

Hutton + Rostron Environmental Investigations Limited

Southleigh Park House: Chimneystack condition investigation

Site note A12 for 5 February 2021, job no. 152.09

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Distribution:

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1 INTRODUCTION

1.1 AUTHORITY AND REFERENCES

Hutton + Rostron Environmental Investigations Limited carried out a site visit to Southleigh Park on 5 February 2021 in accordance with instructions from Steve Coull of FSL Group by email, on 10 November 2020 at 13:09. Drawings were provided by the client. For the purpose of orientation in this report, the principal façade was taken as facing south

1.2 AIM

The aim of this survey was to investigate external chimneystacks for construction, condition, and service life so as to provide recommendations for cost effective remedial works

1.3 LIMITATIONS

Structures were not examined in detail except as described in this report, and no liability can be accepted for defects that may exist in other parts of the building. We have not inspected any parts of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part of the property is free from defect or in the event that such part of the property is not free from defect it will not contaminate and/or affect any other part of the property. The sample remedial details and other recommendations in this report are included to advise and inform the design team appointed by the client. The contents of this report do not imply the adoption of the role of Principal Designer by H+R for the purposes of the Construction (Design and Management) (CDM) Regulations 2015

2 STAFF ON SITE AND CONTACTS

2.1 H+R STAFF ON SITE

Tim Jordan

2.2 PERSONNEL CONTACTED

David Mosdell – FSL Group
Site Staff

3 OBSERVATIONS AND RECOMMENDATIONS

3.1 SUMMARY OF CONSTRUCTION

Chimneystacks and parapet tower features were constructed in knapped flint with galleted lime mortar joints. H+R considered it most likely that the existing external chimneystacks dated from the Edwardian period refurbishment, when many of the facades were remodelled and over-clad. However, several of the chimneystacks are likely to bear onto older chimneybreasts internally, from the Victorian period. Some previous refurbishment was apparent, dating from 1970s and 2000 works

3.2 SUMMARY OF CONDITION

Flint had proven to be a very durable material and had withstood weathering under a high level of exposure to wind, rain and sun. It was remarkable that the stacks had required very little repair since construction some ~90 years ago. Previous repairs had kept the stacks in fair condition. There were limited areas of mortar failure and vertical cracking. The original provision for damp-proofing within the stacks continued to prove effective in preventing moisture related damage to internal finishes. Detailed information is provided within Attachments

There is no requirement to re-build stacks or to install remedial damp-proofing. Localised mortar repairs are required. Open pot heads should be fitted with cowl vents. The Structural Engineer may wish to review H+R record data by way of an assessment of structural integrity. Existing flue voids could potentially be re-purposed as service risers etc.

4 H+R WORK ON SITE

- 4.1** H+R inspected chimneys by visual and tactile means
- 4.2** H+R took photographs for record and illustration purposes

5 PROPOSED ACTION BY H+R

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

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

Attachment A

SCHEDULE OF OBSERVATIONS AND RECOMMENDATIONS

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SNa12.1 CHIMNEY 1				
SNa12.1.1	Construction	No flue heads visible, assumed decorative or closed chimney, penetrates flat roof Knapped flint masonry with galleted joints 700 x 1000mm in section 2600mm height above roof line	-	
SNa12.1.2	Condition	General moss growth at head and exposed ledges No significant defects noted	<i>No remedial works anticipated at this stage</i> <i>Removal of moss is not recommended due to risk of damaging/disturbing the substrate</i>	
SNa12.2 CHIMNEY 2				
SNa12.2.1	Construction	Twin flue chimney, penetrates flat roof, open yellow clay pots Knapped flint masonry with galleted joints 700 x 1300mm in section 2600mm height above roof line	-	
SNa12.2.2	Condition	Open pots will permit direct water ingress North pot cracked, though firmly held by flintwork built-up surrounding General moss growth at head and exposed ledges Some slight weakening of bed mortar at string ledge, some flints could be removed due to weathering of exposed surface No significant defects noted	<i>Allow to fit 2no. yellow clay 'mushroom' cowls</i> <i>Action not deemed necessary in relation to cracked pot</i> <i>Removal of moss is not recommended due to risk of damaging/disturbing the substrate</i> <i>At this time, action to renew localised areas of slightly degraded mortar was not deemed necessary</i>	
SNa12.3 CHIMNEY 3				
SNa12.3.1	Construction	Decorative turret feature within parapet, no evidence that this has been used as a flue in the past Knapped flint masonry with galleted joints It was reported to H+R that the elevation below has been re-built, presumably including this turret also, circa 2000	-	
SNa12.3.2	Condition	Pointing repairs evident within parapet interior No significant defects noted	<i>No remedial works anticipated at this stage</i>	
SNa12.4 CHIMNEY 4				
SNa12.4.1	Construction	As for chimney 3	-	
SNa12.4.2	Condition	As for chimney 3	<i>No remedial works anticipated at this stage</i>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SNa12.5 CHIMNEY 5				
SNa12.5.1	Construction	Decorative turret feature within parapet, no evidence that this has been used as a flue in the past Knapped flint masonry with galleted joints Structure is corbelled-out from façade below with some use of brickwork evident	-	
SNa12.5.2	Condition	Mortar repairs evident in corbel courses No significant defects noted	<i>No remedial works anticipated at this stage</i>	
SNa12.6 CHIMNEY 6				
SNa12.6.1	Construction	Single flue chimney, set within external wall and parapet Yellow clay pot and cowl, knapped flint masonry with galleted joints Structure is corbelled-out from façade below with some use of brickwork evident 800 x 800mm in section 1800mm height above roof line	-	
SNa12.6.2	Condition	Mortar repairs evident in corbel courses, modern render used at parapet interior No significant defects noted	<i>No remedial works anticipated at this stage</i>	
SNa12.7 CHIMNEY 7				
SNa12.7.1	Construction	Three flue chimney, penetrates ridge of pitched roof with lead flashing Yellow clay pots with steel wire cages used to exclude birds, knapped flint masonry with galleted joints At least 1no. flue is still used to vent a boiler appliance within the basement 700 x 2200mm in section 2700mm height above roof line		
SNa12.7.2	Condition	Mortar repairs evident in upper corbel courses, modern render used above flashings at north and south sides No significant defects noted Open pots will permit direct water ingress	<i>No remedial works anticipated at this stage</i> <i>If flues are to be taken out of use, allow to fit 3no. yellow clay 'mushroom' cowls</i>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SNa12.8 CHIMNEY 8				
SNa12.8.1	Construction	Decorative turret feature within parapet, no evidence that this has been used as a flue in the past Knapped flint masonry with galleted joints Overhangs at north, east and west via corbel courses 1100 x 1100mm in section 2700mm height above roof line	-	
SNa12.8.2	Condition	Pointing repairs evident around corbel courses Lime leaching emergence around lead flashing line (effective DPC/tray?) indicates moisture soaking into the masonry head and existing/drying shortly below No significant defects noted	<i>No remedial works anticipated at this stage</i>	
SNa12.9 CHIMNEY 9				
SNa12.9.1	Construction	Two flue chimney, pitched roof with lead flashing Yellow clay pots, one with steel wire cage, one with cowl, knapped flint masonry with galleted joints 700 x 1700mm in section 3200mm height above roof line	-	
SNa12.9.2	Condition	Flaunching mortar cracking/failing Open pot will permit direct water ingress Metal aerial strapped to base of stack	<i>Allow to remove and replace flaunching in an NHL5 mortar</i> <i>Allow to fit 1no. yellow clay 'mushroom' cowl</i> <i>Assuming the aerial is redundant, this should be removed</i>	
SNa12.10 CHIMNEY 10				
SNa12.10.1	Construction	Two flue chimney, rising from parapet wall head Yellow clay pots with cowls, knapped flint masonry with galleted joints 900 x 1200mm in section 3500mm height above roof line	-	
SNa12.10.2	Condition	Vertical crack in north and west faces of the north flue shaft, cracks travelled through mortar joints and were no wider than 3mm There was a general state of mortar deterioration, beyond that seen in most other areas of flintwork at the property, perhaps due to this stack being most exposed to south-westerly weathering. Mortar joints were reasonably intact but often had lost galleting and showed erosion of upto 20mm	<i>Allow to patch repair pointing using new shards of flint galleting and an NHL5 mortar</i> <i>Intact joints may be retained as part of a targeted re-pointing scheme, say upto 10m² pointing required</i> <i>Depending on the view of the Structural Engineer, no further action is required to the areas of cracking, beyond re-pointing</i>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SNa12.11 CHIMNEY 11				
SNa12.11.1	Construction	Decorative turret feature within parapet, no evidence that this has been used as a flue in the past Knapped flint masonry with galleted joints	-	
SNa12.11.2	Condition	No significant defects noted	<i>No remedial works anticipated at this stage</i>	
SNa12.12 CHIMNEY 12				
SNa12.12.1	Construction	Large decorative turret feature within parapet, no evidence that this has been used as a flue in the past Corbelled out from façade below 1200mm diameter Knapped flint masonry with galleted joints, head flaunched in mortar	-	
SNa12.12.2	Condition	Evidence of previous pointing mortar repairs locally Flaunching mortar is of no great age but showed signs of cracking and frost damage. This was in a poorer state than found in the similar 'Chimney 13'	<i>Allow to remove and replace flaunching in an NHL5 mortar</i>	
SNa12.13 CHIMNEY 13				
SNa12.13.1	Construction	As for chimney 12	-	
SNa12.13.2	Condition	Evidence of previous pointing mortar repairs locally Flaunching mortar was weathered but in reasonable condition	<i>No remedial works anticipated at this stage</i>	
SNa12.14 CHIMNEY 14				
SNa12.14.1	Construction	Single flue chimney, penetrating flat roof to pitched roof junction with a lead flashing Yellow clay pot with cowl, knapped flint masonry with galleted joints 700 x 700mm in section 3000mm height above roof line	-	
SNa12.14.2	Condition	Localised failure of pointing mortar was noted, particularly at the east face for ~1m ²	<i>Allow to patch repair pointing using new shards of flint galleting and an NHL5 mortar</i> <i>Intact joints may be retained as part of a targeted re-pointing scheme, say upto 3m² pointing required</i>	
SNa12.15 CHIMNEY 15				
SNa12.15.1	Construction	Decorative turret feature within parapet, no evidence that this has been used as a flue in the past Knapped flint masonry with galleted joints	-	
SNa12.15.2	Condition	No significant defects noted	<i>No remedial works anticipated at this stage</i>	

REFERENCE	ITEM	OBSERVATIONS	RECOMMENDATIONS	CLIENT COMMENTS
SNa12.16 CHIMNEY 16				
SNa12.16.1	Construction	Two flue chimney, rising from parapet wall head Yellow clay pots with cowls, knapped flint masonry with galleted joints 900 x 1200mm in section 3500mm height above roof line	-	
SNa12.16.2	Condition	Vertical crack in west base of the stack, at the springing point of the two separate shafts. Crack travels through mortar joints and was no wider than 2mm	<i>Depending on the view of the Structural Engineer, no further action is required to the areas of cracking, beyond re-pointing</i> <i>Crack to be raked-out and re-pointed with flint shards and NHL5 mortar</i>	
SNa12.17 CHIMNEY 17				
SNa12.17.1	Construction	Two flue chimney, rising from parapet wall head Yellow clay pots with cowls, knapped flint masonry with galleted joints 900 x 1200mm in section 3500mm height above roof line	-	
SNa12.17.2	Condition	Vertical crack in north face of the stack has been re-pointed in the past Modern render has been applied at the parapet interior, interfacing with the roof finish	<i>No remedial works anticipated at this stage</i>	
SNa12.18 CHIMNEY 18				
SNa12.18.1	Construction	Decorative turret feature within parapet, no evidence that this has been used as a flue in the past Knapped flint masonry with galleted joints	-	
SNa12.18.2	Condition	No significant defects noted Previous mortar repairs, rendering and a lead drip flashing were noted	<i>No remedial works anticipated at this stage</i>	

Attachment B



Fig 1:

H+R Chimney 1

Head



Fig 2:

H+R Chimney 1

North



Southleigh Park House

Photographs

5 February 2021

Not to scale

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Fig 3:

H+R Chimney 1

East



Fig 4:

H+R Chimney 1

South



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Fig 5:

H+R Chimney 1

West



Fig 6:

H+R Chimney 1

North; showing detail of joints and
brickwork evident in supporting
structure



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Fig 7:

H+R Chimney 1

String ledge; showing typical biological growth



Fig 8:

H+R Chimney 2

Head



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Fig 9:

H+R Chimney 2

North



Fig 10:

H+R Chimney 2

East



Fig 11:

H+R Chimney 2

South



Fig 12:

H+R Chimney 2

West



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Fig 13:

H+R Chimney 2

String ledge; showing minor dislodgement in bed mortar under heavy weathering



Fig 14:

H+R Chimney 2

South; showing detail of tightly jointed flint



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Photographs
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Fig 15:

H+R Chimney 3

Head



Fig 16:

H+R Chimney 3

North and east



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Fig 17:

H+R Chimney 3

South and west



Fig 18:

H+R Chimney 3

North; showing previous repairs to pointing within the parapet interior



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Fig 19:

H+R Chimney 4

Head



Fig 20:

H+R Chimney 4

North and east



Fig 21:

H+R Chimney 4

South and west



Fig 22:

H+R Chimney 5

Head



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Fig 23:

H+R Chimney 5

North and east



Fig 24:

H+R Chimney 5

South and west; showing corbelling
from façade below and use of
brickwork at corner



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Fig 25:

H+R Chimney 6

Head



Fig 26:

H+R Chimney 6

North and east



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Fig 27:

H+R Chimney 6

South and west



Fig 28:

H+R Chimney 7

Head



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Fig 29:

H+R Chimney 7

North



Fig 30:

H+R Chimney 7

East



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Fig 31:

H+R Chimney 7

South



Fig 32:

H+R Chimney 7

West



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Fig 33:

H+R Chimney 8

Head

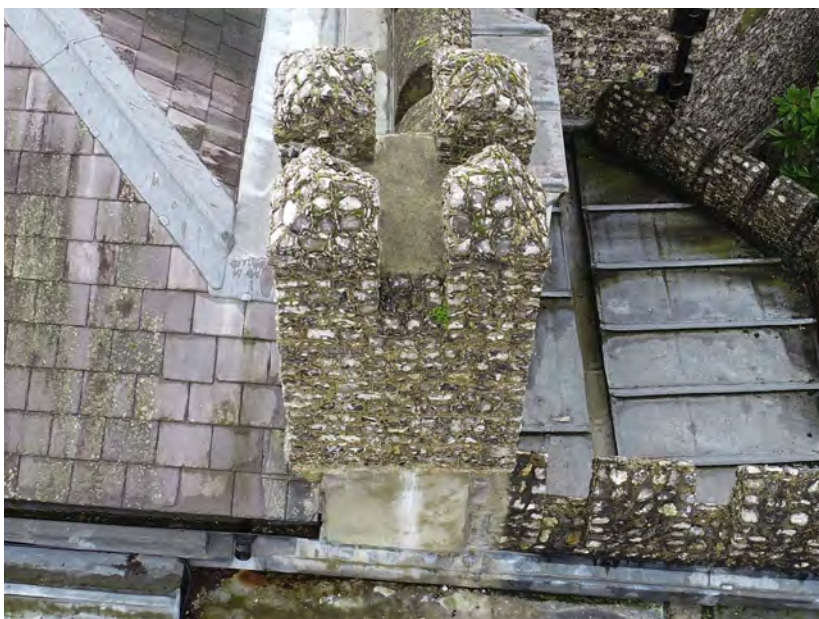


Fig 34:

H+R Chimney 8

North



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Fig 35:

H+R Chimney 8

East



Fig 36:

H+R Chimney 8

South



Fig 37:

H+R Chimney 8

West



Fig 38:

H+R Chimney 8

North; showing lead flashing line which may serve as a DPC/tray



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Fig 39:

H+R Chimney 8

North; showing lime leaching from the masonry due to high volume water passage



Fig 40:

H+R Chimney 8

West; showing previous repairs to corbel courses



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