below top of chalk (m)]

Summary table for 'In The Chalk' and 'Model Factor' with values for F of S (shaft) and F of S (base) ranging from 1.5 to 3.0.



Project: [ ]

Project No: Rpq11279

File: [ ]

Revision: [ ]

Based on: [ ]

PR - 19.70 m ADD

CHALK PILE STATIC DESIGN SHEET

(C.F.A. PILES C574 & PR086)

Comp Tension

Depth Interval 0.5, Input By: RGM, Revisd By: [ ], Chkd By: [ ], Approved For: [ ], Construction: [ ], Date: [ ]

Model Factor table with values 1.4, 1.4, 1.4, 1.4, 1.4, 1.4, 1.4, 1.4

Main data table with columns for Depth, Soil, Chalk, Sand, Clay, N.S.F., Effective, F.O.S. case 1, F.O.S. case 2, F.O.S. case 3, C.F.A. Piles, and Tension. Includes various engineering parameters and calculations.

Notes: 1. The Unit Base figures are limited to values given in PR11. 2. Where 'N' in chalk < 5 <= use PR11. Where 'N' in chalk generally exceeds 20 <= use PG6. [d = depth below top of chalk (m)]

Summary tables for 'In The Chalk' and 'Model Factor' with values for F of S (shaft) and F of S (base).



Project: [ ]

Project No: Rpq11279

File: [ ]

Revision: [ ]

PR = 19.70 m ADD

CHALK PILE STATIC DESIGN SHEET

(C.F.A. PILES C574 & PR086)

Comp Tension

Depth Interval 0.5, Based on: [ ], Input By: [ ], Revisd By: [ ], Chkd By: [ ], Approved For: [ ], Date: [ ]

Model Factor table with values for F of S (shaft) and F of S (base) for different conditions.

Main design table with columns for Depth, Soil, Chalk, Sand, Clay, N.S.F., Effective, F.O.S. case 1, F.O.S. case 2, F.O.S. case 3, C.F.A. Piles, and Tension. Includes various engineering parameters and calculations.

Notes: 1. The Unit Base figures are limited to values given in PR11. 2. Where 'N' in chalk < 5 <= 4, use PR11. Where 'N' in chalk generally exceeds 20 <= 4, use PG6. [d = depth below top of chalk (m)]

Summary table for In The Chalk, F of S (shaft), and F of S (base) with values 1.5, 3.0, and 3.5.





Project: [ ]

Project No: Rpq11279

File: [ ]

Revision: [ ]

PR = 19.70 m ADD

CHALK PILE STATIC DESIGN SHEET

(C.F.A. PILES C574 & PR086)

Comp Tension

Depth Interval 0.5, Based on: [ ], Input By: [ ], Revisd By: [ ], Chkd By: [ ], Approved For: [ ], Construction: [ ], Date: [ ]

Model Factor table with values for F of S (shaft) and F of S (base) above and below the chalk.

Main data table with columns for Depth, Soil, Chalk, Sand, Clay, N.S.F., Effective, F.O.S. case 1, F.O.S. case 2, F.O.S. case 3, C.F.A. Piles, and Tension. Includes various engineering parameters and design values.

Notes: 1. The Unit Base figures are limited to values given in PR11. 2. Where 'N' in chalk < 5 + d, use PR11. Where 'N' in chalk generally exceeds 20 + d, use PG6. [d = depth below top of chalk (m)]

Summary tables for 'In The Chalk' and 'Above The Chalk' showing F of S (shaft) and F of S (base) values.



Project: [ ]

Project No: Rpq11279

File: [ ]

Revision: [ ]

Based on: [ ]

PR - 19.70 m ADD

CHALK PILE STATIC DESIGN SHEET

(C.F.A. PILES C574 & PR086)

Comp Tension

Depth Interval 0.5, Input By: BGM, Revisd By: [ ], Chkd By: [ ], Approved For: [ ], Construction: [ ], Date: [ ]

Model Factor table with values for F of S (shaft) and F of S (base) above and below the chalk.

Main design table with columns for Depth, Soil, Chalk, Sand, Clay, N.S.F., Effective, F.O.S. case 1, F.O.S. case 2, F.O.S. case 3, C.F.A. Piles, and Tension. Includes data for various soil types and pile capacities.

Notes: 1. The Unit Base figures are limited to values given in PR11. 2. Where 'N' in chalk < 5 + d, use PR11. Where 'N' in chalk generally exceeds 20 + d, use PG6. [d = depth below top of chalk (m)]

Summary table for In The Chalk, F of S (shaft), and F of S (base) with values 1.5, 3.0, and 3.5.



