2020 7757

109 Parsonage Rd

Structural Investigation Report

Summary

The property is typical in structural arrangement and construction to other buildings of this type and age there being no non-standard or unusual structural features.

It has suffered from differential foundation movement as a whole but more significantly to the front porch and single storey side bay where the foundations are inadequate. There are three large mature trees in close proximity to the left hand side of the property which are causing on-going subsidence through damage to the below ground drainage and desiccation of the clay subsoils. We understand that it is the intention of the prospective purchase to remove the trees affecting the property soon after completion with construction of a side extension in the medium term and we would strongly recommend that advice is sought to establish that removal of the trees is acceptable to the relevant authorities. On this basis only the entrance porch and side bay if retained would require underpinning however if the trees are not removed for whatever reason there is a risk of ongoing seasonal foundation movement to the property as a whole which would require underpinning of the main house to eliminate. If the trees are removed as suggested there is a risk of some damage to the property in the short to medium term as a result of heave as the clay subsoil rehydrate and recover which may require some ongoing repair of cracking from time to time.

The rainwater goods and below ground drainage should be repaired as necessary.

In additional the outer leaf of brickwork was displaying slight out of plain movement and the wall ties were found to have some surface corrosion therefore we would recommend installation of remedial wall in the short to medium term.

Date of Report: 19/10/2020

Report Revision:A1

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Revision	Author	Checked By	Approved By	Issued to	Issue Date
A0, First issue	Lesley Russell CEng MIStructE	Lesley Russell CEng MIStructE	Nick Forman IEng AMIStructE MICE	Client	29/09/2020
A1 Further Investigation added	Lesley Russell CEng MIStructE	Lesley Russell CEng MIStructE	Nick Forman IEng AMIStructE MICE	Client	19/10/2020

1. Client

Client	Adele Hunter
	Sean Callaghan
Address	51 Lambeth Rd
	Reddish
	SK5 6TL

2. Subject Property

Address	109 Parsonage Rd
	Withington
	Manchester
	M20 4WZ

3. Survey Overview

BDI Reference	2020 7757
Date of visit	22/09/2020
Time of visit	12:00 PM (1 GMT)
Survey/Inspection by	The Survey was undertaken by Lesley Russell. Lesley Russell is a qualified structural engineer, registered with the engineering council, and a member of the Institution of Structural Engineers since 1993. She has over 25 years' experience in low rise buildings and has reported on building defects for over 10 years.
Weather at Time of Visit	Cloudy and overcast
Background and reason for Structural Survey	The client is a potential purchaser of the subject property. A recent valuations survey raised concerns in relation to cracking and movement of the property.

4. Terms of Reference

Terms of Reference	Attend the subject property and undertake a visual Structural inspection and report upon the cause and significance of cracking and movement.
Survey Limitations	We have not inspected the property for evidence of timber rot, infestation or Dampness to walls and floors. If you have concerns in relation to these aspects we recommend that you engage a suitably qualified specialist surveyor who is a member of the BWPDA. We would always recommend that a Timber and Damp survey is appropriate for a property of this age., The external and internal observations are limited to aspects that we consider to be of relevance to the terms of reference. The observations relate to the significant aspects and should not be considered a detailed condition survey.

5. General Description of Building and site

Building type	Semi Detached House, Left Hand
Age of Property	Circa 1930
Structural Form	Load Bearing Masonry
Structural Stability	Buttressing Walls and Floor plates
Number of Stories	2
External Walls	Cavity Brick walls
Roof Covering	Clay Tiles
Roof Structure	Cut Timber rafters and purlins
Upper Floors	Timber floor joists Lath and Plaster
Ground Floors	Timber floor joists
Internal Walls	Brick walls
Cellar/Basement	No
Overall General Condition	
Site Topography	Generally level
Below Ground drainage relevant to terms of reference	Not Inspected; drainage not relevant to Terms of Reference

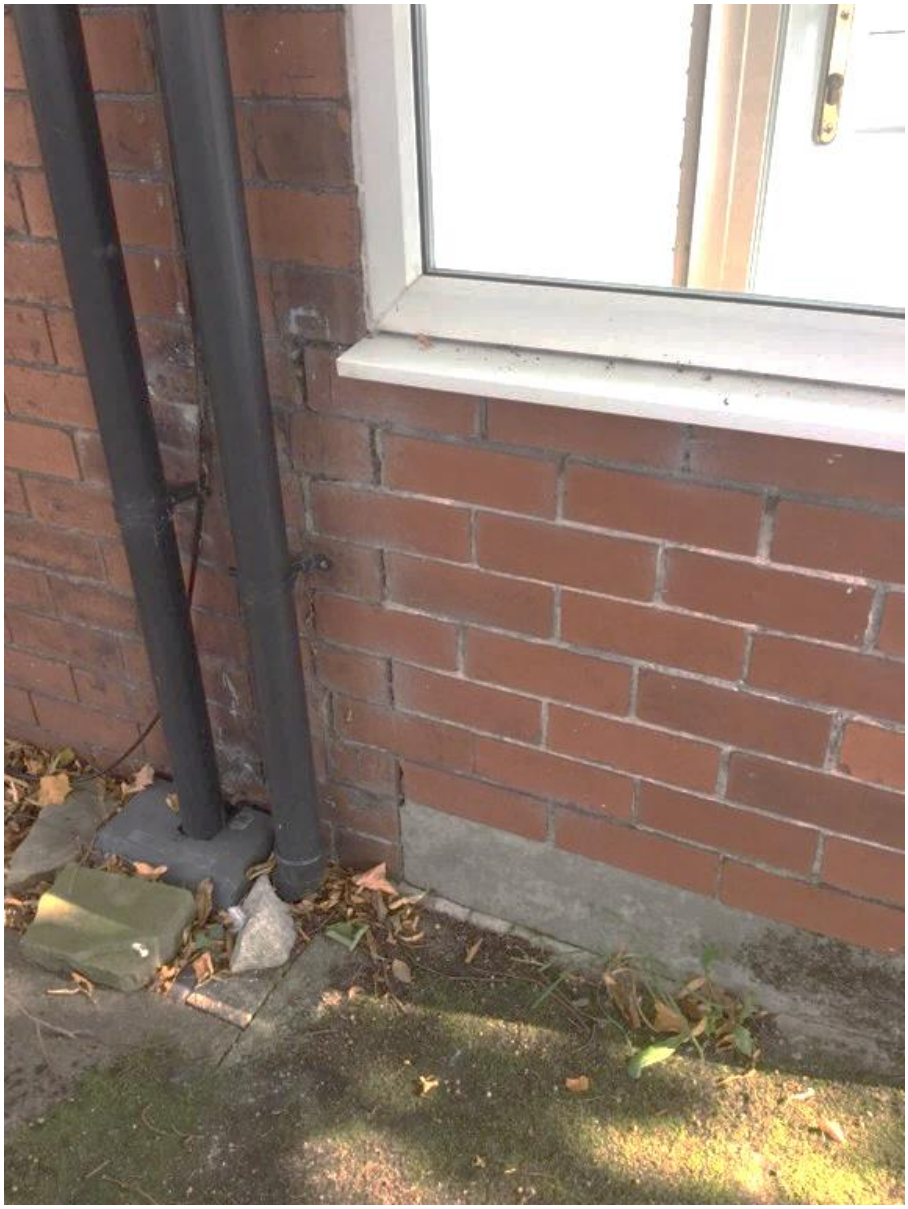
Trees and Vegetation	There are three mature trees located within the boundary of the subject property, one positioned approximately 5 metres forward of the front left hand corner of the house, a second approximately 4 metres to the left of the same corner of the house and a third approximately 4 metres to the left and 4 metres to the rear of the rear left hand corner of the house.
Height of Vegetation	15 - 20 metres
Photograph of Vegetation	

6. Observations

6.1 External Observations

No	6.1.1
Location	Front Elevation
Zone	Elevation Generally
Description	There is a slight fall on the semi circular bay bed joints back to the main front elevation.
Photograph	

No	6.1.2
Location	Front Elevation
Zone	First Floor Bay
Description	There is vertical separation cracking of the first floor bay and the front elevation.
Photograph	

No	6.1.3
Location	Porch
Zone	Brick Coursing
Description	The mortar bed joints fall noticeably from rear to front and slightly from right to left. There is vertical separation cracking at both sides where the porch meets the main front and side elevations.
Photograph	

No	6.1.4
Location	Left Elevation
Zone	Elevation Generally
Description	There is some slight undulation from vertical of the elevation. The mortar bed joints are to reasonable level.
Photograph	

No	6.1.5
Location	Left Elevation
Zone	Single Storey Side Bay
Description	There is a noticeable fall of the bed joints from right to left and to a lesser degree from rear to front with vertical separation cracking at the junction with the left hand elevation.
Photograph	

No	6.1.6
Location	Rear Elevation
Zone	Brick Coursing
Description	There is a general fall on the mortar bed joints from left to right as viewed from the rear. The elevation is to reasonable verticality with some very slight undulations.
Photograph	

No	6.1.7
Location	Rear Elevation
Zone	Below Window
Description	There is stepped cracking below and to the left and vertical cracking below and to the right of the lounge window as viewed from the rear.
Photograph	

No	6.1.8
Location	Rear Elevation
Zone	Over Window
Description	There is a stepped crack from the top left of the lounge window projecting up and to the right all as viewed from the rear.
Photograph	

No	6.1.8
Location	Roof
Zone	General Observation
Description	The front roof slope appears to be to reasonable line and level.
Photograph	

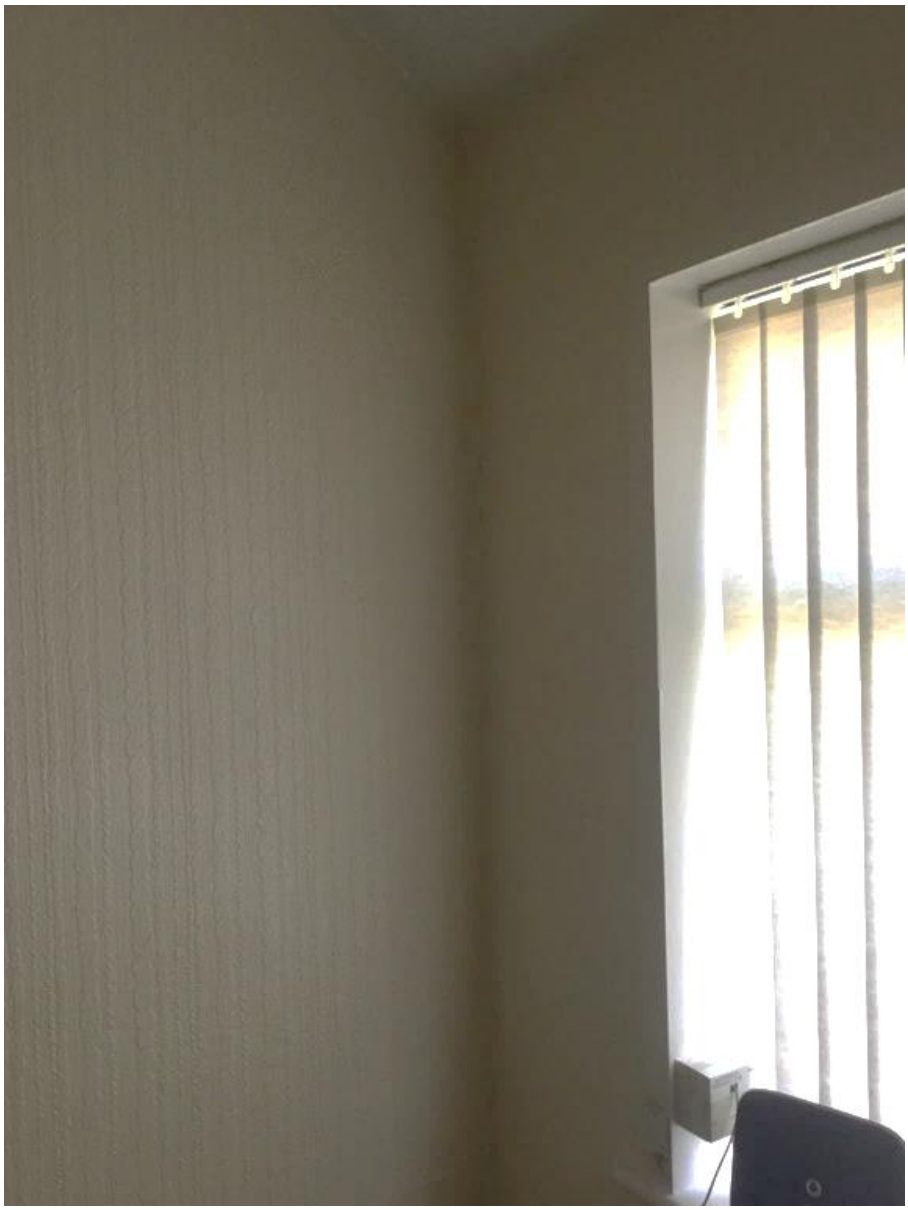
No	6.1.9
Location	Roof
Zone	General Observation
Description	The side and rear roof slopes appear to be to reasonable line and level.
Photograph	

6.2 Internal Observations

No	6.2.1
Location	First Floor, Front Right Bedroom
Zone	General Observation
Description	The room is decorated in old thick wallpaper to the walls and ceiling, there are no obvious signs of distress.
Photograph	

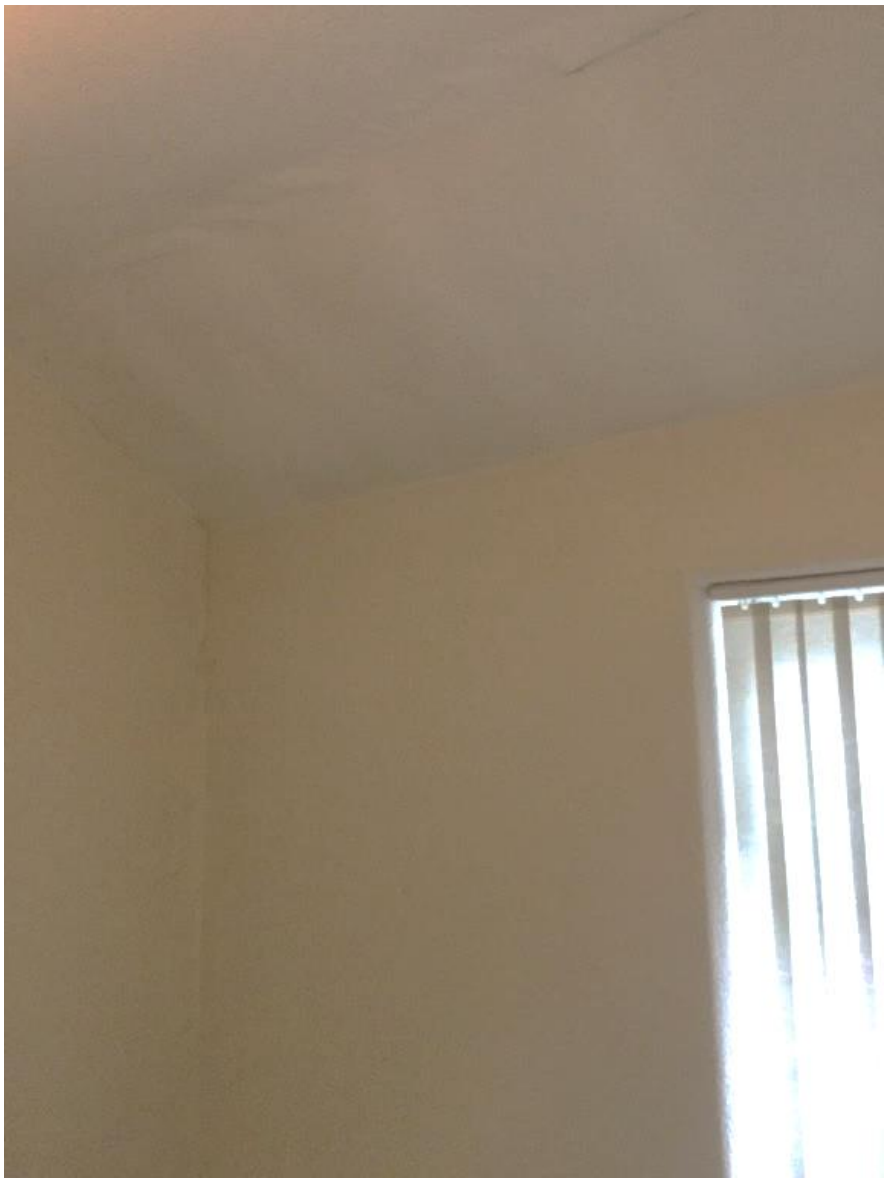
No	6.2.2
Location	First Floor, Front Right Bedroom
Zone	Floor
Description	There is a local dip in the floorboards adjacent to the radiator located on the internal division wall with the rear bedroom.
Photograph	

No	6.2.3
Location	First Floor, Bathroom
Zone	General Observation
Description	There is a slight fall on the floor from right to left and a slight outward lean on the left hand external wall. The is disturbance to the wallpaper to the ceiling.
No	6.2.4
Location	First Floor, Bedroom
Zone	Floor
Description	There is fall on the floor and rear window cill from right to left.
Photograph	

No	6.2.5
Location	First Floor, Rear Right Bedroom
Zone	Internal wall, External Wall
Description	There is a slight outward lean of the rear wall to the left of the window and rucking of the wallpaper at the junction with the internal division wall to the rear left bedroom.
Photograph	

No	6.2.6
Location	First Floor, Rear Left Bedroom
Zone	General Observation
Description	There is a very slight fall on the rear window cill from right to left, the floor and external walls are to reasonable level and vertical respectively.
Photograph	

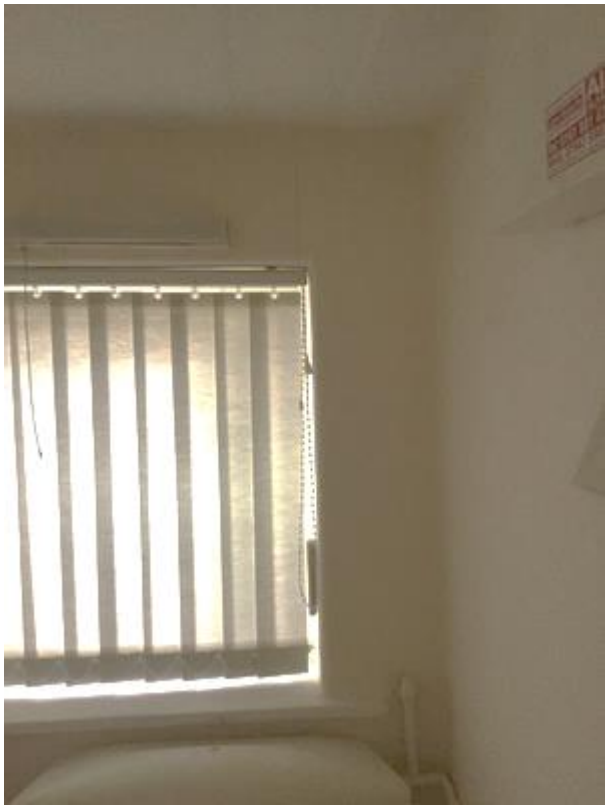
No	6.2.7
Location	First Floor, Hall
Zone	Floor
Description	There is a general fall on the floor from right to left with local dips down to the right and the thresholds of the right hand bedrooms forming a ridge running front to back.
Photograph	

No	6.2.8
Location	First Floor, Landing
Zone	External Wall, Internal wall
Description	There is vertical separation of the wallpaper at the junction of the left hand external wall and the division wall of the front left bedroom and landing. There is disturbance of the ceiling at the junction of the vaulted and horizontal sections.
Photograph	

No	6.2.9
Location	Ground Floor, Kitchen
Zone	General Observation
Description	There is a fall of the side window cills of the bay and kitchen worktop where it projects into bay from right to left.
Photograph	

No	6.2.10
Location	Ground Floor, Rear Reception Room
Zone	General Observation
Description	There is a fall on the window cill from right to left and a slight fall on the floor in the rear left hand corner although the majority of the floor is to reasonable level.
Photograph	

No	6.2.11
Location	Ground Floor, Front Reception Room
Zone	General Observation
Description	The bay cill and floor is to reasonable level, there is a short tear in the wallpaper below and to the right of the bay window and viewed from inside the room.
Photograph	

No	6.2.12
Location	Ground Floor, WC
Zone	External Wall
Description	There is a short vertical crack above and to the right of the window.
Photograph	

No	6.2.13
Location	Ground Floor, Porch
Zone	External Wall
Description	There is cracking in the porch at both sides where it meets the house and to the left of the door as viewed from inside the porch.
Photograph	

7. Discussion Conclusions

The property is typical in structural arrangement and construction to other buildings of this type and age there being no non-standard or unusual structural features.

The property has suffered from differential foundation movement much of which appears longstanding in nature clearly indicated by the fall to floors, cills and mortar bed joints together with some external cracking. The movement of the main house seems to be downwards towards the rear left hand corner of the property and could possibly be the result of subsidence related to the mature trees to this side of the house. The porch and single storey side bay have both suffered from further differential foundation movement relative to the main house, having rotated forward and to the left respectively. The movement to these sections of the property is more pronounced which is likely to be the result of shallower or less substantial foundations.

The presence of such large trees so close to the property can be problematical to the foundations and below ground drainage particularly where the foundations bear on clay sub-soils which can become desiccated by the extract of moisture by the tree roots. The drying out of the ground in this way reduces its volume and can result in subsidence of foundations supported on it particularly in times of prolonged dry weather. Movement of this type is usually seasonal with some recover in wetter months and therefore recommendation was given to carry out a trial hole investigation to assess the depth of the foundations, the soil that they bear on to and if any clay its susceptibility to shrinkage. Given the more significant movement of the porch and side bay it is likely that these will require strengthening of the foundations in these locations by underpinning, the type and depth require to be established during the trial hole investigation.

Elsewhere the elevations were noted to have some slight out of plane movement most notably to the left hand elevation where a ripple effect could be seen to the outer leaf, movement of this type in cavity walls is usually associated with corrosion of the wall ties prior to failure. Properties of this age and type typical contain thin wire butterfly ties to connect the inner and outer leaves of masonry and these are particularly susceptible to corrosion over time. A separate inspection of the wall ties has been carried out by Atlas Survey and Building Services which noted surface corrosion of the wall ties at low level we would therefore recommend that remedial wall ties are installed in the short to medium term to prevent any further lateral movement of the outer leaf.

8. Further Investigation

Two trial holes were excavated by hand on the 6th October 2020 adjacent to the left hand elevation of the property the findings being as follows:-

Trial Hole 1

Located on the rear left hand corner of the property the foundation of the main house was found to be a traditional spread brick footing with two steps giving an overall projection of 100 mm from the face of the elevation and bearing at a depth of 520 mm below external ground level onto stiff dry clay containing many roots. The adjacent bay foundation was found to be a 150 mm thick concrete strip footing bearing at a depth of 250 mm below external ground level with a projection of 70 mm beyond the face of the brickwork and bearing onto fill material. The ground was then auger to a depth of 1.0 metre below ground level with the ground remaining stiff clay throughout and no ground water encountered.

Trial Hole 2

Located on the front left hand corner of the property the foundation of the main house was found to be the same as at the rear however the clay at foundation bearing level was not found to be particularly dry despite the presence of roots. The adjacent gulley however was found to be completely blocked with debris and the rainwater pipe to the porch found to be blocked with leaves, therefore ant y rainwater will have been discharging directly into the ground. The adjacent porch was found to be off a nominal concrete slab bearing directly on the ground at external ground level. The ground was then auger to a depth of 2.1 metres below ground level with the ground becoming stiffer and drier with depth but remaining stiff brown slightly sandy clay throughout with no ground water encountered.

Samples

Soil samples were taken from Trial Hole 1 at a depth of 1.0 metre and Trial Hole 2 at depths of 1.2 metres and 1.9 metres respectively and these were tested to determine their moisture content and susceptibility for volume change.

The results found the soil to be a stiff brown slightly silty sandy Clay with a low moisture content but given the range of plasticity the material having a modified Plasticity index of 20 indicating a low volume change potential when classified in accordance with NHBC guidance.

9. Further Information from Client

The client has advised that it is their intention to remove the trees located within the curtilage of the property immediately after purchase and that the trees are not protected by TPO's with the view of constructing an extension to the side in the medium term. The advice contained within this report is based on this information however we would strongly recommend that confirmation of permission to remove the trees is sought prior to commitment to purchase.

10. Conclusions

The foundation movement that has occurred to the porch and side bay is as a result of inadequate foundations and if retained these will require underpinning to bear on suitable bearing strata, the movement that has currently occurred has not damaged the main house and therefore underpinning or removal is not considered to be urgent however should they be retained without any remedial works this situation should be monitored for further signs of damage.

The movement that can be seen to have occurred to the main house is as a result of differential foundation movement as a result of desiccation of the clay subsoils caused by the presence of the trees. Desiccation being the drying out of the clay by extract of moisture by the action of the tree roots particularly in time of prolonged dry weather or drought, movement of this type is usually seasonal with some recovery during the wetter winter months. Given the size and age of the trees their removal can cause some heave i.e. swelling of the ground in the short to medium term as the ground rehydrates and it is important that specialist advice is sought on the method of removal by a suitably qualified arborculturalist.

Once the trees are removed the external cracking can be repaired by the raking out and repointing the mortar joints and internally by redecoration however, it should be noted that some recurrence of cracking may occur in the short to medium term as the ground rehydrates.

The reader should be aware that if the extension is built prior to recovery / rehydration of the ground special precautions will be necessary to ensure that the foundations extend below the depth of influence of the trees. Similarly should the trees be retained for any reason the property will be at risk of further seasonal movement and to eliminate this risk it would be necessary to underpin the original property.

The extent of damage to rainwater goods and below ground drainage should be assessed and repaired as necessary and remedial wall ties installed in the short to medium term.

11. Budgets and Timescales

Should the entrance porch and side bay be retained a typical budget for underpinning would be in the region of £3000 and £5000 + VAT respectively.

Should the trees be retained and to eliminate the risk of seasonal movement the cost of underpinning of the main house to suitable depth would be in the order of £15,000 – 20,000 + VAT.

A budget allowance of repair of internal and external cracking of £1000 – 2000 + VAT

We would recommend that remedial wall ties are installed in the short to medium term typical cost £1000-1200 + VAT.

Note: Where indicated above budgets are provided as a guide. Repair costs exclude cosmetic aspects such as decorating and works to other finishes.

Where budget costings are provided, they are provided purely as a guide and are based upon our experience of costs of similar repairs to similar properties. Accurate costings should be obtained from suitably qualified and experienced building contractors.

Where we have indicated budget for repairs or further investigations, we will give timescales in respect of these works which are defined as follows:

Immediately: An action or repairs required as soon as possible is may represent further investigations or aspects that relate to structural stability or health and safety, it may also relate to aspects that should be investigated further and/or resolved before, in our opinion, committing to the purchase of a building,

Short: Repairs or works likley to be required in the next 12 months

Medium: Repairs or works likley to be required in the next 3 to 5 Years

Long term: Repairs or works that will or may be required in a time frame exceeding 5 Years.

9. Summary

The property is typical in structural arrangement and construction to other buildings of this type and age there being no non-standard or unusual structural features.

It has suffered from differential foundation movement as a whole but more significantly to the front porch and single storey side bay where the foundations are inadequate. There are three large mature trees in close proximity to the left hand side of the property which are causing on-going subsidence through damage to the below ground drainage and desiccation of the clay subsoils. We understand that it is the intention of the prospective purchase to remove the trees affecting the property soon after completion with construction of a side extension in the medium term and we would strongly recommend that advice is sought to establish that removal of the trees is acceptable to the relevant authorities. On this basis only the entrance porch and side bay if retained would require underpinning however if the trees are not removed for whatever reason there is a risk of ongoing seasonal foundation movement to the property as a whole which would require underpinning of the main house to eliminate. If the trees are removed as suggested there is a risk of some damage to the property in the short to medium term as a result of heave as the clay subsoil rehydrate and recover which may require some ongoing repair of cracking from time to time.

The rainwater goods and below ground drainage should be repaired as necessary.

In additional the outer leaf of brickwork was displaying slight out of plain movement and the wall ties were found to have some surface corrosion therefore we would recommend installation of remedial wall in the short to medium term.

Appendix A | Understanding This Report

This report is written for the benefit of the named client in relation to the subject property only. It should not be used for any other purpose, and may only be copied to a third party with the permission of the Client or BDI structural solutions.

The scope of this report is limited to the consideration of the issues described under the term of reference.

Unless specifically referred to in the report we have not inspected woodwork or other parts of the structure, which are covered, unexposed or inaccessible and are therefore unable to report that any such part of the property is free from defect.

The various sections of the report contain information as follows:

General Description of Property

A brief summary of the type of building. This is factual information and does not describe the condition of the property.

Background

Outlines the reasons for the client instructing BDI structural solutions to carry out the survey and report. Any special instructions or particular relevant background information given to us will also be included in this section.

Observations

The damage or other characteristics of the subject property are described in this section. Factual observations are recorded, including any measurements taken, but opinions on causes and recommendations are not given in this section.

Discussions and Conclusions

This section summarises our expert consideration of the damage and any other characteristics relating to the subject property. In many cases the options will be discussed and where appropriate the advantages and disadvantages of different solutions are discussed.

Suggested Timescale and Budget Costing

Where appropriate we give an indication of the timescale that should be considered for any recommended solutions. Where budget costings are provided these are purely provided as a guide and are based upon our experience of costs of similar repairs to similar properties. Accurate costings should be obtained from suitably qualified and experienced building contractors.

Queries

We try wherever possible to avoid the use of unfamiliar technical terms or jargon and to provide practical technical advice. If you are unclear about the meaning of any words or phrases, or the conclusions of our report, please call us and we will clarify matters for you. If necessary we will revise and reissue this report.