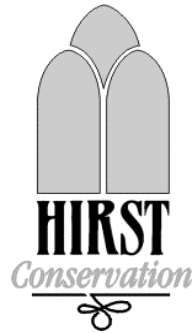


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Results of Architectural Paint Research to Manchester Reform Club



October 2019

**MANCHESTER REFORM CLUB
81 KING ST / 50 SPRING GARDENS
MANCHESTER
M2 4AH**

Summary

Project:	The investigation of architectural paint finishes to the turret louvres and rainwater downpipe to the exterior of the Reform Club, Manchester.
List Entry Number:	12829887
Listing:	Grade II*
Date First Listed:	3 rd October 1974
National Grid Reference:	SJ 84027 98281
Name and Address of Client:	James Moulton Building Surveyor Bruntwood Limited Union, 2 - 10 Albert Square Manchester M2 6LW
Name and Address of Conservator:	Helena Brazil MA, BA (Hons) Hirst Conservation Limited Laughton Sleaford Lincolnshire NG34 0HE
Date of Works:	September/October 2019
Author(s) and Date of Investigative Report:	Helena Brazil MA, BA (Hons) October 2019
Methods Employed:	Paint research – Photographic recording, uncovering of historic paint films by mechanical means and cross-sectional analysis.

Neither the whole nor any part of this report, or any reference contained within, may be included in any published document, circular or statement, or published in any other ways, with Hirst Conservation's written approval or the form and content in which it may appear

*Hirst Conservation is the trading name of Hirst Conservation Limited
Fine Art Conservators and Historic Building Consultants.
Registered office: Laughton Hall Farmhouse, Laughton, Sleaford, Lincolnshire. NG34 0HE
Company No. 09797372 England – VAT Registration No: 425 6915 39*

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1 Introduction

Hirst Conservation were appointed by Bruntwood Limited to undertake architectural paint research to selected paint finishes to the exterior of the Reform Club at 81 / 50 Spring gardens, Manchester M2 4AH.

The following document records the investigation which was undertaken in September/October 2019 by Helena Brazil, an architectural paint researcher from Hirst Conservation Limited.

This report will inform the understanding of the history decorative schemes to the louvres and downpipes to the exterior and support the decision-making process for re-painting and maintenance to the exterior.

The investigation was undertaken at the request of James Moulton of Bruntwood Limited.

2 Project Aims, Research Strategy and Methodology

2.1 Aims and Objectives of Paint Research

The aims of architectural paint research are:

- To understand the original design intention, where possible
- To record the decorative history of the turret louvres and rainwater downpipes
- To inform the ongoing conservation and maintenance of the site

Sample locations are in section three with cross sectional analysis included in section four. A discussion of the results relating to the buildings history is explored further in section five. Recommendations and consideration of an appropriate colour palette for redecoration are included in sections six and seven.

2.2 History and Description

Designed in the Venetian Gothic style by Edward Salomons (1828 - 1906) in collaboration with John Philpott-Jones (1829 – 1873) in 1870 - 1871, the former Reform Club at 81 King Street and 50 Spring Gardens, Manchester, is Grade II* listed and is currently converted to offices and a bar and restaurant.

The listing description is as follows: the building consists of three floors, a basement and an attic and was constructed in Sandstone ashlar with polychrome dressings and a hipped slate roof. The ground floor has an elaborate round-headed doorway in a porch composed of colonnettes with a concave under-hang to the projected balustraded first floor balcony, and five bay windows containing tall two light sashed windows with round-headed lights and circular tracery, with a balustraded balcony. The three-sided oriel windows to the corners are finished as turrets with tall slender arched windows and bracketed under-hangs to the first floor. There are carved emblematic panels above and a prominent balcony to the second floor with a wrought-iron balustrade, and an arcaded cupola with projecting grotesques. To the second floor are small coupled two-centred arched windows with shafts and an impost band with a small wrought-iron balcony to the central pair. The former dormer windows and central spire have been removed.

The Reform Club, founded in 1867, was originally a gentlemen's club for Manchester's Liberal Party elite with the objective of providing a place of meeting for Liberal politicians and supporters of the Liberal cause in the Manchester area. It was not strictly a political club; however Liberal views were a pre-requisite of membership. The club was for Liberal gentlemen as women were not admitted as members until the 1980's. Initially the party members had met in three rooms they rented above a warehouse in Spring Gardens but quickly outgrew the premises. Within a year of its establishment the Manchester Reform Club Building Company was formed to establish a permanent home for the 2000 or so members of the new Club who paid an annual subscription of three guineas per year with the addition of a five-guinea entrance fee. The new building opened on the 17th of October 1871 by then Prime

Minister William Gladstone. Prominent members included Lloyd George, who held the position of annual president and Winston Churchill who gave his election victory speech in 1906 from the Gothic balcony.

Over time, the Reform Clubs' membership shrank. In an attempt to keep the club open it was merged with the Engineers' Club in 1967, to form the Manchester Club, losing much of its political nature in the process. The Reform Club closed in 1988.

Edward Salomon was a pupil of J. E. Grogan, setting up his own practice in Manchester in 1852. Salomon won the competition for the now demolished Exhibition Hall which was built for the city's Art Treasures Exhibition in 1857. His other buildings in Manchester included Trinity Court on John Dalton Street (1865) and the Grade II* listed Manchester Jewish Museum (1875). In London, he assisted with the design of the Agnew Gallery on Old Bond Street (1876) and the Grade I listed New West End Synagogue (1863). He died at Ireton Bank, Platt Lane, Rusholme, Manchester in May 1906, and was cremated at the German Romanesque Manchester Crematorium.

2.3 Archival Research

No independent archival research was commissioned as part of this programme of paint research. A Heritage Impact Assessment 2019; a Statement of Significance 2019 and a Materials Analysis Report 2019 by Heritage Testing Ltd. was supplied by the client prior to the programme of research. No reference to any content within these documents has been included within this report.

2.4 Collection of Paint Samples

Samples were taken using mechanical means (using a scalpel and small wood chisel), given individual reference codes and the samples sites recorded photographically. Grateful thanks are given to Steve Hannigan of Crown Services for the collection of additional samples, utilising abseiling equipment, from the oriel window and additional rainwater goods which were not accessible from scaffolding, tower or ladder during site visits.

2.5 Microscopic Assessment of Samples

The samples were mounted in clear casting resin and polished to provide a cross section through the paint films. Assessment at 100x magnification in incidental light allowed the film structure to be assessed. In addition, fluorescence microscopy was employed to identify the basic stratigraphy (for example, differentiation between degraded paint films) and to establish basic composition of paint films¹.

¹ Microscope used was a Leitz Laborlux 12ME, with brightfield condenser and CoolLED pE-300 white UV light source. Visible light was produced by Euromex cold light LED illuminator with gooseneck attachments (3200K). UV Light, excitation wavelength range: 390-490nm, Splitting mirror: 510nm, Absorption wavelength 515nm.

Assessment of samples in incidental light and UV fluorescence enables each scheme to be identified through dirt films, 'oiling out' films, fading to the upper surfaces of paint films and variations in the fluorescent properties.

2.6 Micro-chemical Analysis of Paint Films

Further investigation of key films was achieved by stain tests and simple chemical techniques². This was undertaken in order to understand the basic composition of individual films.

2.7 In-situ Investigation

In order to better interpret the results of the cross-sectional analysis of samples, using the cross sections as a guide, a scalpel was used to mechanically remove the overlying paint films to evaluate the paint archaeology to unmounted samples.

2.8 Colour Matching

The provision of colour swatches has been based on the understanding of the materials gained during the investigation. Uncovering tests provide some information on the early schemes but should not be taken as an accurate guide to colour as these paint films have been subject to deterioration and discolouration through environmental factors and overpainting. The colour references given are based on those found, although refining of the colours may be required following testing on site.

² Plesters, Joyce. Cross-sections and chemical analysis of paint samples Studies in Conservation, (Volume 02, pp 110-157, 1956)

3 Sample Locations

A site visit was made on the 26th September 2019 to record and collect paint samples from the turret louvres and from the rainwater downpipes.

The information contained in this report is based on the limited number of samples taken and restricted to the areas that could be accessed by scaffold and tower access. Grateful thanks must be given to Steve Hannigan of Crown Services for the collection of additional samples utilising abseiling equipment.



Figure 1 – King Street Elevation

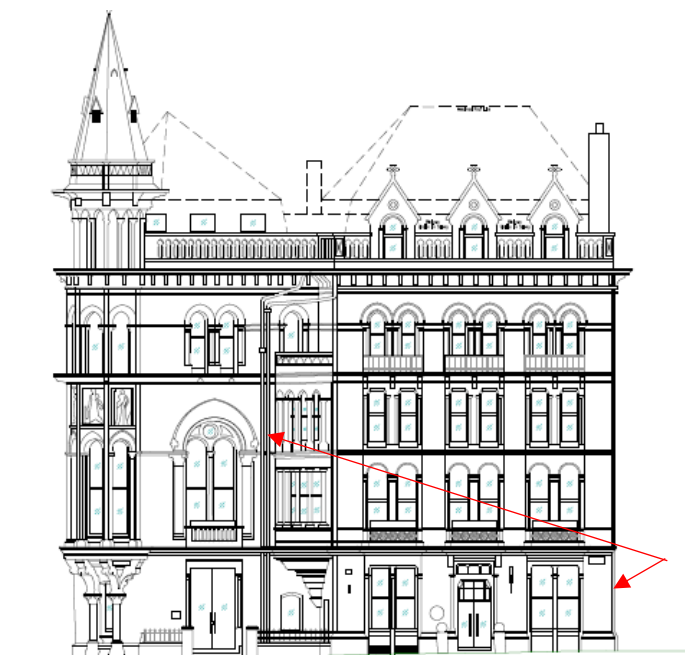


Figure 2 – Spring Gardens Elevation

The only rainwater goods to the exterior elevations are located on Spring Gardens

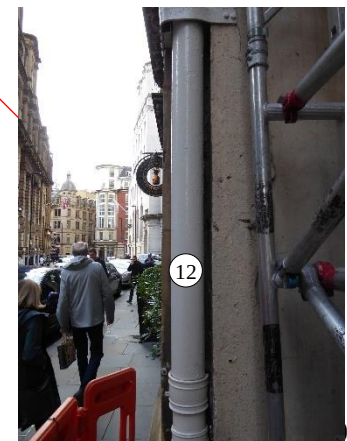
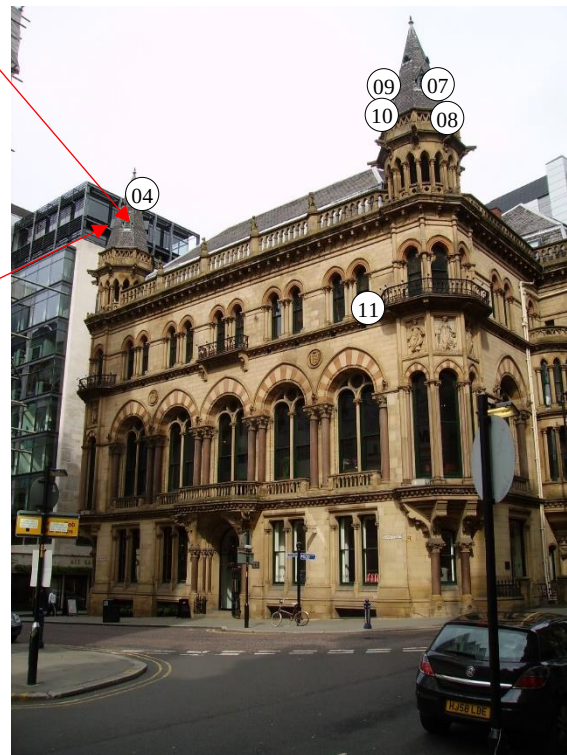
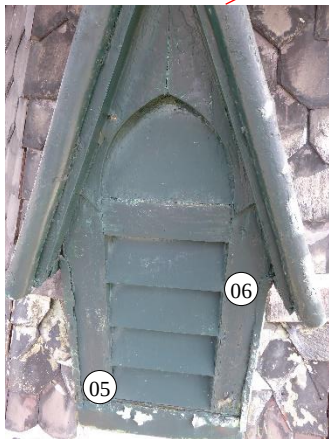
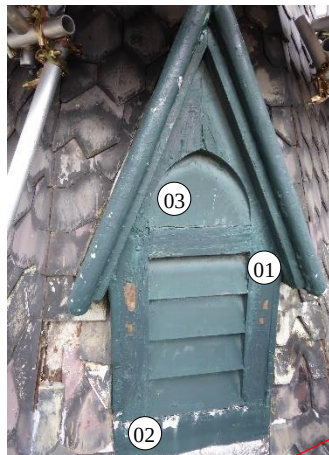
3.1 Turret Louvres and Rainwater Downpipes Sample Locations

Sample Locations

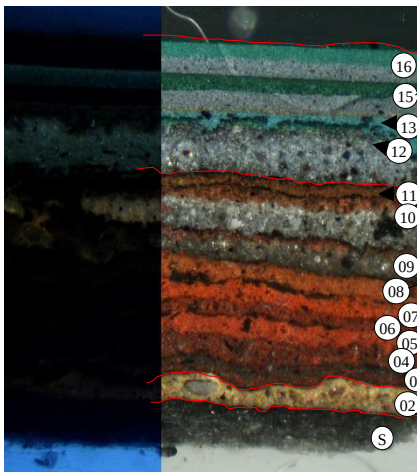
- 01 – King Street, lower right louvre, vertical timber
- 02 – King Street, lower right louvre, lower horizontal
- 03 – King Street, lower right louvre, slate vent
- 04 – King Street, upper right louvre
- 05 – King Street, lower left louvre, vertical timber
- 06 – King Street, lower left louvre, vertical timber
- 07 – Spring Gardens, lower right louvre

Sample Locations

- 08 – Spring Gardens, lower right louvre
- 09 – Spring Gardens, lower left louvre
- 10 – Spring Gardens, lower left louvre
- 11 – Spring Gardens, window 2nd in from the right 2nd floor, timber sill
- 12 – Spring Gardens, rainwater goods to right of Grand Pacific restaurant, pipe
- 13 – Spring Gardens, lower oriel first floor window, timber sill
- 14 – Spring Gardens, rainwater goods adjacent to oriel window to 1st floor, pipe

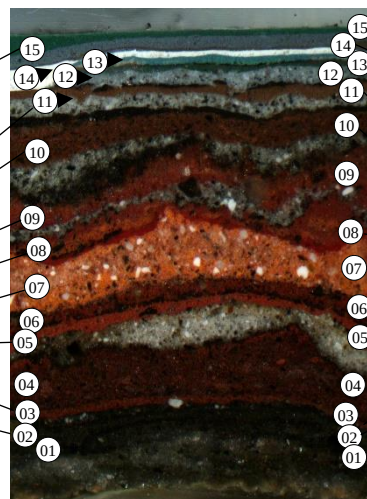


3.2 Comparison of Stratigraphy



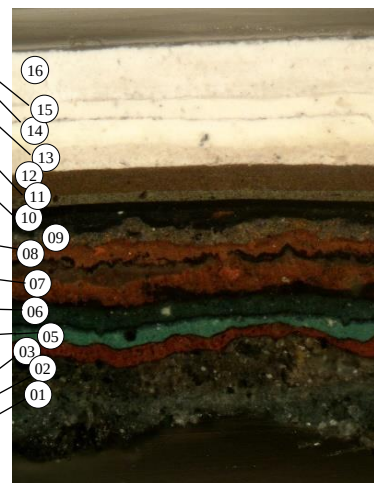
Sample 03: King Street lower right louvre, substrate missing. 14 schemes evident. (comparable to sample 09)

Scheme 02 – Light brown stone colour
Scheme 03 – Dark Red/Brown colour
Scheme 04 – Red/Brown colour scheme
Scheme 05 – Red/orange colour scheme
Scheme 06 – Red/brown colour scheme
Scheme 07 – Red/orange colour scheme
Scheme 08 – Red/orange colour scheme
Scheme 09 – Dark red over a grey primer
Scheme 10 – repeat of scheme nine
Scheme 11 – Dark red/brown (no primer)
Scheme 12 – Green colour over a grey primer (possibly Brunswick Green)
Scheme 13 – Blue/green colour scheme (no primer)
Scheme 14 – not evident in sample
Scheme 15 – Dark green colour over a grey primer
Scheme 16 – thinly applied dark green over a light green undercoat and grey primer



Sample 13: oriel window, timber substrate missing. 15 schemes evident.

Scheme 01 – Dark grey/green colour
Scheme 02 – repeat of scheme 1
Scheme 03 – Dark red/brown colour
Scheme 04 – Dark red/brown colour
Scheme 05 – Bright red with a grey undercoat
Scheme 06 – Dark red colour
Scheme 07 – Bright red colour over an orange primer
Scheme 08 – repeat of scheme seven
Scheme 09 – Red colour over a grey primer
Scheme 10 – repeat of scheme nine
Scheme 11 – Brown colour over a grey primer
Scheme 12 – Dark green colour with a grey primer (possible Brunswick Green)
Scheme 13 – Blue/green colour over a grey primer
Scheme 14 – Brown over a white primer
Scheme 15 – Dark green cover a grey primer
Scheme 16 – not seen in sample



Sample 12: (same as samples 14). King Street, rainwater downpipe. 16 schemes evident.

Initial scheme 01 – Dark grey/brown colour
Scheme 02 – dark grey/brown colour
Scheme 03 – Dark red colour
Scheme 04 – not evident in sample
Scheme 05 – Bright green colour
Scheme 06 – Dark green colour
Scheme 07 – Orange/red-brown colour
Scheme 08 – Red/Brown colour
Scheme 09 – Dark brown (stone) colour
Scheme 10 – Dark brown colour
Scheme 11 – Brown colour with a light brown undercoat
Scheme 12 – Brown colour
Scheme 13 – Off-white colour
Scheme 14 – Off-white colour
Scheme 15 – Off-white colour
Scheme 16 – Off-white colour

Summary of Analysis:

- All complete samples show consistent paint treatments across the exterior painted surfaces of the louvres
- Comparison of the cross sections from the louvres, windows and rainwater downpipe indicate that the building was largely treated coevally, although it appears that not all parts of the louvres were painted with the first scheme of decoration to the building.
- There are very distinct phases of colour to the exterior with an early bronze green seen to the lower facets (seen in samples to the oriel window and rainwater goods) with the louvres appearing to be decorated in a stone colour.
- The building was then decorated with varying phases of red colour schemes with some dark red/browns and brighter reds seen through the samples. There is evidence that the rainwater goods were not always treated in the same manner (sample 12 schemes five and six)
- Later decoration of the rainwater goods sees a distinct move to the use of white whilst a green colour is used to other areas of applied decoration.
- Samples 02, 04, 05, 06, 07, and 10 all appear to illustrate only later paint schemes
- Evidence of heavy dirt films to schemes 01 to 10

Key:



Separates each decorative scheme (where less obvious)



Separates Films within a scheme (Where less obvious)



Scheme numbers to aid identification



Denotes the substrate

4 Discussion of Results

4.1 Turret Louvres

Analysis and comparison of the samples from the louvres has revealed 14 schemes of decoration although there is a variation in the number of surviving paint films to the different samples taken from the louvres. The earliest schemes seen to other facets do not appear in the earliest samples to the louvres and may indicate that they were not initially painted or that the paint films were removed from the areas sampled prior to a change in the decorative appearance of the building. The sample used to illustrate the decoration to the louvres on the previous page (number 03) is taken from a slate from the upper-centre section of the louvre. When compared with a sample taken from a facet adjacent to it, they do not contain the earliest dark green/brown colour seen elsewhere, although a brick colour was seen to the earliest scheme to the sample taken from the King street elevation. This may indicate that the louvres originally appeared to mirror the lower sections of the building with the lighter colour stone and dark slate roof.



Image of the Reform Club 1890 (courtesy of Manchester Image Collection m83867)

An archive image found online clearly shows the louvres of a lighter appearance and the stone facade appears darker³. Whilst black and white images obviously cannot indicate use of colour they can help to provide a reference for a scheme seen in cross section. The lighter appearance

³ Is there a record of the façade being cleaned?

of the louvres in this image, combined with the darker appearance of the window surrounds (notice how they recess into the stone work and depth of the glass) is supported by the findings in the cross sections. It may also help to inform the building archaeology that the louvres were not painted in a dark finish until after 1890 when the image was taken. By contrast an image of the building from the 1930's (seen below) clearly shows that the louvres are painted in a dark finish, the window surrounds here are also of a dark appearance, again support by the paint archaeology.



An image of the Reform Club from 1930 (Manchester Image Collection m02427)

Following the use of the stone colour several phases of a red/brown colour were seen across the samples. It is known that the use of a deep red-brown was common in the period when the building was completed. There is a lack of preparatory coats to the initial schemes of red in the applied decoration to the louvres with grey undercoats or primers only seen from scheme nine onwards. Following the red/brown colour phase there follows four schemes of a green colour. These vary in shade and the use of a primer, though most schemes appear to have been applied over a grey preparatory coat⁴.

A significant number of the early schemes have distinct dirt film separating them, these are seen up to scheme 11. It may therefore be possible to date these as pre-1956 and the introduction of the Clean Air Act.

Microchemical stain tests for lead (Pb) were undertaken to a number of samples with positive results seen to the earliest red/brown schemes and stone colour schemes. There is an indication

⁴ It may be of interest to note that architectural paint research for Manchester Town Hall, another project undertaken in Manchester by Hirst Conservation, completed in 1877 and shows a similar stratigraphy of warm red/browns and greens although, it is not suggested that they are linked in any way.

following lead tests that an earlier green colour scheme may be a Brunswick Green consisting of Prussian Blue and Lead Chromate. However, the paint films in the sample tested were disrupted and it is not possible to positively identify which scheme this relates to from the remaining fragments, although it would closely tie up to scheme 12 just seen in samples three and thirteen. This colour scheme does not form part of the earliest colour phase of red/brown seen in the samples but is the earliest green scheme seen.

Two samples from the windows were also taken in order to give a broader understanding of the entire decorative programme to the exterior. A sample was taken from the first-floor oriel window and another from a third-floor sash window. The sample, taken by Steve Hannigan of Crown Services⁵, was taken from an area that may have undergone some repair as additional schemes were found within however, they do illustrate a coeval programme of decoration with the turrets for the first six schemes with the earliest scheme in a similar warm red/brown paint.

With the number of schemes seen and the age of the building, one can do a rough calculation regarding a maintenance programme⁶. The building was completed in 1871 so is approximately 150 years old. Whilst it has not been possible to isolate the date of the last major phase of external decoration, with up to 16 schemes of decoration seen to the samples this would indicate that the building was redecorated approximately every nine years. On average one would expect to see a new scheme every 8 – 10 years where lead-based oil paints have been repeatedly used⁷. Therefore, with the number of schemes seen to the samples it would indicate that the building appears to have been well maintained.

4.2 Rainwater Downpipes

Analysis of the rainwater goods revealed 16 schemes of decoration with the earliest scheme of a dark brown/green colour (possibly bronze green) over a foundry coat that would have been applied at the ironworks following manufacture. This paint scheme echoes that of the sample from the oriel window and appears to have been repeated up to three times. However, following this dark period of decoration the paint films change to a dark red colour. Unlike on the windows this has not been repeated straight away but changed to two schemes of a green colour before returning to the red phase of decoration, although the tone of the colour used varies with subsequent schemes of decoration.

The applied decoration then changes to a brown colour, possibly to emulate the colour of the surrounding brickwork although it appears darker in some schemes than others. Following several schemes of brown colour, the appearance changes to the existing white colour paint films seen today. There are noticeable dirt films to the earliest schemes which reduce considerably by the time the colour changes to brown with almost no dirt films seen to the white phase of decoration.

⁵ Samples were taken under instruction due to insufficient access to this element by the conservator

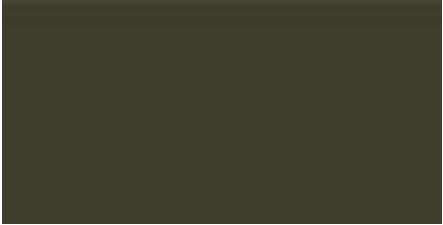
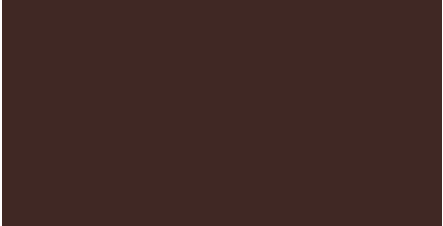
⁶ No surviving decorators' records have been provided to the researcher.

⁷ This is due to the ageing of the paint films, later paints can be renewed less often depending on preparation methods and the exposure of the building, weathering etc

The earliest schemes of decoration have been applied in lead-based oil paints.

The earliest paint schemes found have been recorded in Section five and it should be noted that the earliest uniform appearance to the building can be seen in scheme three with a dark red seen to all facets sampled.

5 Colour Schemes

Scheme	Colour reference
Earliest scheme seen to windows NCS S8010-G70Y	
Earliest Stone Colour Scheme to Turret Louvre NCS S4020-Y30R With NCS S6020-Y30R to timber facets	 
Earliest Dark Red to Turret Louvres and Windows NCS S7020 – Y90R Or NCS S8010-Y90R	 

The colour references are based on the results of cross section analysis, uncovering and experience of pigment and media types. The paint films are deteriorated and discoloured; therefore, it is not possible to take a colour measurement which will truly represent the original colour. Paint films have been subject to deterioration and discolouration through environmental factors and overpainting. Frequently uncovered colours may appear greyer (sulphation of white lead) and yellower (discolouration of oil content). Screen and printing calibration is rarely accurate so the colour swatches in printed or digital format are for illustration only. The hard copy with hand-inserted NCS swatches should be the main point of reference.

6 Recommendations

The colour references given in Section 5 indicate the earliest schemes seen to the samples and it should be noted that the exact colour of red and green used varied across different phases of redecoration. It is noted that the building retains ironwork balustrading which has not been sampled and should a representation of the building be considered to reflect an earlier scheme then appraisal of samples from the balustrading should be considered and should be undertaken prior to removal of any paint films from these facets.

Where the recreation of decorative historic schemes is intended, colour trials should be undertaken. When making colour scheme decisions, it is necessary to be aware that paint will react differently to different surfaces and colour may be subject to change upon application once dried.

Where historic paint films are extant, their removal should be avoided so as to preserve the paint archaeology, however if paint films are failing, choking detail or precluding function, then the removal of paint might be considered, provided listed building consent has been granted.

6.1 Health and Safety

Several schemes were found to contain lead which is toxic. If paint removal is to be undertaken, methods utilised should ensure safe working practice. Therefore, dry removal should be avoided in order to prevent the creation of air-borne, lead-containing dust, unless suitable extraction with a HEPA filter can be in place. In addition, the use of a heat gun should not be used without the operative wearing suitable PPE.

7 Glossary

Paint film: an individual film (one application) of paint.

Paint scheme: all paint films applied as one campaign of redecoration, e.g. primer, undercoat and topcoat(s).

Primer: a base coat to seal and provide key for overlying films.

Topcoat: One or more applications of the final paint colour of a scheme.

Undercoat: paint films applied in preparation to receive the final paint colour.

PAINT TYPES

Lead oil paint: Lead paint is a traditional paint type, with a basic composition of oil (usually linseed, oil type varies according to paint use), lead white paste or pigment, and other pigmentation.

Synthetic resin, oleo-resinous paints, oil-alkyds: Alkyd resins were developed in the 20th century and are based on a synthetic resin. They quickly replaced oil paints, gaining great popularity after WWII, and provided a high gloss paint which was easier to work than traditional oil. They were available as gloss or matt, the gloss and eggshell having a particularly plastic appearance. These paints tend to have a high VOC content, and their use has declined following regulation of VOC content in paint in 2010.

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