

BMC/BMC/MS03636

Mr Piers Bucknell  
Stakers Farm  
North End Road  
Yapton  
Arundel  
West Sussex  
BN18 0DU

22<sup>nd</sup> May 2017

Dear Mr Bucknell,

**Boundary wall, Stakers Farm, North End Road, Yapton.**

Further to your recent instructions, we confirm we have visited the above to carry out a limited visual inspection of the external boundary masonry wall at the above and report as follows.

**1. INSTRUCTIONS**

- 1.1 Instructions were received from Mr Piers Bucknell, the property owner, to carry out an inspection of the external boundary masonry wall at Stakers Farm, North End Road, Yapton so as to report on the significance of cracking and the 'out of plumb' nature.
- 1.2 The Client's attention is drawn to the rear of this report for the Conditions & Limitations.

**2. INSPECTION**

- 2.1 The inspection was carried out by Brian McCarey BEng (Hons) CEng MStructE during the morning of Tuesday 7<sup>th</sup> March 2017.
- 2.2 At the time of the inspection the weather was clear and sunny.

**3. GENERAL DESCRIPTION**

- 3.1 For the purposes of orientation in this report the boundary wall running along the site boundary with North End Road will be referred to as being on the eastern boundary of the property, with North End Road running in a north/south direction.
- 3.2 The eastern boundary wall was of 'rubble masonry'/'boulder wall' construction formed from round flint cobbles with a single brick top course, along part of its length, with half round mortar coping over.
- 3.3 The wall acted as a retaining wall, with the ground level within the northern half of the site being approximately 1 metre higher than the public footpath running along North End Road.

#### 4. OBSERVATIONS

- 4.1 In a localised area, the brick and mortar coping at the head of the wall was missing, allowing the core of the wall to be viewed.
- 4.2 The wall appeared to be 315 mm in thickness, formed of a central single brick skin and faced on both sides with flints, bedded in defined rows, in mortar.
- 4.3 Narrow vertical sections of solid brickwork were present, at uneven intervals of up to 10m, along the length of the wall.
- 4.4 The ground level to the west side of the wall, within the property, was higher than the ground level to the east side of the wall, such that the wall was acting as a retaining wall.
- 4.5 The visible height of wall on the west side was 1220mm. The visible height of wall on the east side was 2200mm. The retained soil height was in the order of 980mm.
- 4.6 The wall was generally out of plumb by approximately 60mm over a measured height of 1800mm. Over the full wall height of 2200mm, this lean would equate to approximately 73mm.
- 4.7 The lower half metre of wall, on the east face, appeared to have been repointed more recently along the majority of its length.
- 4.8 The upper section of wall, on the east face, had similarly been repointed, but to a slightly lesser extent.
- 4.9 The areas of repointing appeared to have a higher percentage of cement than the areas of older mortar, which appeared to have a higher percentage of sand.
- 4.10 Slight vertical cracks were noted at approximately 600-700mm vertical centres along the length of the wall extending up from ground level a height of approximately 500mm.
- 4.11 At intervals along the top of the wall, drainage pipes appeared to have been inserted vertically into the wall to allow the installation of timber fence posts. At some stage in the past there appears to have been a timber fence, approximately 1 metre high, present along the top of the wall. Only a couple of the fence posts remain, with the fencing and horizontal rails now missing.

#### 5. ADDITIONAL INFORMATION

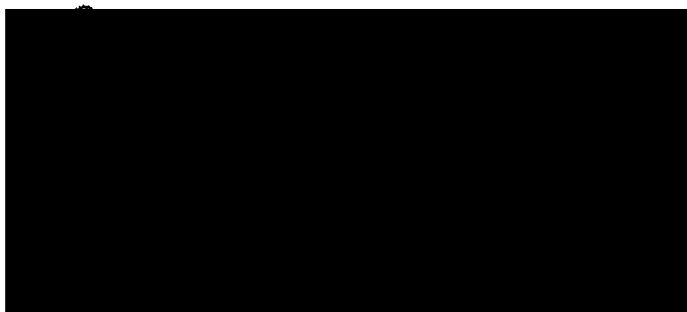
- 5.1 Current guidance on brickwork retaining walls published by the Building Research Establishment (BRE) recommends that retaining walls retaining heights up to 1125 mm should be at least one and a half bricks thick, i.e. 327.5 mm thick.
- 5.2 BRE guidance on freestanding walls recommends that walls up to 2400 mm in height should be at least one and a half bricks thick, i.e. 327.5 mm thick.
- 5.3 Combining a retaining wall and a free standing wall together will require a wall thickness greater than the recommendations for the individual wall types as the combined wall will experience both overturning loads resulting from soil pressure and wind.
- 5.4 A brick wall is substantially stronger than a rubble wall, by a factor of at least 2
- 5.5 BRE guidance on surveying brick freestanding walls suggests that a one and a half brick thick wall should be rebuilt if it leans more than 100 mm. This guidance does not apply to retaining walls.

## 6. CONCLUSIONS AND RECOMMENDATIONS

- 6.1 The eastern boundary wall, when considered as a retaining wall, does not meet current generally accepted construction material standards and should be of solid brickwork construction as opposed to rubble masonry construction.
- 6.2 Similarly, when considered as a free standing wall, the wall does not meet current generally accepted construction material standards and should be of solid brickwork construction.
- 6.3 When considered as a combination retaining wall and free standing wall, the wall does not meet the expected wall thickness and construction material standards.
- 6.4 In our opinion, the wall should have a brick core greater than one and a half bricks thick, as opposed to the existing half a brick thickness.
- 6.5 The extent of the existing wall lean was at the high end of what would be considered acceptable for a one and a half brick thick wall. The wall however is not of solid one and a half brick thick construction.
- 6.6 Our recommendations are to monitor the wall on a yearly basis for extent of lean and if monitoring shows that the lean is progressive, then consideration should be given to either removing the retained height of soil behind the wall within the garden or to reconstructing the wall.
- 6.7 We would not recommend reinstalling a timber fence above the existing wall, as this will serve to increase the lateral wind loading on the wall.

We hope the above is clear and meets with your approval. If you have any queries or wish to discuss any point raised then please do not hesitate to contact us.

Yours sincerely



**BRIAN McCAREY**  
**McCarey Simmonds Limited**



CC Paul Maggs, PB Properties



*View on east face of eastern boundary wall*



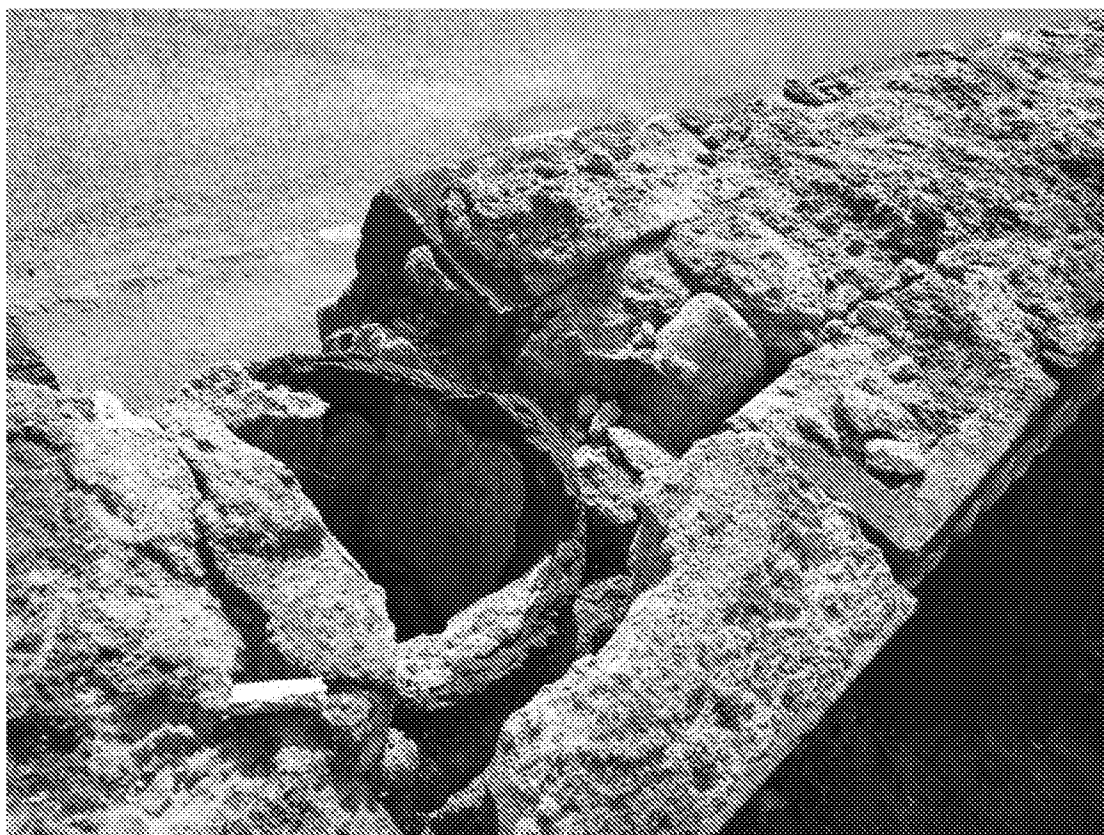
*View on west face of eastern boundary wall*



***View on west face of eastern boundary wall***



*View on top of eastern boundary wall with central brick core visible*



*View on top of eastern boundary wall*



*View on top of eastern boundary wall*

**STRUCTURAL ENGINEER'S INSPECTION – CONDITIONS & LIMITATIONS**

1. The report is a record of a visual inspection carried out by, or under the direction of a Chartered Civil or Structural Engineer and must not be misinterpreted as a Structural Survey, such as would be carried out by a Chartered Surveyor. The report is not a Valuation Report.
2. The inspection is strictly limited to the items requested and these will be detailed in Clause 1 of the report. No consideration will be given to any other aspect or parts of the building.
3. The report is confidential to the Client(s) stated in Clause 1 and has been prepared to their instructions for their own purposes only and it is not permitted to disclose this report to any other parties (except the Client's own Solicitors, Surveyors, Building Societies or Estate Agents) without the prior consent of McCarey Simmonds Limited.
4. The copyright of this report remains the property of McCarey Simmonds Limited.
5. No liability for the contents of this report is accepted to any parties other than the Client(s) stated in Clause 1. No parties other than the Client(s) stated in Clause 1 should rely upon this report.
6. Unless specifically stated otherwise:
  - 6.1 Trial holes will not be excavated prior to the preparation of the report and the depth and construction of the foundations and type of sub-soil will not be inspected.
  - 6.2 All external observations will be carried out by eye from the ground level only. Internal inspection is made within the limits of ready accessibility and it is not normal practice to lift floor coverings or floorboards, remove fixtures, panels or plaster or move heavy items of furniture or bulky goods or materials.
  - 6.3 No inspection will be made of any roof voids, floor joists, wall cavities, drainage pipe work or any other hidden or inaccessible parts.
  - 6.4 No timbers will be checked for damp, rot, infestation by wood-boring insects or other defects.
  - 6.5 It should not be construed that any parts of the construction comply with the requirements of the Building Regulations Act or standard practice either current or as current at the time of the original construction. No enquiries to any Authorities will be made.
  - 6.6 No testing or enquiries into the presence of or susceptibility to pollution, contamination, radiation, methane, radon or other gases or hazardous substances has been carried out.
7. Unless specifically stated otherwise in the report, any recommendations for works given in the report are outline only and are to be confirmed or modified as appropriate as detailed design stage.
8. Where trial holes are specifically included in our instructions the condition of the footing and the founding soil relates only to the point of excavation and does not necessarily confirm a continuation of the same conditions throughout the non-inspected areas of the structure. Whilst such trial pits will usually provide a reasonable indication as to the general state of the foundations and ground conditions, these cannot be determined with complete certainty.
9. Under the Construction (Design & Management) Regulations 1994, the Client has obligations for ensuring Health and Safety arising from any construction work. If it is proposed to proceed with construction work based upon information or recommendations contained in this report, these regulations probably apply. Further details of any issues arising from our report or the Client's obligations generally are available on request.
10. Unless dealt with more specifically above, the Association of Consulting Engineers Conditions of Engagement 1995, Agreement D applies, including optional clauses 2.11, 3.7, 8.1A, 8.1B and 8.1C. Optional clauses 8.2A, 8.2B and 8.2C do not apply.