

HIGHLIFE

ROPE ACCESS

BURY FUSILIERS MUSEUM - INTERNAL VENTILATION TOWER INSPECTION REPORT

Inspection conducted on: 23 JUNE 2023

Inspection conducted by: Will Oates, Alex Haslehurst

Report written by: Alex Haslehurst

Project overseen by: Rob Chambers at Chambers Conservation

Specification:

Upon completion of an external inspection, Highlife Rope Access (HLRA) was asked to continue the inspection of the internal structure of the ventilation tower at Bury Fusiliers Museum. Provision for access was provided for Rob Chambers (Chambers conservation Ltd) to assist with the inspection.

Of particular interest were two aspects which had been highlighted during the initial external inspection.

- The intersection between the low level parapet wall and the South elevation of the tower.
- The Ferrous band running through the middle of the bricked up louvres.

Overview of the inspection:

Upon arrival access was granted into the lift shaft by the lift engineer. Unknown to us beforehand there was a wooden soffit fitted to the tower which needed to be removed prior to accessing the 4no ventilation shafts. Once access had been gained it was noted that there was an uneven distribution of debris on the internal wooden roof. The

North corner had significantly more build up of spalling brick faces, mortar and general descaling of the internal walls.

Due to time restraints we were only able to access 2no of the shafts (N & S). The North shaft was of most importance as this was the elevation with the intersecting parapet wall externally. Rob Chambers inspected this area directly noting that there was no obvious signs of free running water streaking higher up however the steelwork on this wall was showing early signs of rusting due to water ingress and some streaking directly above the lintel beam (See pic).

Higher up the North shaft at the level where the external ferrous band had been discovered the corresponding internal beds were drilled out to check for a metal band on the internal skin. None was discovered here and additionally the internal 'cross' dividing walls were drilled out at this level to check for metalwork tying the external skins band back into the building. None were found here either.

Above this level at the top of the louvres there was a slightly shifted offset course of bricks which was only present on the East wall. Upon closer inspection they were totally solid and looked to be well aged in that position. The rest of the South shaft was in fairly good order apart from some general exfoliation of the stone faces. In the top was signs of old vegetation which had decayed but were still in position.

The North corner shaft had a fair amount of salts coming through the walls and entire faces of bricks having been spalled off. This was limited to certain areas until mid height and the brickwork improved higher up and became less degraded. The build up of additional material could be put down to the lower level areas. No evidence was seen of water streaking down the inside.

The East and West shafts were observed from below via torch. Unfortunately there was not enough time to visit the tops of these. From the lower visual inspection they looked in much better order with the brick faces showing little signs of degrading.

Photographic Report:

North Elevation:

<i>No.</i>	<i>Location</i>	<i>Description</i>	<i>Proposed Solution</i>
	North shaft	Condition	No signs of water ingress on the roof, plant life is

			dried and aged but still in place. Brick joints are in good order.
	Photo		
	North shaft	Brick offset course	The brick course below is level with the top of the louvres, as mentioned in the notes above it is solid and looks to have been in this position since being laid as opposed to more recent bed shifting. East wall only. East wall only, South wall was flat with no offset.

Photo



	photo		
	North corner top of lift boards.	North corner debris build up.	n/a

	Photos		
	North Shaft	Brick face condition	Heavy salt deposits to the lower half in localised areas. Degrading brick faces

	Photos		
	North Shaft	Brick face and offset course	Debris build up on offset course that had fallen from above. Offset course at half height.

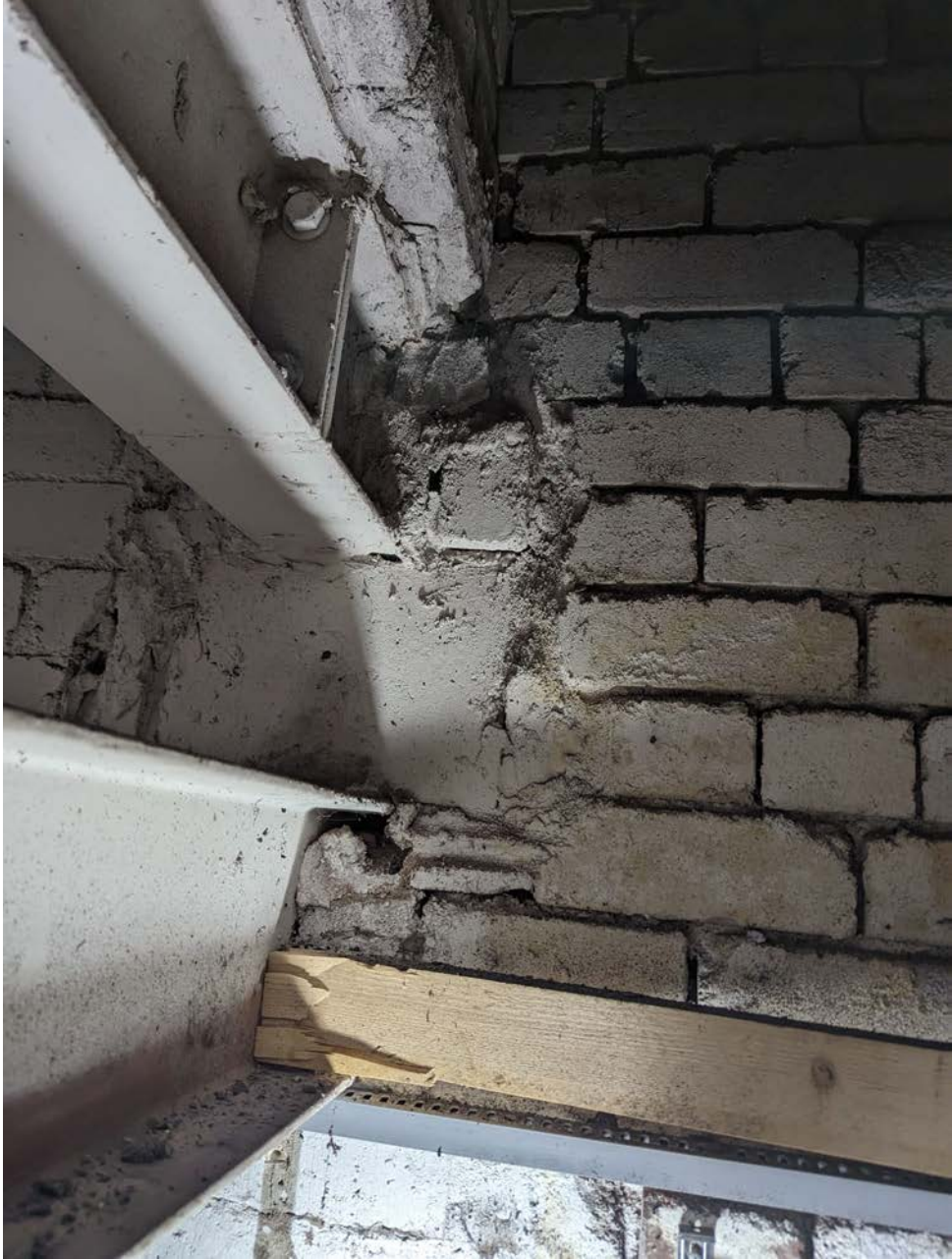
	Photos		
	North Shaft	Brick face condition	Example of heavy salt build up

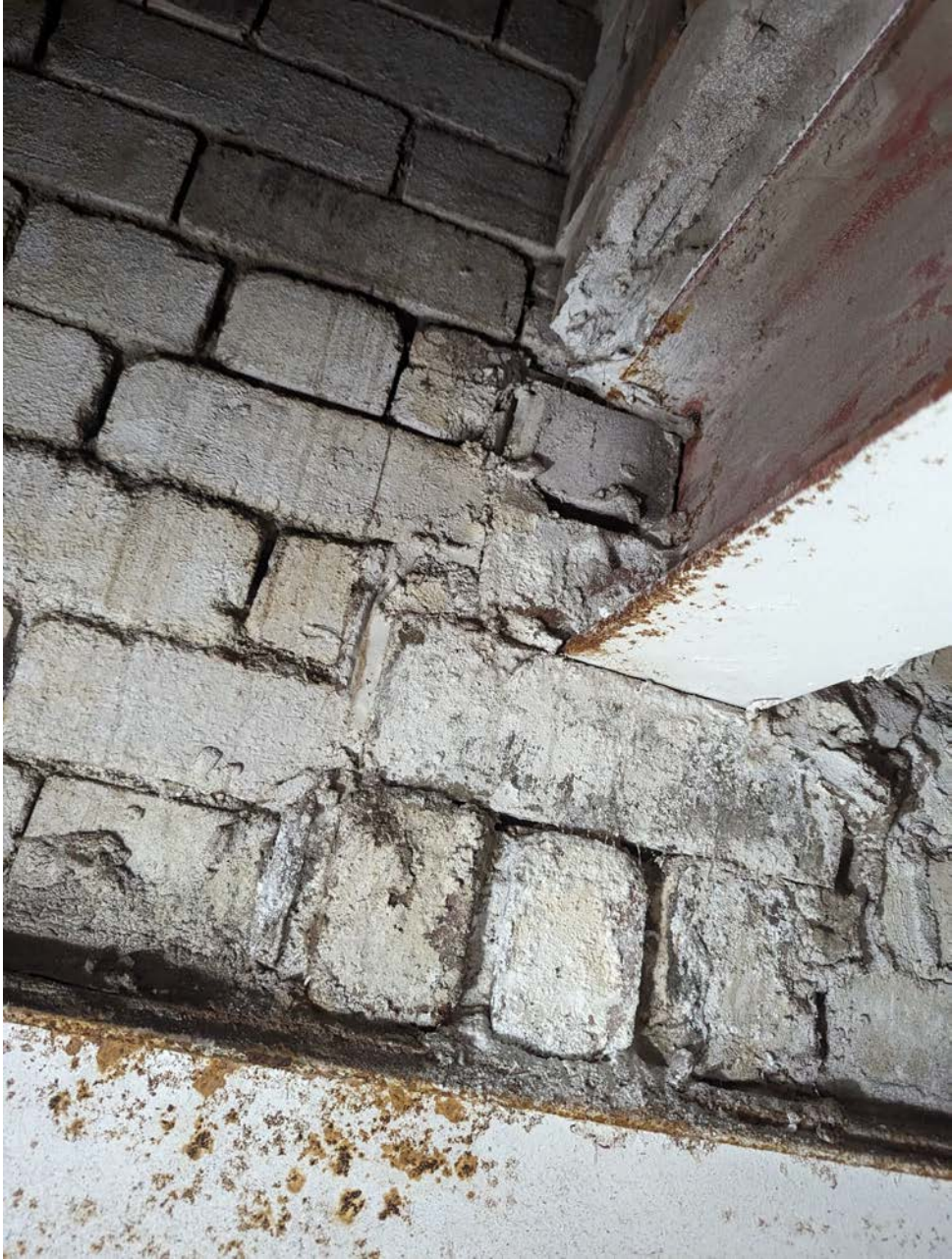
	Photos		
	North East face	Beam end condition North side	Good condition, minimal localised spots of surface rust.

	Photos		
	North East Face	Beam end condition South side	Good condition

	Photos		
	South East Face	Beam end condition North side	Good condition, fixings in good condition.

	Photos		
	South East Face	Beam end condition South side	Good condition, fixings in good condition.

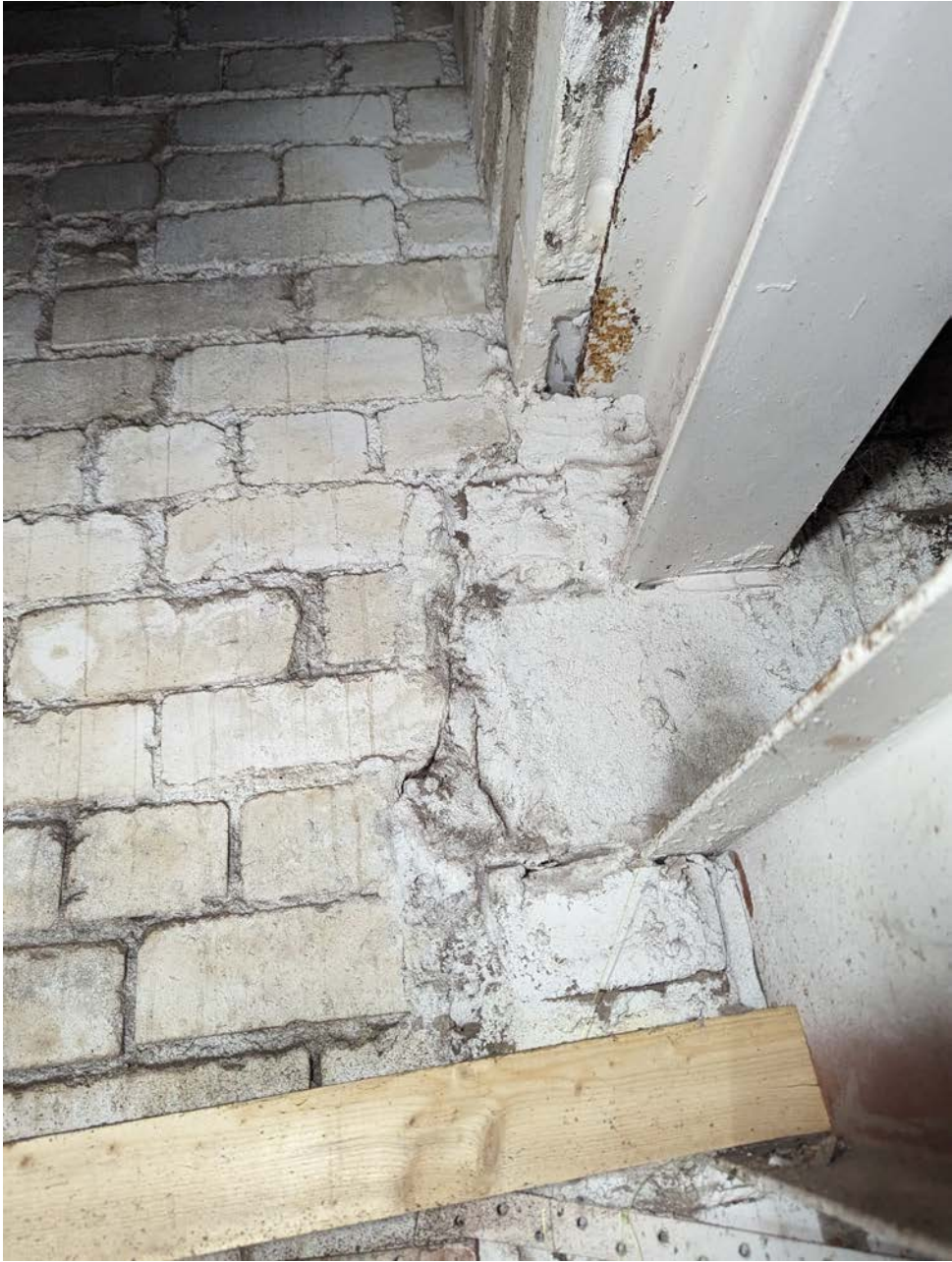
	Photos		
	South west face	Beam end condition East side	Showing signs of surface rust at the entrance to the wall. Indicating water ingress in this area. Also slight streaking from water on internal face directly above the beam.

	Photos		
	South West face	Beam end condition West side and also lintel beam in wall face	Showing signs of water ingress and more general surface rusting showing water ingress along the width of the wall. Streaking can be seen on the left side but not on the right. The left is the side with the external wall identified on the external survey.

	Photos		
	South west face	Lintel wall beam East end	Showing signs of general surface rust and beginnings of some delamination..

	Photos		
	South west face	Lintel beam West end	Showing signs of general surface rust and beginnings of some delamination.

	Photos		
	North west face	Beam end condition South side	Good condition with signs of localised surface rust

	Photos		
	North west face	Beam end conditions North side	Good condition with some signs of localised surface rust

	Photos		
	West Shaft	West shaft showing small signs of surface exfoliation and brick faces degrading.	

	Photos		
	East Shaft	East shaft showing little damage to internal brick facing	

Photos



Conclusions:

On the most part the internal of the tower is dry and the water is only localised to the south wall where the small wall intersects the tower. The faults of this have been identified on the external survey.

There is a fair amount of salts deposits on the north and west wall which may be due to the general poor state of the pointing and it being a harsher weather side. Equally with

the open jointed jacking of the joins higher up in the louvres there will already be water in the wall which will then be making its way out on the internal face during prolonged periods of wet weather. This would match up with the salt deposits only really going up $\frac{1}{2}$ - $\frac{2}{3}$ rd of the tower. Above this the brickworks looked dry and protected by the lead roof and good ventilation.

Closing up the jacked joint should help alleviate a lot of the build up of moisture within the wall however there may be a requirement to repoint to help with moisture transfer to the external wall faces. These we would see as a primary repair with a back up if there was still issues with moisture retention due to surface film water/degraded pointing on this elevation.

The tie beam at louvre level is likely to be just a ring on the external skin of bricks as no evidence was found of a ring on the internal skin or any tie backs into the crossed brickwork within the shaft.