Appendix C

Ground Movements for 59 Goldhurst Terrace, London

Taking height of adjacent house as H=12.3m and width of block of houses as L=33.0m

Then L/H=2.683

Depth of basement excavation take as 2.75m. Depth of walls 3.2m

Houses adjacent are 0m distant from the basement excavation and wall.

Horizontal movement due to installation of wall

0.05% x 3200mm = 1.60mm

Distance to negligible movement 1.5 x 3200mm = 4800mm

Horizontal movement due to excavation

0.15% x 2750mm = 4.125mm

Distance to negligible movement 4 x 2750mm = 11,000mm

Total horizontal movement is 5.725mm (1.60 + 4.125mm)

Horizontal strain over 11m is 5.725mm /11,000mm x100 = 0.052%

Vertical movement due to installation of wall

0.05% x 3200mm = 1.60mm

Distance to negligible movement 1.5 x 3200mm = 4800mm

Vertical movement due to excavation

(0.10% x 2750mm = 2.75mm from Table 2.4)

Instead use Fig 2.11(b) which is more accurate and shows 0.05% at the wall, 0.1% is never reached by the curve or the measured ground movements, so 0.05% is conservative.

0.05% x 2750mm = 1.375mm

Distance to negligible movement 3.5 x 2750 = 9625mm

Total vertical movement is (1.60 + 1.375) 2.975mm

House slope calculated as (total vert settl at 0m – settl at 11m/11m (in units of mm per m.)

To calculate Δ(Delta) the house slope is plotted against the deflection and the maximum Δ(Delta) was found to be 0.8545mm at 6.0m form the basement wall.

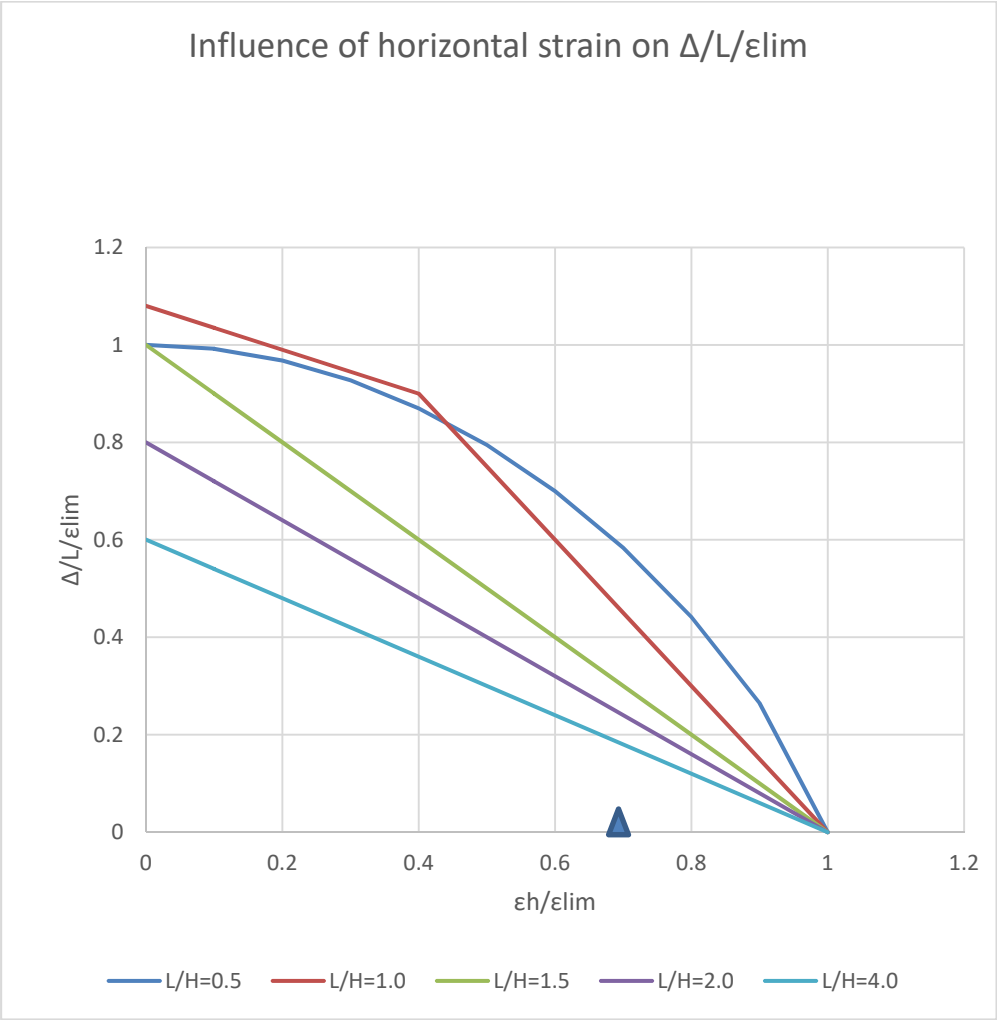
Δ(Delta) /length = 0.8545/11000= 7.76E-05

Δ(Delta) /length/Elim for Category 1 = 7.76E-05 / 0.075 = 0.0010346 = 1.4E-03

Horizontal strain/Elim for Category 1 = 0.052091 / 0.075 = 0.6945466

The above plotted on CIRIA 580 Fig 2.18b fall below the L/H = 4 (as required).

Therefore anticipated Damage Category according to C580 Table 2.5 is negligible to very slight.



These calculations are for stiff support in firm to stiff clay such in the London Clay.

Monitoring Strategy

Groundworks for construction of a basement pose a risk of movement and damage to adjacent properties. The construction at No 59 Goldhurst Terrace is for a basement and lightwells. Temporary works and the inclusion of a Party Wall Agreement in line with the Party Wall Act, including condition surveys of adjacent properties, will ensure that risks can be controlled.

The following mitigating measures are proposed to reduce the risk of damage to neighbouring properties.

- Record and monitor the neighbouring properties, by a condition survey under the Party Wall Act before and after the works are completed.
- Employ suitably qualified structural engineers.
- Provide detailed Method Statement to Contractors.
- Use Contractors experienced in construction of basements and lightwells.
- Allow for unforeseen ground conditions, including loose soil, ingress of groundwater following heavy rainfall and other considerations.
- Undertake Risk Assessment.
- Specify monitoring instrumentation.

Monitoring during the works should include:

- Inspection of party walls and foundations by Party Wall Surveyor during the work.
- Lateral and vertical monitoring if considered necessary by Party Wall Surveyor.
- If damage is recorded on a neighbouring property, install tell tale monitors to check movement.
- Stop work if movement is recorded on tell tales in excess of Party Wall Agreement or red risk in table below.

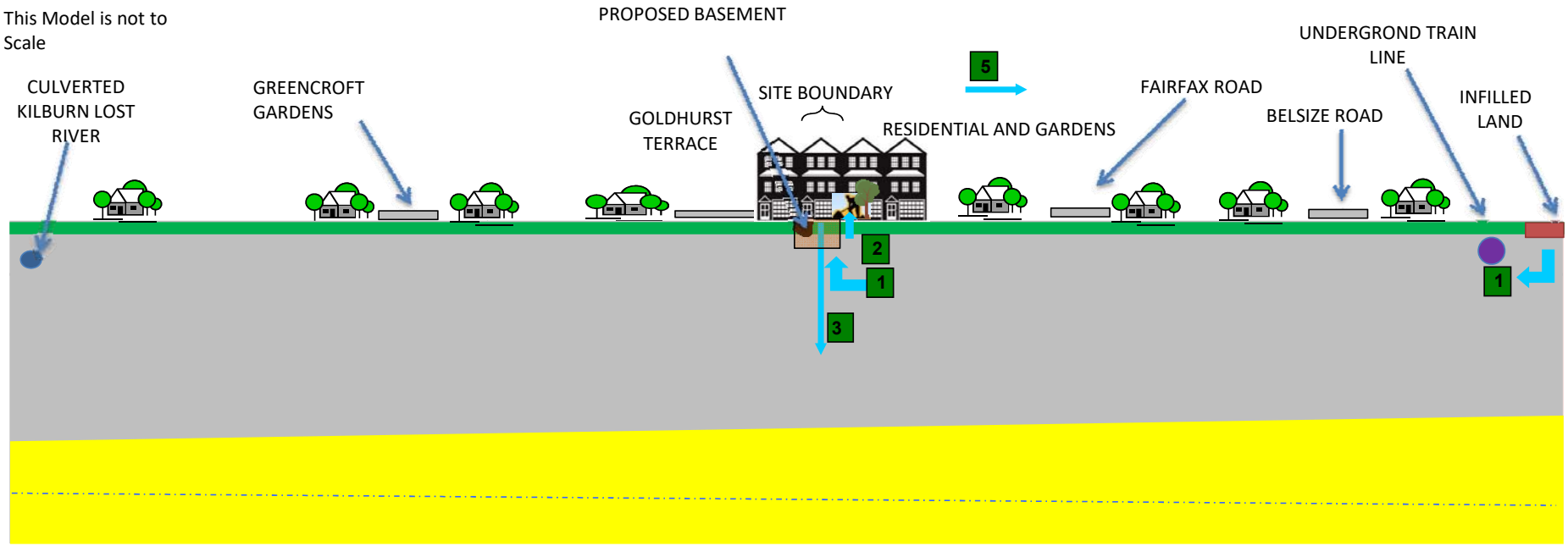
MOVEMENT			
Vertical	Lateral	Risk	Action
0mm to 4mm	0mm to 6mm	Green	No Action
4mm to 8mm	6mm to 10mm	Amber	Structural survey of Party walls
>8mm	>10mm	Red	Structural survey, cease works if necessary except for making site and party walls safe. Revise method of working.

Appendix D

Ashton Bennett
ENGINEERING GEOLOGISTS AND ENVIRONMENTAL SCIENTISTS

Land to rear of 59 GOLDHURST TERRACE, CAMDEN
Conceptual Model

This Model is not to Scale



SOURCES	PATHWAYS	RECEPTORS	RISK
HISTORICAL USE AS OPENLAND CURRENT USE AS RESIDENTIAL OFF SITE RESIDENTIAL	1 Inhalation of vapours from landfiull/mining	Workmen / Future site users / adjacent land uses	Low to mod No landfill within 250m. No Radon. Monitoring required for infilled land
	2 Ingestion and or skin contact	Workmen / Future site users / occupants /adjacent land uses	Low - site unlikley to be contaminated
	3 Ingestion of drinking water / leaching to groundwater	Groundwater.	Low - No abstractions within 2000m
	4 Leaching to surface water	No surface water within 250m of site	Low - no surface water within 250m of site
	5 Inhalation of dust	Workmen / adjacent land users	Low - Appropriate measures during construction
	6 Slope Failure	Future land users	Low - No slopes within 250m
	7 Off site migration	Neighbouring land users.	Low - neighbouring land is residential since 1894

GEOLOGY

- MADE GROUND
- RESIDUAL CLAY
- LONDON CLAY
- THANET SAND AND CHALK

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