meadow consultants ltd

Chartered Building Surveyors

Initial Subsidence Report

At:

17-20 Meadway Gardens,

Ruislip, Middlesex

HA4 7QP

Prepared by:

Ian McKenna
MRICS

Client:

Woodgate and Clark

Date of Report: 20th March 2024

Ref: IM-SUB-xxxx

RICS Regulated by RICS

Contents :

Photo 1: Front Elevation

1.0 INTRODUCTION:

1.1 The purpose of this report was to provide an assessment of the property to assess general structural concerns to 17-20 Meadway Gardens, Ruislip, Middlesex HA4 7QP following instructions by Woodgate and Clarke via email on the 27th February 2024.

1.2 The inspection was carried out by Ian McKenna on behalf of Meadow Consultants Ltd on the 15th of March 2023. The weather conditions at the time of our inspection were overcast (12°C).

1.3 Our report should not be used in the same way as a pre-purchase survey. It has been prepared specifically in connection with the present insurance claim and should not be relied on as a statement of structural adequacy. It does not deal with the general condition of the building, decorations, services, timber rot or infestation etc. The inspection was limited to a visual examination of those parts of the building that were safely and readily accessible from ground level. No opening up of foundations or structural elements was undertaken and as such cannot be said to be free from defect. This Report is for the use only for the party to whom it is addressed, and that no responsibility is accepted to any other party for the whole or any part of its contents.

1.4 Although moisture readings may have been taken to components relating to the pre-determined areas of concern, we have not tested for dampness elsewhere to the walls or timbers or inspected the service installations.

1.5 We have not inspected woodwork or other parts of the structure which were covered, unexposed or inaccessible, and we are therefore unable to report that any part of the property is free from defect. Similarly, no testing of materials, monitoring or invasive investigations have been undertaken.

1.6 All directions are given relative to an observer facing the front of the property.

2.0 PROPERTY:

2.1

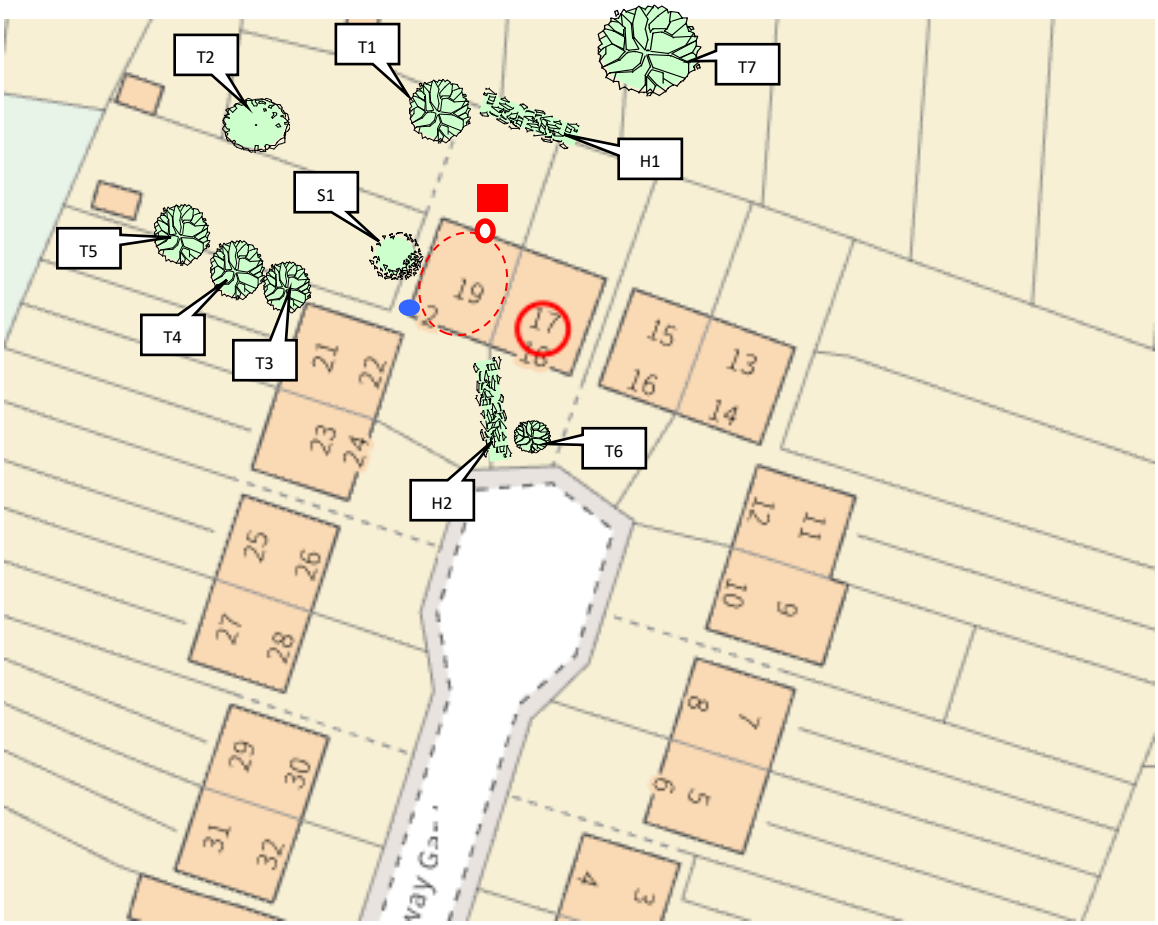
	Options			
Property Type	☐ House	☐ Bungalow	✔ Flat	☐ Other
Construction	✔ Traditional (brick/stone)	☐ Cavity Walls	☐ Timber	☐ Other
Wall Finish	☐ Rendered	✔ Brick	☐ Stone	☐ Clad
Roof Type	☐ Pitched	✔ Hipped	☐ Flat	☐ Other
Roof Cover	☐ Slate	✔ Tiles	☐ Felt	☐ Other
G.F. Floor	✔ Solid	☐ Timber	☐ Mix	☐ Other
Extended	✔ No	☐ Y – Single	☐ Y – Double	☐ Other
Loft Converted	✔ No	☐ Yes		
Outbuildings	✔ No	☐ Yes		
Garage	✔ No	☐ Y – Detached	☐ Y – Linked	☐ Y – Integral
Comments:	Flat 19 & 20 are in a block of 4 purposes built flats. Flat 19 is the left hand ground floor flat and Flat 20 is the left hand first floor flat. Each flat has its own separate entrance.			

Table 1: Property Description

2.2 The property is located in a residential suburb Only on-street parking is available.

Figure 1: Property Location (Source: Google maps/GOV.co.uk)

Site Plan: Not to Scale



Foul Drain	SW Drain	Foul IC	SW IC	Foul DP Gulley	SW DP Gulley	SVP	Area of Damage
Broad leaf tree	Shrubs	Hedge	Conifer	Trial Hole	Borehole	Trial/BH	Level monitoring point

3.0 TOPOGRAPHY & GEOLOGY

3.1 The property occupies a site that slopes upwards from front to rear.

3.2 Reference to the 1:50,000 scale British Geological Survey suggests the bedrock geology consists London Clay Formation - Clay, silt, and sand. Sedimentary bedrock formed between 56 and 47.8 million years ago during the Palaeogene period. Superficial deposits are noted as not recorded.

4.0 OBSERVATIONS

4.1 During our inspection, the Tenants showed us damage throughout the flats. The following table summarises the damage observed. The category of damage is presented in a numerical form in accordance with Table 1 of BRE Digest No.251 as shown in the appendix. For reference a category '0' crack is deemed negligible (<0.1mm) whilst a category 5 crack is deemed very severe (>25mm).

Location	Description of Damage	Category (BRE 251):
Flat 20		
Kitchen	- Tapering diagonal & horizontal cracking is evident radiating from the top left corner of the rear window towards the rear corner. Slight vertical cracking is evident radiating from the top left corner of the rear window. - Slight diagonal cracking is evident radiating from the top right hand corner of the air vent to the left elevation extending up to the ceiling and to radiating from the top left hand corner of the air vent which radiates down towards the extractor hood. - <1mm diagonal tapering crack is evident radiating from the top left hand corner of the front kitchen cupboard door up to the ceiling line.	2
Landing & Stairs	- Circa 1mm diagonal tapering crack is evident to the left hand elevation radiating from ceiling wall junction and extending down to the junction of the front left division wall over the staircase and then extending vertically down to the junction of the division wall and left elevation. - The cracking then continues along the junction of the coving and left elevation towards the rear of the landing. - Slight diagonal cracking is evident above the rear right hand bedroom door extending up to the ceiling. - A crack was noted to the landing ceiling which radiates from the left hand side across to the loft hatch.	2
Front Left Hand Bedroom	- Circa 1mm vertical tapering crack is evident radiating from the bottom left hand corner of the front elevation window cill extending down to skirting level.	2

Bathroom	- Slight diagonal cracking is evident to the top left hand corner of the rear elevation window and to the bottom right hand corner of the window which extends to the skirting. - To the right hand division wall slight diagonal cracking was noted radiating from the rear elevation up to the ceiling extending for approximately 1m from the rear elevation.	2
Rear Right Hand Bedroom	- Circa 1mm diagonal crack was evident radiating from the top right hand corner of the bedroom door extending up to ceiling level. Radiating off this crack was a further slight diagonal crack which radiates up to the ceiling level and then a crack continues across the ceiling from the left to right hand side. - A circa 1mm diagonal crack is evident to the front left corner of the room which extends below the ceiling line on the front division wall and extends diagonally to the left division wall above the landing door. - Cracking was also noted following the ceiling board joints to the room.	2
Flat 19		
Kitchen	A 1mm diagonal tapering crack was noted radiating from the top left hand corner of the rear elevation window extending up to the top left hand corner of the room. Slight diagonal cracking was also evident to the left hand elevation extending from the ceiling down behind the wall units.	2
Rear Right Bedroom	Slight diagonal cracking was evident to the top left hand corner of the rear elevation window with the cracking continuing along the ceiling perimeter line to the left hand division wall.	2
Front Right Hand Lounge	Slight diagonal cracking was noted radiating from the top right hand corner and bottom left hand corner of the front elevation window. Slight diagonal cracking was evident above the top left hand corner of the hallway door. Cracking was also evident to the ceiling perimeter of the room.	2
Front Left Hand Bedroom	1mm diagonal cracking was evident radiating from the bottom left hand corner of the window cill down to skirting level. Hairline diagonal cracking was noted radiating from the top right hand corner of the front elevation window extending up to the right hand division wall.	2
Hallway	Vertical cracking was evident radiating from the top left hand corner of the front storage cupboard door extending up to ceiling level.	2

	Vertical and diagonal cracking is evident radiating from the top left hand corner of the rear cupboard door.	
Front Elevation	1mm stepped diagonal cracking is evident radiating from the bottom right hand corner of the ground floor left hand window running down to the concrete plinth and then runs along the plinth and continues through the plinth. 1-2mm stepped diagonal cracking is evident radiating from the bottom left hand corner of the front elevation ground floor left hand window extending down to the plinth. There is evidence of previous repairs to the crack. 2mm stepped diagonal cracking is noted to the left hand side of the front entrance to Flat 19 which extends from ground level up for approximately 6 courses. The rendered plinth to the left hand side of the front elevation has cracked and debonded from the brickwork and at some stage this has been filled with a silicon sealant. 1mm stepped diagonal cracking is evident radiating from the head of the ground floor left hand window extending to the underside of the first floor left hand window cill. Circa 1mm diagonal crack was noted radiating from the top left hand and right hand corners of the first floor left hand window. Circa 1mm diagonal cracking is evident radiating from the top right hand corner of the ground floor window extending to the underside of the first floor right hand window cill. There is also evidence of a slight diagonal crack radiating from the top left hand corner of the first floor left hand window cill.	2
Rear Elevation	There is a circa 2mm stepped diagonal crack radiating from the cill of the first floor left hand window extending down to the top left hand corner of the 1st floor middle window. There is evidence of a 1mm stepped diagonal crack radiating from the bottom left hand corner of the ground floor window extending to ground level. There is a 2mm diagonal crack radiating from the top left hand corner of the 1st floor left hand window extending up to the eaves level. There is a circa 1mm stepped diagonal crack evident radiating from the underside of the cill to the 1st floor middle window extending down to the top right hand corner of the ground floor middle window. There is evidence of previous repairs & possible presence of Helibars to this crack.	2

Table 2: Overview of Damage Observed

5.0 VEGETATION

5.1 The following describes the major items of vegetation that are within influencing distance of the property and could therefore be implicated in the current damage:

Type of tree	Broadleaf	Conifer	Hedge
Approx. height	6m	14	3m
Approx. distance	10m	16m	8m
From where	Rear Elevation (T1)	Rear Elevation (T2)	Rear Elevation (S1)
Ownership (PH or TP?)	PH	PH	PH
If TP - Name of TP	N/A	N/A	N/A
If TP – Address of TP	N/A	N/A	N/A
TPO (if known)	Unknown	Unknown	Unknown
Approx. height	9m		0m
Approx. distance	10m		1m
From where	Left Elevation (T3)		Front Elevation (S2)
Ownership (PH or TP?)	TP		PH
If TP - Name of TP	N/A		N/A
If TP – Address of TP	21-24 Meadway Gardens		N/A
TPO (if known)	Unknown		Unknown
Approx. height	12m		
Approx. distance	13m		
From where	Left Elevation (T4)		
Ownership (PH or TP?)	TP		
If TP - Name of TP	N/A		
If TP – Address of TP	21-24 Meadway Gardens		
TPO (if known)	Unknown		
Approx. height	10m		
Approx. distance	18m		
From where	Left Elevation (T5)		
Ownership (PH or TP?)	PH		
If TP - Name of TP	N/A		
If TP – Address of TP	N/A		
TPO (if known)	Unknown		
Approx. height	3m		
Approx. distance	3m		
From where	Front Elevation (T6)		
Ownership (PH or TP?)	PH		
If TP - Name of TP	N/A		
If TP – Address of TP	N/A		
TPO (if known)	Unknown		
Approx. height	20m		
Approx. distance	24m		
From where	Rear Elevation (T7)		
Ownership (PH or TP?)	TP		
If TP - Name of TP	Unknown		
If TP – Address of TP	Unknown		

6.0 CAUSE OF DAMAGE:

6.1 It is evident from our observations that the property has suffered distortion and damage possibly due to downward movement of the foundations. The most likely cause is a result of moisture extraction from the roots from the nearby vegetation ultimately leading to the shrinkage of the underlying clay subsoil. The mechanism of movement appears to be a downward rotation towards the left-hand elevation of the property.

6.2 Cracking due to downward foundation movement usually results in diagonal crack patterns, especially around window openings where these occur close to the focal point of the movement. However, vertical construction joints are also often affected. In almost all cases the cracks tend to widen as they travel up the structure and this occurs due to the affected part of the building rotating towards the point of greatest downward movement (usually also towards the offending vegetation).

7.0 CONCLUSIONS:

7.1 We are of the opinion that the damage sustained to the property has potentially resulted from a moderate episode of subsidence with the cause of movement requiring investigation.

7.2 During normal weather conditions the seasonal variations in the subsoil are often not sufficient to result in tree roots causing excessive levels of desiccation. Many trees are close to being within influencing distance of a building and/or exist in ground conditions which are able to sustain the water demand of the tree without excessive desiccation. It is only when the normal levels of moisture in the ground are adversely affected by unusually dry weather conditions, or when the offending tree has been allowed to grow without due consideration for its proximity to the building, that the tree(s) then causes excessive desiccation to occur such that the building foundations become affected.

7.3 In this instance the trees and shrubs to the rear and right hand side of the property is likely to be the primary influence. In our opinion the removal of the trees within influencing distance of the property will alleviate any further movements. The clay sub-soil will then need to be allowed a period of recovery to enable rehydration. The subsequent swelling of the soil should lead to the crack widths reducing as the structure recovers. A short period of monitoring will assist in confirming when stability is regained.

7.4 There is also drainage in proximity to the area of damage and these should also be investigated to confirm they are not damaged and leaking and are not a contributing factor in the movement of the property.

7.4 Repairs can then be limited to the superstructure with associated redecorations. A schedule of remedial works can be drafted, and works may commence once the scope has been approved.

8.0 RECOMMENDATIONS:

8.1 During our inspection we noted signs of previous repairs to the property on the front elevation and you may wish to make further enquiries regarding when these were undertaken.

8.2 Subject to no issues arising under item 8.1 we recommend that site investigations are undertaken to confirm our initial opinion as to the cause of the damage; with the required investigations consisting of:

- 2 Nr Trial holes / bore holes to the front and rear left hand corners of the property to confirm the depths of the foundations and condition of the bearing soils beneath the foundations.
- A CCTV survey of the drainage runs within close proximity of the area of concern.
- An arborist report on the surrounding vegetation following receipt and review of the Trial hole / borehole data.
- Monitoring will be required and will be determined by the cause i.e. if TPO tree is implicated level monitoring will be required for recovery purposes.

8.2 Should you have any queries or wish to discuss any aspect further please do not hesitate to contact me. Meadow Consultants are more than happy to assist with any further investigations required and we await your further instructions.

Yours Sincerely,

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APPENDIX

- Table 1 BRE Digest 251
- Root Induced Clay Shrinkage Explained
- Photographs

Table 1 of BRE Digest No.251

Category 0	Negligible	Less than 0.1mm
Category 1	Very slight	0.1-1.0mm
Category 2	Slight	1mm to 5mm
Category 3	Moderate	5mm to 15mm
Category 4	Severe	15mm to < 25mm
Category 5	Very Severe	➢ 25mm

Figure 1: Table 1 of BRE Digest No.251

Root Induced Clay Shrinkage Explained

Research in the geographical area would suggest that the house is built on a clay subsoil which has become desiccated. Desiccation of the subsoil can occur due to prolonged dry weather conditions as experienced this summer. However, the depth of desiccation is normally relatively shallow and therefore does not have a significant impact on the foundation (which is usually constructed to a greater depth). However, the issue is normally exacerbated by the presence of a nearby vegetation and the encroachment of their root systems which extract moisture from a greater depth.

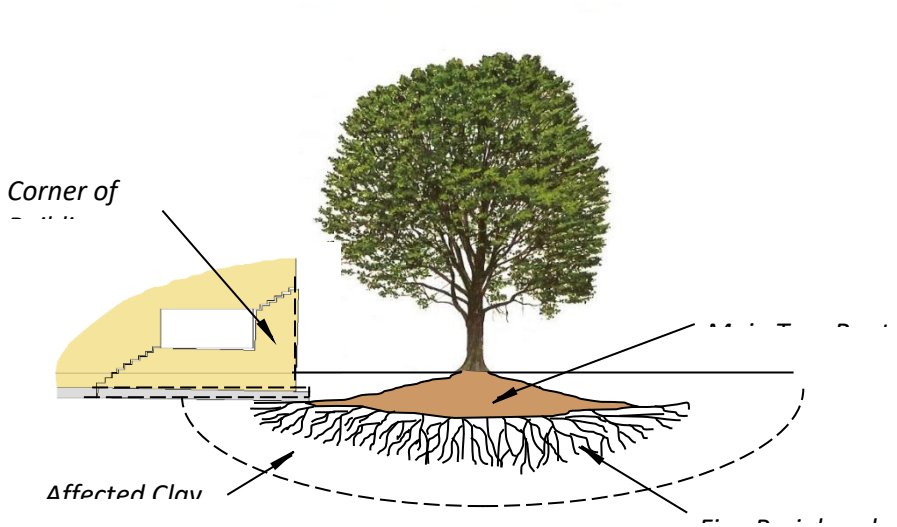

Figure 1: Example of clay shrinkage subsidence process.

The dry weather results in the subsoil becoming naturally drier and the water demand from the adjacent tree roots is likely to result in excessive levels of moisture loss in the sub-soil, causing desiccation and shrinkage to occur in the clay soil. The shrinkage of the clay soil causes a vertical component of movement in the soil, which is effectively a downward movement. This results in

temporary loss of support beneath the building foundations until the foundation fails and moves downwards. The building superstructure then cracks, and the problem becomes visually evident.

Photographs:

Photo 2: Flat 20 – Kitchen - Cracking to LHS of Window

Photo 3: Flat 20 – Kitchen - Cracking to Left Elevation

Photo 4: Flat 20 – Kitchen - Cracking above cupboard door

Photo 5: Flat 20 – Stairs - Cracking to Left Elevation

Photo 6: Flat 20 – Landing - Cracking to Ceiling

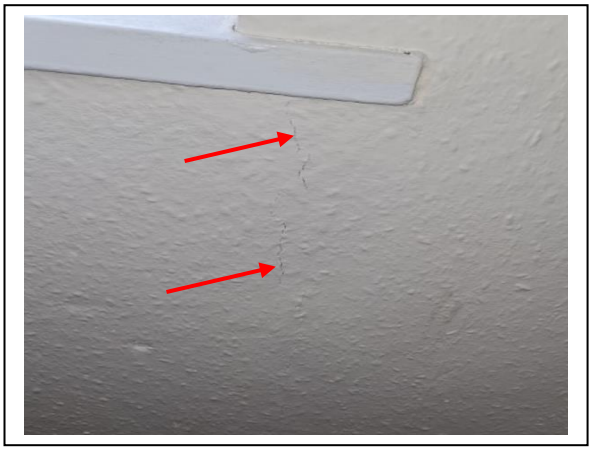

Photo 7: Flat 20 – Front Left Bedroom - Cracking Below LHS of Window

Photo 8: Flat 20 – Bathroom - Cracking Above LHS of Window

Photo 9: Flat 20 – Bathroom - Cracking Below RHS of Window

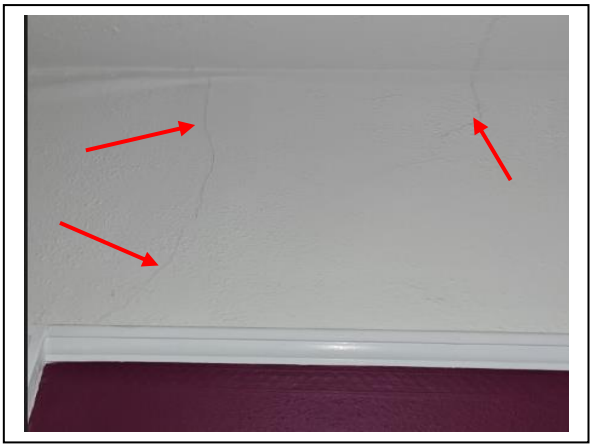

Photo 10: Flat 20 – Rear Right Bedroom - Cracking Above Door

Photo 11: Flat 19 – Kitchen - Cracking Above LHS of Window

Photo 12: Flat 19 – Rear Left Bedroom - Cracking to LHS of Window

Photo 13: Flat 19 – Front Right Lounge- Cracking above door

Photo 14: Flat 19 – Front Left Bedroom- Cracking below window

Photo 15: Front Elevation – Cracking below Ground Floor Left Window

Photo 16: Front Elevation – Cracking below Ground Floor Left Window- Note evidence of previous repairs

Photo 17: Front Elevation – Cracking below Ground Floor Left Window- Note evidence of previous repairs

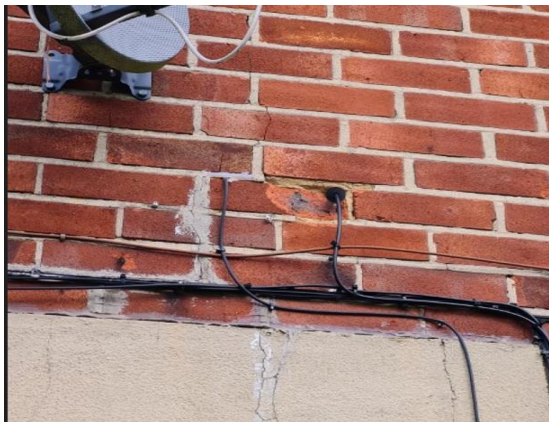

Photo 18: Front Elevation – Cracking above Ground Floor Right Window- Note evidence of previous repairs

Photo 19: Cracking above First Floor Left Window

Photo 20: Rear Elevation – Cracking below First Floor Middle Window- Note evidence of previous repairs & possible presence of Helibars

Photo 21: Rear Elevation – Cracking above Ground Floor Middle Window-

Photo 22: Rear Elevation – Cracking below First Floor Left Window

Photo 23: Rear Elevation

Photo 24: Vegetation to Rear Elevation

Photo 25: Vegetation to Rear Elevation

Photo 26: Vegetation to Left Elevation

Photo 27: Vegetation to Left Elevation

Photo 28: Vegetation to Left Elevation