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THE SCIENCE AND ART OF CONSERVATION

Silverdale Mining Tribute Monument

Post-Treatment Report

During the second half of 2020, Plowden & Smith Ltd. carried out the comprehensive conservation and restoration of a large-scale mining tribute monument located in the parish of Silverdale, near Newcastle-under-Lyme, Staffordshire, which had been installed there since 1996.

A summary of the treatment the monument received, is as follows:

- Restoring the significantly deteriorated 'coal wagon', which involved: fabricating a new better-designed galvanised internal frame; hot waxing and refitting the original outer patinated brass cladding elements; shot blasting and repainting the original wheels and supporting beams; and renewing and painting the concrete 'coal' top.

- Replacing the original rotten sleepers with new ones treated with several layers of preservative, including a Creosote oil-based preservative to give added longevity and improved colour.

- Shot blasting and repainting the rails, chairs and chairscrews.

- Pressure washing/steam cleaning the brick plinth to remove dirt and plant matter.

- Hot waxing the bronze plaques mounted to the sides of the plinth and the figure of the miner, to provide additional protection from the elements and improve their visual appearance and readability in the case of the plaques.

- Painting the top edge of the plinth and, where appropriate, the edges of the ballast material on top of the monument

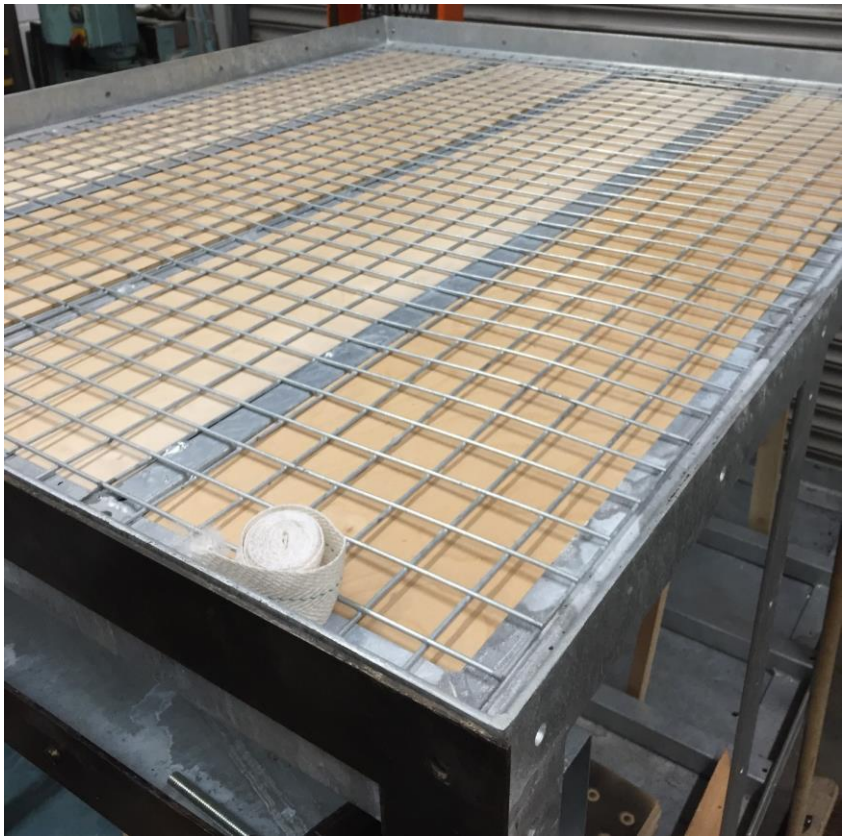
The following photographs show various stages of the restoration and reinstallation of the Silverdale Mining Tribute Monument, with some explanatory notes. The concluding section provides advice on the future maintenance of the monument, to help preserve this much-loved local-landmark and to keep it looking smart.

Overall view of the monument before restoration commenced. Note the patchy appearance to bronze and brass elements, and general dirt and organic growth on the plinth.

Detail of the widespread corrosion present across the sheet steel structure of the original wagon. This was a result of water being trapped between the outer brass cladding and the sheet steel.

Detail of structural failure of joints between welded sheet steel sections of the original wagon. There was minimal structural integrity, ventilation or drainage in this design, which we improved upon in the new structure.

The new wagon structure was of a frame design with better rigidity, ventilation and drainage holes to reduce moisture retention and was galvanised to improve corrosion resistance. The original brass cladding elements are bolted on to this in the original configuration to give an identical appearance to the original.



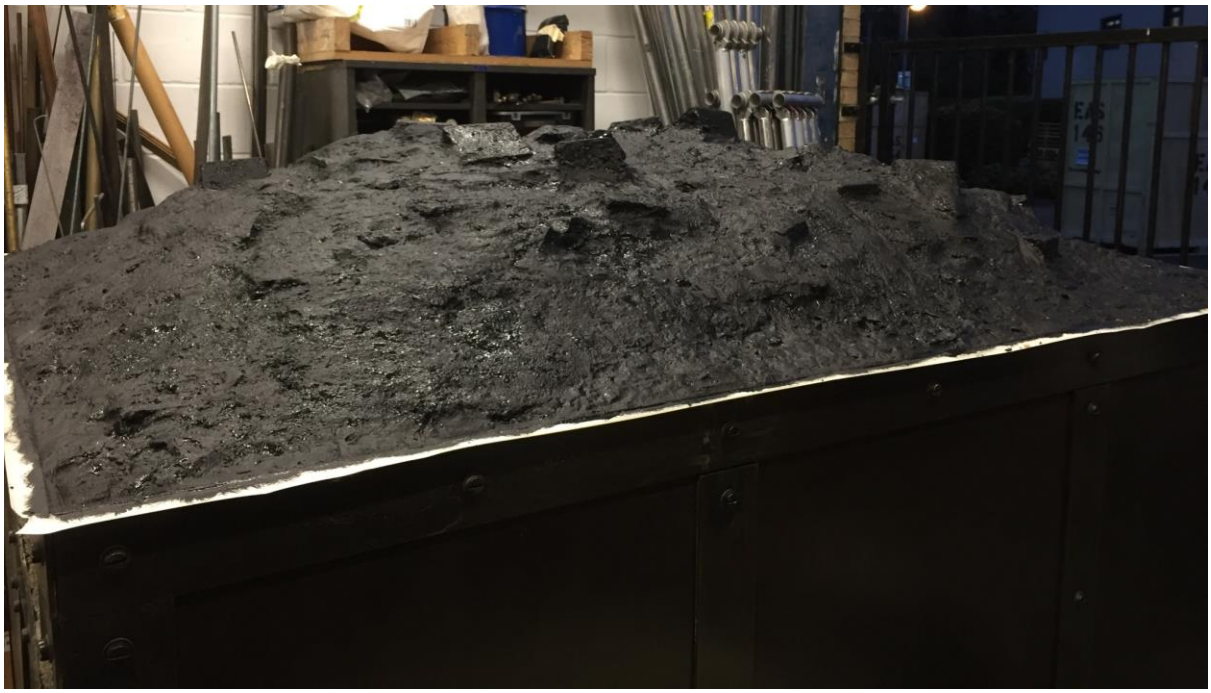
A smaller gauge grid and square tube was used to better support the concrete replica coal. The plywood here is temporary, used until the concrete had set.

The original broken bricks were used in the new top and combined with concrete to sculpt a realistic pile of coal.

Spaces were left where nuts needed to be inserted to attach the brass cladding.

Afterwards, these holes were filled in with a softer mortar which can be more easily excavated in the future, if needs be.

The concrete top was painted with two coats of good quality black masonry paint.



Overall view of painted top with brass elements fitted.

After and before hot waxing of brass cladding elements. This was done mainly with microcrystalline wax and occasionally with brown coloured wax where necessary.

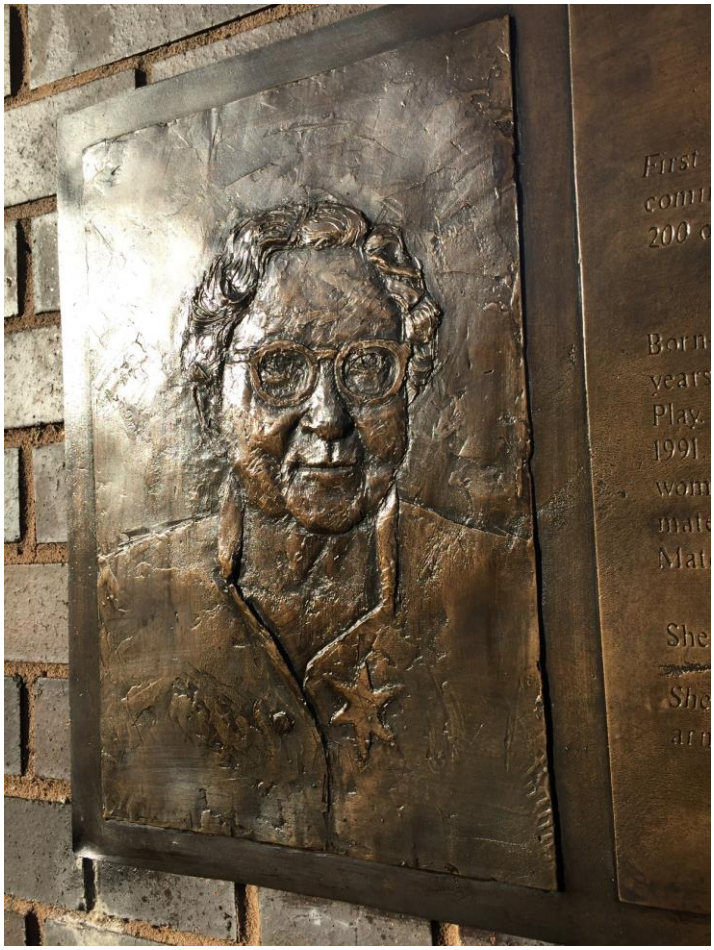
The original rotten sleepers and corroded rails and fixings.

The replacement sleepers treated with Creosote preservative and with shot blasted and painted rail fixings attached.

(above and preceding image) The treated rails and sleepers after reinstallation on the plinth and detail of new e clips, kindly provided by Pandrol, who manufacture them. The sleepers were placed on three spacers each to give room for the drainage of water and ventilation beneath.

Three memorial plaques at the end of the plinth prior to hot waxing.

The same plaques after hot waxing.



Plaque dedicated to Mrs Fanny Deakin after hot waxing.

The plinth after washing, with plaques waxed and top painted with black masonry paint.

Half inch BSW studding is used to secure the figure's feet to holes in the concrete track bed. These were secured in place with masonry resin and some concrete over this. Ballast pieces were positioned around the feet.

The left side of the monument after restoration. The wagon was secured in place via the two original upright rods, bolted through the underside of the wagon. The figure is coupled to the wagon via ½" BSW studding from the palms through to the shelf at the rear of the wagon. The concrete within the shelves at the rear end of the wagon has been arranged such that spanners and sockets can be inserted to remove the nuts with greater ease in the future.

The right side of the monument after restoration.

The front end of the monument after restoration.

(above and preceding image) The underside, supporting beams, axles and wheels before and after restoration. The underside of the wagon was painted with a zinc phosphate primer layer and gloss black metal paint.

(above and preceding image) The figure and rear end of the wagon after hot waxing and reinstallation on the plinth.

Future Maintenance

The design and fabrication of the new wagon incorporates protection from corrosion through being galvanised; this, along with having better ventilation and drainage holes means that the structure should last much longer than the 24 years of the original.

The new wagon has been designed to allow one brass panel to be removed with a large flat head screwdriver (and a 17mm spanner for the top bolts) from the exterior, whilst all the other brass panels require a spanner or socket to be positioned within the interior as well, which prevents those who have no business removing the panels from doing so.

The removable panel is the front westerly, or front proper right one, facing Mill Street, and is shown in the image below. The concrete in the end tray has been arranged to allow the 17mm spanner to be inserted into the top nuts. The bolts which are to be removed have two punched dots on them for identification purposes, as shown below.

Removal of this panel allows for periodic inspection of the interior for dampness etc., and will also make any future necessary deinstallation / deconstruction easier.

The bolts which are to be removed have two punched dots on them for easy identification.

It is recommended that the bronze figure, plaques and the patinated brass wagon cladding are hot waxed periodically. Over time, the weather (sunlight, rain), bird droppings, etc. can cause the wax coating to deteriorate and become patchy or wear off, resulting in the visual unity of the piece being reduced as well as the monument being less resistant to deterioration.

Wax applications should be carried out approximately every two years to keep the monument looking at its best.

Similarly, further thorough applications of dark brown Creosote oil-based wood preservative should be applied to the sleepers to keep them resistant to water, as well as keeping them looking dark brown and unfaded. This should be done on an annual basis in late summer or autumn, before the dampness of winter sets in.

It is also important to prevent the build-up of weeds, leaves and soil on the track bed. These retain moisture which can lead to increased rates of metal corrosion and the rotting of wood. Doing this after the leaves have fallen from trees in late autumn would be a good time. Any branches which overhang the monument could be cut off to help prevent the build-up of organic matter. Areas of loose ballast on the track bed between the rails were left this way, with no additional paint or concrete applied, in order to aid better drainage and evaporation of water. Moisture retention is a big factor in causing wood and metal deterioration.

Periodic cleaning of the brick plinth and painting of the top part would be beneficial to keep the monument looking at its optimum best. However, as these elements of the monument are durable, from the point of view of longevity the frequency of doing this is less critical.

It was a great pleasure to be involved in the restoration of a monument so close to the hearts of the folk of Silverdale. We received many compliments from passers by who told of their own connection with mining in the area. It was also an honour to meet Gerald D'Arcy who originally established the monument, and who shared interesting stories of how it came about in 1996.

Hal Jacob, Metals Conservator
23 December 2020