PRICE&MYERS

REPORT

22 Frognal Way - Curtilage Wall and Outbuilding

Structural Inspection Report

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Job Number: 23261

Date	Version	Notes/Amendments/Issue Purpose
June, 2018	2	For Information

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Appendices:

1 Introduction

Price & Myers have been appointed by the client, Ironside & Malone Design & Build 2 Ltd, to provide a structural inspection report of the curtilage boundary wall at 22 Frognal Way.

Price & Myers attended site and carried out a visual inspection of the curtilage wall and outbuilding on the 11th May 2018, the weather was clear and bright. The purpose of this inspection has been to assess any potential defects of the current construction and to provide a proposal for remedial measures if required.

2 Description of Existing Structure

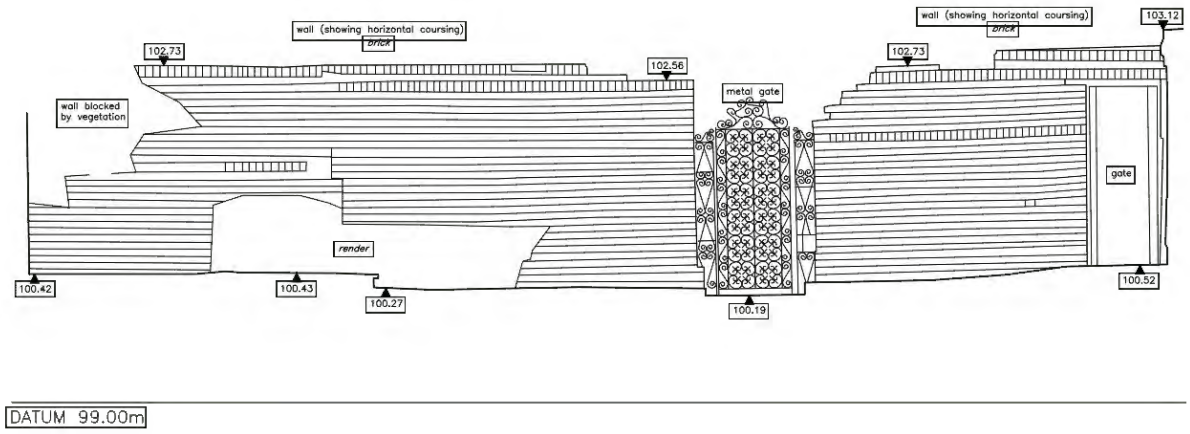
The site is located in Hampstead, approximately 250m to the south west of Hampstead London Underground station and is situated at the end of Frognal Way.
22 Frognal Way is currently under development and the works include the demolition of the existing property and the construction of a new private residence on site. The curtilage wall that is considered within this report forms the north-eastern boundary wall to the site.

Location Plan, showing Curtilage Wall and Outbuilding in Red

3 Observations

20 Perrins Walk Elevation Observations

The curtilage boundary wall was inspected from all sides, including from within the gardens of 20 Perrins Cottage. The wall forms the western boundary wall of the property and is the full length of the site.



ELEVATION 5

Elevation 5, Matrix Surveys

Photo 1, View from 20 Perrins Cottage

Elevation 5 depicts the initial straight-line boundary wall with two openings. The left-hand side section, behind the existing shed, has notable previous remedial works to the lower part of the wall. Photograph 2 shows the extent of the concrete render applied to the lower section of the wall. Above the concrete render the brickwork is in poor condition with the corbel portion no longer insitu.

Photo 2, Southern section of wall behind existing shed

The right-hand section of the wall on this elevation has two openings (refer to Photograph 3 & 4). These openings provide access between the two properties. On review the openings do not look to be of a similar age as the wall construction as new brickwork and cement mortar is visible, refer to photograph 5.

The brickwork at high level surrounding the openings is in poor condition and a number of courses are missing locally from the upper section of the wall.

Photo 3, Opening 1, Full height

Photo 4, Opening 2

Photo 5, new/old brickwork at opening reveal

Photo 6, Corbel detail

Photographs 5 & 6 show the composition of the wall itself. At its base it is a brick & a half thick reducing to one brick thick for the upper section. To achieve the change in thickness the wall corbels at approximately 1000mm above the current ground level. The Wall is approximately 2.3m high from 20 Perrins Walk side.

Photo 7, Outbuilding on 20 Perrins Cottage Side

The outbuilding is centrally located along the length of the wall and steps its footprint straddles the two properties. The construction of the outbuilding looks to be of London stock brick and no structural defects of concern in the masonry were seen during the site visit on the 11th May, although sections do require re-pointing. An anchor plate is evident on the top right-hand side corner of its east elevation.

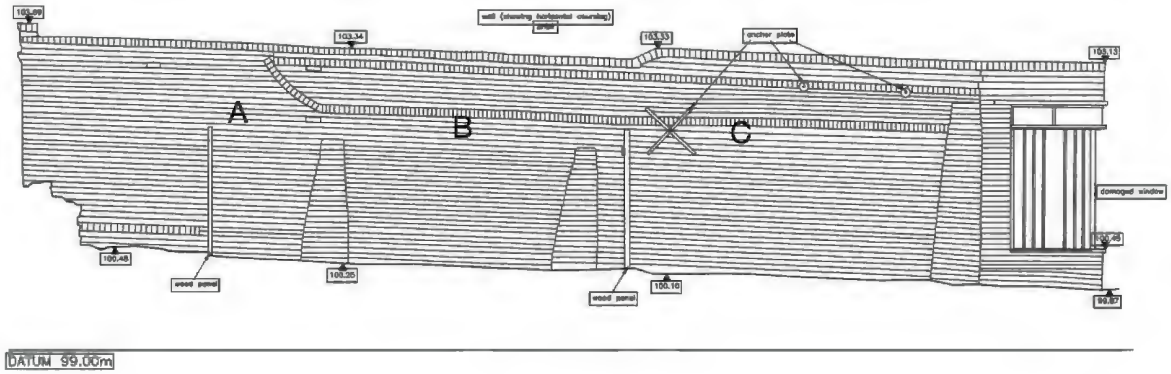
The roof to the outbuilding was noted to be in disrepair.

Photo 8, View of Outbuilding Masonry

22 Frognal Way Elevation Observations

The wall was also inspected from the side of 22 Frognal Way.

Elevation 2, below, shows the northern part of the curtilage wall. This elevation forms part of the outbuilding façade (from its right-hand extent to the crossed anchor plate).



Elevation 2, Matrix Surveys

There are buttresses located on this elevation which are all of a raked masonry brickwork construction and taper towards their top. The right-hand side, taller pier looks to be constructed in the same brick as the remainder of the wall. The two smaller piers, to the left-hand side and centre, are obviously of recent construction and are likely to be an attempt to strengthen the wall against the obvious bow at approximately 2.3m above ground level. The bonding of the new buttresses does not match that of the wall, and they do not look to be properly keyed into the existing wall.

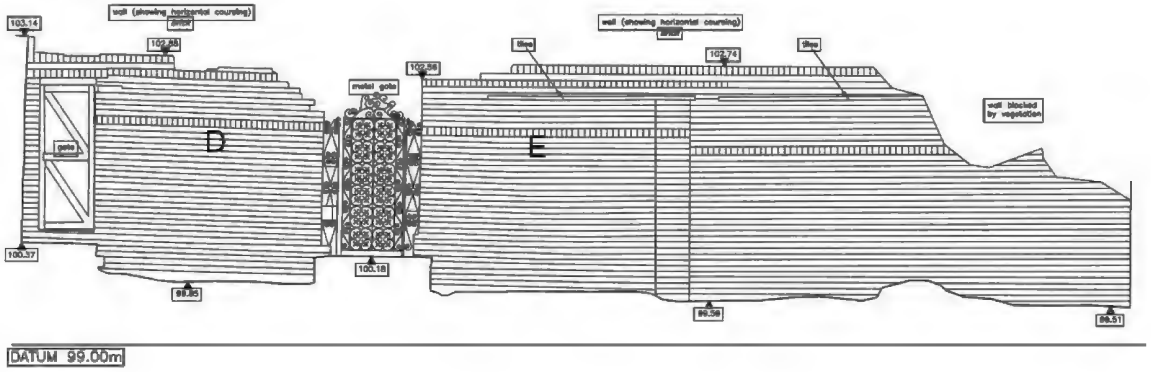
It should be noted that there is an level change between the two properties along this wall, with a retained height of approximately 860mm to the 20 Perrins Walk side the neighbouring property.

Measurements taken on site of the lean to the wall were measured at 48mm, 131mm and 144mm and correspond to the locations A, B & C in Elevation 2, above.

Photo 9, North section of wall and viewing toward the into Outbuilding entrance

Photo 10, Right-hand side masonry pier to Outbuilding

Photo 11, North Section of Wall showing newer piers and bow at the top of the elevation.
Also evident is the anchor plate situated in front of the nearest pier.



ELEVATION 4

Elevation 4, Matrix Surveys

Photo 12, Elevation 4, LHS of opening 1 on 22 Frognal Way side

Photo 13, Elevation 4, RHS of opening on 22 Frognal Way side

Photo 14, Opening 1 in foreground with Opening 2 & Outbuilding in background

Once the vegetation had been removed from this section of the wall we were able to see the condition of the masonry. The new brickwork and cement mortar is more visible on this side of the wall and, similar to the northern section, there is a slight bow to the wall at approximately 2.3m above ground level.

Measurements taken on site of the lean to the wall were measured at 51mm and 110mm which correspond to the locations D & E on Elevation 4.

There is also a level change of approximately 400mm between the two properties in this location. Unlike the northern section of wall, due to its thickness of 325mm at its base, the wall is not acting as a retaining wall as the spread of load at 45 degrees will transfer directly into the soil on the lower side.

Photo 15, Opening 1 with new brickwork evident

As with observations from the 20 Perrins Walk side, the top masonry courses are noted to be in poor condition.

4 Discussions

Areas of Concern & Possible Remedial Measures

Overall stability of the Curtilage Wall and Outbuilding

Further to the noticeable bow highlighted in Section 3, we have investigated whether the overall stability of the wall is satisfactory in its current state. This check ignores any applied loads and is considering the passive stability of the wall only, the capacity of the wall under wind and retaining loads is a separate structural check which is discussed below. Site measurements have been considered in relation to whether the centre of gravity of the wall is falling within the middle third of its base, which ensures that there is no tension developed within the depth of the wall under self-weight.

Location A on Elevation 2 & D on Elevation 4 have a centre of gravity that still falls within the middle third of the wall base and no added stability measures are required. However, at locations B and C on Elevation 2, and location E on Elevation 4, the wall is potentially unstable in the long term.

Separately, we have also investigated the structural capacity of the retaining section of the wall, Elevation 2. This wall is not satisfactory to support the required applied wind loads and retaining forces from the neighbouring property when checked using current codes of practice.

Finally, we have investigated the structural design of the 2.3m high freestanding wall with piers at a maximum of 5.0m centres as a standalone item. Location C on Elevation 2, where the wall spans 5.0m between piers is not satisfactory. The maximum allowable spacing of piers for the wall to be compliant with current codes is 4.6m. This is achieved at Locations A and B on Elevation 2, although as noted earlier, this section of wall fails once the retaining forces are taken into account in any event.

We would therefore recommend that Elevation 2 & 4 are either strengthened or taken down and rebuilt to modern codes of practice.

Strengthening Option

Three new buttresses would be introduced to Elevation 2 at central locations between the existing buttresses, and the existing buttresses should also be rebuilt. These piers will have new footings and be properly tied into the existing wall to ensure they work together structurally.

We also recommend introducing two new piers either side of Opening 1 to strength this wall panel and repair the upper courses of masonry.

Rebuilding Option

The existing masonry would be carefully taken down and a new concrete retaining wall built to the base of Elevation 2. This retaining wall will be faced with existing bricks so that it matched the current visual appearance of the wall.

Elevation 4 & the upper section of Elevation 2 would then be reinstated with concealed wind posts to provide the required structural capacity.

General Repairs

Generally the masonry on the 20 Perrins Cottage elevation looks to be in worst condition. This is probably due to increased exposure from its orientation. If the wall is strengthened rather than rebuilt, both elevations would require repointing.

Photo 16, Disrepair at the top of the wall adjacent to Opening 1

Where possible all masonry should be reused or new to match existing, and any re-pointing should be done with a suitable lime mortar by Limetec or similar in accordance with our specification.

5 Conclusions

At the time of the survey there was no particular evidence of continuing movement, however the wall has not been monitored and there is no way to know if the wall is actually stable. Due to the lean on the wall and the retaining forces at certain sections we believe that the wall must either be strengthened with new buttresses, including the replacement of the more recent buttresses, or that it should be carefully taken down and rebuilt with concealed windposts. The options for this have been discussed in Section 4.

This report has been commissioned by the client to give a structural engineer's opinion on the curtilage boundary wall and outbuilding. It should not therefore be considered a full structural survey of the property. The conclusions presented herein are based on the inspection on 11th May 2018 and no liability can be accepted for the condition of parts of the structure that were not inspected or for deterioration after the survey.

Appendix A

Survey Drawings - Matrix Surveys

Appendix B

Structural Calculations