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Project: Report of the Collapsed Wall at Castle House, Castle Street, Calne, Wiltshire

Client: Castle House Management Company Ltd.

Date: 4th June 2021

Project No: S2651

1 Introduction

1.1 Atkins Martin Associates Ltd. were instructed to carry out a visual inspection without opening up of the collapsed wall at Castle House, Castle Street, Calne Wilts, which is a listed building grade 11. This wall which consisted of an upper garden wall on top of a retaining wall formed the boundary between Castle House and properties on Patford Street (given as Platford Street on some maps), Calne, which had collapsed in the early Spring 2021. The properties immediately alongside Castle House were 5 Castle Street grade 11 listed, Patford House grade 11 listed and the House to South of Patford House Grade 11 listed. The property was visited on 1st March 2021 when the collapsed wall was inspected as far as the electricity substaion only. The weather was reasonably sunny, and the following observations were made. Some client supplied photographs are also included in this report.

2 Observations

2.1 Fig. 1. Client photograph taken from Castle House showing the collapsed wall at that time. This is looking South East



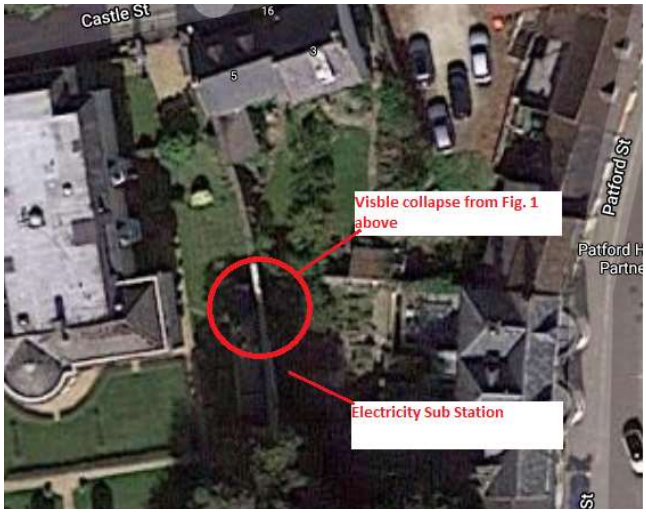
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2.2 Fig. 2. Satellite view of Castle House locating the collapse. Due North is up – down on the photograph.



2.3 Fig. 3 View onto Castle House of the collapsed portion . Client photograph. It can be seen that the collapsed wall was faced with stone at high level.



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2.4 Fig 4. View from the collapsed portion looking North. Client photograph.



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2.5 Fig. 5. Client photograph showing the wall being taken down with the permission of Building Control. On the left is the start of the stone parapet wall, and on the right the upper part of the wall was constructed of brickwork on the inside i.e the Western face of the wall.



2.6 Fig. 6. Client photograph showing the dangerous lean on the upper part of the wall after the collapse.



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2.7 Fig. 7. Client photograph showing the remains of the wall and its lean behind and beyond the garden shed.



2.8 Fig. 8. Client view of the leaning stone wall further North along the boundary wall. The stone was badly weathered and appeared to be the local Calne Freestone. There was an apparent lean in the wall away from 5 Church Street in the distance.



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2.9 Fig. 9. Client photograph of the Eastern side of the collapsed wall. It was reported that the wall collapsed early one morning.

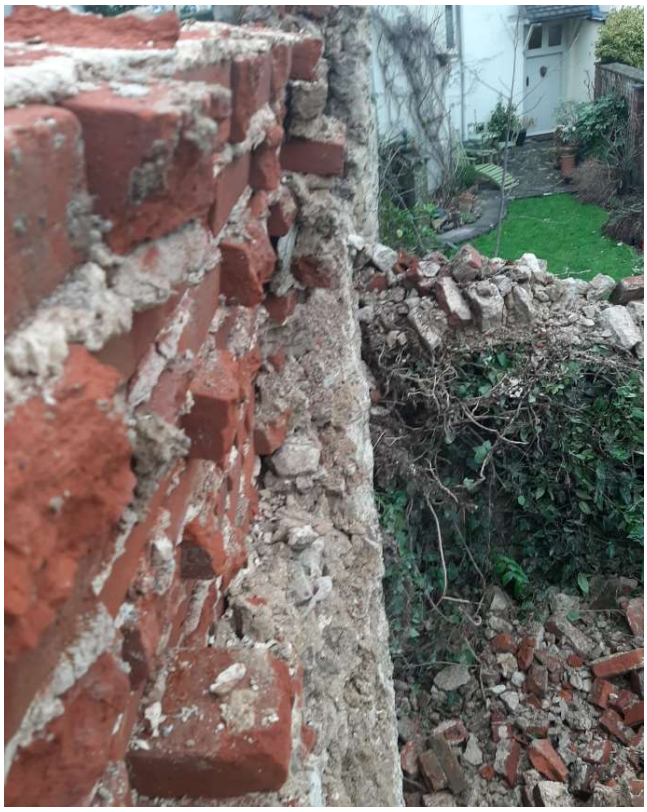
The stone appeared to have little bonding between the stone and the brickwork. A boundary wall at right angles to the wall which collapsed was present and is shown in Fig. 10.

The collapsed wall did not collapse to its complete height and the remaining part of the retaining wall appears from the photograph to be reasonably upright.

Ivy grew out of the boundary wall as shown here and a large sapling was visible in the photograph.



2.1 Fig. 10. Client photograph showing what appear to be occasional only bonding bricks tying the outer stone to the inner brick part of the wall. A return wall buttressing the retaining part of the collapsed wall is visible. Last client photograph.



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2.11 Fig. 11 . AMA photograph. The electricity sub station was on the left looking from the Platford Street side of the wall.

It was too dangerous to approach the collapsed wall, but the Castle House retaining wall looked reasonably upright, albeit with ivy growing into the upper part of the masonry and damage from this plant would be expected – see 2.12. The return wall by the electricity substation was in poor condition.

The brick pier was repeated at regular intervals along the boundary wall. A detail photograph is in Fig 13.



2.12 Fig. 12. There were large trees relatively close to the wall. There was too much ivy to see if the wall had mechanical damage, but damage from Ivy was clearly visible at the upper part of the wall.



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2.13 Fig. 13 The brick pier was in damaged condition with a number of damaged bricks and vertical cracks.



2.14 Fig. 14 This shows the piers repeating along the wall. The retaining wall visually appeared to be reasonably upright, but it was approached only briefly to take the photograph as it was considered unsafe to loiter to measure any lean.



The grotto in the foreground is a marker for Fig. 15.

The stone was weathered, and in visual crumbly condition, with some vegetation growing out of it. The lean on the upper part of the wall was evident and is shown in later figures.

Also evident was the terracing of the ground towards Patford Street.

No weep holes were present in the retaining wall forming the lower portion of the boundary wall. These drain water from behind the wall, in conjunction with a free draining layer immediately behind the wall, to relieve the wall of water pressure.

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1.15 Fig. 15. The grotto is visible on the right and is close to the position where the wall collapsed.



2.16 Fig. 16. This shows the terracing, looking to the North, and shows the fallen part of the wall.



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2.18 Fig. 18. The stone wall was in weathered stone and was visually in poorer condition towards the top of the wall where water would penetrate the top of the wall. The top courses may have been removed, but this was not clear from the photograph.



2.19 Fig. 19. There appeared to be an earlier repair to a local bulge in the retaining wall. This is not absolutely clear but there appeared to be a change in construction towards the grotto just on the right.



2.20 Fig 20. This shows the failed wall with poor quality bonding bricks set in lime mortar. The outer "skin" of stone had completely detached leaving the soft "hearting" exposed. There appeared to be a few snapped headers i.e. bricks used for bonding which had either snapped under load or had been installed after being broken in half - a cheap form of construction.



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2.21 Fig. 21. This shows the junction between the brick backed stone on the left and the "solid" stone wall to the North. The outer face of the stone on the left had not failed at low level. A considerable amount of vegetation was visible by the wall, and one root appeared to have been torn out of its position.

It is unclear if this was the case but the root below may well have come from the wall as it fell.

Fig. 21A





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2.22 Fig. 22. The wall was clearly leaning dangerously for a considerable length.



The form of the construction looking South was of a as outer leaf in stone with rubble and some bonding bricks tying the inner brick leaf to the outside.

Fig 22a – detail of the wall construction.



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2.23 Fig. 23. Further to the South the brick wall was leaning strongly. The very large tree stump forming the remains of a very large tree would have imposed large bursting forces on the retaining wall and a slight outward curve is visible in the line of the wall at the base.



2.24 Fig 24. Frost damage was visible to the wall, which appeared to be more upright to the South. The tree would have been close enough to the wall to cause damage, and the Ivy had caused mechanical damage to the upper part of the wall when observed on the other side.



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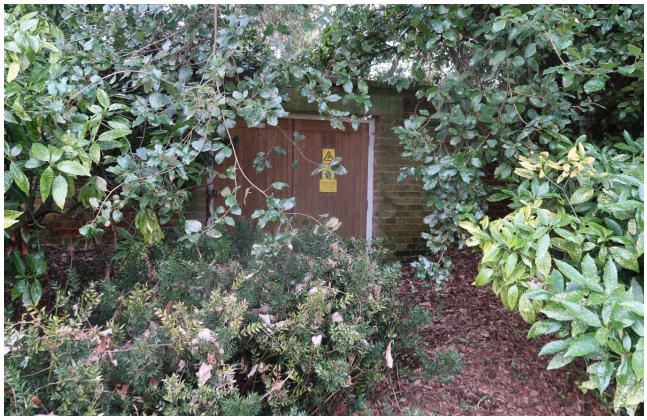
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2.25 Fig. 25. The access to the electricity sub station from the Castle House.

The wall was not examined from this point onwards to the South.



From these observations the following conclusions were drawn:

3 **Conclusions:**

3.1 Castle House is listed Grade 11 and the boundary wall would be curtilage listed. It is also inside a conservation area. The repair works will need listed building consent and a conservation area planning permission. Trees may also have a tree preservation order on them. No information about which trees had Tree Preservation Orders was available when the Planning map was consulted.

3.2 **The Cause of the Collapse**. It was noted that ,relative to the Castle House outside ground level,the most Northerly stone part of the wall was not as high as the Southern brick inner skin wall.

Near the collapse the form of construction changed to a higher wall with an inner brick poorly bonded to the outer stone wall, and with a weak rubble inner core. The inner brick construction looks at first sight to be well bonded to the outer wall, but close examination of the photographs shows headers (bricks laid across a wall) bonding the wall together. However, this is illusory – the builders have simply snapped the bricks in half and the bonding of one “leaf”to the other is poor.

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These extracts from the client supplied photographs clearly show that the failure occurred at the Northern End of the Brick Clad garden wall and not in the stone garden wall. The failure was that of separation of the outer stone face from the inner brick leaf which in part was left standing.





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The failure did not involve a failure of the retaining wall which was left standing, albeit with a damaged upper surface.



The wall at high level was already leaning as shown by Fig. 22 & 23 but there might have been some vegetation growing from the wall which weakened it and it is possible that frost attack or a high wind finally caused the collapse.

3.3 The wall to the South is leaning dangerously , and the large trees in particular, combined with poor bonding of the inner brick leaf to the outer stone make the wall vulnerable to collapse. There is no evidence that the retaining wall, below the upper garden wall, is defective, but the nature of the Calne Freestone – only just adequate as a building material and prone to weathering suggests that the retaining wall, a historic wall, will have a finite and possibly limited lifespan.

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The upper part of the wall is dangerous where it is leaning, and it may be dangerous for contractors to tie it back to restraints in the Castle Wall grounds. Further investigation will be needed.
The wall to the North needs further investigation - the stone is poor and whilst it appears to be reasonably upright where it is buttressed No 5 Castle Road, it appears to be increasingly erratic further South.

3.4 The repair of the collapsed wall will need to be considered in detail, a specification written, a drawing prepared and planning permission and listed building consent obtained. A land survey will be needed, and agreement with the neighbours reached about the remedial measures, particularly regarding practical measures such as temporary propping, removal of collapsed material etc.

A Party Wall Surveyor is likely to be needed to act under the Party Wall Act, and ownership of the wall will need to be clearly established.

Further work will be needed.

Attention is drawn to the Construction Design and Management Regulations 2015 which apply to all construction projects and impose duties on Clients, Designers and Contractors. Reference should be made to the Health and Safety Executive CDM2015 web pages.

Geoffrey Atkins

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Chartered Structural Engineer & Director

On behalf of:
Atkins Martin Associates Ltd.

Addendum:

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

This is for the use of our Client only, and shall not be relied upon by a third party.

All works strictly in accordance with our terms and conditions

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