37 NORTH ROAD

FAÇADE MASONRY CONDITION INVESTIGATION

JOB NO. 162-58

PKS ARCHITECTS

28 NOVEMBER 2024

REVISION A

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CONTENTS

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1 INTRODUCTION

1.1 AUTHORITY AND REFERENCE

Hutton+Rostron Environmental Investigations Limited carried out a site visit to 37 North Road, N6 4BE on 28 November 2024 in accordance with instructions received from Mr Douglas Paskin by email dated 18 November 2024. Reference was made to drawings supplied by the client for the identification of structures. For the purpose of orientation in this report, the building was taken as facing east onto North Road

1.2 AIM

The aim of this investigation was to determine the construction, evolution and condition of the external facades. Recommendations and risk management advice for the refurbishment are provided. Under revision A of this document, various small clarifications have been made

1.3 H+R STAFF ON SITE

Tim Jordan
Ryan Donoghue

1.4 PERSONNEL CONTACTED

Douglas Paskin - PKS Architects
Site Team

For limitations that apply to this report please see section 3

2 EXECUTIVE SUMMARY

2.1 CONSTRUCTIONAL NATURE OF FAÇADE MASONRY

The property is one of several neighbouring properties in the same style, built circa C19th and now approximately 200 years old. The external walls were of solid brickwork construction; red facing bricks were backed by lesser quality stock brick. Sandstone slabs were used for corbelling in the cornice. There were other areas where gault brick and clay tiles were used for packing-out behind render profiles. Use of a hard render for architectural features (rather than carved stone) was typical of the period and employed an eminently hydraulic lime with pozzolanic set (also known as 'Roman cement' or 'Parker's cement')

2.2 EVOLUTION OF FAÇADE MASONRY

Broadly speaking, there seemed to have only been one significant refurbishment carried out to the property in its lifetime, apparently circa 1980/90s (at this point in the building's life, after circa 150 years of service, it would likely have been quite dilapidated and in need of modernisation). Roofing works in particular are understood to date from 2013. Previous works appeared to have included;

-dormers overhauled
-chimneystack and rear wallhead of party wall overhauled
-front elevation brickwork cleaned (pollution-blackening removed)
-front elevation re-pointed (lime mortar changed to Portland cement)
-rear closet wing extension
-coal chute blocked-off
-front balcony propped
-parapet gutters/wallhead patched in flashband

Since this period of work, very little maintenance/refurbishment has been undertaken, hence the very poor state of the property seen today (2024). Note - a slate-slab door canopy has been added at some earlier stage in the building's life. Note - acrylic paint has been applied to the render of the rear elevation and some other areas have been clad in Portland cement within the last decade

2.3 CONDITION OF FAÇADE MASONRY

As described within attachments, the south corner of the front wallhead (including decorative render cornice) was in a state of disintegration. The front elevation generally was badly stained by roof leakage. Plain render at frontage plinth and rear elevation was subject to general debonding failure

2.4 REFURBISHMENT STRATEGY

As described within attachments, localised re-construction and renewal of render will be necessary along with specialist brickwork cleaning and redecoration in mineral paint. All works to the façade should be subject to approval of trials/samples in the first instance

3 LIMITATIONS

3.1 GENERAL

Note separate documentation has been issued by H+R in relation to the interiors (see report dated 1 November 2024). This survey was confined to the accessible structures. Concealed materials 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. No formal investigation of moisture distribution was made

3.2 CDM

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

3.3 BUILDING SAFETY ACT AND BUILDING REGULATIONS

H+R should not be considered as a designer under the Building Safety Act 2022 or the Building Regulations as amended. The client and design team should ensure that appropriate arrangements have been made where the Building Regulations apply and that the appropriate duty holders are in place and applications are made for Building Regulations approval

3.4 FIRE SAFETY

H+R have not carried out any risk assessments, surveys, investigations or analysis of fire safety risk, including compartmentation and structural fire performance of materials. It is recommended that the client and design team seek the guidance of appropriately qualified fire engineers or fire risk assessors as applicable

3.5 PLANNING PERMISSION AND LISTED BUILDING CONSENT

Listed buildings have statutory protection and works or alterations that may include fabric removal, some repairs, extension and demolition will require listed building consent. It is the responsibility of the client to ensure listed building consent is obtained where this is necessary. Where works to any building, listed or otherwise, constitute development requiring planning permission it is the responsibility of the client to ensure planning permission is obtained where this is necessary

Appendix A

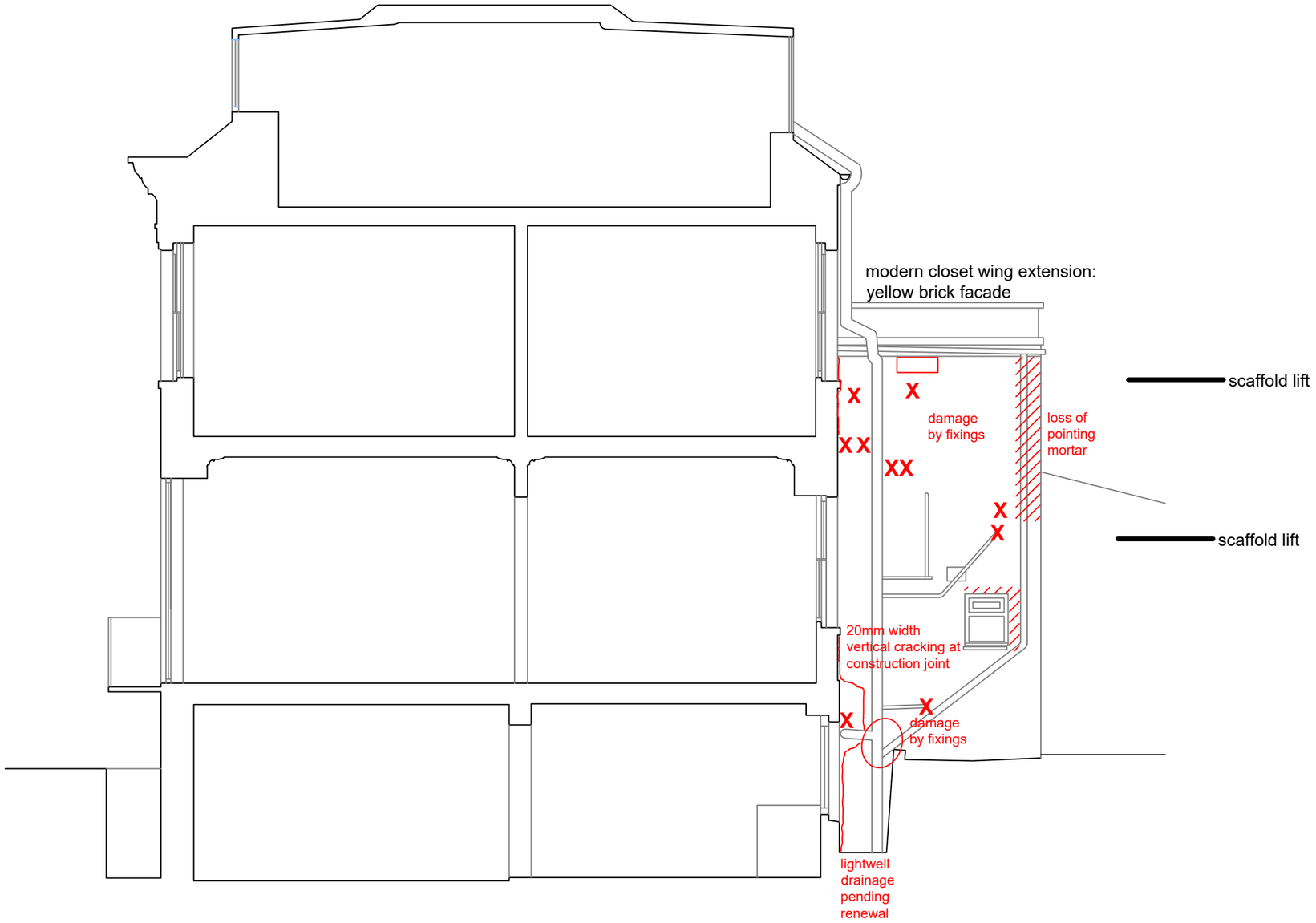
SCHEDULE OF OBSERVATIONS AND RECOMMENDATIONS

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
RPT.1 CHIMNEY AND PARTY WALL				
RPT.1.1	Chimneystack	There were a total of 7no. pots which connected to the fireplaces indicated on drawings. The flues would not be safe to use without certification by a heating engineer or similar The east pot has suffered clay failure All flaunching mortar was in a state of failure The west 3no. pots were modern replacements which did not closely match the historic original pots One of the 3no. modern pots appeared to have an asbestos-cement cowl (and the flue riser itself may be lined/lagged with asbestos materials, tbc) The upper courses of the stack had been replaced as part of a previous refurbishment and all brickwork in the stack had been re-pointed (rather crudely) using modern cement mortar. There were at least 12no. spalled brick faces	*Consideration could be given to re-lining flues. In any case, H+R recommend trickle-ventilation is provided up all flues* *Pot to be carefully removed and sent to specialist terracotta workshop for fabrication of replica (at which time, the modern three pots could also be replaced in a more sensitive historic design)* *All pots to be lifted and re-laid into a replacement flaunching of NHL5 lime mortar (with a party wall agreement, it would be optimal to do this for the neighbouring pots too)* *Ideally these would be replaced in historic replicas (see other commentary)* *Asbestos containing materials should be inspected by a specialist and carefully removed under controlled conditions* *Allow to rake-out and re-point all brickwork on the chimneystack using NHL5 lime mortar. Bricks with spalled faces should be cut-out and replaced in a brick of matching type and imperial size*	
RPT.1.2	Front slope of party wall	The original weathering had been 'roman cement' which was in poor condition, exacerbated by modern Portland cement re-surfacing. The flashing onto the slate roof finish was poor. Note - render sample 1 was taken from this location	*With a party wall agreement, it would be optimal to remove and replace the entire wallhead (new lead flashing onto roof slates, partial repair/rebuild of brick substrate, new 'Roman cement' render finish)* *The modern equivalent of 'Roman cement' is a product known as 'Prompt'. As per the original, the setting time of this product is very fast so application is a specialist task*	
RPT.1.3	Rear slope of party wall	The wallhead in this area has been extended and re-built in several previous phases of work. There were at least 18no. spalled brick faces	*Allow to rake-out and re-point all brickwork on the chimneystack using NHL5 lime mortar. Bricks with spalled faces should be cut-out and replaced in a brick of matching type and imperial size* *The flashing at the roof line should be replaced in lead*	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
RPT.2 FRONT ELEVATION (EAST)				
RPT.2.1	East elevation Wallhead and cornice	As shown on drawings, the south end of the wallhead had suffered a history of render failure (exacerbated by modern cement repairs and acrylic paint). The severity of failure has resulted in disintegration of the substrate; this part of the wallhead was 'live' at time of survey. Note - render sample 2 was taken from this location	*These sections of wall should be carefully dismantled, being sure to take photographic records during this process. It is important that the process of dismantlement is closely supervised and not allowed to progress excessively (although none of the historic mortars may be entirely 'solid', the dismantlement must stop after reaching a point where the wall is reasonably intact). Reconstruction should use the original materials where possible but the expectation should be that matching new replica materials will be needed. New brickwork to be laid in NHL5 lime mortar, new render to be a 'Prompt' product as mentioned above*	
		The north end of the cornice was generally intact with only localised cracks and small patches of debonded render	*All paint to be removed using chemical paint softener and pressurised steam lance. Cracks to be filled with 'Prompt' mortar. Small debonded areas do not require remediation. Redecoration to be made using Keim Mineral Paint*	
		In general, the upper surface of the wallhead has previously been over-coated with cement and flashband which did not appear to be an ideal substrate for the lead capping and gutter lining	*Allow to record and remove the leadwork forming gutter lining and wallhead capping. Underlying flashband and cement patches should be removed and made good using 'Prompt' mortar. Conservation leadworker to be consulted on their preferred substrate build-up for laying lead onto masonry; a timber substrate and/or underlay membrane is normally called for*	
RPT.2.2	East elevation First floor	As shown on drawings, the upper part of the south pilaster has debonded or been lost	*Loose material to be removed before making good by building-up coats of 'Prompt' mortar. Replication of the pilaster capital will likely need to be done off-site using a reverse-moulding taken from the remaining capital at the party wall (check that it is the same as that seen at the neighbouring property at the other end of the terrace), again this should be done using a 'Prompt' mortar. All of the pilaster and other painted render features should be stripped and re-decorated as described above*	
		Adjacent to this, there was a large failed previous repair (dressed-back damaged brick faces clad with a red-coloured render to imitate brickwork). Elsewhere at first floor, there were isolated areas of spalled brick faces	*Failed previous repairs to be removed. Bricks with spalled/damaged faces to be cut-out and replaced in a brick of matching type and imperial size. Pointing for these areas should replicate the surrounding (modern) cement profile because it would be excessively damaging to attempt replacing cement pointing throughout. Products such as 'dyebrick' can be used to tone-in brick and mortar to match*	
		All of the first floor render above the entrance door canopy was in a state of failure, including a window sill composed of render	*This area of render should be replaced in a 'Prompt' mortar. The brick substrate (including sill and lintel) may be in need of repair/replacement)*	
		The south corner of the elevation was badly stained by moisture/salt from many decades of parapet gutter leakage. Note that staining is liable to persist or worsen as drying-down eventually occurs (during and after roof repairs) due to the way in which moisture dries towards the surface and draws-out salts with it	*Specialist cleaning contractor to be engaged to carry out cleaning trials. This may entail 'poultice' cleaning repeatedly to draw-out salts. The wall will require many months of drying and may be subject to recurring salt emergence*	
		There was also some soiling by aerial roots/suckers of ivy	*Ivy suckers can be removed by careful use of flame gun*	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
RPT.2.3	East elevation Ground floor and basement lightwell	All render below the string course was debonded from the substrate and in poor general condition. Original packing-out using clay tiles was evident There were isolated areas of spalled brick faces The entrance steps have been replaced or overcoated in cement/concrete (unknown if degraded stone structure remains below). The top step was cracked at a point of weakness created by the coal delivery chute The south corner of the elevation was badly stained by moisture/salt from many decades of parapet gutter leakage. Note that staining is liable to persist or worsen as drying-down eventually occurs (during and after roof repairs) due to the way in which moisture dries towards the surface and draws-out salts with it On the south-facing flank elevation, render was subject to general crazing and paint failure There was also some soiling by aerial roots/suckers of ivy The enamelled metal street number was degraded by corrosion	*This area of render should be replaced in a 'Prompt' mortar* *These bricks to be replaced, as described above* *The steps are likely to remain serviceable in their current state. Only if desired, consideration and further exploration could be made as to potentially restoring the original stone steps* *Poultice cleaning is suggested, as described above* *All paintwork to be removed, cracks filled with 'Prompt' mortar and allowed to cure prior to re-decoration using 'Keim Mineral Paint', as described above. Within the range of products available from Keim, there are primer products which can provide a more even surface finish* *Ivy suckers can be removed by careful use of flame gun* *The sign could be restored by a specialist or replaced*	
RPT.2.4	East elevation Boundary walls etc.	The historic boundary wall alongside the entrance steps was rendered brickwork. This was badly cracked and subject to general debonding of the render Further down the south boundary to the front garden was a modern brick wall which appeared intact The pavement boundary may have originally been iron railings fixed into a stone plinth but this appeared to have been lost many years ago The north boundary of the front garden was not reviewed, it was potentially missing/absent	*This section of wall is likely to require replacement of the render and structural repair of cracks by helibar* - *Consider restoring a historically appropriate boundary* -	
RPT.3 REAR ELEVATION (WEST)				
RPT.3.1	General	Vertical cracking at construction joint between modern closet wing extension and original rear elevation, crack opened-up by ~20mm Upper south corner has been re-rendered in modern Portland cement (appears to be associated with flying freehold area?) General failure of original render which appears to have always been a low quality (thin) coat of render and vulnerable to the effects of prevailing weather. Modern application of acrylic paint was likely deleterious to render. Render subject to various areas of collapse and widespread debonding Various redundant fixings and service runs/penetrations The rear garden boundaries were not reviewed, they appeared to be simple modern timber fencing	*Structural Engineer to review this and other areas of cracking generally. It may be necessary to provide corner-ties using helibar or similar* *As a minimum, it is suggested that this area is decorated using Keim mineral paint for weathering protection* *Total replacement of this render is recommended using an NHL5 mortar* *To be made good using matching materials, following removal of all redundant items* -	

Appendix B



37 North Road, N6 - Flank (north) elevation

Façade masonry condition investigation

28 November 2024

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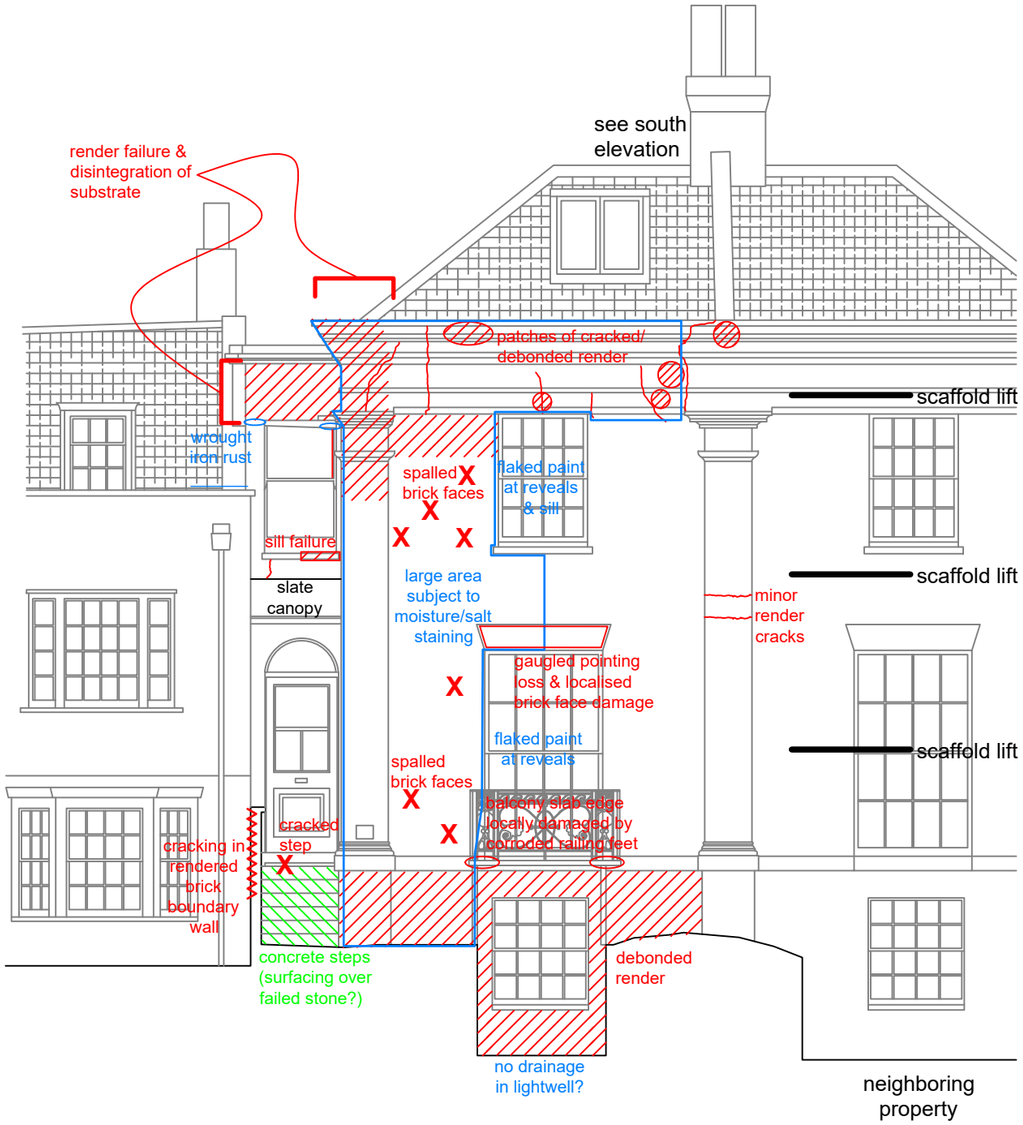
162-58 Report -Not to scale-



37 North Road, N6 - Front (east) elevation

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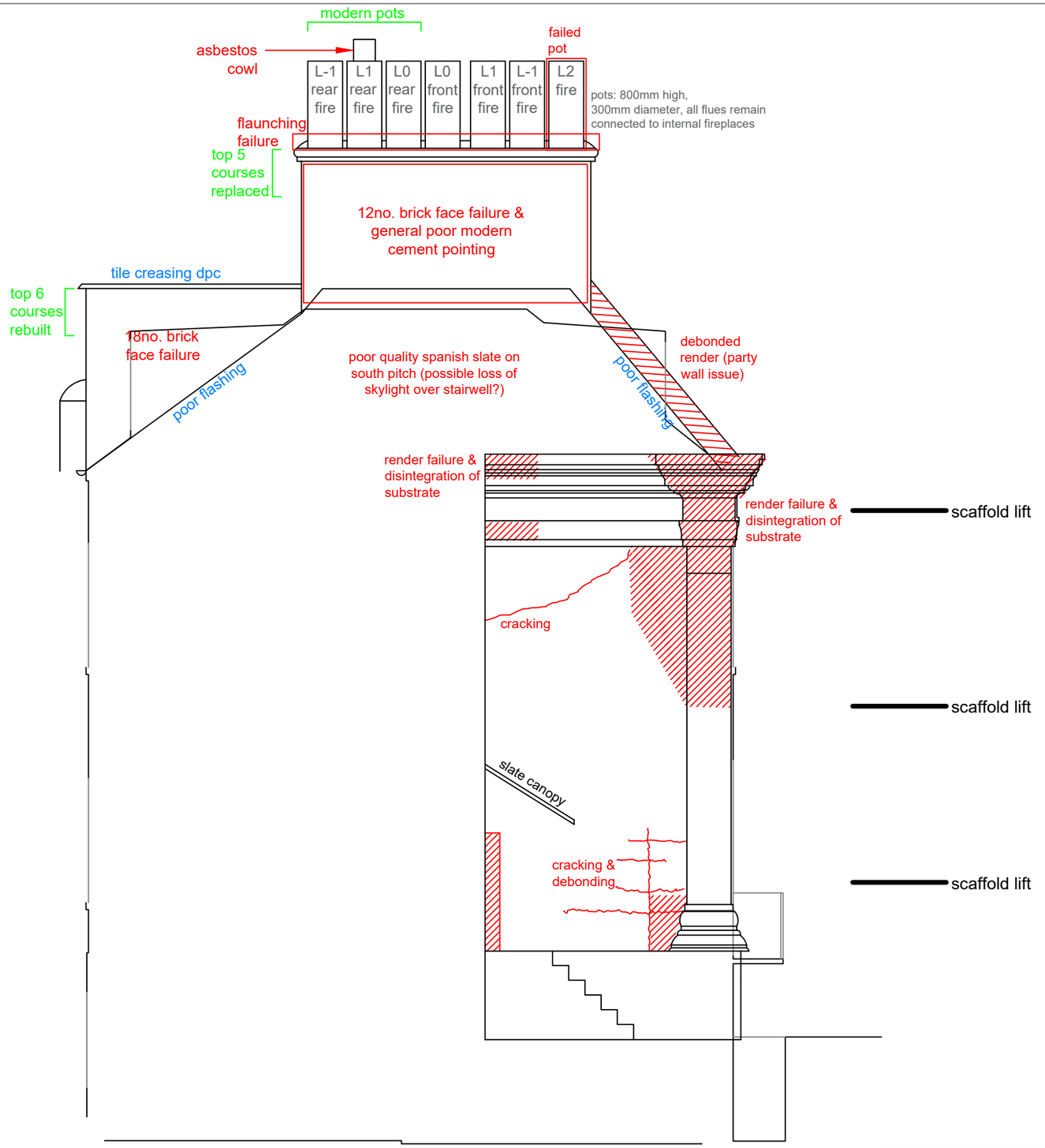

37 North Road, N6 - South elevation

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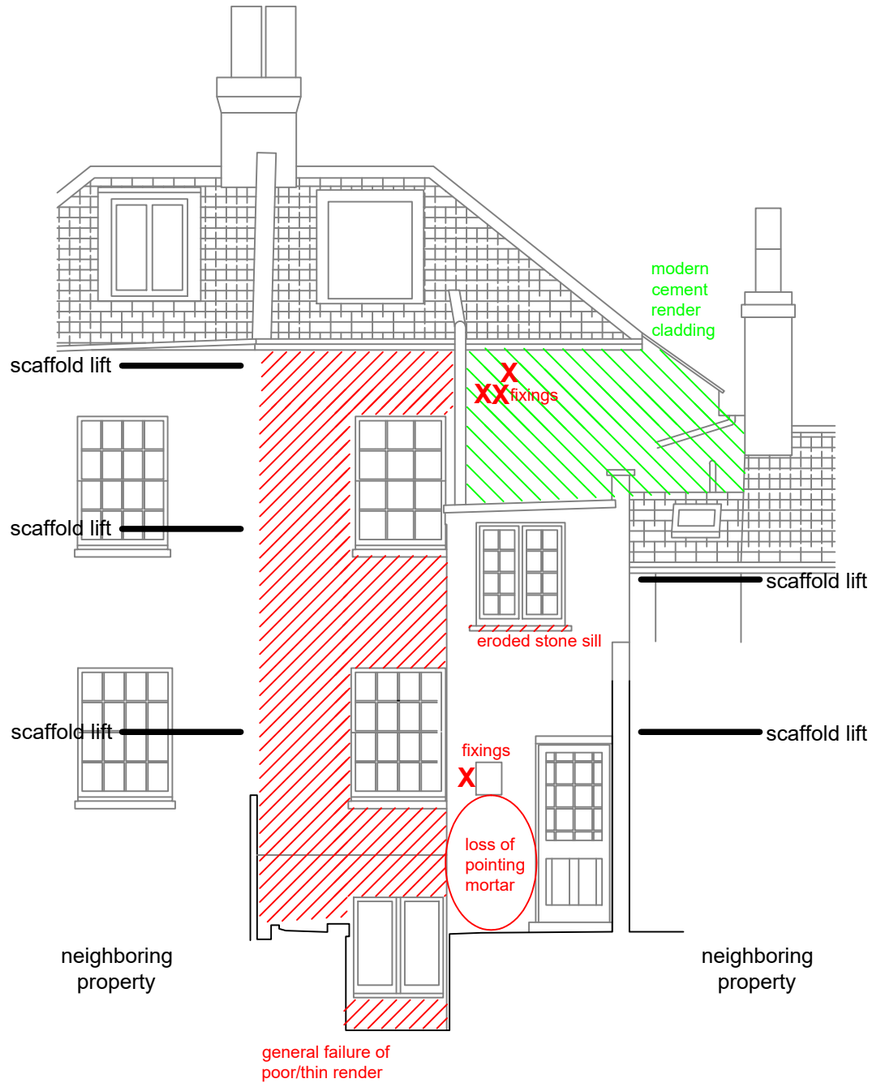

37 North Road, N6 - Rear (west) elevation

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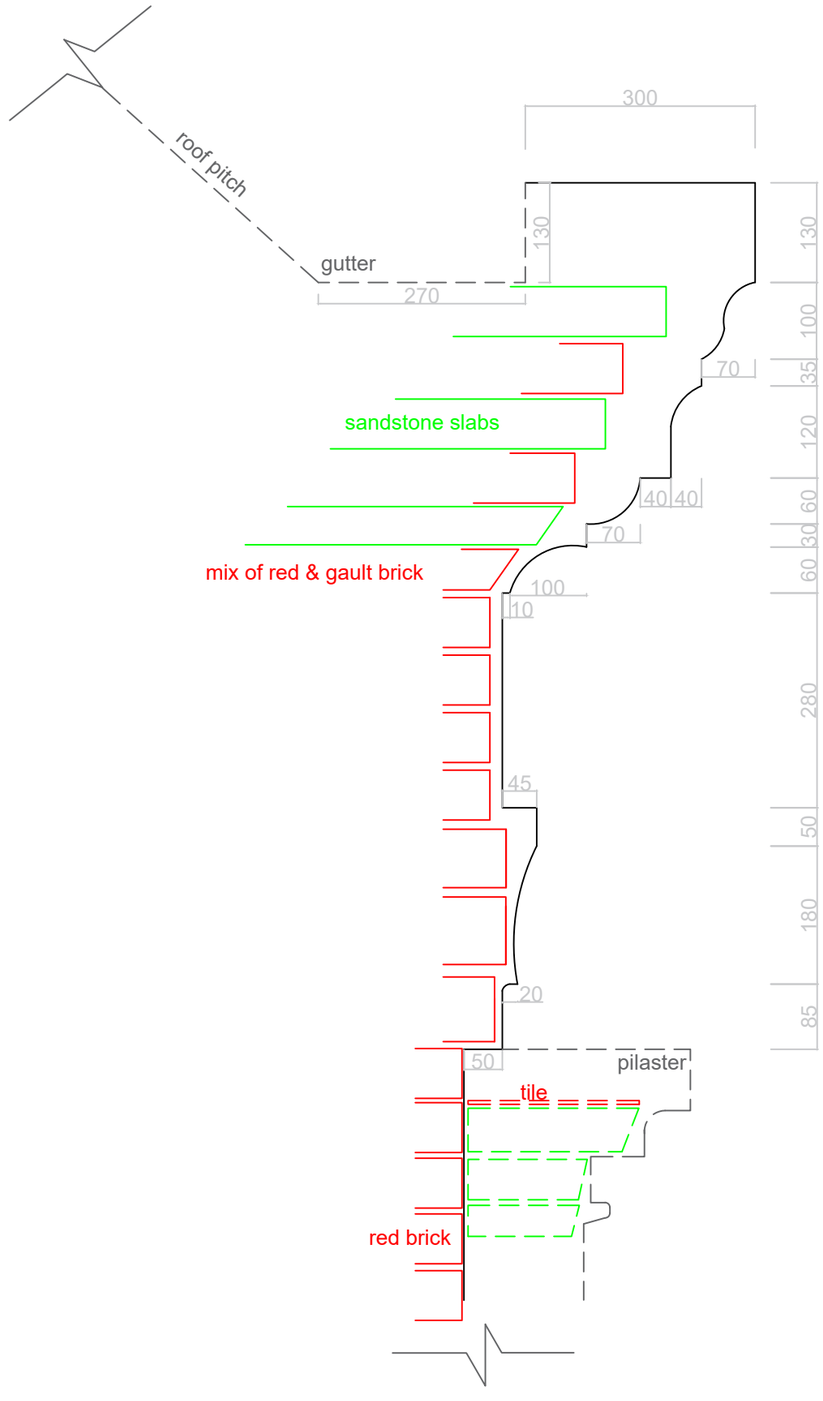

37 North Road, N6 - Section drawing of wallhead

Façade masonry condition investigation

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Appendix C

Fig 1:

Chimneystack

Fig 2:

Party wall, rear slope

Fig 3:

Party wall, front slope

'H+R render sample 1' taken from this location

Fig 4:

Front (east) elevation

Fig 5:

Front (east) elevation, showing modern flashband repairs to wallhead

Fig 6:

Front (east) elevation, showing modern flashband repairs to wallhead

Fig 7:

Front (east) elevation, showing modern Portland cement re-surfacing of original ‘Roman cement’ render feature

The paint finish was a modern acrylic type

Fig 8:

Front (east) elevation, showing modern Portland cement re-surfacing of original ‘Roman cement’ render feature

Note de-bonding between materials/ layers

Fig 9:

Front (east) elevation, showing area of failed render cladding to corbelled cornice

The view of the substrate allowed H+R to determine the construction using sandstone slabs and corbeled-out brick courses

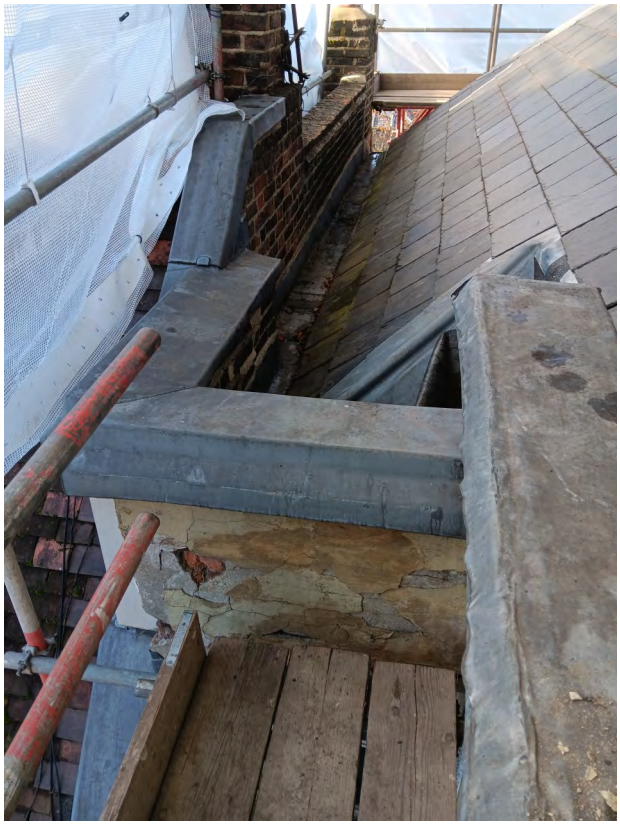

Fig 10:

Front (east) elevation, showing poor state of render at flank/return junction with an older neighbouring property

Note brickwork was distorted and 'live'

Fig 11:

Front (east) elevation, showing disintegration of render column capital feature

Note corbeled brick, tile and sandstone formwork

Note pilaster formed by considerable thickness of the render itself (rather than a step in the substrate)

Fig 12:

Front (east) elevation, showing detail of cement re-pointing (note smears onto brick faces)

Also note residue to black pollution staining which appears to have been scoured-off brick faces (resulting in loss of brick material but luckily this has not affected weathering performance)

Fig 13:

Front (east) elevation, showing residue to black pollution staining which appears to have been scoured-off brick faces (resulting in loss of brick material but luckily this has not affected weathering performance)

Fig 14:

Front (east) elevation, showing debonding failure of mortar repair to brick faces

Also note soiling by moisture/salts from parapet leakage

Also note soiling by ivy growth (aerial root suckers)

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Fig 15:

Front (east) elevation, showing north side of first floor in fairly good condition

Note rendered window reveal largely intact despite paint failure

Fig 16:

Front (east) elevation, showing disintegration of modern cement render applied over original pilaster render

Fig 17:

Front (east) elevation, showing detail of pilaster capital at party wall

Fig 18:

Front (east) elevation, showing detail of moisture/salt staining from roof leak

Note salt staining was worst at the ‘drying band’ where moisture content fluctuated from wet to dry (which brings -out salts)

Also note some damage to gauged brick arch lintel and loss of pointing

Fig 19:

Front (east) elevation, showing flank elevation subject to cracking and paint failure

Note slate slab canopy

Fig 20:

Front (east) elevation, showing coal delivery chute (latterly bricked-up internally)

A lead water supply pipe was noted (this could be a health hazard if it is still the source of drinking water to the property, tbc)

Fig 21:

Front (east) elevation, showing detail of balcony

Note minor damage to stone corners at corroded railing feet

Note modern and fairly crude props at leading edge of balcony (appeared to be loose and unclear if they are structurally essential)

Fig 22:

Front (east) elevation, showing entrance steps and boundary wall in poor condition

Fig 23:

Front (east) elevation, showing detail of balcony railing

The balusters are of cast iron whereas the handrail is of wrought iron

Fig 24:

Front (east) elevation, showing detail of balcony stone damage at corroded railing feet

Fig 25:

Front (east) elevation, showing detail of basement lightwell

It appeared that there was no drainage in this area (tbc)

Fig 26:

Front garden; showing modern boundary wall and loss of original metal railings along the pavement

Fig 27:

Rear (west) elevation, showing north side at first floor level

Note render was poor quality (thin) and subject to delamination

Fig 28:

Rear (west) elevation, showing south side at first floor level

Note render was poor quality (thin) and subject to delamination

Fig 29:

Rear (west) elevation, showing crack at junction with modern closet wing

Fig 30:

Rear (west) elevation, showing north side at ground floor level

Note render was poor quality (thin) and subject to delamination

The impermeable properties of the modern acrylic paint was also detrimental to the render

Fig 31:

Rear (west) elevation, showing crack below ground floor window aperture

Fig 32:

Rear (west) elevation, showing crack at junction with closet wing

Fig 33:

Rear (west) elevation, showing poor previous patch repair to render at ground level

Fig 34:

Rear (west) elevation, showing ivy soiling, paint loss and infill repair to modern closet wing

Fig 35:

Rear (west) elevation, showing modern cement render cladding at upper south side

Appendix D

LIME MORTARS : GENERAL COMMENTS & STANDARD RECOMMENDATIONS

1 MORTAR MIX COMPOSITION (non-specific general guidance)

1.1 SAMPLING EXISTING MORTARS

The intention may be to replicate mortars of an existing structure for repairs or new work. Based upon an exercise of informed sampling in representative and targeted areas, analysis can be carried out to determine the nature of an existing mortar. The results can be used to inform composition of proposed mortars (e.g. binder type, aggregate type/size and mix ratio). Note that it is not always appropriate to exactly replicate an existing mortar (e.g. in the case of pre-existing/inherent problems)

1.2 BINDER TYPES

1 Non-hydraulic lime: This binder sets by exposure to air (carbonation) not by reaction with water (hydration). These mortars are often found in older structures and in a very binder-rich mix proportion. This is commonly referred to as ‘lime putty’ and is typically supplied in tubs (underwater). Alternatively it can be made on site by adding water and/or wet sand to ‘quicklime’ to produce a ‘hot-lime mortar’. Note that working with hydraulic lime mortars is a particularly specialist task and requires a high standard of preparation, execution and aftercare, especially so for hot lime

2 Hydraulic limes: These binder types set (primarily) by exposure to water (hydration) but also by exposure to air (carbonation). This binder type can be subdivided according to its ‘hydraulicity’. This is whereby eminently hydraulic limes set only by water and feebly hydraulic limes have a greater requirement for setting by air also. These are commonly referred to as NHL5 (eminently hydraulic), NHL3.5 (moderately hydraulic) and NHL2 (feebly hydraulic) and are supplied in bags (powder). The acronym NHL denotes ‘natural hydraulic lime’. Some eminently hydraulic limes can also be classified as ‘natural cements’ and are relatively similar to using conventional modern cement mortars which may be less demanding of operative expertise

3 Other: Pozzolanic additives have been used throughout history in lime mortars where hard and impervious properties are required, typically this is by the addition of clay. There are practices of mixing/’gauging’ mortars such as mixing modern cement into a lime mortar or adding hydrated lime to a cement mortar. Although they have a place in modern construction, these are not true lime mortars and are not recommended as substitutes. Earthen structures and/or finishes (e.g. cob or daub) are a separate technology to lime mortars. Additives have been used both in historic and contemporary mortars, these include air-entrainers, water-proofers and adhesives. These can often compromise or lead to problems in lime mortar unless used with care and experience

1.3 AGGREGATE AND REINFORCEMENT

A good sand for use in mortars should be ‘well-graded’ (i.e. an even mixture of fine and course particles). Sand grains should be ‘sharp’ to allow the mortar to form a strong matrix. Note that aggregate inclusions should not generally exceed one third of the mortar joint width. Matching sand is key in attaining both a uniform aesthetic and similar performance with adjoining areas. Where desired, mortars may be purposely made weaker by selecting sands of more homogenous grain sizes and rounded grain forms. Fibre-reinforcement has been used historically in the form of animal hair and in modern times as metal lath, artificial fibres and scrim

1.4 MIX PROPORTION

Most aggregates have a void ratio of approximately one third by volume. This leads to the commonly used mix proportion of one part binder to three parts aggregate. However, variations will be necessary in order to alter the strength, flexibility and breathability properties of the mix. Proportions can be more accurately measured by weight rather than by volume. Pointing mortars and/or successive render coats should generally be mixed to become progressively weaker than the substrate material/layer

2 MORTAR EXECUTION (non-specific general guidance)

2.1 OPERATING TEMPERATURE

Lime work should not be carried out in temperatures where there is a risk of frost (5 Celsius and falling). An operating temperature of 10ºC and rising is preferable

2.2 MIXING MORTAR

Lime mortars should ideally be mixed using a ‘roller pan’ or ‘forced action’ mixer rather than a cement dry mixer. For visual uniformity, consider charging a single operative with responsibility for mixing mortar batches. Production of hot lime mortars is inherently hazardous due to the violent heat/steam given off; training, experience and enhanced PPE is required. Mortar additives are often used to delay setting time (e.g. for natural cements). Additives for workability and moisture resistance can have a detrimental effect upon future mortar performance

2.3 CONSTRUCTION

Walls should be built-up in staged intervals; courses of say 300mm, depending upon the binder type, environmental conditions and progression of the setting/’curing’ process. This is in order to allow the mortar to carbonate and achieve sufficient strength. The outside face of joints should be left clear to receive pointing mortar later

2.4 AFTERCARE

In order to allow effective curing, new mortar must be protected from the drying effect of sunlight, wind and high temperature. New mortar must also be protected from frost by working during favourable weather conditions and covering to control radiant heat loss. Generally, it is advised to regularly dampen the wall by water mist and cover with hessian

2.5 POINTING

1 Raking-out existing mortars: Wherever possible, existing mortars should be raked-out by hand, with a view to minimising damage to the substrate. Consider using a small club hammer and plugging chisel. Narrow joints may require a hooked/serrated 'small tool'. Where mortars are very hard, it may be necessary to use a powered hand tool such as an angle grinder, taking care not to gouge into the substrate (or it may be decided not to remove the mortar at all if this will cause excessive damage). Joints should be cleared to a sufficient depth to receive pointing mortar; say twice the joint width (e.g. in a 10mm brick joint the depth should be 20mm)

2 Preparation for pointing: The wall should be brushed-down to remove dust, debris and loose material. The wall should be cleaned by misting with water from top to bottom. This serves also to control 'suction' of the substrate so that water is not drawn-out of pointing mortar to an excessive degree. The process of misting the wall should be repeated as necessary, depending on environmental conditions, mortar type and substrate type

3 'Dubbing-out': Deep joints and holes in the wall should be filled with mortar and packing material then allowed to cure. This is so as to allow a uniform joint depth when pointing the wall. The objective should be for no phase of mortar installation to be of any greater depth than 20mm, to ensure ability to cure

4 Pointing: Joints should be filled with mortar, allowed to cure, then 'tamped' into the joint by brush or pointing iron (depending on desired aesthetic). Note that pointing mortar is normally relied upon to shed surface water (e.g. driving rain). Therefore, a pointing profile flush with the substrate is normally preferable

2.6 RENDER (EXTERNAL)

1 Substrate repairs: The context of render repair/replacement is often some form of defect such as cracking or debonding which may arise from structural movement and/or water penetration. Underlying defects should therefore be corrected in the first instance

2 Removal of failed/previous render: Typically, render systems should be applied directly to the substrate (e.g. brick) rather than attempting to skim over existing render. Therefore, some removal of render may be required, the technique for this should be trialled in the first instance to confirm that it is practical and that excessive damage is not being sustained to the substrate

3 Preparation for patch-repairs: Defective material should be removed until sound material is reached. It may be aesthetically preferable to cut-back render to a natural break (e.g. wall corner, window reveal, decorative feature, 'lined-out' pattern). In other situations, following a more irregular/organic shape of repairs may blend-in better (e.g. following the shape of a de-bonded render patch). In the opposite sense, patch repairs which obviously follow the line of previous cracking problems could be detrimental to the aesthetic and capital value of the building (larger panels of render replacement could be considered in this scenario)

4 General surface preparation: The substrate should be brushed-down to remove dust, debris and loose material, then misted with water (spraying down the wall from top to bottom). This should be repeated as necessary, depending on environmental conditions, mortar type and substrate type

5 'Dubbing-out': Deep joints and holes in the wall should be filled with mortar and packing material so to avoid excessive variation in the base coat render thickness

6 Rendering: Typically, render systems are built-up in three coats to 25mm overall thickness. This could comprise a 10mm base coat, 10mm levelling and 5mm finish coat. Preparation and aftercare are required between and after each coat. The term for working ‘green-on-green’ refers to the benefit of applying a following coat of mortar when the mortar below is not entirely cured, this must be gauged by an experienced operative. The term ‘keying’ typically refers to roughening a render surface to provide a better bond for the following coat

7 Detailing: Render facades should be designed to shed water from vulnerable locations. Existing buildings may often show cornice ledges and sill projections with ‘drip’ rebates at the underside. At the base of walls, care should be taken not to compromise damp-proof courses by rendering-over; stop-beads or similar should be used to form a break. In many cases, rendering is not recommended below the level of the DPC or to earth-retaining walls

8 Finishing: Shrinkage cracks will often emerge in render, even in work done to the highest standard. This is generally the result of water in the mix being lost to drying. Therefore, risk can be reduced by avoiding excessive water in the mortar and keeping-up aftercare to slow drying. Cracks which do emerge can be filled using fine mortar/slurry rubbed into the surface and/or a paint finish application

9 Painting: Paint should only be applied once the render has cured, material moisture contents are dry and in accordance with manufacturer instructions. Film-forming paints (those with acrylic and similar binders) are commonly used but can have a limited service life and can be detrimental to the substrate due to entrapment of moisture/salts. Mineral paints such as traditional limewash, modern silicate systems or other similar clay-based products can bond into the render and are more able to allow the substrate to breathe which can allow an improved service life

Appendix E

Fig A:

Sample 1, microscopic view

Note very well bonded aggregate matrix

Fig B:

Sample 1, microscopic view

Note reasonable variation in aggregate size grading

37 North Road, N6
Render sample analysis
28 November 2024
Not to scale

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Fig C:

Sample 1, microscopic view

Note reasonable variation in aggregate size grading

Variation in aggregate colour suggested some mica inclusions (tbc)

Fig D:

Sample 1, microscopic view

Fig E:

Sample 2, microscopic view

Note very well bonded aggregate matrix

There were no significant voids, pores or microcracks. This was consistent with what is understood of 'roman cement' (that it is a hard and fairly impervious material)

Fig F:

Sample 2, microscopic view

Note biological growth associated with excessive saturation

Fig G:

Sample 2, microscopic view

Note area of excessive fines associated with debonding failure

Fig H:

Sample 2, microscopic view

Note cross-section showing layer build-up between coats of render

Note well graded aggregate, good matrix cohesion

Note whitish lime inclusions

37 North Road, N6
Render sample analysis
28 November 2024
Not to scale

