

Structural Appraisal Report for
90 Leverton Street, London. NW5 2NY

Ref: 180345/H Hawker

Approved By: NN

17 Apr 2018

Version final

1.0 BRIEF

- 1.1 We were asked by Shaun O'Brien at Roar on behalf of Russell Thompson to visit the above property and visually investigate the existing foundations, cracking and structural integrity of the property, particular in relation to a Tree of Heaven in the rear garden. To provide a report with recommendations for remediation where necessary. We visited site on 11th April 2018.
- 1.2 Whilst our investigation work has been taken far enough to satisfy the requirements of the brief, it has, of necessity, not been exhaustive. The findings cannot therefore be warranted to apply to areas of the building not inspected or investigated
- 1.3 This report is intended for the use of the client, Russell Thompson, and his agent, Shaun O'Brien and no liability can be accepted for use by any third party.

2.0 PROPERTY TYPE, CONSTRUCTION & CONTEXT

- 2.1 The property is an end of terrace Victorian property of three stories.
- 2.2 The local subsoil is highly shrinkable London Clay and the area is known for ground movement.
- 2.3 On the London Bomb Damage Map 90 Leverton Street is highlighted in yellow : minor blast damage, whilst properties opposite on Leverton Street and to the rear of these on Fortress Road were purple : damaged beyond repair.

3.0 EXISTING FOUNDATIONS

- 3.1 These are recorded and appended. Sheets 02-04.

- 3.2 The foundations are fairly typical of the building of this size / age with very shallow footings to the rear addition (or 'closet wing').
- 3.3 It is noted that there was minimal made ground, and the London Clay was very-soft to soft even toward the base of the deeper trial pits.
- 3.4 The main rear elevation foundations were exposed near to the party wall return, to obtain both sections (TP01) However the rear elevations' footings are peculiar, with past works placing two reinforced concrete beams (or lintels) below the floor level, with there being a clear gap between these and the original footing. The concrete beams appear to span onto a smaller deeper section of brick footing at the party wall, though at 850mm below ground level, still founded in moderately soft clay soils. The reason for this modification is unknown – perhaps movement to the floor or panel below the rear window. Roots up to 3mm dia were observed in the trial pits and through the party wall foundation.
- 3.5 The party wall appears to be original Victorian structure, with a corbelled footing to approx 700mm deep, which seems relatively deep for a garden wall, was possibly, was an outhouse or reflects soft ground present at that time.(TP02)
- 3.6 The trial pits along the party wall both have several roots within them, as described above and there was a larger root, some 30mm dia, in TP03.

4.0 VISIBLE DEFECTS

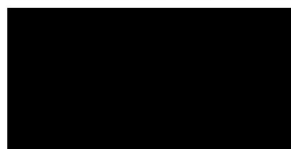
- 4.1 The rear additions rear elevation has been re-built in the past, although there are some fine cracks presently, and it is dry lined to the inside. Cracks are present between the rear addition and main property. There are verticals crack to the render of the flank wall (Ospringe Road).
- 4.2 There are cracks to the garden wall along Ospringe Road.
- 4.3 The flank wall of the main elevation has a distinct 'lean' when observed from the other side of Leverton Road. It is noted that there are 2 patress plates: to the second floor level and one to the first floor level. However movement to the floors is not obvious within the property.

5.0 OTHER OBSERVATIONS

- 5.1 A trial pit towards the end of the higher portion of party wall (also wall to neighbours extension, although the wall appears to be original) highlighted a drain running under this wall, presumably across the gardens, manholes to the rear of no.90 and then into Ospringe Road.
- 5.2 It is understood the flank wall to no. 40 Ospringe Road has been underpinned.
- 5.3 It is obvious that strengthening and making good works have already been undertaken to 90 Leverton Street, and some movement have taken place (the the rear addition) since that time.
- 5.4 It is noted that 88 Leverton Streets garden is almost fully paved.
- 5.5 The 'Tree of Heaven' in the rear garden only 5.5m from the rear addition. This is a moderate water demand, yet vigorous tree that can reach up to 20m height. It post dates the buildings construction and appears to be a self seeded tree (although they do sucker also), which has been left unchecked whilst the property was unoccupied and occupied by multiple residents previously. It roots are apparent near to the main elevation and should a property be constructed in the same foot print today, it would be expected to have minimum 1.7m deep foundations to NHBC guidelines.
- 5.6 There were no other trees or shrubs of size in the garden to no 90 nor no. 88 (paved), so it is assumed that the roots observed within the trial pits are from the Tree of Heaven, which then reaches to the rear of the property.
- 5.7 The 'Mountain Ash' street tree in Ospringe Road is a moderate water demand tree and presently 4m high, according to NHBC guidelines a foundation should then be the minimum depth of -1m. A trial pit could not be dug in the public pavement so it is not known if the trees roots presently do reach the property. Should the tree reach its mature height of 11m, then it could influence the foundations as new foundations on the same location would expect to be founded at a depth of 1.6m.
- 5.8 To the front of the property there is a 'Silver Birch' in the front garden of No 88 Leverton Street. This is a low water demand tree, and hence a popular street tree, however this one is close, 2.4m away from the foundations to the front elevation of 40 Leverton Street. The depth of foundations to the front of the property is unknown.
- 5.9 The above assessment of foundations is appended, sheet 01.

6.0 CONCLUSIONS

- 6.1 The building has suffered movement in the past, and while the main building appears to have settled, the cracking seen highlights more recent movement to the rear addition. It is likely the movement may be attributed a combination of 'the book-end effect', soft sub-soils and the action of tree roots and subsoil desiccation. The patress plates appear to have settled the 'book end effect'; however it is likely that movement seen to the rear additional maybe be attributed to trees and poor/desiccated subsoil.
- 6.2 It is highly recommended that the Tree of Heaven is removed as this tree's roots can be observed in the trial pits, and it will most likely further effect the property as it matures. It is noted this tee also touches over head lines and seems to have little amenity benefit while reducing the amount of beneficial plants that can be grown. Any replacement trees should be chosen and located with potential influence in mind, with roots barriers.
- 6.3 It is essential both the silver birch, in the front garden of 88 Leverton Street, and the Mountain Ash in Ospringe Road, a street tree, are maintained to ensure root growth and spread is limited so as not to affect nearby properties.
- 6.4 It is recommended that the property should be monitored over time to check the verticality of the flank walls and the rate of movement between the rear additional and main rear elevation, as it can be difficult to ascertain whether movement is historical or ongoing at a single visit.
- 6.5 If works are to be carried out at the property, it would be prudent to form a movement joint between the rear addition and main elevation to allow for movement. Should any additional loading be placed on the rear addition, or the present movement appear to be ongoing and becomes structurally significant then it will become necessary to underpin it to a depth according to NHBC guidelines. The removal of the Tree of Heaven and good management of the street tree should reduce the likelihood of this being necessary.
- 6.6 It would be useful if any information on past works can be obtained.



Helen Hawker. MSc BEng (Hons) MStructE
For Conisbee

TREES & FOUNDATION ASSESSMENT.

174m-7 SPINDLE TREE LONDON CLAY SUBSTR.

TREE OF HEAVENS PRESENT HEIGHT: 7m / MODERATE
(GARDEN) MATURE HEIGHT: 20m / WATER DEMAND

DEPTH OF FOUNDATION TO NHTC GUIDELINES:

DISTANCE FROM EXISTING ROAD ELEVATION = 5.5m

EXISTING: $D/H = 5.5/7 = 0.78 \rightarrow$ MIN 1m DEPTH TO NHTC
(Actual = 0.28m)

Mature: $D/H = 5.5/20 = 0.275 \rightarrow$ MIN 1.08m DEPTH TO NHTC

\rightarrow Similar to 40 Aspenger Road (Actual depth unknown)

DISTANCE FROM NEAREST FOUNDATION (88 LLEVELTON ST)

EXISTING $D/H = 4.8/7 = 0.69 \rightarrow$ MIN 1.1m TO NHTC
(Actual = 0.7m)

Mature $D/H = 4.8/20 = 0.24 \rightarrow$ MIN 1.9m TO NHTC

DISTANCE FROM MAIN ROAD ELEVATION, 90 LLEVELTON ST

Mature $D/H = 7.6/20 = 0.38 \rightarrow$ MIN 1.7m TO NHTC

MANTON ASH - PRESENT HEIGHT: 5m / MODERATE
(SMALL TREE) MATURE HEIGHT: 11m / WATER DEMAND

EXISTING: $D/H = 4.7/5 = 0.94 \rightarrow$ MIN 1m

Mature: $D/H = 4.7/11 = 0.43 \rightarrow$ MIN 1.6m DEPTH TO NHTC

SILVER Birch PRESENT HEIGHT: 4m / LOW WATER
(FRONT GARDEN - 83) MATURE HEIGHT: 14m / DEMAND TREE

EXISTING $D/H = 2.4/4 = 0.6 \rightarrow$ MIN 1.0m DEPTH REQ'D

Mature $D/H = 2.4/14 = 0.17 \rightarrow$ MIN 1.5m DEPTH REQ'D

Project
90 LEVENTON STREET

Title
TRIAL PIT LOGS. TP. 01.
RECORDED 11.04.18

Project No
180245

Sheet No
02

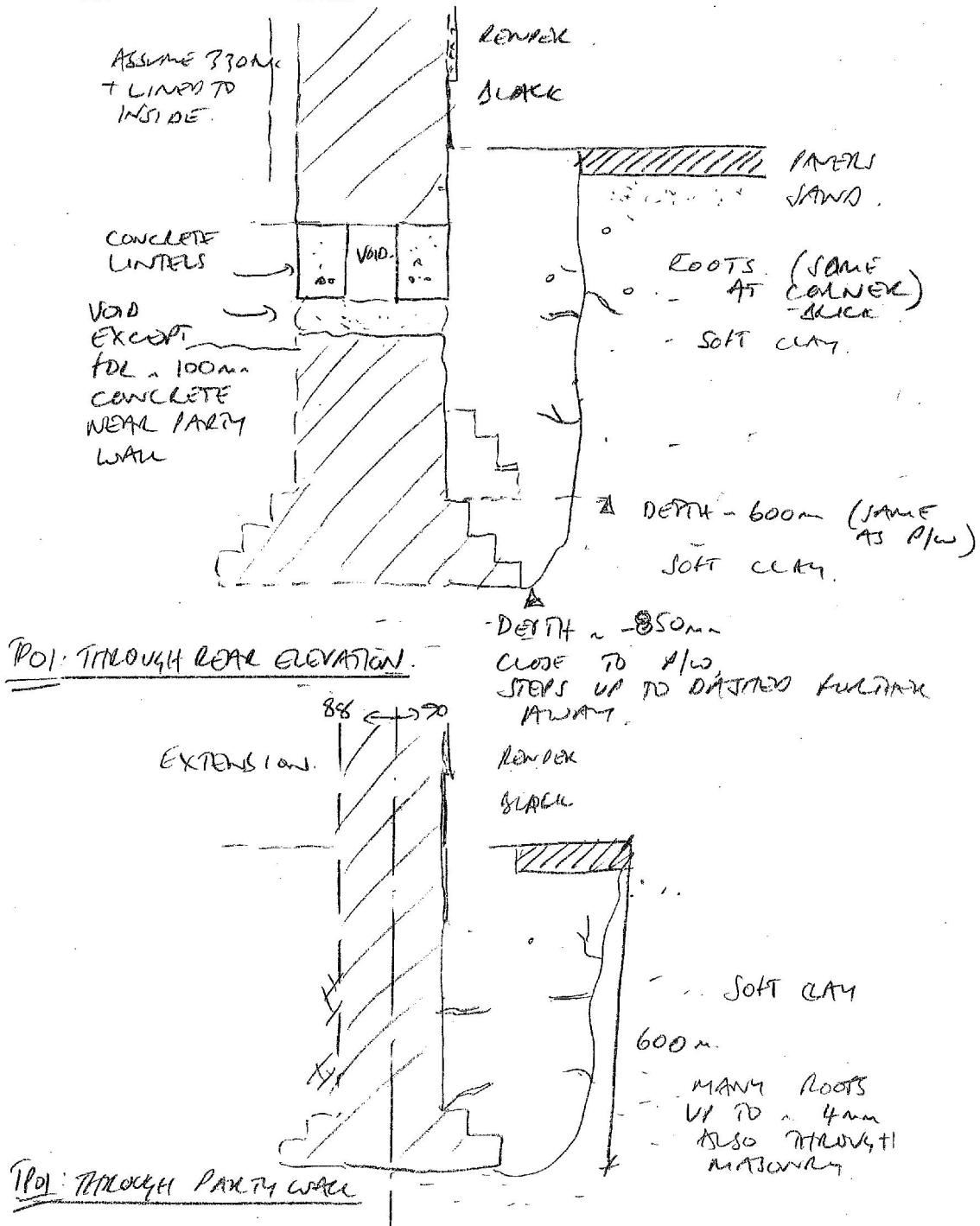
Date
16.4.18

Revision

Engineer
HJH

Checked

Rev Date Description



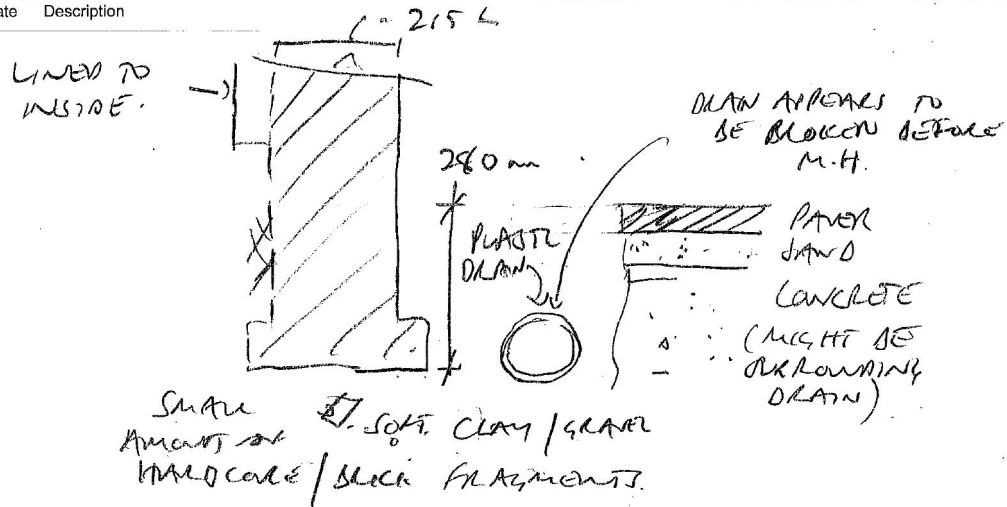
Project
90 CLEVELAND STREET.

Project No 180345 Sheet No 03

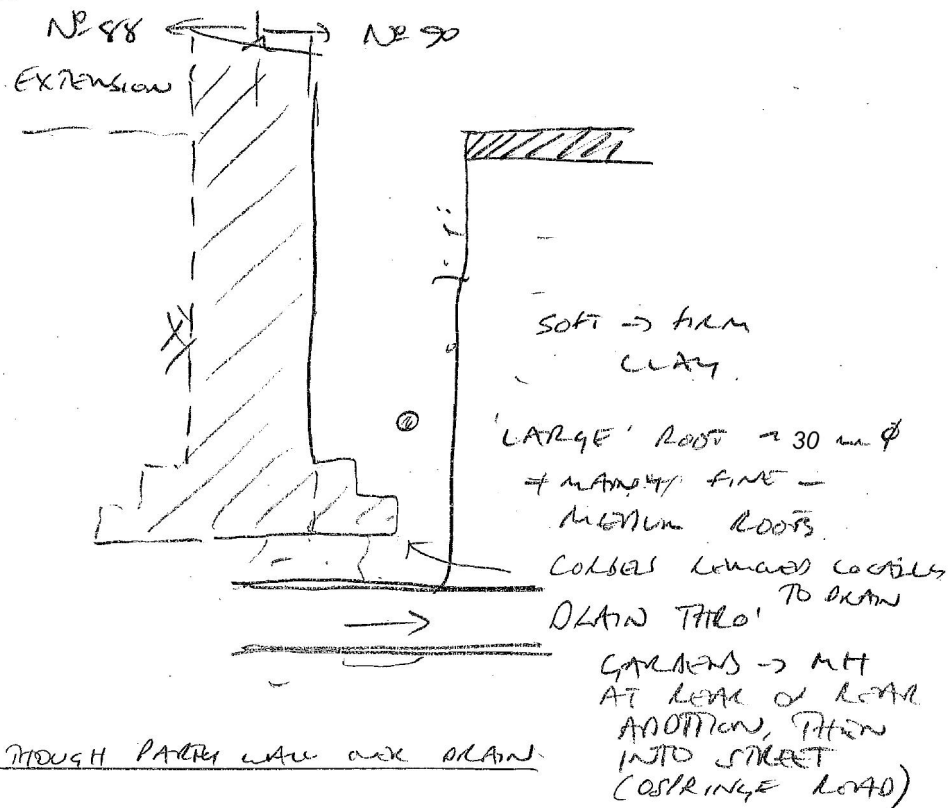
Title TRIAL PIT LOGS. TP0213 16.4.18
RECORDED 11.04.18

Date Revision
Engineer Checked
H11

Rev Date Description



TP02: THROUGH FLANK WITH LEAK ADDITION



TP03: THROUGH PAVEMENT WITH DRAIN

Site plan showing proposed tree removal and retention for 100gA3. The plan includes OSpring Road, Levertton Street, and two numbered trees: Tree 1 (Tree Of Heaven) and Tree 2 (Silver Birch). Dimensions for removal and retention are provided for both trees. A scale bar (0m to 5m) and a north arrow are included.

Tree 1: Tree Of Heaven


- Proposed removal dimensions: 7.642 mm, 4.815 mm, 5.376 mm.
- Proposed retention dimensions: 5.376 mm.
- Assumed dimensions: 5.376 mm.

Tree 2: Silver Birch

- Proposed removal dimensions: 2.401 mm.
- Proposed retention dimensions: 2.401 mm.

Scale: 0m, 1m, 2m, 3m, 4m, 5m. 1:100gA3.

NOT FOR CONSTRUCTION

 <p>1-5 Oldfells St London SE1 1QW Tel: 020 7766 6600 Fax: 020 7766 6602 www.conisbee.co.uk enquiry@conisbee.co.uk</p>	Project		Drawing Status		Project No		
	90 LEVERTON STREET		INFORMATION		180345		
	Title		Date		Drawing No		
	STRUCTURAL ASSESSMENT - TREES & TRIAL PIT LOCATIONS		APR 2018		SK-04		
			Scale		Revision		
		NTS		Engineer		Revision	
				HH		-	