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Conservation of the Bathhouse Stevenage

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Bathhouse Conservation Project Stevenage

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Photographic Appendix of before and after conservation

1. Introduction and Rationale

Over a period of several weeks in October/November 2008, following ceiling and brick wall restoration by builders, Hirst Conservation carried out interior conservation work to the fabric, fixtures and fittings inside the bathhouse in Stevenage, such that it may be exhibited to visitors as a museum.

The Bath House opened in 1913 and closed in 1960 and retains many of its original fixings and fittings. The building measures about 4.5m wide x 5.5m long x 4m high, with its interior consisting of four cubicles, each approximately 2.5m long x 1.25m wide (four widths = length of the building) and each with a white cast iron enamelled bath.

Only one cubicle had its original duckboard, so the other three were replicated. The cubicles wooden partitions are approximately 2.5m high and painted a pale green or aquamarine colour (lead-oil paint), as are the brick walls up to about 1.5m or so. The upper parts of the brick walls (walls approximately 4m high) are painted a cream colour (emulsion paints and distempers).

Each cubicle had a wooden seat and shelf, painted the same pale green colour as the partitions. A seat was missing from the left hand cubicle and needed replicating as did the angle supports for the seats in cubicle 1 and 3.

Each cubicle has the same arrangement of four hooks, but only two of the cubicles retained their original mirrors on the back wall (cubicles 1 and 3). Mirrors for the other two cubicles were replicated.

The Bath House also contained a very rusty cast iron stove with flue pipe, in its original position, dated circa 1900, marked with the name Carron. The boiler needed cleaning and the rust stabilising. The original boiler was replaced in the 1950s.

Two gas lights still existed with their glass shades intact.

The two windows in the sloping roof (cubicle side of the building) were re-glazed and repainted and had broken cord/pulley mechanisms, one requiring its cast iron lever 'welding' or fixing back in place and both requiring new cords.

All the badly tarnished brass pipes/fittings were cleaned, polished and laquered to inhibit future corrosion.

The restoration of the building had two elements:

1. Building works to weather proof the exterior and stabilise the interior.
2. Conservation of the internal fixtures and fittings

2. Condition of the Fabric, Fixtures and Fittings

There was much loose dirt, dust and cobwebs over most of the surfaces as well as significant imbibed dirt and staining.

2.1. Brick Walls

Clearly there was much damp within the atmosphere of the Bath House mostly attributable to its damp fabric. The walls were subject to significant and ongoing rising damp, up to 1.5 metres height, and water stains on the ceiling testified to rain ingresses. This suggested the building envelope had not been water-tight for some time, if ever.

The brick walls, mostly up to 1.5m height, but also at near ceiling height, exhibited decay/flaking/powdering of paint and brick surfaces (up to several centimetres deep on some bricks) as a consequence of moisture and soluble salt migrations.

The back wall of each cubicle has a hard impervious, possibly cement based plaster applied, which is essentially intact with its pale green paint finish, but above it the bricks show increased paint and surface deterioration. This is probably a result of interior pore moisture being 'driven' higher up the wall, behind the impervious cement plaster, to where it can better evaporate through the more porous exposed bricks.

The pointing mortars are lime based, and the cream paint on the upper sections of wall are mostly distempers, while the green paint on the woodwork and lower sections is lead-oil based. The distempers and lime mortars are porous materials desirable in these damp conditions, but still allowed the decay of paints and bricks in several locations, testifying to the excessive damp problems. The impervious green lead-oil paint types had entrapped moisture and salts, leading to the decay of the brick substrate.

2.2. Metallic Elements

Many of the metallic fixtures and fitting showed evidence of surface corrosion and tarnishing, resulting from protracted periods of high atmospheric humidity over at least the last 47 years or so, e.g. :

On all four enamelled baths there was enamel loss in a few small areas, but nothing excessive, and rusting of exposed cast iron substrates, edges, claw feet, taps, plugholes and all exterior non enamelled sides (where the paint is thin, and was powdering and flaking significantly).

All the metal hooks were rusty with most of their black paint disrupted.

Water feed pipes (painted silver/aluminium) showed significant paint loss and rusting/pitting.

The cast iron stove had surface rust and its flue pipe had rusted almost completely away.

The angle-iron stands and framework for the 1950s boiler and water tank had much surface rusting and pitting, as did the boiler. In addition the large asbestos flue pipe to the boiler had to be replaced.

A section of gas and water pipe was missing, as was a gas meter from the wall and associated pipes, which have been replaced, the gas meter with an appropriate 1938 model which now stands on a new wooden shelf.

The window opening mechanism (cord, pulleys, levers) on each of the two sloping windows was broken, rusting and not functioning. The painted cast iron lever on the right hand window was broken away but retained.

The bronze gas lamp pipes/fittings, bath taps and chains, door latches and engaged signs, stop valve levers etc had tarnished significantly.

2.3. Woodwork

Most of the woodwork was in a good, sound condition, apart from some evidence of untreated woodworm in a few localised places, mainly on the cubicle doors and bath stands and parts of the lower partition walls in cubicles 2 and 3.

The wooden hook plate on the left brick wall of cubicle 1 was loose due to crumbly bricks and had to be secured.

Missing wooden elements, such as a missing seat in one cubicle, seat supports, duckboards in three cubicles, mirror frames (plus mirrors) in two cubicles and parts of mirrors in two cubicles, had to be faithfully replicated and stained/painted as necessary.

All the woodwork (apart from duckboards): partitions, doors, seats, shelves, mirror frames and window frames, was painted a pale green/aquamarine colour, which had become discoloured by imbibed dirt and mould in some areas. In addition resin from knots had broken through the paint in many locations.

Analysis showed little evidence of any earlier or original paint layers beneath the extant pale green paint, apart from the glossy 'varnish' showing through its cracks, and a yellow paint dribbling down the partitions, behind the baths, which may be the remains of a lead or zinc chromate undercoat/primer.

In several significant areas (0.5 -1m²) of the partitions and doors, the green paint exhibited severe shrinkage cracking (rather than age cracking) and wrinkling, where it overlies a glossy clear varnish/resin (possibly shellac) which was applied as a knotting and water sealant, but which was probably still drying during application of the green paint. This was particularly noticeable in cubicle 3 and on the outside of the door for cubicle 4.

2.4. Glass

The window glass in the ceiling and above the cubicle doors was very grimy, as were the two glass gas-lamp shades.

3. Conservation Treatments

The four baths were boxed up for protection, in situ, before the restoration or building works, since they were to remain in the building during conservation.

In addition the floor was jet washed and covered in thin plywood as protection. Loose dust/debris and dirt accumulated under the plywood during the restoration work. This had to be removed from the floor with a vacuum cleaner and pressure steam tool at the end of the conservation work.

Once the builders had completed element 1 of the restoration, which included replacement of badly corroded bricks, roof and ceiling repairs and installation of a damp proof course by injection of the bricks (to reduce rising damp), the building envelope could be considered essentially water-tight and conservation of the interior could commence (element 2).

Adopted Conservation Procedures

Please see before and after conservation Photographs in the Appendix.

Since the main aim of the conservation was to clean and stabilise the fabric, woodwork, metals and paint surfaces within the environment of the Bath House, and present them in an authentic and aesthetically pleasing way, without excessive or unnecessary re-painting, cleaning or paint stripping (the latter being unethical, unless any underlying historically important scheme can be left intact and undamaged), the following procedures were carried out:

1. **All fixtures, fittings, areas of doors and walls etc, to be conserved, were photographed before during and after conservation.**

16 no. cubicle hooks, 2 no. mirrors/mirror frames, the cast iron stove, 2 no. gas lamps, 4 wooden cubicle doors and 1 duckboard were transported back to Hirst Conservation workshops for conservation work.
2. **Samples of paint** were taken from the wooden partition walls, doors, brick walls, hooks and pipes, for **cross-sectional analysis**, to determine paint types and colour chronologies. In addition, **samples of pointing/bedding mortar was analysed for replication purposes.**

3. **Cleaning tests** were carried out on wall and **woodwork painted** surfaces, **metal** elements and **glass**, both **in-situ and in workshop**, to establish the most appropriate and satisfactory methods/materials to be used.
4. Once **cleaning methods** were established in 4 above, cleaning throughout could commence.
5. The cleaning methods for the **painted wood and metal surfaces** included **de-ionised water** with and without **Synperonic A7** – a non-ionic, neutral surfactant (1 – 2% in a 1 : 1 mixture of water : white spirit), **2% ammonium hydroxide** and **tri-ammonium citrate 2%** in de-ionised water. These solvents/reagents were applied using **cotton wool swabs and small sponges**. Any residues were removed with cotton wool swabs and sponges wetted with de-ionised water.
6. Areas of **woodworm** infested wood were treated by injection of biocide into flight holes, followed by consolidation with **Paraloid B72**. Severely decayed wood (bath stands) was replaced.
7. **Synperonic A7** mixtures were used to adequately clean the **enamelled bath** surfaces without the risk of any abrasion and some very disfiguring areas of enamel loss (e.g. around the brass plugholes) were painted with a white resin. The baths were moved within the cubicles to gain access to wall surfaces and blind sides of the bath.
8. **Rusted iron surfaces** were cleaned/stabilised using dilutions of **Orthophosphoric acid**, which dissolves and removes rust, whilst reacting with iron to form an insoluble, stable and corrosion resistant surface layer of iron phosphate. The main areas were the iron bath sides, the boiler and the stove.
9. Most of these metal surfaces were then painted (for protection and integration) with appropriately tinted paraloid B72 methacrylate resin (i.e. generally silver - mixture of pearlite mica and raw umber - for the pipes, boiler, boiler flue and angle iron water tank and boiler frames, black for the stove, with added fine sand to simulate corrosion textures, for the plastic replacement stove flue).
10. **All Brass/copper metal surfaces** (taps, plugholes, pipes, gas lamp fittings, valves, engaged signs etc.) were cleaned using a fine alkaline paste – siliceous/diatomaceous earth with ammonium hydroxide – **Autosol**), applied with cotton wool, to carefully remove discoloured corrosion products (copper oxides and sulphides). A clear, **protective laquer – Incralac** (Paraloid B44) was applied to the cleaned brass surfaces, to inhibit further corrosion.
11. The **broken cast iron widow lever** was secured back into position using chemical metal resin, and the **cord/pulley mechanisms reassembled**.

12. **All glass elements** were cleaned using either acetone or dilute ammonium hydroxide solution (2% in water).
13. All missing wooden items i.e. **3 no. duckboards, 2 no. mirror frames** (requiring 2 replacement mirrors), **parts of 2 mirror frames, 1 cubicle seat**, were replicated. **A wooden cupboard (painted same green as the partitions) and an attendant's chair were sourced and installed.**
14. **Damaged areas, paint losses and new/repaired elements were retouched/repainted as necessary**, once all surfaces had been repaired, cleaned and stabilised.
15. **Replicated wood** elements were repainted in **acrylic paint** and **metal** elements in pigmented Paraloid B72, to match and integrate visually with the cleaned surrounding original paints, distressing them as necessary. In order to restore the colour balance and harmony of the Bathhouse, presenting it in an aesthetically pleasing way, by retaining as much of the 'aged' fabric as possible but without total repainting, integration of damaged surfaces was necessary: **Large areas** of mould stained, severely cracked, lost and damaged paint surfaces were **sensitively 'in-painted'** and distressed as necessary, using **acrylic paints** to visually match, the surrounding aged extant paint, feathering their edges with sponges into the original to integrate gradually. **Small isolated cracks** etc. were carefully **retouched with acrylics or tinted Paraloid B72.**
16. Areas of **repaired brick wall** were treated in a similar way as detailed in 14 above, using acrylic paint/glazes for the green lower wall section, but more **porous casein limewash for the upper wall sections.**

4. Environmental Considerations

As mentioned earlier, the Bathhouse was probably subject to an internal atmosphere of high Absolute Humidity for much of its history, as a result of damp walls and leaking roof. This encouraged condensation (since outside air temperatures are then more likely to drop to the internal dew point of the air inside), as well as mould growth and cyclical hygroscopic action of the more aggressive salts within the porous brickwork etc. (sulphates from cement mortars and bricks in particular), which cause crumbing of the brick surfaces and flaking of paint layers.

After the repairs to the roof and walls (including the installation of a damp course) the building should be essentially water-tight, but there will still be some residual hygroscopic salts in the walls which may continue to dissolve, migrate and crystallise as the temperature and RH of the air inside the building fluctuate, causing future flaking of the paint and spalling of the brickwork. This is by virtue of these salts absorbing and desorbing moisture from the air as the RH varies, even if rising damp and leaks have been eliminated.

Therefore, maintaining a steady Relative Humidity (RH) and temperature would help to stabilise the remaining hygroscopic salts in the fabric.

5. Future Maintenance of the Bathhouse interior

The paints used to restore/conservate the interior of the bathhouse are stable and light fast, which means they should retain their colour and permanence against the now stable old original paints. The Paraloid B72 paints are reversible in acetone or xylene, while the acrylics are generally reversible in acetone and can be removed if necessary.

The cleaned and polished brass elements which have been coated in a clear lacquer, should retain their lustre for a considerable time since the lacquer will exclude the air and inhibit further tarnishing. The incralac (Paraloid B44) resin/lacquer used, is reversible in acetone or xylene and can therefore be removed if repolishing of the brass is required. The re-polished elements can then be re-coated with a protective incralac lacquer.

Essentially most of the fabric should now be stable and require only dusting/hovering or cleaning with damp soft cloths as necessary in the future.

Re-painting would only be required if the brick walls and iron elements corrode significantly in the future as a result of moisture/salts in the walls and/or adverse environmental conditions, or vandalism.

Photographic Appendix of before and after conservation



Photograph 1 – Before Conservation
View of north wall and rusting stove with missing fluepipe



Photograph 2 – After conservation
North wall with stove, cupboard, attendant's chair and boiler



Photograph 3 – Before conservation
Coat hooks on south wall of cubicle 4



Photograph 4 – After conservation
South wall in cubicle 4



Photograph 5 – Before conservation
Gas lamp above cubicle 2



Photograph 6 – After conservation
Gas lamp seen from outside cubicle 2



Photograph 7 – Before conservation
Cubicle 2, note decaying bricks on wall
and missing mirror



Photograph 8 – After conservation
Cubicle 2 showing new mirror



Photograph 9 – Before Conservation
Cracking and wrinkling paint on wooden portions of cubicle 3



Photograph 10 – After Conservation
Cubicle 3 re-touched door and walls



Photograph 11 – Before Conservation
Cracking and wrinkling paint on wooden portions of cubicle 3



Photograph 12 – After Conservation
partition wall, cubicle 3 after cracks and wrinkling had been re-touched.



Photograph 13 – Before Conservation
Broken window lever in cubicle 3



Photograph 14 – After Conservation
Cubicle 2 showing window



Photograph 15 – Before Conservation
Decaying brick walls and missing mirror
in cubicle 4



Photograph 16 – After Conservation
Inside cubicle 4 showing new mirror



Photograph 17 – Before Conservation
Decaying brick in south wall, note missing
gas pipes and gas meter



Photograph 18 – After conservation
Gas meter with pipes and shelf



Photograph 19 – Before Conservation
Missing water pipe against west wall,
by door



Photograph 20 – After conservation
Renewed water pipe



Photograph 21 – Before Conservation
General view of cubicle 1



Photograph 22 – After Conservation
Cubicle 1



Photograph 23 – Before Conservation
General view of cubicle 2 window



Photograph 24 – After Conservation
Cubicle 2 showing



Photograph 25 – Before Conservation
General view of cubicle 3 showing broken
window lever



Photograph 26 – After Conservation
Cubicle 3



Photograph 27 – Before Conservation
Rust water tank supports



Photograph 28 – After Conservation
Water tank



Photograph 29 – Before Conservation
Tarnished brass hot water valve and engaged
sign on door of cubicle 3



Photograph 30 – After Conservation
Water stop valve and engaged sign



Photograph 31 – Before Conservation
Rusting boiler



Photograph 32 – After Conservation
Boiler and pipes



Photograph 33 – Before Conservation
Tarnished brass taps



Photograph 34 – After Conservation
Bath and taps in cubicle 3



Photograph 35 – Before Conservation
Displaced and missing water pipe
Against west wall



Photograph 36 – After Conservation
replaced water pipes



Photograph 37 – Before Conservation
Rusting and missing gas pipes



Photograph 38 – After Conservation
Replacement gas pipe



Photograph 39 – Before Conservation
Rusty boiler and missing flue pipe outside
cubicle 2



Photograph 40 – After Conservation
Boiler and flue pipe



Photograph 41 – Before Conservation
Rusty boiler



Photograph 42 – After Conservation
Restored/stabilised boiler



Photograph 43 – Before Conservation
Dirt and cracked paint on partition walls
of cubicle 3



Photograph 44 – After Conservation
Retouched door and walls, cubicle 3



Photograph 45 – Before Conservation
Rusting supports to water tank



Photograph 46 – After Conservation
Boiler flue pipe replacement



Photograph 47 – Before Conservation
Rusting supports to water tank



Photograph 48 – After Conservation
Water tank seen from inside cubicle 2



Photograph 49 – Before Conservation
General views of cracked paint on partition
wall of cubicle 3



Photograph 50 – After Conservation
Cubicle 3, retouched door and walls



Photograph 51 – Before Conservation
Cubicle 3, showing broken window lever etc



Photograph 52– After Conservation
Cubicle 3