

Appendix 6: Monuments and Memorials Survey, Recommendations, History and Alterations January – February 2017

Introduction

This report summarises the existing conditions of the Port Sunlight monuments and memorials in early 2017. The purpose of the survey was to identify and to prioritise work on the monuments and memorials in the care of PSVT and to identify objects or conditions where further diagnostic testing or assessment by specialist conservators might be required.

Port Sunlight Village Trust's (PSVT) Conservation Advisers did a visual assessment of the sites in January and February 2017. Existing conditions were recorded by hand on printed photographs, and photographs were taken of typical and/or exceptional conditions. No sampling, diagnostic tests, probes or quantitative work was done. The survey work followed on from a cursory visual assessment completed by PSVT's Conservation Adviser in January 2015.

The following sites were assessed:

- Analemmatic sundial
- Balustrade at the south end of The Diamond (Grade II listed)
- Bath Street sphinx and sundial (Grade II listed)
- Centenary Marker
- The Dell Bridge (Grade II listed)
- Founder's Tomb (Grade II*), in Christ Church, responsibility of the Leverhulme family
- Hillsborough memorial
- Gladstone Theatre bronze plaque (Grade II listed)
- Jubilee Arch (Grade II listed)
- Leverhulme Memorial (Grade II listed)
- Lion Mask Fountain (Grade II listed)
- Mill stone
- Mosaic (2008 time capsule)
- Silver Wedding Anniversary Fountain (Grade II listed)
- Sea Piece and boating pond (Grade II listed)
- Victoria Bridge stones and marker
- War Memorial (Grade I listed)

Three sites were added for the 2017 survey work: Sea Piece and the boating pond, the founder's tomb and The Dell Bridge. The significant heritage character and aesthetic value of these sites merit special attention. Where PSVT does not directly own a site, such as the founder's tomb, PSVT will share observations and recommendations with the caretakers of these important sites.

Vertical access via a large cherry picker was provided to two key sites: the Jubilee Arch and the Leverhulme memorial. This access enabled a more complete assessment of these listed sites than was previously possible.

Philosophy of care

PSVT has established a philosophy of care regarding the monuments and memorials in its care. Following guidance established by Historic England, our philosophy of care is 'to stabilise and maintain the monuments and memorials in their existing condition'. The guidance referenced can be found in '*The Conservation, Repair and Management of War Memorials*', prepared jointly by Historic England and the War Memorials Trust (v 1.3, January 2016).

Other interventions (ie cleaning or restoration works) have only been specified when necessary for safety (ie tripping hazards or loose/detached objects at height), long-term sustainability of the monument (ie inappropriate pointing mortar

is damaging masonry), or when/where interpretation of a monument may deteriorate irreversibly (where meaning could be lost). PSVT will survey the monuments and memorials annually to track deteriorated conditions and reassess treatment priorities.

Priorities

Treatment recommendations were prioritised into actions to inform decision making with regard to capital repairs, cyclical maintenance budgets and fundraising targets.

High priority actions address deteriorated conditions that:

- present hazards to the public, ie tripping hazards, unstable or loose masonry,
- are presently and directly damaging or threatening the monument/memorial, ie overhanging trees, blocked drains, open mortar joints at wash surfaces, inappropriate coatings or harmful deposits, or
- are needlessly costing PSVT money, ie costs for filling the leaking boating pond.

These should be addressed as soon as possible.

Medium priority actions address deteriorated conditions which could damage the monument or memorial over time, ie open mortar joints on vertical surfaces, inappropriate mortar, friable stone surfaces and loss of ornamental detail. These should be addressed in the next five years (or sooner if deterioration accelerates).

Low priority actions address conditions that are primarily aesthetic in nature (ie heavy soiling, minor losses) or those which solely address the heritage character of the monument or memorial (ie inappropriate location for the Silver Wedding Anniversary Fountain). These actions need not be completed (ie cleaning can do more harm than good) unless deterioration accelerates, atmospheric deposits prove to be detrimental to the condition of the site or an appropriate proposal is brought forward to restore a monument or memorial. Instead the deteriorated conditions associated with these actions should be tracked annually to ensure conditions remain stable.

Planning permission

As most of the monuments and memorials are listed, actions to address deteriorated conditions or to enhance a site may require Listed Building Consent from Wirral Borough Council.

Table 1 – 2017 Conditions Survey Results and Prioritised Actions

Results of the 2017 survey are presented in table 1, along with findings from the 2015 survey and any treatments carried out since 2015. Where known, a brief history and description for each site is presented in table 2 and detailed treatment histories are included in table 3 to inform future treatments and to better understand existing conditions.

Site	2015 survey results	Treatments/Alterations since 2015	2017 survey results	High priority actions	Medium priority actions	Low priority actions
Annalemmatic sundial	Fair to good condition. No action. Consider replacing planters with ferrous straps with different planters.	Planters with ferrous straps were removed.	The concrete parge coating on the cheek walls of the ramp leading to the sundial is cracked and detached in areas. The stone surfaces of the ‘calendar’ are soiled, reducing legibility. There are cracked joints at the ‘calendar.’ There are minor losses and 10% of the joints in the perimeter planting border are open. Seven arrises of white granite hour markers have losses. Six arrises of grey granite hour markers have losses.		Repair or replace detached and cracked parge coating at cheek wall of ramp. Gently clean stone elements of the calendar to remove soiling and biological growth. Repoint open joints in the calendar.	
Balustrade at south end of The Diamond	Not surveyed.	None.	The drains appear to be blocked. There is ponding at the drain site. The tall hedge enclosing the Hillsborough Memorial and connecting the balustrade to the arch provides privacy for people using the site. However, it may also contribute to or enable anti-social behaviour in this area. There is evidence of inappropriate pointing mortar at the joints in the retaining wall (Storeton stone) section of the balustrade. The incompatibility has damaged the surrounding masonry at the expense of the mortar. The surface of the stone is blistered and detached.	Investigate drains and clear/repair/replace as necessary.	Lower the height of the hedge enclosing the Hillsborough Memorial to improve views into and out of the area. Remove inappropriate pointing mortar from sandstone retaining wall and replace with compatible lime mortar. Retool sandstone to a sound surface. Repoint open or deeply recessed mortar joints in the balustrade using lime mortar. Remove tarmac perimeter paving from the Hillsborough garden where it abuts the balustrade. Replace with a permeable paving material.	Gentle cleaning and removal of biological growth could be done when the retaining wall and balustrade are repointed. Repair minor cracks and losses in the balustrade. Replace failed patch repairs in masonry.

		<p>Open or recessed mortar joints are typical conditions for the balustrade and retaining wall.</p> <p>The top course of stone in the retaining wall (beneath ground level at the upper terrace) exhibits heavy biological growth and efflorescence. The surface layers of the sandstone are blistered and detached.</p> <p>Possible cause: the tarmac paving at the terrace on the opposite side abuts the balustrade wall. This impervious material is channeling damp into the sandstone wall. De-icing salts may be spread on the tarmac in freezing temperatures. This would introduce further salts into the sandstone wall. Sampling and testing are required.</p> <p>Some of the original balustrades are heavily eroded and very friable. Stabilisation may be required.</p> <p>Previous abrasive cleaning (date, unknown but likely to be 1987) appears to have damaged the surface of the Portland stone (which initially had a smooth finish) and the Storeton stone.</p> <p>The balustrade was extensively damaged along with the Hillsborough Memorial in September 2001. It was subsequently rebuilt in 2002. Reminders of this damage and subsequent repair (ie repaired balusters, new balusters) should be retained as part of the history of the site.</p> <p>Aside from the balusters and coping units installed in 2002, the surface of the Portland stone is friable.</p> <p>There is widespread evidence of heavy biological growth and mild efflorescence at the balustrade and the retaining wall.</p>		<p>Assess feasibility of epoxy stabilisation for deeply eroded balusters.</p>	
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			<p>There are minor losses and cracks at the Portland stone balustrade.</p> <p>There are failed masonry patch repairs in the balustrade.</p>			
Bath Street sphinx and sundial	<p>Fair to good condition.</p> <p>Biological growth</p>	None.	<p>Very narrow pointing joints where open at the pillar.</p> <p>There is biological growth at the base of the pillar and at the wash surface of the entablature.</p> <p>The finish of the wooden cross is deteriorating.</p> <p>There is a hairline crack in the pillar.</p>			<p>Refinish the wooden cross for the sundial.</p> <p>Repoint open joints in the pillar.</p> <p>Remove biological growth and soiling throughout.</p>
Centenary marker	<p>Pointing of setts and kerb is failing. Consider repointing.</p> <p>Minor chips and losses in support.</p> <p>Also, biological growth. No action.</p>	None.	<p>Kerb joints are wide open, 100%.</p> <p>Joints in setts are open and many are filled with macro-biological growth.</p> <p>Biological growth on the kerbs, setts and stone base.</p> <p>Minor losses on the stone base for the plaque.</p>	Repoint joints in kerb and setts, 100% to address tripping hazard.		Remove biological growth at the kerb, setts and stone base for the plaque.
The Dell Bridge	Not surveyed.	Someone attempted to drive over the bridge in 2015. The steps were damaged.	<p>Joints at stairs on the bridge are open, 100%.</p> <p>There is thick ivy growing on the bridge.</p> <p>Shrubs and other vegetation adjacent to the bridge are overgrown and too close to the bridge. The vegetation covers the bridge and creates spaces for anti-social behaviour.</p> <p>There is graffiti on the bridge.</p> <p>The string course along both sides of the bridge has open wash joints, 100%. The joints beneath stringcourse are also open.</p>	<p>Repoint stairs on the bridge, 100%. ALTERNATIVELY: replace stairs with a smooth, ramp surface as originally built and install bollards at the bridge ends. Design to match original. See archival photographs.</p> <p>Remove ivy, 100%.</p> <p>Heavily prune shrubs to expose bridge surfaces and reduce opportunities for anti-social behaviour.</p> <p>Remove graffiti.</p> <p>Repoint stringcourse, 100% at both sides of bridge.</p>	<p>Repoint open joints on vertical surfaces, including inside walls and underneath the arch.</p> <p>Replace tarmac perimeter paving at the bridge with appropriate permeable surface material.</p> <p>Repoint open joints in stone benches.</p>	<p>Replace lost carved stone busts, Jacobean details and other carved stone ornament in kind.</p> <p>Replace lost or severely eroded carved detail from the plaques.</p> <p>Replace missing sundial elements.</p> <p>Provide masonry patch repairs to minor losses in coping units.</p> <p>Gently clean the bridge to remove biological growth and heavy soiling.</p>

			<p>A mature climbing hydrangea has rooted into the joints of the bridge. The mortar joints have deteriorated, and the stonework is damaged as a result of the trailing/climbing plant.</p> <p>Joints at coping units are open. There is lead flashing installed beneath coping units.</p> <p>Carved ornamental detail at the busts is highly eroded and legibility has been lost.</p> <p>Carved plaques (on outside of the bridge) are completely lost.</p> <p>Sundial elements are missing.</p> <p>There are losses at the Jacobean details in the stringcourse.</p> <p>Assess drainage. Corners (especially at sloped sections of the bridge) typically exhibit heavy biological growth and open mortar joints.</p> <p>Tarmac is used as perimeter paving for the wing walls of the bridge. This is unsightly and inappropriate for the setting and heritage character of the bridge/ The Dell.</p> <p>There are multiple minor losses in the coping units. The stone supports for the benches are delaminated. Monitor condition.</p> <p>There are open joints in the stone benches.</p> <p>Large piles of cigarette butts were found beneath the stone benches.</p> <p>There is heavy biological growth on certain areas of the bridge and mild biological growth throughout.</p>	<p>Repoint coping units, 100%. Note: lead flashing installed beneath coping units.</p> <p>Assess costs and feasibility of installing drainage.</p> <p>Advise landscape team to check beneath the stone benches and to clear refuse from the site.</p> <p>Work with the landscape team and masons with heritage skills to remove the hydrangea and repoint/repair the masonry.</p>		
Founder's Tomb	Not surveyed.	None.	The surface of the bronzes (Lady Lever, Lord Leverhulme and the children at the foot of the	Commission a specialist outdoor bronze conservator to examine the bronze sculptures, test the	Remove stand for the second Lord Leverhulme's bust or replace bust.	Gently clean to remove heavy soiling from marble bases.

	In Christ Church. Responsibility of Leverhulme family.		<p>sarcophagi) is covered with pustules. Although these deposits/corrosion products need to be tested for confirmation, they appear to be signs of widespread bronze disease.</p> <p>The bust of the second Lord Leverhulme is missing from its stand.</p> <p>The marble bases of the sarcophagi have minor losses.</p> <p>The marble bases are heavily soiled.</p>	deposits/corrosion products and any extant coatings, and make recommendations for appropriate treatments.	Existing condition detracts from character of site.	
Gladstone Theatre bronze plaque	Not surveyed.	None.	The bronze plaque is soiled and the finish is dull.		Clean and re-wax bronze plaque.	
Hillsborough Memorial	No deteriorated conditions were noted in the 2015 survey.	None.	<p>The tall hedge enclosing the Hillsborough Memorial and connecting the balustrade to the arch provides privacy for people using the site. However, it may also contribute to/enable anti-social behaviour in this area.</p> <p>The brick walls for the crest-shaped planting beds have loose or failed bedding and pointing mortar.</p> <p>Brick units are displaced or missing from the planting bed walls.</p>		Replace missing or cracked brick, relay loose bricks and repoint brickwork in crest-shaped planting beds.	
Jubilee Arch	<p>Access is an issue for survey and maintenance/repairs. The work will require a cherry picker or scaffold.</p> <p>Open mortar joints throughout the site.</p> <p>Macro and micro biological growth.</p> <p>Surface erosion (no action).</p>	None.	<p>Mature trees overhang the arch. Leaf/branch drop and shade may contribute to the deterioration of this Portland stone site.</p> <p>The joints in the paving beneath the arch are open.</p> <p>There are six paving units that are displaced.</p> <p>There are three paving units that have significant surface losses.</p> <p>Sections of the render at the underside of the arch are cracked.</p> <p>The majority of the masonry joints in the arch's Portland stone cladding</p>	<p>Fell trees overhanging the arch.</p> <p>Repoint joints in paving beneath the arch, 100%.</p> <p>Reset six displaced paving units to reduce tripping hazards.</p> <p>Retool or replace three paving units with significant losses to reduce tripping hazards.</p> <p>Investigative work should be done to determine construction for the arch and to inform treatment strategies for addressing cracks at the render on the underside of the arch.</p>	<p>Repoint joints in the bottom eight courses of the south elevation and at the north elevation, 100%.</p> <p>Remove macro-biological growth (moss, plants) found at the wash surfaces (roof) and throughout.</p>	Remove micro-biological growth and heavily soiling.

			<p>require repointing. The joints of the primary elevation (facing south) are in the best condition, but even here repointing is required in the bottom eight courses of stonework.</p> <p>Repointing is required at the majority of the joints in the north elevation.</p> <p>The joints at the east and west elevations are in the worst condition, with wide open joints throughout.</p> <p>The arch exhibits macro-biological growth and heavy soiling throughout.</p> <p>Previous abrasive cleaning (date, unknown, but likely to be 1987) appears to have damaged the surface of the Portland stone (which initially had a smooth finish).</p> <p>Overall, the roof is in fair to good condition. The Portland stone slabs for the roof are held together with copper straps. These appear to be in sound condition. (Note: only one side of the roof was visible/accessible as the cherry picker was too large to bring onto the terrace.) The pointing/masonry surrounding one strap is open and should be repointed. Two stone units appear to be slightly displaced but are sound (not currently moving).</p> <p>There is macro-biological growth (moss) found at the surface of the roof and at the vertical joints of the east and west elevations.</p>	<p>Repoint joints in the east and west elevations, 100%.</p> <p>The pointing/masonry surrounding one strap at the roofing units is open and should be repointed.</p>		
Leverhulme Memorial	<p>Access is an issue (for survey and maintenance/repairs). Requires a cherry picker or scaffold to assess condition of obelisk and 'Inspiration'.</p> <p>Bronze repair appears to be failing (near toe of 'Charity').</p>	None.	<p>The paving at the site is cracked and, in some instances, severely displaced. The site is a popular tourist stop and in its current condition presents a high-risk tripping hazard.</p>	<p>Remove pavers, address cause of settlement, repair drains, repair cracked paving units and reinstall pavers.</p> <p>Investigate drains. Clear, repair, replace as required.</p>	<p>Repoint and reset stone drain units at base of lower level sculpture group.</p> <p>Repoint base of cenotaph, 100%. Work may require resetting massive granite units and replacing missing anchors.</p>	<p>Clean base of cenotaph and cenotaph itself, 100%.</p> <p>Remove ferrous staining from pavers.</p>

	<p>Limescale/biological growth/crust at base of obelisk.</p> <p>Open mortar joints at obelisk and obelisk base.</p> <p>Cracked and displaced pavers.</p> <p>Open joints/weeds in pavers.</p> <p>Ferrous staining on pavers from planters.</p> <p>Bronzes show signs of green patina. Time to reapply wax?</p> <p>Blocked drains</p>		<p>Several paving units have deep losses which also present a tripping hazard.</p> <p>There are ferrous stains on the pavers.</p> <p>The surface drains at the site are blocked and ponding occurs at the site.</p> <p>The joints at the stone drain units are open and the joints at the base of the cenotaph are open, 100%. The massive granite units at the base of the cenotaph appear to have moved. They may need to be reset/rebuilt.</p> <p>There is efflorescence, heavy soiling and biological growth at the base of the cenotaph.</p> <p>The joints in the cenotaph are open.</p> <p>Lower level sculpture: these bronzes exhibit inclusions and pitting. There is patina developing at joints, sides and in covered areas that are not washed by rain. There are minor pustules on the surface and the previous bronze patch repair is starting to fail. There is evidence of ponding at the base of the group.</p> <p>'Inspiration': there are atmospheric deposits and evidence of previous coatings at the bronze. 'Inspiration' exhibits inclusions and pitting. There is patina developing at joints, sides and in covered areas that are not washed by the rain. There are minor pustules on the surface.</p>	<p>Replace severely cracked and displaced paving units at memorial, assume 21 units.</p> <p>Resurface pavers with losses.</p> <p>Lower level sculpture: hire specialist bronze conservator to assess inclusions and pitting, patina developing at joints, sides and covered areas, minor pustules, previous patch repair and ponding at base of statuary group.</p> <p>'Inspiration': hire specialist bronze conservator to test coatings and deposits and assess condition. Previous treatment history (see table 2) will be very important for specification of future treatments.</p>	<p>Install moveable/flexible joint at base of cenotaph.</p> <p>Remove efflorescence and heavy soiling/biological growth from cenotaph base.</p> <p>Repoint cenotaph, 100%.</p> <p>Clean and wax bronzes at low level.</p>	
Lion Mask Fountain	Not surveyed.	None.	<p>There are losses at the lion mask.</p> <p>There is surface erosion at the lion mask.</p> <p>The fountain does not work.</p>			<p>Repair minor losses at the lion mask.</p> <p>Reinstate fountain and pool.</p>

			The pool is filled in and the lion mask has lost its setting/character.			
Mill stone	Pavers cracked and spalling. No action required.	None.	Paving stones surrounding the millstone are cracked and spalling. The joints at the paving stones are open, 100%, and one paving stone is loose.	Replace two paving stones which are heavily cracked. Repoint paving stones, 100%. Reset one loose paving stone.		
Mosaic	Sections of mosaic lifting/detached. Minor losses at perimeter.	Large sections of the mosaic have been removed.	The mosaic is in very poor condition and is an unsightly aspect of this registered landscape. Large sections of the mosaic have detached and/or been removed.		Remove mosaic.	Re-open shallow pond for lion mask fountain. Install an information panel or plaque to mark the location of the time capsule.
Sea Piece and boating pond	Not surveyed.	The pond is emptied and cleaned approximately every two months. Organic vegetable dye has been used to turn the colour of the water blue. This is an aesthetic treatment. A UV light system was installed. Water pumped into the pond passes through glass tubes that house UV lamps, killing algae. This system does not appear to work effectively as algae growth continued unchecked. In the spring of 2017, PSVT re-introduced bagged barley straw as a method of algae and blanket weed control, and it appears to be relatively effective.	There are open joints and displaced units in the paving surrounding the pond. The base of the boating pond is extensively cracked, and sections of screed are missing/detached. The screed has detached or failed at the stone walls of the boating pond. There are open mortar joints in the stone walls of the boating pond and at the seating area of the boating pond. There are open joints in the statue base. The painted coating on the surface of the boating pond is extensively scratched/lost. The sluice gate is not operational. Recent measures, such as UV lights, to retard algae growth have failed. The boating pond is not pitched to properly drain. The landscape team brushes/sweeps the water towards the drain to empty the pond.	Reset and repoint paving surrounding the pond. Replace the lining/finish of the pond, including the surface coating for the walls. Allow for costs to improve the pitch of the pond as it does not drain properly. Repoint the open joints in the inside surface of the pond walls. Trial different methods to control algae growth. Repair or replace the pump and filters. The surface deposits at the bottom of the bronze sculptural group should be assessed and tested by a specialist conservator. The staining at the joints in the bronze sculptural group should be assessed by a specialist conservator. Areas at the bronze sculptural group with heavy patina should be assessed and tested by a specialist conservator.	Repoint the open joints at the seating area and outside surface of the boating pond wall. Repair or replace the sluice gate. Repoint the open joints in the base of the statue. Clean and wax the bronze sculptural group.	

			<p>The pump and filters are not working properly.</p> <p>The bronze sculptural group exhibits mild green patina.</p> <p>The bottom sections of the bronze sculptural group exhibit a mottled, uneven, almost flaking finish.</p> <p>The joints at the faces of the bronze statues exhibit staining.</p> <p>Protected areas, not washed by rainwater, exhibit heavy patina in areas.</p>			
Silver Wedding Anniversary Fountain	<p>Open mortar joints (some with very wide joints).</p> <p>Spot repointing required.</p> <p>Staining.</p> <p>Biological growth.</p> <p>General maintenance.</p>	<p>The fountain was cleaned by a volunteer workforce in June 2015 using Orvus Paste diluted with water and nylon brushes.</p>	<p>Widespread loss of pointing mortar, resulting in deep and often wide-open joints.</p> <p>There is mild efflorescence leaching out of joints at back of monument.</p> <p>100% loss of pointing at wash surfaces (coping units) and upper section of the monument.</p> <p>Slight movement/displacement in some of the coping units.</p> <p>100% loss of pointing mortar at kerbs and stairs.</p> <p>Drains appear to be blocked.</p> <p>There is a 15cm 'impact zone' at the kerbs which exhibits surface delamination, cracking and losses.</p> <p>There are losses at the corners of stone coping and seating units.</p> <p>There are two small sections of heavy soiling beneath the canopy.</p> <p>The bronze plaque is slightly tarnished.</p> <p>Tarmac paving is unsightly.</p>	<p>Rebuild and repoint walls as required.</p> <p>Repoint wash surfaces, 100%.</p> <p>Reset displaced coping units.</p> <p>Repoint kerbs and stairs, 100%.</p> <p>Investigate drains. Clear, repair and replace as required.</p>	<p>Resurface or replace kerbs at 'impact zone.'</p>	<p>Repair minor losses at corners.</p> <p>Remove heavy soiling beneath the canopy.</p> <p>Clean and wax bronze plaque.</p> <p>Replace tarmac paving with a suitable, permeable paving material.</p> <p>Connect the fountain.</p> <p>Improve the setting for the fountain or move it to an appropriate location.</p>

			Fountain is not connected or functional. The fountain setting is poor and detracts from the heritage value of the heritage asset.			
Victoria Bridge stones and marker	Spalling and detachment of surface at the front of the name stone and back of the date stone.	None.	Cracks and spalling at front of name stone have worsened since 2015.		Consolidate or resurface name stone to ensure that the damage does not progress to the inscription.	
War Memorial	In 2015 the stonework at the War Memorial was cleaned using steam; the stairs, paving and select vertical surfaces were repointed with lime mortar. This work was done by Aura Ltd. Andy Mitchell from Andy Mitchell Sculpture trained PSVT's landscape team and Conservation Adviser how to rinse and re-wax the bronzes.	The mortar joints in the cross and at the low kerbs (works not completed in the 2015 contract) were repointed with NHL5 lime mortar and stone sand (aggregate selected to match masonry) in February 2017 by Aura Ltd.		Clean and wax bronzes not treated in 2015. There are eleven bronzes left to treat. Remove macro-biological growth.	Repaint/repair damaged lettering.	Remove biological growth, general soiling and staining (eg copper, run-off wax and residue from bronze cleaning work) from stonework. Repoint minor open joints at vertical surfaces.

Table 2: Brief History and Description of Monuments and Memorials

The following is a brief history and description of the monuments and memorials included in the 2017 survey.

Site	Brief history and description of site
Analematic sundial	The Friends of Port Sunlight Village secured a grant from the Biffa Award, a multi-million-pound environment fund managed by the Royal Society of Wildlife Trusts, to design and install this sundial. The sundial was installed in 2012 as part of the village celebrations for the Queen's Diamond Jubilee. The analematic sundial features two rows of stone markers laid out on the ground, one for British summer time and another for winter, along with a flat calendar stone that reflects each month of the year. When the sun is shining, the shadow line cast by their form falls upon the current time. It was unveiled by members of PSVT and pupils from nearby Church Drive School.
Bath Street Sphinx and Sundial	The memorial was erected after c 1900 with a concrete pillar, originally finished with stucco render, topped by a stone entablature decorated with anthemion frieze and cornice, and finished with a stone sphinx and wooden sundial. The monument was erected to commemorate the relief of the siege of Mafeking, a small town in South Africa, during the Second Boer War. The siege had lasted for seven months, from October 1899 – May 1900.

Site	Brief history and description of site
Centenary marker	The Centenary Marker was unveiled by Philip Lever, 3rd Viscount Leverhulme on March 3rd 1988 to commemorate the 100th anniversary of the founding of Port Sunlight. The cobbles for the platform may have been salvaged and reused from another location in the village.
The Dell Bridge	This sandstone pedestrian bridge links Park Road and the northern stretch of Bridge Street. Built in 1894 to the designs of architects Douglas & Fordham, it is decorated with Neo-Jacobean ornaments and ball finials, also executed in sandstone.
Founder's Tomb	Christ Church was built in 1902-4 and designed by William and Segar Owen. In 1914 the Lever family vault was added as a memorial to Lady Lever. The chest tombs (marble) of Lord and Lady Leverhulme have bronze figures by W Goscombe John and bronze dedication plaques. The railings, rooflights and memorials to other Lever family members were later additions.
Gladstone Theatre bronze plaque	A copper Art Nouveau plaque commemorating the opening of Gladstone Hall by William Gladstone MP on 28th November 1891. Plaque was created by H Bloomfield Bare, a Liverpool architect who had a workshop in the village c 1902-04, which is when the plaque likely dates from. The '8' has been added at some point as originally the wrong date of 29th November had been applied.
Hillsborough Memorial	Commemorated in August 1989, the Hillsborough Memorial was installed at the south end of The Diamond, in the raised garden between the arch and the balustrade, in memory of the 96 people who died at the disaster that occurred at the football match between Liverpool Football Club and Nottingham Forest Football Club in the semi-final of the FA Cup in April 1988. The match was held in the Hillsborough stadium in Sheffield, home of Sheffield Wednesday Football Club. As built, the memorial included a black commemorative stone and two flower beds shaped and planted to depict the Liverpool Football Club crest.
Jubilee Arch, balustrade and lion mask fountain	The balustrade, retaining wall, lion mask fountain and arch were built to the designs of J Lomax Simpson in c 1937. They anchor the formal École des Beaux Arts design of this area of the village, previously established by the neo-classical design of the Lady Lever Art Gallery (completed 1922) and the formal, axial arrangement of The Diamond (completed 1910). The balustrade, arch and lion mask fountain are Portland stone, and the retaining wall is Storeton sandstone.
Leverhulme Memorial	Leverhulme Memorial by sculptor Sir William Reid Dick and architect J Lomax Simpson. Designed 1927-30. Unveiled on 13th September 1930, five years after the first Lord Leverhulme's death. The bronze at the top of the obelisk represents 'Inspiration' and the bronzes in the lower sculptural group represent 'Industry', 'Education', 'Charity' and 'Art'. The inscription at the back of the obelisk base was added by Lever Brothers in response to local demand, with around 22,000 Lever Brothers employees around the world paying for it by subscription. Obelisk: black granite 1100cm high x 98cm wide; Sculpture base: black granite 213cm high x 213cm deep x 1500cm wide; Sculpture: bronze 230cm high; Obelisk base: black granite 350cm wide x 350cm deep.
Mill stone	The mill stone was brought to The Dell from the old water mill at Spital in 1923, which was also known as Spital Dam or Bromborough Mill. The Dibbin River site reportedly had the oldest water mill on the Wirral as it was recorded in the Domesday Book. The mill was worked until 1940 and was then demolished in 1949. In 1905, William Lever purchased the mill from Mr Mainwaring. The mill stone, likely made of Storeton stone, was lying idle at the site, so Lever brought it to display in The Dell.
Mosaic	In 2008, the Port Sunlight Residents and Conservation Society led a community project as part of Liverpool's Capital of Culture year and the village's 120th Anniversary. They invited residents, village groups and children from Church Drive Primary School to donate items to a time-capsule which reflected life in the village in 2008. The time-capsule was buried at the foot of the Hillsborough Memorial Garden on Festival Day and a mosaic, designed by a young resident, was laid to mark the spot.
Sea Piece and boating pond	Designed by Sir Charles Wheeler and presented to the village by the Trustees of the Lady Lever Art Gallery, the fountain, which commemorates the 100th anniversary of the birth of Lady Lever, was unveiled in 1950. The sculpture represents a legendary sea horse with a triton and baby triton on its back. Sea Piece is a bronze figure approximately 180cm x 200cm, on a marble base 110cm diameter x 47cm high. The boating pond and associated stone paving and walls were completed in c 1934.
Silver Wedding Anniversary Fountain	The Silver Wedding Anniversary Fountain was designed by William Owen in 1898-99. It was completed in 1901 and installed at the top of The Dell. The fountain and benches are pink granite, the low water basin is sandstone and the commemorative plaque is bronze. In 1926 the fountain was disassembled and rebuilt in the front of the railway station. In 1932 the fountain was again disassembled and rebuilt in its present location behind the bowling green, opposite 93-94 Greendale Road.
Victoria Bridge stones and marker	Victoria Bridge was designed by William Owen and erected in 1897. Named after Queen Victoria, it had a 100ft clear span and carried Bolton Road over a tidal arm of the River Mersey. The bridge was built of reinforced concrete and clad with Anglesey limestone. Hon George H Reid, Premier of New South Wales, had the honour of opening the bridge. The creek was gradually filled and by c 1910 the ground was raised to road level and the bridge buried beneath. The name and date stone lay unused and undiscovered until the 1984 Liverpool Garden Festival where they were reused to form a feature in Unilever's Victoria Garden. After the festival they disappeared again, eventually being rediscovered in Vale Park in Wallasey by Gavin Hunter, Leverhulme historian and former senior engineer for Unilever. Their return to Port Sunlight was agreed with Wirral Borough

Site	Brief history and description of site
	Council and they were installed in their present location. The fragments are Anglesey limestone. The main section is 203cm wide x 66cm high. A small interpretation plaque was installed in 1995, adjacent to the Victoria Bridge remnants.
War Memorial	<p>Designed by Sir William Goscombe John on the theme of 'The Defense of the Home'. Unveiled in December 1921. The bronzes were created by the founders, Burtons of Thames Ditton. The unveiling of the memorial took place on 3rd December 1921 and was undertaken by Thomas George Eames and Robert Cruickshank. Lever wanted two ex-servicemen to perform the unveiling and after a ballot of the remaining members of the 13th Battalion of the Cheshire Regiment, the two men were chosen. Eames had been blinded at the battle of The Somme, and Cruickshank had been awarded the Victoria Cross for bravery during the conflict.</p> <p>The runic cross has a loose grouping of bronze figures (sculpture in the round) on a plinth around its base. Four seating areas are enclosed inside the ramparts, featuring reliefs showing the armed forces at work, and children offering wreaths and garlands as symbols of gratitude. The memorial was intended to commemorate the part played in the Great War by Port Sunlight and all connected with it. The names on the memorial are those "from the offices and works of Lever Brothers Limited and their associated companies overseas and also from Port Sunlight who laid down their lives in the Great War", to quote from the memorial itself. In total there are 515 names from the First World War. A further 118 names from the Second World War were added to the memorial at a re-dedication service in November 1947.</p> <p>Listing upgraded to Grade I in 2014.</p>

Table 3: Known Treatment History (Prior to 2015)

The following is a table showing the known treatments or alterations, presented in reverse chronological order by site, to the Port Sunlight monuments and memorials.

NB National Museums & Galleries on Merseyside (NMGM) became National Museums Liverpool (NML) in 2003

Site	Year	Contractor	Description of work	Notes
Annalemmatic sundial	2016	PSVT – Landscape	Removed the planters with ferrous metal straps	

Site	Year	Contractor	Description of work	Notes
Bath Street Sphinx and Sundial	Unknown at time of publication		Over the years, and by 1986 when the monument was listed, the sphinx had lost its head, the sundial was missing and the stucco render was lost. Concrete patch repairs were evident at the sphinx and pillar.	
	2000		The concrete pillar was replaced with a stone unit. The sphinx head was fabricated and reinstated, and a wooden cross was fabricated and installed for the sundial. A plaque was installed to explain the 'equation of time'.	
Centenary marker			None known.	
The Dell Bridge	Unknown at the time of publication		The smooth pedestrian finish of the bridge was replaced with steps. The bollards were removed. Stone benches were removed from the sides of the bridge.	
	1987		According to Michael Shippobottom (p.72, A Guide to Port Sunlight Village), the sandstone bridge was 'grit blasted' in this year.	
	Unknown at the time of publication		Many joints were repointed with tinted mortar.	
Founder's Tomb	1996	English Heritage – Architectural Metals Conservation Studio	A quick assessment of the bronzes was carried out. It was noted that dust was clinging to the darkly coloured bronze. The dark colour and build-up of dust suggest that the bronze has received a wax coating. The sheltered location, while helping to preserve the coating, prevents natural washing down, and dirt will gradually build up, trapping moisture and airborne chemicals to form an aggressive deposit on the bronze surfaces.	
	1994	Bronze Restorations, Liverpool	Proposed the following works: <ul style="list-style-type: none"> • Install Molyflex around the perimeter to retain cleaning materials. • Thoroughly strip off all old green and black corrosions from the surface of the alloy, bringing it back to a clean and bright base metal. • Wash down thoroughly with a heavy coat of benzotriazole and rinse with cold water. • Hand apply chemical bronzing solution, burnish chemicals into crevices. • Highlight where necessary to achieve a high antique matured finish. • Spray apply three coats of anti-copper corrosive inhibitor (ie Incralac). • Paint a heavy coat of bronzene wax polish and burnish into the surface of the lacquer to give a satin finish. 	Works proposed before creation of PSVT. Completion of this work could not be verified.
Gladstone Theatre bronze plaque			None known.	
Hillsborough Memorial	2001		The commemorative stone, the flowerbed walls depicting Liverpool FC's crest and the balustrade were vandalised in September 2001. Subsequently, the commemorative stone was replaced, permanent flower pots were added, and the planting beds were rebuilt as raised planting beds with brick retaining walls.	
Leverhulme Memorial	2001	Andy Mitchell Sculptures	Commissioned to do a conditions assessment of the lower sculptural group. 'Inspiration', cenotaph and the base were excluded.	Completion of this work could not be verified.

Site	Year	Contractor	Description of work	Notes
			<p>Notes that the sculptures are in fair condition, bronze patch at the front requires attention, little areas of exposed porosity that require filing and weld lines are showing. Notes that the main problem is the surface of the bronze which is described as a blotchy colour. Notes that at the back of the base a steel wedge has been inserted between the bronze sculpture and the granite. This wedge has rusted causing jacking and rust stains to run down the Cornish granite.</p> <p>Recommends:</p> <ul style="list-style-type: none"> • Cleaning the sculpture group with JOS back to copper oxide level. • Removing the iron wedge (rusting) from the base. • Apply poultice to remove rust and copper stains from granite base. • Stabilise loose section in the front of the bronze and fill areas of porosity. • Clean granite base. • Patinate bronze figures. • Hot wax bronzes (with added corrosion inhibitor). • Cold wax and polish bronzes. • Submit report of conservation works completed (materials and methods). 	
	1998	Burleigh Stone Cleaning & Restoration Co. Ltd.	Recommends cleaning the bronzes with Neolith 63 Bronze Cleaner (alkaline liquid containing ammonium hydroxide) and then rinsing with low pressure potable water.	Completion of this work could not be verified.
	1997	National Museums & Galleries on Merseyside (NMGM)	Recommends removal of the four lower group bronze statues to conservation studio in Liverpool, cleaning and conservation by laser and then reinstalling the bronzes. (Estimated cost of £25-30,000)	This work was not done.
	1996	National Museums & Galleries on Merseyside	UML writes to NMGM to request advice regarding restoration of Leverhulme Memorial after suspending work on the site following inappropriate treatments done on 'Inspiration' (see below).	
	1996	Wirral Borough Council and English Heritage	Inspect 'Inspiration' and find treatments completed by Bronze Restorations (Liverpool) to be inappropriate and request works to be stopped.	
	1996	Bronze Restorations, Liverpool	<p>Completed the following works to 'Inspiration':</p> <ul style="list-style-type: none"> • Used Renova (a silicone-free fine sand), pressure applied (air abrasive) to remove the corrossions from the bronze. • Applied Benzotriazole in a 3% solution in water to stabilise the bronze and copper. • Used Cannings brown bronze powder mixed in a solution of water and ammonia to 'patinate' the bronze. <p>When this was found to be inappropriate, requested an appropriate specification from a specialist bronze conservator. The specialist bronze conservator responded that the coatings and deposits need to be sampled and analysed before treatments could be specified. The specialist conservator also noted that the bronzes needed to be thoroughly assessed, that a series of cleaning tests should be done to determine the least aggressive and most effective way to treat the bronzes, and that whatever works are done, a stable patina layer should remain on the bronze after 'cleaning'.</p>	

Site	Year	Contractor	Description of work	Notes
	1996	English Heritage – Architectural Metals Conservation Studio	English Heritage notes that the lower sculptural group appear to have a coating. On raised surfaces the coating has disappeared to expose the bronze which exhibited a green patina. In sheltered underside areas light green spots perforate the coating, raising concerns over pitting of the metal surfaces. Notes concerns over treatment of 'Inspiration'. Notes that conservation practice is changing to conserve patina, rather than to strip back to remove it. Notes that a regular wash down and waxing is a good, cost effective treatment. Recommends testing of structural conditions of bronzes, identification of coatings, contaminants, patinas, causes of corrosion and deterioration. Notes that NMGM has partnered with a specialist bronze conservator re: laser cleaning. English Heritage is happy for this work to progress on memorial if found to be appropriate after testing and analysis work is complete.	
	May 1996	Andrew Naylor	Report on existing conditions of the lower sculptural group. Surface of the statues is patchy pale green and dense black. The black is the decaying remnants of an epoxy coating and the pale green is lightly adhering grains of copper sulphate. 'Inspiration' has been stripped back to bright metal, coloured to a uniform dark, cold brown and then highlighted by rubbing off the colouring or lightly abrading the surface. Notes that "it is universally accepted that any treatment carried out in order to conserve a sculpture must not cause any further loss of or alter original material and it must be reversible". Regarding the recent treatment to 'Inspiration', the specialist conservator notes that "The specification supplied by the contractor describes a process which is known to conservators as inevitably damaging, it changes the surface of the metal, causes loss of metal and is irreversible". The specialist conservator then goes on to assess each of the methods and materials used by Bronze Restorations (Liverpool). Of particular concern was the abrasive cleaning method used to strip the bronzes back to bare metal, the bronzing solution and method used and the use of Inctalac (clear lacquer) to finish the bronzes. They stripped the surface of metal using air-driven shot blasting with Renova blasting media. Renova is described as a hard, high-density, igneous rock, crushed to produce sharp, angular grains with chipping points and cutting edges. According to the company who manufactured it, it was recommended for preparation of metals prior to painting when a toothed surface is required. The impact of each grain on the surface chips away the overlying strata and makes cuts and burrs in the exposed metal. The use of Inctalac or other clear lacquers as protection for bronzes has created a number of well reported conservation problems. When lacquers start to break down and lose adhesion, pockets are created which can trap moisture and pollutants against the surface of the metal to create highly active cells of corrosion. The specialist conservator concludes that the advice and specification given by the contractors to the client is "not in accordance with currently acknowledged conservation philosophy and practice". Recommends that no further work can be done to 'Inspiration' as the harm has already been done, but recommends that 'Inspiration' be cleaned and that the Inctalac be maintained until it starts to break down.	
	April 1996	William Bell & Co	Quotation to take up and reset the raised and sunken areas around the memorial, to clean off the stone paving with pressurised water and to clean out the joints and repaint.	Completion of this work could not be verified.
	1995	Bronze Restorations, Liverpool	Strip off all old green and black corrosions from metal (using Renova, air abrasive), bringing it back to a clean and bright base metal, wash all down with a heavy coat of benotriazole, then wash down with cold clean water. Hand apply a chemical bronzing solution, burnish chemicals into crevices and surface to give a rich colour, highlight where necessary to give a high antique matured appearance, followed by the spraying of three coats of anti-copper corrosive inhibitor (ie specialised bronze lacquer Inctalac). Finally brush on a heavy coat of bronzene wax polish burnished into the surface of the lacquer to give a satin finish.	This work was done to 'Inspiration', but work was not done to the lower sculptural group.
Mill stone			None known.	

Site	Year	Contractor	Description of work	Notes
Jubilee arch and balustrade	Unknown at the time of publication		The Portland stone was abrasive cleaned.	
	2001		The balustrade was rebuilt after vandals damaged it in September 2001.	
Mosaic	2014		Members of PSVT's landscape gardening team noticed that the mosaic had begun to lift in places and so wooden boards were placed on top to protect it from further damage. Advice was sought from the company that had originally laid the mosaic and they revealed that the cost to rectify the problem would be in the region of £3,000. Furthermore, they stated that the problem (and the cost) would recur every few years and advised us to remove it altogether.	This work is incomplete.
	2015		PSVT considered other ways to mark the location of the buried time-capsule. One idea was to install an interpretation panel similar to the ones that can be found around the War Memorial. The panel would serve as a permanent reminder of the project and would include images and information about the time capsule and mosaic.	Works pending.
Sea Piece and boating pond	1993-1995		Wirral Borough Council (WBC) approved a Listed Building Consent application to repair and repaint the boating pool, and in 1995 the surface of the boating pond was painted.	
	1998	Burleigh Stone Cleaning and Restoration Co Ltd	Proposed the following work: <ul style="list-style-type: none"> To clean Sea Piece with Neolith 63 Bronze Cleaner, thoroughly rinse and clean off with low pressure clean potable water. This cleaning product was used to remove green and brown deposits (patina) off copper bronze and brass, exposing bright metal surface. This product was an alkaline liquid containing ammonium hydroxide. At the time, UML cleaned the boating pond by changing the water every two weeks. 	Completion of this work could not be verified. UML consulted with WBC Conservation Officer regarding this proposal. WBC Conservation Officer then in turn consulted with English Heritage which recommends commissioning a full survey of the bronzes by a bronze specialist, including testing to identify coatings, contaminants, patinas, causes of corrosion and deterioration. English Heritage also recommended archival research to identify surfaces finishes and coatings, previous maintenance regimes, etc. English Heritage then recommended that UML commission NMGM to test the bronzes and, if appropriate, to clean them with lasers.
	1999	Ustigate Limited	Surveyed the leaks, pump and time clock mechanism of the boating pond. Their report noted that the perimeter walls of the boating pond were constructed of stone on a concrete/waterproof rendered painted base that exhibits settlement and movement cracking. Recommended that the pool area be laminated up to the existing paint line, with glass-reinforced plastic to affect a waterproof member, pigmented to a desired RAL colour. Proposed cost was £43,680. They also recommended replacing the pump and associated pipework with uPVC plastic pressure pipework and valves, and the existing timers/control panel and power supply (to meet current regulations and safety standards).	No works completed in 1999.
	2000	Wainwright & Gibson	Installed a reconditioned pump to the fountain.	
	2000	North West Water Limited	Utility company advised PSVT that its water consumption had increased and suggested that a leak was likely. PSVT acknowledged that there was a leak in the boating pond.	

Site	Year	Contractor	Description of work	Notes
	2001		The fountain pump and associated electric work required a general overhaul and upgrading. The base of the pool was concrete and in general disrepair. The surface had been painted six years prior (1995), but the paint coating did not waterproof the basin. The option to coat the boat basin with a glass-reinforced plastic membrane (supplied and installed by Surface Treatment Specialist Ltd and Copon High Performance Protective Coatings) was considered but then rejected due to high costs.	
	2001	Andy Mitchell Sculptures	<p>Carried out the following works as recommended by the specialist conservator:</p> <ul style="list-style-type: none"> • The bronze sculpture was lifted off of its base to restore/repair faulty plumbing and to fix new bronze water spouts. • A lead skirt was added to the base (beneath the sculpture). • The stone base was repointed. • Leaking lead and steel pipe water nozzles were replaced with purpose-made brass fittings fixed to threaded steel pipes and new bronze nozzles. • New nozzles for the dolphins were provided to match the water sprays seen in c 1950 photographs. • A new bronze filter was provided to cover the pump inlet in the sump to help keep out detritus from the fountain. (NOTES that the filter will still need regular cleaning and the sump should always be kept full.) • All old brass and steel screw fittings were replaced with matching bronze. • Drain holes were drilled into the lower arm of the main figure. • Drain holes were drilled into the back tail and wet core material was removed. • Bronze sculpture was cleaned using a JOS system (calcium carbonate powder and water mixture at a pressure of 30psi). • Sculpture was JOS cleaned to the copper oxide level using Stonehealth. • Once cleaned, the sculpture was brushed with soft bronze brushes. • Sculpture was chemically patinated with hot-applied ammonium polysulphide, a dilute and variable concentration with water. • Chemical patination was applied until an even, light brown colour was formed. Highlights were achieved by brushing the finish with soft bronze brushes. • When dry, the bronzes were hot-waxed with micro-crystalline wax and then rewaxed with cold applied wax. • 2-5% BTA (Benzotriazole, a corrosion inhibitor) was added to the wax. • NOTE: The boating pond basin had a white finish at this time. 	<p>Feedback on the 2001 works:</p> <ul style="list-style-type: none"> • Lady Lever Art Gallery (NMG), Donald Insall Associates and WBC Conservation Officer all objected to the cleaning method used (Stonehealth, JOS) and the repatination. • Wirral Borough Council had previously stated that a Listed Building Consent application was not required for the work (a copy of the application submitted by PSVT, clearly stating the proposed works is in the files). PSVT also consulted English Heritage prior to engaging Andy Mitchell to do the work and English Heritage took no objection to the work. PSVT consulted with the Conservation Centre, noting that PSVT could not afford laser cleaning. • No response from the Conservation Centre was found in the files.
	2001	Burleigh Stone Cleaning and Restoration Co. Ltd	<p>The following works were completed:</p> <ul style="list-style-type: none"> • Stone walls at boating pond were steam cleaned and an algae remover (product not mentioned) was applied. • New buff sandstone units were supplied and installed for the seating at the boating pond. • Loose and flaking paint was scraped off the boat basin. • High edges of paint were mechanically removed, and surfaces of concrete cleaned to prepare to paint. • Spalled areas were levelled with two parts fast-setting concrete repair material. • Two coats of fast drying chlorinated rubber paint (A 148 Swimming Pool Paint) were applied. • All concrete construction joints, the perimeter base to wall joints and cracks in concrete base were prepared by mechanically grinding out joints/cracks to approximately 20mm deep. These were filled with epoxy adhesive and then painted with chlorinated rubber paint. • The sluice gate was overhauled (no details about this work) with guidance from Paddock Johnson. 	
	2008	Fordwater Pumping Supplies Limited	<p>The following works were completed:</p> <ul style="list-style-type: none"> • Stone walls damaged by a car driving in the fountain were rebuilt. • The sluice gate was removed, refurbished and reinstalled. 	

Site	Year	Contractor	Description of work	Notes
			<ul style="list-style-type: none"> • A lock was fitted to the access manhole. • A new sand filter, manual controls, pump and associated pipe work were supplied and fitted. • A new control panel containing fuses, isolator and time switch were supplied and fitted. • The top-up ball valve and cover were refurbished. • Repairs were made to the basin with Durapol screed, then two coats of black resin coating were applied. 	
Silver Wedding Anniversary Fountain			No known treatments prior to 2015.	
Victoria Bridge stones and marker			None known.	
War Memorial	2015	Aura Conservation	<p>The joints in the paving and stairs at the memorial had rapidly deteriorated after the 2010 restoration work. The poor performance of the mortar was blamed on weather at the time of installation. The PSVT Conservation Officer surveyed the site and recommended 100% repointing of the east stair and extensive repointing elsewhere. The joints at the raised terrace were filled with moss and macro-biological growth, so the extent of work could not be specified until after the moss was cleared from the joints.</p> <p>The works completed include:</p> <ul style="list-style-type: none"> • Steam cleaning the masonry, 100%. • Removing moss and biological growth from the paving. • Repointing the east stair and terrace, 100%. Spot repointing elsewhere. <p>Two mortar mixes were used to properly blend with the surrounding, freshly-cleaned masonry. The mortar mix was a NHL5 and stone sand (aggregate selected to match masonry).</p>	
	2015	<p>Andy Mitchell Sculptures and PSVT landscape team/Conservation Adviser</p> <p>Jamie Fairchild, Restorative Techniques</p>	<p>Restorative Techniques prepared and applied stone poultices as a mock-up/test to remove copper and iron stains, as well as unidentified stains beneath painted lead lettering.</p> <p>Restorative Techniques demonstrated how their super-heated steam system (Thermatech) could be used to remove light soiling and old wax from three of the bronze plaques at the memorial.</p> <p>Andy Mitchell Sculptures then worked with the PSVT team to:</p> <ul style="list-style-type: none"> • Remove mild corrosion from the bronze sculptures using bronze brushes. • Thoroughly clean the bronzes with a dilute solution (1:20) of white spirit, Vulpex Soap and water using clean cotton towels. • Warm the bronze surfaces with a blow torch (propane gas) until the surface of the bronze appeared wet (residual wax melting). The first coat of micro-crystalline wax (Renaissance wax) was applied to the warm bronzes with a natural bristle paint brush. • The microcrystalline wax was applied (cold) with a natural bristle paint brush and the surfaces lightly buffed with clean cotton towels. • The microcrystalline wax was applied for a third time with a natural bristle paint brush and buffed to a sheen with clean cotton towels and 'buffing mitts'. 	At the time of publication, eleven bronzes still need to be cleaned and waxed.
	2014	Byrom Clark Roberts	Received Listed Building Consent to install two weepholes onto the mid-landings at each stair to aid drainage/reduce ponding in these areas.	The work was completed in 2014.

Site	Year	Contractor	Description of work	Notes
	2010	Andy Mitchell Sculptures	<p>Summary: A complete restoration of the memorial was completed in 2010. The memorial was nearly 90 years old. Located in close proximity to an industrial site and a major river, it had suffered from the elements. Existing patina, deposits and coating were removed from the bronzes. New patina was applied to the bronzes and then they were waxed, and the stone work cleaned, and the lead lettering re-done (including regilding).</p> <p>Detailed description of works: The bronze conservator assessed the condition of the bronzes and identified heavy patination of 'both copper salts and carbide deposits'. This was the dark green/black surface of the bronze at the time. The bronze conservator did not test the surface deposits or patina. It was felt that the dark green/black surface deposits obscured the significant detail of the sculptures.</p> <p>To better assess the condition of the bronzes (and to make better informed treatment recommendations), the bronzes were steam cleaned using the DOF steam cleaning machine at 70psi with the temperature between 100C and 140C, 60mm from the surface. A non-ionic detergent (Vulprex) was added to the water supply (a few drops:10 litres of water). Steam cleaning removed the surface dirt and thinned some of the corrosion products.</p> <p>Cleaning revealed gaps between the stonework and the bronzes, which would need to be filled with either lead or mortar, several areas of iron rust and inclusions left in the bronze by the original foundry.</p> <p>A section of a wounded soldier's left leg was missing, and the remaining section was actively splitting. Closer inspection revealed that the leg was 'full of foundry material and this was jacking out, to create the split'. Within the foundry material was an iron support structure. This support structure was rusting and staining the bronze and stonework below.</p> <p>The bronze conservator identified an 'artificial brown surface' on the bronze, which was judged (but not verified by testing) to be shellac. The conservator noted that shellac had been used in other outdoor bronzes to attempt to return the surface of the sculpture to its original glossy, brown colour. The shellac was applied over the green/black patina, date unknown.</p> <p>Areas not typically washed by rainwater exhibited a dark black carbide surface coating and had light green pustules. These pustules were identified as 'bronze disease'.</p> <p>Options for treatment were considered and then the JOS abrasive cleaning system was used to remove surface deposits, patina and corrosion. The bronzes were then repatinated a brown colour with brush-applied highlights. Despite disputes with grant conditions and disagreements with English Heritage, works progressed. Full repairs were carried out, casting residues were removed, splits caused by internal corrosion were rectified and thousands of active pin hole corrosion cells were heated and filled. The memorial was finished with a bronze patina. Grant funding from the War Memorials Trust was not awarded for the bronze restoration work, but it did cover the stone restoration work.</p>	
	2004-2010	English Heritage Building Conservation and Research Team (BCRT)	<p>PSVT, Wirral Borough Council, English Heritage Regional Team, English Heritage BCRT and Head of Sculpture at the Conservation Centre (NML) made a site inspection following PSVT's application to the War Memorials Trust for funding to restore the monument.</p> <p>BCRT determined that the memorial was in good condition, with bronze elements displaying a stable overall green patina with limited areas of active corrosion. They recommended that conservation of the memorial be based on minimum necessary intervention aimed at visual presentation of the ensemble as a whole and planned maintenance. They recommended removal of accretions, treatment of local active corrosion and removal of visibly corroding</p>	

Site	Year	Contractor	Description of work	Notes
			<p>ferrous material. Then they recommended application of a protective coating to the bronze patina. This treatment would have left the bronzes 'green'.</p> <p>Their recommendation was based on a visual assessment of the bronzes, comparison with previous works carried out on other sculptures in the vicinity and technical literature research.</p> <p>Three proposals for restoration were considered: laser cleaning by NML and Andy Mitchell's recommendations of either leaving the natural green patina in place or repatinating the green corrosion layer to a brown colour.</p> <p>In 2005, Byrom Clark Roberts was appointed as consultant architect for the restoration of the memorial. Byrom Clark Roberts sought advice from Eura Conservation (metalwork conservators). Eura Conservation did a detailed inspection of the memorial and determined that the state of corrosion was so bad that most of the existing patina would have to be removed.</p> <p>In 2008, PSVT consulted with Wirral Borough Council's Conservation Officer, who agreed that JOS abrasive cleaning should be used to remove areas of active corrosion and that the finish should be repatinated brown. Byrom Clark Roberts also sought advice from Historic England's Regional Office, but at the time the memorial was Grade II listed so English Heritage advised that it would not need to be involved.</p> <p>Byrom Clark Roberts prepared detailed specifications and a treatment methodology, and submitted them to Wirral Borough Council for Listed Building Consent. Consent was granted in 2009.</p> <p>Tenders were invited, and Andy Mitchell won the contract.</p> <p>Grant funding was given by the War Memorials Trust, with the condition that the bronzes retain their green patina.</p>	