



LINCOLN

CONSERVATION

Research and conservation of historic decorative schemes in the built environment

Project Name: Manchester Opera House
(Preliminary Report)

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1.0: Introduction

Lincoln Conservation were commissioned by Osbornes Chartered Architects to carry out an architectural paint research exercise on the façade and windows of The Opera House, Manchester.



Figure 1: The Opera House façade facing the road

Architectural Paint Research is a technique widely used to help define the decorative history of historic buildings and other structures. It is an evidence-based approach that relies on the microscopic examination of small samples of paint removed from key locations. Sample locations are carefully selected to yield as much information as possible (the thickest paint layers) and include a portion of substrate (in this case, wood and render) to ensure a complete historical record is examined.

With the decorative history of an historic building revealed, the client is provided with the evidence needed to make informed decisions about how a building should be presented to

reflect its past appearance. With sufficient evidence, it may be possible to faithfully recreate the appearance of a historic building at some point in its past; or if information is lacking or fragmentary there is normally enough evidence to reintroduce a flavour of its decorative appearance and extrapolate the colour schemes onto areas of later repair.

1.1: History of the building

The Opera House is a Grade II listed building built in 1912 by Horace Farquharson and Richardson and Gill in a Neo-classical style¹. It operated mainly as a theatre (with a brief stint as a cinema in WW2) until the late 1970s, when it was run as a bingo hall for several years, before being re-opened as a theatre again in 1984². The building was most recently refurbished in 2003³.



Figure 2: Detail of a drawing of the Opera House (then known as the New Theatre) by Handlip Fletcher, from *The Guardian*, 26th December 1912 (source: <https://www.newspapers.com>)

¹ <https://historicengland.org.uk/listing/the-list/list-entry/1247470?section=official-list-entry>

² <http://www.arthurlloyd.co.uk/ManchesterTheatres/OperaHouseManchester.htm>

³ <http://manchesteroperahouse.com/>



Figure 3: The Opera House in 1913 (source: Historic England)

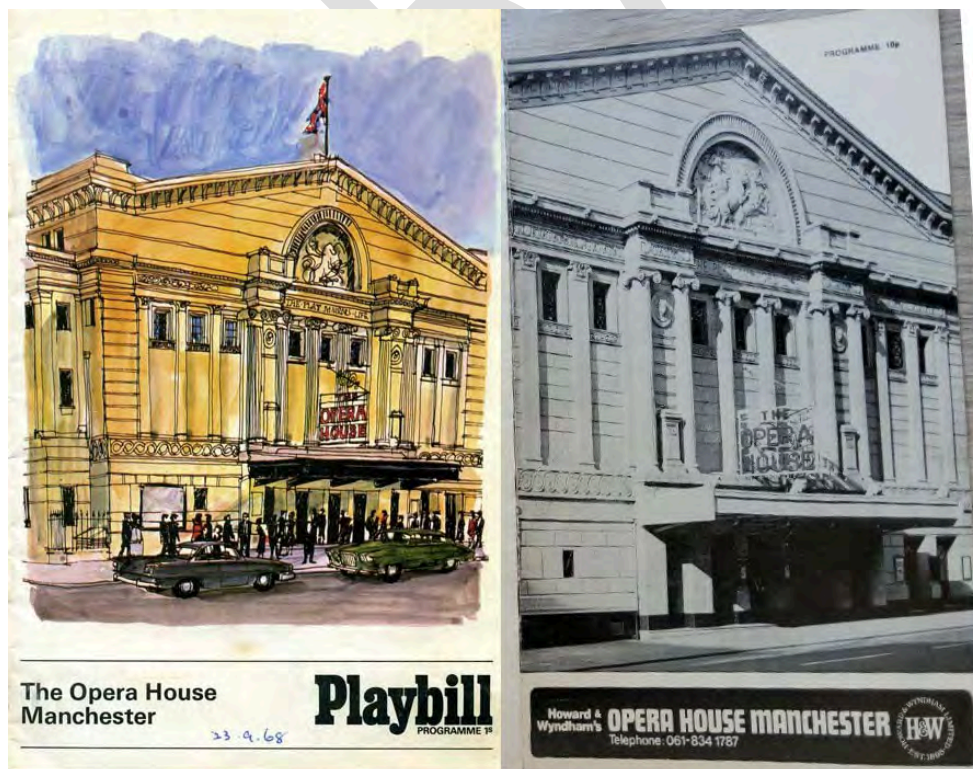


Figure 4:
Details from
1968 (left) and
1977 (right)
Opera House
theatre
programmes
(source:
manchesterhis
tory.net)

2.0: Methodology

The samples, including substrate, are mounted in polyester resin in cross-section and polished back to reveal the full stratigraphy of the paint layers applied. The earliest paint layers appear at the bottom of the sample, with subsequent layers stacked above, as they would have been applied over time (similar to an archaeological record).

The sample is then viewed through a microscope at various magnifications under simulated daylight to determine the distinct layers of paint applied and to reveal colours. The presence of dirt layers helps to determine the separate decorative schemes – a scheme can be made up of more than one layer, commonly a primer and topcoat. Ultra-violet illumination causes different types of paint and varnishes to fluoresce (or glow) in a characteristic manner, helping to distinguish traditional oil paints (both lead and zinc based) from modern synthetic alkyds, distempers and varnish coatings.

3.0: How to read this report

These preliminary architectural paint research findings are presented in two formats:

- Annotated photomicrographs
- Discussion

Annotated photomicrographs

A photograph taken at high magnification through a microscope. Selected images are included in section 5.0 of this report. Some of them display a large number of paint layers, starting in the early 20th century with many others stacked above, up to the present day. Others show fewer layers, indicating areas that have been stripped or replaced. Where possible the timber or render substrate is included with the image, indicating a complete record has been examined.

Discussion

This summarises the research and provides the concluding remarks, with options for redecoration that re-introduces an earlier appearance of the building façade based on the evidence uncovered. If evidence is missing, sensible conclusions are drawn extrapolating the data uncovered, coupled with our extensive experience on similar buildings over many years.

4.0: Sample locations

Every sample removed carries a unique identifying number corresponding to the locations illustrated in this section of the report. Samples were removed from the external frames and casements of the windows that were accessible from ground level, but due to access issues, it was only possible to remove external samples from the upper-level frames and casements on selected windows. Samples were also removed from selected internal casements and frames on the upper levels for comparison, and several samples were removed from the railings outside, in case they could provide additional evidence of historic external decorative schemes. Four samples were removed from various decorative elements of the façade at ground level, but the guilloche mouldings on either side of the entrance were found to be modern resin replicas, so they were not sampled.



Figure 5: sample locations 1, 2 (windows W2-F and W3-F) & 18 – 20 (railings)

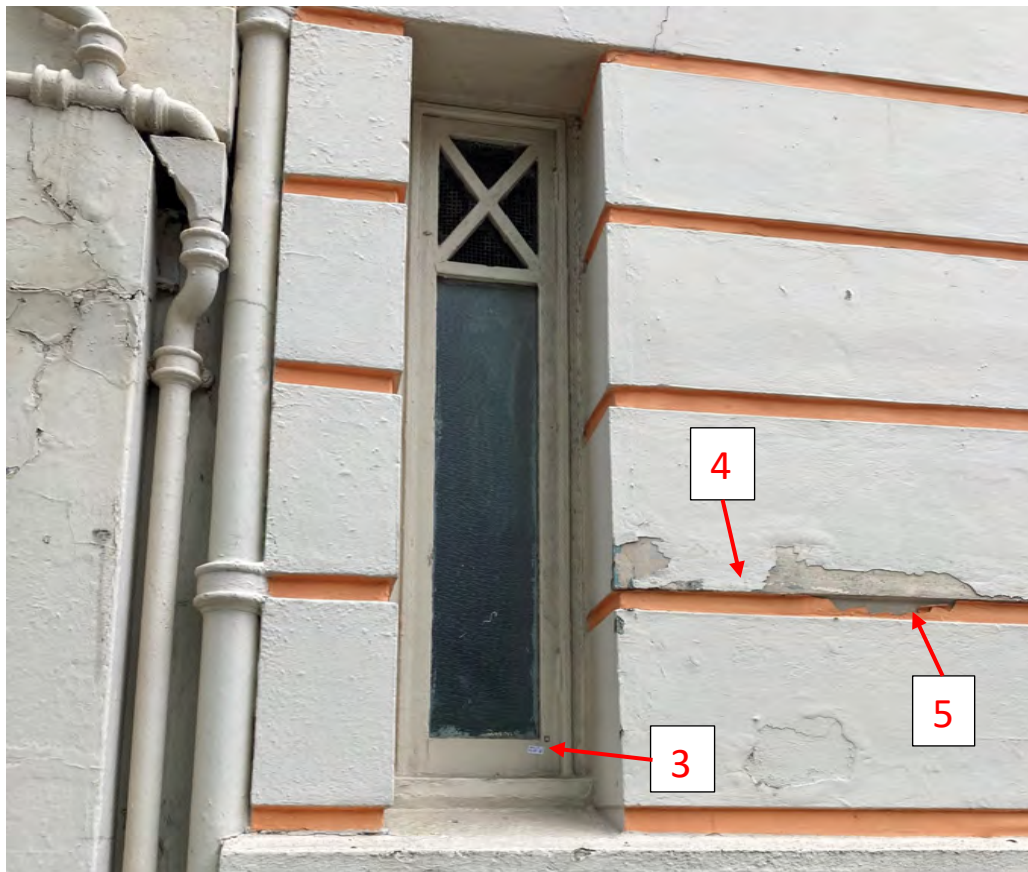


Figure 6: sample locations 3-5 (window W1-F and faux-ashlar blockwork of façade)

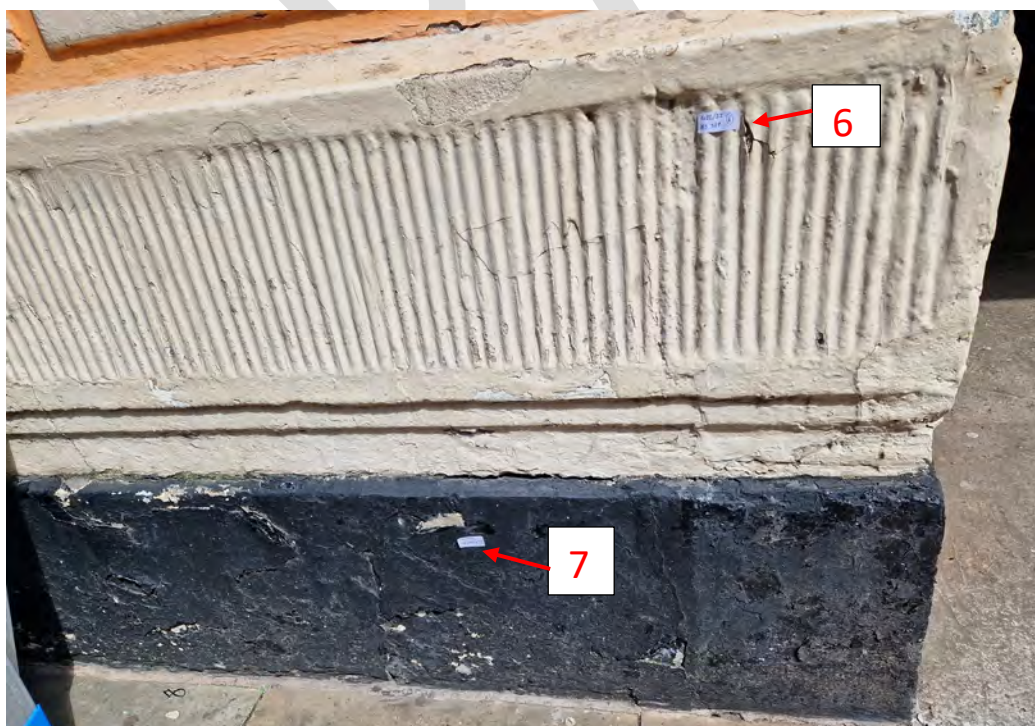


Figure 7: sample locations 6 & 7 (fluted course and flat plinth of lower façade)

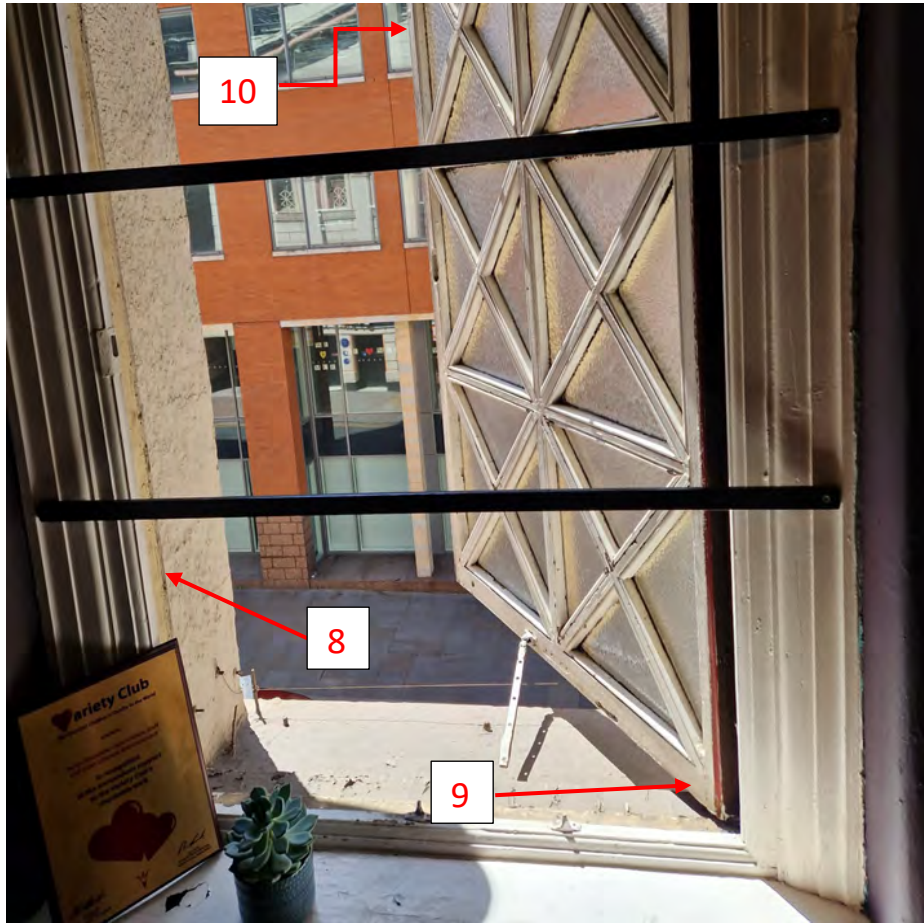


Figure 8: sample locations 8-10 (upper window W13-LG)



Figure 9: sample location 11 (upper window W11-LG)



Figure 10: sample location 12 (upper window W8-LG)

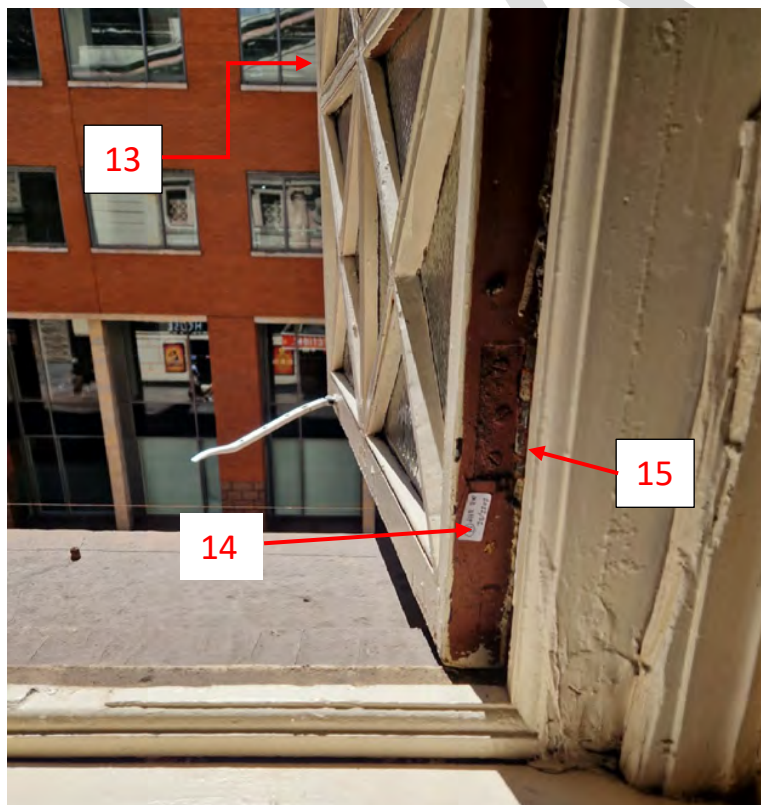


Figure 11: sample locations 13-15 (upper window W15-LG)

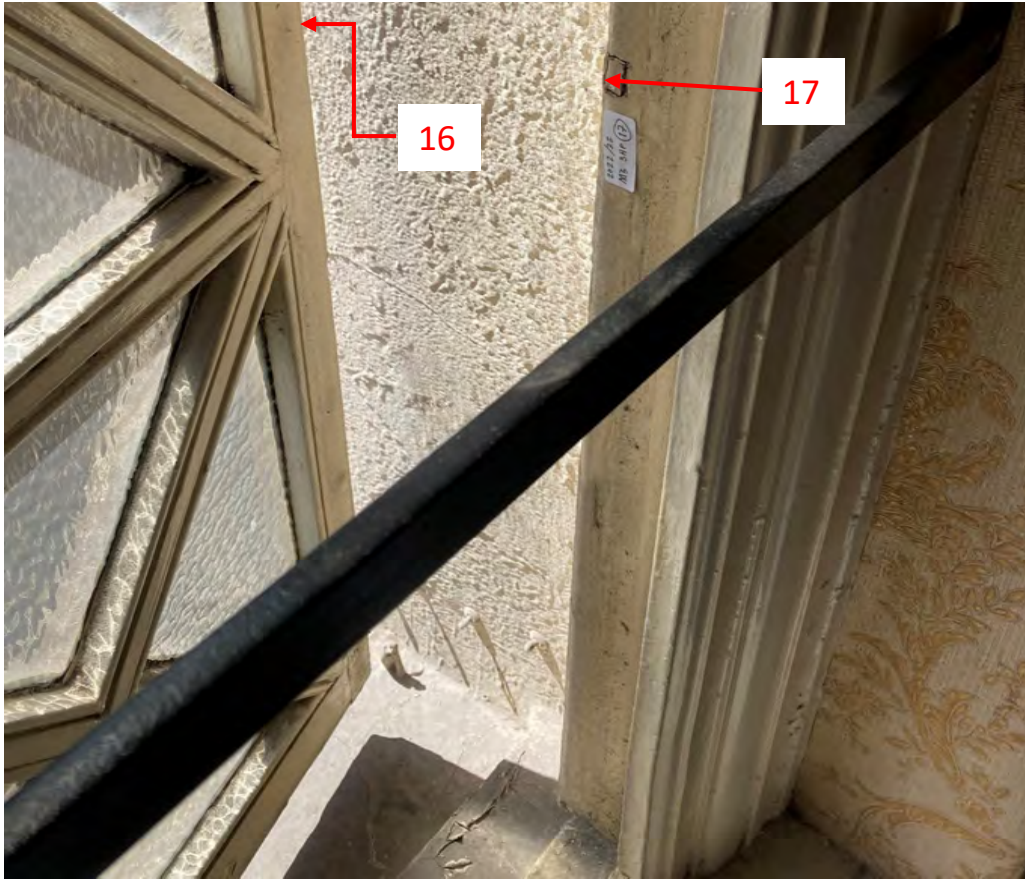
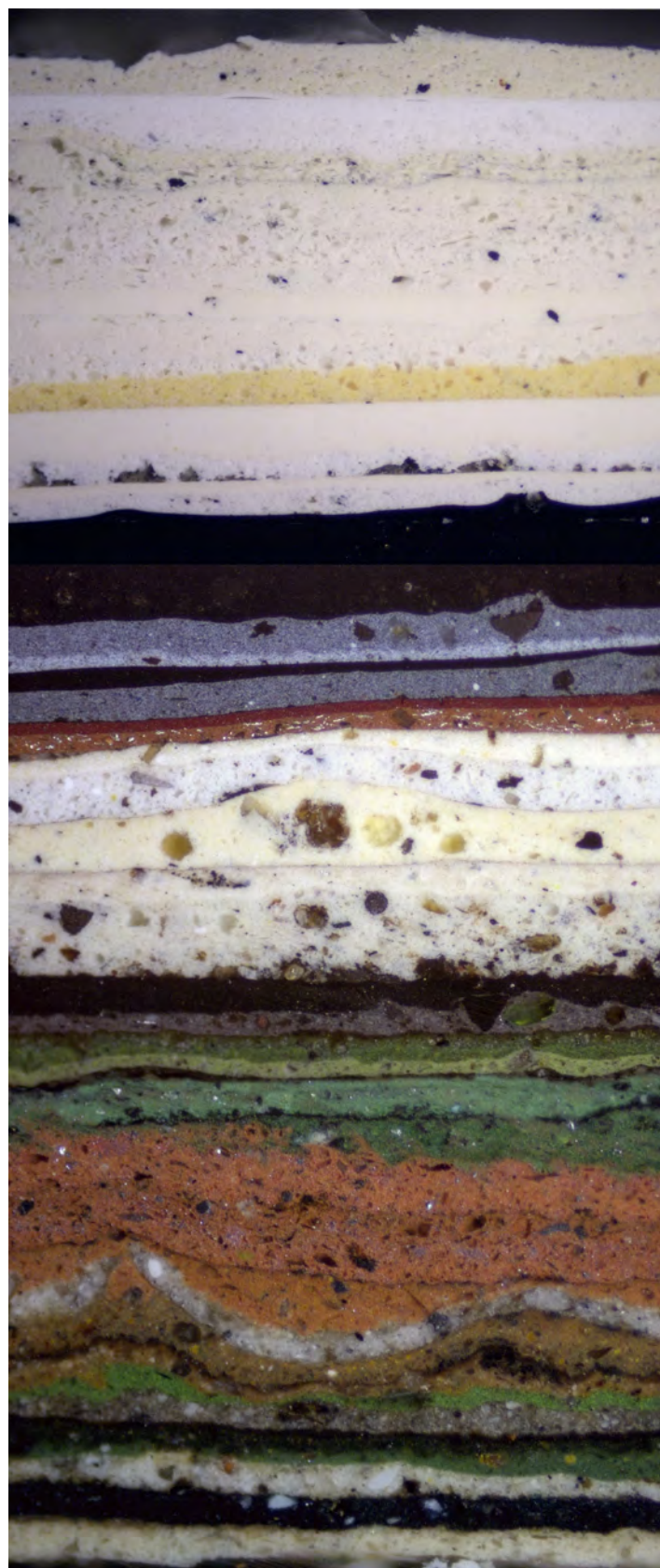


Figure 12: sample locations 16 & 17 (upper window W16-LG)

5.1 Windows



The later schemes begin with a bright red alkyd paint, followed by several schemes of black, and finally by mainly white, off-white and cream alkyd and zinc paints. The single scheme of yellow alkyd paint may date from the 1960s, when programme covers show that the Opera House may have been given a predominantly yellow decorative treatment (see Figure 4).

The earliest layers are lead oil paints in strong colours: blue/black, mid-green, tan brown and red. These were often refreshed once or twice between colour changes. These are followed by off-white and cream zinc paints, which may date to the 1930s or 1940s.

Figure 13: **Sample 3**, exterior window casement W1-F

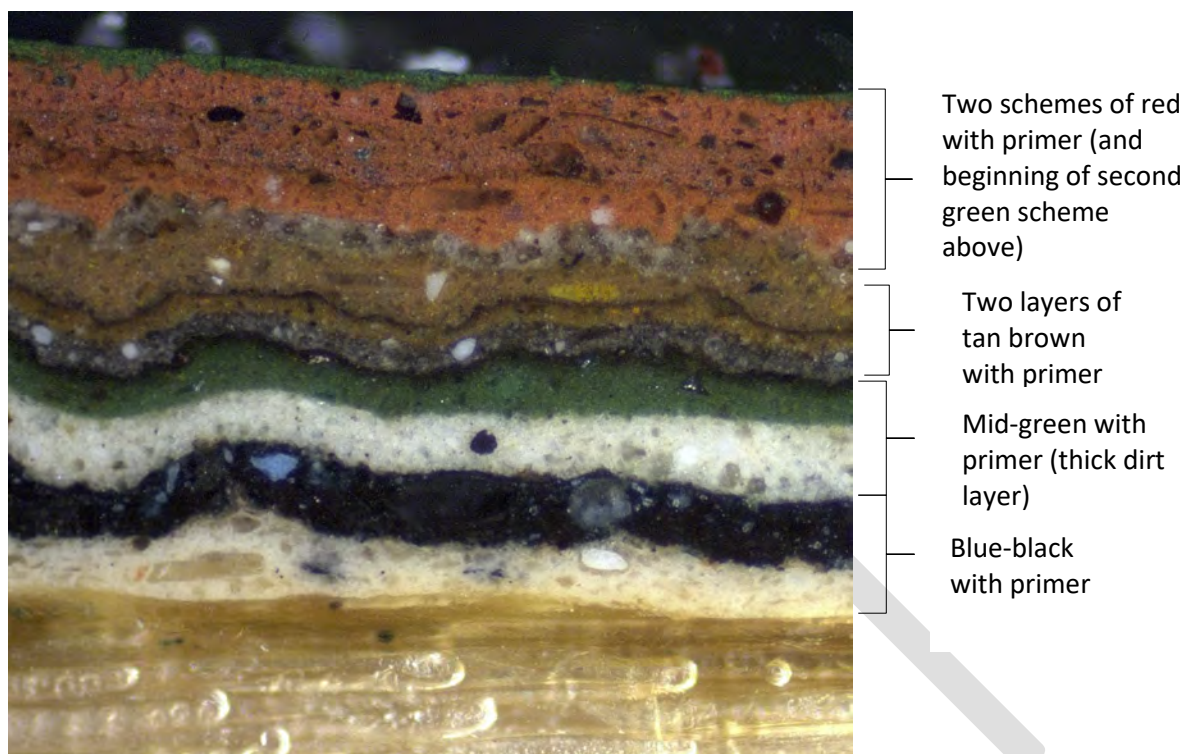


Figure 14: Close-up of **Sample 1**, exterior window casement W2-F, showing earliest paint layers on wood substrate

All of the samples from the window exteriors, both upper and lower, show similar stratigraphy: early lead paints in blue-black, mid-green, tan brown and red, followed by off-white and cream lead and zinc paints, then black zinc paints, then more off-white and cream paints, mainly zinc and alkyd (with a single layer of yellow in the later layers). This stratigraphy is the same for both the casements and the frames, suggesting that they have been painted the same colour throughout their decorative history.

The use of strong colours in the early layers is typical of external decoration on urban buildings in the late 19th and early 20th centuries, when high levels of air pollution in city centres meant that pale colours would appear soiled very quickly. The first mid-green scheme shows a thick dirt layer on the surface, illustrating this problem, and suggesting that it was in place for longer than some of the later schemes.

The large number of layers (approximately 24 schemes) indicates that the windows were repainted or refreshed roughly every 4-5 years throughout the building's history. This may be due in part to the abovementioned problem of pollution.

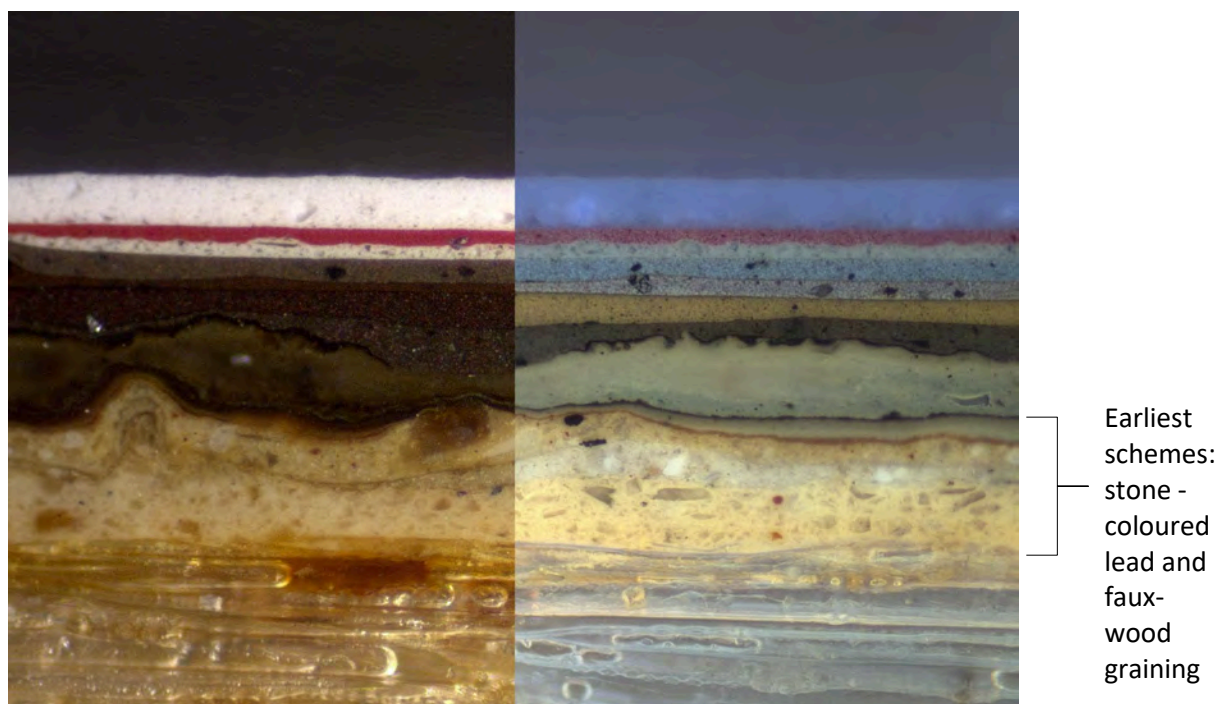


Figure 15: **Sample 9**, interior casement of W13-LG (right is under UV light)

The samples taken from the interiors of the upper windows show that the earliest decorative scheme was a stone-coloured lead paint, followed by a faux-wood-grained finish (which is common in late 19th and early 20th century interior decoration), and later covered by several layers of varnish. This was followed by several different shades of brown zinc paints, and lastly by a layer of red zinc paint, before the current layer of modern white paint was applied.

This indicates that the interiors of the windows were treated differently from the exteriors, and that the decorative schemes used on the insides of the windows were more likely related to the interior decoration of the Opera House.

5.2 Facade

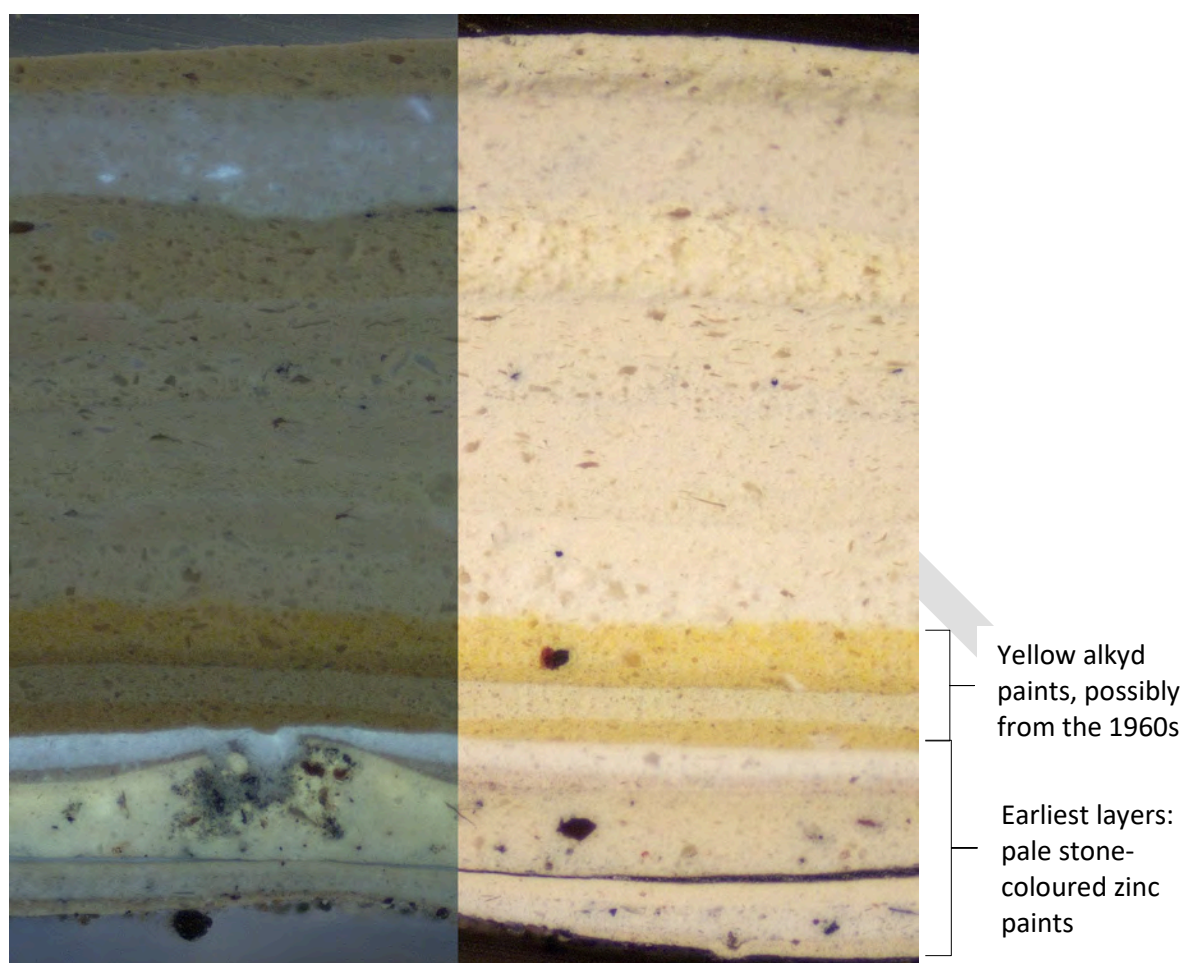


Figure 16: **Sample 4**, façade - faux-ashlar blocks (left is under UV light)

The sample taken from the faux-ashlar blocks on the façade shows only more recent zinc and alkyd paints, suggesting that either the façade has been stripped at some point in the past, or that the area sampled did not contain all extant paint layers. It is worth noting that residues of blue paint were seen in some areas of the façade on site, but these do not appear in the sample taken.

The sample shows that the earliest visible layers are pale stone-coloured zinc paints, which may date from the period just before or just after the Second World War. The yellow alkyd paints that follow may date to the 1960s, when theatre programmes from the Opera House show the exterior of the building to be predominantly yellow (see Figure 4), although as this is an artist's interpretation, it may not be entirely accurate. The rest of the layers are mainly off-white and pale stone-coloured alkyd paints.

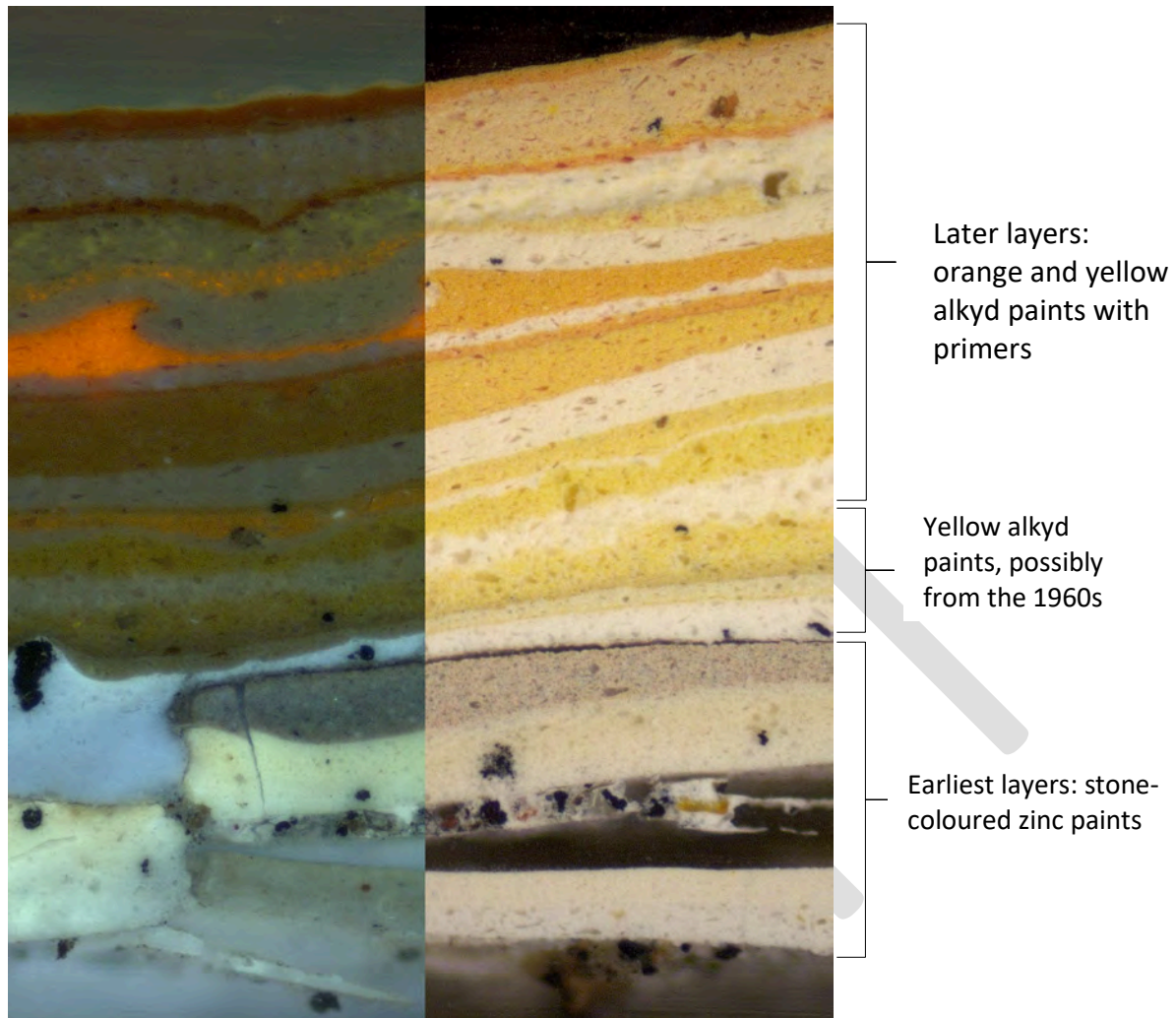


Figure 17: **Sample 5**, joints between faux-ashlar blocks on façade (left is under UV light)

The sample taken from the joints between the faux-ashlar blocks of the façade shows a similar early stratigraphy to the sample from the blocks themselves: the earliest layers are stone-coloured zinc paints, followed by the same yellow alkyd layers as on the blocks, which may date to the 1960s. Above these yellow layers, however, the sample shows that the yellow alkyds continued for two more schemes, and then were changed to orange or yellow-orange alkyd paints.

This suggests that the joints have often been picked out in yellow or orange (with the blocks themselves being painted in lighter off-white or cream colours) since the 'yellow scheme' of the 1960s. Before this period, however, it is uncertain whether the joints were painted differently from the blocks, although the presence of a slightly darker stone colour in the earliest layers may support this for the period of the stone-coloured zinc schemes.

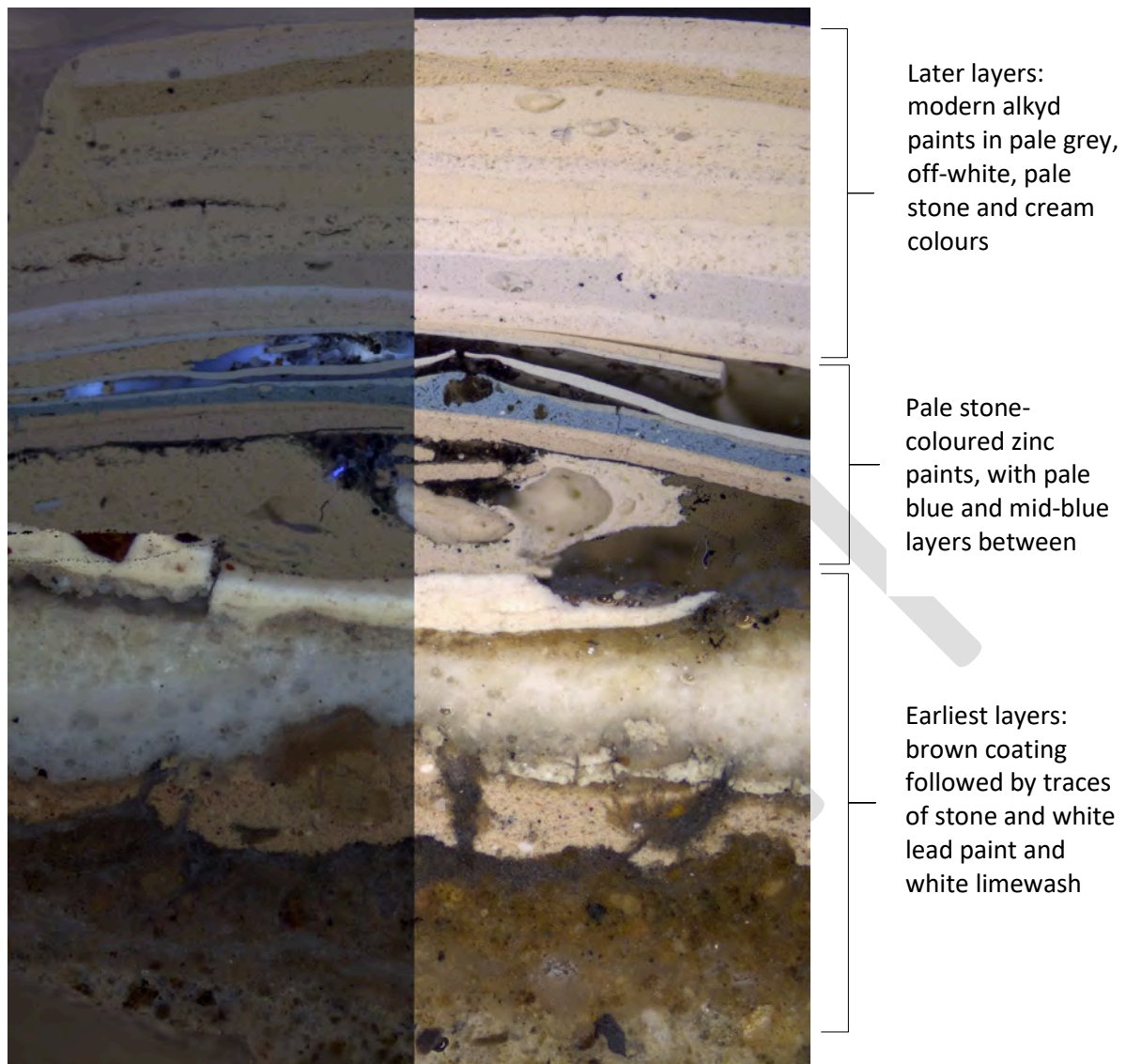


Figure 18: **Sample 6**, fluted course, lower façade (left is under UV light)

The sample from the fluted course below the faux-ashlar blockwork shows an early layer of mid-brown just above the substrate; this layer may be the original render colour, or it may be a coating added later in the building's history, but the heavy dirt layer on it suggests that it was in place for some time. This is followed by traces of white and stone-coloured paint, which appear similar to later layers, and may have seeped down to this level through cracks in the layers above. These are followed by two layers of white limewash, and then by several layers of white lead oil paints. The next schemes are a series of stone-coloured zinc paints, which appear similar to the earliest layers on Samples 4 and 5, and may date to the same period in the mid-20th century. Within these stone-coloured layers, however, are

layers of pale blue and mid-blue, indicating that this element of the façade may have been picked out in blue tones at some point in the mid-20th century. These layers may also relate to the blue paint residues seen elsewhere on the façade during the sampling visit. The final layers are all modern alkyd paints in pale colours: pale grey, off-white, pale stone and cream.

This suggests that the fluted course has been painted in pale colours throughout much of its history, but it was painted to match the blocks in the façade above in some schemes, and picked out in toning colours (such as blue or grey) in other schemes.

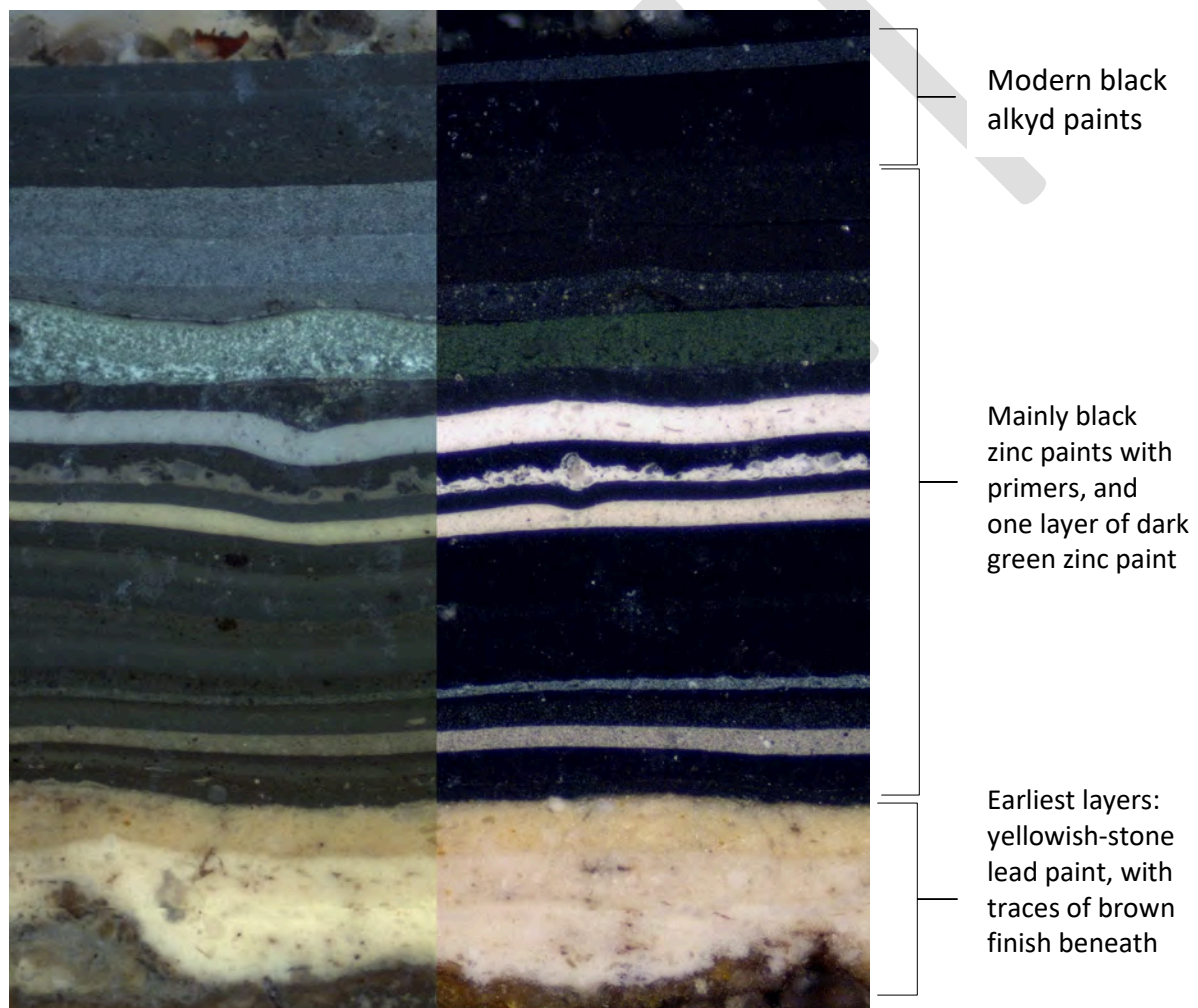


Figure 19: **Sample 7**, flat plinth at base of façade (left is under UV light)

The sample removed from the flat plinth at the base of the façade shows a somewhat different stratigraphy to the elements above it. The earliest layers are traces of a brown coating, which appears to be the same as the early brown layer on Sample 6 from the fluted

course above, with a pale yellowish-stone-coloured lead paint above it. These may relate to the decorative treatments of the façade up to the 1960s, as archival photographs (see Figure 3) and programme covers (see Figure 4) show this element painted in light colours up to 1968, and painted in dark colours from the 1970s onwards. The disturbed surface of the brown layer, however, may indicate that the surface has been scraped back before the application of the yellowish-stone lead paint, so any intervening layers may have been lost. The later layers are mainly black paints with primers: the zinc-based paints are likely to date from the mid-late 20th century, while the black alkyd paints are likely to be late 20th- 21st century.

The resemblance of the early brown finish to the earliest layer in Sample 6 above suggests that the lowest two elements on the façade may have been treated similarly in early decorative schemes.

6.0: Discussion



Figure 20: Detail of the Opera House in 1913, showing window & facade treatments (source: Historic England)

The decorative history of the Opera House's exterior is difficult to determine with precision, but our research so far has highlighted several key points.

6.1: Colours

The external elements of the windows were originally painted in strong colours, mainly blue-black, mid-green, tan brown and red. This can be seen in Figure 20, where the window frame and casement are clearly considerably darker than the surrounding façade. These colours were a practical choice, given the high levels of air pollution in Manchester in the early 20th century. Both window frame and casement were painted in the same colours in this early period.

The interior faces of the window casements were originally painted pale stone, then given a faux-wood-grained finish, likely linking them to decorative schemes within the

interior of the building, rather than to the exterior decorative treatments.

The original colour of the façade is difficult to state with certainty, but the lack of early layers, combined with the fact that the earliest extant layers are stone-coloured suggests that the façade may originally have been coated in a stone-coloured render and left unpainted, or it may have been rendered and then painted in a stone colour. The surfaces of the façade in photographs from 1913 appear to be unpainted render, with no picking out of the joints, fluted course or base plinth (see Figure 20), although some of the decorative mouldings higher up do appear to be picked out. Further sampling of the façade would be necessary, however, to determine if any evidence remains of this early decorative scheme.

6.2: Materials

Pending further materials analysis of the window timber and render, our observations on site suggest that the windows are made of a softwood timber such as pine. This is supported by the discovery of the faux-wood-graining treatment on the interiors of the windows, as this treatment was normally used to make cheaper softwoods like pine resemble more expensive hardwoods like figured oak or mahogany.

Observations during sampling of the façade suggest that the original render is a hard, cementitious render similar to Portland cement.

Ultra-violet fluorescence and micro-chemical analysis with sodium sulphate during microscopic examination indicated that the early paint layers on the windows contain high levels of lead. Lower levels of lead were also detected in the earliest layers on the façade. As a result, any work done on these elements will need to follow proper procedures for the handling and disposal of toxic materials.

HISTORIC MATERIALS ANALYSIS



HISTORIC INTERIORS



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