

Project: G523 – 104 - 110 Haverstock Hill, Belsize Park, London, NW3 2BD, UK



**LSY Engineering Consultants Ltd**

Chartered Civil and Structural Engineers

STRUCTURAL

REPORT

104 - 110 HAVERSTOCK HILL,

BELSIZE PARK,

LONDON,

NW3 2BD,

UK

CLIENT  
ORIGIN HOUSING

Project: G523 – 104 - 110 Haverstock Hill, Belsize Park, London, NW3 2BD, UK

### Revision Control Table

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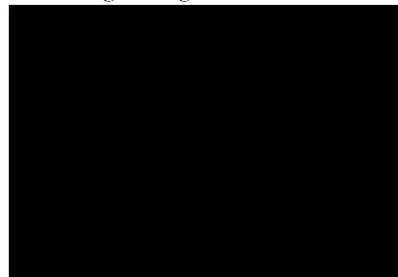
Rev	Description of Changes	Prepared by	Checked by	Approved by	Date
A	For Information	JG	BT	SY	JUNE 2022

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LSY Engineering Consultants Ltd



G523-SR-001 – Structural Report

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*Figure 3: Extract from BRE Digest 251 Classification of Damage Based on Crack Widths .....4*

## 1.0 Introduction

LSY Engineering Consultants Ltd have been instructed by Safaa Patel on behalf of Origin Housing by email on the 27<sup>th</sup> of May 2022 to provide a structural report on the boundary wall and front porches for 104 - 110 Haverstock Hill, Belsize Park, London, NW3 2BD, UK.

LSY Engineering Consultants Ltd subsequently undertook a site inspection of the property on the 31<sup>st</sup> of May 2022. The survey was confined to a visual non-intrusive inspection of the exterior areas of the property. At the time of inspection, weather conditions were dry and sunny.

This report summarises the findings of desk-based studies and a site reconnaissance of the property and concludes with recommendations.

## 2.0 Site Location and Description

104 - 110 Haverstock Hill, Belsize Park, London, NW3 2BD, UK is in the Borough of Camden London. The approximate national grid reference is 527678 (E) 184793 (N) (TQ276847). Chalk Farm underground station is approximately 500m from the property.

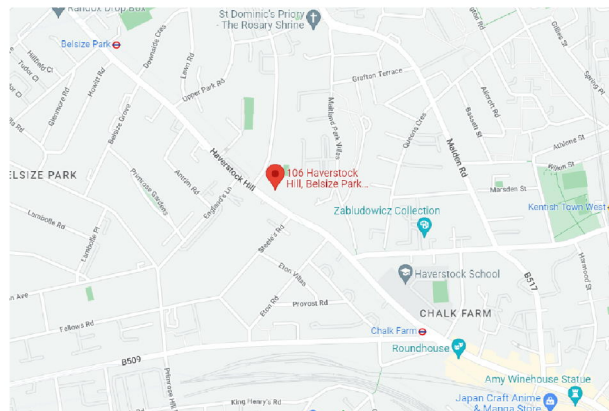


FIGURE 1: AERIAL PHOTOGRAPH OF 104 - 110 HAVERSTOCK HILL, BELSIZE PARK, LONDON, NW3 2BD, UK. (GOOGLE MAPS)

According to British Geological Historical Society Maps (Figure 2) the underlying ground conditions near the site London clay. The bore hole logs available online within proximity to the property confirm these soil conditions.

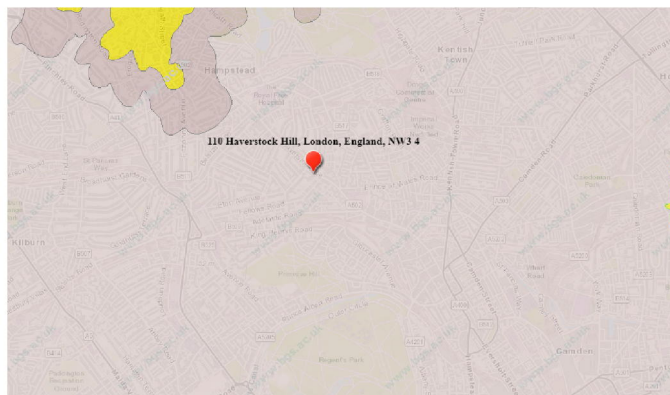


FIGURE 2: BGS MAP EXTRACT SHOWING COMBINED GEOLOGY

### 3.0 **Historical Local Authority Information**

As part of the desk-based study, LSY checked with the building control department of Camden for archive information online for the existing property at 104 - 110 Haverstock Hill, Belsize Park, London, NW3 2BD, UK. There were several recent building control applications for 104 - 110 Haverstock Hill, Belsize Park, London, NW3 2BD, UK.

### 4.0 **Observations**

#### General Observations:

1. There were ongoing refurbishment works at 104-110 where a scaffold was installed to the front elevation.
2. The front boundary wall extends from property 104-110 and was approximately 50m in length.
3. The height of the wall was measured at approximately 1.49m high and was of masonry construction.
4. There were piers noted at approximately 6.4m centres which measured 1.81m in height.
5. The piers measured 600mm x 470mm.
6. There were 4no. trees noted along the length of the front boundary wall.
7. The trees were approximately 18-24m in height and were between 0.5m to 1m from the front boundary wall.
8. There was vegetation hedges and shrubs noted along the length just to the back of the wall.
9. There were 3no. manholes noted along the pavement.

10. There were previous repairs and remedial works noted along the full length of the front boundary wall.
11. It appeared that the front boundary wall between properties 104-106 had been rebuilt previously.

Property 104 Observations:

1. There was cracking noted to the front pillars of property 104 in various areas.
2. There were gaps of 15mm recorded between the front pillars and front elevation with a crack gauge at property 104.
3. There were cracks recorded between 1-5mm to the front of property 104 with a crack gauge on site.
4. The retaining wall to the front of property 104 which was bowing in several areas.
5. The wall was measured as approximately 980mm high and was of masonry construction.
6. The cracks measured to the retaining wall were between 5-20mm recorded on site with a crack gauge.
7. There was excess soil, vegetation and various waste items surcharging the retaining wall to the front of property 104.
8. Trees and vegetation were noted approximately 2m from the front retaining wall.
9. It was noted that a section of the leaning retaining wall was pushing against a leg of the temporary scaffold outside the front elevation.

Property 106 Observations:

1. There was cracking noted to the front pillars of property 106 various areas.
2. There were cracks recorded between 1-4mm to the front of property 106 with a crack gauge on site.

Property 108 Observations:

1. The walls were noted as bowing outside property 108.
2. The walls were checked for vertical alignment with a spirit level during the survey.
3. The wall outside property 108 was out of plum 41-48mm in various areas over a 560mm long spirit level.
4. There was a gap of 20mm measured on site between the junction of the inside garden wall of property 108 and the front boundary wall.

Property 110 Observations:

1. The walls were noted as bowing outside property 110.

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2. The walls were checked for vertical alignment with a spirit level during the survey.
3. The wall outside 110 was out of plum by between 45-49mm in various areas over a 560mm long spirit level.



**TABLE 7.1:** Classification of visible damage to walls with particular reference to ease of repair of plaster and brickwork or masonry  
(Crack width is just one factor in assessing category of damage and should not be used on its own as a direct measure of it)

Damage category	Description of typical damage	Typical size of crack	Ease of repair
0	Hairline cracks classed as negligible	Less than about 0.1 mm	No action required
1	Fine cracks with damage generally restricted to internal wall finishes; cracks rarely visible in external brickwork	Up to 1 mm	Treated easily using normal decoration
2	Cracks not necessarily visible externally; doors and windows may stick slightly	Up to 5 mm	Cracks easily filled; recurrent cracks can be masked by suitable linings; some external pointing may be required to ensure weather-tightness; doors and windows may require easing and adjusting
3	Doors and windows sticking; service pipes may fracture; weather tightness often impaired	5 to 15 mm (or several of say 3 mm)	Cracks require some opening up and can be patched by a mason; repointing of external brickwork and possibly a small amount of brickwork to be replaced
4	Extensive damage, especially over doors and windows; windows and door frames distorted, floor sloping noticeably,* walls leaning or bulging noticeably,* some loss of bearing in beams; service pipes disrupted	15 to 25 mm (but depends on number of cracks)	Requires breaking-out and replacing sections of walls
5	Structural damage; beams lose bearing, walls lean badly and require shoring; windows broken with distortion; danger of instability	Greater than 25 mm (but depends on number of cracks)	Requires a major repair job, involving partial or complete rebuilding

\* Local deviation of slope, from horizontal or vertical, of more than 1/100 will normally be clearly visible. Overall deviations in excess of 1/150 are undesirable.

Source: Copyright BRE, reproduced from BRE Digest 251 with permission.

FIGURE 3: EXTRACT FROM BRE DIGEST 251 CLASSIFICATION OF DAMAGE BASED ON CRACK WIDTHS

## 5.0 Conclusions

### General conclusions:

1. Foundation movement to the front boundary wall may have occurred due to the trees in the vicinity of the property. The foundations may not have been constructed originally to meet the requirements of structures built near trees.
2. It is also possible that the foundations for the front boundary wall could be quite shallow considering when they were originally built, and the soil conditions may be of shrinkable plastic clays.
3. It would appear the front boundary walls have had issues for some time with previous repair works noted throughout on site.

Property 104 conclusions:

1. The cracking and movement noted to the pillars outside 104 appears to be due to movement of some kind.
2. Movement would not be unusual for a property of this age.
3. The cracking and movement recorded to the pillars on property 104 with a crack gauge on site measured between 1-15mm which fall within categories 2 and 3. Please refer to BRE Digest 251 table above in figure 3.
4. The garden retaining wall outside property 104 was unlikely designed for the various materials which are surcharging the wall at present.
5. The garden retaining wall which is currently bowing outside property 104 is unsafe and a health and safety hazard on site.
6. The section of retaining wall leaning against a scaffold leg is unsafe and a health and safety hazard.

Property 106 conclusions:

1. The cracking and movement noted to the pillars outside 106 appears to be due to movement of some kind.
2. Movement would not be unusual for a property of this age.
3. The cracking and movement recorded to the pillars on property 106 with a crack gauge on site measured between 1-4mm which fall within category 2. Please refer to BRE Digest 251 table above in figure 3.

Properties 108 and 110 conclusions:

1. The walls noted to be bowing outside 108 and 110 may be due to the trees and vegetation in close proximity to the areas where movement was recorded.
2. It was not possible to tell if movement was ongoing.

**6.0 Recommendations**

General recommendations:

1. An arboriculturist report should be undertaken for the trees and vegetation surrounding the property to assess the damage impact on the boundary walls and porches.
2. It is recommended a drains test be undertaken to confirm current condition of drainage for the property. Trees planted around the property can lead to issues with drains becoming cracked.
3. We would recommend that trial holes are carried out to inspect foundations and soil conditions for the front boundary wall.

4. In order to investigate if there is any ongoing movement occurring to the front boundary wall at present LSY Engineering Consultants Ltd recommends that movement monitoring is undertaken over a period of 12 months. Reading to be taken at 2-month intervals.

Property 104 recommendations:

1. We would recommend that trial holes are carried out to inspect foundations and soil conditions for the retaining wall to property 104.
2. The cracking and movement noted to the pillars on property 104 should be repaired.
3. The garden retaining all outside property 104 should be taken down and rebuilt once the scaffold has been removed.
4. A full structural design will should be undertaken for the new retaining wall taking into consideration the recommendations of the Arboriculturists report.
5. The excess materials currently surcharging the wall should be removed as soon as possible
6. Temporary propping should be installed to support the bowing retaining wall outside 104.
7. The scaffold contractor should be consulted to maintain safety of their scaffold on site which is currently carrying a load from the leaning retaining wall.

Property 106 recommendations:

1. The cracking and movement noted to the pillars on property 106 should be repaired.

Properties 108 and 110 recommendations:

1. In order to investigate if there is any ongoing movement occurring to the bowing section of wall outside 108 and 110 at present LSY Engineering Consultants Ltd recommends that movement monitoring is undertaken over a period of 12 months. Reading to be taken at 2-month intervals.

## **7.0 Qualifications and Limitations**

LSY Engineering Consultants Ltd work on this report is subject to the following Qualifications and Limitations:

1. The opinions and recommendations made in the report have been given using our professional judgment after visual non-intrusive inspection. This report is a structural based report.
2. LSY Engineering Consultants Ltd are not retained to examine the property for asbestos, toxic or hazardous materials or any pollutants unless noted otherwise. LSY Engineering Consultants Ltd claim no expertise in these areas, and can assume no liability for the work, options, or reports of any other independent consulting firms engaged to do so.
3. LSY Engineering Consultants Ltd have not conducted nor commissioned a site investigation or geographical or geophysical survey and can therefore give no

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assurance, opinion or guarantees that the ground has sufficient load bearing strength to support the existing structures which exist. LSY Engineering Consultants Ltd give no assurance, opinion or guarantee that there are any underground mineral or other workings within the site or in its vicinity, nor that there is any fault or disability underground.

4. LSY Engineering Consultants Ltd have not inspected woodwork or other parts of the structure, which are hidden, unexposed or inaccessible, and are therefore unable to report that any such part of the property is free from defect.
5. Any reference to services, electrics or plant was only in passing; the relevant qualified personnel should be consulted to confirm these items are acceptable to all current regulations.
6. This report is a structural based report and not a general building survey.

**8.0 Appendix A – Photographs**

<b>Description</b>	<b>Photo</b>
General views of front boundary wall with bowing evident	1-10
General views of trees in close vicinity to the front boundary wall	11-16
Views of manholes outside the front boundary wall	17-18
Views of previous repairs to the front boundary wall	19-21
Close up view of gap to wall outside property 108	22
View of property number	23
General view of porch area	24
Close up views of cracking to porch area	25-41
Close up views of crack gauge readings recorded on site	42-44
View of property number 106	45
Close up views of cracking	46-47
Views of leaning retaining wall to the front of 104	48-50
Close up views of cracking	51-54
Views of various materials surcharging retaining wall	55-58
Additional views of retaining wall	59-62
Views of vegetation in close proximity to the retaining wall	63-67



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(10)



(11)



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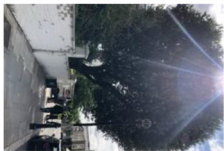
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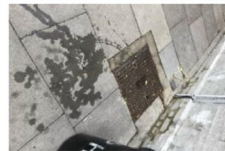
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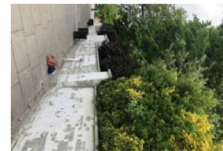
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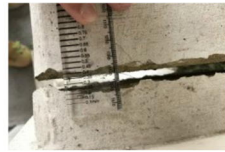
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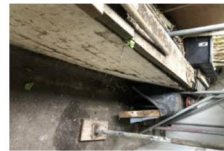
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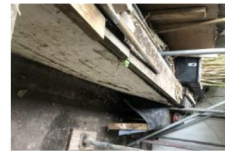
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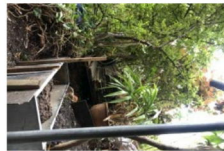
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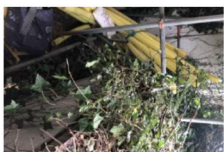
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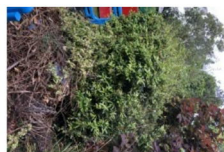
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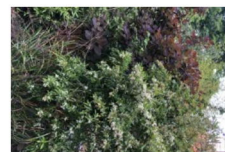
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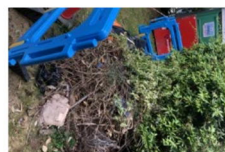
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