123 Knights Hill, West Norwood, London, SE27 0SP

Structural Engineer's Crack Monitoring Report

Prepared for

Lambeth Housing

September 2022

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IDB 1576 SFSP

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5098 – 123 Knights Hill, West Norwood, London, SE27 0SP

Project Revision Sheet

PROJECT TITLE: Lambeth Housing/123 Knights Hill

PROJECT No: 5306/IDB 1576

Version	Report issued	Prepared by	Reviewed by
00	September 2022	[redacted]	[redacted]

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1.0 Introduction

1.1 Under the terms of a contract with the London Borough of Lambeth, Pellings LLP was instructed by Lambeth Housing Management to undertake monitoring of crack widths at 123 Knights Hill, SE27 0SP (IDB 1576-SFSP). Pellings LLP instructed Sir Frederick Snow and Partners Ltd (SFSP) to undertake the crack monitoring on its behalf.

1.2 The SFSP's initial report, dated April 2016, advised that a period of monitoring should be undertaken. The SFSP's second final report, dated July 2021, stated that, following the 12 months crack monitoring exercise, it may be possible to advise more permanent repairs, or more monitoring may be required.

1.3 SFSP was instructed by Lambeth's Strategic Asset Partner, Savills (UK) Ltd to carry out an inspection of the property part way through the crack monitoring and a report was produced, dated July 2022. This report outlined remedial repairs once it has been determined that significant progressive movements have ceased (and only then).

1.4 Monitoring readings were taken from the plastic studs internally across a crack in the wall adjacent to the upper switchback stairs on ground floor and first floor, and externally across a crack in the side elevation of one storey section at the rear of the property (see photographs 4.1-4.3).

1.5 Monitoring was undertaken over a period of approximately 7 months, commencing in February 2022 and ending in September 2022 at the request of Savills. See results in section 2.0.

1.6 This report is for the use of Lambeth Living only. It should not be copied or distributed except in full.

2.0 Monitoring Records

2.1 The monitoring database is attached on next page.

2.2 Three measurements were taken on each visit using digital callipers between the centres of each of the plastic discs. The results were then averaged and then related to the initial settings to show movement trends. Positive numbers indicate the crack shrinking relative to the start of the monitoring and negative numbers indicate widening.

2.3 Visits were made every two months on average.

CRACK MONITORING RECORD FOR DIGITAL CALIPER SET

Project Title : 123 Knights Hill

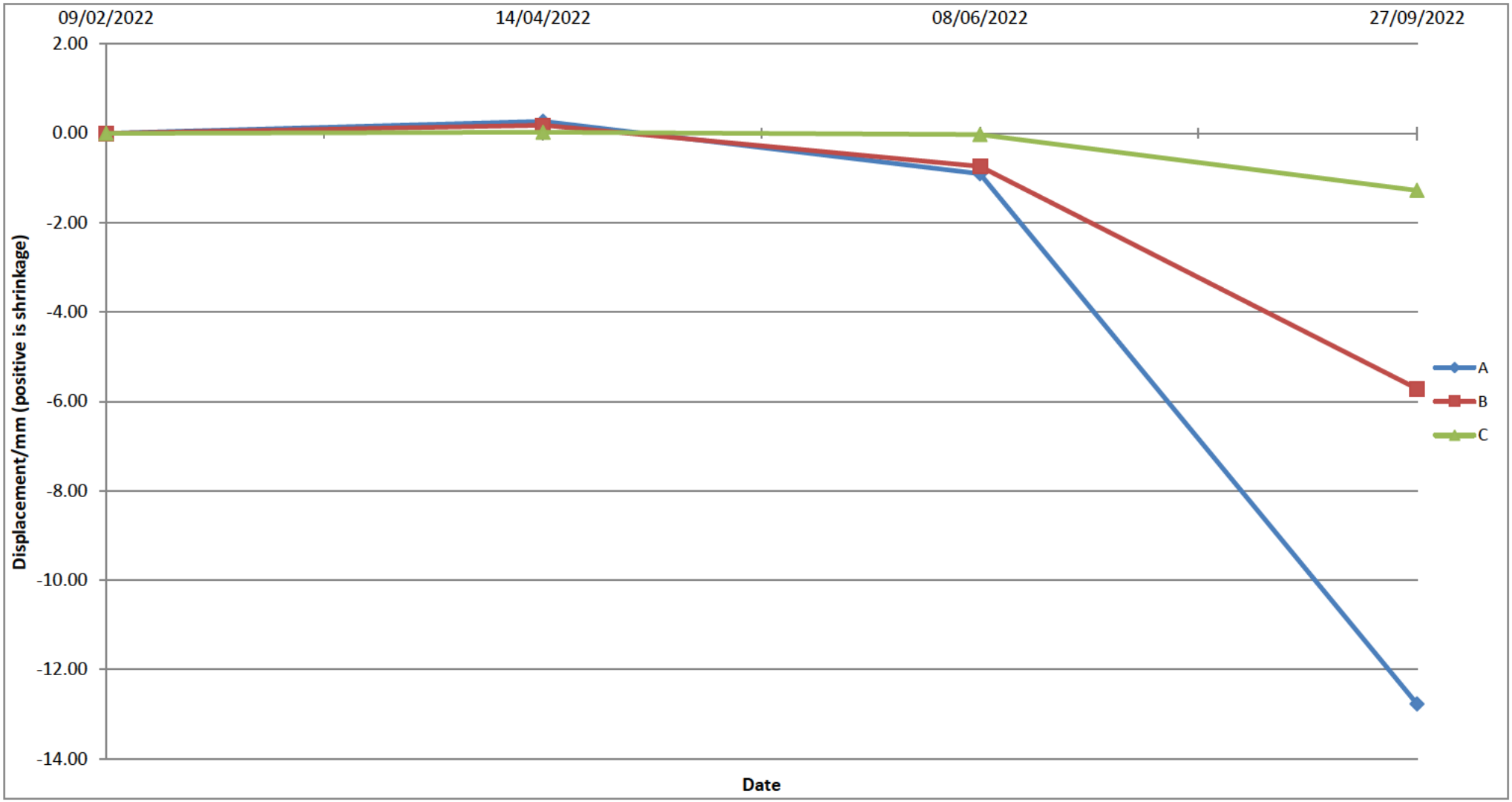
Job No : 5252 / IDB 1576

No.	Date	Location of Stainless Steel Discs and Corner Discs								
		Internal - Stair landing wall			Internal - Ground floor hallway wall			External - Left hand side rear door		
		Readings (mm)			Readings (mm)			Readings (mm)		
			Horizontal			Horizontal			Horiz. High level	
1.0	09/02/2022		76.08			77.89			111.79	
			76.00			77.95			111.82	
			76.03			77.98			111.83	
			76.04			**77.94**			**111.81**	
2.0	14/04/2022		75.76			77.61			111.84	
			75.8			77.84			111.77	
			75.74			77.82			111.75	
			75.77			**77.76**			**111.79**	
3.0	08/06/2022		77.13			78.64			111.8	
			76.84			78.55			111.86	
			76.85			78.84			111.86	
			76.94			**78.68**			**111.84**	
4.0	27/09/2022		88.82			83.62			113.10	
			88.79			83.70			113.08	
			88.81			83.64			113.09	
			88.81			**83.65**			**113.09**	
		Crack Monitoring terminated at clients request			Crack Monitoring terminated at clients request			Crack Monitoring terminated at clients request		

Change From Start				
	09/02/2022	14/04/2022	08/06/2022	27/09/2022
A	0.00	0.27	-0.90	-12.77
B	0.00	0.18	-0.74	-5.71
C	0.00	0.03	-0.03	-1.28

Neg = Wider

Pos = Shrink


09/02/2022
14/04/2022
08/06/2022
27/09/2022
2.00
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
-12.00
-14.00
Displacement/mm (positive is shrinkage)
Date
A
B
C

3.0 Results Discussion and Recommendations

3.1 Stud group A is located internally in the stair area on the internal wall adjacent to the upper switchback of the stairs, across an approximately vertical crack that has moved considerably over the period of monitoring. Initially the crack remained relatively stable, before a trend of horizontal expansion started. This expansion became more extreme towards the conclusion of the crack monitoring exercise. The crack has expanded by 12.77mm by the end of the monitoring period, although most of this movement occurred in June-September period.

3.2 Stud group B is located internally in the ground floor hallway on the internal wall below the upper switchback of the stairs across an approximately vertical crack. This is a continuation of crack A, but at a lower level. The crack has expanded over the period of monitoring. A similar pattern is seen in the magnitude of movement as that at A, with the initial period having only slight movements and more significant movement occurring in the June-September period.

3.3 Stud group C, which is situated externally on the side of the one storey section of the property, has shown the least significant movement, on a diagonal crack that has expanded over the period of monitoring. Initially this cracked showed little to no movement before expansion began in the June-September period.

3.4 It is possible that recent weather in the UK has exacerbated ground movements. This year has seen five consecutive months of below average rainfall across all regions in England and above average temperatures. According to the Environment Agency, river flows, groundwater levels and reservoir stocks all decreased during July. It is thought possible that the lack of rainfall has caused movements to become more extreme resulting in the degree of cracking present and the significant movement recorded in the recent crack monitoring exercise.

3.5 It is observed that the rear door was found to have become very stiff on the last crack monitoring visit, and considerable gaps were present around the frame. It is possible that more extreme movement in the wall with crack C is being facilitated by this gap and crack A and B on the same wall further into the property. Therefore, Crack C shows relatively small movements compared to other cracks monitored.

3.6 Two mature trees which have previously been determined by NHBC (Chapter 4.2 Building Near Trees) guidance to be too close to the property, especially with the shallow nature of the foundation at the property, remain in place (see photograph 4.4). Furthermore, dense foliage has also returned in the rear garden (see photograph 4.5). It is thought likely that trees and foliage have continued to remove moisture from the soils over the period of monitoring. The extreme movement occurring during the June-September period of monitoring is likely the result of the period of drought experienced in the region at this time.

3.7 The dense foliage in the rear garden has grown to such an extent that large foundation exposure excavations are concealed and present a danger to anyone attending the site (see photograph 4.6 and 4.7).

3.8 Upon inspection of previous reports, it is observed that a number of cracks at the property have shown what appeared to be expansion, in some cases considerable expansion, since SFSP's initial inspection in August 2018.

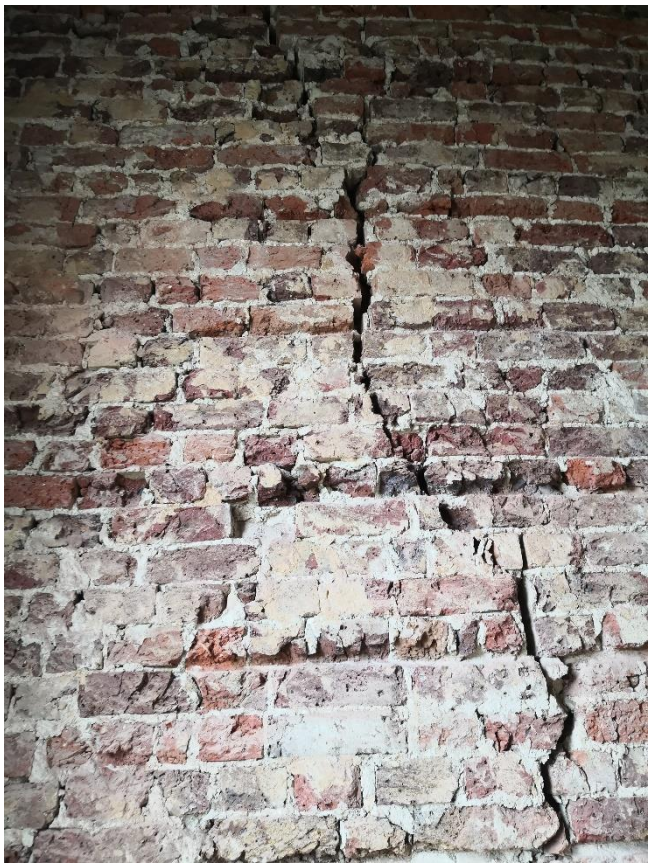
3.9 We recommend that work records are checked to determine if works were carried out to drainage defects identified by CCTV survey as per SFSP Second Final Report recommendation 6.2.

3.10 We recommend that, as per SFSP's Final Report recommendation 7.2, the two mature trees along the southern boundary of the garden are removed and dense foliage is removed. The garden should be maintained so that it is not overgrown, in order to reduce the influence of vegetation on soil moisture contents and to expose excavations in order to reduce fall risk.

3.11 It is not thought that movement has ceased sufficiently for remedial repairs to be successfully implemented at this time, and any remedial repairs carried out are likely to fail as movement continues.

3.12 We recommend that once trees and dense foliage have been removed, as per recommendation 5.7 of SFSP report, dated July 2022, crack monitoring is continued and once it has been determined that significant progressive movements have ceased (and only then), that repairs are undertaken.

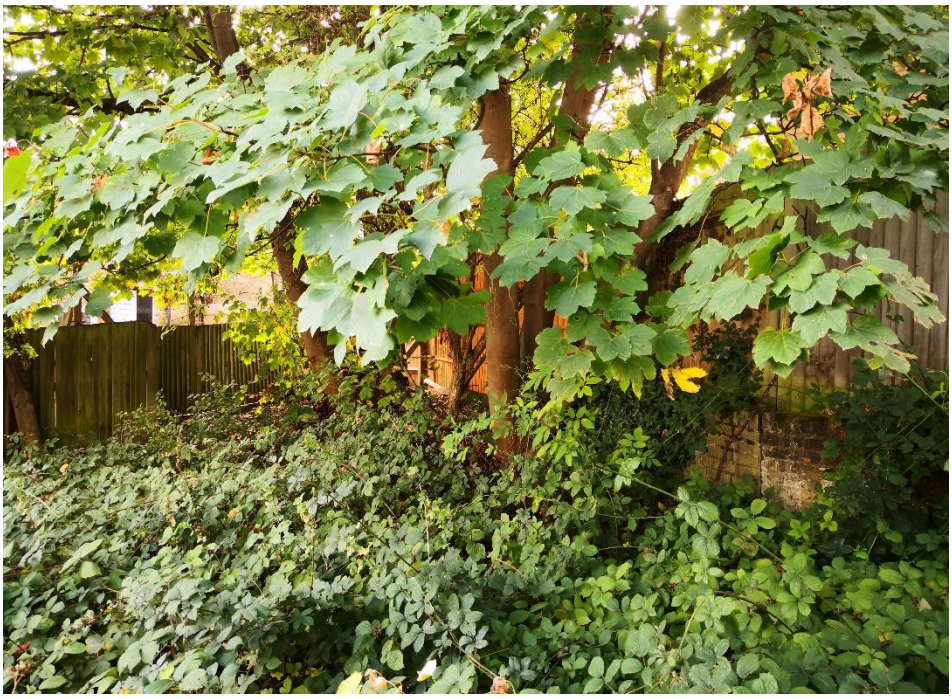
4.0 Photos



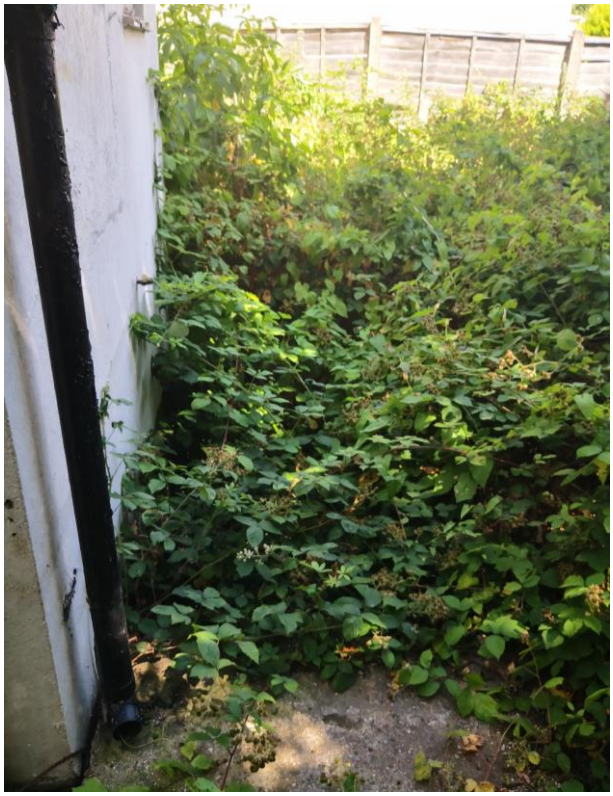
4.1 Crack A, internally in the stair area in the internal wall adjacent to the upper switchback of the stairs (left)

4.2 Crack B, internally in the ground floor hallway in the internal wall below the upper switchback of the stairs (right)

4.3 Crack C, externally on the side of the one storey section of the property



4.4 General view of trees along southern boundary of rear garden



4.5 General view of the rear garden area (left)

4.6 General view of the concealed foundation exposure excavations (right)

4.7 General view of excavation in photograph 4.5 prior to growth of foliage

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