

Hutton + Rostron Environmental Investigations Limited

Hornsey Town Hall: Façade masonry condition investigation

Site note 1 for 3 and 8 August 2018, job no. 405.73

CONTENTS

- 1 Introduction
- 2 Staff on site and contacts
- 3 Observations and Recommendations
- 4 H+R work on site
- 5 Proposed action by H+R
- 6 Information required by H+R
- 7 Administrative requirements

Attachments

- A Schedule
- B Photographs
- C Plans

Distribution:

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File: 405.73

1 INTRODUCTION

1.1 AUTHORITY AND REFERENCES

Hutton + Rostron Environmental Investigations Limited carried out site visits to Hornsey Town Hall during August 2018 in accordance with instructions from Kiah Khing Tan on behalf of Crouch End (FEC) Ltd by letter, on 13 July 2018, reference Hornsey Town Hall, The Broadway, Crouch End, N8 9JJ, London, Condition Survey of Existing Buildings at Hornsey Town Hall and Broadway Annex (the "Services"). Drawings provided by MAKE, Ref 1360 were used for the identification of structures. For the purpose of orientation in this report, the main entrance was taken as facing west

1.2 AIM

The aim of this survey was to inspect external façade masonry for construction and condition, within the confines of ground and roof access available. Recommendation and provisional quantity allowances are provided within a schedule, as an aid to the QS and tenderers

1.3 LIMITATIONS

This survey was confined to the accessible structures. Concealed materials and cavities have not been investigated within this site note. 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 other parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect 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
Isabel of Mar

2.2 PERSONNEL CONTACTED

Site security

3 OBSERVATIONS AND RECOMMENDATIONS

3.1 CONSTRUCTION

3.1.1 Arrangement

Hornsey Town hall is irregular in plan, generally comprising rectangular wings arranged around a central courtyard and with a principal elevation to the west. Generally, the structure is arranged over four stories

3.1.2 Build-up

- 1 Historic construction photographs show original construction using steel and concrete framework superstructure. This was clad in brickwork; there was variation between solid and cavity wall construction. Generally, brickwork was laid in an irregular bond type with some loose similarity to Flemish bond. Interlocking of some jointing was variable and sometimes minimal; this is not best practice and may be inherently vulnerable to cracking, especially given the half-brick thickness of the outer leaf and especially where this was under structural stress
- 2 Generally, solid wall areas were found to be one full brick thick (9 inches). Cavity wall areas were generally found to comprise a half brick outer leaf and full brick inner leaf. Refer to H+R Site Note 3 for further detail on wall profiles and cavity ties

3.1.3 Materials

- 1 Brick: Stock brick, brown-purple in tone. Variable brick dimensions; 235-215mm in length, 110-105mm in width, 55mm in height. This variation may have contributed to the irregularity of bonding pattern
- 2 Mortar: Bed joints varied in width from 10-25mm. 'Perp' joints varied from 5-15mm. Joint variation may have been in response to variable brick dimensions; this was not best practice and may create inherent weakness. It appeared that bricks had been laid in cement bedding mortar which had been raked/tamped-back to clear the joint for installing a separate pointing mortar scheme. Pointing appeared to be a cement binder, characterised by grit inclusions of up to 5mm. In those areas where continuous sills and lintels were featured, the brick piers between windows were left un-pointed (apparently for decorative effect)
- 3 Copings: These were a mixture of natural stone (Portland limestone) and pre-cast reinforced concrete 'RC'. RC components were made up on cement binder and limestone aggregate pieces. Embedded reinforcement bars appeared to be of plain steel and of two 'gauges' (larger and smaller diameters). The units appeared to have been roughly cast over-size before being ground-back so as to reveal decorative stone aggregate. Stone copings were linked by bronze cramps which were embedded in the top surface and caulked using lead
- 4 Sills and lintels: Again, these were a mixture of stone and RC. However, some lintels were of plain brickwork. Refer to H+R Site Note 4 for further detail on lintels
- 5 Plinths (west elevation): These were upright slabs of stone, possibly non-structural or only supporting the outer leaf brickwork
- 6 Cantilever balcony (west elevation): Reinforced concrete, apparently a standard mix without decorative stone aggregate
- 7 Entrance steps (west elevation): The steps and ramps leading to each of the two entrances were suspected to be non-original 'public realm' landscaping, possibly a

dense sandstone

3.1.4 History

Original construction was circa 1930s. There has been a subsequent history of maintenance works. This has mostly involved re-pointing parapet walls and patch repairing RC sills/lintels. However, more extensive works have been undertaken locally, including replacement of brick cladding (e.g. adjacent to the west structural frame stanchions of the tower). Very localised cleaning has been undertaken in the past, apparently confined to the base of the west elevation in order to remove graffiti

3.2 CONDITION

3.2.1 Structural issues

- 1 As also identified by others, there were a number of areas of cracking. Typically these were vertical cracks although there were also some diagonal cracks. Very rarely, there were horizontal cracks. These are illustrated on plans
- 2 The majority of cracks travelled through both mortar joints and brick faces which illustrated that the construction mortars were harder than or equal in hardness to the bricks
- 3 Generally, cracks were found to be of a consistent width (rather than opening-up further towards one end). This may indicate a thermal movement defect (e.g. differential expansion/contraction of frame structure vs brick cladding). However, very large vertical cracks and areas of diagonal cracking may be indicative of differential foundation movement
- 4 As described above, the irregular brick bond pattern created inherent weaknesses, including at corners, where frame stanchions appeared to have caused vertical cracking issues. Cracks corresponding with frame stanchions may indicate corrosion ('rust jacking') but could also indicate lack of original provision for thermal movement
- 5 As shown on plans, there were very localised areas subject to cracking which had also become distorted. Again, this suggested possible underlying defects in parts of the steel frame
- 6 *The Structural Engineer should review cracking and direct remedial works. Provisionally allow for cutting-out and replacing brickwork in areas of cracking using matching materials and possibly also including bed joint reinforcement (e.g. helix rods). It may also be necessary to expose and remediate defective embedded steel framework*
- 7 *In the view of H+R it cannot be expected that latent defects can be entirely eliminated. Therefore, allowance should be made for ongoing monitoring and patch repairs to areas of cracking on future occupancy. This could be scheduled on a five-yearly basis*

3.2.2 Material deterioration to brickwork and pointing

- 1 Brick faces had proven to be very durable in service. There were no generic problems of brick failure or spalling, despite use of very hard mortars. Best practice is to use a mortar which is softer than the brick; although this was not followed at the Town Hall there was no evidence of resultant material failure

- 2 There had been a history of mortar failure in heavily damp affected areas, most of which had been re-pointed in the past. This included parapets, the base of walls as well as larger areas where roof drainage has repeatedly failed. The hardness of original mortars was such that many (but not all) areas of failed mortar had only recessed by ~10mm. In general, re-pointing mortars were a poor aesthetic match for the original as they did not include grit aggregate. Furthermore, these areas of mortar were typically found to suffer recurrent failure, apparently due to ongoing water penetration and perhaps also due to inadequate depth of pointing into the joints
- 3 It was notable that most areas of brick and mortar were in good condition at time of survey and well within their service life. Perp joints are typically more difficult to point for bricklayers, this had been compounded by the narrowness of some of these joints. As such, some of the more exposed areas of brickwork showed eroded/washed-out perp joints
- 4 *Allowance should be made for localised brick replacement and re-pointing in defective areas. New pointing mortar should be mixed to match the original; trial panels should be produced for agreement by all parties and the panels retained nearby the building throughout the work as a reference. Joints should be raked-out and pointed to twice the joint width to ensure longevity*
- 5 *In the view of H+R, subject to adequate workmanship and rectification of water penetration defects, the refurbished brickwork can be expected to hold a service in excess of 25 years. However, some ongoing maintenance/repairs should be expected, particularly in areas of cracking or where water penetration is not corrected*
- 6 *Subject to the view of the client, it may be acceptable to retain superficially failed pointing mortar on the basis that these areas will hold at least some remaining service life. H+R would recommend that, as a minimum, joints which have recessed by more than 10mm should be raked-out and re-pointed*

3.2.3 Material deterioration to stonework

- 1 Limestone generally appeared to be of good quality and had proven to be durable. However, sills and lintels had cracked locally due to other factors (structural movement). Copings showed relatively more widespread damage; cracks had formed at the cramp fixings. The cramps did not appear to be susceptible to corrosion, rather it appeared to be lack of original provision for movement which had caused cracking
- 2 *Damaged stone units may be replaced in matching limestone or repaired in-situ using colour matched stone repair mortar (e.g. a mix of hydraulic lime binder and limestone-dust aggregate). Subject to the view of the Structural Engineer, it may be prudent to omit cramps from the top face of new/refurbished copings so as to avoid recurrent damage by movement stresses (alternative restraint could be achieved by using stainless steel dowels located into lugs at the underside of copings)*

3.2.4 Material deterioration to RC features

- 1 Fundamentally, RC features were suspected to have been used as a low cost alternative to limestone. As shown on plans, these suffered widespread failure due to embedded steel corrosion. It was suspected that these units had been custom made for the town hall, possibly on an 'experimental' basis. Use of RC, especially for external features, was relatively new at time of original construction which may explain some technical flaws

- 2 It appeared that steel was not stainless nor protected by galvanic/paint layers. Also, there appeared to be inadequate 'cover' of concrete between the outer surface and embedded steel. These factors made the units highly vulnerable to steel corrosion and 'rust jacking' of the concrete surfaces
- 3 *RC features represent a high risk of latent damage and falling masonry due to inherent construction flaws. The most robust risk management option would be to entirely replace these units using modern reconstituted stone products of a matching appearance*
- 4 *Alternatively, defective areas can be repaired in-situ. This would involve removing all loose fragments, cutting back underlying corroded steel (or cleaning to expose bare metal), priming and decorating steel in rust inhibitor and patch repairing in a matching mortar. In some areas, this is likely to be a more realistic approach in relation to time and cost incurred. However, the landlord and/or building operator will be at risk in terms of latent failures. Mitigation measures can be put in place such as;*
 - yearly condition checks/repairs*
 - avoiding pedestrian circulation below facades with RC features*
 - precautionary replacement of RC above areas of circulation*
 - covered walkways*

3.2.5 Soiling and plant growth

- 1 The majority of the facades were free of significant soiling and showed only very minor pollution/dust accumulations
- 2 In areas of long term water penetration, construction salts had been washed-out towards the external wall face, leaving white staining. Moisture and salts also increased risk of material failure to RC and pointing mortar
- 3 Also in damp affected areas, rooted plant growth had become established such as 'buddleia'. These have invasive roots which become established inside cracks where they can continue to grow as long as water penetration continues. Elsewhere, 'ivy' climbing plants have grown over large areas of wall where they had not been controlled by maintenance/housekeeping. These did not appear to be causing damage to the structure but would leave suckers on the wall face if the vines were to be removed
- 4 Previous graffiti removal at the base of the west elevation has been poorly executed. Use of excessive force has resulted in damage/abrasion to the surface of bricks. Fortunately, the extent of damage does not appear to have significantly compromised the durability of bricks. However, when viewed closely, the original aesthetic has been degraded
- 5 *In the view of H+R, wholesale cleaning of the Town Hall is not necessary or recommended. Localised cleaning of stained areas can be considered for aesthetic improvement, although this would only be worthwhile after water ingress defects have been rectified. An over-all light clean could be undertaken during a staged scaffold strike so as to remove construction debris and light soiling at the end of the works*
- 6 *As described in a separate Site Note 6, H+R will conduct and evaluate cleaning trials to determine the most suitable means of removing staining*

3.2.6 Redundant embedded fixings

- 1 There were surprisingly few surface-mounted services which would normally be expected in a building of this age. However, there were a number of redundant metal fixings left embedded in the walls. These may become latent defects for corrosion and substrate damage. At the west side, most of the original flagpole brackets had been lost in the past with only the bolts remaining
- 2 *Ideally, redundant fixings would be entirely removed and the brickwork made good. In some areas, it may be necessary to cut-out brickwork to remove these (e.g. larger bolts). However, these works could be omitted, if the existing state is deemed aesthetically acceptable by the client*

4 H+R WORK ON SITE

- 4.1** H+R inspected all accessible external masonry materials from available ground and roof access to record relevant construction and condition information
- 4.2** H+R inspected the structure for defects liable to allow water penetration before and after refurbishment

5 PROPOSED ACTION BY H+R

- 5.1** H+R will advise on repair and conservation, so as to minimise the risk of defects 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

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SN1.1 ELEVATION 1 (WEST)				
SN1.1.5	Structural	At least 10no. areas of cracking; mixture of vertical and diagonal, passing through both bricks and joints Distortion of the wall line and displacement of the first floor lintel noted at the north end Possible brace installed across window opening below copper canopy (could be for supporting a temporary banner – indeterminate) Evidence of partial reconstruction to parapet brickwork and tower corners (see plans)	<i>Structural Engineer to comment</i> <i>Allow for making good brickwork and replacing cracked bricks to match original</i>	
SN1.1.1	Brick	2no. bricks damaged by impact Say ~30no. bricks damaged by cracking (see 'structural' above)	<i>Cut out and replace using matching materials</i>	
SN1.1.2	Mortar	Mortar failure at base of wall Mortar failure below defective north-west flat roof Mortar failure to parapets (recurrent, despite re-pointing) Total: say ~40m² All copings show degraded joint mortar and evidence of water penetrating into parapet walls below Total wall head measurement: say~40 linear metres	<i>Rake-out and re-point to match original</i> <i>Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar</i>	
SN1.1.3	Stone	At least 10no. copings damaged at cramp joints 4no. cracked lintels 4no. cracked sills 2no. areas of plinth stone cracking 3no. damaged stair treads 1no. area of point damage to stone cornice below copper canopy ~6m² superficial stone surface erosion at plinth	<i>Mortar repair or replace damaged stones</i> <i>Superficially eroded plinth stones may be retained subject to making good missing pointing mortar and monitoring for further stone damage</i>	
SN1.1.4	RC	No defects apparent at time of survey	<i>Further investigation of first floor balcony integrity may be prudent</i>	
SN1.1.6	Soiling and plant growth	At least 2no. areas of rooted plant growth in parapets 1no. area overgrown by climbing plants Base of west wall superficially damaged by previous cleaning works	<i>Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps</i> <i>Avoid further water penetration by remedial works to parapet wall heads as described above</i>	
SN1.1.7	Redundant embedded fixings	9no. (missing) flagpole brackets with redundant bolt fixings	<i>Remove and make good brickwork</i>	

SN1.2 ELEVATION 2 (NORTH)				
SN1.2.1	Structural	At least 14no. areas of cracking; mixture of vertical, horizontal and diagonal, passing through both bricks and joints Cracking and displacement of brickwork below north-west cantilevered stairwell suggests possible steel frame corrosion at low level	<i>Structural Engineer to comment</i> <i>Allow for making good brickwork and replacing cracked bricks to match original</i>	
SN1.2.2	Brick	Say ~40no. bricks damaged by cracking (see 'structural' above) Previous patch repair using very poor match brick type (6no. bricks)	<i>Cut out and replace using matching materials</i>	
SN1.2.3	Mortar	Mortar failure at base of wall Mortar failure below defective north-west flat roof Mortar failure to parapets and extending below defective roof drains Total: say ~45m ² All copings show degraded joint mortar and evidence of water penetrating into parapet walls below Total wall head measurement: say~55 linear metres	<i>Rake-out and re-point to match original</i> <i>Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar</i>	
SN1.2.4	Stone	1no. coping lifted-off from bearing onto wall head 1no. coping with spalled section 1no. plinth stone with spalled section	<i>Pack underside of lifted coping in mortar</i> <i>Replace damaged stones</i>	
SN1.2.5	RC	1no. spalled lintel At least 3no. spalled sills Widespread spalling to flat roof edge beam and soffit 3no. areas of spalling adjacent to north-west stairwell	<i>Replace damaged RC</i>	
SN1.2.6	Soiling and plant growth	Long term roof overflow has caused salt staining in brickwork ~45m ² 1no area of rooted plant growth below defective flat roof 1no. area overgrown by climbing plants (no access available to east end)	<i>Subject to trials, consider undertaking cleaning works on the stained areas</i> <i>Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps</i> <i>Avoid further water penetration by remedial works to parapet wall heads as described above. Urgent measures should be put in place to provide temporary roof drainage</i>	
SN1.2.7	Redundant embedded fixings	Very limited number of redundant fixings and old services Say 10no. areas	<i>Remove and make good brickwork</i>	

SN1.3 ELEVATION 3 (EAST)				
SN1.3.1	Structural	At least 3no. areas of vertical cracking; passing through both bricks and joints Suspected displaced brickwork at bearing for roof slab (~3no. bricks)	<i>Structural Engineer to comment</i> <i>Allow for making good brickwork and replacing cracked bricks to match original</i>	
SN1.3.2	Brick	Say ~5no. bricks damaged by cracking (see 'structural' above) Previous patch repair using very poor match brick type (3no. bricks)	<i>Cut out and replace using matching materials</i>	
SN1.3.3	Mortar	Local mortar failure at base of wall and 'planters' Mortar failure to parapets Total: say ~35m ² All copings show degraded joint mortar and evidence of water penetrating into parapet walls below Total wall head measurement: say~40 linear metres	<i>Rake-out and re-point to match original</i> <i>Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar</i>	
SN1.3.4	Stone	-	-	
SN1.3.5	RC	At least 6 no. spalled lintels (3no. previous repairs, poor aesthetic match and possibly prone to recurrent failure) At least 3 no. spalled sills (9no. previous repairs, poor aesthetic match and possibly prone to recurrent failure) Extensive coping/eaves spalling, total: say ~8 linear metres (also including some evidence of cramp damage at south side) Extensive ground floor canopy spalling ~6 linear metres Extensive carriageway bressummer spalling ~7 linear metres	<i>Replace damaged RC</i>	
SN1.3.6	Soiling and plant growth	Long term roof run-off salt staining in brickwork ~15m ² 1no. area overgrown by climbing plants (no access available to north end) Some plant growth within 'planters'	<i>Subject to trials, consider undertaking cleaning works on the stained areas</i> <i>Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps</i> <i>Avoid further water penetration by remedial works to parapet wall heads as described above. Urgent measures should be put in place to provide temporary roof drainage</i> <i>Planters may be re-used subject to re-detailing for damp-proofing/water containment</i>	
SN1.3.7	Redundant embedded fixings	Very limited number of redundant fixings and old services Say 10no. areas	<i>Remove and make good brickwork</i>	

SN1.4 ELEVATION 4 (SOUTH)				
SN1.4.1	Structural	At least 3no. areas of vertical cracking; passing through both bricks and joints 1no. area where the base of the wall has moved outward along the DPC (i.e. 'oversailing' the footings) 1no. area of displaced parapet brickwork (at least 4no. bricks) Boundary walls to south heavily cracked; one area of diagonal cracking has opened-out by ~50mm, one area of oversailing along a horizontal crack	<i>Structural Engineer to comment</i> <i>Allow for making good brickwork and replacing cracked bricks to match original</i> <i>Consider replacing/removing the defective boundary walls</i>	
SN1.4.2	Brick	It was noted that a spare stock of several hundred matching bricks was stored in the courtyard area, these may be suitable for repair works Say ~12no. bricks damaged, including by cracking (see 'structural' above) At least 2no. areas of previous patch repair using very poor match brick type (total ~15no. bricks) At least 2no. broken clay tile window sills Say ~5no. bricks damaged by poor vent installation	<i>Cut out and replace using matching materials</i>	
SN1.4.3	Mortar	Mortar failure at and below parapets. Eroded pointing to lift over-run room at roof level Total: say ~30m² At least two schemes of re-pointing to the tower head. Lower part of tower showed widespread failure/loss of perp joint mortar, say ~20m² Most areas of wall head were dressed-over in the roof finish. Localised area of stone copings show degraded joint mortar and evidence of water penetrating into parapet walls below say~5 linear metres	<i>Rake-out and re-point to match original</i> <i>Perp joints may be patch repaired (rather than entirely re-pointing all joints in these areas)</i> <i>Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar</i>	
SN1.4.4	Stone	3no. damaged copings, generally due to cracking at cramp fixing points 1no. stone lintel with cracked intermediate joint (see plans)	<i>Mortar repair or replace damaged stones</i> <i>Structural Engineer to comment on lintel cracking</i>	
SN1.4.5	RC	2 no. significant areas of spalled roof soffit/overhangs At least 3 no. spalled/damaged copings At least 15no. spalled lintels (9no. previous repairs, poor aesthetic match and possibly prone to recurrent failure) At least 5no. spalled sills (9no. previous repairs, poor aesthetic match and possibly prone to recurrent failure)	<i>Replace damaged RC</i>	
SN1.4.6	Soiling and plant growth	Run-off salt staining in brickwork ~8m² Plumbing overflow mineral staining to brickwork ~10m² 1no. area overgrown by climbing plants 1no. area of rooted plant growth at base of wall	<i>Subject to trials, consider undertaking cleaning works on the stained areas</i> <i>Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps</i>	

SN1.4.7	Redundant embedded fixings	Very limited number of redundant fixings and old services Say 10no. areas	<i>Remove and make good brickwork</i>	
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SN1.5 ELEVATION 5 (SOUTH OF ASSEMBLY HALL)				
SN1.5.1	Structural	At least 5no. areas of vertical cracking; passing through both bricks and joints, some travelling the entire height of the structure. As shown on plans, some cracks had opened-up differentially 1no. area of displaced parapet brickwork	<i>Structural Engineer to comment</i> <i>Allow for making good brickwork and replacing cracked bricks to match original</i>	
SN1.5.2	Brick	Say ~90no. bricks damaged, including by cracking (see 'structural' above)	<i>Cut out and replace using matching materials</i>	
SN1.5.3	Mortar	Mortar failure at base of wall and parapets Total: say ~30m² Copings suspected to suffer degraded joint mortar, allowing water penetration into parapet walls below say ~50 linear metres	<i>Rake-out and re-point to match original</i> <i>Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar</i>	
SN1.5.4	Stone	-	-	
SN1.5.5	RC	3 no. areas of spalled roof soffit/overhangs, including small projecting door canopy at ground level (1no. previous repair, poor aesthetic match and possibly prone to recurrent failure) Suspected spalled/damaged copings disguised by temporary sheeting, quantity indeterminate. At least 1no. area of damage affecting low-level roof 3no. previous lintel repairs, poor aesthetic match and possibly prone to recurrent failure At least 2no. spalled sills	<i>Replace damaged RC</i>	
SN1.5.6	Soiling and plant growth	1no. area of rooted plant growth in parapet wall head	<i>Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps</i>	
SN1.5.7	Redundant embedded fixings	Very limited number of redundant fixings and old services Say 5no. areas	<i>Remove and make good brickwork</i>	

SN1.6 ELEVATION 6 (WEST OF COUNCIL CHAMBER BLOCK)				
SN1.6.1	Structural	2no. areas of displaced parapet brickwork (say ~6no. bricks)	Structural Engineer to comment Allow for making good brickwork	
SN1.6.2	Brick	At least 1no. damaged brick	Cut out and replace using matching materials	
SN1.6.3	Mortar	Mortar failure at parapet, say ~8m ² Copings suspected to suffer degraded joint mortar, allowing water penetration into parapet walls below say ~10 linear metres	Rake-out and re-point to match original Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar	
SN1.6.4	Stone	-	-	
SN1.6.5	RC	At least 1no. spalled coping 2no. previous lintel/sill repairs, poor aesthetic match and possibly prone to recurrent failure	Replace damaged RC	
SN1.6.6	Soiling and plant growth	2no. areas of rooted plant growth (tree saplings) at base of wall 2no. areas of climbing plant growth (restricted access) External pipe lagging, fibrous material and heavily disintegrated	Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps This lagging should be checked against the asbestos register to confirm ACM risk	
SN1.6.7	Redundant embedded fixings	Very limited number of redundant fixings and old services Say 2no. areas	Remove and make good brickwork	

SN1.7 ELEVATION 7 (EAST OF WEST WING)				
SN1.7.1	Structural	1no. area of vertical cracking Peculiar wall construction at low level (original detail to avoid contact with pre-existing neighbour's garden wall)	Structural Engineer to comment Allow for making good in areas of cracked brickwork	
SN1.7.2	Brick	At least 1no. damaged brick	Cut out and replace using matching materials	
SN1.7.3	Mortar	Recurrent mortar failure at parapet, despite previous re-pointing, say ~6m ² Copings suspected to suffer degraded joint mortar, allowing water penetration into parapet walls below say ~6 linear metres	Rake-out and re-point to match original Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar	
SN1.7.4	Stone	At least 1no. damaged coping	Mortar repair or replace damaged stone	
SN1.7.5	RC	Suspected risk of spalled copings (disguised by plant growth) 1no. spalled lintel (2no. previous repairs, poor aesthetic match and possibly prone to recurrent failure)	Replace damaged RC	
SN1.7.6	Soiling and plant growth	1no. areas of climbing plant growth (restricted access)	Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps	
SN1.7.7	Redundant embedded fixings	Very limited number of redundant fixings and old services Say 2no. areas	Remove and make good brickwork	

SN1.8 SECTION BB (UPPER EAST PART OF AUDITORIUM AND LIGHTWELL)				
SN1.8.1	Structural	-	-	
SN1.8.2	Brick	-	-	
SN1.8.3	Mortar	Mortar failure at parapet, say ~5m ² Localised loss of perp joint mortar in wall below, say ~10m ² Those areas of copings not clad-over in asphalt were suspected to suffer degraded joint mortar, say ~6 linear metres	<i>Rake-out and re-point to match original</i> <i>Perp joints may be patch repaired (rather than entirely re-pointing all joints in these areas)</i> <i>Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar</i>	
SN1.8.4	Stone	-	-	
SN1.8.5	RC	1no. spalled coping 1no. spalled lintel	<i>Replace damaged RC</i>	
SN1.8.6	Soiling and plant growth	-	-	
SN1.8.7	Redundant embedded fixings	-	-	

SN1.9 SECTION CC (EAST SIDES OF COURTYARDS)				
SN1.9.1	Structural	4no. areas of vertical cracking	Structural Engineer to comment Allow for making good brickwork	
SN1.9.2	Brick	At least 14no. damaged bricks	Cut out and replace using matching materials	
SN1.9.3	Mortar	Mortar failure at base of walls and parapets, say ~15m ² Copings were suspected to suffer degraded joint mortar, say ~15 linear metres 1no. area of previous re-pointing very poorly matched to original aesthetic, say 1m ²	Rake-out and re-point to match original Rake out and re-point coping joints, also consider flashing-over copings to encourage water to shed clear using sheet metal or similar	
SN1.9.4	Stone	-	-	
SN1.9.5	RC	At least 1no. spalled coping 3no. spalled lintels (4no. previous repairs, poor aesthetic match and possibly prone to recurrent failure) 6no. spalled sills (6no. previous repairs, poor aesthetic match and possibly prone to recurrent failure)	Replace damaged RC	
SN1.9.6	Soiling and plant growth	Splash-up staining affecting carriageway bressummer ~4m ² Plumbing overflow mineral staining to brickwork ~4m ²	Subject to trials, consider undertaking cleaning works on the stained areas	
SN1.9.7	Redundant embedded fixings	Very limited number of redundant fixings and old services Say 5no. areas	Remove and make good brickwork	

SN1.10 SECTION EE (NORTH OF TOWER)				
SN1.10.1	Structural	1no. area of vertical cracking	Structural Engineer to comment Allow for making good brickwork	
SN1.10.2	Brick	Say ~5no. bricks damaged by cracking (see 'structural' above)	Cut out and replace using matching materials	
SN1.10.3	Mortar	Mortar failure below roof overhang, say ~1m ²	Rake-out and re-point to match original	
SN1.10.4	Stone	-	-	
SN1.10.5	RC	1no. area of spalling to roof overhang/soffit 1no. spalled lintel 1no. previous sill repair, poor aesthetic match and possibly prone to recurrent failure	Replace damaged RC	
SN1.10.6	Soiling and plant growth	-	-	
SN1.10.7	Redundant embedded fixings	-	-	

SN1.11 SECTION FF (NORTH OF LINK AND WEST WING)				
SN1.11.1	Structural	General: 13no. areas of cracking West wing: Diagonal cracks and 2no. areas of distortion appear to suggest differential movement with the adjacent tower West wing: 1 no. area of horizontal cracks subject to distortion may indicate frame corrosion below the parapet gutter Boiler chimney: vertical cracking at south face may relate to weathering a deleterious flue gasses	<i>Structural Engineer to comment</i> <i>Allow for making good brickwork</i>	
SN1.11.2	Brick	Say ~50no. bricks damaged by cracking (see 'structural' above) 4no. removed bricks (adjacent to foundation stone) has left a hole into the wall cavity	<i>Cut out and replace using matching materials</i>	
SN1.11.3	Mortar	Mortar failure at parapets, base of wall, lift over-run room and boiler chimney. Total, say ~25m ²	<i>Rake-out and re-point to match original</i>	
SN1.11.4	Stone	At least 4no. damaged copings, generally due to cracking at cramp fixing points 4no. cracked/damaged sills	<i>Mortar repair or replace damaged stones</i> <i>Structural Engineer to comment on lintel cracking</i>	
SN1.11.5	RC	2no. areas of spalling to roof overhang/soffit 6no. previous sill repairs, poor aesthetic match and possibly prone to recurrent failure	<i>Replace damaged RC</i>	
SN1.11.6	Soiling and plant growth	Plumbing overflow mineral staining to brickwork ~2m² Base of west wing superficially damaged by previous cleaning works	<i>Subject to trials, consider undertaking cleaning works on the stained areas</i>	
SN1.11.7	Redundant embedded fixings	5no. (missing) flagpole brackets with redundant bolt fixings	<i>Remove and make good brickwork</i>	

SN1.12 SECTION HH (WEST SIDES OF COURTYARDS)				
SN1.12.1	Structural	10no. areas of cracking The most severe area of cracking was adjacent to the auditorium; diagonal cracks subject to displacement were indicative of differential movement	<i>Structural Engineer to comment</i> <i>Allow for making good brickwork</i>	
SN1.12.2	Brick	Say ~50no. bricks damaged by cracking (see 'structural' above) 2no. broken clay tile window sills	<i>Cut out and replace using matching materials</i>	
SN1.12.3	Mortar	Mortar failure at parapets, say ~4m ²	<i>Rake-out and re-point to match original</i>	
SN1.12.4	Stone	-	-	
SN1.12.5	RC	2no. spalled lintels (8no. previous repairs, poor aesthetic match and possibly prone to recurrent failure) 3no. spalled sills (9no. previous repairs, poor aesthetic match and possibly prone to recurrent failure) 1no. area of spalled soffit (adjacent to ground floor entrance)	<i>Replace damaged RC</i>	
SN1.12.6	Soiling and plant growth	Plumbing overflow mineral staining to tower brickwork ~1m². Rooted plant growth has also become established in the saturated masonry (~3no. areas) Roof ledge at second floor shows run-off/splash-up staining and 2no. rooted plants The base of the council chamber shows 1no, rooted plant growth and a larger area of climbing plant growth (restricting survey)	<i>Subject to trials, consider undertaking cleaning works on the stained areas</i> <i>Remove all plant growth and as much root system as possible, inject herbicide into any residual stumps</i>	
SN1.12.7	Redundant embedded fixings	-	-	

Attachment B



Fig 1:

Elevation 1; showing general view.
Note previous re-point to parapet



Fig 2:

Elevation 1; showing tower. Note
previous re-build to corners



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Fig 3:

Elevation 1; showing north end. Note water staining associated with failure of the flat roof/drainage



Fig 4:

Elevation 1; showing north end. The upper corner appeared to have been partially re-built in the past. Cracking and displacement was noticed around window apertures



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Fig 5:

Elevation 1; showing base of wall superficially damaged by aggressive cleaning works in the past



Fig 6:

Elevation 1; showing localised mortar failure at base of wall. The damp-proof course was not readily apparent (asphalt found elsewhere). Perhaps the stone plinth was intended as a damp-proofing course



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Fig 7:

Elevation 1; showing concrete cantilever balcony. Water staining below indicated drainage failure. There were no visible defects affecting the underside although embedded steel may be vulnerable to corrosion

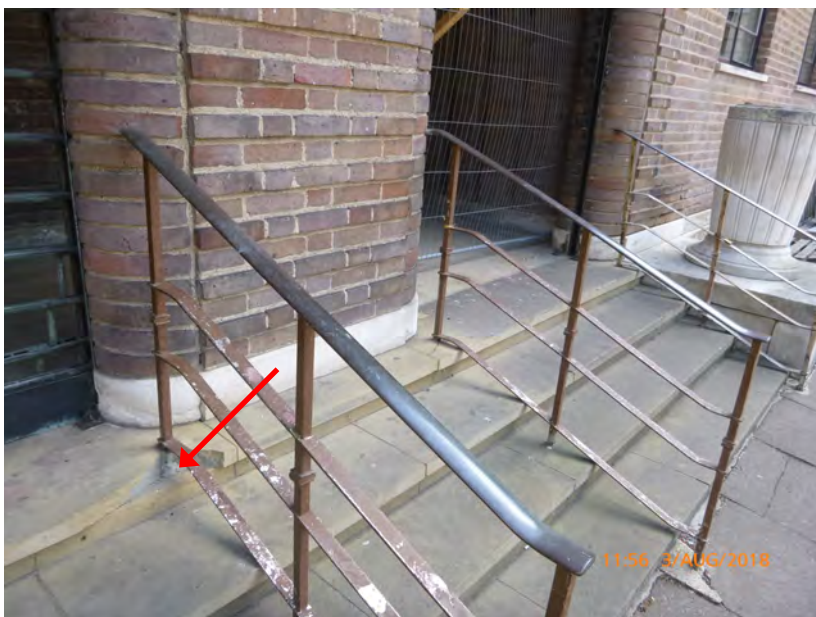


Fig 8:

Elevation 1; showing entrance steps subject to localised damage. These may or may not be original



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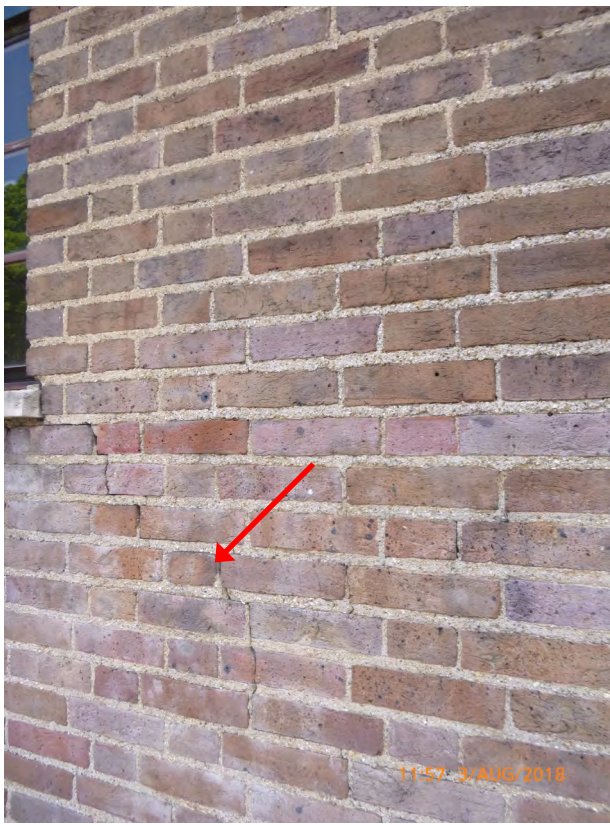


Fig 9:

Elevation 1; showing crack emanating from window aperture

Also note change in brick colour between original areas and those subject to aggressive cleaning

Also note irregular brick bond pattern



Fig 10:

Elevation 1; showing localised staining suspected to relate to a plumbing leak



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Fig 11:

Elevation 1; showing brace fitted across window opening, purpose unknown

Also note cosmetic damage to stone frieze and copper-oxide run-off staining



Fig 12:

Elevation 1; showing view of re-pointed and partially re-built brickwork to tower

Note variation in brick and joint width is apparent

Also note slight deviation in the corner 'arris'



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Fig 13:

Elevation 1; showing general view of south part



Fig 14:

Elevation 1; showing degraded pointing below copings and redundant flagpole brackets

Also note weep holes for cavity walls. These were sporadic and appeared not to feature corresponding cavity trays



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Fig 15:

Elevation 1; showing south end. Plant overgrowth restricted survey



Fig 16:

Elevation 1, south side; showing high level view

Note vertical crack in brickwork appeared to follow a line of weak bond pattern



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Fig 17:

Elevation 1, north side; showing high level view

Note upstand in roof may correspond with structural framework



Fig 18:

Elevation 1, north side; showing previous damage to copings, apparently where cramp fixings did not allow for normal thermal movement



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Fig 19:

Elevation 2, west side; showing damp affected brickwork subject to staining and rooted plant growth

Note damaged stone coping



Fig 20:

Elevation 2, west side; showing stair structure supported onto a projecting cantilever structure



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Fig 21:

Elevation 2, west side; showing spalled RC roof soffit



Fig 22:

Elevation 2, west side; showing spalled RC soffit (below cantilever stairwell)



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Fig 23:

Elevation 2, west side; showing cracked and displaced brickwork. This may correspond with the base of a steel frame stanchion. This could be subject to corrosion and/or without adequate provision for differential movement



Fig 24:

Elevation 2, return wall; showing section of wall not shown on plans

Brickwork was subject to significant diagonal cracking



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Fig 25:

Elevation 2, east side; showing spalled RC roof soffit at low level

Also note tarpaulins laid over the roof at high level. These were an inappropriate and ineffective attempt to shed water from the main roof



Fig 26:

Elevation 2, east side; showing surface deterioration to mortar in areas subject to water penetration and salt emergence



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Fig 27:

Elevation 2, east side; showing spalled RC sill



Fig 28:

Elevation 2, east end; showing inaccessible and overgrown area



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Fig 29:

Elevation 2, high level; showing relatively tall parapet comprising a single brick solid wall



Fig 30:

Elevation 3, north side; showing general view. Note overgrown and inaccessible fire escape area

Also note significant spalling to RC soffit overhang. Relatively large sections of masonry had fallen onto the ground below which remained an ongoing risk



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Fig 31:

Elevation 3; showing general view

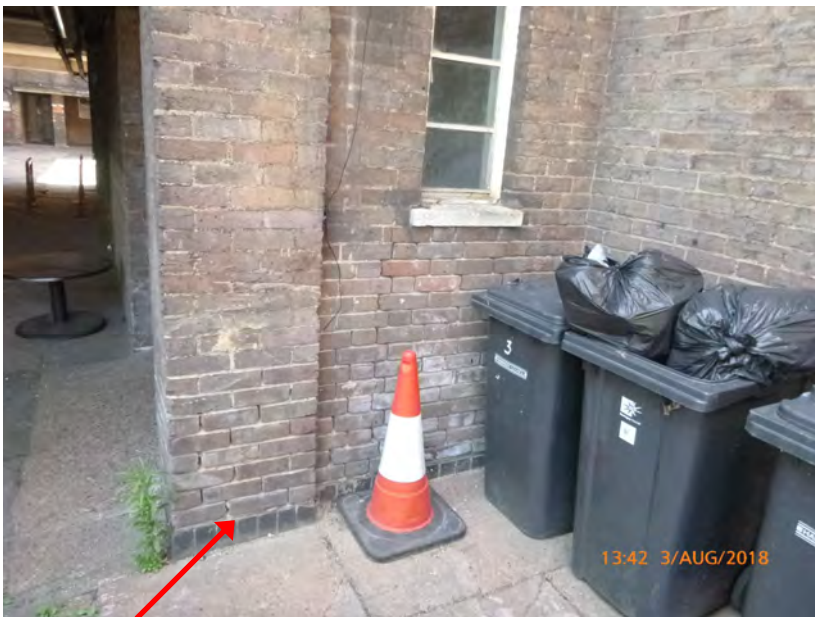


Fig 32:

Elevation 3; showing general view.
Showing washed-out mortar where
hard landscaping appeared to be
compromising the damp proof course



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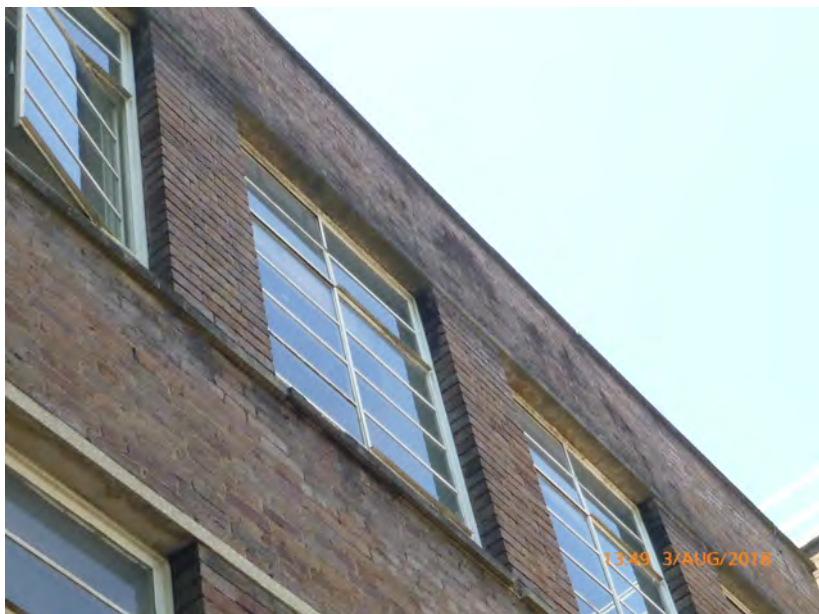


Fig 33:

Elevation 3; showing continuous sills and lintels formed in RC

There had been extensive failure by spalling to these elements, some of which had been repaired in mortar



Fig 34:

Elevation 3; showing typical brick planter

There appeared to be no special provision for protecting against water ingress from the soil containers

Note staining and RC sill failure



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Fig 35:

Elevation 3; showing detail view of typical RC failure

Note embedded re-bar is not provided with adequate 'cover' (too close to the surface)

Also note typical previous mortar repair; these were a poor aesthetic match and may be vulnerable to recurrent failure



Fig 36:

Elevation 3; showing evidence of ongoing RC failure at the large soffit overhang

Note rooted plant growth indicating saturation of the masonry

Also note vertical cracking where provision for movement between parts of the structure appeared inadequate



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Fig 37:

Elevation 3; showing high level view of damaged RC copings

Damage appeared to have occurred at cramp fixings, likely due to restriction of thermal movement



Fig 38:

Elevation 4; showing east side

Note original parapet wall has been altered by insertion of the modern roof extension



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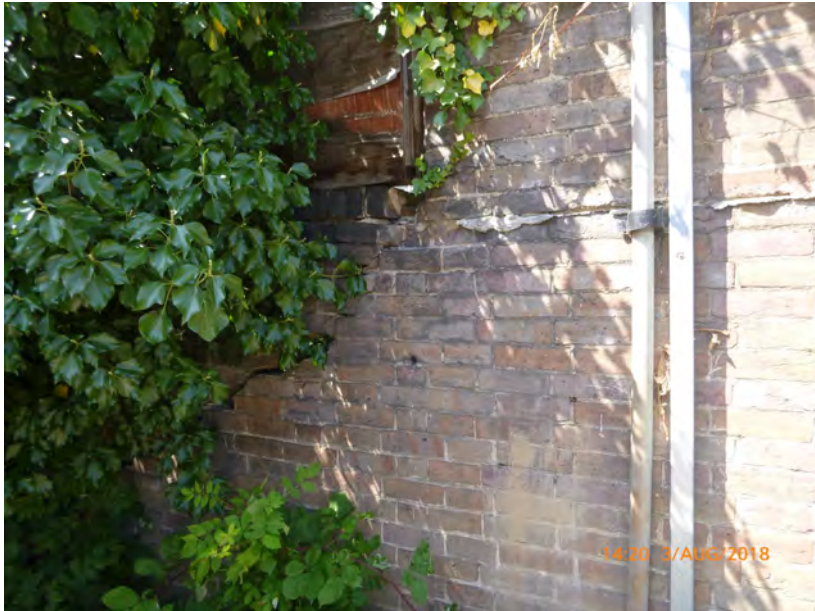


Fig 39:

Elevation 4; showing associated boundary wall

Typically, these were in a poor state due to cracking and movement



Fig 40:

Elevation 4; showing west side



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Fig 41:

Elevation 4; showing associated boundary wall

Typically, these were in a poor state due to cracking and movement



Fig 42:

Elevation 4; showing widespread RC failure

Also note staining from plumbing overflow pipe



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Fig 43:

Elevation 4; showing overgrowth by ivy

Also note external pipe clad in fibrous lagging. This should be checked against the asbestos register to determine its material type



Fig 44:

Elevation 4; showing parapet re-pointed in the past. The grey cement mortar was a poor aesthetic match for the original and had suffered recurrent failure



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Fig 45:

Elevation 4; showing clay tile sills used at the upper floors

Much of the original pointing had washed-out and a small number of tiles had broken



Fig 46:

Elevation 4; showing general view.

Note piers between windows in this and other areas had been purposefully left without pointing mortar

Also note widespread RC failure and patch repair



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Fig 47:

Elevation 4, west end; showing general view



Fig 48:

Elevation 4; showing tower

Note upper parts re-pointed previously and corner to west apparently re-built

The original areas of mortar below showed many areas of lost 'perp' joints



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Fig 49:

Elevation 4; showing lift plant room with washed-out pointing and localised RC spalling at the roof overhang



Fig 50:

Elevation 5; showing general view. Note poor temporary roof protection using tarpaulins



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Fig 51:

Elevation 5; showing later addition at east side

Significant vertical cracking was noted at the interface



Fig 52:

Elevation 5; showing area of significant vertical cracking where the auditorium and stage areas may be on separate foundations



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Fig 53:

Elevation 6; showing general view

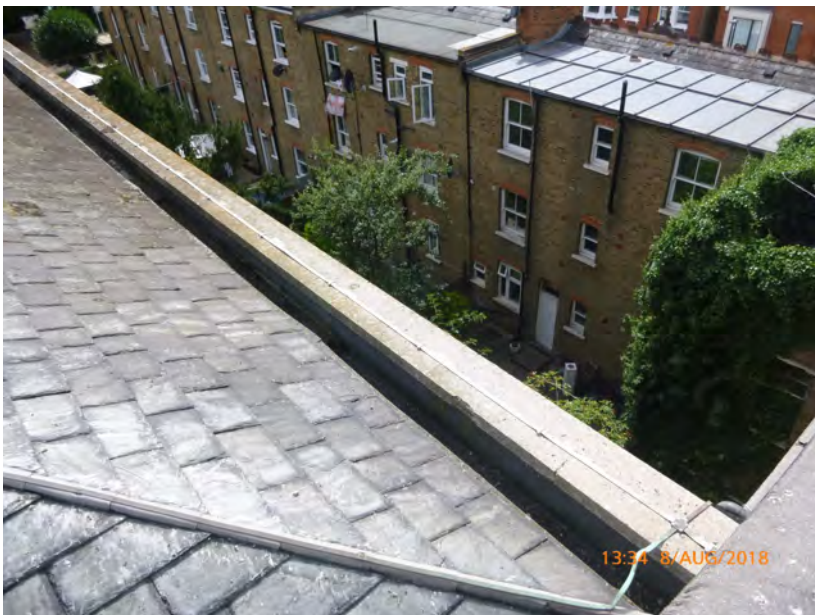


Fig 54:

Elevation 6; showing copings subject to localised damage and displacement



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Fig 55:

Elevation 7; showing upper section

Vertical cracking travelled from above the window opening

The parapet had been re-pointed in the past but suffered recurrent failure



Fig 56:

Section BB; showing general view



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Fig 57:

Section CC; showing general view



Fig 58:

Section CC; showing general view

Note plumbing leak staining and overgrowth at low level



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Fig 59:

Section EE; showing tower



Fig 60:

Section EE; showing roof level façade

RC damage/repairs were noted to the roof soffit and sill of the glazed room



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Fig 61:

Section FF; showing west wing

Note discolouration to base of walls where damage has been sustained by previous aggressive cleaning



Fig 62:

Section FF; showing west wing wall heads

The upper roof copings were overlaid in asphalt

The lower roof copings were exposed and were damaged at their cramp fixings in a number of areas



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Fig 63:

Section FF; showing boiler chimney

Pointing mortar degradation and vertical cracking was noted locally due to weathering and flue gasses

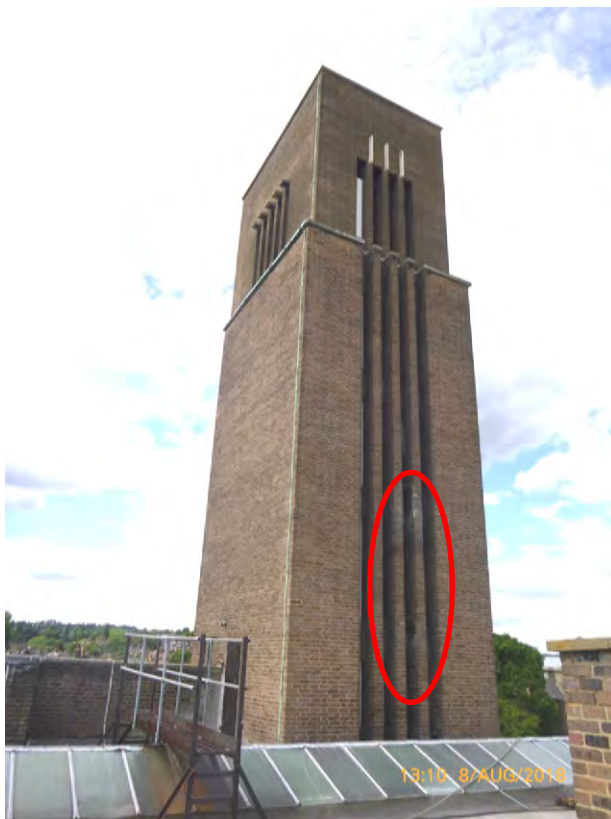


Fig 64:

Section HH; showing tower

A plumbing overflow pipe had caused saturation and staining of the brickwork as well as rooted plant growth



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Fig 65:

Section HH; showing council chamber

Note overgrowth restricting survey

Also note vertical cracking was quite widespread at the base of the wall



Fig 66:

Section HH; showing general view

This area showed very significant diagonal cracking at the interface with the auditorium. This may indicate differential foundations and lack of provision for movement



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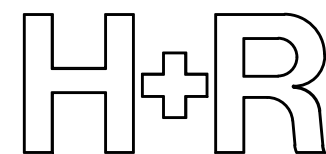
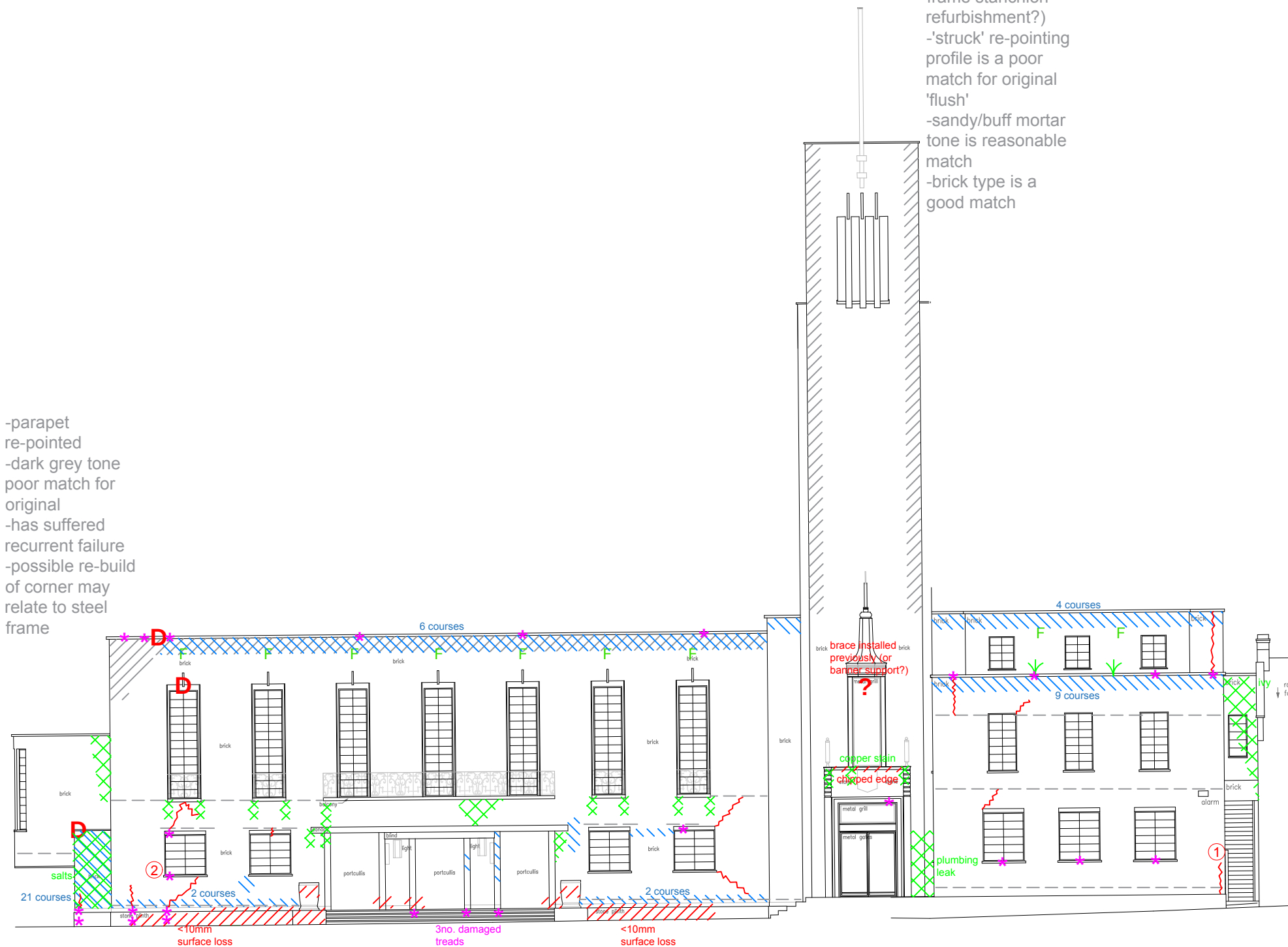
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Attachment C

-parapet
re-pointed
-dark grey tone
poor match for
original
-has suffered
recurrent failure
-possible re-build
of corner may
relate to steel
frame

-corners partially
re-built previously
(related to steel
frame stanchion
refurbishment?)
-'struck' re-pointing
profile is a poor
match for original
'flush'
-sandy/buff mortar
tone is reasonable
match
-brick type is a
good match

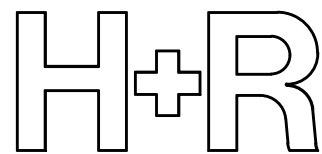


Hornsey Town Hall, Elevation 1
Façade masonry condition investigation
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Key:

- Illustration of weep holes (indicating cavity wall)
- ✓ Soiling/plant growth (to be cleaned/removed)
- * Damaged stonemasonry (to be repaired/replaced)
- F Redundant fixings (consider removal and making good)
- D Cracking/displacement (Structural Engineer to comment)
- /// Indication of previous remedial works
- /// Superficial erosion to stonemasonry
- /// Degraded pointing mortar (to be made good)
- ① Damaged brick, number (to be replaced)



Hornsey Town Hall, Elevation 3
Façade masonry condition investigation
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Key:

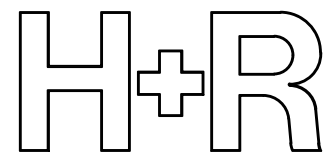
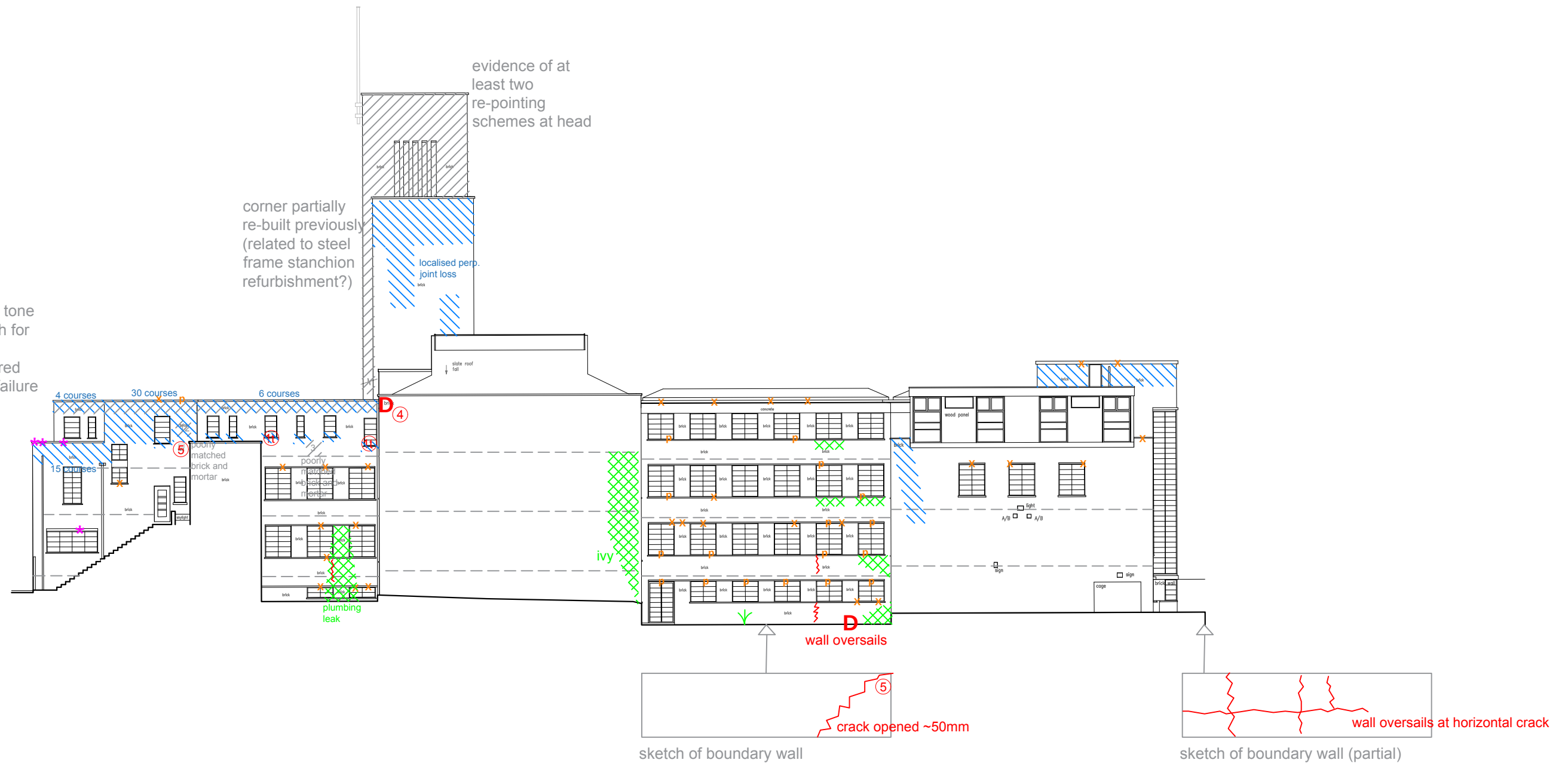
- — — Illustration of weep holes (indicating cavity wall)
- x Damaged reinforced concrete (to be repaired/replaced)
- p Previous patch to reinforced concrete (adequacy to be reviewed)
- xxx Soiling (to be cleaned)
- D Cracking/displacement (Structural Engineer to comment)
- /// Degraded pointing mortar (to be made good)
- ① Damaged brick, number (to be replaced)

-parapet
re-pointed
-dark grey tone
poor match for
original
-has suffered
recurrent failure

corner partially
re-built previously
(related to steel
frame stanchion
refurbishment?)

evidence of at
least two
re-pointing
schemes at head

localised perp.
joint loss

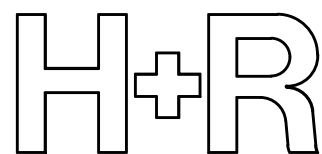
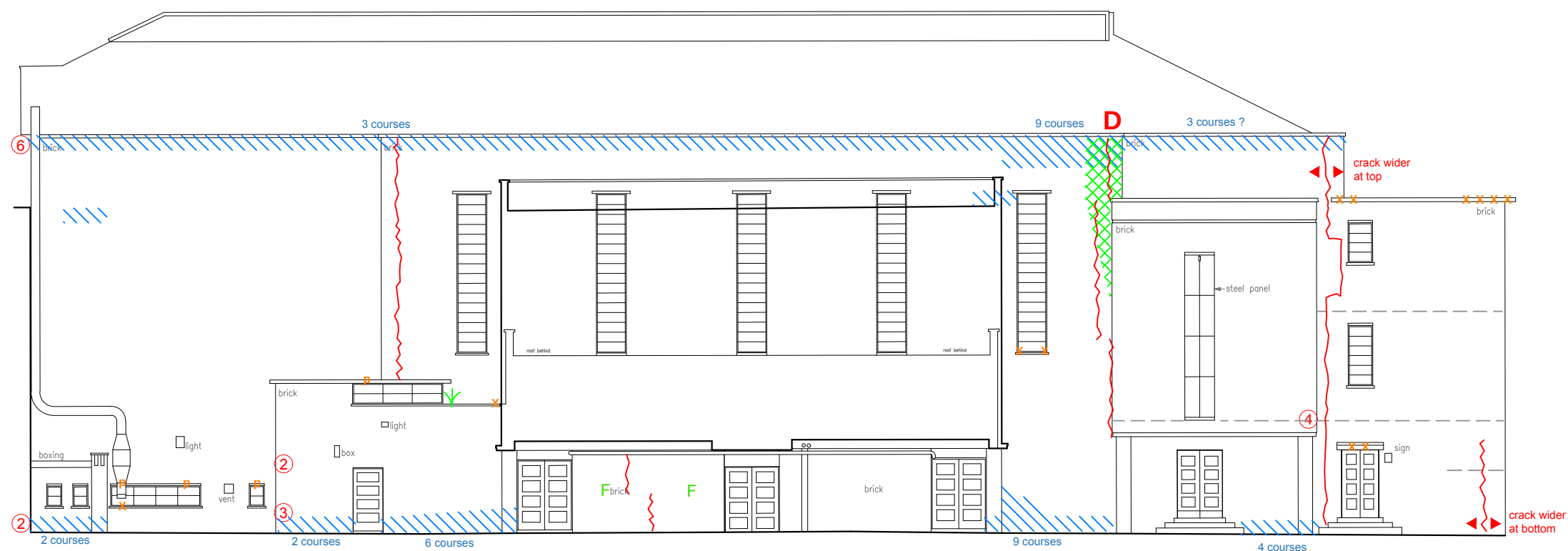


Hornsey Town Hall, Elevation 4 Façade masonry condition investigation August 2018

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Key:

- * Damaged stonemasonry (to be repaired/replaced)
- Illustration of weep holes (indicating cavity wall)
- x Damaged reinforced concrete (to be repaired/replaced)
- p Previous patch to reinforced concrete (adequacy to be reviewed)
- xxx Soiling/plant growth (to be cleaned/removed)
- D Cracking/displacement (Structural Engineer to comment)
- /// Indication of previous remedial works
- /// Degraded pointing mortar (to be made good)
- ① Damaged brick, number (to be replaced)



Hornsey Town Hall, Elevation 5
Façade masonry condition investigation
August 2018

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Key:

- F Redundant fixings (consider removal and making good)
- Illustration of weep holes (indicating cavity wall)
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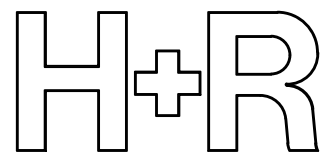
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Façade masonry condition investigation
August 2018

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Key:

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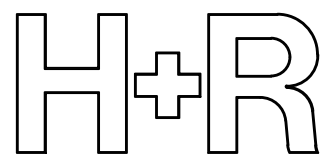
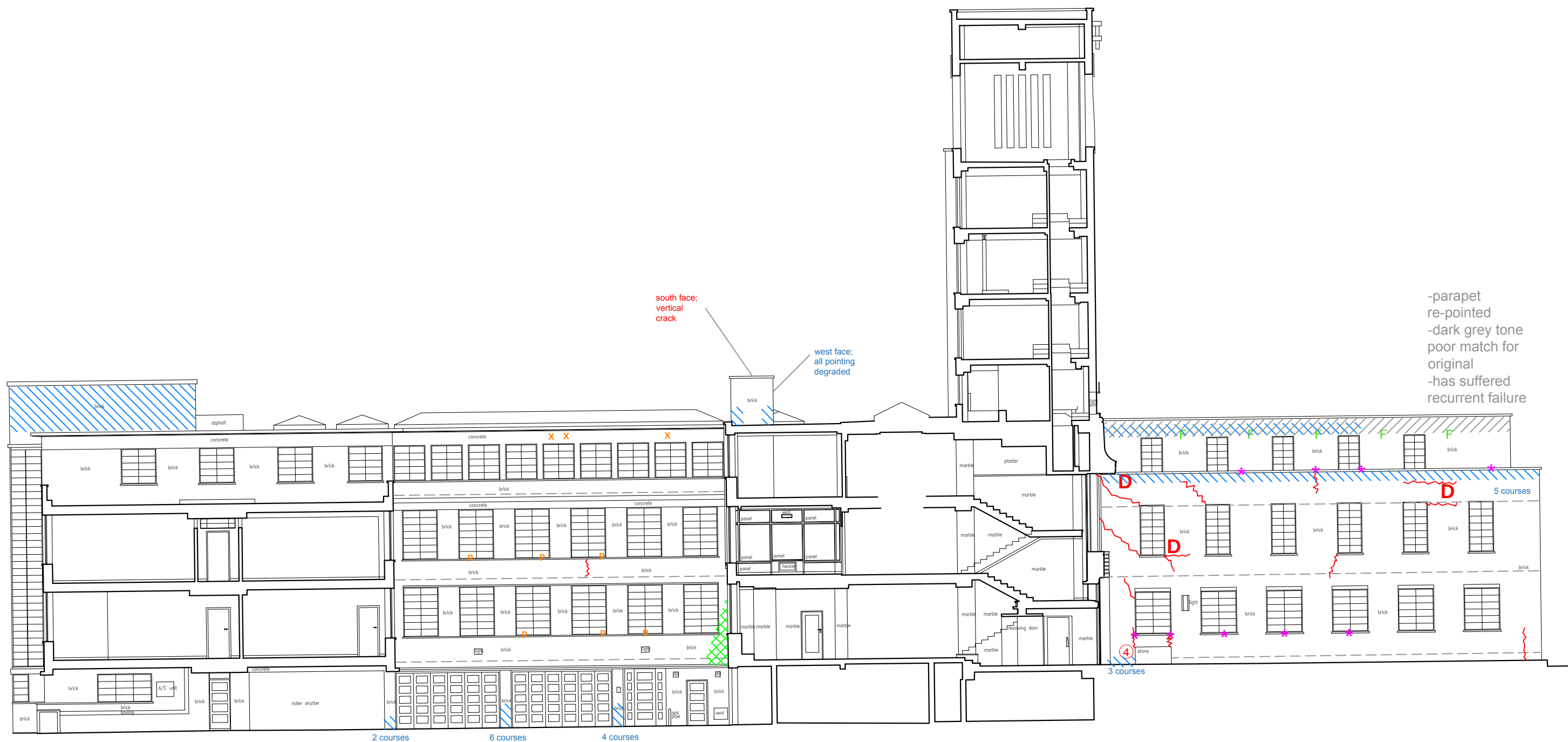


Hornsey Town Hall, Section CC
Façade masonry condition investigation
August 2018

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Key:

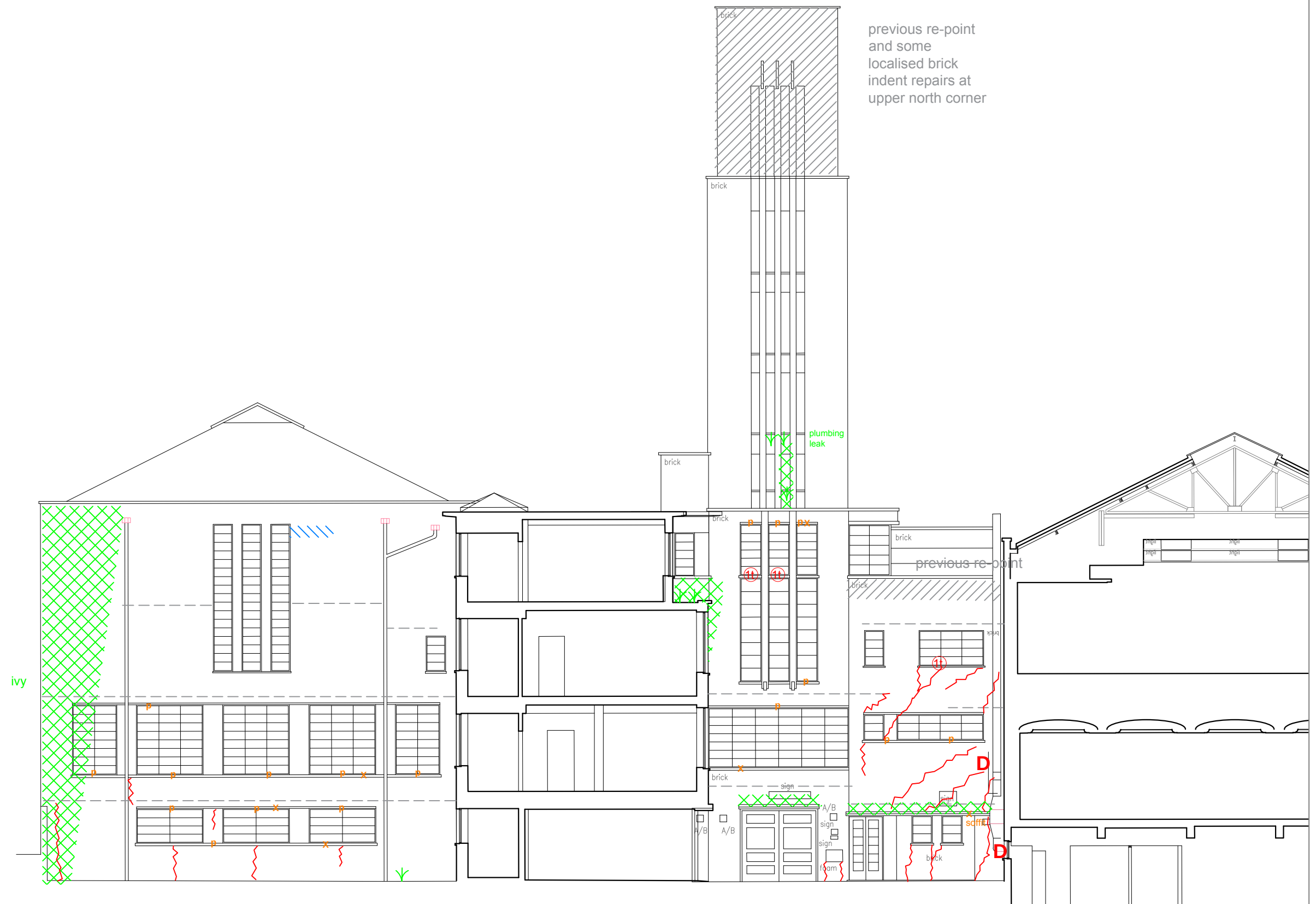
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- ~ Cracking (Structural Engineer to comment)
- /// Degraded pointing mortar (to be made good)
- ① Damaged brick, number (to be replaced)



Hornsey Town Hall, Section FF
Façade masonry condition investigation
August 2018

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 - * Damaged stonemasonry (to be repaired/replaced)



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