BRUCE, CUFLEY & PARTNERS

FURTHER STRUCTURAL APPRAISAL

ON

ONE SEVEN ONE
171A FINCHLEY ROAD
LONDON
NW3 6LB

FOR

JAMES ANDREWS RSW

An appraisal of structural condition for James Andrews RSW

By Peter Mann, C.Eng., M.I.Struct.E

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Project N° 2411
October 2015

BRUCE, CUFLEY & PARTNERS

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ON

ONE SEVEN ONE
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NW3 6LB

Contents

1. Date of Inspection: 24th September 2015

2. General:

Orientation in this report is as if looking at the property from the front unless noted otherwise.

This report deals specifically with structural matters based on a visual inspection and we have not checked individual members of construction for competence/adequacy.

3. Description:

The shop One Seven One and the adjoining shops are part of the terrace Fairfax Mansions, date of the terrace is not known but is assumed to be early 1900's based on historic maps. The property is located on Finchley Road which is a major road leading towards Central London in the Hendon area.

4. Terms of Reference:

We visited the property in accordance with e-mailed instructions from Mr Trevor Hall of Simmons Taylor Hall on behalf of James Andrews RSW on 24th September 2015 to inspect and report on the structural condition at the above building and to review the structural stability and integrity of the noted property in respect of the very prominent damage as seen at the previous visit, and also comment upon the affect the trees to the rear of the property are having upon the building.

Access at the time of the visit was not limited to the property externally, but internally, access was denied. However no opening up works were undertaken.

No fittings or fixtures were lifted or removed at the time of the visit and assessment was limited to a visual inspection only.

We understand that the purpose of the further Structural Survey is to establish whether there is any ongoing movement and if this is progressive in order to confirm that if the trees are removed at the rear of the property, the damage seen as detailed in the February 2011 report and seen on site at this latest visit would recover and ongoing movement eliminated.

Simmons Taylor Hall have requested Bruce, Cufley & Partners to undertake the survey works and to prepare a report on the findings. This is to act as a record of any damage seen to the property. The concerns are that as there was damage to the property as seen at the original visit, then what is the solution to restore the structural integrity to the building and ensure measures are put in place to eliminate future issues.

It should be noted (as referred to earlier) that no opening up works have been undertaken and therefore any internal features, decoration, condition or damage referred to in the report, is purely from a visual perspective only.

5. Observations:

The shop where the damage is seen is at ground floor and basement levels to 171A Finchley Road, and part of the terrace known as Fairfax Mansions.

The exact age of the property is unknown although by the style of the external features and from historic maps, the terrace probably dates from the early 1900's. It is assumed that no major structural alterations have been undertaken to the property as the style of the finishes internally appears to be original.

Above the shop at ground floor and basement levels are a further three storeys, which are flats above the shop.

Access and egress to the flats is via the rear open walkway and the rear entrance lobby/door. The walkway runs the full length of the terrace. This walkway is at ground floor level (as the shop ground floor level) with the basement to the shop extending out beneath the walkway.

There is access to the rear of the basement through the rear door in the boundary wall. This boundary wall access opens out onto a large unmade open space used as car parking. It is not known whether the open space is within the terrace boundary. Access to the rear of the basement is via solid steps as the basement level is higher than the open space level.

The construction details of the specific property but also the terrace as seen during the visit are as follows:-

<u>The Building</u>

(i) External solid masonry walls with brickwork finish to all elevations with feature brick work to door and window reveals. The perimeter walls being solid masonry as referred to above but internal walls either solid masonry or plaster lath/stud depending upon location.

(ii) As there is a basement area beneath the shop and also the rear walkway and based on opening up works to adjoining properties, the floors are suspended timber or concrete. All other upper floors are timber and this includes within the access stairs to the flats above the shop.

(iii) Roof is timber cut and pitch with ridge running parallel with the front elevation except for the large hip over the entrance to the main terrace to the back for each block. The coverings being concrete tiles over roofing felt.

(iv) Internally all walls that are loadbearing and are assumed to be solid masonry. The internal non loadbearing walls are assumed to be timber stud/plaster lath.

(v) Although not seen it is assumed the foundations are traditional corbelled brick work, as you would anticipate for the age of the property. The foundations are part of the walls that extend into the basement area and are part of the retaining walls to the front as required.

The structural condition of the building, is all that forms the content of this report, with comment being only about the crack damage and the effects the trees may be having upon the property.

In order to confirm the significance of the damage and also other features that may affect the structural integrity of the building, we have noted specific locations and the damage/feature seen at that location.

It should be noted that we were not allowed access to the basement area of the shop nor allowed access to the back rooms of the shop at ground floor level. However we have been informed that no works have since been undertaken to repair any of the damage seen at the visit back in 2011. We were also informed that the people in the shop at the time of the visit had no idea whether the damage had got worse.

Therefore we firstly outline the damage at the original visit, which is fully detailed in our report dated 25th February 2011. We will update as required as part of the information for the particular area of damage. We will then detail the damage seen externally and to the rear of the shop and use as a comparison with that seen at the original visit.

For the outline of the damage seen at the original visit we will use the same references and titles for ease of use.

a) The Shop at Ground Floor Level (Internally Only)

   Crack damage to walls and ceiling towards the rear of the shop. All crack damage 1.0 mm and less.

b) The Shop, Stock/Store Room at Basement Level

   Crack damage to walls and ceiling with major water penetration through the walkway slab and around the gulley. Crack damage 1.0 mm – 2.0 mm at the worst case.

   Floor had major settlement with the worst recorded settlement of 120 mm vertically. Also crack damage measuring 1.0 mm – 2.0 mm width.

c) The Walkway at Ground Floor Level (Externally Only)

   Note: All of the following is part of the present visit as access was available.

   Rear Elevation of the Building

   Crack damage was originally noted to the rear of the ground floor and the entrance (which forms part of the entrance to the flats). This has been repaired as part of the alterations and refurbishment of the flats that were undertaken recently. There are no signs of further damage to the areas repaired.

Rear Open walkway Surface and Rear Boundary Wall for Walkway

As part of ground works to the rear of the terrace the walkway surface has been fully repaired.

This included all asphalt features and repairs where cracked brick work was noted, whilst the refurbishment works were being undertaken.

d) The Rear Elevation of the Boundary Wall from the Rear Car Park/Open Space

Rear Elevation

It was noted that the right hand side shop to 171A has been refurbished recently and 'Spec Savers' occupy this unit. As part of the refurbishment the rear elevation has been repainted and repaired where crack damage originally occurred. A photographic record of the repairs are included within Appendix A at the end of this report. The timing of the repairs is not known but there appears to be no new crack damage to the rear elevation.

To the rear of 171A Finchley Road, the crack damage is similar to that noted within the original report. Although the toothed vertical crack recorded last time does appear to have increased only very slightly.

Access Steps

The mass concrete access steps which serve 171A Finchley Road, have major crack damage and have settled and moved away from the rear boundary walkway wall. The gap between the face of the mass concrete is in excess of 100 mm at the worst case. There appears to be a worsening since the previous visit.

The steps that serve the adjoining property 'Spec Savers' however have been completely rebuilt with new handrail. It is noted however that there is some settlement of the concrete steps and a slight movement away from the rear boundary walkway wall although the handrail shows little signs of distortion or movement. It has likely flexed due to the type used.

Trees

The trees as referred to in the original report have increased greatly in size and as their canopy increases so too their root spread. As referred to also in the original report and reiterated within the Arboriculture Report dated 11th April 2011 the trees are likely to be self-seeding.

As referred in the previous report, there is no indication of tree roots extending towards the rear basement wall. However the roots seen in front of the tree and extending out into the car park area are very prominent. The finishes to the car park are broken up quite badly and the top of some roots are seen through. The canopy of the trees at the bottom of the steps to N° 171A extends mainly over the car park area. This information is detailed within the Arboriculture Report.

It should be noted and of concern that the trees along the rear of the basement elevation are within 1.0 meter of the wall. Any new foundations constructed in this area with the trees as seen on site would have to be to a minimum depth below ground level of at least 1.5 m (in accordance with NHBC and Building Regulation requirements).

General Comment

At the time of the visit although not checked by specialist equipment, there were no signs of any major distortion, or non-verticality or out of level of any of the walls or support members to the main building and in particular the rear basement wall. This included window reveals and door and window lintels or cills.

6. Discussion and Recommendations

In order to clarify the extent of damage, the effects upon the structural integrity of the building and therefore make recommendations on the type of repair, we have carried out an assessment of the damage in comparison with the "Comparison of Visible Damage Table" from the BRE Digest 251.

We have reproduced this table for reference purposes, as Table 1 overleaf:

Table 1 – Classification of Visible Damage to Walls with Reference to Ease of Repair

Category of Damage	Description of Typical Damage *Ease of repair in italic type*	Approximate Crack Width (mm)
0	Hairline cracks of less than about 0.1mm width are classed as negligible	Up to 0.1*
1	*Fine cracks which can easily be treated during normal decoration.* Perhaps isolated slight fracturing in building. Cracks rarely visible in external brickwork.	Up to 1* **Insignificant**
2	*Cracks easily filled. Redecoration probably required. Recurrent cracks can be masked by suitable linings.* Cracks not necessarily visible externally*; some external repointing may be required to ensure weathertightness.* Doors and windows may stick slightly.	Up to 5* **Slight**
3	*The 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.* Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired.	5 to 15* (or a number of cracks up to 3) **Moderate**
4	*Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows.* Window and door frames distorted, floor sloping noticeably+. Walls leaning+ or bulging noticeably some loss of bearing in beams. Service pipes disrupted.	15 to 25* but also depends on number of cracks **Severe**
5	*This requires a major repair job involving partial or complete re-building.* Beams lose bearing; walls lean badly and require shoring. Windows broken with distortion. Danger of instability.	Usually greater then 25* but depends on number of cracks. **Very Severe.**

* Crack width is one factor in assessing category of damage and should not be used on its own as direct measure of it.

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

The purpose of the subsequent visit and therefore this report is to confirm the damage to the property and whether there is a major ongoing problem with the areas of damage.

Specifically, whether the structural integrity of the building has been compromised or is likely to be compromised in the future if no action is taken.

The property is most likely to be founded on London Clay material due to its location when the geological maps are examined. Although, with the basement to the front, the founding level is more into natural ground as the terrain generally slopes from the front of the property down towards the back and into the car park/open space at the rear.

The London Clay material is a shrinkable sub soil and can be susceptible to changes in volume of the clay with variation in moisture content. If the foundations are on this sub soil, then the building is susceptible to movement.

However, the crack damage to the shop internally seen as part of the original visit and assumed to have got worse over time is only in one or two locations. Although the damage to the ceiling had been reported, we do not consider the cracks that were seen at the time to have been caused by foundation movement. There are only hairline cracks to the walls adjacent to the ceiling cracks. However, there has been some movement as the cracks have appeared since the shop was redecorated. The crack damage is more likely to be as a result of some thermal movement rather than foundation failure.

The damage seen as part of the structural survey works in accordance with Table 1 above is considered to be 'Category of Damage 1 and 2' and 'insignificant' or 'slight' We understand that the damage seen has occurred recently. It is not possible to confirm whether there is any progressive movement without a period of monitoring. However, if the cracks are repaired as part of the normal redecoration, they could be used as a self-monitor. Again, we do not consider the cracks to be of major concern in respect to the overall structural integrity of the building.

As originally reported and still current (as no repairs have been undertaken), the crack damage to the Basement Stock/Storeroom, particularly in the ground bearing slab, the crack damage could be as a result of both the leaking pipes at walkway surface, also the trees adjacent to the boundary wall.

Whether the downpipe running down the wall has leaked in addition to the gully pot from the soffit of the walkway slab, it is not possible to confirm without the drains being inspected and tested. This is also on the assumption that the drains run beneath the Basement Stock/Storeroom slab. If the drains have leaked then the fines in the material beneath the slab have been washed away creating voids and thus the slab settling.

However, the major settlement of the slab is at the middle area, which is directly opposite the location of the large tree adjacent to the rear boundary wall.

If the tree root activity is such that it has extended beneath the boundary wall and are under the Basement Stock/Storeroom slab with moisture being extracted from the sub soil, the natural ground could reduce in volume and the structure above subsequently settle. This situation will only get worse if the cause of the moisture extraction is not removed.

If there is damage to adjoining properties, we assume to be of a similar nature as the trees and the leaking walkway slab are close to other properties, but outside of the demise to 171A Finchley Road.

We understand from the information within the Arboriculture Report that Tree Preservation Orders are not imposed on two trees along the rear boundary wall and closest to the steps where the damage is seen.

As referred to earlier in this report if new foundations were to be constructed with the trees in their present position the foundation level would have to be at least 1.5 m below external ground level. It is very unlikely that this is the case, bearing in mind the age of, and type of footings for this building. Although the stairs and the rear walls have been repaired to the adjoining property of N° 171A. The damage seen does not confirm or otherwise whether the tree roots pass beneath the boundary wall. However the new steps although as a mass block is sound there appears to be a slight separation between the rear wall face and the back face of the block of steps. Whether there is a separation joint between that has disintegrated it is not possible to confirm. But the gap seen is rather larger than a typical separation joint and therefore some form of settlement has occurred. Timing for this is not possible to confirm, but if the trees are an issue with any ground movement then the settlement would commence once the block of steps has been completed.

The damage as seen at the rear wall to 171A, when compared with the record photographs from the 2011 report has got worse. The magnitude of this is not possible to gauge as no formal monitoring regime has been set up.

The damage as recorded in the 2011 report for the areas in the Basement and Store Room, cannot be compared as access was denied. On the basis that the external damage has got worse then it is likely the internal damage has also got worse. On the basis that the damage both externally and internally is as a result of tree root activity. Then as no tree management measures have been undertaken, with the trees continuing to grow, they will have an ongoing effect on the damage.

The only way to ensure that there is no ongoing issues from the trees, on the assumption that they are the proximate cause of the damage, is to have the trees removed.

As with any tree removal there are issues regarding heave and tree preservation order (TPO). With reference to the Arboriculture Report it is noted that the trees of concern do not have any TPO’s in place. The trees are self-seeded and therefore became established after the construction of the building. Therefore on both counts there are no reasons for not having the trees removed.

Due to their present size there may be a request for a staged removal. But from a structural point of view their removal would ensure that there are no further issues regarding the structure of the building. This will include the ground bearing slab in the Basement/Store Room area.

7. Summary:

To ensure that there are no further issues with the building and in particular the rear of the property and the ground bearing slab in the Basement/Store Room area, the trees are removed.

The tree removal should be undertaken under the advice of suitably qualified Arboriculturist or Tree Surgeon.

8. Report by:

Peter D Mann

for Bruce, Cufley & Partners

Qualifications: **C.Eng., M.I.Struct.E**

Disclaimer: This report is not a full structural survey. The report is specifically restricted in accordance with conditions, limitations and qualifications agreed.

BRUCE, CUFLEY & PARTNERS

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APPENDIX 1

Photographic Record

Plate 1 – General view of the rear area of the Basement to N° 171A and adjoining property

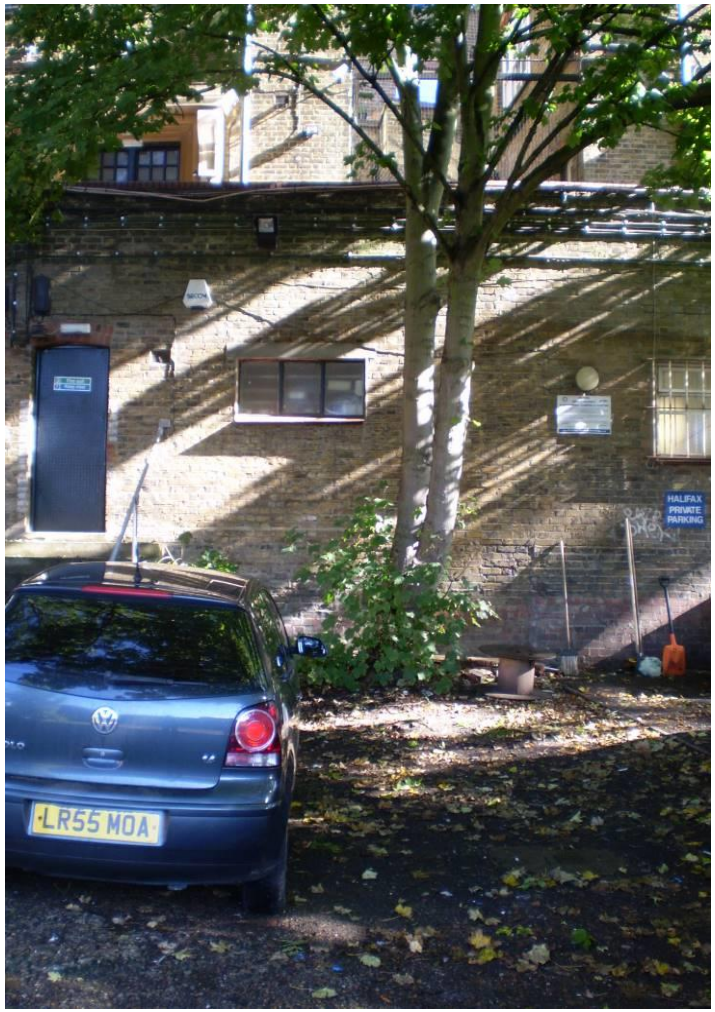

Plate 2 – View of rear elevation to the Basement of adjoining property

Bruce, Cufley & Partners Suite V, Epsilon House, Laser Quay, Culpeper Close, Medway City Estate, Rochester, Kent. ME2 4HU Telephone: 01634 727633 e-mail: bcp@brucecufley.co.uk	Title: **One Seven One, 171A Finchley Road, London NW3 6LB**	Date: 24th September 2015 Prepared by: PDM	Sheet No. 1 Project Nº 2411

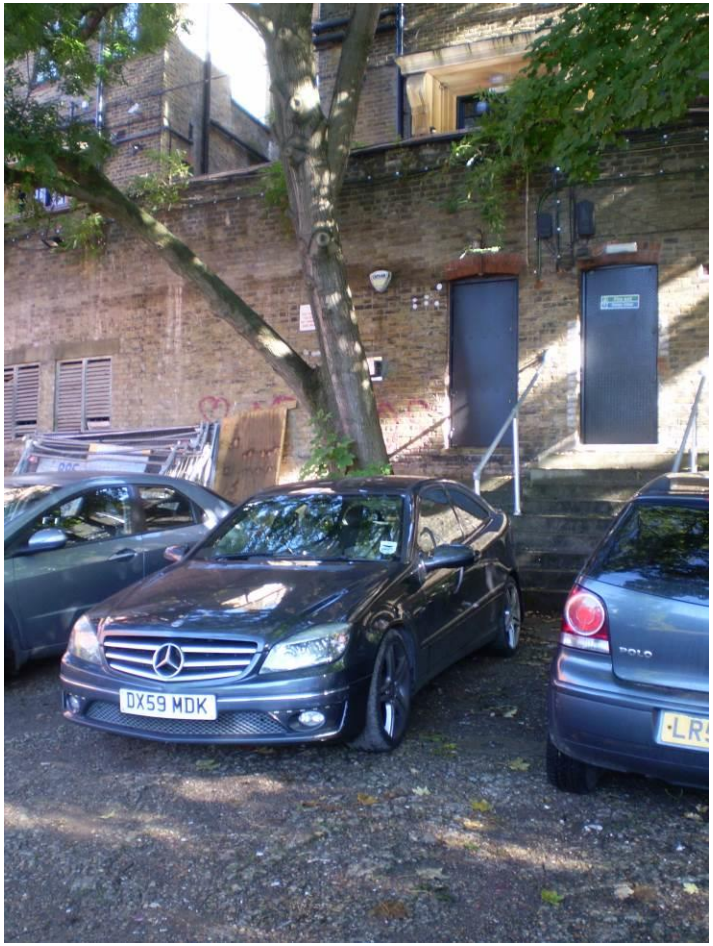

Plate 3 – View of elevation to the Basement of N° 171A

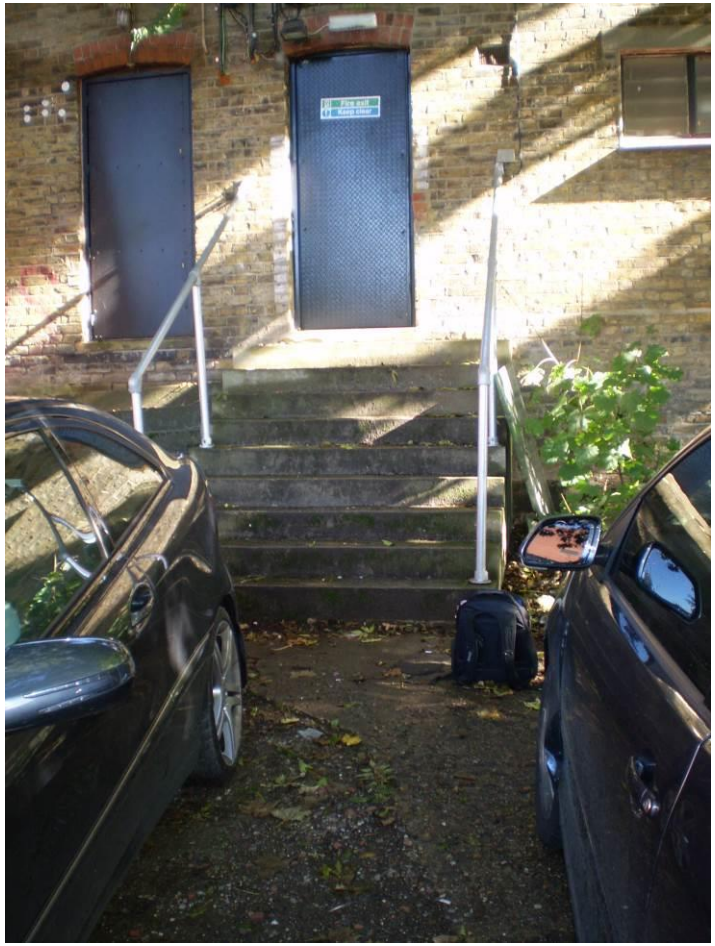

Plate 4 – View of rear access steps to adjoining property

Plate 5 – View of rear access steps to adjoining property

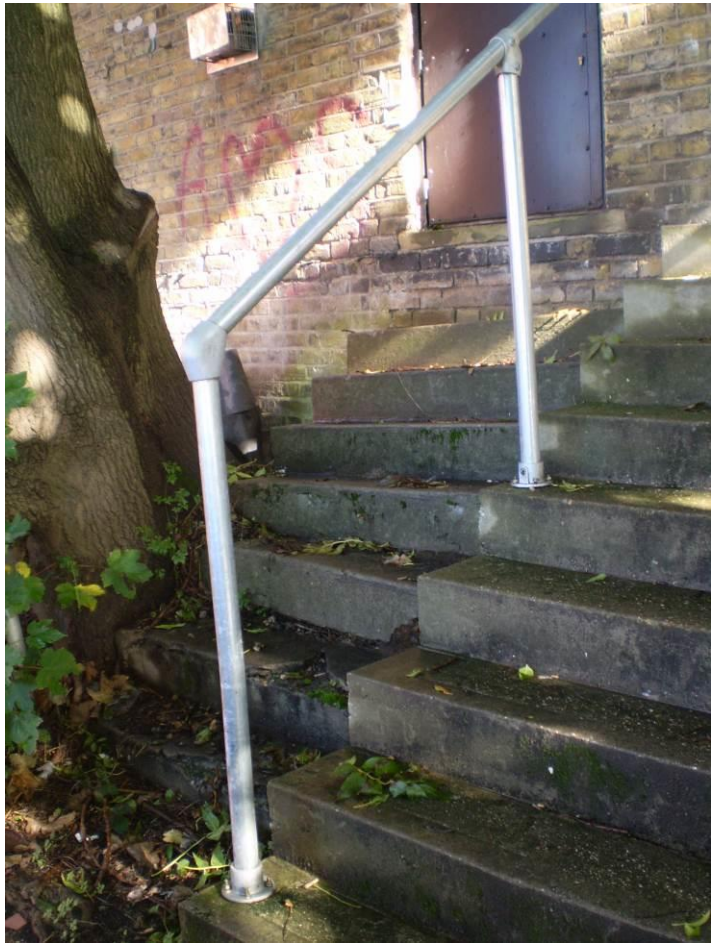

Plate 6 – View of steps to rear adjoining property with steps to N° 171A beyond

Plate 7 – Base of tree adjacent to the rear steps to N° 171A

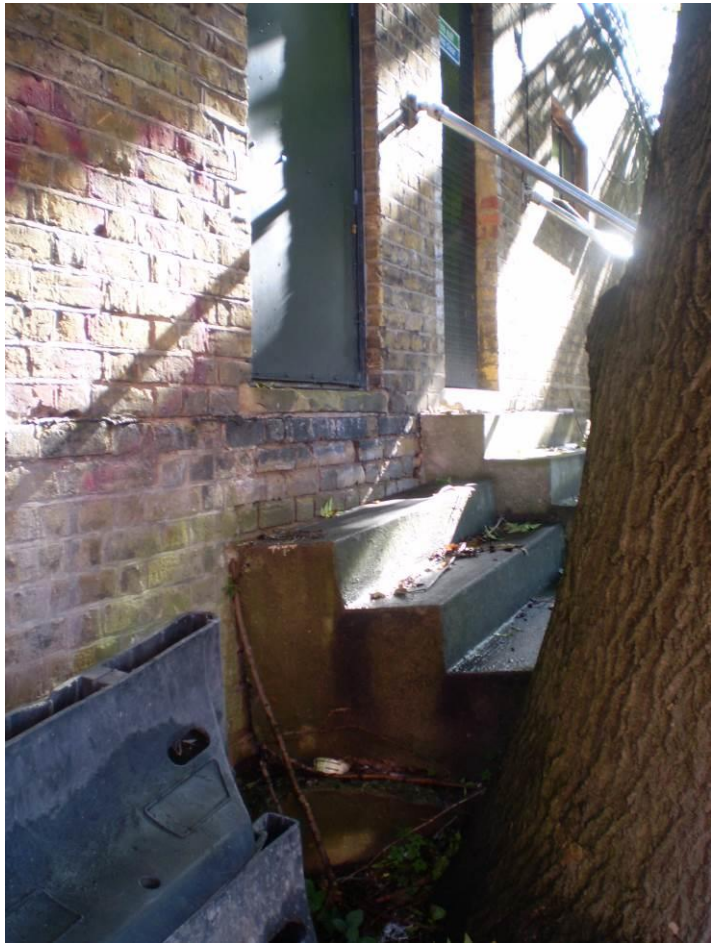

Plate 8 – Close up view of steps to N° 171A settled and moved away from rear wall

Plate 9 – View of existing hand rail encased by the tree at the steps to 171A

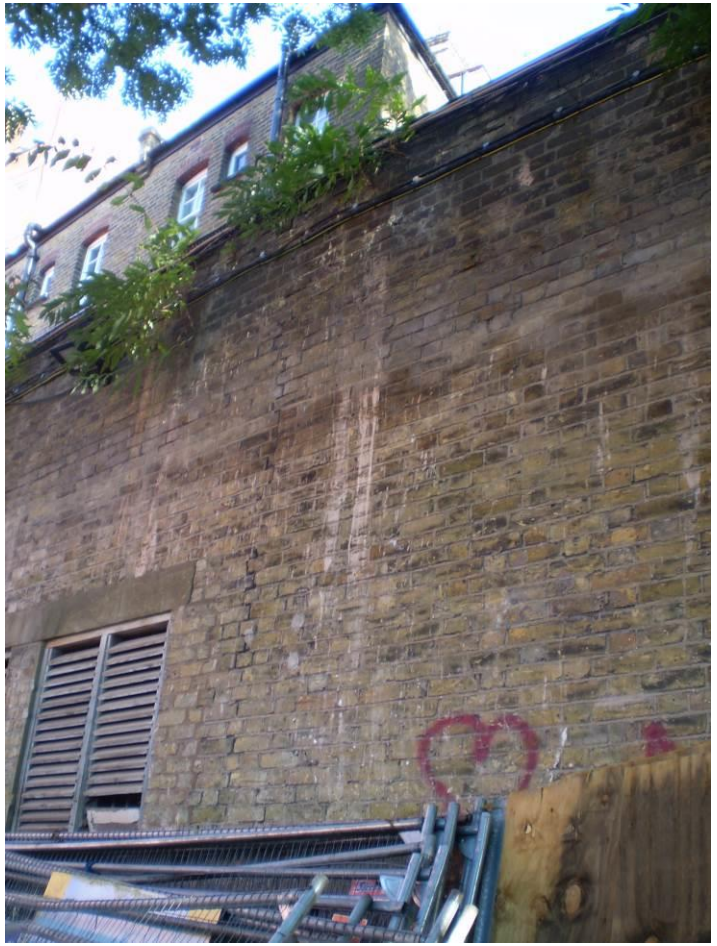

Plate 10 – Vertical crack damage to the rear wall of N° 171A Basement

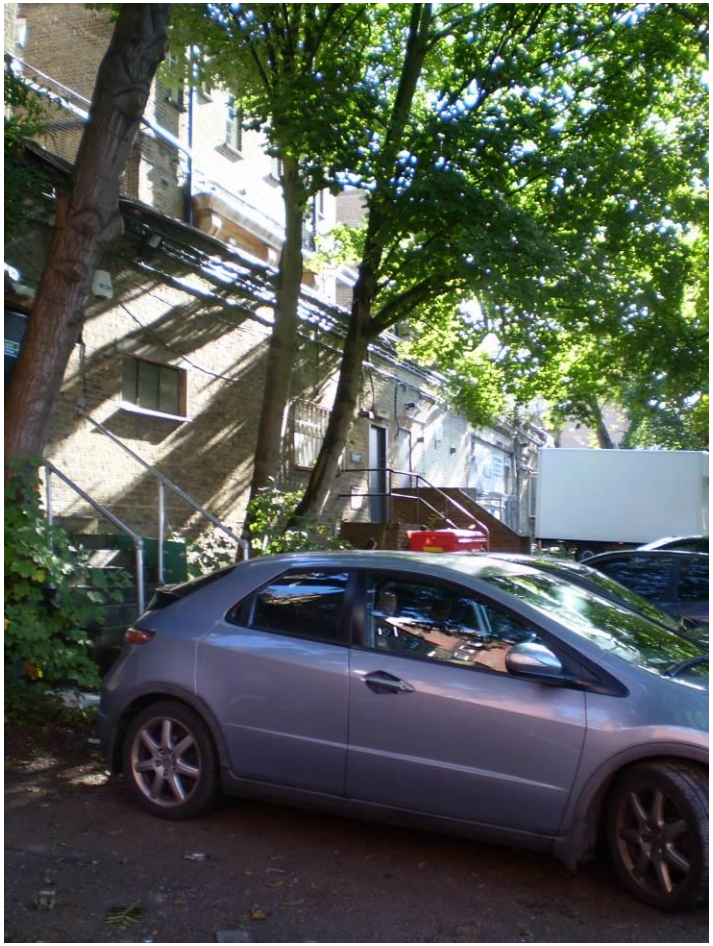

Plate 11 – View of tree adjacent to rear wall to adjoining property

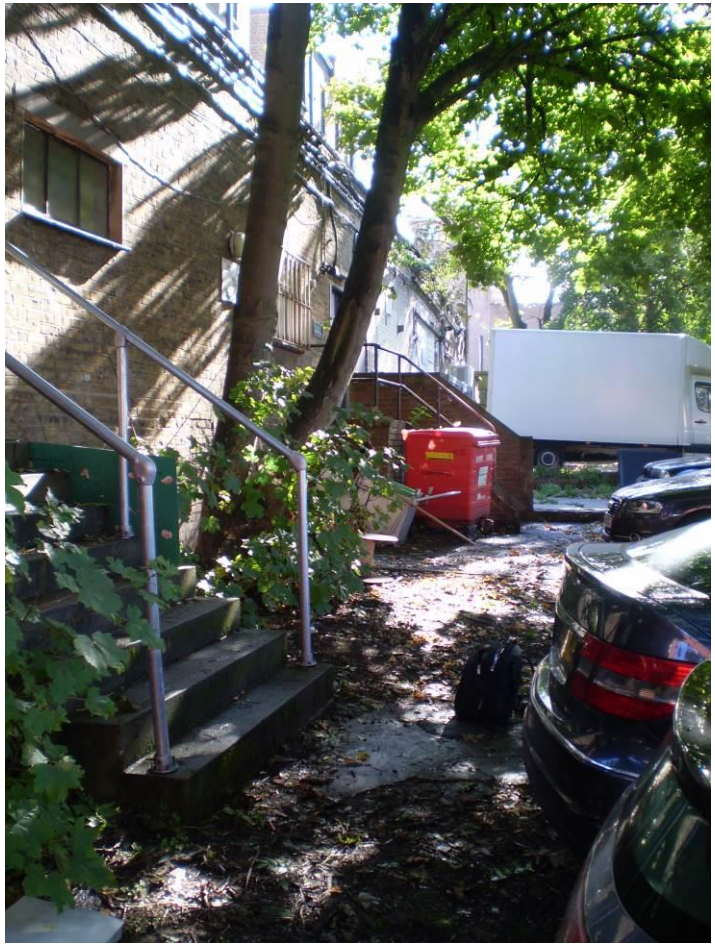

Plate 12 – View of bottom of steps to the adjoining property

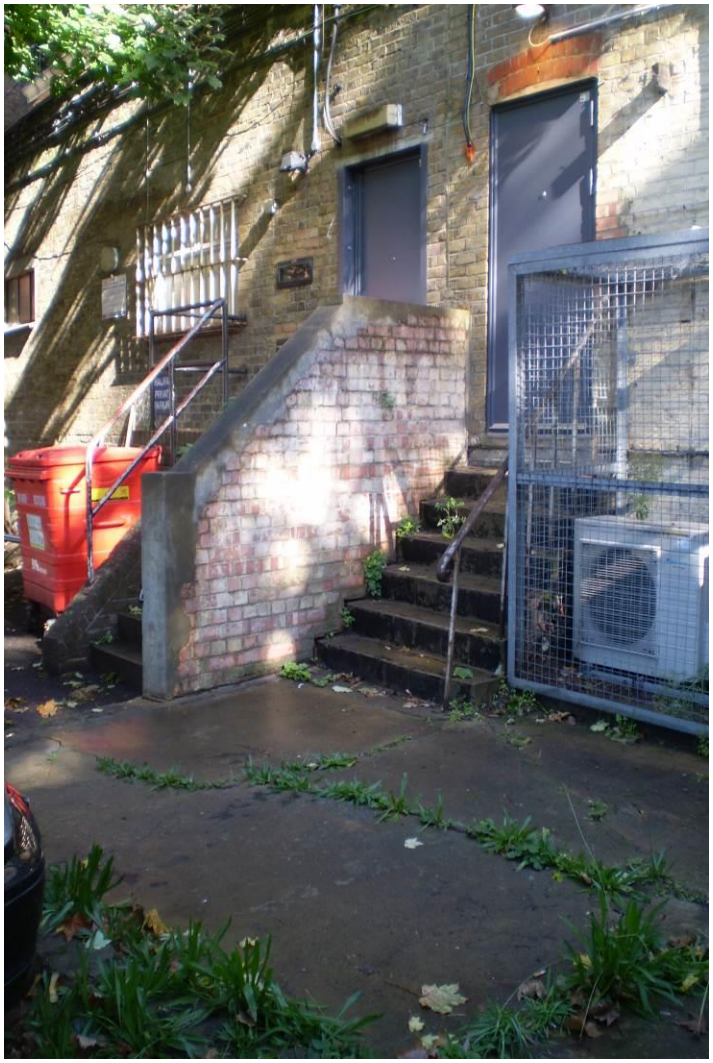

Plate 13 – View of steps to properties beyond the area at the rear of N° 171A

Plate 14 – Crack damage to the step beyond the area of N° 171A (with gap between wall and step structure)

Plate 16 – Further repaint/crack repairs to rear elevation to adjoining property below dpc level

Plate 15 – Repaint to rear elevation of main wall to adjacent property

Sheet No. 8
Project N° 2411

Date: 24th September 2015
Prepared by: PDM

Title: **One Seven One, 171A Finchley Road, London NW3 6LB**

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Plate 18 – Comparison view of steps to rear of N° 171A and adjoining property

Plate 17 – Damage to threshold at the top of rear steps to adjoining property

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Title: **One Seven One, 171A Finchley Road, London NW3 6LB**

Date: 24th September 2015
Prepared by: PDM

Sheet No. 9
Project N° 2411

BRUCE, CUFLEY & PARTNERS

FURTHER STRUCTURAL APPRAISAL

ON

ONE SEVEN ONE
171A FINCHLEY ROAD
LONDON
NW3 6LB

APPENDIX 2

Copy of Original BC&P Report Dated 25th February 2011

Bruce, Cufley & Partners Consulting Engineers

Suite V, Epsilon House, Laser Quay,
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Our Ref: PDM/SS/2411

25th February 2011

James Andrew RSW
Fairchild House
Redbourne Avenue
London
N3 2BP

For the Attention of Liz McGovern, Property Manager

Dear Liz,

Re: Crack Damage
One Seven One, 171A Finchley Road, London, NW3 6LB

We refer to our recent discussion with regard to the above site and in particular your request to visit and report, giving Structural Engineering advice upon the crack damage to the property, and other areas where there has been signs of movement in the building structure.

1.0 Introduction

Bruce, Cufley and Partners have been requested by Liz McGovern, Property Manager to James Andrew RSW, to visit and give Structural Engineering advice on the damage to the property. Subsequently report on the observations, giving possible cause of damage and give advice upon any remedial measures (if they are required) and the way forward for the next stage.

2.0 Background

This letter report has been prepared by Bruce, Cufley and Partners in response to the request by James Andrew RSW on behalf of the tenant of the ground floor shop One Seven One, 171A Finchley Road, London NW3 6LB to give Structural Engineering advice on the crack damage to the shop internal area and other storage area, stock rooms and the like. This report has been prepared without any intrusive works being undertaken, simply a visual inspection of the areas of concern.

A visit was made by Bruce, Cufley and Partners' Chartered Structural Engineer on Wednesday 16th February 2011. The detail of the crack damage within the shop area in particular and the basement store/stockroom were noted. A photographic record of the damage and other relevant features has been made and is contained under Appendix A at the end of this report.

The crack damage of most concern to the shop tenant was towards the rear of the shop in the ceiling. The damage to the rear store/stock room in the basement was also noted, although the tenant seemed less concerned over the damage seen.

Cont'd…/

3.0 Observations

The shop where the damage is seen is at ground floor and basement levels to 171A Finchley Road, and part of the terrace known as Fairfax Mansions.

The exact age of the property is unknown although by the style of the external features and from historic maps, the terrace probably dates from the end of the 19th Century. It is assumed that no major structural alterations have been undertaken to the property as the style of the finishes internally appears to be original.

Above the shop at ground floor and basement levels are a further 3 storeys, which are flats above the shop.

Access and egress to the flats is via the rear open walkway and the rear entrance lobby/door. The walkway runs the full length of the terrace. This walkway is at ground floor level (as the shop ground floor level) with the basement to the shop extending out beneath the walkway.

There is access to the rear of the basement through the rear door in the boundary wall. This boundary wall access opens out onto a large unmade open space used as car parking. It is not known whether the open space is within the terrace boundary. Access to the rear of the basement is via solid steps as the basement level is higher than the open space level. **(Plates 1 and 2 refer giving typical details).**

The areas of damage which was inspected as part of the survey are as follows:-

a) The shop at ground floor level
b) The shop/stock/storage room at basement level
c) The walkway at ground floor level, externally only
d) The rear elevation of the boundary wall from the rear car park/open space including the rear solid steps and access door.

In order to confirm the significance of the damage and also other features that may affect the structural integrity of the building, we have noted specific locations and the damage/feature seen at that location.

a) The Shop at Ground Floor Level (Internally only)

Ceiling

Crack in the ceiling towards the rear left hand corner above the staircase down to basement level. Crack runs parallel to the party wall and away from the bulkhead from the stairs to the flats above. Slight rucking in the ceiling finishes also. Crack approximately 1.0mm width (Fine). **Plate 3 refers**.

Crack in the rear right hand corner. Crack across the corner extending slightly down the rear wall. Crack less than 1.0mm (Hairline). **Plate 4 refers**.

Cont'd…/

3.0 Observations (Continued)

Walls

Crack to the right hand side party wall pier around the picture rail level. Crack less than 1.0mm (Hairline).

Picture rail to the wall that bounds the staircase/lobby area to the flats above. The rail has come away from the wall. Appears to be a slight bow in the wall. No signs of any other damage to the wall. **Plate 5 refers**.

b) The Shop, Stock/Store Room at Basement Level

Ceiling

Major water penetration through the walkway slab over the Basement, Stock/Storeroom, in particular where the gully is located and the drain run to the vertical down pipe. **Plates 6 and 7 refer**.

Walls

Stepped crack in the external boundary wall close to the junction with the party wall line. Crack measures 1mm - 2mm width (Slight). **Plate 8 refers.**

Vertical stepped crack in the party wall to the left hand side of the rear Basement, Stock/Storeroom. Crack measures 1.0mm in width. **Plate 9 refers**.

Floor

Major settlement cracking with the floor dropped over the whole area of the Basement slab to the rear Store/Stockroom. Cracks measure 1mm - 2mm in width. Major settlement occurs adjacent to the rear boundary wall in the middle of the span where the slab has dropped by 120mm vertically. At that location, no crack damage in the boundary wall can be seen. **Plates 10 and 11 refer**. Damage to the boundary wall is as referred to above.

c) The Walkway at Ground Floor Level (Externally Only)

Rear Elevation of the Building

There is some crack damage to the rear elevation of the property in particular beneath the rear window at ground floor level to the shop. The crack measures 1mm to 2mm in width. **Plate 12 refers.**

Some of the perpendicular and bed joints in the rear elevation of the flats entrance area has the mortar washed away adjacent to the drain pipe. **Plate 13 refers.**

Rear Open Walkway Surface

The cover to the gully pot in the top surface of the asphalt covered walkway has been displaced. There are no signs of cracking in the finished surface and it is not possible to determine where the leak to the Basement, Stock/Storeroom below was located. Whether repairs have been carried out, it was not possible to see. Generally, the surface showed no signs of distress.

Cont'd…/

3.0 Observations (Continued)

Rear Boundary Wall from Walkway

The rear boundary wall that extends up above the open walkway surface is 1 brick thick (215mm) with intermediate 1½ brick thick (327mm) x 2 bricks (440mm) piers at 6000mm centres. The wall extends above the finished walkway level approximately 1500mm in height. **Plate 14 refers.** No crack damage can be seen in this boundary wall.

d) The Rear Elevation of the Boundary Wall from the Rear Car Park/Open Space

Rear Elevation

Although there are no major cracks to the rear boundary wall, both above and below the Basement level of the Stock/Storeroom, there is a toothed vertical crack at approximately the party wall line between the Basement areas under the walkway. **Photo 15 refers.**

Access Steps

The mass concrete access steps which serve both 171A Finchley Road and the adjoining property have major crack damage and has settled and moved away from the boundary wall. The crack runs through the majority of the steps. No handrails or balustrades are attached to the steps. The gap between the face of the mass concrete steps and the face of the boundary wall is approximately 100mm. **Plates 16, 17 and 18 refer.**

Trees

Adjacent to the rear boundary wall from the car park/open space level is what is believed to be a large Sycamore tree. There are a number of large trunks from the ground level. The tree is probably in excess of 15.0 metres in height. From the location of the tree and the style, it is most likely to have self seeded. The tree is adjacent to the rear access steps and within 1.0 metre of the rear boundary wall. There is no indication of any tree roots under either the wall or the access steps, but this can only be determined by trial pit excavations. It appears that a post, either handrail or scaffold tube, passes through the lower section of the Sycamore trunk. Obviously, the tree has grown up and around this metal section. **Plates 1 and 19 refer.**

There are other trees further along the boundary wall, but are outside of the boundary of 171A Finchley Road. These trees are of a similar species and of a similar size and distance from the boundary wall.

Cont'd…/

4.0 Discussion

In order to clarify the extent of damage, the effects upon the structural integrity of the building and therefore make recommendations on the type of repair, we have carried out an assessment of the damage in comparison with the "Comparison of Visible Damage Table" from the BRE Digest 251.

We have reproduced this table for reference purposes, as Table 1 below:-

Table 1 Classification of Visible Damage to Walls with Reference to Ease of Repair

Category of Damage	Description of Typical Damage *East of repair in italic type*	Approximate Crack Width (mm)
0	Hairline cracks of less than about 0.1mm width are classed as negligible	Up to 0.1*
1	*Fine cracks which can easily be treated during normal decoration.* Perhaps isolated slight fracturing in building. Cracks rarely visible in external brickwork.	Up to 1* **Insignificant**
2	*Cracks easily filled. Redecoration probably required. Recurrent cracks can be masked by suitable linings.* Cracks not necessarily visible externally*; some external repointing may be required to ensure weathertightness.* Doors and windows may stick slightly.	Up to 5* **Slight**
3	*The 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.* Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired.	5 to 15* (or a number of cracks up to 3) **Moderate**
4	*Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows.* Window and door frames distorted, floor sloping noticeably+. Walls leaning+ or bulging noticeably some loss of bearing in beams. Service pipes disrupted.	15 to 25* but also depends on number of cracks **Severe**
5	*This requires a major repair job involving partial or complete re-building.* Beams lose bearing; walls lean badly and require shoring. Windows broken with distortion. Danger of instability.	Usually greater then 25* but depends on number of cracks. **Very Severe.**

* Crack width is one factor in assessing category of damage and should not be used on its own as direct measure of it.

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

Cont'd…/

4.0 Discussion (Continued)

The purpose of the visit and therefore this report is to confirm the damage to the property and whether there is a major ongoing problem with the areas of damage. Specifically, whether the structural integrity of the building has been compromised or is likely to be compromised in the future if no action is taken.

The property is most likely to be founded on London Clay material due to its location when the geological maps are examined. Although, with the basement to the front, the founding level is more into natural ground as the terrain generally slopes from the front of the property down towards the back and into the car park/open space at the rear.

The London Clay material is a shrinkable sub soil and can be susceptible to changes in volume of the clay with variation in moisture content. If the foundations are on this sub soil, then the building is susceptible to movement.

However, the crack damage to the shop internally is only in one or two locations. Although the damage to the ceiling has been reported recently, we do not consider the cracks to have been caused by foundation movement. There are only hairline cracks to the walls adjacent to the ceiling cracks. However, there has been some movement as the cracks have appeared since the shop was redecorated. The crack damage is more likely to be as a result of some thermal movement rather than foundation failure.

The damage seen as part of the structural survey works in accordance with Table 1 above is considered to be 'Category of Damage 1 and 2' and 'insignificant' or 'slight' We understand that the damage seen has occurred recently. It is not possible to confirm whether there is any progressive movement without a period of monitoring. However, if the cracks are repaired as part of the normal redecoration, they could be used as a self monitor. Again, we do not consider the cracks to be of major concern in respect to the overall structural integrity of the building.

With regard to the crack damage to the Basement Stock/Storeroom, particularly in the ground bearing slab, the crack damage could be as a result of both the leaking pipes at walkway surface, also the trees adjacent to the boundary wall.

Whether the downpipe running down the wall has leaked in addition to the gully pot from the soffit of the walkway slab, it is not possible to confirm without the drains being inspected and tested. This is also on the assumption that the drains run beneath the Basement Stock/Storeroom slab. If the drains have leaked then the fines in the material beneath the slab have been washed away creating voids and thus the slab settling.

However, the major settlement of the slab is at the middle area, which is directly opposite the location of the large tree adjacent to the rear boundary wall.

Cont'd…/

4.0 Discussion (Continued)

If the tree root activity is such that it has extended beneath the boundary wall and are under the Basement Stock/Storeroom slab with moisture being extracted from the sub soil, the natural ground could reduce in volume and the structure above subsequently settle.

Without further investigation works it is not possible to determine the proximate cause of the crack damage to the rear boundary wall and the settlement of the ground bearing Basement Stock/Storeroom slab.

It should be noted that a typical exclusion from a Building Insurance policy (mainly domestic) is that if there is no damage to the main structural walls, although the ground bearing slab has settled, it is classed as an uninsured peril.

The damage to the ground floor slab is major although the wall has only minor damage in comparison. However, it would be worth checking insurance policies to confirm whether the exclusion does exist for this particular case.

If there is damage to adjoining properties, we assume to be of a similar nature as the trees and the leaking walkway slab are close to other properties, but outside of the demise to 171A Finchley Road.

We understand that Tree Preservation Orders are in force for each of the trees along the rear boundary wall.

It was noted that refurbishment works are being undertaken to a number of the flats above shops, this includes 171A Finchley Road. Further disturbance is possible during the works, but it would be prudent to have a condition survey of the existing finishes, undertaken to confirm damage and whether it worsens as a result of other works.

5.0 Conclusion and Recommendations

We are unable to specifically confirm the proximate cause of the damage to the property. This is both for the internal crack damage to the ground floor level shop and also the Basement Stock/Storeroom. However, there are clear signs for the damage to the Basement Stock/Storeroom slab, being as a result of either water penetration or the trees or both, although leaking drains cannot be determined at this stage.

With regard to internal damage to the shop at ground floor level, we would recommend the following:-

(i) A Condition Survey is carried out to the internal cracking as works are being undertaken to the upper level flats.

Cont'd…/

5.0 <u>Conclusion and Recommendations</u> (Continued)

(ii) Once the works to the flats are completed, crack repairs as part of normal redecoration works are undertaken and then used as a self monitor.

With regard to the rear Basement Stock/Storeroom, we would recommend the following:-

a) The building's insurance policy is checked to confirm whether any exclusions are in force regarding ground bearing slab settlement.

b) The drains are surveyed and tested to confirm any leaks and where they flow to.

c) Trial pit excavations are undertaken to confirm whether tree root activity has extended under the rear boundary wall and the ground bearing slab.

d) The walkway slab is checked and if required repair for any water penetration (if this has not already been completed).

e) A claim is made to your Insurers for subsidence to the rear Basement Stock/Storeroom. Although you need to check policy excess for Commercial Policies for this type of property.

f) As part of item e) above, put the Local Authority on notice regarding the tree nuisance.

We trust that the above is satisfactory, but should there be any problem or queries, please do not hesitate to contact us.

Assuring you of our best attention at all times.

Yours sincerely,

For and on behalf of
Bruce, Cufley & Partners Ltd.

P.D. Mann
C.Eng., M.I.Struct.E

Encl. - Appendix A - Photographic Record

BRUCE, CUFLEY & PARTNERS

STRUCTURAL REPORT

ON

EXISTING STRUCTURE

AT

ONE SEVEN ONE
171A FINCHLEY ROAD
LONDON
NW3 6LB

Appendix A

Photographic Record

Project 2411
February 2011

Plate 2 Rear Open Walkway

Plate 1 Typical Rear Elevation

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e-mail: bcp@brucecufley.co.uk

Title:

One Seven One
171A Finchley Road
London NW3 6LB

Date: February 2011

Prepared by: P. Hodges

Checked by: P.D. Mann

Sht No. 1

Project No. 2411

Plate 4 Crack in rear wall and ceiling

Plate 3 Ceiling crack to rear of shop

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Date: February 2011
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Checked by: P.D. Mann

Sht No. 2

Project No. 2411

Plate 6 Ceiling water penetration damage at walkway gully pot location

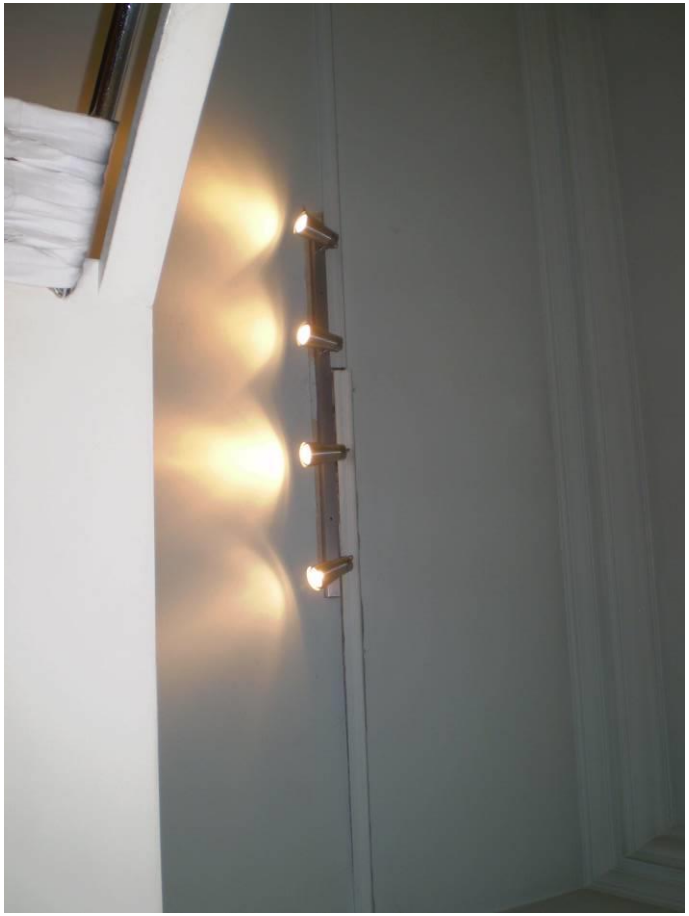

Plate 5 Picture rail parted from internal wall

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Sht No. 3

Project No. 2411

Plate 8 Stepped crack in rear boundary wall

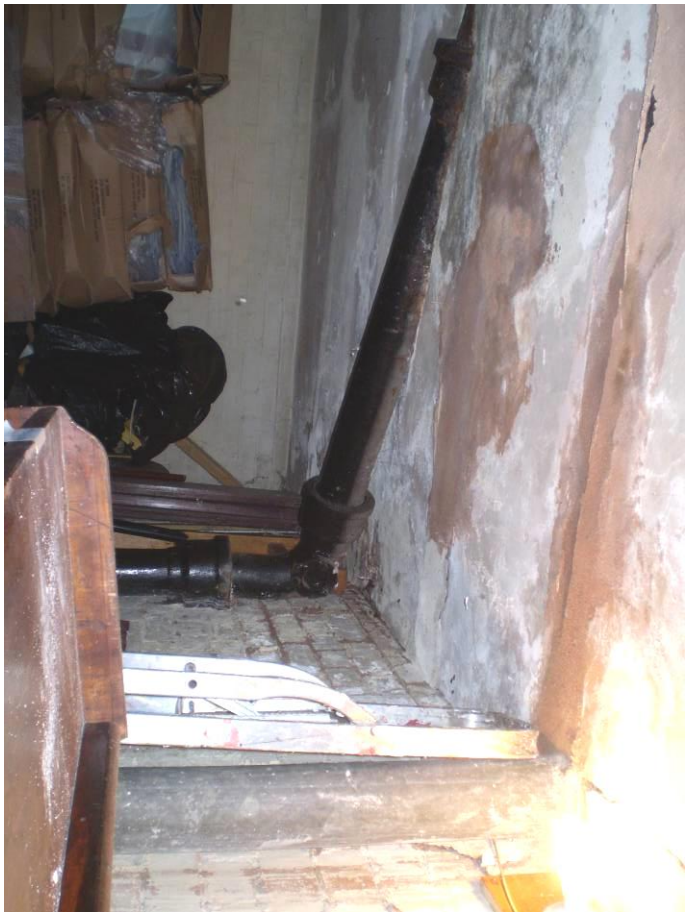

Plate 7 Drain run to vertical down pipe with water penetration damage to ceiling

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Date: February 2011
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Sht No. 4

Project No. 2411

Plate 10 Cracks in Basement floor at door threshold to rear stack/store room

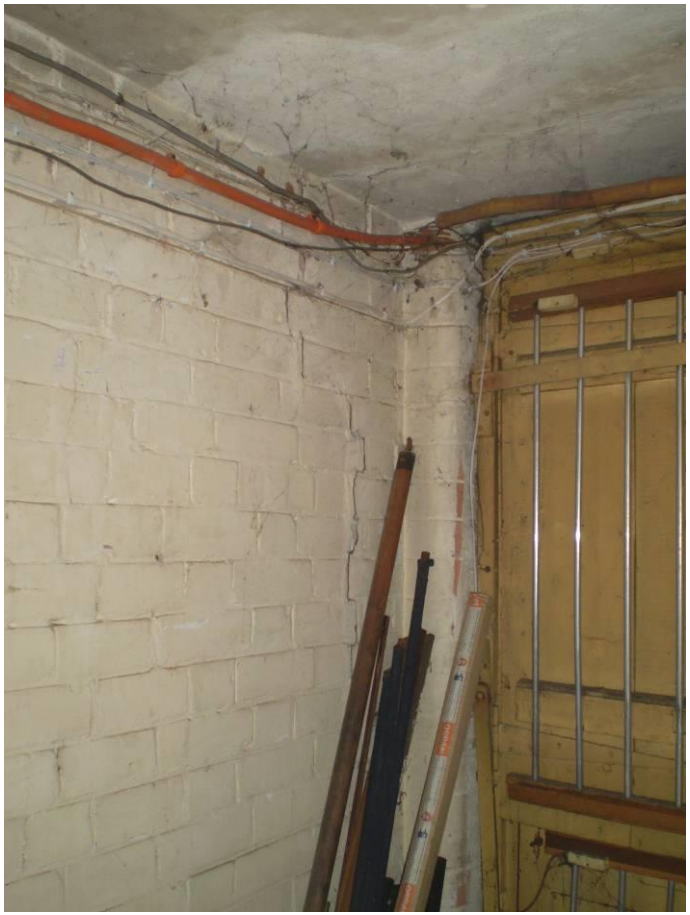

Plate 9 Stepped crack in Party Wall to left hand side

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Sht No. 5

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Plate 12 Rear ground floor level window to shop

Plate 11 Settlement in floor slab at centre span adjacent to the rear boundary wall

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Sht No. 6

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Plate 14 Typical upstand boundary wall detail to the rear open walkway area

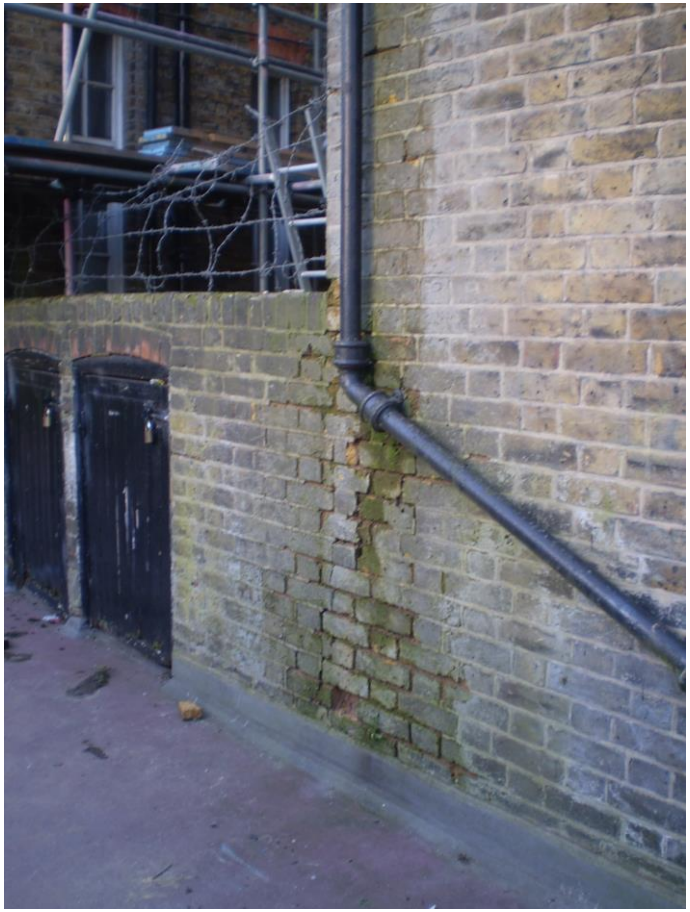

Plate 13 Mortar washed out of perpendicular and bed mortar joints

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Sht No. 7

Project No. 2411

Plate 16 Typical view rear access stairs

Plate 15 Toothed vertical crack at approximate party wall location

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Project No. 2411

Plate 18 Gap between steps and rear boundary wall

Plate 17 Major crack in mid section of the mass concrete rear access steps

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Sht No. 9

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Plate 19 Tree adjacent to rear boundary wall

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Sht No. 10
Project No. 2411

BRUCE, CUFLEY & PARTNERS

FURTHER STRUCTURAL APPRAISAL

ON

ONE SEVEN ONE
171A FINCHLEY ROAD
LONDON
NW3 6LB

APPENDIX 3

Copy of the Arboriculture Report Dated 11th April 2011

Fairfax Mansions LLP,
c/o James Andrew RSW
Fairchild House
Redbourne Avenue
London
N3 2BP

Your ref:
Our ref: 1-38-2714

11th April 2011

JOHN CROMAR'S
ARBORICULTURAL
COMPANY
LIMITED

SUITE 6D,
BRITANNIA HOUSE,
LEAGRAVE ROAD,
LUTON, BEDS.,
LU3 1RJ
TEL 01582 80 80 20
FAX 01544 231 006
MOB 07860 453 072

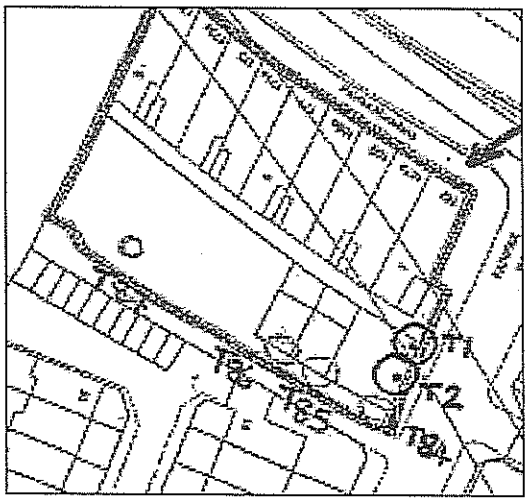
admin@treescan.co.uk
www.treescan.co.uk

Dear Sirs,

Re: Fairfax Mansions LLP – 167/175 Finchley Road and Blocks 1/9 Fairfax Mansions Finchley Road London NW3

Thank you for your instructions to provide a brief report on the impact on trees of proposals for development - refurbishment of a car parking area – at the rear of the above.

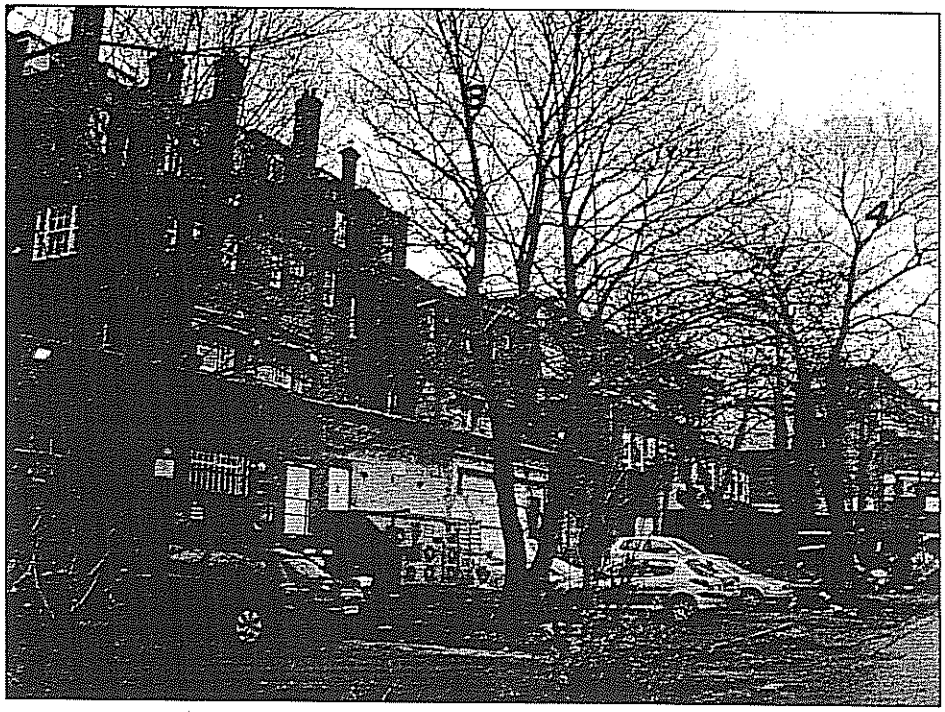
1) I made an inspection on 15th February, 2011.
I have to hand drawing(s)
Survey Drawing – Car park 1793-01
Existing Basement plan 1462



Sketch plan excerpt (left) from Camden document supplied showing TPO trees and certain hand-written information on trees.

T1 – not identified in TPO info supplied
T2 - sycamore
T84 – not identified in TPO info supplied (gone)
T85 – not identified in TPO info supplied
T86 - sycamore
T87 – cherry (gone)

2) The site as existing is somewhat dilapidated, and the trees have suffered some neglect and vandalism. (See photographs overleaf)



3) The plan 1-38-2714/P1 appended gives a quick reference assessment of value as per section 4 (table 1) of BS 5837:2005.

4) British Standard 5837:2005 'Trees in relation to construction - Recommendations' recommends a way of classifying trees when assessing their potential value in relation to proposed development. Table 1 suggests categories 'R', 'C', 'B' and 'A' , in ascending merit. Several of the trees are in poor condition. The proposal is to remove most of the trees (all of which are likely the result of wind-sown seeds having developed naturally) to ; arrest the structural damage caused by some of the trees (see TREE DATA TABLE below); and to allow a comprehensive tree replacement scheme. Tree 3 is proposed for retention : it is sited centrally and provides visual anchorage for the proposed replacement native-source trees *Acer campestre* 'Elegant' (a cultivated variety of field maple). These typically are of 12-15m in height and are flame shaped at maturity. They can reasonably be expected to add considerably to public amenity.

5) The British Standard also provides a way of determining an area (the root protection area or RPA - please see plan – orange circle) around the trunk of the tree in which protective measures should be used in order to prevent significant damage to trees. (There are various ways of achieving this. A simple way is to use exclusion fencing, but other methods have been shown by established use to be very effective.).

6) Activity around tree 3 within the RPA is entailed. To put this in context, trials made by the Morton Arboretum found that up to 30% of the root system of mature trees could be cut without any difference in shoot elongation or vitality resulting. There is no proposal to cut any roots of tree 3. BS 5837:2005 11.3.4 restricts impermeable hard surfacing within the RPA of trees to be retained to 20% of the RPA. Please note that this does not apply to permeable surfacing, as allowed for by

other sections of BS 5837. Methods that are proposed in this case satisfy the recommendations in sections 11.3.3, 11.4.1, 11.4.2, 11.8.2 and 11.10, *et al.*

7) PERCEPTION OF TREES
Shading by trees has been considered (as section 6.3.2 of BS 5837:2005 recommends) and is not significant : the proposed 'structure' is non-habited.

8) METHODS :

TREE PROTECTION - GENERAL
It is highly important to tree health and vitality that construction activities are carried out strictly in accordance with the tree protection methods specified. A single traverse of a root protection area by a mechanical excavator can cause SIGNIFICANT and PERMANENT (albeit temporarily invisible) damage to trees. Such machinery, including piling rigs, shall be kept at ALL times outside the root protection areas as indicated in the tree details table appended, and/or shall be subject to SPECIAL METHODS below. Fences to protect trees shall be respected as TOTAL EXCLUSION fences. Hence, before any site activity, including demolition, the fence lines shall be complete. Protective fencing and any temporary protection of ground surfaces will have to be removed in due course to allow finishing of landscaping, paving, etc., but this shall not take place until all need for vehicular access to the site has passed, and shall be agreed with arboriculturist / planners on site during progress of works.

TREE PROTECTION – SPECIAL METHODS

PRE-CONSTRUCTION
PLEASE READ WITH PLAN REFERENCE 1-38-2714/P2A, APPENDED

Method 1 : Supervision by an arboriculturist shall take place at key points in the construction process, and additionally whenever required by the architect or LPA. These key stages are :

1) **At site possession by contractor, outline all tree protection measures with site agent and resolve any issues arising. Ensure tree work is carried out to specification and sign off. Ensure protective fencing is erected and completed as proposed. Ensure any site huts, mixing sites for mortars, disposal-to-skip sites, etc., are located appropriately, and sign off.**
2) **Supervise lifting of hard surfacing near trees.**
3) **Supervise laying of geotextile combination ground protection and sign off.**
4) **Attend as required to supervise digging for and the laying of lighting cable ducts or services.**
5) **Approve timing of removal of protective fencing (post main phase) and sign off.**

Method 2 : Tree work shall be in accordance with good arboricultural practice, to BS 3998:1989 'Recommendations for tree work', and to standards set within the Arboricultural Association's 'Standard Form of Contract and Specifications for Tree Work', 1996.

Method 3 : Tree protection fencing shall be erected, consisting of 'Heras' type fencing (weld-mesh panels), each section securely attached to uprights driven at least 0.6m into ground, as per the layout as shown on the plan

(pink lines). The standard rubber supports ('elephant's feet') shall not be used. Pedestrian access 0.7m wide shall be formed as indicated.

Method 4 : Additional tree protection 1.8m high placed around the trunk of the retained tree (3) shall be erected, consisting of hoarding of manufactured board and uprights, no part of which is to be attached to the tree.

CONSTRUCTION PHASE
PLEASE READ WITH PLAN REFERENCE 1-38-2714/P3, APPENDED

Method 5 : This method shall apply in zone outlined orange on plan. No levels are to be reduced below existing sub-base. Any existing hard surfacing, any existing surface debris, light vegetation, etc., that lies within the zone shall be removed where required using hand tools or hand-held power tools only. No 'scraping up' with a mechanical excavator shall be carried out. Cement residues shall be dry brushed, bagged up and removed to skip for disposal off site. Hoses or other irrigation shall not be used to wash cement dust residues away. Any cement-contaminated soil shall be removed with hand tools only and removed from site.

Method 6 : CAR PARKING BAYS
This method shall apply in zone outlined orange on plan. No levels are to be reduced below existing sub-base. N.B. This means no conventional kerb-haunching. No wheeled or tracked machinery shall be used, except if standing on completed formation as outlined below. A 2D geotextile such as 'Treetex' type, shall be laid directly on the ground surface, overlaid by a 3D 'Cellweb' type provisionally 150mm deep (available from e.g., Geosynthetics Ltd. 01455 617139), depending on envisaged loads backfilled with 40-60mm, CLEAN STONE – NO FINES. N.B. This layer can be increased by doubling the thickness of 'Cellweb' or using lesser thickness (100mm) in conjunction with the 150mm layer. A coarse shingle layer can be placed directly over this, or for 30mm of resin-bound open-pore gravel, or for a block paving finish, a separating layer of non-woven geotextile such as 'Treetex' or similar shall be laid, another 20-40mm bedding sand shall be laid, then the blocks. Total thickness over existing ground level can thus be as little as 130mm up to 200mm. N.B. The depth is not critical provided no fines aggregate is used. 30-40mm surcharge of aggregate can be applied to protect the upstanding cell walls if there is a delay in laying the wearing course, for example during main build phase. Edge restraint shall be formed from timber baulks (e.g. 'modern railway sleepers') pinned to the substrate with 25mm dia. re-bar or similar. If edges are required to be flush with adjacent ground levels, topsoil shall be loose-tipped and graded by hand to slope to existing levels. (All design subject to engineering approval).

Method 7 : This method shall apply after completion of main build only. Soil handling of any kind within the root protection area of tree 3 shall take place only after a minimum of 3 days after heavy rain, and shall where possible be carried out 7 days or more after such rainfall. Screened topsoil (to BS3882:2007- multi purpose topsoil) shall be laid to a maximum depth of 100mm as required.

Method 8 : This method shall apply to proposed soft landscaping areas. Decompaction measures shall consist of deep ripping by mechanically means, followed by hand held tools – forks and/or pinch bars - to loosen the ground surface. Outside the root protection area of tree 3, screened topsoil as specified shall be laid to depth as required – a minimum of 300mm is recommended.

Method 9 : Trees shall be supplied exactly as specified - *Acer campestre* 'Elegant' 16-18cm girth. The trees shall be planted at positions 'A' (see plan 1-38- 2714/P2), shall be short double-staked, , tied with proprietary tree tie, or non-stretch UV stabilised webbing or supported otherwise by underground guying and mulched to 100mm depth and 0.75m radius from trunk.

Method 10 : In addition to the above, careful general operation and site handling shall be observed as outlined below.

GENERAL TREE PROTECTION METHODS

A) No fires shall be made on any part of the site, or within 20m of any tree to be retained.

B) No spilling or pouring of fuels, oils, solvents, tar shall be made on any part of the site.

C) No spillage or discharge of wet mortar or concrete shall be made on any part of the site.

D) No storage of materials shall be made within the protective fences.

E) No breaching or moving of the protective fences without the approval of an arboriculturist.

F) Services, if planned to be laid in the root protection areas, (and which notionally appears unnecessary in this case) shall be laid using trenchless 'no dig' methods or by hand dug trenches to avoid cutting major roots.

G) Alterations in levels within the tree protection fence areas shall be avoided.

It is recommended that acceptance of the recommendations in this report is demonstrated by, for example, the architect specifying in writing to the building contractor that tree care conditions apply in execution of the contract, and by an estimate or written undertaking from the contractor to the architect demonstrating that the practical aspects of observation of such recommendations have been priced in.

9) CONCLUSION

I conclude that the construction proposed, subject to precautionary measures as outlined above and as per the recommendations outlined below, will not be injurious to the tree to be retained. The scheme includes several replacement trees of native source which address tree losses appropriately.

I trust the foregoing is of use to you. If I can be of further assistance, or any point needs clarification, please do not hesitate to contact me. For a brief overview of our small company please visit www.treescan.co.uk

Yours sincerely,

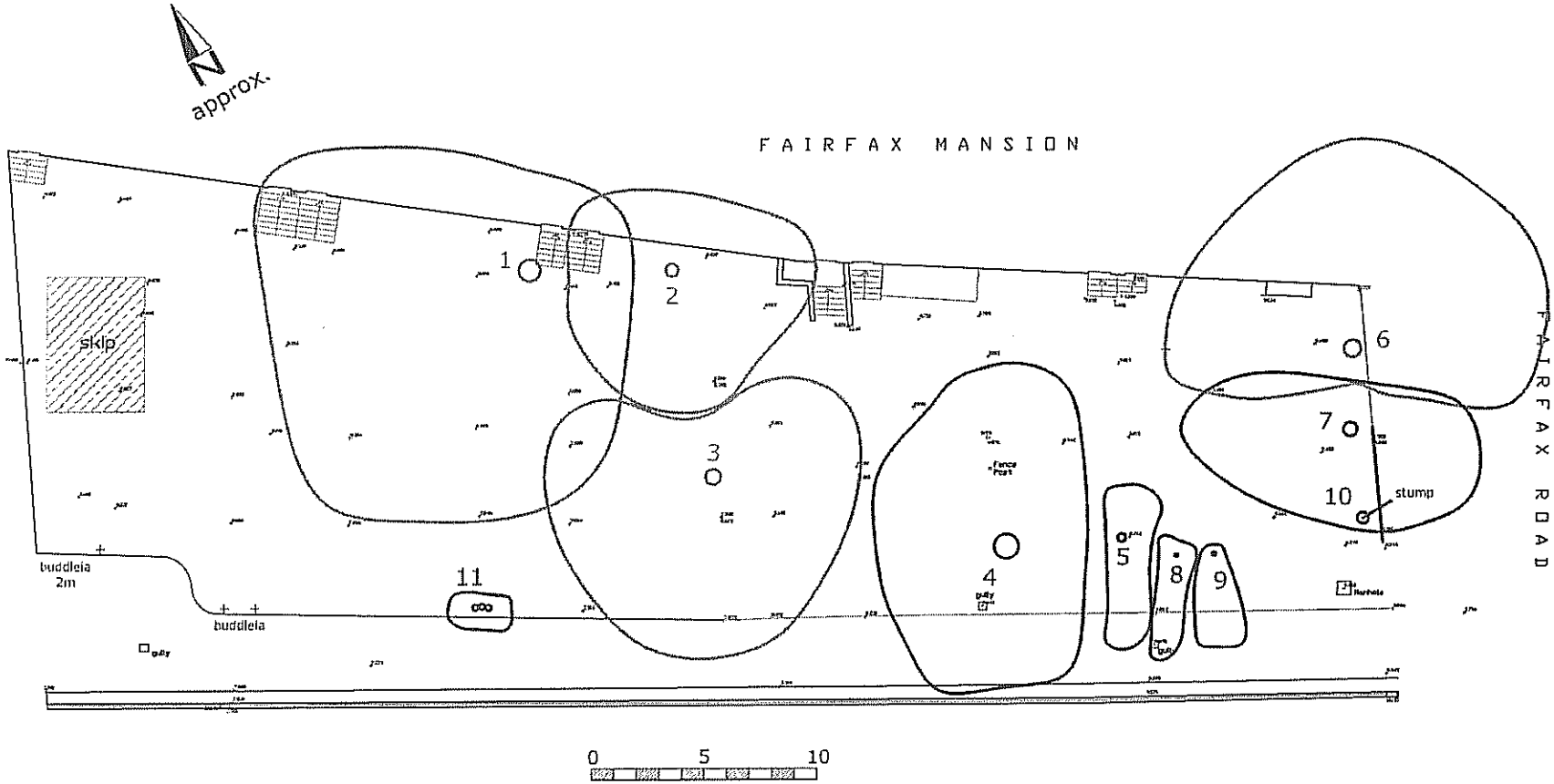
John C. M. Cromar
enc

TREE DATA TABLE
PLANS
1-38-2714/P1
1-38-2714/P2A
1-38-2714/P3

TREE DATA TABLE

No.	Tree	Height range (m)	Multi-stem (MS)?	Trunk / stem count dia. (mm)	Radius of RPA if circle	Root Protection Area (RPA) (m^2)	Comments	Life Expectancy	Assessed BS 5837 Value Cat.
1	2	3	4	5	6	7	8	9	10
1	ash	17	MS	950	9.50	283.53	Ironwork, previously a hand-rail by the steps, has become enclosed by trunk tissue of the tree. The tree has obviously caused massive disruption to not only the adjacent steps but also the brick courses at the rear of Fairfax Mansions. I was informed that subsidence within the building is quite dramatic with floors out of level, sloping down toward the tree.	40+	B2
2	sycamore	15	MS	570	5.70	102.07	Tree in a similar situation to tree 1. Some distortion of the brickwork courses was noted. Likely to cause more extensive damage in future and may indeed have already caused damage not immediately apparent from outside. Trees 1 & 2 provide some softening/screening, although in respect of tree 2, the screening function is duplicated by tree 3, some way from the building.	40+	B2
3	sycamore	15	MS	680	6.80	145.27	Composed of two stems : junction appears normal.	40+	B2
4	sycamore TPO T86	11	MS	1100	11.00	380.13	Previously consisted of a further stem, now removed. Basal decay, very poor form.	10-20	C2
5	sycamore TPO T85 ?	10		370	4.44	61.93	Low vitality. Poor form.	<10	R
6	sycamore TPO T1	12		750	9.00	254.47	Composed of two stems : junction appears normal. The tree is moderately important in the streetscene being in large part visible from the busy Finchley Road and the curtilages of several buildings on the east side of Finchley Road. Some local distortion to the end of the brick wall supporting the walkway was apparent. The pier supporting the end of the walkway is out of true.	40+	B2
7	sycamore TPO T2	13	MS	610	6.10	116.90	Very low vitality. An adjacent tree apparently has blown down recently and this is now represented by stump 10.	<10	R
8	ash	9		130	1.56	7.65	Very poor form. Young tree.	40+	C2

No.	Tree	Height range (m)	Multi-stem (MS)?	Trunk / stem count dia. (mm)	Radius of RPA if circle	Root Protection Area (RPA) (m^2)	Comments	Life Expectancy	Assessed BS 5837 Value Cat.
1	2	3	4	5	6	7	8	9	10
9	ash	8		160	1.92	11.58	Very poor form. Young tree.	40+	C2
10	stump	-		500	6.00	113.10		-	R
11	sycamore	5	MS	250	2.50	19.63	Coppice growth.	40+	C2



BRIEF TREE VALUE KEY

GREEN - High Value
BLUE - Moderate Value
BLACK - Low Value
RED - Remove/Very short life expectancy

JOHN CROMAR'S ARBORICULTURAL COMPANY LIMITED

BRITANNIA HOUSE,
LEAGRAVE ROAD,
LUTON, BEDS.,
LU3 1RJ
TEL 01582 808020
FAX 01544 231006
MOB 07860 453072

enq@treescan.co.uk
www.treescan.co.uk

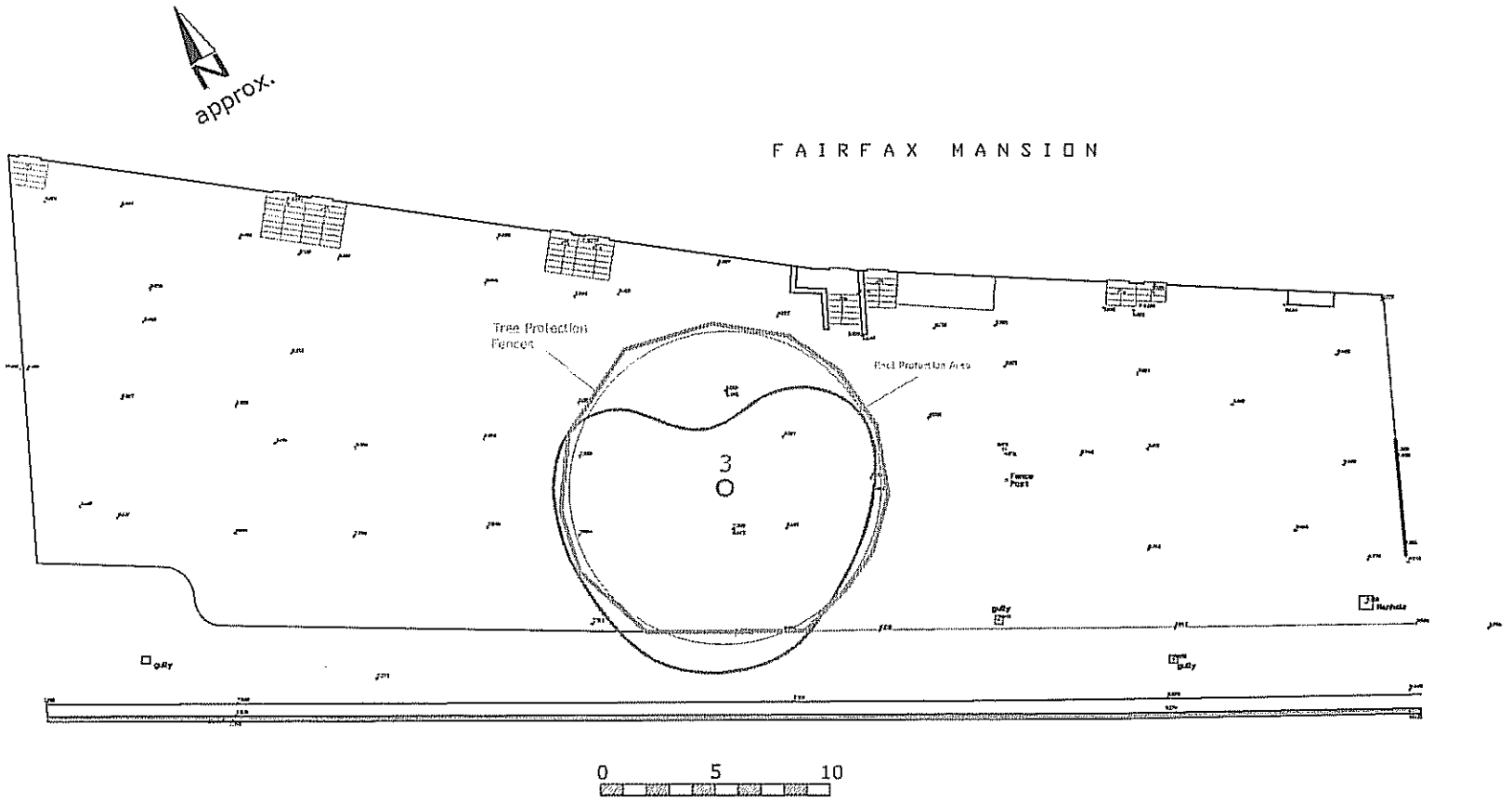
TREE VALUE ASSESSMENT
as per BS5837:2005

for full details of
tree value see report
reference TC/1-38-2714

1-9 Fairfax Mansions,
Finchley Road,
London,
NW3 6JY

based on Ross Laird drg.
CAD ref.: 1793-01 supplied

ref : 1-38-2714/P1
1:200 scale @ A3
Feb 2011



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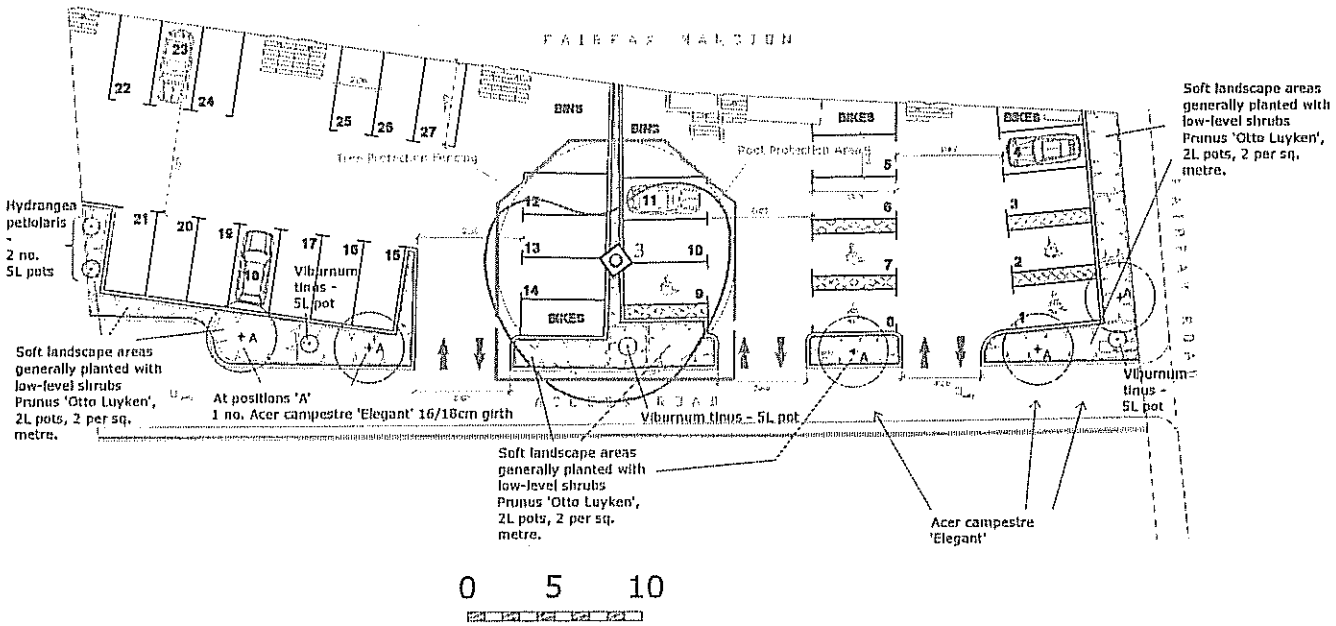
TREE RETENTION & TREE PROTECTION MEASURES
(Pre-Construction Phase)

for full details of
tree protection see report
reference TC/1-38-2714

1-9 Fairfax Mansions,
Finchley Road,
London,
NW3 6JY

based on Ross Laird drg.
CAD ref.: 1793-01 supplied

ref: 1-38-2714/P2A
1:200 scale @ A3
Apr 2011



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TREE PROTECTION & TREE PLANTING PROPOSALS
(Construction Phase)

for full details of tree protection and planting proposals see report reference TC/1-38-2714

1-9 Fairfax Mansions,
Finchley Road,
London,
NW3 6JY

based on Simmons Taylor Hall drg. 'Fairfax Mansions - Proposed Car Parking' supplied

ref: 1-38-2714/P3
1:200 scale @ A2
Apr 2011