

Hutton + Rostron Environmental Investigations Limited

Southleigh Park, Stables: Investigation of masonry damp and damp-proof courses

Site note C3 for 18 January 2021, job No. 152.09.

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Distribution:

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1 INTRODUCTION

1.1 AUTHORITY AND REFERENCES

Hutton + Rostron Environmental Investigations Limited carried out a site visit to the Stables at Southleigh Park on 18 January 2021 in accordance with instructions from Steve Coull of FSL Group by email, on 10 November 2020 at 13:09. Drawings provided by the client were used for the identification of structures. For the purpose of orientation in this report, the building was taken as facing west

1.2 AIM

The aim of this survey was to investigate defects likely to have allowed water penetration to the structure and to assess the extent and distribution of surplus residual moisture in the load bearing masonry structures of the ground floor

1.3 LIMITATIONS

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

2 STAFF ON SITE AND CONTACTS

2.1 H+R STAFF ON SITE

Michael Almond
Clive Stonehill

2.2 PERSONNEL CONTACTED

Site security

3 OBSERVATIONS AND RECOMMENDATIONS

3.1 NORTH ELEVATION

3.1.1 Roof coverings and drainage

- 1 Roof coverings appeared to be from natural slates on preliminary inspection from ground level. Slates and ridge fittings were generally intact and appeared in good condition. The eaves gutter was laid to fall from west to east, draining onto the flat roof of the extension from on the east side of the elevation. The eaves were relatively deep, extending approximately 600mm from the façade. No defects allowing surface water to drain over structures below the eaves were identified but a deflection in the gutter, approximately 3m from the west end, may have allowed water to overflow onto the ground at the base of the structure in the past

H+R assume that roof coverings are to be overhauled and roof drainage systems replaced on proposed refurbishment. The roof drainage system should be adequately maintained pending refurbishment to ensure that water from roof structures is drained clear of masonry at all times, especially around the base of the building

- 2 Masonry: The façade was from coursed flints set into weather struck pointing. Pointing had failed around the flat brick sill to the first floor window but the extent to which this increased the risk of water penetration into the structure was mitigated by the sheltered northerly orientation. Elsewhere a number of shrinkage cracks around flints indicated that the façade had been patch repaired in a cementitious mortar in isolated areas on previous refurbishment. This may allow surface water to drain into the structure but restrict drying, increasing the risk of residual moisture accumulating in the masonry of the façade and of damp penetration to the interior

Allowance should be made for replacing the sill to the first floor window in a fired clay or masonry sill that it is assigned to throw surface water clear of the structures beneath. Façade pointing should be inspected in detail when safe and convenient access is available and allowance made for cutting out and replacing any detached or loose render in a lime mortar mix, gauged to match the original materials. Consideration should be given to cutting out all cementitious pointing from the façade and replacing in a suitable lime mortar mix. H+R can advise further on conservation repairs if required

- 3 Render: A render panel approximately 30mm thick had been applied to the base of the wall extending to approximately 700mm above external ground level. Patch repairs had been made in a cementitious mortar below the central ground floor window and a blind window opening towards the west end of the elevation. Vertical cracks had formed between the repaired material and retained render on the west side, which may have allowed surface water to drain into the structures behind

Allowance should be made for specialist repair to cracks in the render panel at the base of the wall if this is to be retained on proposed refurbishment

- 4 External ground levels and drainage: A retaining wall had been constructed approximately 700mm from the façade, creating a pathway which had been covered with chippings, finished approximately 150mm above internal floor level. Soil beneath was compacted and the detail did not appear to be operating as a 'French' drain, with a perforated land drainage pipe at the base

On proposed refurbishment, consideration should be given to reducing external ground levels to a minimum of 200mm below finished floor level on the interior and for provision of effective drainage systems, to direct ground and surface water clear of the structure at all times

3.1.2 East elevation of north wing

- 1 Roof coverings and drainage: Slate roof coverings were moderately weathered and approximately 4 No. slates had been replaced and secured with tingles on a previous refurbishment. Ridge fittings were in fair condition with some weathering to joints. Lead flashings around the central dormer were extensively patinated and showed some age but did not appear to have exceeded their service life. The eaves gutter discharged to a downpipe at the south-east corner of the two storey structure onto the flat roof of the ground floor corridor extension, which covered the full width of the façade. No defects allowing water from roof surfaces to drain over structures beneath were identified

See 3.1.1(1)

- 2 Façade: Approximately 1.5m of elevation masonry was exposed below the eaves, above the flat roof of the extension installed across the full width of the elevation on a previous refurbishment. Flint masonry, laid in courses and brick embellishments to window reveals at first floor level were in good condition, consistent with the sheltered easterly orientation

No urgent remedial works are required, subject to detailed inspection on provision of safe and convenient access

- 3 External ground levels and drainage: The ground floor elevation and part of the first floor were enclosed in a single storey flat roofed extension, linking office accommodation to the north with an extension to the Stable block to the south-east. The extension appeared to be generally effective in protecting the loadbearing masonry of the building from external water penetration. Fall of ground was generally from north to south. The extension external wall appeared to be detailed with a drainage channel at its base, approximately 300mm wide and back-filled with gravel. H+R understand that the enclosed corridor is to be demolished on proposed refurbishment

The proposed specification for refurbishment should include provision for a suitable land drainage system, to intercept ground and surface water draining towards the structure and direct it away from the footings to an established or new drainage system of adequate capacity. H+R can provide further advice on drainage detailing when required

3.1.3 South elevation

- 1 Roof coverings and drainage: Roof coverings above the façade were in a mixture of asphalt and mineral felt, laid over flat roof structures. Extensive ponding was noted to the east of the upstand wall and chimneystack, dividing the south-east extension from the single storey corner building to the south-west. This may have allowed surface water to drain into internal loadbearing masonry, increasing the risk of damage to decorative finishes and of decay in structural timber elements in contact with damp affected masonry at roof level and below

H+R assume that roof structures are to be overhauled on proposed refurbishment and roof coverings and drainage provision replaced. Allowance should be made for routine inspection and repair of the roof coverings and drainage pending refurbishment, to prevent further water penetration to the roof structures or interiors

- 2 Façade masonry: Coursed flint elevation masonry and brick embellishments to window reveals were generally in good condition, with patch repairs to pointing restricted to areas of physical damage where external architectural ironmongery or rainwater goods had been removed on a previous refurbishment. Some biological growth and staining were noted to the east of the return corner on the west side, indicating intermittent failure of the roof drainage system allowing surface water to drain over the structure. The hopper and downpipe collecting water from the flat

roof surfaces at high level, towards the centre of the elevation, was of complex design but no defects indicating intermittent blockage and overflow were identified. The brick sill to the third window opening counting from the east end appeared to have been clad in cement render on a previous refurbishment, presumably to reduce the water penetration, or to create a sill where the size of the window opening had been reduced. Elsewhere, window openings were detailed with masonry external sills with drip rebates on the undersides

No urgent remedial works are required. Allowance should be made for effective maintenance of the roof drainage system prior to and during refurbishment, to ensure that surface water is drained clear of the structure at all times. Consideration should be given to replacing the render clad brick sill below the third window opening counting from the east end in a new masonry profile to match others

- 3 Render: A render skirting, projecting approximately 60mm from the façade, was installed across the full width of the elevation, following the fall of ground at the lower edge and with the upper edge between 400 and 600mm above external ground level. Render appeared to have been extensively patch repaired or replaced on previous refurbishments and significant vertical cracks had formed in 2 No. locations; approximately 1.5m to the west of the 45° return corner and beneath the rainwater downpipe at the centre of the elevation. Render surfaces were subject to extensive biological growth on the upper surfaces, where these did not shed water effectively away from the façade and at low level, where render was in direct contact with tarmacadam hardstanding, allowing water draining from the eaves to splash back onto the façade at low level. A mortar fillet had been applied to the upper surface of the skirting across the majority of the elevation, where a power cable had been covered over. This fillet showed widespread failure and detachment, allowing surface water to drain into the head of the render skirting and to pass through open joints at the interface between the skirting and the elevation masonry

Allowance should be made for complete removal of the existing render skirting and for replacement in new materials as directed by the Architect. Render replacement should be undertaken in conjunction with modifications to external ground levels and landscaping, to ensure effective drainage at the junction between the external ground and the façade and to prevent water 'wicking' up through the skirting render or the interface between the render and the brickwork behind

- 4 External ground levels and drainage: Tarmacadam hardstanding was in contact with the elevation across its full width, laid to fall to drain generally from north-west to south-east. Significant falls had been created which would generally have prevented surface water from being driven against the façade by prevailing winds from the south. It was likely that external ground levels had risen over time on successive refurbishments, which would have bridged any provision for horizontal damp-proofing and increased the risk of water draining into the base of the render skirting. External ground levels were approximately level with finished floor level on the interior at the south-east corner of the structure, where a level threshold detail had been created

On future refurbishment consideration should be given to a general reduction in external ground levels to a minimum 150mm below any horizontal damp proof courses included in the structures and perhaps 200mm below internal floor level where no DPC had been installed. No chemical injected remedial DPCs or internal applications of waterproofing cementitious render are required or recommended.

3.1.4 West elevation

- 1 Roof coverings and drainage: Slate roof coverings between the north and south gables were extensively weathered and a number of slates had slipped from their original positions or had been restrained with sheet lead tingles on previous

refurbishment. Damaged slates may have been allowing water penetration to roof structures, where there was significant exposure to rain driven by prevailing winds from the west. The gutter below the central canopy drained to a downpipe on the north side of the south gable and from there to hardstanding at the base of the wall

H+R assume that the roof coverings are to be extensively overhauled or replaced on proposed refurbishment and that the roof drainage system will be reinstated in new materials. The design of a roof drainage system should be based on up-to-date meteorological data and roof drainage calculations should be undertaken to ensure that the system has adequate capacity to discharge surface water clear of the structure at all times after refurbishment. H+R can provide further advice if required

- 2 Clock tower: The lead sheathed timber structure including a weathervane, bell and clock, was in fair condition and flashings at the interface between the structure and the roof pitch did not appear to be approaching the end of their service lives. H+R assume that the structure is to be retained on proposed refurbishment. No defects allowing water penetration into masonry structures were identified on preliminary inspection from ground level

No urgent refurbishment works are required, subject to the general specification for refurbishment

- 3 Eaves soffits and external joinery: Bargeboards, projecting purlins and timber soffit boards appeared in fair condition and to have been adequately maintained on previous occupancy. The bargeboards, with exposure to rain driven by wind from the west, showed signs of preliminary paint failure, which may allow water to drain into the structure pending further refurbishment. The open structure of the central canopy also appeared to be fair condition, with a mixture of iron posts and timber trusses finished in film forming external paint systems. The material forming the under cladding of the canopy roof could not be confirmed on preliminary inspection but was assumed to be weatherboard with a paint finish. Failure of film forming paints applied to external joinery may allow water penetration but restrict drying, increasing the risk of decay to vulnerable components, notably at joints in external structures and window frames. Paint finishes were failing progressively at the bases of first and ground floor door panels towards the north but window and door frames generally appeared to have been adequately maintained on previous refurbishments, to exclude wind driven rainwater

No urgent remedial works are required, subject to detailed inspection when safe and convenient access is available. Paint finishes to external joinery should be maintained in materials compatible with the existing pending general refurbishment

- 4 External ground levels, drainage and dpc: Tarmacadam hardstanding was in contact with the façade across its full width, laid to fall generally from north-east to south-west, away from the masonry and foundations of the structure. Ground levels rose generally towards the north to a level above internal floor finishes, directing surface water into masonry at the base of the façade. The north door opening appeared to have been reduced in size on a previous refurbishment, with isolated sections of horizontal damp-proof membrane installed in bed joints 2 No. brick course above external ground level. A depression in the tarmacadam surface at the base of the downpipe on the north side of the south gable was allowing water to pond in contact with the structure and façade masonry at the base of the wall was subject to widespread biological growth. The render plinth at the base of the façade was extensively weathered and had partially fallen away to the south of the downpipe, where there was also significant exposure to wind driven rain in the location to which surface water would have tended to drain

Allowance should be made for a general reduction in external ground levels to a minimum of 200mm below finished floor level on the interior and for provision of adequate ground and surface drainage, to discharge water clear of the base of the structure at all times

- 5 Elevation masonry: The coursed flint façade and extensive brick embellishments around piers and window and door openings were in generally good condition, with no defects allowing direct water penetration identified on initial inspection. Vertical cracks in the masonry drip course above the ground floor window and door heads had been patch repaired on previous refurbishments. Masonry plinth blocks in the central bay, typically extending to 250mm above external ground level and projecting 60mm from the façade, showed widespread biological growth and surface salt efflorescence, consistent with water contaminated with de-icing salts draining into the base of the wall on previous occupancy and since construction. Urea salts from use of the building as a stable may also have accumulated in the masonry structures and been mobilised by standing water at the base of the façade, where the provision for roof drainage was vulnerable to blockage and overflow, and there was significant exposure to rain driven by prevailing winds from the west

Subject to the general specification for refurbishment, allowance should be made for removing residual render skirting from the base of the wall, followed by making good or replacement of damaged masonry blocks and reinstatement of the render skirting in new materials, generally to match the existing and as directed by the Architect

3.2 INTERIORS

Defects associated with water penetration to masonry from the exterior were limited to some isolated paint failures on the west side, at the base of the access stair to the first floor. A rainwater downpipe on the exterior had been identified as being vulnerable to blockage and overflow, which was likely to have allowed water to drain intermittently into the base of the masonry external wall. Water was also liable to pond on external hardstanding in contact with the façade in this location. See 3.1.4(4) above and figs.23 and 27 at Attachment A

3.3 RESIDUAL MOISTURE IN MASONRY

3.3.1 Sampling

A total of 27 No. deep masonry samples were taken from representative internal and external load bearing masonry structures. Samples were double bagged on site and returned to H+R's laboratory for gravimetric analysis of available and hygroscopic moisture content. Results are shown on plans at Attachment B and in a table at Attachment C

3.3.2 Results

- 1 West side: 4 no samples from the base of the west external wall were classified as either wet or saturated, with available moisture contents above 5 per cent. Falls in hard landscaped surfaces were draining water into the masonry at internal floor level and defects in the provision for roof drainage were allowing water to pond intermittently in contact with the structure in this location
- 2 North side: An isolated sample from the base of the north external wall was classified as saturated, with an available moisture content above 8 per cent. The eaves guttering in this location on the exterior was allowing intermittent escape of water, which splashed back onto the wall from the compacted ground beneath
- 3 East side: 3 No. samples from the north side of the east wing and an isolated sample towards the north end of the east wall were classified as moist, with available moisture contents between 2 and 5 per cent. All these samples were taken from the wall separating the two storey structure from the corridor extension

at ground level and were consistent with a tendency for ground water to drain beneath the building from the north and with reduced heating and ventilation of the interior since vacancy

- 4 Remaining samples: All other samples were classified as dry, indicating that the structure was not generally vulnerable to rising damp from below ground

Chemical injected or other remedial damp-proof courses are not required. The application of waterproofing render or cementitious slurries to the interior is not recommended and may cause damage to the structure and actually promote decay on future occupancy. See below

- 5 Hygroscopic moisture: 11 No. samples were found to include raised levels of hygroscopic salts, possibly arising from previous use of the buildings as stabling or from application of de-icing salts to paving around the structure on previous occupancy. Concentrations of salts may represent a risk of damage to vulnerable materials and finishes, such as plasterboard, gypsum plaster and non-structural timber products if these are placed in direct contact with masonry on proposed refurbishment

Works described elsewhere in this report are required to improve ground drainage at the bases of all external walls, especially on the east and west sides. Some repairs to façade masonry may be required, subject to detailed inspection. Failed internal paint finishes could be brushed off and replaced in a highly breathable and salt resistant paint type, such as limewash or 'clay' paint. These finishes should be regarded as sacrificial and will require periodic maintenance. If robust protection of internal finishes is required consideration should be given to installing independent internal wall structures, to provide a ventilated dry lining system to a minimum 1.0m above internal floor or external ground level or to full height, as directed by the Architect. This should be detailed to fully isolate timber, hygroscopic materials and vulnerable decorative finishes from masonry vulnerable to moisture and salt transit from the exterior or from the ground. H+R can provide further advice on remedial detailing when required

4 H+R WORK ON SITE

- 4.1** H+R inspected the structure for defects liable to allow water penetration before and after refurbishment
- 4.2** H+R took samples from representative masonry masses, so as to determine their gravimetric and hygroscopic moisture content

5 PROPOSED ACTION BY H+R

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

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



Fig 1:

North elevation, view from north-west;
showing general arrangement of roof
coverings and deep eaves



Fig 2:

North elevation, first floor window;
showing damaged pointing around a
flat brick sill that may be allowing water
to drain into the structures beneath
window opening



Southleigh Park House - Stables

Masonry damp investigation

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Not to scale

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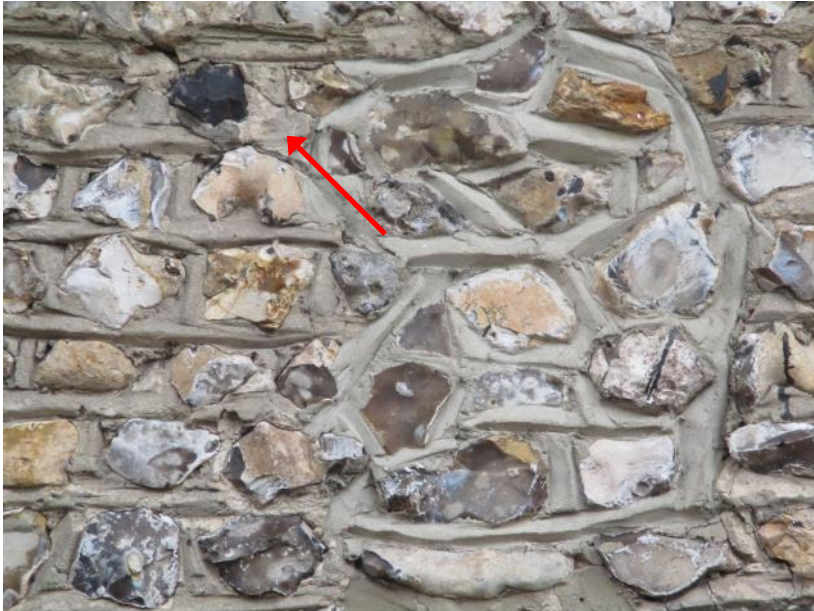


Fig 3:

North elevation, central section; showing typical cementitious patch repair to lime mortar pointing. Note shrinkage cracks around flints which may allow surface water to drain into the structure



Fig 4:

North elevation; showing patch repairs to the render skirting at the base of the wall, possibly where door openings had been closed off or reduced on previous refurbishment



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Fig 5:

North elevation, west end; showing external ground levels approximately 150mm above finished floor level on the interior across the full width of the façade



Fig 6:

North wing, east elevation; showing general condition of roof coverings and sheet lead flashings around the central dormer



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Fig 7:

North wing, east elevation; showing general arrangement of façade, with approximately 1.5m of elevation masonry exposed above a flat roofed extension extending across the full width of the building, which H+R understand is scheduled for demolition on proposed refurbishment



Fig 8:

North wing, east elevation; showing general fall of ground from north to south, with extensive moss growth on turf indicating saturation of soil in contact with the single storey extension at time of survey



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Fig 9:

North wing, east elevation of single storey extension; showing drainage trench detail at base of wall and physical horizontal damp-proof course 2 no. brick courses above external ground level



Fig 10:

North wing, east elevation; showing generally good condition of sheet lead cover flashings to the asphalt upstand at the abutment between the single storey extension and the east elevation



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Fig 11:

North elevation; showing general condition of slate roof coverings and eaves gutter at time of survey. Partial obstruction of the gutter was allowing water to drain clear of the eaves but the depth of the eave projection protected the façade from surface water



Fig 12:

Extension to south-east; showing flat roof coverings subject to extensive ponding, increasing the risk of water penetration to the structures below



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Fig 13:

South elevation, west end; showing generally serviceable condition of asphalt roof coverings, with isolated blistering and progressive failure of protective paint coatings. Note mineral felt patch repairs at the roof perimeter. Defects at the edge of the roof may have allowed surface water to drain into the structures below in the past



Fig 14:

Roof above south elevation, central section; showing standing water adjacent to an upstand dividing wall which was subject to extensive biological growth, indicating intermittent saturation and an increased risk of water penetration into the structures beneath



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Fig 15:

South elevation, west end; showing biological growth affecting brickwork adjacent to a window opening, consistent with intermittent failure of the provision for roof drainage above. Note also cementitious repair to masonry and pointing, where an item of architectural ironmongery had been removed on previous refurbishment. Cracks and open joints in this location were likely to be allowing water penetration where the roof drainage system above was vulnerable to overflow



Fig 16:

South elevation, east end; showing biological growth on the upper surface of the render skirting at the base of the wall and moss growth on hardstanding close to the façade, indicating persistently damp conditions consistent with intermittent failure of the provision for roof drainage



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Fig 17:

South elevation, central section;
showing typical failure of cementitious
fillet applied above the render skirting,
to cover a power cable



Fig 18:

South elevation, central section;
showing vertical open joints in the
render skirting, likely to allow water
penetration into the structure should
the provision for roof drainage fail
locally



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Fig 19:

South elevation, angled return on west side; showing surface weathering and cracks in the render skirting at the base of the wall



Fig 20:

South elevation, west end; showing external ground levels rising to be roughly equivalent to floor level on the interior, increasing the risk of surface water draining into masonry structures locally



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Fig 21:

West elevation; showing generally good condition of clock, bell and weathervane turret at the centre of the façade



Fig 22:

West elevation; showing general condition of slate roof coverings with a number of slipped slates increasing the risk of water penetration to the structure



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Fig 23:

West elevation, north side of south gable; showing generally damp conditions and weather damage to masonry and render skirtings, where a rainwater downpipe was vulnerable to blockage and overflow. Note evidence of water ponding in contact with the structure on hardstanding at the base of the façade



Fig 24:

West elevation, north end; showing ground levels rising above finished floor level on the interior, increasing the risk of water penetration to the structure



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Fig 25:

Interior, west room on south side; showing section of external wall masonry found to be dry, with a residual moisture content below 2 per cent on analysis of samples. This was despite a rainwater downpipe that was vulnerable to blockage and overflow being installed locally on the exterior



Fig 26:

Ground floor, west room on south side, south-west corner; showing failure of ceiling finishes and evidence of extensive water penetration to the timber roof structure, where water was identified as ponding on roof surfaces above. See fig.12



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Fig 27:

Ground floor, base of west staircase; showing blistering and detachment of internal paint finishes, where a rainwater downpipe had been identified as vulnerable to blockage and overflow on the exterior. A masonry sample from this location was classified as saturated, with an available moisture content above 8 per cent



Southleigh Park House - Stables

Masonry damp investigation

18 January 2021

Not to scale

Hutton + Rostron Environmental Investigations Ltd, Netley House, Gomshall, Surrey, GU5 9QA

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Attachment B

High salt content
Low salt content

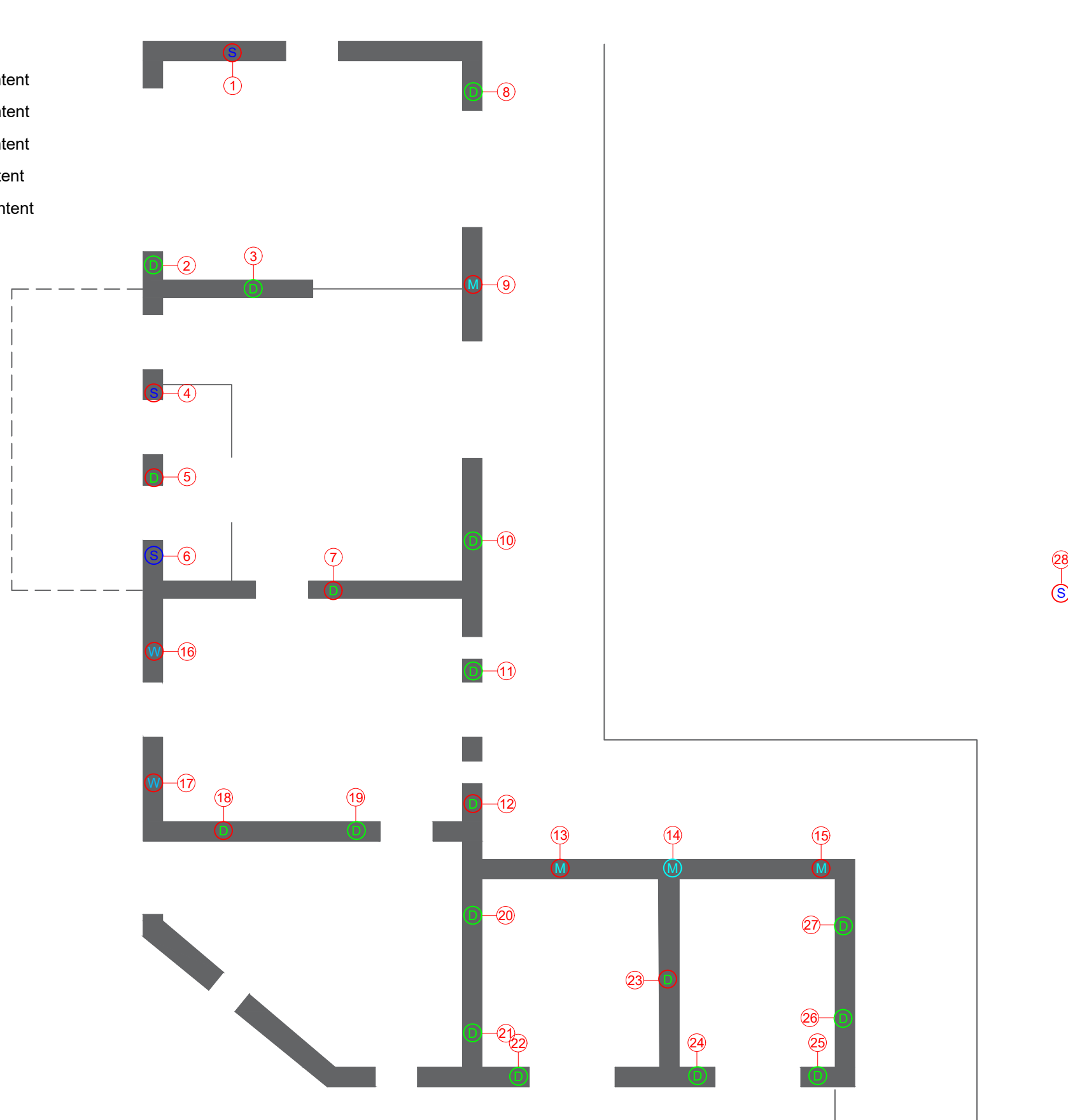
Dry (D) (D) 0-2% w/w available moisture content

Moist (M) (M) 2-5% w/w available moisture content

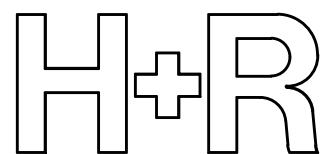
Wet (W) (W) 5-8% w/w available moisture content

Saturated (S) (S) 8+% w/w available moisture content

Super Saturated (SS) (SS) 20+% w/w available moisture content

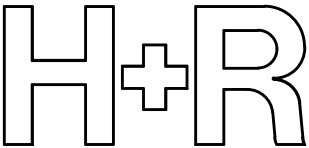
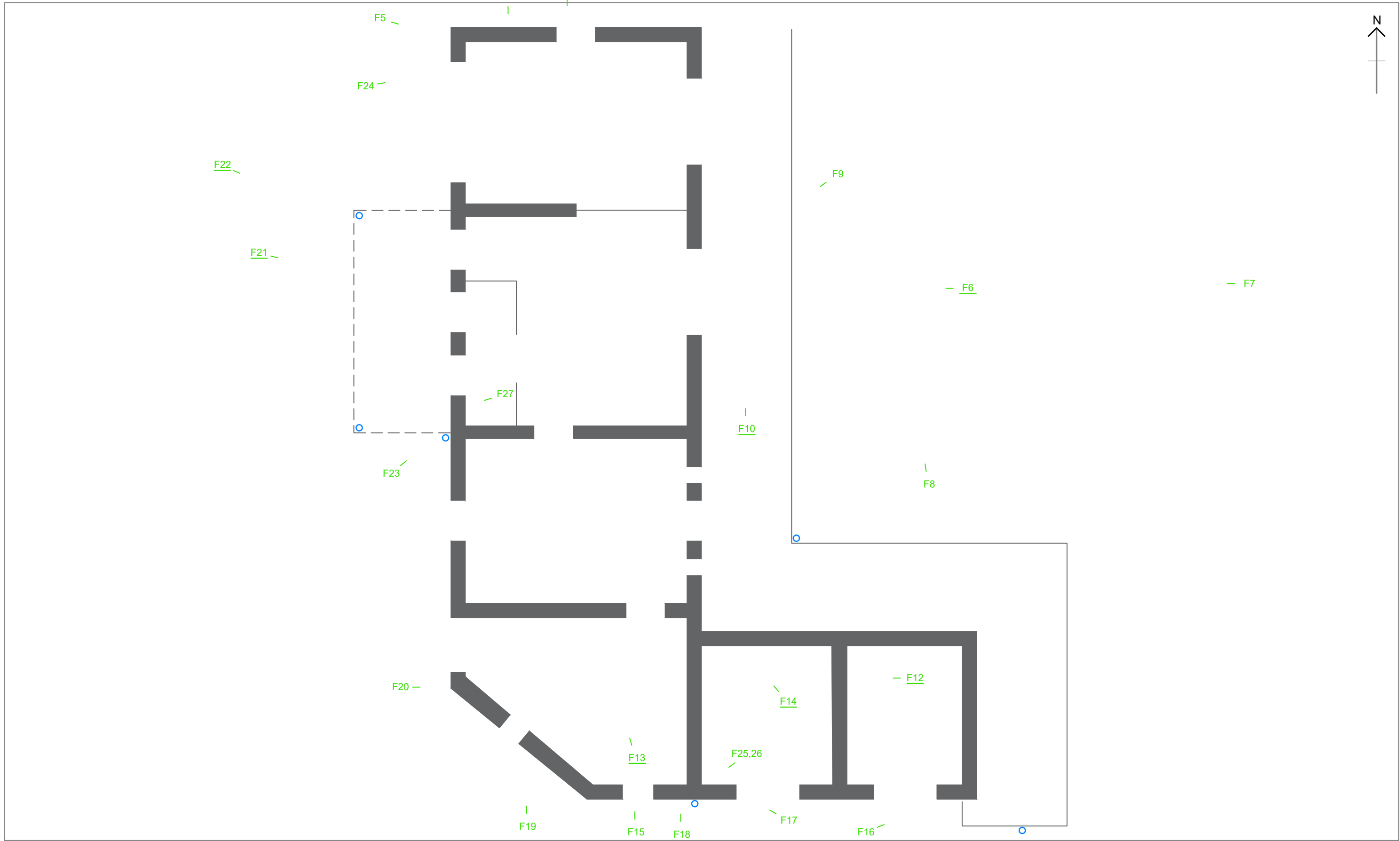


Key: —① Masonry sample location



Southleigh Park, Stables - Ground Floor
Masonry damp and DPC investigation
18 January 2021

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Southleigh Park, Stables - Ground Floor
Masonry damp and DPC investigation
18 January 2021

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- Key:**
- Approximate location of rainwater downpipe
 - F Approximate location of photograph
 - F Approximate location of photograph over

Attachment C

Table of material moisture contents

Attachment C

Samples of masonry were drilled from walls in areas vulnerable to damp penetration. The samples were placed in sealed containers and tested at the H+R laboratory in accordance with the procedure for gravimetric measurement of moisture content as described in the appendix to BRE Digest 245

Dish no.	Moisture content % w/w			Hygroscopic moisture content % w/w	Available moisture content % w/w
Coach House					
1	5.46	D	H	3.54	1.92
2	5.51	M	H	2.86	2.65
3	4.46	M	H	2.24	2.23
4	2.83	D	H	2.74	0.09
5	2.46	D	H	2.35	0.12
6	2.53	D	H	2.06	0.46
7	13.21	S		0.81	12.39
8	1.87	D		0.59	1.28
9	4.16	D	H	4.81	-0.66
10	4.50	M		1.88	2.62
11	7.27	M	H	2.26	5.01
12	3.08	M		0.80	2.28
13	1.29	D		0.92	0.37
14	3.64	M		1.51	2.12
15	3.65	D	H	2.34	1.31
16	1.79	D		0.90	0.89
17	2.35	D	H	2.20	0.15
18	2.33	D		1.69	0.64
Stables					
1	14.61	S	H	4.37	10.25
2	1.53	D		1.25	0.28
3	1.30	D		1.49	-0.19
4	16.67	S	H	6.64	10.03

5	2.99	D	H	2.48	0.50
6	13.73	S		0.79	12.94
7	5.16	D	H	6.06	-0.90
8	2.96	D		1.45	1.51
9	5.26	M	H	3.19	2.07
10	2.96	D		1.62	1.34
11	3.31	D		1.60	1.71
12	7.52	D	H	6.46	1.06
13	4.19	M	H	2.01	2.18
14	4.07	M		1.95	2.12
15	5.21	M	H	2.41	2.80
16	11.53	W	H	5.59	5.94
17	13.27	W	H	5.62	7.65
18	8.69	D	H	7.90	0.78
19	1.31	D		1.75	-0.45
20	1.21	D		1.03	0.18
21	1.48	D		1.44	0.04
22	1.34	D		0.79	0.55
23	3.08	D	H	2.40	0.68
24	1.36	D		0.90	0.46
25	1.43	D		0.88	0.55
26	0.74	D		0.44	0.30
27	1.06	D		0.59	0.48
28	13.23	S	H	2.47	10.76

Hygroscopic moisture is the 'air dry' moisture content of the sample at 75 per cent relative humidity. High levels above, say, 2 per cent are attributable to salt contamination. Hygroscopic salt commonly accumulates in old plaster and masonry that has been subject to dampness penetrating from the ground over many years. High levels above, say, 2 per cent of available moisture (liquid water) in the sample indicate continuing dampness due to liquid water in the sample usually resulting from faulty rainwater and plumbing goods