CAMADS Eskdale Mill Visit 27/09/2018

We are five Civil Asset Management Apprentice Degree Students who work for Sellafield whilst studying 1 day a week at Gen2. On Sellafield site we work with the Civil System and Maintenance Engineers, learning the life cycle and asset care of built structures. Alongside this, we are CIOB student members and have joined the CIOB young person's group NOVUS.

We were fortunate to have been granted a tour of Eskdale Mill to learn about the built environment outside of Sellafield Site, and were shown some specific conservation efforts, particular issues and how these issues are being overcome.

History

The Mill's first recorded presence is in the 16th Century, although it could be older. The Mill was operated until the 1930's and then used for domestic habitation by the last miller's descendants until 1971, when it was bought by the County Council and turned into a heritage site. Eskdale Mill & Heritage Trust, a charity, acquired the mill from the Council in 2006. The Mill itself is Grade II* listed, the stables and stone bridge over the Whillan Beck are both Grade II-listed. The 18th-century miller's cottage, on the other side of the track onto the fells, is also part of the group.

Ongoing Conservation Work

The work is being financed by the Heritage Lottery Fund, Copeland Community Fund and other donors. The Mill and Cottage has a planned re-opening date of June 2019 to the public as an information centre to teach visitors about the history of the Mill & surrounding buildings. The overall aim for the conservation work is to repair rather than replace components. This will maintain authenticity and protect this piece of West Cumbrian history.

Cottage

The Cottage overall, is structurally sound. However it needs to be internally stripped and rebuilt with new electrics and plumbing. The main issue facing the cottage is based on the back wall. It is built into the hillside allowing the ground water to flow down to bedrock and therefore move towards the river. This results in flooding in the lower main living area. This is planned to be resolved by allowing water flow underneath the floor; this flow cannot be stopped but can be re-routed to prevent flooding. The majority of the work associated with the cottage is turning it back into a traditional structure, another example of this is in the main bedroom; the expanding foam across the timbers will be removed and more timbers added to keep its authenticity in construction as an 18th century cottage.

Stone Walls

All the stone walls of the structures require re-pointing (renewing the external part of mortar joints). In earlier years the stones were re-pointed using a portland cement /sand mortar, this has resulted in some of the areas losing their stability and traditional style; these areas need to be replaced. Lime

mortar pointing is being used instead, this is because it is breathable; waterproofing is improved as the water can evaporate from the stonework. This lime mortar pointing has a similar composition to earlier pointing; its composition consists of grit sand & ballast sand with pebbles up to 20mm in size. This composition & method usually takes 2-3 weeks to fully dry at which point the upper crust layer is removed so the pointing sits stronger in the recesses. The aggregate also matches the same colour of the building stone, keeping uniformity. As well as this, stones are placed back into walls prior to pointing to fill out the walls and maintain structural soundness. This new pointing will be most prominent by the water wheels, where it is most likely to erode due to the force of water, but is featured throughout the buildings.

Roofing

Local slates have been used on all roofs at the Mill. All the roofs will be re-slated; about 70-80% of the original slate is being reused, with the larger slates being cut to smaller size so they can be used. The slates are traditionally held in place by a nail with overlap of 3 slates, over the years wind flow has weakened these nails which has loosened the slates and caused de-lamination of the slates. Dressing the existing slates ensures only sound material is re-used. To further help waterproofing and insulation, a traditional lime-hair mixture is used as 'torching' on the underside of the slate. Lime is effective for pointing used on walls, as it can absorb moisture until a limit, at which point water will run off the building. The lime-hair mixture works like a plaster (with hair to reinforce the lime) which means it can get into all crevices to prevent ingress and retain heat. This mixture can also prevent the effect of wind vibration on the slate nails by securing them further.

Woodwork

One of the issues affecting the timbers is woodworm, once affected there is not much that can be done. Luckily very few areas have been affected by woodworm, and all timber areas in the mill have been treated to prevent further infestation. All original cross beams and purlins have been kept and are being preserved. The additional support beams are being fitted to better preserve them. These are used sparingly, but also resemble the earlier beams used, so they do not look out of place.

Environmental Restrictions

Whillan Beck flows below the mill and powers the Mill through the use of water wheels. The Beck is not to be disturbed as part of the conservation building work. Certain methods have been proposed by the companies involved. One of these involved the scaffolding on the barn, which directly interferes with the beck. To stop this, a ballasted scaffold system is in use. This system means that the scaffolding never touches the beck and cannot disturb it. It works through a counterweight system to oppose the scaffold weight over the beck, keeping it from toppling over. Another environmental issue is the use of lime pointing, as lime can affect the beck's PH and interfere with the wildlife there. There are adequate protections in place to prevent this from happening however, as scaffolding boards prevent the lime mortar falling into the beck and is monitored during the curing period in case the top layer becomes loose and liable to fall.

Water Wheels

The Mill has 2 historical water wheels; they require additional conservation work alongside the building itself. The wheels themselves are metal cast with wooden paddles across them. Both wheels require work done to return them to working order. The metal has fractured in a couple of locations on both wheels and is to be traditionally re-cast. To help this, the paddles have been removed. This also helps so access can be gained to re-point the wall behind the wheels using different strength lime mortar. Some of these paddles have rotted and, for safety, the decision was made to replace all of them. A third water wheel was erected in 2017 to generate electricity for the mill and to show future visitors how water can still be harnessed to create power. An issue arose with this wheel in the form of noise pollution and was disturbing local residents. The issue was resolved by changing the angle at which the gears operated and enclosing the generator, this quietened the wheel, and allowed it to continue to operate.

Future Plans

Other conservation work focuses on the Mill's future role as a heritage attraction. This includes work such as organising disabled access (where possible) and collecting and dating historical artefacts for possible future display. The Garage is being turned into a reception area, small shop and toilet for visitors. Each of these has their issues, such as flooding and previously badly pointed stonework. However these are being overcome in similar ways to the other buildings.

The visit was an amazing opportunity for the five Sellafield Civil Asset Management Apprentice Degree Students to understand not only the history behind the Lake District's oldest mill, but the difference of techniques and materials required during the conservation work compared to what is used on the SL Site. We hope to arrange a second visit once the work is fully completed and see the results of the hard work put into the project.