

# STRUCTURAL ENGINEER'S RESPONSE TO QUERIES RAISED BY CARD GEOTECHNICS LIMITED

**Project:** 7 Branch Hill, London NW3 7LT **Project No.** 7922

**Date:** 29 June 2016

**Reponse By:** Ravi Azad MEng CEng MICE MStructE  
(Technical Director, Sinclair Johnston & Partners)

## GENERAL

The following report has been prepared in response to structural queries raised by Card Geotechnics Ltd, following their review of structural information submitted by Sinclair Johnston & Partners (SJ&P) to discharge planning conditions set by the London Borough of Camden (document ref. CG/08649a, dated 25<sup>th</sup> May 2016).

Specific responses to queries raised by Card Geotechnics Ltd (CGL) as part of their review have been outlined below for clarity.

## RESPONSES

1. The interface between the existing rear wall of the existing building and sheet piled wall on site has been investigated by core drilling through the wall. Please find enclosed a report prepared by concrete investigation specialists, Sandberg Ltd, and SJ&P's interpretation of these investigation works. The investigation works confirmed that the reinforced concrete rear wall to the existing building had been cast up against the sheet steel piled wall.

The proposed construction sequence remains unchanged, and is broadly as follows:

- laterally prop the existing reinforced concrete wall as excavation progresses downwards;
- underpin the existing rear wall to underside of basement level;
- and build up independent new r.c. wall in front of existing rear wall, with the new wall designed to take full earth and surcharge loading).

This is all as shown on SJ&P structural drawings.

2. Groundwater investigation and monitoring has been undertaken as part of the works that Sandberg Ltd undertook. No water was found, and this has been recorded in both the Sandberg Ltd report and SJ&P notes (enclosed). It is proposed that groundwater will continue to be monitored as works proceed on site.

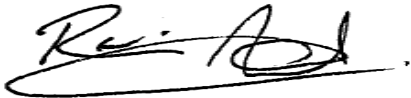
3. We note that CGL accept that the GEA ground movement analysis report satisfactorily demonstrates that ground movements can be controlled to limit predicted damage, and that this query is now closed out.
4. The sectional properties of the existing sheet pile wall and thickness of concrete have been investigated by in-situ investigation. It is impractical to investigate the length / toe level of the wall at this stage, and this will be confirmed once demolition works commence. In any case, neither the permanent structure nor temporary supports rely on the existing wall being founded at any particular depth. The existing wall is to be propped laterally, underpinned, and then a new wall is to be cast in front of the existing, rendering the existing wall effectively redundant (it will 'lean' against the new internal retaining wall, which itself will be propped by floor slabs).
5. The interface between the concrete rear wall and the sheet pile wall has been investigated. Please refer to the Sandberg report which confirms that the concrete has been cast directly against the sheet piles, with no slip membrane between. In any case, there is no reliance for frictional resistance to be developed between the two surfaces, as the existing retaining wall will become effectively redundant as part of the proposed works.
6. No groundwater has been found from the in-situ investigation and monitoring, which is understandable as the site is near the top of a very steep hill. In any case, it is envisaged that any groundwater seepages encountered during excavation can be dealt with by local pumping with no adverse impact on the surrounding ground. These proposals will be included within the Contractor's construction methodology statement.
7. A Main Contractor has not been appointed yet, however it is agreed that it is imperative that they prepare a detailed construction methodology for the works. This must follow the basis of the design assumptions we have made, and will be reviewed by us prior to acceptance by the project team.
8. The Main Contractor, once appointed, will provide:
  - a. Details of procedures for auditing and controlling site works during construction
  - b. Details of temporary works checking regime
  - c. Detailed contingency plans to reinstate and control ground movements should they occur
  - d. Evidence of recent and successful experience in the construction of basements of this scale in London (track record)
  - e. Details of accreditation or membership of accredited bodies (such as ASUC).
  - f. Details of warranty/insurance cover
  - g. Details of all subcontractors involved in the basement excavation, including track records, construction method statements, insurances
9. SJ&P will undertake an independent review of the Contractor's design and methodology prior to acceptance of the proposals.

SJ&P have been appointed to undertake regular site inspections to see that the works are carried out in accordance with the approved design.

CONCLUSION

It is considered that the additional information enclosed and responses referred to above provide clarification to the queries raised by CGL as part of the BIA audit, and that out all items on the CGL Audit Query Tracker can now been closed out.

For Sinclair Johnston & Partners Ltd

A handwritten signature in black ink, appearing to read 'Ravi Azad', with a long horizontal flourish underneath.

Ravi Azad MEng CEng MICE MStructE

SANDBERG

**REPORT 50429/S/1**

**7 BRANCH HILL**

**INVESTIGATIONS OF RETAINING WALL**

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**REPORT 50429/S/1**

**7 BRANCH HILL**

**INVESTIGATIONS OF RETAINING WALL**

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This report comprises  
2 pages of text  
Figures 1 to 7

For the attention of Ms Cheryl Plaza

16 January 2014

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**REPORT 50429/S/1**

**7 BRANCH HILL**

**INVESTIGATION OF RETAINING WALL**

**Instruction:** Received from Mr Thomas Musson from Sinclair Johnston & Partners Limited on 6 January 2014.

**1. INTRODUCTION**

Sandberg was instructed to carry out intrusive investigations to the retaining walls at 7 Branch Hill, London, NW3.

The Schedule of Works was as detailed in the email sent 16 December 2013 and consisted of the following:

- a) Confirm presence of ground water levels behind retaining wall.
- b) Confirm thickness of concrete retaining wall.
- c) Confirm presence of the sheet piled wall.

The works were performed on 7 January 2014.

**2. TEST METHODS**

**2.1 Concrete Core Specimens**

A Hilti Ferrosan (Sandberg equipment reference S711) was used to scan the concrete surfaces so as to avoid reinforcing steel when coring at the nominated locations. Concrete core specimens were extracted at required locations using 110v electric powered coring equipment. The cutter used was a nominally 75mm diameter diamond tipped core barrel. The cutting operation was lubricated and flushed using water from a lightly pressurised reservoir.

The purpose of the cores through the retaining wall was to determine the construction and presence of sheet piling and groundwater behind the wall.

**3. RESULTS**

The core locations are shown in Figure 1 and 2. Photographs of the locations are shown in Figures 3 and 4.

3No. cores were taken to confirm the thickness of the concrete retaining wall. The results are shown in Figures 5 to 7.

In all cases a 5mm thick sheet piled wall was found in the concrete retaining wall at a depth ranging from 470 to 550mm.

From the survey conducted no ground water was found behind the wall.

c/o Marek Wojciechowski Architects  
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for Sandberg LLP

For the attention of Ms Cheryl Plaza

Roger Lucas  
Associate

LH/RL/sh/Inspection

16 January 2014

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Materials, samples and test specimens are retained for a period of 2 months from the issue of the final report.

Tests reported on sheets not bearing the UKAS mark in this report/certificate are not included in the UKAS accreditation schedule for this laboratory.

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

**FIGURES**







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50429/S/1

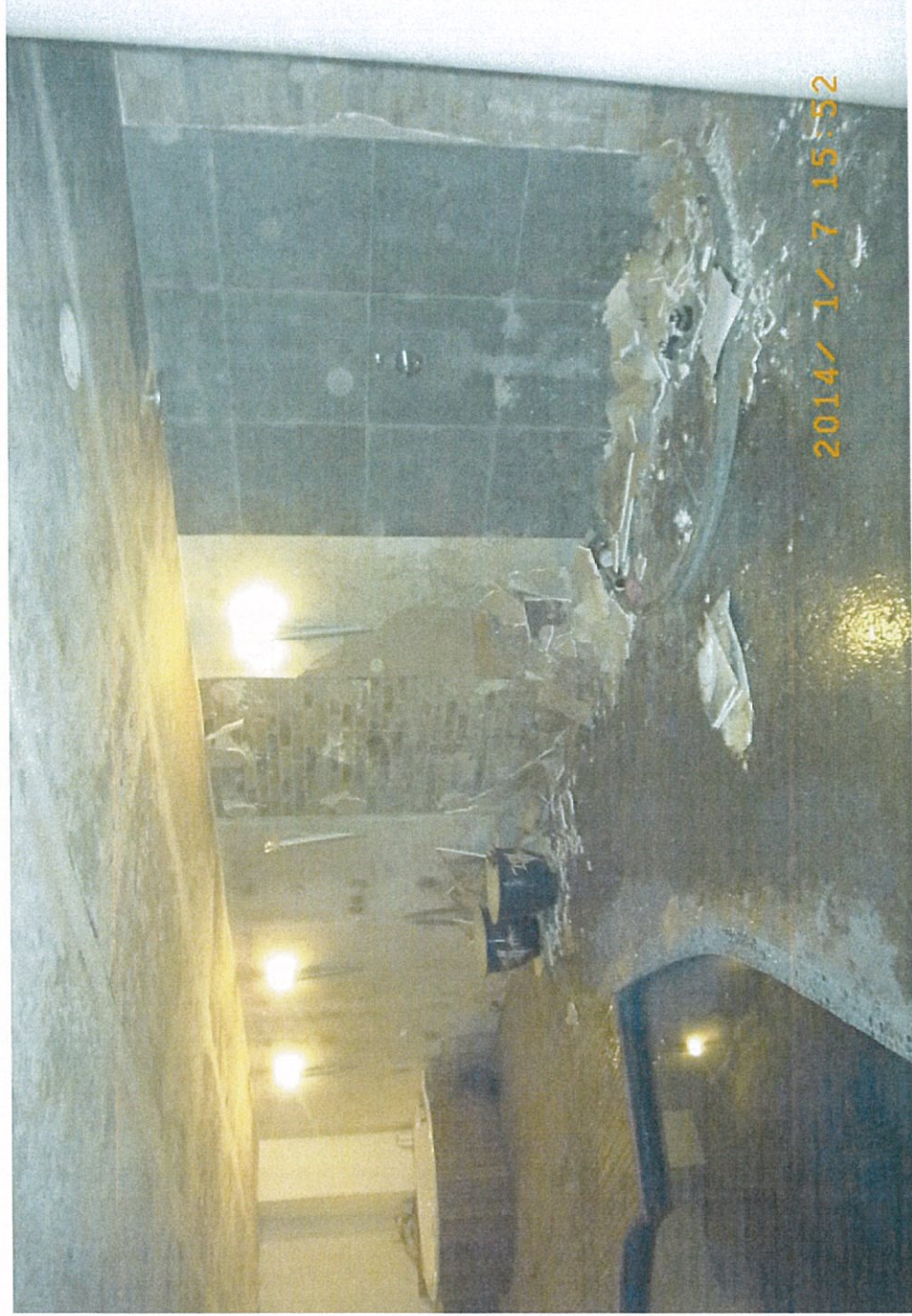
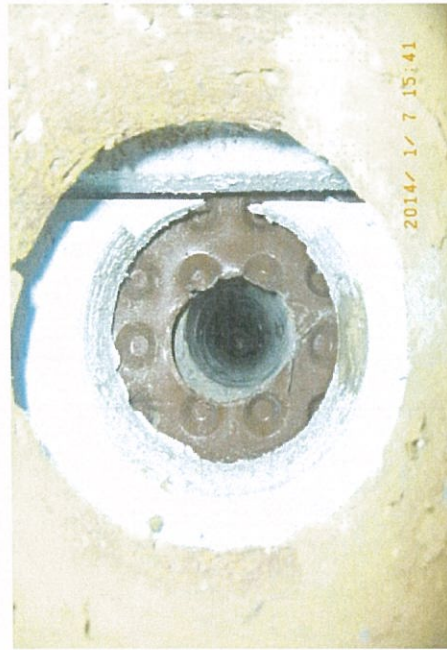
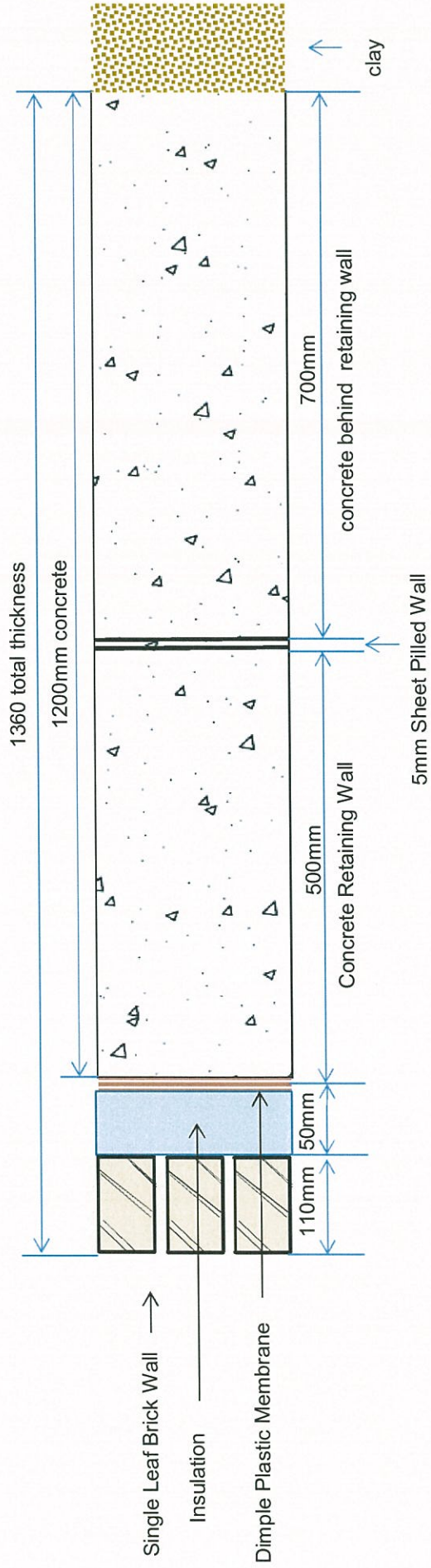


Figure 3: Core Location Judge Lodge 7 Branch Hill



Figure 4: Core Location Judge Lodge 7 Branch Hill



**Figure 5:** Core 1 - Location 1 Middle

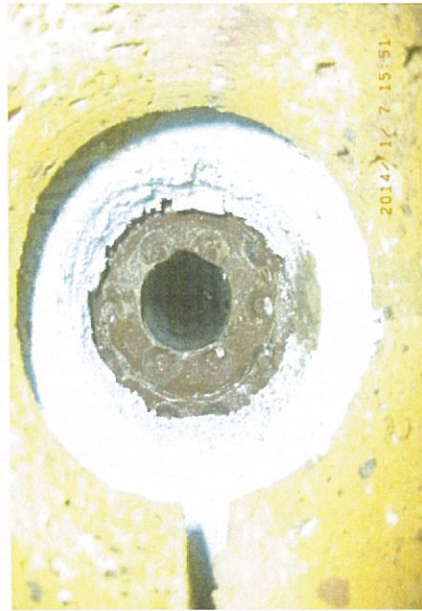
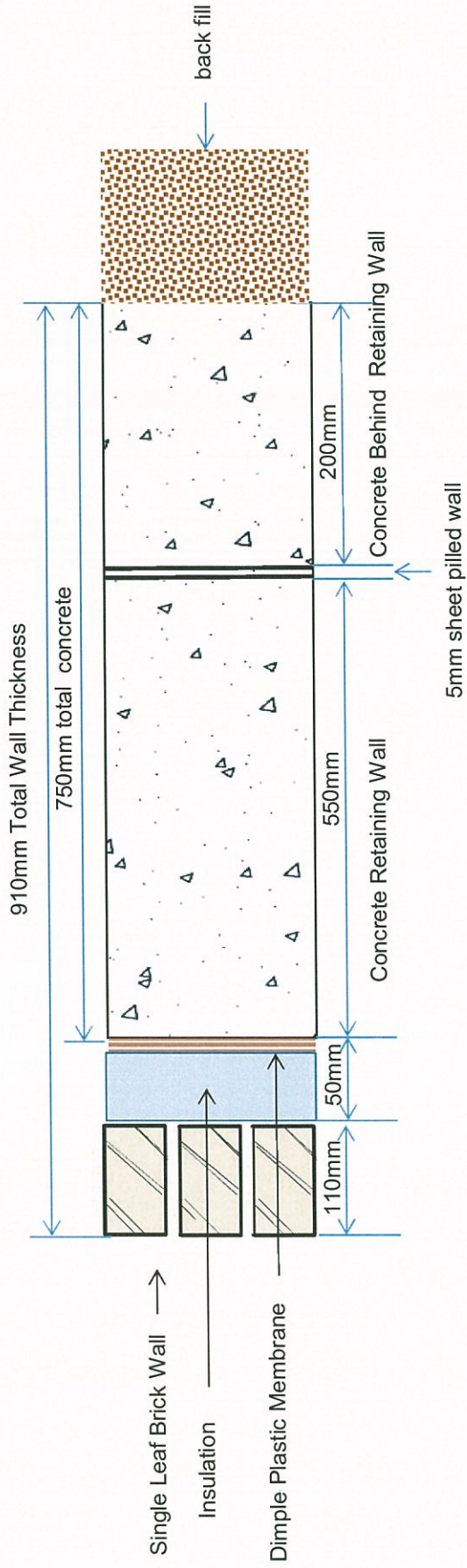


Figure 6: Core 2 - Location 2 Low

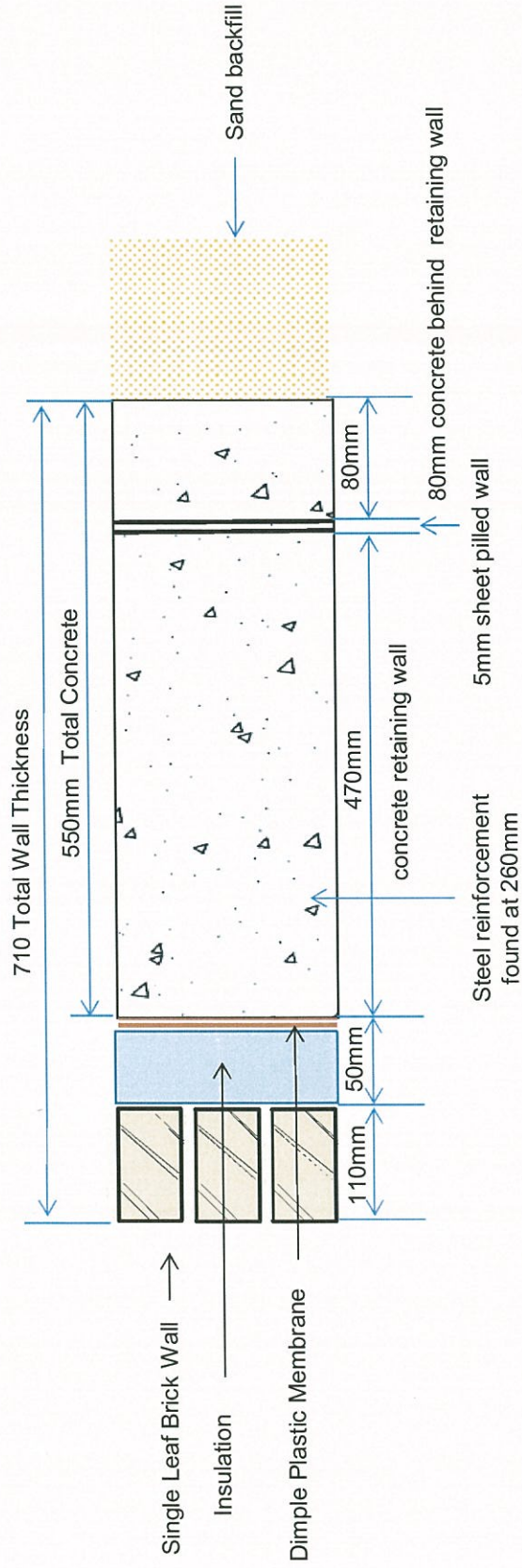


Figure 7: Core 3 - Location 2 High

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Where our involvement consists exclusively of testing samples, the results and our conclusions relate only to the samples tested.





# APPLICANT'S STRUCTURAL ENGINEERS ADDITIONAL INVESTIGATION NOTE

**Project:** 7 Branch Hill **Project No.** 7922  
**Application No.** 2013/4187/P  
**Date prepared:** 8 January 2014  
**By:** Thomas Musson BEng CEng MIStructE

## 1. BACKGROUND

The following note records the findings of the additional intrusive investigation undertaken at 7 Branch Hill.

The investigation was undertaken to assess if any significant ground water is present behind the existing 6.5m high boundary retaining wall in response to Card Geotechnics Limited's (CGL) 'Independent Review of Basement Impact Assessment' report ref. CG/08649 and dated 5 December 2013.

## 2. DESCRIPTION OF INVESTIGATION WORKS

Holes, at 150mm, 1150mm and 2250mm above ground floor level were core drilled through the existing retaining wall, and into the ground beyond.

Core holes were initially 100mm diameter reducing to 50mm diameter beyond the line of the sheet piling.

The investigations were undertaken by Sandberg LLP on the 7 January 2014 under the supervision of Sinclair Johnston BSc CEng FICE FStructE FCONSE (Sinclair Johnston & Partners).

## 3. WEATHER

The investigations were undertaken during a period of severe storms with prolonged periods of heavy rainfall having occurred since mid-December.

## 4. FINDINGS OF INVESTIGATION

4.1 On drilling through to the Bagshot Formation (natural ground) inflows of ground water did not occurred. Refer to photographic evidence in Section 5.

4.2 The existing wall comprised a single brick lining wall / 40mm cavity / 50mm polystyrene insulation board / cavity drain membrane / 500mm reinforced concrete retaining wall / 5mm steel sheet pile / concrete back fill / sandy ground (Bagshot Formation) beyond.

5. CONCLUSION

As no inflows of ground water were recorded in any of the cores, significant levels of ground water behind the existing retaining wall do not appear to be present, despite the period of heavy rainfall experience since mid-December.

6. PHOTOGRAPHIC RECORD



Photo 01 – Typical Core through Existing Wall



Photo 02 – Typical Cores (Low Level top & High Level bottom)

Thomas Musson BEng CEng MStructE