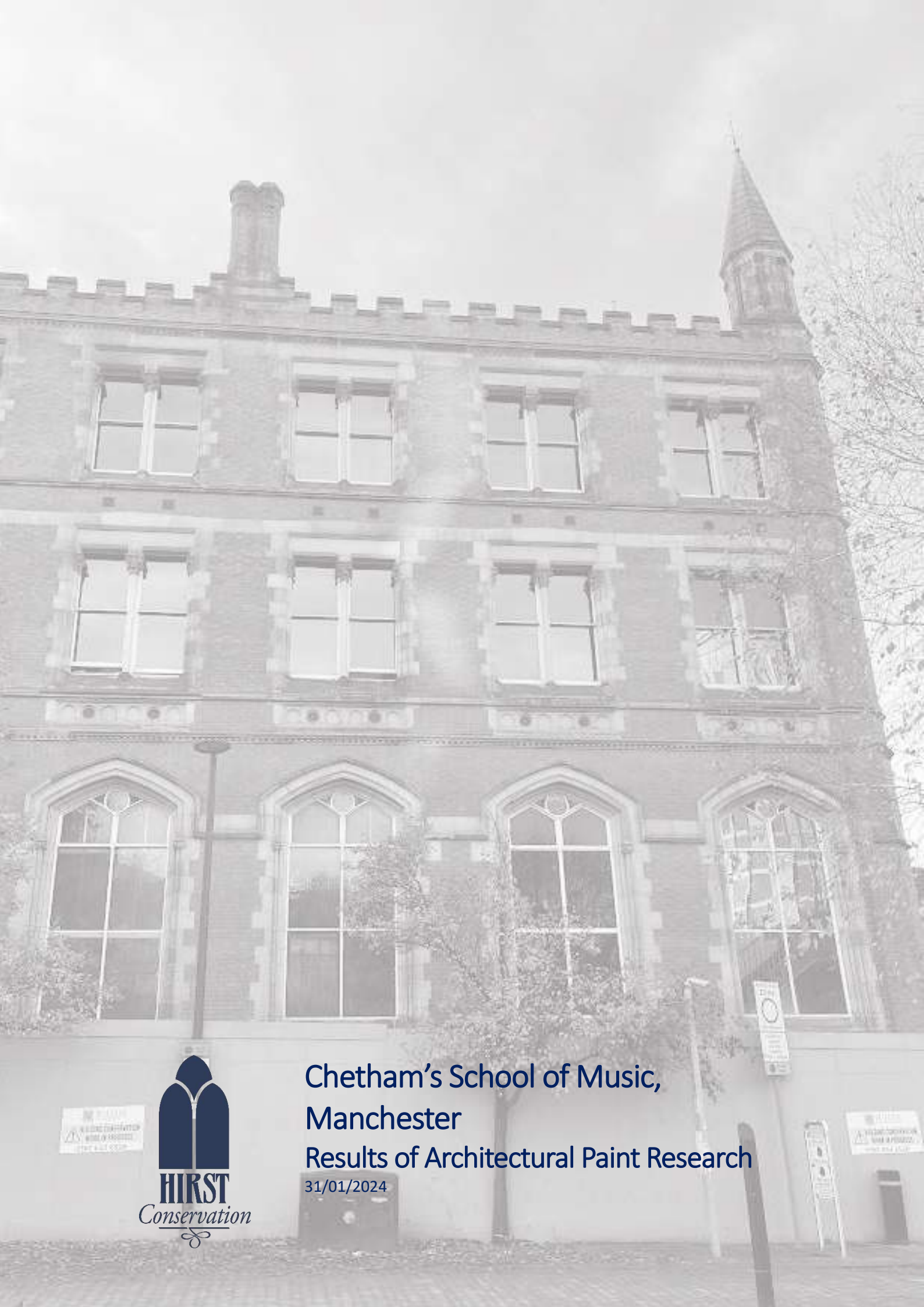




Chetham's School of Music, Manchester

Results of Architectural Paint Research

31/01/2024



Project Summary

Project	Whiteley Hall, Chetham's School of Music, Manchester
Nature of Project	Architectural Paint Research to selected interior facets within the fire damaged music hall.
List Entry Number	1197921
Listing Date:	3 rd October 1974
Listing ID	Grade II
National grid reference	SJ 83912 98905
Address of building	Chetham's School of Music Long Millgate Manchester M3 1SB
Name and Address of Conservator	Hirst Conservation Limited Laughton, Sleaford Lincolnshire NG34 0HE
Name and Address of Architect:	Steve Kendall Buttress Architects
Date of Site visit	27 th November 2027 17 th & 18 th January 2024
Author(s) and Date of Investigative Report	Charlotte Owen
Methods Employed	Cross sectional analysis; micro-chemical stain tests.

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 publish in any other way, without Hirst Conservation Limited's written approval of the form and content in which it may appear.

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Company No. 09797372 England - VAT Registration No: 425 6915 39*

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1. Scope of Research

This report discusses the results of architectural paint research to Whiteley Hall within the Long Millgate building at Chetham's School of Music. The research was undertaken at the request of Buttress Architects, Manchester on behalf of the client.

The aim of this programme of research is to understand the nature of applied decoration to the interior of Whiteley Hall in support of Listed Building Consent application for redecoration of the space following fire damage to the hall in July 2021.

Sampling was undertaken by Charlotte Owen of Hirst Conservation in November 2023 with high level access provided by the client. Following assessment of the samples a return visit was made in January 2024 to undertake exposures of decorative schemes to record colour references.

No independent archive research has been undertaken as part of this study. Any information or archival images contained in the report has been obtained through limited internet searches or following review of the Heritage Impact Statement and Design and Access Statement prepared by Buttress Architects. All details are listed in the bibliography in section 9.



Figure 1: The Long Millgate Building (Manchester History, n.d.)

2. Definitions of the Aims of the Project, Discussions of the Research Strategy and Details of the Methodology

2.1. Aims and Objectives of Paint Sampling

The aims of architectural paint research are:

- To understand the original design intention, where possible.
- To record the decorative archaeology of the space prior to renovation following fire damage.

2.2. Collection of Paint Samples

Samples were taken using mechanical means using a small chisel and hammer or scalpel, given individual reference codes and the sample sites recorded photographically and diagrammatically (these are illustrated in section 5 Sample Locations).

2.3. Microscopic Assessment of Samples

The samples were mounted in clear casting resin and polished to provide a cross section through the paint layers. Assessment at 50x, 100x & 200x magnification in incidental light allowed the layer structure to be assessed. The majority of the sample images have been assessed in darkfield mode with additional analysis and image capture undertaken at 500x

¹ Microscope used was a Nikon Eclipse LV150NL stand with LV-UEP12 Universal EpiFL-Illuminator 2. Visible & UV light was produced by CoolLED pE-300 Ultra pE-300-UT-D-SB-27E-30(3200k). UV-2A FL Filter cube, Excitation wavelength range: 390-490nm, Splitting mirror :510nm, Absorption wavelength: 515nm

magnification in brightfield mode. In addition, fluorescence microscopy was employed to identify the basic stratigraphy of paint schemes and to establish basic composition of paint films.¹

Assessment of samples in incidental light and UV fluorescence allows each scheme to be identified though dirt films, 'oiling out' layers, fading of upper surfaces of films and variations in fluorescence properties.

2.4. Micro-chemical Analysis of Paint Films

Further investigation of key layers was achieved by stain test and simple chemical techniques (Plesters, 1956)..² This was undertaken in order to understand the basic composition of the layers.

2.5. Advanced Analysis

No advanced analysis has been included in the scope of works.

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

2.6. In-situ Investigation

Where employed, colour readings are taken using a handheld colour measurement tool³ and are adjusted slightly by eye to take into account the yellowing and greying of paint films over time.

Any intention to recreate colour schemes should make use of colour swatches or test panels prior to final colour scheme selection as any historic colours applied at different periods will have been seen when the colour of surrounding masonry was likely to be different from the existing appearance. Therefore, the choice of colour schemes should take into account the colour changes to the building to ensure an appropriate colour palette is selected.

³ NCS Colour Scan 2.0, which can give colour translation details in LRV D65 10°, CIE Lab D65 10°, RGB D65 2°, Adobe RGB D65 2° and CMYK Euro. Cites the nearest NCS colour reference and can also indicate sheen/gloss.

3. History and Context

3.1. Archive material.

No independent archive research has been commissioned as part of these works and all material herein contained has been provided by the client / their agent or through appraisal of material available through internet research. Should any further archival information be identified then Hirst Conservation reserves the right to reappraise the findings of the survey and make appropriate revisions to the results.

The details of any documents or web sources are listed in Section 9 – Bibliography.

The following information is recorded as a relevant history of the building to further understand and support the findings of the paint analysis and is not intended to be a full and concise history of the building.

3.2. Brief History of Building



Figure 2: Site plan showing location of hall. (Buttress Architects, 2022)

The history of the site of Chetham's Music School is complex and incorporates the cathedral collegiate and Manchester Grammar school. It is understood that in 1978 the grammar school buildings were acquired by the music school. The following section outlines a brief description of the Millgate building where the Whiteley Hall is located (see Figure 2 & Figure 3)

The Heritage Impact statement records the following description of the Barker and Ellis building constructed to the northern section of the Long Millgate structure *"It has a deep basement (originally for dining room and kitchens) with an upper ground floor hall (Whiteley Hall) and a further three floors above (the third floor in the roof space was converted to a sick bay in 1996). It is built of red brick laid in Flemish bond with sandstone dressings. [...] The main range has Tudor-arched windows to the hall, string courses and 2-light mullioned windows to upper floor rooms"*. (Buttress Architects, 2022, p. 12)

An older description of the building from Manchester Guardian from 27th September 1870 gives further details as to the earlier dimensions of the new school building:

"The new building....is five storeys high, including the basement, covers an area of 700 square yards of land, and has a frontage of 40 yards to Long Millgate. The basement contains a dining hall, 57 feet long by 50 feet wide, and 12 feet high; lavatory for boys, heating apparatus, kitchen, and other offices. The ground floor contains the entrance hall, 18 feet wide, in which is a porter's room, and the principal staircase, of stone, 6 feet wide, connecting the several floors. The large hall, or hall of assembly is 86 feet 6 inches long by 50 feet wide, and 23 feet high, and is lighted by eleven windows. There are three doorways leading into the room from the entrance hall. The platform is at the end of the room opposite to the entrance and has upon it an elaborate oak screen and seats for the masters. The hall has a floor area of 480 yards and will seat 800 persons. The room is without columns, which will afford an uninterrupted view of its entire area from the platform.....The architectural character of the building is Gothic, adapted to modern requirements; all the windows, and other openings have moulded and splayed reveals, with stone dressings; and the walls are faced with the best stock bricks. The main body of the building, containing the large hall and classrooms over, is 64 feet in height, and is crowned by a battlemented parapet and octagonal pinnacle at the corner."

The works were undertaken by Swindells and Little contractors in 1870 and cost £28,780 (Manchester Victorian Architects, n.d.)

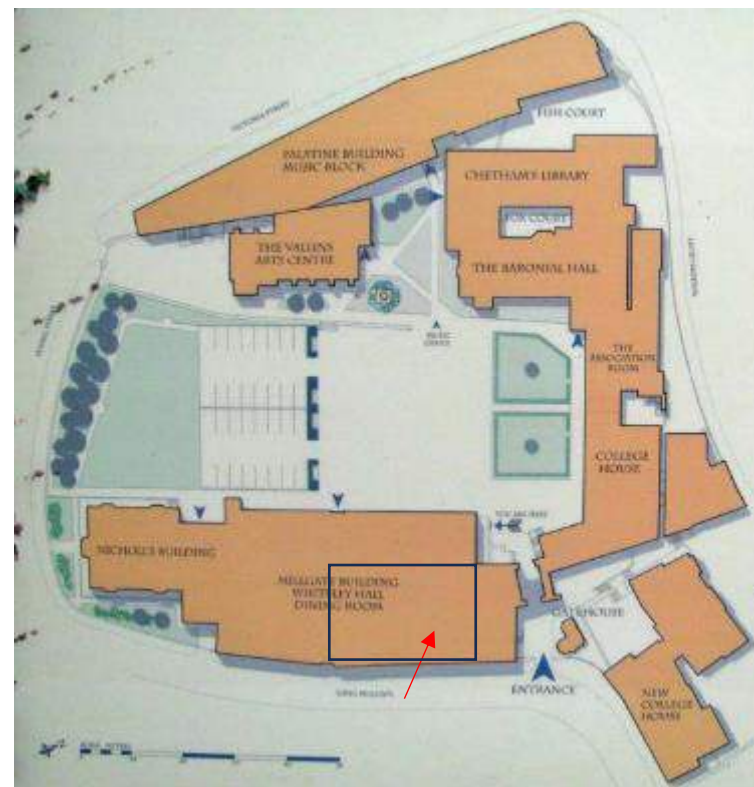


Figure 3: Map of the music school showing the location of Whiteley Hall in relation to the other buildings. (Manchester History, n.d.)

It is understood that the space was renamed the Whiteley Hall in the 1990's following a bequest to the music school. Prior to this the space at the centre of this investigation was known simply as the Assembly Hall and limited internet research carried out to understand any earlier design intention or alterations has been included in the following pages.



Figure 4: Manchester Grammar School & Chetham's Hospital & Library c1922 (Buttress Architects, 2022, p. 15)

Attribution of the building had previously placed this under the offices of Alfred Waterhouse, the architect of Manchester Town Hall among other local landmarks. However, it is understood that the Millgate building was constructed by Barker & Ellis for the Manchester Grammar School

⁴ Internet research indicates that the Manchester Teacher Training College had four sites in the 1970's including Long Millgate. 1976 Manchester education

between 1869-1870. Originally of greater dimensions the section to the south was replaced in 1911-13.

A subsequent addition in 1952 included a range of building to the west of the assembly hall that, whilst not directly impacting the structure of the hall, is visible through the west elevation windows at the lower range.

The Grammar School moved to new premises in September 1931 and the site was used by Manchester Training College prior to the acquisition by Chetham's School of Music c.1978⁴. A refurbishment is recorded in 1996 and 2006 the details of which are not known in relation to the assembly hall. (Buttress Architects, 2022, p. 15)

Understanding of the history of the area is limited but archive images available through internet searches lists the area to be known as Poets' Corner with timber framed buildings on the space now occupied by the park to the east front of the Whiteley Hall. It is understood these buildings were demolished in the 1920s as part of the clearance of the area known as Poets' Corner. The name of Poets' Corner originates, in part to the location of the Sun Inn frequented by a group of poets' in the nineteenth century.

committee amalgamated Long Millgate with another site resulting in a move to Elizabeth Gaskell College (source Manchester History.net)



Figure 5: Poets' Corner, Long Millgate looking toward Whiteley Hall. c.1870 (Chetham's School of Music, n.d.)

Two images taken from a similar position illustrate the timber framed buildings (Figure 5) with the Grammar school in the background and following the demolition of the timber framed buildings and the presence of a footbridge from the Long Millgate building joining it to another building to the north (Figure 6). The footbridge is no longer present but illustrates a number of minor alterations carried out to this range of the building. The footbridge would have joined the building where an internal staircase is located at the north end of the hall.



Figure 6: Photograph of the Long Millgate building taken from the north c.1923 (David Whittworth, 2020)

Limited images for the interior of the building have been identified and whilst only one image of the interior of the assembly hall has been located there are some images that may be used to demonstrate the use of applied decoration to the former Grammar School building. These are shown in the following pages.

The refectory at Long Millgate is understood to have been either on the space above the assembly hall or across the entrance hall from it. In the image shown in Figure 7, c.1919, it shows use of a darker colour to the lower walls and a lighter colour above. Window and door surrounds would also appear to have been painted with a darker finish than that of the main section of wall.



Figure 7: Refectory at Long Millgate (c.1919) (The Manchester Grammar School, n.d.)

In the image shown in Figure 8 there is a darker finish used to the lower wall than to the upper section. This treatment is also reflected in the scheme seen in Figure 9 where it is also possible to see a section of the cornice and ceiling which has been treated in a lighter manner than the walls. Note in this image the contrast between the joinery surrounding the windows or door partitions and the appearance of the lower wall and picture rail to the side wall between the windows.



Figure 8: Manual training room at Long Millgate c. 1910 (The Manchester Grammar School, n.d.)

A webpage by Manchester Grammar School called Hoots from the Archive notes “*Memories of the Victorian MGS invariably include a description of the “gloomy” buildings at Long Millgate*” it is understood electric lighting was installed in the school buildings in 1905 (Manchester Grammar School, 2022). Whilst this description was more likely attributable to the location within an increasingly industrialised and growing city it may also indicate an interior appearance of dark and gloomy decoration.



Figure 9: Grammar school class at Long Millgate early twentieth century. (Manchester Grammar School, 2022)

The only two images have been identified by the author that may show a representation of the assembly hall at Lower Millgate which can be seen in Figure 10 & Figure 11; though the assumption that this second image is the assembly hall is partly based on the description on page 7 from 1870 *"There are three doorways leading into the room from the entrance hall. (seen in Figure 10) The platform is at the end of the room opposite to the entrance and has upon it an elaborate oak screen and seats for the masters"*.

Whilst these images are grainy and dark, it does perhaps illustrate the earlier appearance and use of decoration to the space.



Figure 10: the assembly hall at Lower Millgate, Manchester Grammar School c.1910 (Manchester Grammar School, 2022)

The Conversazione were started in 1884 and were similar to what might now be called an Open Day. The image dates to 1920s and appears to be of the Drawing Hall (as referred to in the 1891 programme). The elaborate wooden screen also appears to contain an organ. Details of this have not been found in existing documentation though it is understood that the existing organ in the hall is a later twentieth century addition.



Figure 11: Image c.1920 from an open day or Conversazione (Manchester Grammar School, 2022)

Discussion with the team at Whiteley Hall on the day of sampling noted the alteration to the stage in the twentieth century⁵, this included extending the platform and, from inspection of the proscenium arch, perhaps remodelling of the plaster mouldings.

Images of the hall before the fire in 2021 shows a space plainly decorated in light colours (see Figure 12). This space has been noted to be of high architectural significance with the retention of the plaster ceiling and tall windows. (Buttress Architects, 2022). However, twentieth century alterations and modifications, such as the installation of the bleacher style seating, are seen as compromising the historic character of the space.

⁵ Anecdotal reference between Charlotte Owen of Hirst Conservation and Simon Chaplin, Chetham's School of Music. November 2023



Figure 12: Whiteley Hall prior to fire damage (supplied by the school)

A summary of recorded events are detailed in the table below.

Date	Event
1421	Construction of the grammar school on the present site of the music school
1869-70	Barker & Ellis building constructed to northern range as part of Manchester Grammar school.
1905	Electric lighting installed in the school.
1940	School hit by incendiary device
1969	Specialist music school developed.
c.1970s	Manchester (teacher) training college used Long Millgate as one of its locations.
1978	Millgate Building acquired from Manchester Grammar School.
1996	Installation of modern bleacher seating to the south elevation by Thomas Worthington & Sons.
2021	Significant fire within Whiteley Hall.

Table 1: summary of relevant history

4. Whiteley Hall

4.1. Overview



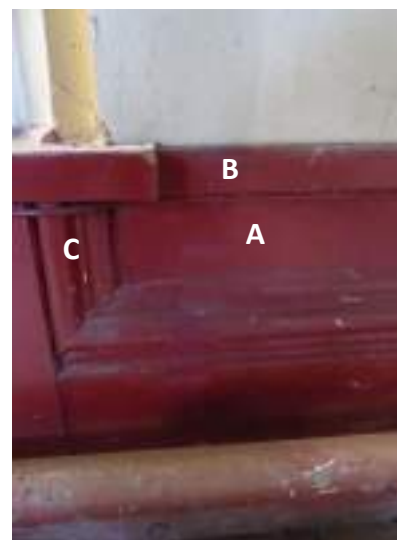
Figure 13: The blackened ceiling to the west side of Whiteley Hall.

At the time of sampling the room had been out of use since the fire in July 2021. An appraisal of the walls and ceiling in order to select sample locations indicates a number of modifications.

Proposals for the space include the cutting back of plaster to sound edges which is likely to result in the loss of early if not original material. In light of these proposals the following detail may be of interest for building archaeology records.

The skirting appears to have been modified to appear deeper than what may have been the original intention. This may have been through two

phases of modification though appraisal of the paint samples should help to inform this.



- Later timber baton
- Section of wall plaster incorporated into skirting section.
- Lower section of timber skirting – possibly with the upper portion a later addition.

Figure 14: detail of the skirting showing likely modifications.

Whilst it is not clear when exactly the alterations to the skirting took place it would appear that the small platform within the window recesses have been “built up” to carry the radiators. It would therefore seem likely that the sections marked A & B above became part of the line of skirting. Inspection of the facets also indicated that this modification was finished by adding the moulding (C) to match to the existing finishes.

Examination of the window recesses indicated that these areas have been re-skimmed with plaster. The lack of apparent paint films was noted to a number of the window recesses. It is not known the reason for this and further archival research would need to be undertaken to try and

understand it. It should be noted that not all skirting appears original and an inspection to the west wall just beneath the bleacher style seating indicated this area was a later replacement moulding.

The walls contained regular horizontal lines or breaks just seen in the applied decoration under raking light. Where this is seen it can often indicate the former location of a separate moulding such as a dado band. However, it was noted that these gaps appeared in multiple parallel lines suggesting there may have once been timber batons fixed to the walls. The lower of these former gaps in the paintwork was recorded at 1m 30cm from the floor then again at approximately 1m 70cm. Further breaks of this nature were recorded on the west wall up to the approximate height of the mezzanine (bleacher seating). The regularity of such spacing could indicate some former use of timber panelling, or similar, to the walls. Appraisal of paint samples should help to inform the nature of coatings and therefore aid interpretation of this feature.



Figure 15: west elevation window reveal showing an apparent break in the underlying paint films.

Such gaps were not easy to photograph but have been shown from one of the window recesses to the east elevation in Figure 15.



Figure 16: detail of the fire damaged ceiling taken on the day of sampling.

The ceiling was blackened and therefore not easy to inspect or take images of. However, at close inspection it became apparent that the centre of the moulded panels had a later section of plasterboard inserted over the earlier plaster finish. This appears to have also resulted in the covering up of a section of the edge moulding to the ceiling. Without the ability to photograph this an attempt has been made to illustrate this modification with a simple drawing shown overleaf (Figure 17).



Figure 17: simplified drawing of the insertion of plasterboard over earlier plaster ceiling section.

This modification is noted in the architect's report however a use of a wire mesh was outlined in the architects reports but was not identified in the ceiling panel inspected by the conservator to the west side of the room (Figure 18).

"Ceilings

The ceiling is comprised of plaster mouldings with panels above which have been plastered over. At a later stage this has been underdrawn with a fibrous board fixed back on a metal mesh wire and plastered over." (Buttress Architects, 2022). Whilst the later inserted plasterboard appears fractured it was not possible to inspect the underlying plaster which appeared to be a lime base plaster⁶.

In addition to this modification, it would also appear that the underside of the beam casing received an additional skim of a pink gypsum type plaster thus making the downstand / beam casing appear deeper than might originally have been intended. It is therefore not known if any additional mouldings exist to the underside of this facet and this may be of interest to investigate prior to the removal of the ceiling plaster and take additional paint samples for recording, as appropriate.

⁶ A section to the east side of the building where the plasterboard has been removed indicates presence of lath and plaster ceiling.



Figure 18: section of ceiling showing suspected area of additional plaster skim.



Underside of beam casing that appears to have had an additional coat of gypsum-based plaster.

Figure 19: profile of the beam casing with suspected line of plaster illustrated.

In addition to the areas within the hall that were sampled an inspection of the entrance vestibule and entrance lobby was undertaken. A small number of samples were removed with the intention of providing a benchmark for comparison. Both areas contain ornate carved stone capitals above retained columns set over stone bases as illustrated in Figure 20.



Figure 20: entrance hall showing doors into the Whiteley Hall on the day of sampling.

The base of the columns to the entrance hall are painted with a dark brown colour paint and the stone columns are finished with an imitation marble paint scheme. It was noted that the floor finish in this area was

⁷ This was also due to the distribution of the agreed specified number of samples.

made up of a number of brown and cream colour floor tiles. By contrast the area within the vestibule has been painted white to the wall with a cream-yellow colour to the retained columns and a grey colour to the skirting. In this area the carved stone capitals have been painted white.



Figure 21: image of the entrance vestibule to the main entrance foyer as seen on the day of sampling.

The area of the stage to the Whiteley Hall was inspected and largely found evidence of later gypsum-based plaster finishes beneath very few layers of paint. This area, along with the organ, were therefore not sampled⁷.

4.2. Discussion of results

Analysis of samples taken from the ceiling and cornice would indicate initial use of distemper applied to the plaster. In the most part these have been applied without any apparent addition of any pigments so would appear as an off-white colour to the plaster due to the natural appearance of the distemper. Further analysis may indicate use of distemper or whiting, but both were a common method employed where decoration of a plaster ceiling could be undertaken whilst allowing lime plaster to continue to carbonate, a process that could take up to two years to complete. This type of paint was also relatively cheap to make and renew with the ability to wash off the existing scheme prior to the application of a new paint film. There appears to be in the region of five schemes of distemper seen in samples to the ceiling facets (Figure 22).

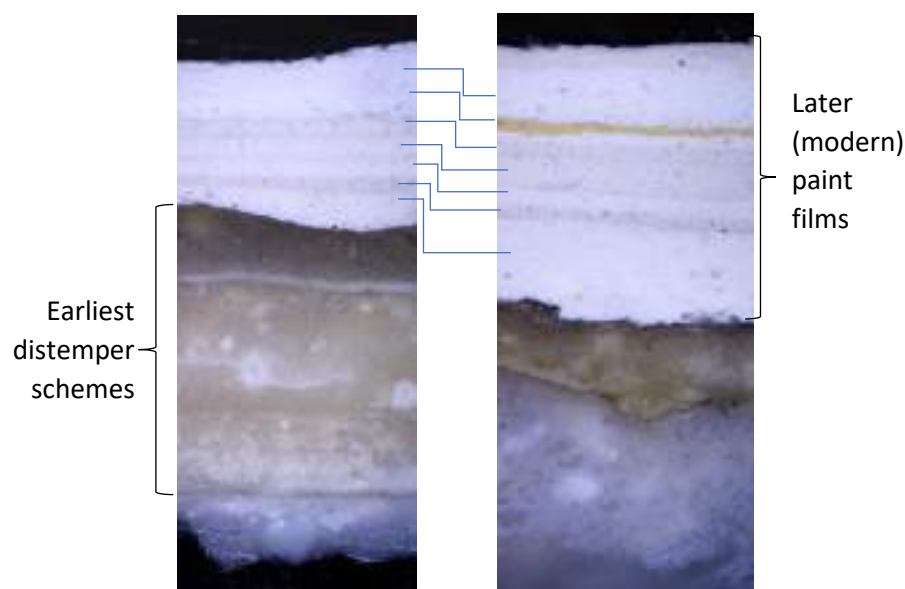


Figure 22: sample 26 (left) and sample 23 (right) taken from the ceiling.

There is evidence of dirt films between some of the schemes with some apparent yellowing of the distemper (see Figure 22). This would suggest perhaps that there was some tonal variation across the ceiling though there is no evidence of polychromy often employed with the picking in of facets in the Victorian period. It may be that the functional nature of this space within the grammar school required a simple and easy to maintain scheme of decoration to the ceiling. Dirt films between schemes can also be evidence of pollutants (such as from gas lighting) or an indication of the length of time between redecoration.

Within one of the later schemes of decoration applied in this paint media there is evidence of sporadic use of blue pigments. Distempers had a natural tendency to yellowness and the use of blue pigments was employed to counter this indicating a later inclination towards a white colour scheme to the ceiling. Not all blue pigments are stable in the alkaline nature of distemper/lime-based paint films. This is therefore likely to indicate the presence of artificial ultramarine available from the mid-nineteenth century. Whilst this does not help with the dating of schemes it is interesting to note that not all schemes contain this pigment and therefore there has been some variation in the appearance of the ceiling.

Later schemes of decoration have been applied in modern paint films of oil alkyd or synthetic resin-based paints. These have generally been applied in white or off-white colours with some use of yellow seen in samples 21, 22 & 23 taken from smaller elements of the rib mouldings.



Figure 23: a later image of the hall showing use of cream and yellow to pick out facets to the ceiling (image supplied by the client).

Samples taken from the wall included the upper wall to the west elevation and lower wall to the east elevation. These show a comparable use of colour to both the elevations with samples also taken from a number of facets to the upper section of a window to the west elevation. This was to understand if there was a variation in colour applied up the height of the wall and if any variation in the use of colour was seen to the mouldings surrounding the windows.

One sample was taken from the metal surround of a window to the south-west corner of the space along with a number of samples from where the window surround met the window reveal. Analysis of these samples will be discussed in more detail but to summarise the earliest

scheme is a grey colour distemper, most likely a decorator's finish applied across the space.

There is evidence that the timber batons were applied after this scheme as gaps in the paint films revealed the presence of the grey paint film in these voids. The horizontal gaps were recorded at regular intervals with a slight decrease in the space between them. Initial thoughts had considered the use of low-level panelling to the walls however it may also be worth considering these batons as picture rails from which a number of framed items were hung, and this is certainly indicated in the image seen in Figure 24 and shown in more detail in Figure 25.



Figure 24: detail of the archive image of the Assembly Hall c.1910



Figure 25: additional detail of the image shown in figure 24.

It is not immediately apparent if the existing skirting was in place at this early period in the room with a varnished red/brown colour noted in the cross sections, equally this may also have been introduced during the second scheme noted below.

Following the initial grey colour decorators coat, the first scheme appears as a cream (stone) colour applied across the interior. This scheme has now darkened and discoloured and would appear to have a green hue to it although there is no evidence of such pigmentation in the paint cross section to indicate a green colour.

The schemes that follow this introduce initially a pale blue-grey colour before a number of green colour schemes were recorded. The green colours started in a light shade before stronger colours were introduced (see Table 3). The skirting colour takes on a warmer purple tone at this point.

We then see the introduction of a dark red applied to the lower walls with some indication of the use of yellow to the upper section of the walls. The dark red colour was primarily applied to the lower wall from the skirting up to the first timber baton / picture rail. Whilst there appears to be two schemes of red there is an indication that the second scheme seen in the cross sections was a secondary layer applied to the first scheme to create the effect of a grain in the brush stroke. This was evident as a vertical "grain" up to just below the timber baton with a broad horizontal "grain" just below it. There is also evidence to the west wall of a gap at the corner of the wall into the window recess (see Figure 26). Details of what this might have been has not been identified and did not appear to continue above the height of the lower picture rail.

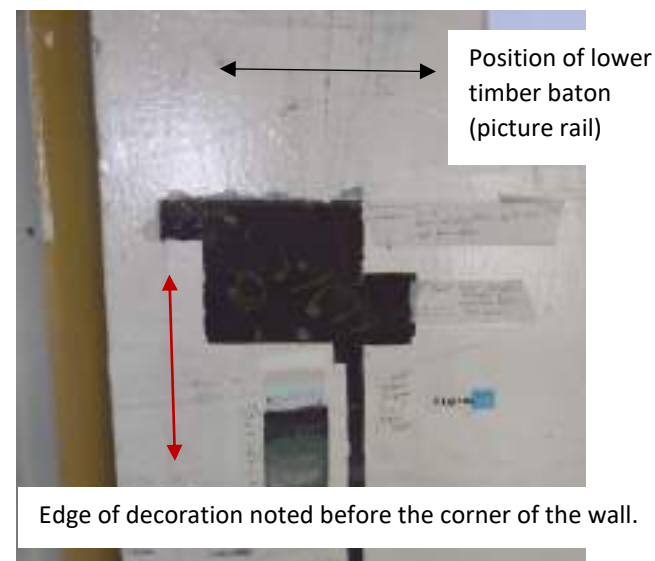


Figure 26: area of exposed decoration to the west wall.

The dark red colour scheme was painted out with a strong yellow colour prior to the introduction of modern pastel paint schemes. There is evidence in the samples taken from the east wall, and seen in uncovering of the paint layers, that this was also painted over with a varnish or similar oil-based film. This has not been analysed in detail though does react to ultraviolet light and appears tacky when exposed, the film has also discoloured and now appears quite brown. It is likely that this is an organic oil-based varnish coating perhaps applied both as a protective and decorative finish to the lower wall (Figure 27).



Figure 27: image of exposed yellow scheme with darkened coating applied over.

Later schemes of decoration applied to the interior appear to move away from the use of colour to the walls with this only seen to the skirting mouldings where brown, purple and red are noted.

The images shown in Figure 28 illustrate the comparable treatment of the upper section of the wall with the middle section. There is a slight variation in the last green colour scheme with a stone colour seen preceding the yellow in the right-hand sample but generally the treatment of the wall varied at the lower level during the use of the dark red colour.

Samples taken from the ceiling sections reveal a number of off-white or whitened distemper-based paints preceding the modern twentieth century-based paints seen in all paint samples dating to the period after the Second World War. There are fewer schemes of decoration seen in the ceiling samples but this is not unusual when one considers access

issues and the nature of the applied coatings where washable distempers may have been used.

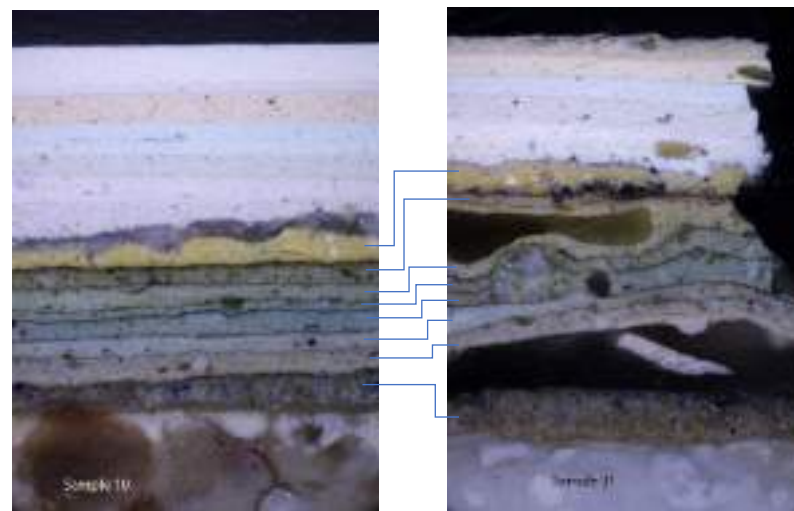


Figure 28: comparison of sample 10 from the mid-wall height and sample 31 from upper wall.

It is therefore shown in this analysis that whilst significant alterations to the space may have been undertaken over the years there is sufficient remaining paint archaeology to show that not all areas of the room were affected and these areas should be preserved, where possible. The following detail should be viewed alongside the table of stratigraphy shown in Table 2.

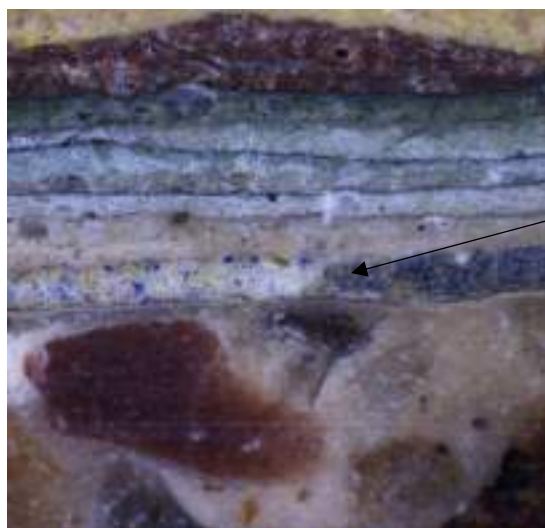
- **Scheme 01**

Joinery

Earliest scheme is not apparent on the timber skirting suggesting that the timber may not have been in place at this point.

Walls

The earliest scheme seen to the walls is a dull grey colour semi-opaque distemper. The paint film has discoloured perhaps as a result of the impact of gas lighting and the reaction of the pigments with sulphur & carbon produced by the gas lighting. Electric lighting was not installed in the school until 1905 so this would be plausible.



Note colour change
(darkening) within
paint film.

Figure 29: detail of sample 06 (taken at 200x magnification and cropped for illustration).

Detail of sample 06 is shown in Figure 29 where the earliest paint film applied to the plaster substrate appears white with yellow and blue

pigments to the left-hand side of the sample but a dull grey to the right-hand side. Testing the sample with dilute hydrochloric acid confirms the use of carbonates in this paint film and a lack of reaction when exposed to ultraviolet light indicates limited oil content. No lead detected in this sample.

This scheme appears in almost all samples taken from the walls indicating that the room was initially painted in a unified manner, this is likely to be a decorators' or finishing coat and may not have been the intended final decorative finish. The application of a coloured distemper will have allowed the room to be presentable whilst enabling the lime plaster to continue to carbonate.

Ceiling

The ceiling samples have fewer schemes of decoration and the presence of similar use of distemper suggests that the earliest schemes may or may not be present due to the practice of washing off these type of paint films before renewing with a fresh scheme of distemper. It is likely that the ceiling was plainly decorated with an off-white colour scheme.

- **Scheme 02**

Joinery

No evidence of corresponding paint films to the skirting for this scheme.

Walls

The second scheme sees a change in the use of paint media with paint films testing positive for the presence of lead and the reaction when exposed to ultra-violet light supports the use of lead-based oil paints.

The initial colour applied to the walls in this scheme appears to be a light stone colour with evidence of orange colour pigments seen in samples, analysis indicates the use of a red lead pigment. A comparison of the samples taken from the walls indicates no discernible variation in the scheme indicating that the walls were painted uniformly despite the horizontal banding interruptions noted up the wall.

Some evidence of a pale green colour is seen in the sample taken from the window reveal to the south-west window (sample 19C). The upper section of the wall, including the mouldings around the window arch, were treated with a cream (stone) colour.

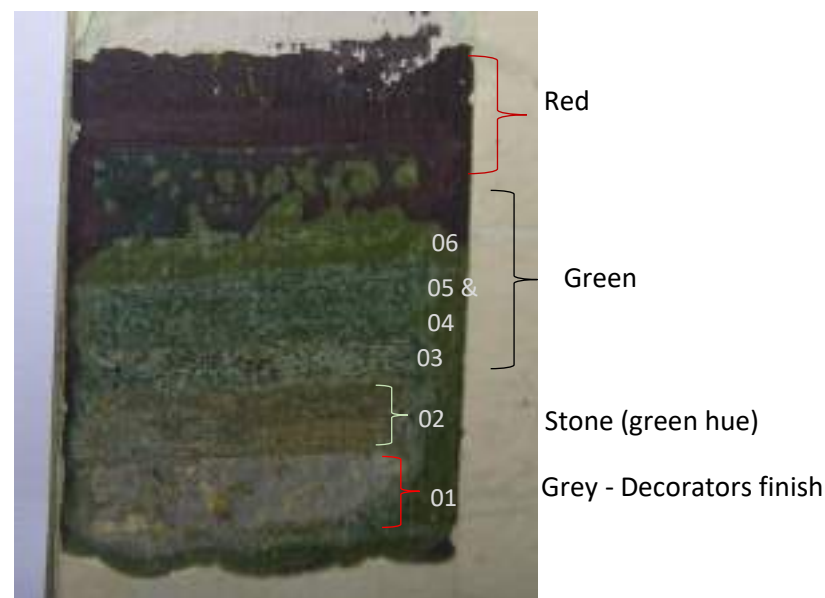


Figure 30: image of exposed schemes of decoration applied to the wall (corresponding to sample 06)

The image of paint exposures shown above reveals the number and variation in the use of green from scheme three onwards but note how scheme two initially appears as a lighter colour but has darkened to a dull green colour.

Limited record of surviving paint films from the ceiling and therefore concluded likely to have been painted with an off-white distemper.

It was noted that the scheme has darkened considerably to a dull dark grey-green both to the walls and the window reveal.

- **Scheme 03**

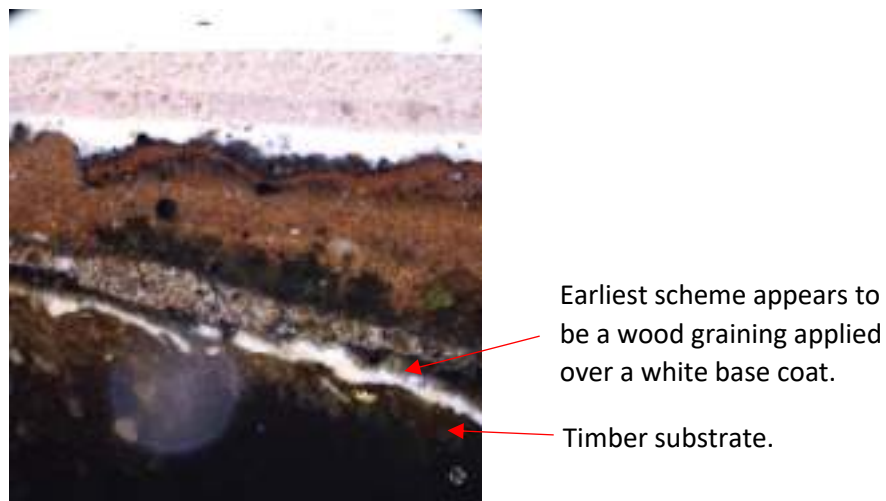


Figure 31: detail of sample 01 taken at 200x magnification.

Joinery

Evidence of a brown colour applied to the skirting. There is an initial cream colour seen in the samples with a darker film apparent as shown in Figure 31 this would suggest the use of a graining scheme however this was extremely difficult to expose, and a colour reference couldn't be recorded. It is not conclusive that this early scheme to the skirting is coeval with scheme three to the walls.

Walls

Appear to have been painted in a fairly uniform manner with no significant variation noted. The walls were painted with a pale green colour to the main section of the wall with a darker blue green seen to the window reveal. The lighter colour to the main section of the wall

appears almost off-white in cross section as seen to the right-hand image in Figure 32, however when exposed the effect is a soft pale green colour.

As noted, the ceiling samples have disrupted paint films and conclusive detail cannot be determined. It is likely that an off-white distemper was still used at this time.

- **Scheme 04**

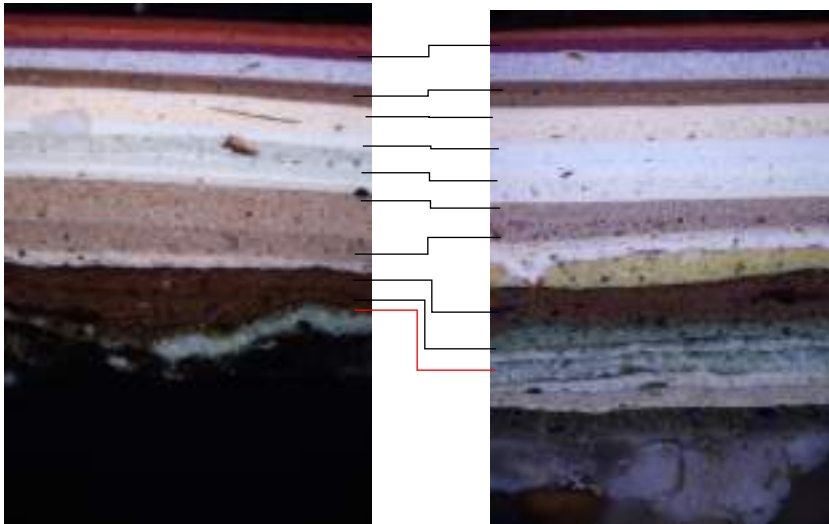


Figure 32: Sample 03 (left) and 04 (right) taken at 200x magnification showing treatment of lower wall and skirting timber.

Joinery

Renewed use of brown colour to the skirting and sample 03 contains evidence of the blue-grey colour from the walls within this sample indicating that the decorator likely painted over the top edge of the skirting when painting the wall before returning and painting the skirting. This evidence was only seen in this sample and corresponded to the same colour seen in sample 04 from the lower portion of the wall that was later incorporated into an extension of the height of the skirting (see Figure 32).

Walls

Introduction of a blue-grey colour seen to the walls with evidence this was used from the low level up to the cornice. This was a much darker colour than used in the previous scheme. Slight variation seen in the samples taken from the window reveal with a lighter colour noted and also in the use of colour around the window arch to the upper section of the room where a cream (stone) colour is noted.

Ceiling

Likely painted with an off-white distemper.

- **Scheme 05 (post 1905?)**

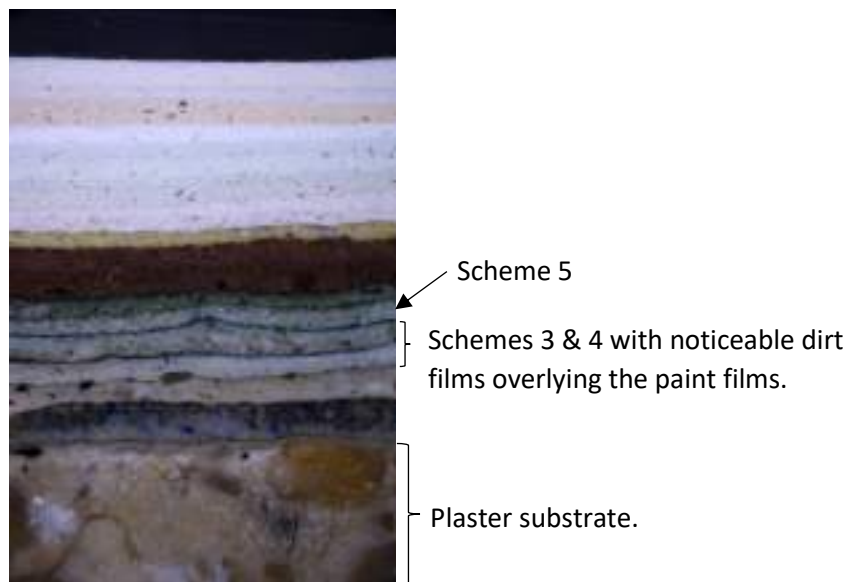


Figure 33: Wall sample (06 at 200x mag) showing reduction in dirt films from scheme 5 onwards.

Joinery

Limited evidence of a possible tinted green varnish or glaze applied to the skirting. Further investigation was undertaken but due to the difficulty of accessing the skirting for uncovering meant that it was not possible to expose this scheme. It therefore cannot be accurately recorded how this glaze may have appeared.

Walls

Continuation of the green colour scheme though there is evidence that there is less blue in this scheme leaning towards stronger use of a green-grey colour. There is a slight variation in the colour used to the window

reveal with the paint film appearing to have been applied in a lighter shade.

The arched element of the upper part of the window continues to be painted with a cream (stone) colour.

There is a noted reduction in the dirt films seen over schemes three and four than seen to scheme five. This may suggest that this scheme was applied after the introduction of electric lighting in 1905. Though it can also indicate that redecoration occurred earlier in the maintenance schedule so there was a shorter period of time for dirt deposits to settle onto the paint films.

Ceiling

Likely to have been painted with an off-white distemper.

- **Scheme 06**

Joinery

More concise use of an orange-brown colour to the three lower samples from the skirting indicating that at this point the timber moulding (sample 03) was the top of the skirting and sample 04 from the lower wall was not yet incorporated into the line of skirting (see Figure 34 below) .

The orange arrow indicates where the lower section of the wall (sample 4) starts to be treated as part of the skirting rather than section of the wall.

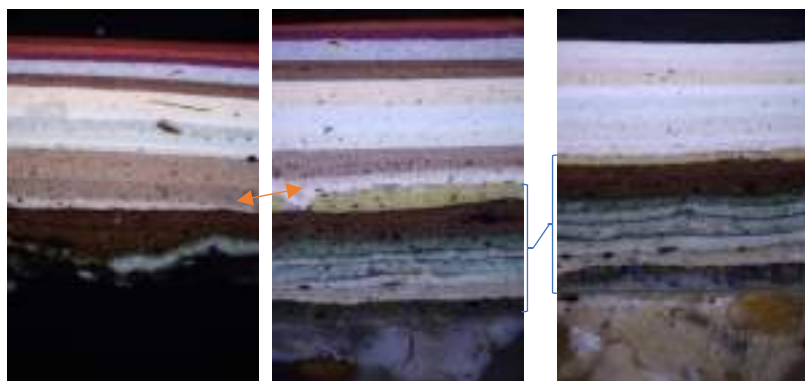


Figure 34: Comparison of sample 03(left), sample 04 (centre) and sample 06 (right)

Walls

The samples shown in Figure 35 below illustrate the correlation of paint films with scheme six identified by a red line to show the colour change seen.

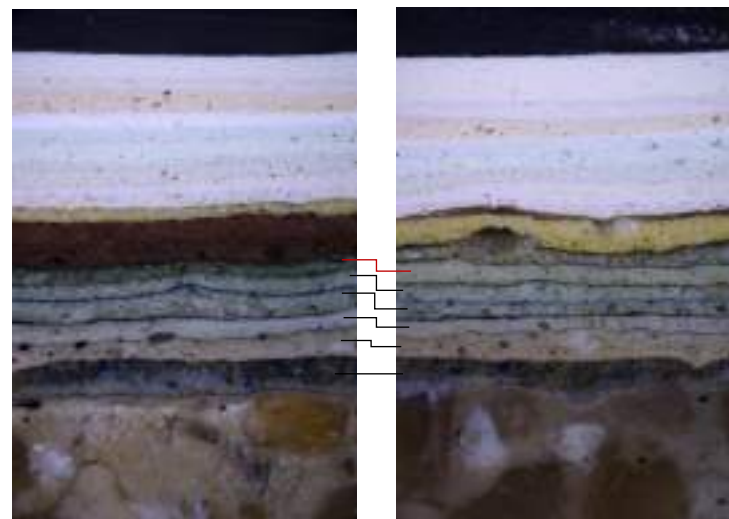


Figure 35: Comparison of samples 06 & 08 from the wall (at 200x magnification)

Continuation of the use of green colour scheme though the appearance of the colour varies with a blue-green used to much of the lower wall and a more vibrant green colour seen to the mid-section (see Figure 35). The paint films at the upper level are disrupted though fragmentary evidence of the paint films does not indicate the vibrant green colour seen to the mid height walls. Evidence suggests this there may have been a cream (stone) colour used to the upper level.

The change in the use of colour to the lower wall would tie into the noted interruption in the wall finish with the blue-green colour seen in samples 04 & 06 below the first line of note, this would suggest that a lower dado batten may have been at approximately 1m 30cm (4 feet) from the floor. The second interruption was noted at 1m 90cm (approx. 6 foot). This may suggest that the colour varied moving up the wall and further sampling would be required to ascertain any further variation in the use of colour.

However limited investigation during the return visit of an upper area of the wall, accessible from the staircase to the mezzanine seating, suggests that any colour variation up the wall was limited. It was also noted a pencil line appears to survive for the marking up of the placement of the timber batons / picture rails as indicated in the image below from the east wall.



Figure 36: detail of upper wall paint exposure where pencil lines are seen in the void where a timber baton has been removed.

The indented corner of the wall into the window recess also appears to now be distinguished by colour with a soft yellow colour noted.

The sample taken from the metal window frame indicated this was painted a brown colour and the window reveal was painted in a cream (stone) colour in a similar manner to the mouldings to the arch at the top of the window.

- **Scheme 07**

- Joinery

- More significant use of the brown colour applied to the skirting timbers which has now also been carried over onto the lower portion of the wall (samples 05 & 06) suggesting the lower portion of the wall below 1.3 m was painted brown. This is not a suggestion that the skirting was extended by the use of paint but more likely that the lower wall and skirting were more evenly matched to provide a less noticeable change in facet.

- Walls

- Red-brown colour to the lower section (below 1.3m as noted) followed by a dull yellow colour in the section above. At the higher level there is a cream (stone) colour is seen to the upper section of the wall and the window arch and mouldings. The dark red colour applied to the lowest section of the wall has a "grain" effect created by the brush application which is illustrated overleaf. Much of the section had a vertical grade with a band of horizontal grain beneath the timber baton at 1.3m high.

- The bevel moulding to the edge of the wall into the window recess is picked out in a slightly darker colour, light brown, in contrast to the earlier lighter colour.

- The window frame is painted a brown colour.

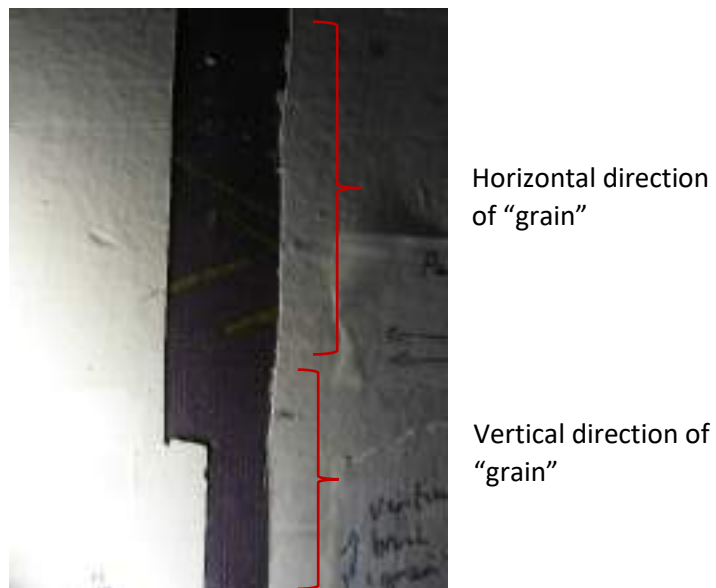


Figure 37: image of scheme 7 showing "grain" effect in the brush strokes.



Figure 38: detail of textured paint finish shown in previous image.

- **Scheme 08**

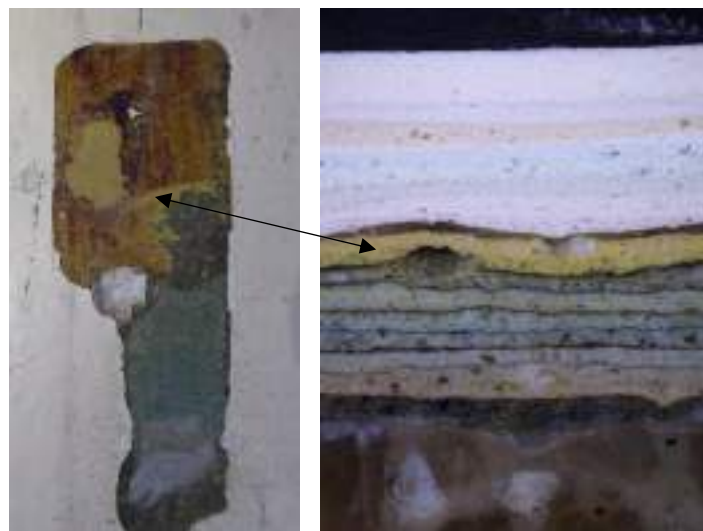


Figure 39: detail of the exposed yellow scheme (08) shown alongside a paint cross section.

Joinery

There is no immediate corresponding paint film for this scheme where yellow is noted in the schemes to the walls. This would therefore suggest that the dark red colour was retained to the skirting. It was noted that the yellow was seen in sample 04 rather than the dark red being retained, thus further indicating that this portion of the wall was still treated as separate facet to the skirting moulding at this time.

Walls

Significant move away from the use of red with a change to a yellow seen across many of the samples taken from the walls and one sample from the skirting joinery (sample 04). The number of samples containing this

colour would suggest that the room is now painted with a single colour to the walls though the paint films in samples taken from the window arch are disrupted and the treatment cannot be determined. Oil based varnish film noted in one sample but also recorded in exposure of paint films as illustrated in Figure 39.

Ceiling

There is evidence of blue pigments in the last of the distemper schemes seen to the ceiling suggesting an intention to whiten the natural yellow appearance of the distemper. It is therefore likely that the ceiling was painted with a white distemper.

- **Scheme 09**

Joinery

Pink colour seen in samples taken from the skirting timbers. This colour is seen in sample 04 indicating that this was now treated as part of the skirting rather than the wall (refer Figure 34). This scheme shows the first paint films to sample 05 and sample 14 further indicating that the timber baton was now applied to the wall to provide the impression of a deeper skirting than previously seen in the space. The paint appears to have been applied in an oil alkyd type paint (not tested) suggesting this scheme post-dates the Second World War.

Walls

Following the use of yellow the decorative scheme now enters a more neutral phase with the use of off-white and buff seen to many of the samples from the walls.

Ceiling

Paint samples taken from the ceiling and cornice contain white paint films also applied in oil alkyd-based paints (not tested).

- **Scheme 10**

Joinery

Appears to be a renewal of the earlier scheme with continuation of a pink colour.

Walls & Ceiling

Refreshing of the scheme.

- **Scheme 11**

Joinery

Skirting joinery appears to have been painted in a grey / off-white colour.

Walls & Ceiling

Largely neutral paint scheme applied to the walls with a light grey / off white seen to many of the samples. A light-yellow colour was recorded in sample 11 from the bevel edge moulding of the corner of the wall into the window recess. This may also correspond to a yellow colour recorded in sample taken from the ceiling (edge mouldings) though cannot be accurately tied together.

- **Scheme 12**

Joinery

Evidence of a white colour seen to the samples. It is unclear if this is a final finish, or a temporary scheme used as an interim undercoat.

Walls & Ceiling

Light blue colour seen to some samples taken from the walls (sample 11,18 from the bevel edge corner moulding) and samples 19B & C from the window reveal. The light blue colour is also seen in samples to the upper portion of the wall around the window arch.

- **Scheme 13**

Joinery

Likely return to the use of a warm pink colour to the skirting applied over a cream colour undercoat.

Walls & Ceiling

Walls were painted a cream colour with some evidence of the use of a peach colour in samples 31 & 32 from the window arch suggesting some use of colour to pick out some elements of the arch.

- **Scheme 14 and 15**

Final schemes of decoration seen to the space before the fire. These are fairly neutral in the treatment of the walls and ceiling with the use of white and perhaps and off-white undercoat to the ceiling to aid

re-decoration. There is some use of a yellow paint to pick out facets to the ceiling that appear to correspond to mouldings to the corners of walls.

The skirting is initially painted purple on grey but appears as though it may soon have been changed to a dark red colour as this was very difficult to separate from the purple when exposing paint films.

Additional information – entrance foyer

It was noted that the samples taken from the small entrance foyer beneath the bleacher style seating contained fragments of a scheme applied before scheme 10. This lack of paint films may be associated with the area being liable to impact damage in a high traffic area and preparation of the surfaces prior to re-decoration resulting in loss of any applied decoration.

There is a comparable use of colour up to scheme 15 when a strong yellow is introduced. This is likely to indicate the point at which the former entrance doors became the foyer separated off from the main hall c.1980s, but this would need further investigation to clarify. It is also noted that the Music School colours appear to include a yellow suggesting this may be a colour scheme more associated with the School of Music rather than the Grammar School

Scheme	Time Period	Colour	Colour	Colour	Colour	Colour	Colour	Colour	Colour	Colour
Scheme 15		strong red	off-white	off-white	beige	off-white	white	white		off white
Scheme 14	c.1980's?	purple on grey	off-white	off-white	off-white	off-white	white	white	Lost / disrupted	white
Scheme 13	c.1970s?	dark pink on cream	cream	cream	cream	cream	white	white	peach	peach
Scheme 12		white	white	white	light blue on white?	light blue	off-white		light blue(grey)	light blue(grey)
Scheme 11	c.1952?	grey	off-white (grey)	off-white (grey)	light yellow	off-white (yellow)	off-white	off-white		
Scheme 10	1940s?	pink renewed	renewed	renewed	off-white	off-white	disrupted	off-white	off-white	off-white
Scheme 9		pink on light pink	off-white	off-white	off-white	buff		white	white	white
Scheme 8		dark red	yellow	yellow	yellow	yellow	yellow	yellow	yellow	yellow
Scheme 7		brown	red-brown	dull yellow?	light brown	stone	dark red	cream/stone	warm cream (stone)	warm cream
Scheme 6	c.1911?	brown-orange	blue-green	vibrant green	light yellow (red pigments seen)	stone	brown	interrupted	interrupted	interrupted
Scheme 5		tinted (green) glaze on brown	green grey	green grey	green grey	grey-green	brown-orange	green grey	warm cream (stone)	green grey
Scheme 4		brown	blue-grey	blue-grey	blue-grey	pale blue-grey		blue-grey	warm cream (stone)	blue-grey
Scheme 3		brown on cream	off-white	off-white	off-white	off-white		off-white	warm cream (stone)	off-white
Scheme 2			cream	cream	cream	pale green	cream	cream	warm cream (stone)	cream
Scheme 1	1870		light grey-green distemper	light grey-green distemper	light grey-green distemper	light grey-green distemper	? dark on off-white	light grey-green distemper	light grey-green distemper	light grey-green distemper
Substrate	1869-1870	timber	plaster	plaster	plaster	plaster	metal	plaster	plaster	plaster
Sample		01, 02, 03	04, 06	08, 09, 10,	11	19C	19A	28	30, 33	31, 32
Facet		Skirting	Lower Walls	walls - mid height	window - bevel edge moulding	Window reveal	Window frame	wall - upper	upper wall - window arch	inner window arch

Table 2: Table of stratigraphy

4.3. Colour References

A return visit to the hall was made on the 17th & 18th January 2024 to make limited exposures to applied decoration to the interior of the building.

The following tables outline the colour references recorded on site and allow for limited adjustment for aging and deterioration of paint films. Colour schemes applied in lead-based oil paints can discolour when not exposed to ultraviolet light. An adjustment is taken into account to allow for this discolouration based on experience and consideration of the composition of the paint films including pigment morphology. However, it is strongly recommended that colour panels are trialled in-situ in planned lighting arrangements where possible as historic colour schemes were appropriate based on lighting and any earlier appearance of surround facets (stone etc). Minor adjustments may therefore be needed where representation of the space is intended to emulate the original design intention.

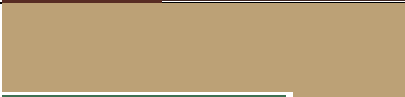
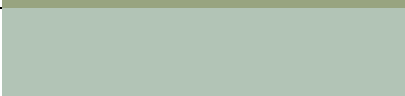
Colour reference	Colour swatch
Scheme 09 NCS S0505-Y90R	
Scheme 08 - yellow NCS S2030-Y20R	
Scheme 07 NCS S3020-Y20R (upper wall)	
NCS S7020-Y80R with NCS S8010-Y90R over (lower wall)	
Scheme 06 Upper wall flat: NCS S3020-Y10R Lower wall flat: NCS S5030-G10Y Recessed edge: NCS S3020-Y10R	 
Scheme 05 NCS S3020-G40Y	
Scheme 04 NCS S2010-G10Y	
Scheme 03 NCS S1510-G10Y	
Scheme 02 NCS S3010-Y20R	
Scheme 01 Earliest (decorators finish) NCS S3005-G20Y	

Table 3: Recorded colour references for wall

Colour reference	Colour swatch
NCS S7010-Y90R (modern flat colour paint)	
NCS S6010-Y90R (modern flat colour paint)	
Scheme 07? NCS S7020-Y80R	
NCS S7010-Y90R Early varnished scheme	
Earliest – scheme 04? NCS S6010-Y90R Early varnished scheme	

Table 4: Recorded colour references for skirting moulding

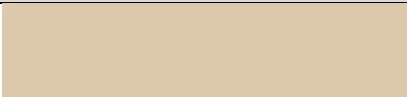
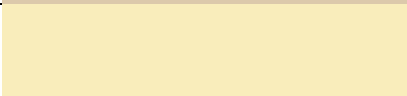
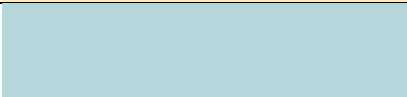
Colour reference	Colour swatch
Extant NCS S1510-Y30R	
Scheme 10 NCS S0515-Y	
Scheme 09 NCS S1015-B20G	
Scheme 08 NCS S2030-Y20R	
Scheme 06 / 07 NCS S2010-Y10R / NCS S2010-Y20R	
Scheme 05 NCS S4010-G30Y	
Scheme 04 NCS S4020-B90G	
Scheme 02 NCS S3010-Y20R	
Scheme 01 Earliest (decorators finish) NCS S3005-G20Y	

Table 5: Recorded colour references for window reveal

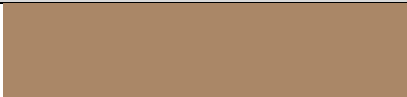
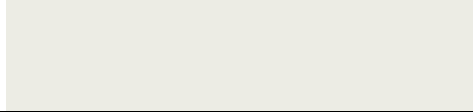
Colour reference	Colour swatch
NCS S4020-Y30R	
NCS S6030-R	
NCS S7020-Y80R	
Earliest NCS S3005-Y20R	

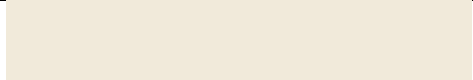
Table 6: Recorded colour references for window frame

4.3.1. Development of Colour palette

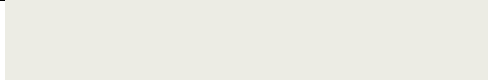
Option 1: Scheme 01 - Grey

Colour reference	Colour swatch
Ceiling NCS S0603-G40Y	
Walls Earliest (decorators finish) NCS S3005-G20Y	

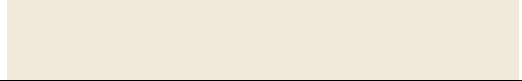
Option 2: Scheme 02 – stone / cream

Colour reference	Colour swatch
Ceiling NCS S0603-Y20R	
Walls, window reveal NCS S3010-Y20R	
Window frame NCS S3005-Y20R	

Option 3: Scheme 03 – early Victorian

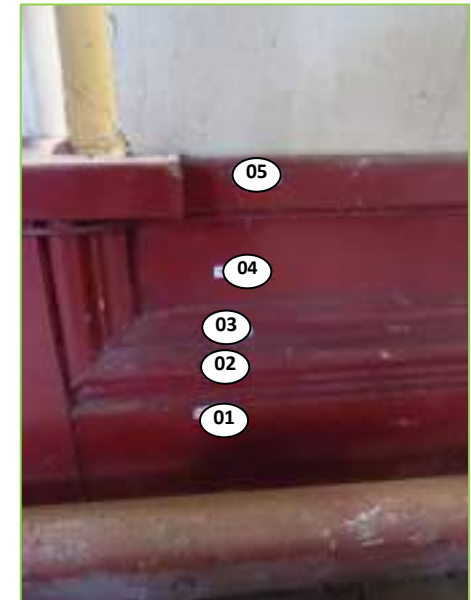
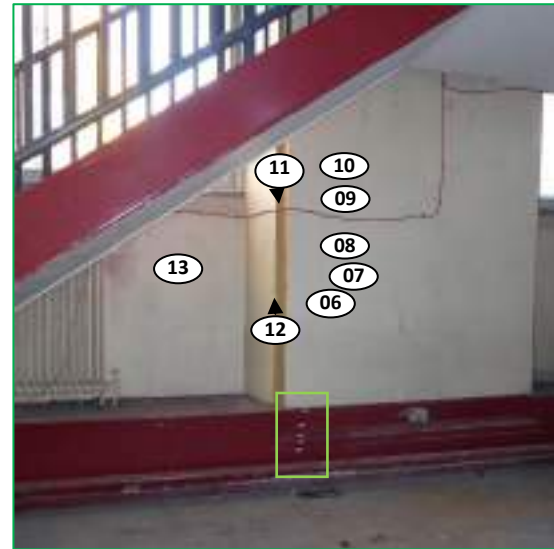
Colour reference	Colour swatch
Ceiling NCS S0603-G40Y	
Window frame NCS S3005-Y20R	
Walls NCS S2010-G10Y	
Joinery NCS S7020-Y80R varnished	

Option 4: Scheme 7 (red and cream)

Colour reference	Colour swatch
Ceiling NCS S0603-Y20R	
Window frame NCS S6030-R	
Window reveal NCS S2010-Y10R	
Scheme 07 NCS S3020-Y20R (upper wall)	
Lower wall & Skirting NCS S7020-Y80R	

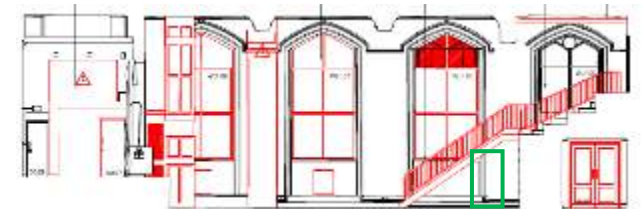
5. Sample Locations

5.1. East Elevation



Sample locations:

- 01 – East elevation, skirting, top of vertical flat
- 02 – East elevation, skirting, large ovolo moulding
- 03 – East elevation, skirting, diagonal architrave
- 04 – East elevation, skirting, upper vertical flat
- 05 – East elevation, skirting, upper flat baton
- 06 – East elevation, lower wall approx. at approx. 1m10cm
- 07 – East elevation, lower wall at approx. 1m 30cm
- 08 – East elevation, mid height at approx. 1m 44cm
- 09 – East elevation, wall, mid height at approx. 1.77m
- 10 – East elevation, wall, mid height at approx. 1.90m
- 11 – East elevation, wall, corner recess – approx. level with 09
- 12 – East elevation, wall, corner recess – approx. level with 06
- 13 – East elevation, wall beneath window



5.1.1. West elevation



Lower-Level Sample locations:

- 14 – West elevation, skirting, lower vertical flat
- 15 – West elevation, wall, lower, near edge
- 16 – West elevation, wall, mid height – near edge
- 17 – West elevation, below window
- 18 – West elevation, South facing window reveal
- 19 – West elevation, southern window, outer (metal) surround.
- 19B – West elevation, southern window, diagonal windowsill
- 19C – West elevation, southern window, junction of window reveal to window surround (stone)

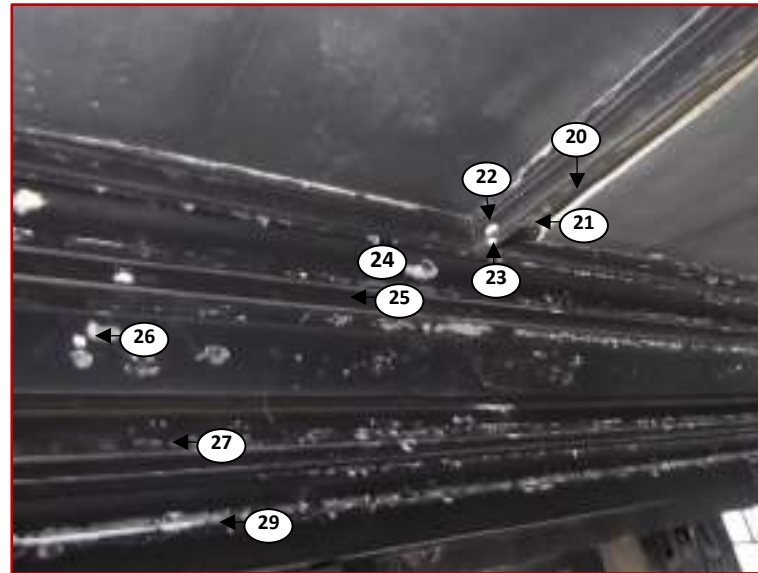
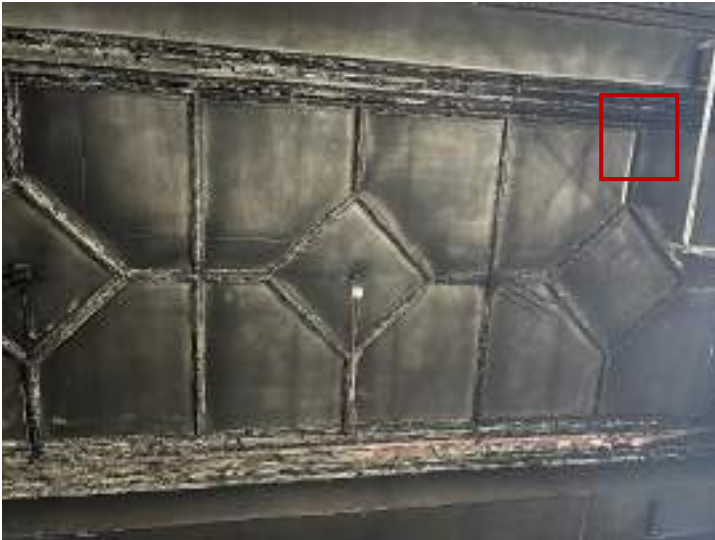


Upper-Level Sample locations:

- 28 – west wall, upper flat, (where exposed area of green seen)
- 30 – west wall, ovolo moulding to window arch
- 31 – west wall, middle window, inner moulding to main arch (small ovolo)
- 32 – west wall, centre window, main inner arch, vertical flat
- 33 – west wall, centre window, arch, inner bevel edge

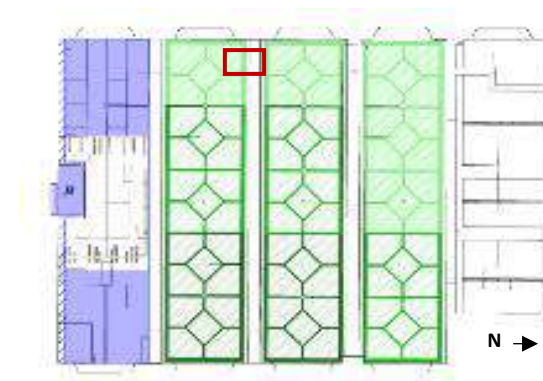


5.1.2. Ceiling

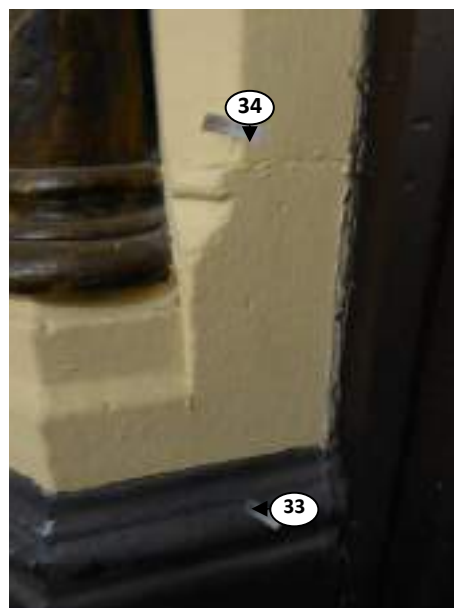


Ceiling Sample locations:

- 20 – ceiling, flat panel (behind later plasterboard)
- 21 – ceiling, moulding to edge of ceiling panel
- 22 – ceiling, outer moulding – outside of gypsum skim
- 23 – ceiling, underside rib moulding (horizontal flat)
- 24 – ceiling, beam casing / downstand – recess at junction of curve of ceiling
- 25 – ceiling, beam casing, ovolo moulding
- 26 – ceiling, beam casing, large flat (middle area)
- 27 – Ceiling, beam casing, lip just above lower ovolo moulding
- 29 – ceiling, beam casing, underside element but beneath later gypsum skim



5.2. Supporting Samples (vestibule & entrance)



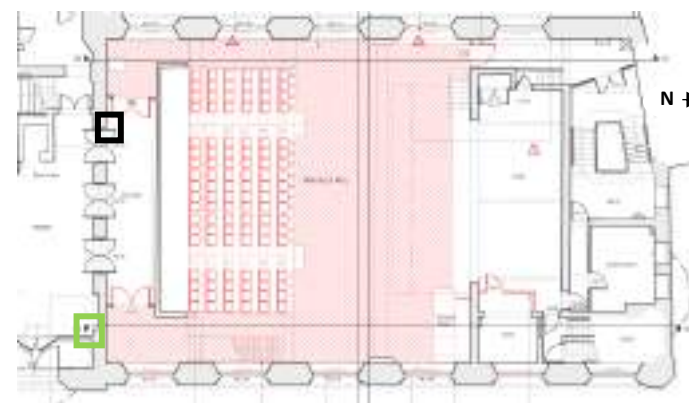
Sample locations:

34 – Entrance Hall, east side, base of column

35 – Entrance hall, east side, skirting below column

36 – Entrance vestibule (beneath mezzanine), west door, edge of column/wall, bevel edge

37 – Entrance vestibule (beneath mezzanine), west door, as above – skirting, ovolo



6. Photomicrographs

6.1.1.Ceiling



Sample 25 (200x mag)
– ceiling, beam casing,
ovolo moulding



Sample 20 (200x mag)
– ceiling, flat panel
(behind later
plasterboard)



Sample 21AB (200x mag)
– ceiling, moulding to
edge of ceiling panel.



Sample 26 (200x mag) –
ceiling, beam casing,
large flat (middle area)



Sample 22 (200x mag) -
ceiling, outer moulding –
outside of gypsum skim.

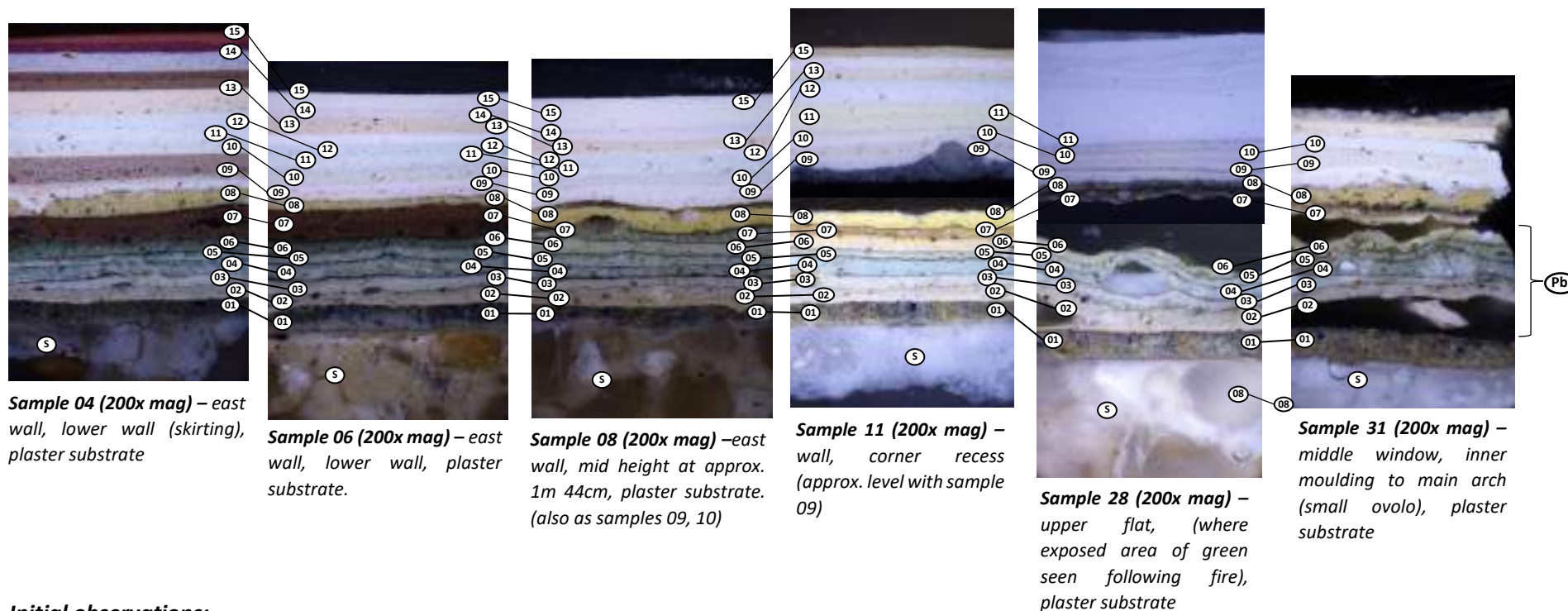
Initial observations:

- Earliest schemes applied in distemper/limewash directly to the plaster substrate.
- Sample 25 shows presence of two schemes of decoration with evidence of significant disruption to the second scheme indicating loss prior to the application of the later schemes of white/off-white modern paint schemes.
- Samples 21 & 26 show sporadic presence of a blue pigment likely used to brighten the distempers to off-set the natural yellowness of the paint media.
- Due to the disruption, it is not possible to determine exactly how many schemes exist to the ceiling.

Key

- ① Number of scheme(s)
- Links decorative scheme
- Ⓟ Pb Lead-based oil paint scheme(s)
- Ⓟ Zn Zinc-based oil paint scheme(s)
- Ⓟ S Substrate

6.1.2. Walls



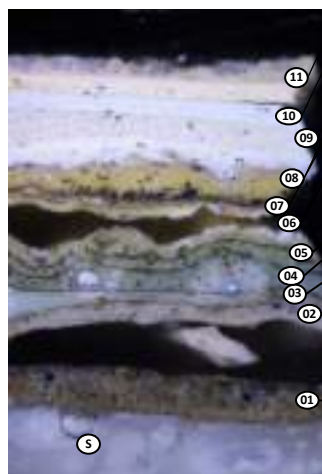
Initial observations:

- Samples taken from wall show a comparable use of colour from the earliest grey distemper-based scheme through use of green and then red in samples taken from the lower wall. Sample 08 taken from the mid-height of the wall shows the upper section of wall was not treated in the same manner at this stage.
- A strong yellow colour is seen at scheme 08 applied to samples except that taken from upper wall section.
- Later schemes of decoration have largely been applied in pastel / off-white schemes in twentieth century modern paint films.
- Strong colour seen in samples to the skirting section of the lower wall (sample 04) where brown, purple and red are seen.
- Schemes 02 – 07 test positive for the presence of lead.

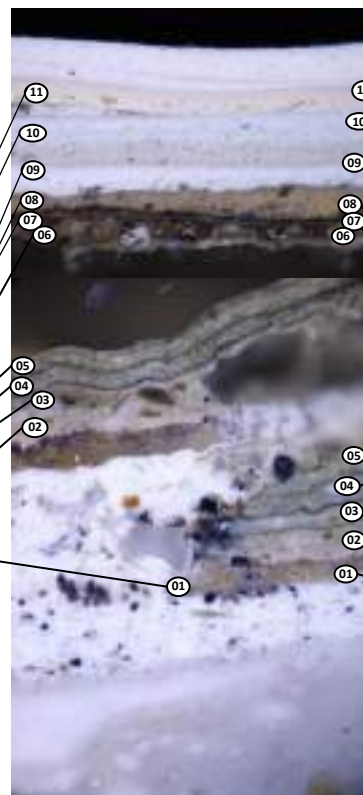
Key

- ① Number of scheme(s)
- Links decorative scheme
- Pb Lead-based oil paint scheme(s)
- Zn Zinc-based oil paint scheme(s)
- S Substrate

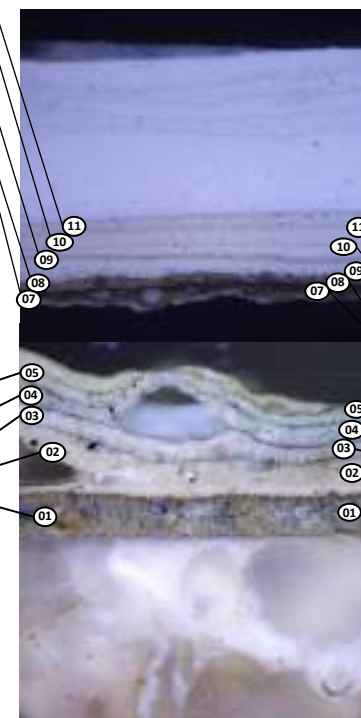
Upper wall:



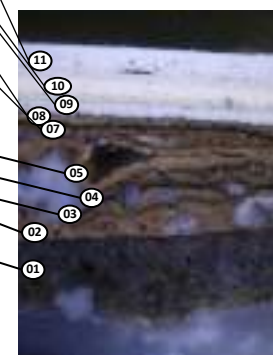
Sample 31 (200x mag) – middle window, inner moulding to main arch (small ovolo), plaster substrate



Sample 32 (200x mag)– upper wall, centre window, main inner arch, vertical flat, plaster substrate.



Sample 28 (200x mag)– upper wall, upper vertical flat, plaster substrate.



Sample 33 (200x mag) – wall, centre window, arch, inner bevel edge plaster substrate. (also as sample 30).

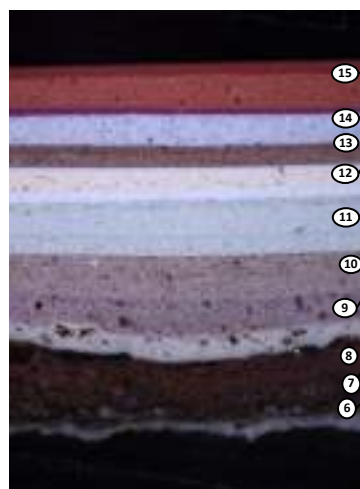
Initial observations:

- Samples taken from upper section of west elevation include samples from around the window arch.
- All samples contain the earliest grey colour seen in samples from the lower wall.
- Sample 32 shows a fracture in the paint films that has allowed later (modern) paint film to bleed through the schemes.
- Samples indicate that there was little variation in the scheme from the lower wall up to the cornice with the exception of the bevel edge of the window arch which was repeatedly painted a stone colour rather than green.
- No dark red seen in the samples taken from the upper wall.

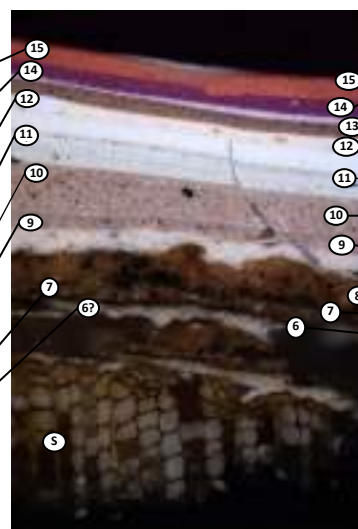
Key

- ① Number of scheme(s)
- Links decorative scheme
- Pb Lead-based oil paint scheme(s)
- Zn Zinc-based oil paint scheme(s)
- S Substrate

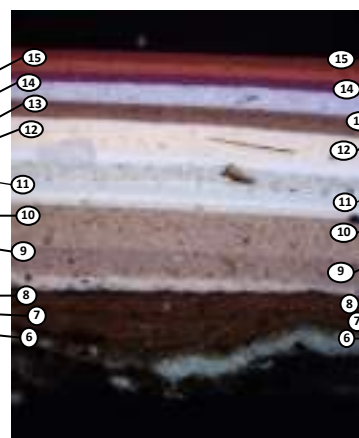
6.1.3. Joinery



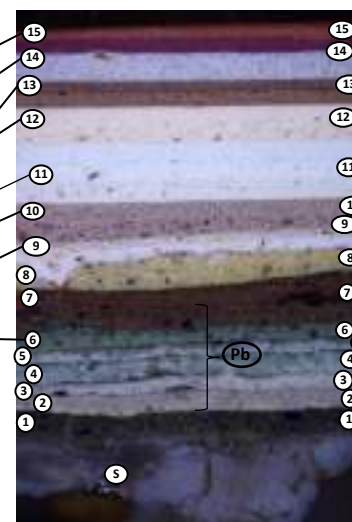
Sample 01A (200x mag) – East elevation, skirting, top of vertical flat, timber substrate.



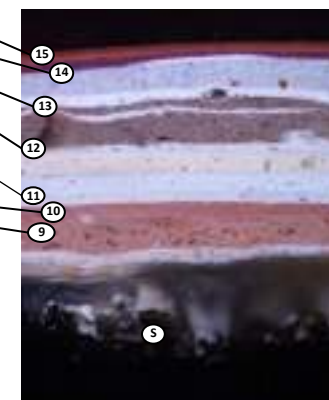
Sample 02 (200x mag) - East elevation, skirting, large ovolo moulding, timber substrate.



Sample 03 (200x mag) – East elevation, skirting, diagonal architrave, timber substrate.



Sample 04 (200x mag) – East elevation, skirting, upper vertical flat, plaster substrate.



Sample 05 (200x mag) – East elevation, skirting, upper flat baton, timber substrate

Initial observations:

- Sample 04 was taken from a section of skirting that appears to have originally formed part of the wall, it contains the initial “drab” colour scheme followed by a number of green colour schemes.
- Sample 03 contains a fragment of the green scheme likely hinting at the way of painting the wall with some carry over onto the skirting moulding rather than the skirting also appearing in green.
- By contrast sample 05 contains no earlier schemes of decoration indicating this is a later modification to the skirting.
- The lack of corresponding schemes in the samples taken from the skirting compared to the wall above may suggest replacement of these architectural features or that the skirting moulding was a later addition.

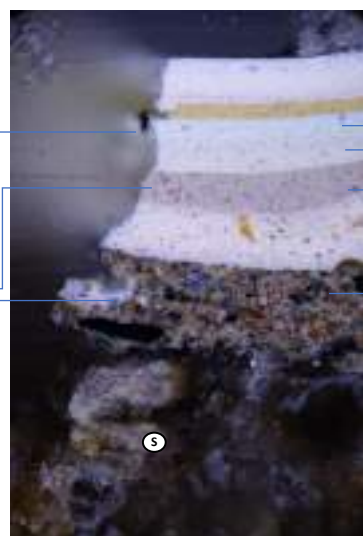
Key

- ① Number of scheme(s)
- Links decorative scheme
- Pb Lead-based oil paint scheme(s)
- Zn Zinc-based oil paint scheme(s)
- S Substrate

Supporting samples – vestibule.



Sample 37 (200x mag) –
Entrance vestibule,



Sample 36 (200x mag) –
Entrance vestibule,



Sample 19B (200x mag) –
West elevation, window
reveal,



Sample 19C (200x mag) –
West elevation, window
reveal,



Sample 19A (200x mag) – West
elevation, window reveal,

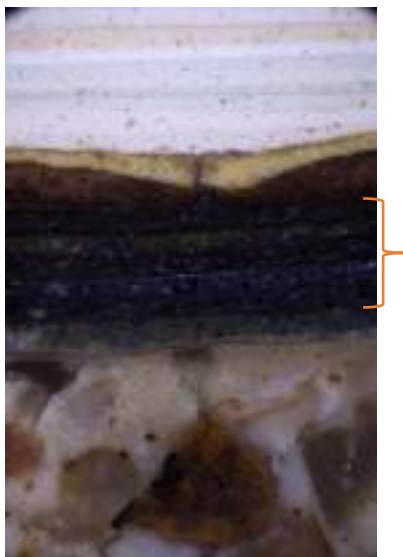
Initial observations:

- Samples 36 & 37 have been taken from the lower section of a column to the entrance vestibule which was formed following the insertion of the bleacher style seating. This area was formerly part of the main hall and therefore samples were taken for comparison to those from the hall.
- Samples 36 & 37 contain very few initial schemes of decoration however there is some indication that these facets may not have initially painted with evidence of significant dirt film to the substrate.
- There is a comparable early paint film seen in fragmentary form in sample 37 (far left) and the earliest scheme in sample 36 and 19B which was taken from the window reveal to the south-west corner of the hall. The limited number of schemes here indicate these facets were likely left barefaced and painted less frequently.
- The earliest scheme seen to sample 19A from the metal surround to the south-west window contains an initial stone colour scheme followed by a number of red colour schemes, these likely correspond to schemes 07 & 08 seen to the joinery & walls.

Key

- ① Number of scheme(s)
- / Links decorative scheme
- Pb Lead-based oil paint scheme(s)
- Zn Zinc-based oil paint scheme(s)
- S Substrate

6.1.4. Microchemical stain tests:



Sample 06 (200x mag) - Pb

Sample tested for the presence of lead. Confirmed by the change to black seen in paint layers marked.



Sample 08 (200x) Hcl

Test with dilute hydrochloric acid tests for the presence of carbonates found both in lead-based paints (lead carbonate) and in distempers and limewashes. Strong effervescence in the earliest grey colour confirms presence of carbonates.



Sample 08 (200x mag) – after Hcl

Test with dilute hydrochloric acid to the blue pigments in the earliest grey paint film indicates artificial ultramarine. Note bleaching of the blue to leave the yellow pigment.

7. Recommendations

7.1. Appropriate Redecoration Strategy

A number of areas contained failing paint films and all areas of flaking paint should be removed prior to redecoration. Whilst every effort should be made to retain paint archaeology suitable preparation is required to ensure appropriate bonding of the paint films, especially given the elevated nature of the facets and any future access limitations.

If it is possible to retain some paint archaeology prior to redecoration following removal of failing paint films, this ensures physical evidence is retained should any existing research be lost.

It would be beneficial for location of retained schemes to be marked onto drawings to ensure these areas can be identified in future should any further research or analysis be required.

7.2. Health & Safety

The earliest paint films were found to contain lead which is toxic. Where paint removal is to be undertaken, methods should ensure safe working practice. Therefore, dry removal should be avoided to prevent the creation of air-borne, lead-containing dust, unless suitable extraction with a HEPA filter can be in place. The use of a heat gun should also not be used without the operative wearing suitable PPE and appropriate Hot Works permits in place. Any waste material from the use of paint strippers should be disposed of according to lead contaminated waste regulations.

Positive identification of paints with a high lead content: Where original architectural features are still extant, early paint films were identified as lead oil paints and tested strongly positive for lead. Most of these are encapsulated by later, non-lead paint films though there is localised failing. Those working in close proximity to these facets need to follow guidelines for working with lead contaminated waste and wear suitable PPE at all times.

7.3. Colour Tests Prior to Redecoration

It is strongly advised to undertake trial panels viewed in-situ prior to the final specification for colour where there is an interest in recreating the design intention of the original architect.

Any intention to recreate an earlier colour palette should take into consideration the changes in any surrounding buildings or landscape and associated patina since construction. Schemes that were applied in the eighteenth century may have considered the colour of stonework, the appearance of which, will most likely have altered in the intervening years. Therefore exposed "original" colours may need to be adjusted accordingly.

8. Glossary of Terms

Cross-section: a sample, mounted in clear resin, polished to exposure all the paint films for microscopic examination.

Decorative scheme: an intended finished appearance of a space.

Dirt layer: a layer of dust or debris sandwiched between decorative schemes. Often seen in exterior paint samples where paint films were applied before the Clean Air Act (1956) and surfaces were not heavily prepared before the application of the new paint film. Dirt films can also be seen in samples from areas of heavy carbon deposits such as interiors where open fires, gas lighting etc. were employed. Dirt films can be indicative of long periods of time between schemes of decoration.

Oil Paint: Dry, finely-ground pigment which is made into a paste with an oil, such as linseed, poppy or walnut. The paste may then be diluted with more oil and/or a spirit such as turpentine or white spirit.

Lead oil paints: 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. The translucency of white lead oil paint increases with age by virtue of saponification of basic lead white with oil, forming lead linoleates. This represents a graceful alteration of the paint, leading to a more yellowed tone with time.

Gilding: an application of gold or metallic leaf applied to a surface as part of a decorative scheme. Oil or water gilding can be used and exterior oil gilding can include double gilding for a more durable finish.

Paint sample: the physical sample of paint. The sample should include all paint films and a small section of substrate where possible.

Paint film: a single application of paint, a number of paint layers make up a decorative scheme.

Paint scheme: a combination of a number of paint layers to form the intended scheme of decoration e.g. primer, undercoat and top coats.

Photomicrograph: an image of a cross-section taken through the microscope.

Primer: a preparatory film applied beneath an undercoat, can be applied as a continual film or as a spot primer where the underlying or existing coatings need additional preparation prior to the application of a new scheme of decoration.

Synthetic resin, oleo-resinous: 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.

Substrate: the underlying material upon which the paint film has been applied.

Topcoat: One or more applications of the final paint colour of a scheme. A topcoat can be used to pick out an architectural facet or have a number of paint layers to make up a polychrome or stencilled scheme.

Undercoat: a preparatory paint film(s) applied to a surface prior to the application of a topcoat or varnish film. An undercoat can be built up in several layers.

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Head Office
Laughton, Sleaford,
Lincolnshire NG340HE

Tel: 01529 497449
hirst@hirst-conservation.com
www.hirst-conservation.com