

P e l l F r i s c h m a n n

Longhurst Road, Blackley, Manchester

Geotechnical Design Addendum Report

Rear Dwelling Retaining Wall

Project	Longhurst Road, Blackley, Manchester
Client	Great Places Housing Group
Document Title or Subject	Geotechnical Design Addendum Report – Rear Dwelling Retaining Wall
Document Reference	106240-PE:-GEN-XX-RP-D-0005
Revision	02
Prepared by	Sean Webb/Kevin Stone (Pell Frischmann)
Date	04/10/2024

1 Introduction

Pell Frischmann have been commissioned by Great Places Housing Group to undertake a geotechnical design addendum report for the proposed rear dwelling retaining wall within Blocks 3-9 at Longhurst Road, Blackley, Manchester. This addendum report follows on from the *Geotechnical Design Report – Foundations* (Report Ref: 106240-PEL-GEN-XX-RP-D-0004, dated: February 2024).

The proposed residential dwellings will be constructed using strip footing foundations embedded into the underlying Glacial Till Formation geological strata. The foundation depths are primarily influenced by the expected volume changes and heave due to the presence of existing, retained, and removed trees, as per NHBC Standards 2014 – Section 4.2. Laboratory testing of the Glacial Till strata (Atterberg limits and Particle Size Distribution) indicates the underlying strata has a low volume change potential.

This addendum report details the design of a rear retaining wall within Blocks 3-9, which will replace the previously designed deepened trench fill foundations mentioned in the earlier report. The geotechnical parameters from the previous Geotechnical Design Report (GDR) have been utilised to design the rear retaining wall. The base of the proposed retaining wall will tie into the previously designed proposed shallow strip footings that form the foundations for the rest of the dwellings.

1.1 Proposed Retaining Wall

The proposed retaining wall is approximately 61m in length and will extend from Blocks 3 to 9. It will consist of a reinforced concrete retaining wall, designed to buttress the upslope soils at the rear of the property and within the southwestern portion of the site. Additionally, it will serve as the ground-bearing foundation for the rear dwelling wall. The base of the cantilever retaining wall will integrate with the proposed mass concrete strip footings. The alignment and extent of the proposed retaining wall are illustrated in Figure 1.

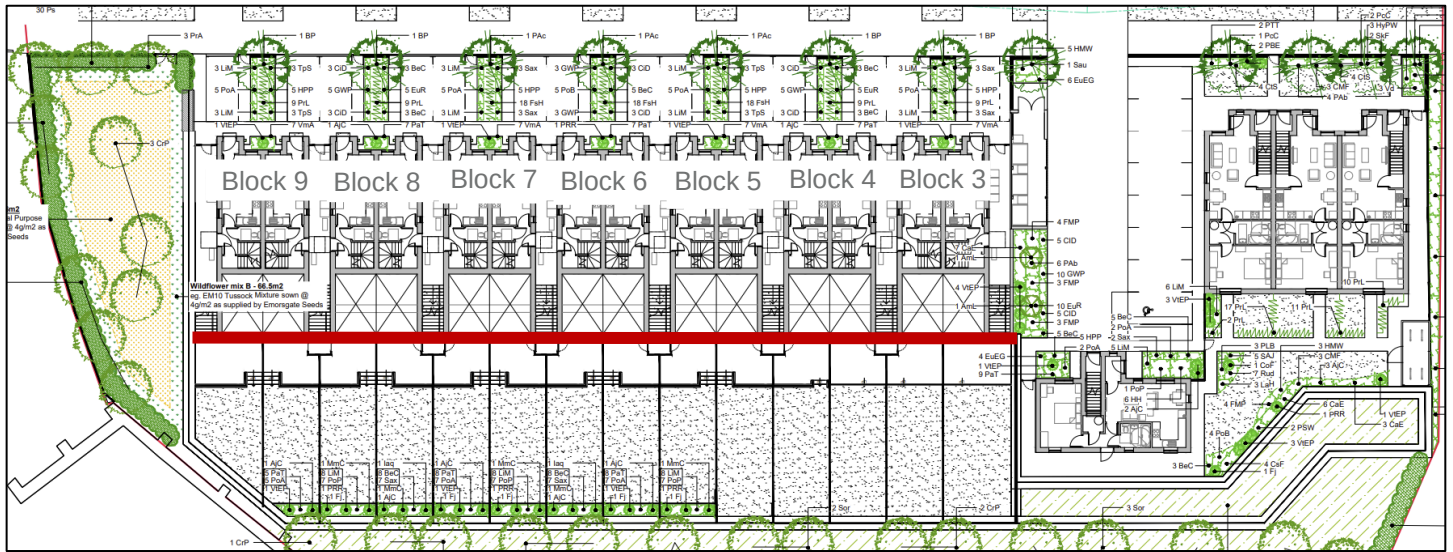


Figure 1: Rear Retaining Wall Extent (RED)

The southwestern and northeastern sections of the proposed rear retaining wall will be built next to existing sheet piles, which were designed and installed by Quinn Group. The proposed retaining walls should be constructed in a manner that ensures the proposed retaining wall excavation do not undermine the existing sheet piles.

1.2 Retaining Wall Design

1.3 Design Criteria and Standards

The proposed reinforced concrete retaining wall has been calculated utilising the commercial software *Tekla Tedds* by Trimble Inc. The *Tekla Tedds* calculation outputs are presented in Appendix A.

The design standards and principal guidance documents that have been followed are as follows:

Standards

- BS EN1990:2002+A1:2005, Eurocode – Basis of structural design
- UK NA to BS EN1990:2002+A1:2005
- BS EN1997-1:2004+A1:2013, Geotechnical Design - Part 1: General rules
- UK NA to BS EN1997-1:2004+A1:2013
- BS 8002:2015, Code of practice for earth retaining structures

1.4 Wall Design Elements and Geometry

The ground profiles for the retaining wall design are derived from the design earthworks drawing 106240-PEL-HML-01-DR-D-0002. The top of the proposed retaining wall is approximately 89.075m OD. The base of the retaining wall varies in order to connect to tie into the proposed shallow strip footings. The design considers the worst-case retained height. As the retaining wall will function as a shallow foundation, its base shall be compatible with the foundation depth requirements outlined in NHBC Section 4.2. The geometry of the wall used for the design is shown in Figure 2.



Pell Frischmann



1.5 Conclusion

Pell Frischmann has completed the geotechnical design addendum for the proposed rear dwelling retaining wall at Longhurst Road, Blackley, Manchester. This report is a addendum to the previous *Geotechnical Design Report – Foundations* (February 2024).

The proposed dwellings will use strip footing foundations embedded into the Glacial Till Formation, with depths designed to manage volume changes and heave due to trees, per NHBC Standards 2014 – Section 4.2. The proposed retaining has been designed to retain the upslope soils at the rear of the property and will serve as the ground-bearing foundation for the rear wall of the dwellings.

The 61-meter retaining wall, extending from blocks 3 to 9, has been assessed using Tekla Tedds software. The design complies with relevant standards, including BS EN1990:2002+A1:2005 and BS EN1997-1:2004+A1:2013

This report is to be regarded as confidential to our Client and is intended for their use only and may not be assigned except in accordance with the contract. Consequently, and in accordance with current practice, any liability to any third party in respect of the whole or any part of its contents is hereby expressly excluded, except to the extent that the report has been assigned in accordance with the contract. Before the report or any part of it is reproduced or referred to in any document, circular or statement and before its contents or the contents of any part of it are disclosed orally to any third party, our written approval as to the form and context of such a publication or disclosure must be obtained.

Report Ref.		Addendum Report - Dwelling Retaining Walls.Docx				
File Path		https://pellf-my.sharepoint.com/personal/seanwebb_pellfrischmann_com/Documents/Projects/106240 - Longhurst Road/Dwelling Retaining Wall - Design/Addendum Report - Dwelling Retaining Walls.docx				
Rev	Suit	Description	Date	Originator	Checker	Approver
P01	1	Initial issue	04-10-2024	SMW	KS	KS
P02	1	First Review	08-10-2024	SMW	KS	KS
Ref. reference. Rev revision. Suit suitability.						

