

Hutton + Rostron Environmental Investigations Limited

Grandpont House, Oxford: Façade investigation

Site note 4 for December 2023-January 2024, job no. 160-42

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1 INTRODUCTION

1.1 AUTHORITY AND REFERENCES

Hutton + Rostron Environmental Investigations Limited carried out site visits to Grandpont House, Abingdon Road, Oxford during December 2023-January 2024 in accordance with instructions from Xavier Bosch by email on 15 January 2023. Drawings provided by Studio Stassano were used for the identification of structures. For the purpose of orientation in this report, the building was taken as facing west onto Abingdon Road

1.2 AIM

The aim of this survey was to investigate brick and render facades for construction, condition and requirement for refurbishment. Recommendations are provided for remedial works as part of the proposed refurbishment scheme. This exercise was carried out in conjunction with and with relevance to other H+R investigations (refer to Site Notes 1-10 ref. 160-42)

1.3 LIMITATIONS

This survey was confined to the accessible structures. Concealed timbers and cavities have been investigated where necessary by the use of high-powered fibre optics. The condition of concealed materials may be deduced from the general condition and moisture content of the adjacent structure. Only demolition or exposure work can enable the condition of timber to be determined with certainty, and this destroys what it is intended to preserve. Specialist investigative techniques are therefore employed as aids to the surveyor. No such technique can be 100 per cent reliable, but their use allows deductions to be made about the most probable condition of materials at the time of examination. Structures were not examined in detail except as described in this report, and no liability can be accepted for defects that may exist in other parts of the building. We have not inspected any 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 or in the event that such part of the property is not free from defect it will not contaminate and/or affect any other part of the property. Any design work carried out in conjunction with this report has taken account of available pre-construction or construction phase information to assist in the management of health and safety risks. The sample remedial details and other recommendations in this report are included to advise and inform the design team appointed by the client. The contents of this report do not imply the adoption of the role of Principal Designer by H+R for the purposes of the Construction (Design and Management) (CDM) Regulations 2015. No formal investigation of moisture distribution was made

2 STAFF ON SITE AND CONTACTS

2.1 H+R STAFF ON SITE

Tim Jordan
Ellen Wise
Hamad Tahir

2.2 PERSONNEL CONTACTED

Mr Xavier Bosch
House residents

3 OBSERVATIONS AND RECOMMENDATIONS

3.1 EXECUTIVE SUMMARY

The property dates back to the early C18th ('west wing' brick-built) but was substantially extended circa 1785 ('main house' comprising timber frame on stone bridge). The external envelope of both buildings were in a poor condition, especially failed/damaged/missing render

As detailed within Attachment A, H+R recommend that all render facades are removed in order to repair the substrate prior to reinstatement of a lime putty render with limewash finish. Significant works are likely to be needed to the timber wall frames of the main house. It is important to determine the condition of the bridge supporting the main house and the riverbank supporting the stables

4 H+R WORK ON SITE

- 4.1** H+R inspected specified parts of the building fabric using all available access and exposure
- 4.2** H+R deployed visual, tactile and specialist equipment techniques to interrogate the fabric

5 PROPOSED ACTION BY H+R

- 5.1** H+R will advise on repair and conservation, so as to minimise the risk of decay after refurbishment if instructed
- 5.2** H+R will advise on remedial detailing, so as to minimise the risk of damp and decay problems after refurbishment if instructed
- 5.3** H+R will advise on conservation of original fabric with regard to damp, decay and salt damage, as necessary and if instructed
- 5.4** H+R will review proposed remedial details as these become available if instructed
- 5.5** H+R will return to site to inspect sample remedial details if instructed
- 5.6** H+R will liaise with conservation and historic building authorities, if instructed, so as to ensure the cost-effective conservation of original fabric

6 INFORMATION REQUIRED BY H+R

- 6.1** H+R require up-to-date copies of project programmes, as these become available
- 6.2** H+R require copies of up-to-date lists of project personnel and contact lists as these become available
- 6.3** H+R require copies of proposed remedial details for comment as these become available
- 6.4** H+R should be informed as a matter of urgency if further significant water penetration occurs onto site; so that advice can be given on cost-effective remedial measures, to minimise the risk of cost or programme overruns and so as to minimise the risk of damp or decay problems during the latent defect period

7 ADMINISTRATION REQUIREMENTS

- 7.1** H+R require formal instructions for further investigations and consultancy on this project
- 7.2** H+R require confirmation of distribution of digital and printed copies of reports and site notes

Attachment A

SCHEDULE OF OBSERVATIONS AND RECOMMENDATIONS

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SN4.1 MAIN HOUSE FACADES (non-original georgian phase)				
SN4.1.1	Main house North elevation	<p>Soft red clay bricks laid in lime putty mortar. Projecting brick cornice at wallhead and string courses at each (2no.) intermediate floor level serve to encourage surface water to shed off the wall</p> <p>The north elevation of the main house incorporated a four-flue chimney, as described at the south elevation. However, there was significant variation in overall wall thickness from 250-750mm thick. This suggested that parts of this elevation may have incorporated older fabric (from the pre-existing west wing). This was difficult to fully understand because externally there was a vertical crack/construction joint which seemed to divide the main house from the west wing</p> <p>The brickwork showed limited residues of limewash, apparently a yellow/ochre colour which was built-up in many coatings during the early centuries of the building's life but has been left to weather-away in the last century</p> <p>There were ~25no. superficially spalled brick faces which had developed since upkeep of the protective limewash coating lapsed</p> <p>There were a number of fairly small fixings into the brickwork for cable-runs; these were visually poor</p> <p>There has been localised re-pointing using cement which corresponded with areas of previous cracking/erosion around the first-floor oculus window and the vertical construction joint to the west wing. Cracking and in-plane-displacement between 15-25mm has been a recurrent issue at the vertical joint</p> <p>A relatively modern (1930s?) flat roof single story extension has been added along the riverside frontage, albeit with evidence of incorporating various elements of slightly older fabric. This was measured locally as 220mm solid brickwork (single brick thickness) in Flemish bond with concrete lintels and tiled sills externally</p>	<p><i>Allow to renew lead flashing to cornice ledge</i></p> <p><i>Structural Engineer to review. For example, it may or may not be desirable to restrain the vertical cracking by helibars</i></p> <p><i>H+R recommend that the wall is lightly cleaned/brushed-off in preparation for restoring a limewash finish. Given that so little remains of the coating, it was expected that a significant number of coats may need to be applied (say 4-8no. at the discretion of the heritage mason engaged to carry out the building restoration)</i></p> <p><i>Subject to reinstatement of limewash, H+R did not believe it necessary to replace spalled brick faces</i></p> <p><i>In preparation of limewashing, all surface-mounted services should be removed along with any fixings (small holes to be patched/filled in lime putty mortar). On refurbishment, service runs should be rationalised and ideally run internally</i></p> <p><i>Structural Engineer to review. As a minimum, and as mentioned above, allowances should be made for localised patching/filling defects using lime putty mortar prior to limewashing</i></p> <p><i>This structure seemed relatively insubstantial compared to the main house. It may be in particular need of additional insulation internally. Externally, H+R would recommend localised lime putty mortar repairs and a limewash finish in common with the rest of the north elevation</i></p>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SN4.1.2	Main house East elevation	<p>Timber frame wall structure on masonry plinth. Originally finished in lime putty render and limewash. Plinth was of limestone ashlar, rising to 250mm above existing external ground level. Note plinth was probably integral with the three-arch stone bridge over the river Isis which formed the foundation of the main house</p> <p>The plinth should incorporate ventilation to the internal timber subfloor voids. However, there seemed to be no ventilation at the north room</p> <p>The east wall frame has visibly dropped, as indicated onto drawings attached. This included distortion of both (2no.) canted bay windows and at the north side of the doorway</p> <p>The original lath and lime render cladding has been 'temporarily' replaced in marine ply with cover strips and mastic sealant at joints. Apparently due to budget/logistical constraints, this temporary measure has remained in place since circa 1980s. As seen internally, there were at least 3no. significant leaks which have penetrated the frame at high level in the past (see drawings). A limited section of render cladding remained at the south side, this seemed to be a patchwork of mortar types including inappropriate and deleterious cement material</p> <p>Photographic records circa 1980s show that parts of the plinth wall and/or lower sections of the wall frame have been replaced in modern concrete blockwork. There seems to be sporadic and limited insulation of the frame using mineral quilt. There has been a history of decay to the wall frame, probably a latent defect since original construction given that a 25mm render and lath external cladding would not resist driving rain penetration. At this stage, H+R assume that the extensive decay issues found in 1980s were not rectified, only stabilised by the ply cladding (refer also to H+R Site Note 9 in relation to wall frame)</p> <p>As shown on drawings, many of the timber sills were lost to decay or had been crudely replaced. There were currently lead flashings dressed over these sills which partially obscured these defects (the leadwork itself was not in good condition)</p> <p>The east and west wall frames relied upon connections to the roof and floor structures for lateral restraint. Any decay to these connections would risk the wall frames detaching or crushing in the vicinity; this would manifest as the frame bowing/buckling outwards</p> <p>Metal straps/brackets were used to secure the east and west frames at the corner junctions with the south elevation. These appeared intact but scantily fixed into the brickwork such that they may not offer robust support/connection</p> <p>The east elevation of the north single-storey extension showed localised render loss. The adjoining stone pier of the terrace balustrade has rotated/dropped away significantly from the wall of the building; an 80mm joint had opened-up</p>	<p><i>Structural Engineer to review integrity of the stone bridge forming the substructure of the main house</i></p> <p><i>H+R recommend that the existing frame is totally exposed by removing all external cladding (so as to enable inspection and repair of the structure). The Structural Engineer should direct and oversee this process on the basis that temporary propping will be required. Once timber repairs have been executed, H+R recommend external cladding in reinstated in the form of oak laths, three-coat lime putty render and 4-8no. coats of limewash. Architect to consider a 'lined-out' effect to imitate stone joints in the render surface</i></p> <p><i>The historic render cornice may or may not be feasible to retain but in any case, allow to renew lead flashing to cornice ledge</i></p> <p><i>Architect to direct provision of sufficient sub-floor ventilation via plinth</i></p> <p><i>Extensive timber repairs are expected to be necessary. However, it may or may not be possible to jack-up parts of the structure which have dropped historically. Structural Engineer to direct and oversee these works. Refer also to H+R Site Note 9</i></p> <p><i>Total replacement of external cladding recommended (see above). Leaks at high level are to be corrected by works to roof finish and roof drainage (see H+R Site Notes 2 and 3)</i></p> <p><i>Inappropriate modern masonry infill to be restored to original timber frame as part of wider repair scheme (see H+R Site Note 9). Insulation of the wall build-up should be informed by H+R Site Note 10</i></p> <p><i>All window sills and sub-sills should be restored to allow proper shedding of water from the base of windows (refer also to H+R Site Note 5)</i></p> <p><i>Further investigation will be required once external cladding has been removed (with scaffold in place and with oversight from Structural Engineer). Allow for extensive repairs to roof and floor connections</i></p> <p><i>Structural Engineer to review corner connections between brick and timber frame walls. Strengthening may be deemed necessary</i></p> <p><i>East elevation of single storey extension at north will require render repairs. Significant work should be anticipated to review and consolidate apparent defects in the stone balustrade alongside the river (Structural Engineer to review, possible re-build required)</i></p>	

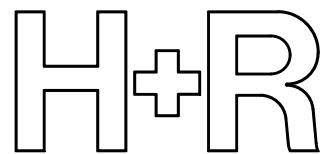
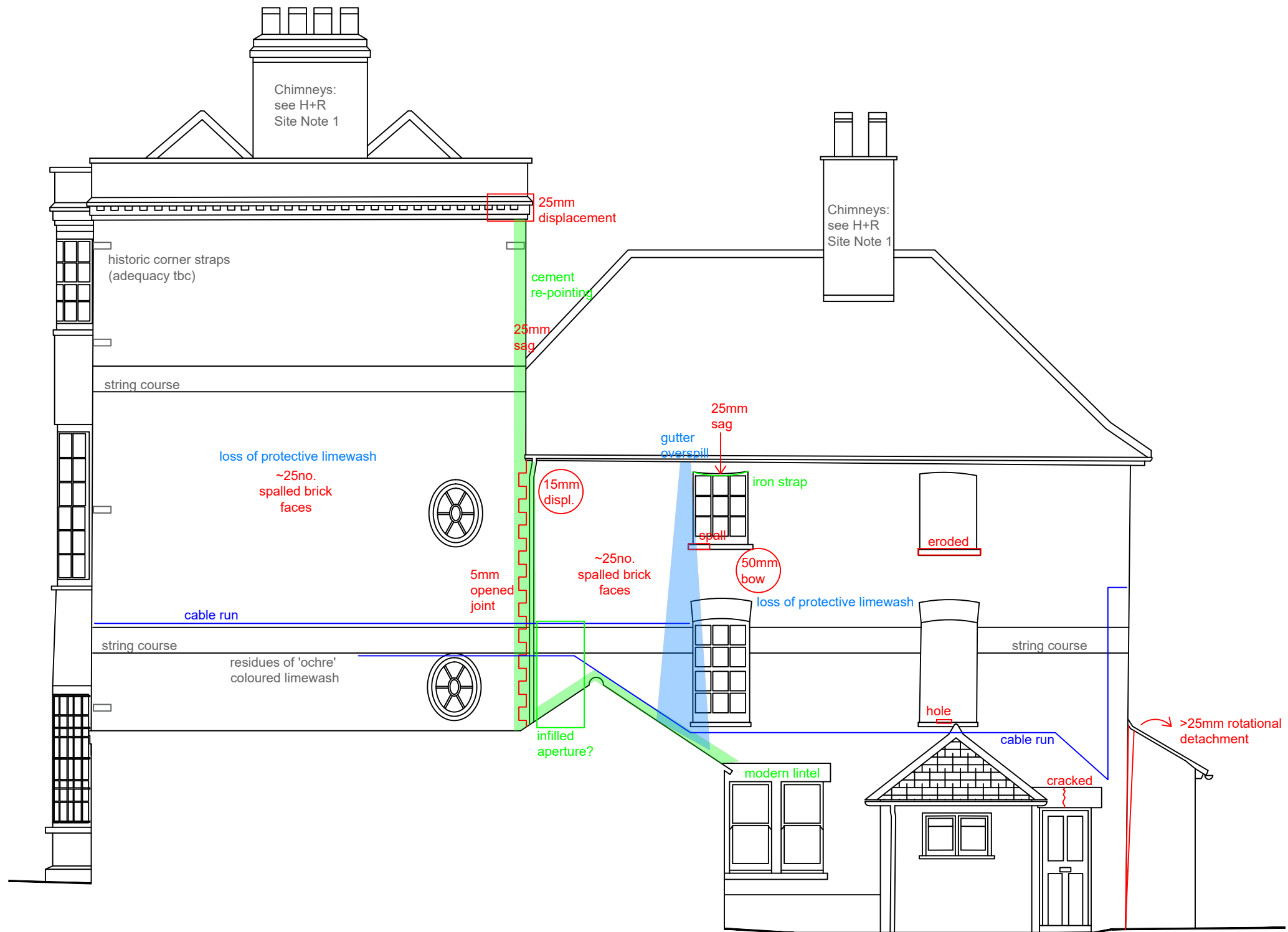
REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SN4.1.3	Main house South elevation	<p>The south elevation of the main house was of solid brickwork and incorporated a four-flue chimneystack. The brickwork was originally rendered in a lime putty mortar and finished in limewash, to match the appearance of the render applied to the east and west timber frame facades</p> <p>For unknown reasons, the render has been totally removed in the past, leaving the brick substrate rather disfigured and vulnerable to water ingress. It was suspected that the removed render was a non-original cement mortar which was strongly bonded to the substrate, hence the level of damage sustained to brick faces during removal</p> <p>There was a lead flashing protecting the projecting cornice ledge; this remained largely intact but was in poor condition</p> <p>The ground floor window had a softwood lintel at the external wall face which had been exposed by render removal. This appeared intact but should ideally be protected. The sill was a brick ledge with a failed render cladding</p> <p>There has been a history of vertical cracking at the west corner of the wall; this has persisted despite previous re-pointing and partial re-building</p>	<p><i>H+R recommend that the external cladding be reinstated in the form of three-coat lime putty render and 4-8no. coats of limewash. Architect to consider a 'lined-out' effect to imitate stone joints in the render surface</i></p> <p><i>No requirement to repair damaged brick faces, subject to reinstatement of render and limewash cladding</i></p> <p><i>The historic render cornice may or may not be feasible to retain but in any case, allow to renew lead flashing to cornice ledge</i></p> <p><i>New render to be reinstated to these areas, as mentioned above</i></p> <p><i>Structural Engineer to review corner connections between brick and timber frame walls. Strengthening may be deemed necessary</i></p>	
SN4.1.4	Main house West elevation	<p>Historic wall frame studs could be seen and measured locally from within voids at the junction with the west wing. This suggested that the original brick wall at the east end of the pre-existing west wing was demolished when the Georgian 'main house' was added</p> <p>H+R expected that the wall frame was of softwood;</p> <ul style="list-style-type: none"> -common studs were of variable section size but seemed to be a consistent 130mm thickness -common stud widths varied from 60-75-80-90mm -common stud centres varied from 280-360mm -principal studs/posts measured 130x180mm in section -horizontal rails in the frame at high level measured 140x140mm -the sole plate laid over the masonry plinth at low level measured 80x130mm -the overall wall thickness was 220mm which suggested a remarkably thick 45mm build-up of plaster and render claddings at each face of the frame <p>The external render on the timber frame wall of the main house was a patchwork of replacement material, the majority of which appeared to be inappropriate cement mortars which would be deleterious to the substrate due to the tendency for moisture retention. Localised measurement indicated the render to be built-up to a thickness of 25mm upon the laths; this would not resist driving rain penetration</p> <p>There were at least 3no. recurrent leaks into the frame at high level (roof drainage issues)</p> <p>The frame has bowed-distorted in at least 2no. areas, potentially due to loss of lateral restraint by roof timbers. There was also a pattern of movement to suggest the centre of the timber frame façade has sagged in relation to the brick gable walls to the north and south. As mentioned for the east elevation, there has been a history of decay in the frame which was suspected to have largely gone without repair over the building's lifetime</p> <p>As shown on drawings, there was extensive cracking within the render, as might be expected for a relatively brittle coating applied to a relatively flexible (and partially decayed) timber substrate. Sections of render were loose at window reveal soffits and cracked at sills</p>	<p><i>Structural Engineer to review interface connections between brick and timber frame walls (including junction between main house and west wing). Strengthening may be deemed necessary</i></p> <p><i>Extensive timber repairs should be anticipated, like-for-like timber species and section sizes should be used (refer to H+R Site Note 9)</i></p> <p><i>H+R recommend that the existing frame is totally exposed by removing all external cladding (so as to enable inspection and repair of the structure). The Structural Engineer should direct and oversee this process on the basis that temporary propping will be required. Once timber repairs have been executed, H+R recommend external cladding be reinstated in the form of oak laths, three-coat lime putty render and 4-8no. coats of limewash. Architect to consider a 'lined-out' effect to imitate stone joints in the render surface</i></p> <p><i>Leaks at high level are to be corrected by works to roof finish and roof drainage (see H+R Site Notes 2 and 3)</i></p> <p><i>Further investigation will be required once external cladding has been removed (with scaffold in place and with oversight from Structural Engineer). Allow for extensive repairs to wall frame itself, along with connections to roof and floor structures</i></p> <p><i>Total replacement of external cladding recommended (see above)</i></p>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SN4.2 WEST WING FACADES (original phase)				
SN4.2.1	West wing North elevation	<p>The north elevation of the west wing (oldest part of property) measured 380mm in thickness overall. This corresponded with that seen in the west elevation (see commentary below). But unlike the west and south sides, the north elevation was of exposed brickwork in Flemish bond. For decorative effect, 'vitrified' header bricks had been used. String courses served to encourage surface water to shed away</p> <p>There was evidence that window apertures within the original north elevation of the west wing have been altered over time, probably at the time the Georgian 'main house' was added and subsequently when the ground floor extensions were added</p> <p>As mentioned below, there may originally have been a parapet wall detail (before the roof structure was altered). Removal of the upper courses of brick may partly explain why the top floor brick arch windowhead has badly distorted/sagged and required strengthening by iron bars. Below this window aperture, the brickwork has bowed outwards by upto 50mm and showed diagonal cracking</p> <p>Deterioration in this area was potentially ongoing and exacerbated by overspill from an excessively long eaves gutter run</p> <p>As shown on photographs and drawings, all 4no. stone sills in the upper stories showed deterioration by cracking and/or erosion. The stone lintel over the doorway had cracked at mid-span</p> <p>There were various small fixings into the brickwork for cable runs which were visually poor</p> <p>The flashing and brickwork pointing was poor at the junction with the ground floor pitched roof extensions</p> <p>A modern (1910s?) single story addition has been built onto the west wing. This was of brickwork, clad in roughcast render. The tile flashing over the window aperture was slightly loose/damaged. Various section of render had debonded due to frost/salt damage, especially at the landscaping junction</p>	<p><i>H+R recommend that the wall is lightly cleaned/brushed-off in preparation for restoring a limewash finish. Given that so little remains of the coating, it was expected that a significant number of coats may need to be applied (say 4-8no. at the discretion of the heritage mason)</i></p> <p><i>Structural Engineer may wish to review the history of alterations to the west wing</i></p> <p><i>Structural Engineer to review the wall distortion around the upper window. Remedial options may range from a) do nothing b) strengthen or reinforce by helibar c) locally re-build</i></p> <p><i>Leaks at high level are to be corrected by works to roof finish and roof drainage (see H+R Site Notes 2 and 3)</i></p> <p><i>Structural Engineer to review damaged stone sills and lintels. Remedial options may range from a) reinforce by helibar and cover with stone repair mortar b) replace stone elements using matching new limestone</i></p> <p><i>In preparation of limewashing, all surface-mounted services should be removed along with any fixings (small holes to be patched/filled in lime putty mortar). On refurbishment, service runs should be rationalised and ideally run internally</i></p> <p><i>Flashings onto adjoining roofs at low level on the façade should be replaced (with allowances for lime putty pointing repairs in the vicinity)</i></p> <p><i>Using a hammer test, all section of loose render should be removed and replaced in matching material. A vertical line should be cut neatly along the base of the wall, 300mm above external ground level. All render should be removed below this line. The repaired render should then be clad in limewash, in common with the rest of the building</i></p>	
SN4.2.2	West wing East elevation	<p>It was suspected that the east end of the original house/mill was demolished or heavily altered when the adjoining main house was added in the georgian period</p>	<p><i>Structural Engineer may wish to review the history of alterations to the west wing</i></p>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SN4.2.3	West wing South elevation	<p>The south side of the west wing measured between 530-570mm thick overall at ground floor level. This was remarkably thick and corresponded with reported historic use of the building as a mill (which typically require resilience to heavy loading and dynamic forces from machinery). As described for the west elevation, cement render was clearly not original and the brick substrate may have originally been left exposed</p> <p>As shown on drawings, there was extensive cracking to the brickwork (which transferred through the render cladding). Cracks tended to run vertically and diagonally between window apertures. On the basis that the wall is suspected to have been exposed brickwork originally, it was possible that the cracking has been made more visually apparent by applying render. Cement render, although strong, is relatively brittle compared to the brick and lime mortar substrate</p> <p>Cracks had typically opened by less than 2-3mm. The pattern of cracking may suggest a drop in the footings at the centre of the wall (which was also seen internally where the chimneystack seemed to be dropping relative to the perimeter walls. Vertical cracks at the east side suggested differential movement in the foundations of the west wing vs main house. The centre of the wall also appeared to be bowing outwards which may relate to loss of support from internal timber structures</p> <p>There were numerous penetrations into the wall by surface mounted pipework, these generally seemed to be of poor quality and visually crude</p>	<p><i>All existing render to be removed to expose the substrate. Trials should be carried out beforehand to determine how this can be done with the minimum damage to the underlying brick faces. H+R recommend that the external cladding is reinstated in the form of three-coat lime putty render and 4-8no. coats of limewash. Architect to consider a 'lined-out' effect to imitate stone joints in the render surface</i></p> <p><i>Structural Engineer to review cracking and direct any remedial works deemed necessary. H+R provisionally expect that extensive 'helibar stitching' repairs will be needed along bed joints to consolidate cracked brickwork</i></p> <p><i>Structural Engineer to review and direct any remedial works deemed necessary</i></p> <p><i>In preparation of render replacement, all surface-mounted services should be removed along with any fixings (small holes to be patched/filled in lime putty mortar). On refurbishment, service runs should be rationalised and ideally run internally</i></p>	
SN4.2.4	West wing West elevation	<p>The west wing (the oldest part of Grandpont House, reportedly a mill) was of solid brickwork construction. Walls were measured 380mm thick overall at first floor and ground floor level (expected to comprise 330mm brickwork, plus plaster/render cladding at each face). This would suggest the wall to be a brick-and-a-half thick, probably Flemish bond as seen at west wall. The external render finish was a cement mortar, clearly not original (H+R suspected that there may have originally been an exposed brick aesthetic or limewashed brickwork). The roofline has been changed historically which was also suspected to have included changing an original parapet wallhead detail to an overhanging roof eaves</p> <p>There was hairline vertical cracking at the centre of the elevation</p> <p>There was superficial damage by cable clips</p> <p>There was spalled render adjacent to the foot of the RWP</p> <p>A later single storey lean-to extension has been added to the west wing. This was poorly connected to the wall and potentially also with poor foundations; a 25mm vertical crack and outward rotation has developed</p> <p>Also affecting the extension; roughcast render has spalled from the brick substrate along the base of the wall due to salt/frost damage arising at the landscaping junction</p>	<p><i>All existing render to be removed to expose the substrate. Trials should be carried out beforehand to determine how this can be done with the minimum damage to the underlying brick faces. H+R recommend that the external cladding is reinstated in the form of three-coat lime putty render and 4-8no. coats of limewash. Architect to consider a 'lined-out' effect to imitate stone joints in the render surface</i></p> <p><i>Structural Engineer to review cracking and direct any remedial works deemed necessary. H+R provisionally expect that localised 'helibar stitching' repair may be needed along bed joints to consolidate cracked brickwork</i></p> <p><i>In preparation of render replacement, all surface-mounted services should be removed along with any fixings (small holes to be patched/filled in lime putty mortar). On refurbishment, service runs should be rationalised and ideally run internally</i></p> <p><i>Total replacement of external cladding recommended (see above). Re-detailing and upgrade of roof drainage has been recommended within H+R Site Note 3</i></p> <p><i>Structural Engineer to review single storey lean-to extension. H+R expect that 'helibar stitching' will be needed to provide a connection between the west wing and the extension</i></p> <p><i>Total replacement of external cladding recommended (see above)</i></p>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SN4.3 STABLES FACADES				
SN4.3.1	Stables North elevation	<p>The elevation was built directly into the banks of the River Isis; this limited access for survey and to conduct works in future</p> <p>Previous alteration to the elevation was evident by modern lintels and cement re-pointing in the vicinity. Presumably this dated from the major works carried out circa 1980s when the roof structure was replaced and the building was fitted-out for cooking and dining. Originally, Grandpont House had a range of service buildings which would likely have included stabling for horses, garaging for coaches, accommodation for groom/staff and other miscellaneous storage</p> <p>The façade appeared to be in reasonable overall condition, save for localised erosion/cracking to mortar joints</p> <p>The section of wall footings below 'The Cottage' (east end of the stables block) appeared to be at risk of structural compromise due to washed-out masonry</p>	<p><i>H+R expect that external access will likely be necessary to the north elevation alongside the river; special measures will be in order</i></p> <p>-</p> <p><i>Provisionally allow for localised patch re-pointing using a lime putty mortar to any missing/failed sections of pointing or partially damaged brick faces</i></p> <p><i>Structural Engineer to review. It seems likely that this area will be important for making good. <u>Bear in mind the project risk that more extensive problems could be found in the riverbank walls and that it could be extremely expensive to underpin this entire wall alongside the stables and main house</u></i></p>	
SN4.3.2	Stables East elevation	<p>The east end of the building was in a dilapidated state, comprising various structures in variable states of dilapidation</p> <p>For example, there was a hole in the gable wall and the cottage has been 'ruined' by removal of the roof</p>	<p><i>It was understood that the Architect will devise a scheme to bring parts of the stables and outbuildings back into use (potentially dependant on budget available for the overall scheme)</i></p> <p><i>As a minimum, H+R would consider it prudent to stabilise the fabric of the Stables and outbuildings by making good any significantly damaged brickwork (even if there is not budget to fully rehabilitate them in the short term)</i></p>	
SN4.3.3	Stables South elevation	<p>The facade of the stables was of solid brick construction, with past evidence of cementitious repointing at various locations</p> <p>The brickwork remained in reasonable condition with only localised mortar erosion/loss in areas of overflowing roof drainage</p> <p>There was probably further unseen damage to the cottage walls arising from removal of the roof</p>	<p>-</p> <p><i>Provisionally allow for localised patch re-pointing using a lime putty mortar to any missing/failed sections of pointing or partially damaged brick faces</i></p> <p><i>Structural Engineer to review integrity of the 'ruined' cottage and adjoining structures</i></p>	
SN4.3.4	Stables West elevation	<p>The stables had been built alongside an older rubblestone wall forming the site boundary. This boundary wall was currently cordoned-off at the roadside due to areas of structural compromise by stone erosion (effects of water splashing-up from the road and deleterious road salting during winter months). It was possible that an independent internal skin of brickwork has been provided for the stables, on the basis that the internal condition of the wall seemed fairly good</p>	<p><i>Project team to confirm split of ownership/liability between client and council on the roadside boundary wall</i></p> <p><i>Structural Engineer to review boundary wall</i></p> <p><i>It was understood that works to repair parts of the stone boundary wall are soon to be carried out (separately to the scheme to refurbish the Grandpont House site)</i></p>	

Attachment B



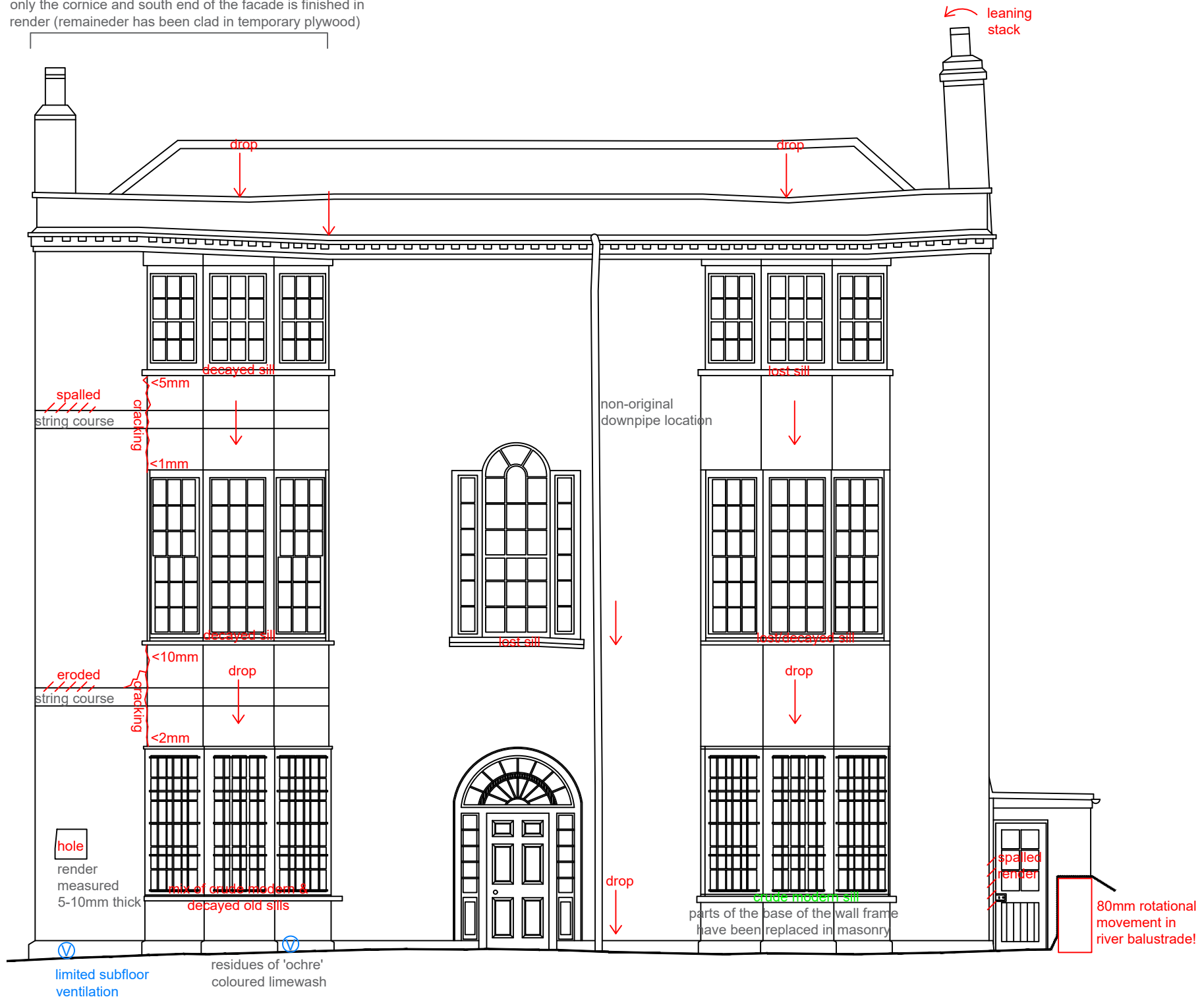
Grandpont House, Main House - North elevation
 Facade investigation
 December 2023 - January 2024

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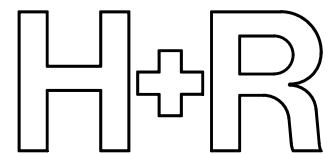
Key:

- Constructional note
- Defect, as annotated
- Service run, as annotated
- Moisture related issue, as annotated
- Previous remedial works, as annotated

only the cornice and south end of the facade is finished in render (remainder has been clad in temporary plywood)



... river Isis runs below ...
condition of stone bridge unknown!

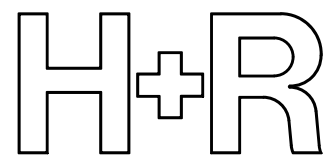
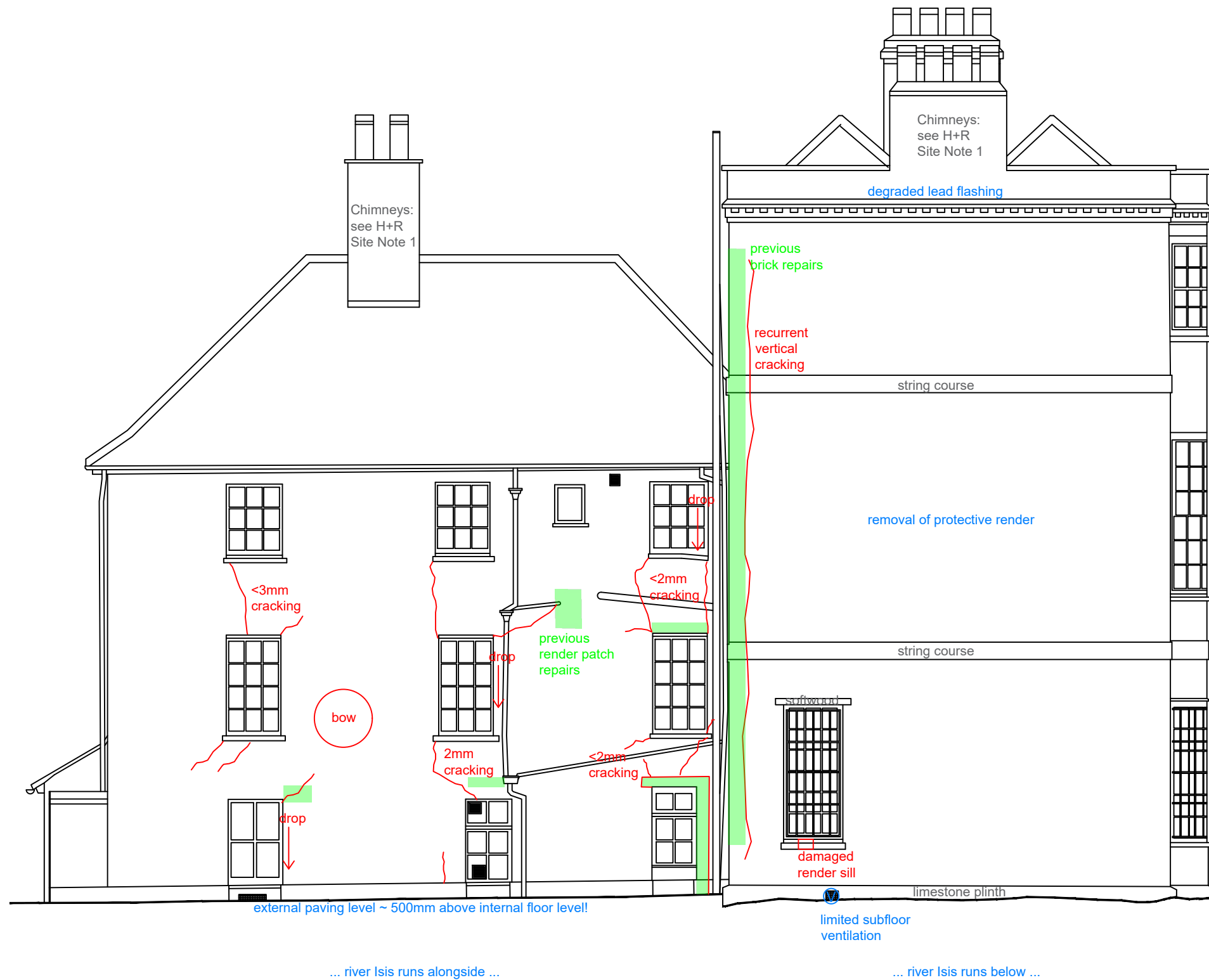


Grandpont House, Main House - East elevation
Facade investigation
December 2023 - January 2024

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Key:

- Constructional note
- Defect, as annotated
- Service run, as annotated
- Moisture related issue, as annotated
- Previous remedial works, as annotated

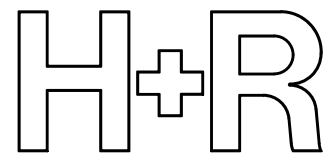


Grandpont House, Main House - South elevation
 Facade investigation
 December 2023 - January 2024

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Key:

- Constructional note
- Defect, as annotated
- Service run, as annotated
- Moisture related issue, as annotated
- Previous remedial works, as annotated



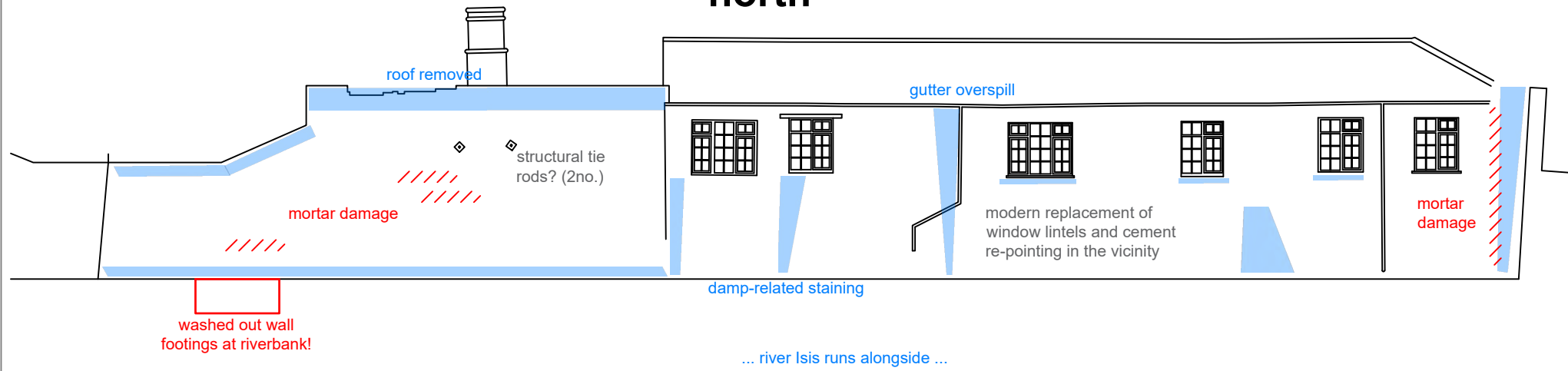
Grandpont House, Main House - West elevation
 Facade investigation
 December 2023 - January 2024

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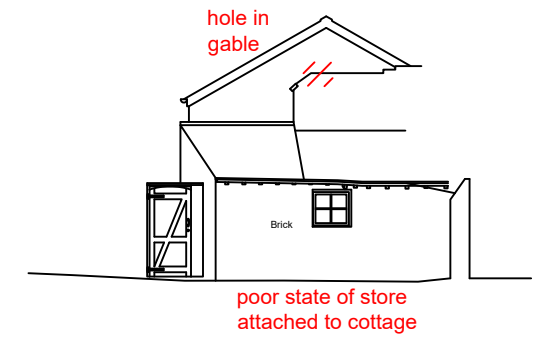
Key:

- Constructional note
- Defect, as annotated
- Service run, as annotated
- Moisture related issue, as annotated
- Previous remedial works, as annotated

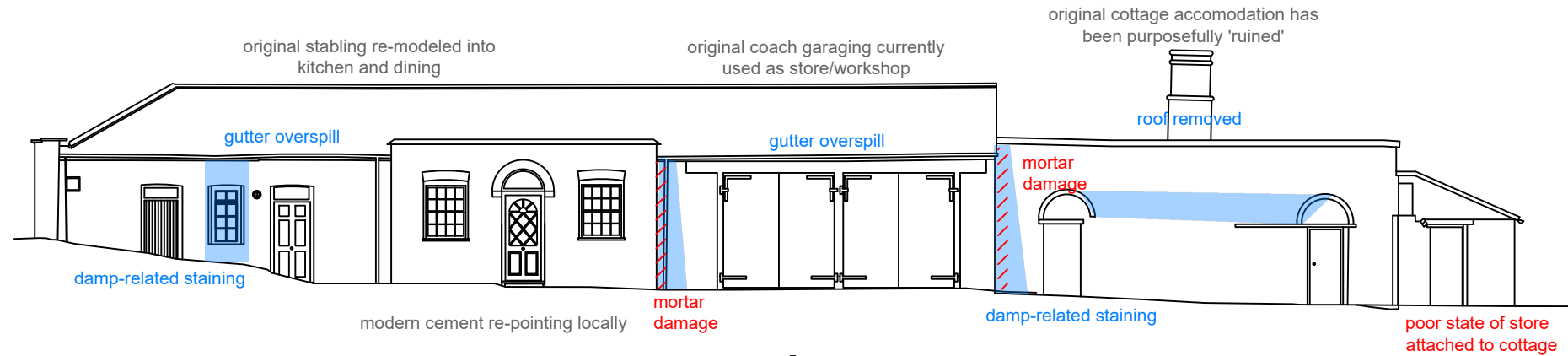
north



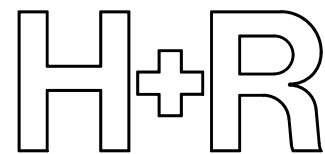
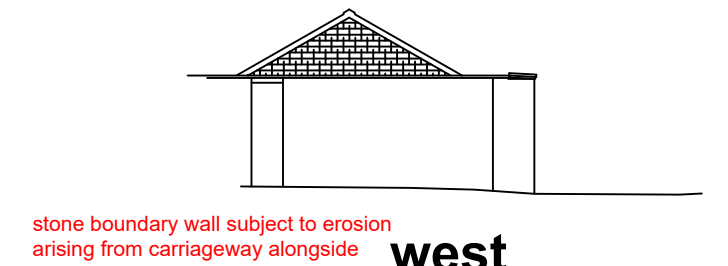
east



south



west



Grandpont House, Stables - Elevations
 Facade investigation
 December 2023 - January 2024

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Key:

- Constructional note
- Defect, as annotated
- Service run, as annotated
- Moisture related issue, as annotated
- Previous remedial works, as annotated

Attachment C



Fig 1/1:

Main house and west wing

North elevation

Showing high level view



Fig 1/2:

Main house

North elevation

Showing low level view of single storey extensions



Grandpont House
Photographs (MAIN HOUSE)
November 2023-January 2024
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Fig 1/3:

Main house

North elevation

Showing degraded lead flashing on cornice ledge



Fig 1/4:

West wing

North elevation

Showing cracking and distortion around second floor window

Also note damaged sill



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Photographs (MAIN HOUSE)
November 2023-January 2024
Not to scale



Fig 1/5:

Main house and west wing

North elevation

Showing recurrent cracking at joint between main house and west wing (despite previous re-pointing)



Fig 1/6:

Main house

North elevation

Showing limited residues of 'ochre' limewash in the shelter of the lower string course



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November 2023-January 2024
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Fig 1/7:

Main house

East elevation

Showing high level view



Fig 1/8:

Main house

East elevation

Showing low level view of the stone bridge which serves as the foundation



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Photographs (MAIN HOUSE)
November 2023-January 2024
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Fig 1/9:

Main house

East elevation

Showing storage shed attached to north side

Note damaged render and distorted stone balustrade pier



Fig 1/10:

Main house

East elevation

Showing example of metal bracket corner connection between brick and timber frame walls

Also note decorative lined-out effect of render to imitate ashlar stone



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Photographs (MAIN HOUSE)
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Fig 1/11:

Main house

East elevation

Showing interface between render finish (south) and temporary ply cladding (north)

Also note many of the window sub-sills were missing, decayed or crudely replaced (albeit disguised below lead flashings)



Fig 1/12:

Main house

East elevation

Showing stone plinth with evidence of multiple previous works to replace lower part of framework wall with masonry infill



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Fig 1/13:

Main house

South elevation

Showing high level view



Fig 1/14:

West wing

South elevation

Showing high level view



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Fig 1/15:

Main house

South elevation

Showing low level view; render has been stripped some time ago with no replacement provided

Note previous repairs to west corner where there has been recurrent cracking



Fig 16:

West wing

South elevation

Showing low level view

Note riverbank and bridge supporting base of property (condition TBC)

Note stone 'balcony' serving as entrance to property (set significantly above internal floor level of the west wing which tended to bridge moisture to the interiors)

The waterway would make scaffold installation more complex



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Fig 1/17:

Main house

South elevation

Showing poor condition of cornice flashing



Fig 1/18:

Main house

South elevation

Showing earth heaped-up against the plinth

Also note cracked render sill and rough state of brickwork (following render removal)



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November 2023-January 2024
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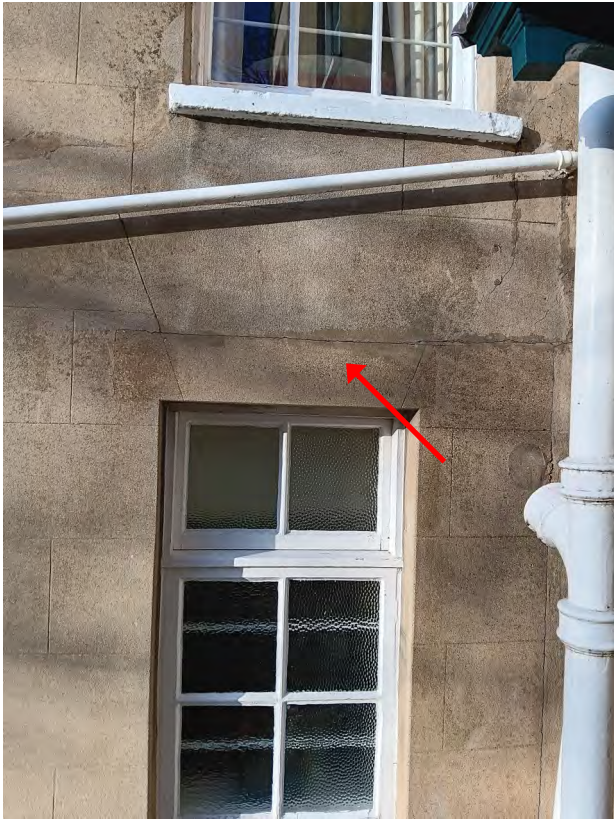


Fig 1/19:

West wing

South elevation

Showing history of cracking and render patchwork

Also note crude service runs (pipework)



Fig 1/20:

West wing

South elevation

Showing history of cracking and render patchwork

Also note crude service runs (pipework)

The window apertures shown had both distorted by dropping at the east side



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Fig 1/21:

West wing

South elevation

Showing history of cracking and render patchwork

Also note crude service runs (pipework)

The wall had also bowed outwards at the lhs of the image



Fig 1/22:

West wing

South elevation

Showing stone paving bridging surface water to the interior



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Fig 1/23:

Main house

West elevation

Showing high level view

Note obvious dampness at upper storey due to weathering exposure and use of cement render (which tends to entrap moisture)



Fig 1/24:

West wing

West elevation

Showing high level view

Note single storey elevation (which has cracked and dropped away from the elevation due to foundation issues)



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Fig 21/5:

Main house

West elevation

Showing historic cornice with ochre limewash finish and lead flashing



Fig 1/26:

Main house

West elevation

Showing second floor render replaced in cement



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Fig 1/27:

Main house

West elevation

Showing pre-existing exposure of render to reveal frame

The sole plate was clearly decayed at likely to crush (allowing wall to drop)



Fig 1/28:

West wing

West elevation

Showing low level view



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Fig 1/29:

West wing

West elevation

Showing spalled render adjacent to defective roof drain



Fig 1/30:

West wing

West elevation

Showing lean-to extension with render failure at landscape junction



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November 2023-January 2024
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Fig 2/1:

Stables

North elevation

Showing dampness and plant growth below gutter at junction with west boundary wall

Also note salt staining to brickwork



Fig 2/2:

Stables

North elevation, east end ('The Cottage')

Showing washed-out footings

Also showing fairly crude modern works around window aperture (replacement lintel and repaired reveals)



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29 January 2024
Not to scale



Fig 2/3:

Stables

North elevation, 'The Cottage'

Showing missing fabric from wallhead
(roof purposefully removed)



Fig 2/4:

Stables

North elevation

Showing timber lintel exposed to
weathering (against good practice)



Grandpont House
Photographs (STABLES)
29 January 2024
Not to scale



Fig 2/5:

Stables

North elevation

Showing crude modern works around window aperture (replacement lintel and repaired reveals)

Fig 2/6:

Stables

North elevation

Showing poorly bonded brickwork which may suggest bad workmanship and/or crude previous alterations



Grandpont House
Photographs (STABLES)
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Fig 2/7:

Stables

East gable

Showing hole in wall at junction with 'ruined' roof over the cottage



Fig 2/8:

Stables

South elevation

Showing stained brickwork below roof leaks



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Fig 2/9:

Stables

South elevation

Showing crude work around modern service installation



Fig 2/10:

Stables

South elevation

Showing recurrent cracking despite previous pointing repair



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Fig 2/11:

Stables

South elevation

Showing previous patch re-pointing
carried out



Fig 2/12:

Stables

South elevation

Showing areas of pointing loss around
overspilling roof drainage



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Fig 2/13:

Stables

South elevation

Showing closed window/door apertures in 'The Cottage' where the roof has been purposefully removed in the past



Fig 2/14:

Stables

South elevation, east end

Showing example of crude/scarred brickwork where various outbuildings have been partially demolished/alterd



Grandpont House
Photographs (STABLES)
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Attachment D

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REPORT 76324/C

REF: 160-42

ANALYSIS OF A RENDER SAMPLE

Hutton and Rostron Environmental Investigation
Netley House
Gomshall
Guildford
GU5 9QA

This report comprises
2 pages of text
Table 1 of 1 sheet

For the attention of Mr Tim Jordan

5 January 2024

Partners: N C D Sandberg S C Clarke D J Ellis M A Eden J D French C Morgan G S Mayers G C S Moor
J Fagan J H Dell Dr E D W Maclean M I Ingle M Faliva A L Pitman J Glen Dr R M Harris
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REPORT 76324/C

REF: 160-42

ANALYSIS OF A RENDER SAMPLE

References: Written instruction from Mr Tim Jordan of Hutton and Rostron.

1. INTRODUCTION

One render mortar sample, taken by yourselves, was received in our laboratories on 22 December 2023.

We were asked to carry out analysis to determine the mix composition and proportions of all layers from the render sample.

2. SAMPLE DETAILS

Sandberg reference	Client reference	Sample details	Weight of sample received, g
C22382	160-42	Several pieces and powder of light brown render in two layers: Inner layer: 12-15mm thick, moderately soft, well compacted Outer layer: up to 7mm, moderately soft, well compacted	362

3. ANALYSIS METHOD AND RESULTS

The render sample was separated into two layers and each layer was prepared and analysed using documented in-house methods, Section 34.1, supported by qualitative chemical analysis where appropriate.

As examination of the analysis data in conjunction with the appearance, tactile properties and available background information for both of the sample layers suggested that the mixes consisted of non-hydraulic lime and sand, the mix proportions were calculated on this assumption, following documented in-house methods.

The lime contents were calculated from the acid soluble calcium contents making the assumptions shown in the analysis table. The approximate volume proportions were calculated using typical bulk densities for the constituents as indicated in the analysis table.

Details of the analyses are given in Table 1 of this report, including details of the assumptions made in the calculations. The mix proportions are summarized below:

Sandberg reference	Client reference	Mix Type	Mix proportions by weight	Mix proportions by volume
C22382a	inner layer	Non-hydraulic lime : sand	1 : 0.7	1 : 0.3
C22382b	outer layer	Non-hydraulic lime : sand	1 : 0.9	1 : 0.4

4. **REMARKS**

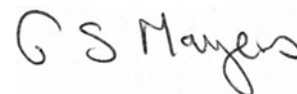
It is not always possible by chemical analysis alone to distinguish with certainty between Portland cement and lime binders or between hydraulic and non-hydraulic limes.

Microscopical examination can usually ascertain the presence or otherwise of Portland cement in the mortar and of calcareous material in the aggregate. In the absence of such confirmatory work, interpretation of the analytical results is made on the basis of consideration of the analysis in conjunction with the appearance and any available background information for the mortar.

The render sample layers were both found to comprise non-hydraulic lime and sand mixes.

Hutton and Rostron Environmental Investigation
 Netley House
 Gomshall
 Guildford
 GU5 9QA

for Sandberg LLP



G S Mayers
 Department Manager
 5 January 2024

For the attention of Mr Tim Jordan



RENDER - CHEMICAL ANALYSIS
DETERMINATION OF MIX PROPORTIONS
 Documented In-house Methods 34.1(*) and BS 4551:2005+A2:2013

Sandberg reference	C22382a	C22382b		
Client reference	-	-		
Details	Inner layer	Outer layer		
CHEMICAL ANALYSIS				
	% by mass			
Insoluble residue	24.57	30.80		
Soluble silica, SiO ₂ *	2.28	2.67		
Acid soluble alumina, Al ₂ O ₃ *	0.74	0.89		
Acid soluble iron, Fe ₂ O ₃ *	0.29	0.57		
Acid soluble calcium, CaO	35.55	32.30		
Acid soluble magnesium, MgO	1.20	0.90		
Acid soluble sulphate, SO ₃	2.05	2.55		
Loss on ignition	30.99	27.83		
Total	97.67	98.51		

Calculated Mix Proportions				
Composition to nearest 0.5%	% by mass of dry mass			
Non-hydraulic lime : sand				
Lime	58.5	51.5		
Sand	41.5	48.5		
Calculated volume proportions	1 : 0.3	1 : 0.4		
Remarks	Possibly feebly hydraulic	Possibly feebly hydraulic		

Assumptions used in calculations	SiO ₂ %	CaO %	Bulk density kg/m ³	Material type
Sand	-	0.0	1400	siliceous
Non-hydraulic lime	-	75.6	575	non hydraulic