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Eskdale Mill Works
Conservation Building Contract

Progress report following valuation meeting on 13th December 2018

Lambert Walker Ltd. was appointed as main contractor on 29th June 2018 and the pre-start meeting was held on 9th July 2018. During this meeting, the contract conditions and duration were discussed, along with the necessity for the contractor to engage with the local community. John Lambert prepared information flyers and delivered them in person to neighbouring properties, leading to a good start in the relationship with the community regarding the works on site.

The conservation building works are subject of a JCT Intermediate Building Contract 2016, signed between John Lambert and Paul Pharaoh (chair of the trustees of the Eskdale Mill Heritage Trust) on 30th July 2018. The completion date for the works is March 2018.

Works commenced on site that same week, with the erection of the heras fencing to either side of the public right of way and the scaffold to the cottage and the mill buildings.

Images showing the heras fencing and scaffold, 7th August 2018

WORKS TO THE COTTAGE

The cottage was in poor condition and was not suitable for residential purposes. The proposed works approved during the development stage are designed to upgrade the building to achieve a watertight envelope, including thermal insulation to the roof and the ground floor construction. External walls and external joinery are being retained as existing and are the subject of conservation works.

The first work undertaken at the cottage was the breaking up of the existing ground floor construction in preparation for a new floor incorporating a damp proof course membrane and thermal insulation. While the ground floor was dug out, some elements were unearthed:

- A clay drain was found running from the back wall to the front door; this drain would have discharged water from the french drain below the surcharged ground to the rear of the cottage, running below the ground floor and ultimately soaking away in the cottage garden at the front of the cottage.
- Another drain was found between the kitchen and the living room which may have discharged water from the north-east side of the external French drain into the drain discharging onto the garden, although this is not certain.
- At the bottom of the rear wall to the living room a slate course was discovered, which would have functioned as a DPC.
- At the bottom of the rear wall in the kitchen, a concrete underpinning was unearthed. It was agreed that the underpinning should not be disturbed (since it may be structural and also preventing water ingress from the fell).

Image showing the concrete haunch at the bottom of the north wall to the kitchen, 7th August 2018

All the above-mentioned elements indicated the risk of water ingress into the living room and after periods of continuous rain whilst the floor was excavated this indeed occurred.


Left hand side image: water ingress at the base of the north wall to the living room, 20th September 2018. Right hand side image: temporary haunch to the base of the wall preventing water ingress and trench for new internal drain, 9th October 2018

During the Development Stage of the project, a French drain installed at a deeper level running along the north and west elevations of the cottage discharging onto the garden had been specified. However, after the on-site findings, it was agreed to incorporate a second barrier against water penetration by building a small concrete upstand at the base of the wall to the living room along with a new internal drain below floor level to drain the area (included in Architect's Instruction no. 6). This internal drain discharges onto the new external French drain right below the window to the west gable of the cottage as shown below.


Left hand side image: connection point of the internal drainage to the external French drain (west elevation). Right hand side image: French drain to north elevation under construction, 26th October 2018

As a third line of defence against internal dampness (after the external French drain and the internal drains and concrete upstands) it was agreed that those two areas of the north wall (living room and kitchen) would benefit from tanking. Sovereign's Hey'di K11 system was then specified in AI no. 6.
Finally, a studwork dry lining was incorporated to the kitchen walls over the tanking to allow for the services to be installed without puncturing the tanking protection (AI no. 11).


Left hand side image: tanking to north wall and return to living room. Right hand side image: dry lining to kitchen area showing the tanking below and the first fix of electricity. 22nd November 2018

The works to the external envelope were undertaken between August and mid-October, in order to guarantee the water tightness of the building before winter.

For the repointing works, several samples of lime mortar pointing were tested before reaching a mix that would be satisfactory. The original specification asked for 1:2.5 with 1 part of NHL 3.5 or 5 and 2.5 parts of Cardewmires sand, since it is locally sourced in Cumbria. However, the sample sand did not have a satisfactory spectrum of particle sizes and so it was decided to vary the mix to 1:1:1.5 with 1 part of NHL 3.5 or 5, 1 part of Cardewmires sand and 1.5 parts of ballast sand (up to 20mm sand/gravel mix from the Overby quarry).


Left hand side image: first sample of lime pointing deemed as unsatisfactory, 7th August 2018. Right hand side image: sample of approved lime pointing at the top of the eastern gable, 6th September 2018

During the lime repointing works, a small area of brick work with cement mortar forming the bottom left corner of a first floor window was discovered and replaced with salvaged stone.


Left hand side image: western jamb to window no. 5 showing area of brickwork covered in cement, 14th July 2016. Right hand side image: western jamb to window no. 5 showing new masonry, 9th October 2018

Both roof pitches were re-roofed including salvaged slates as necessary. During a site inspection on 7th August 2018 the roofer subcontractor highlighted that the upper courses to the front pitch of the cottage were too small (approx. 8'' when the minimum he would use is 10'') and it was agreed that those small slates would be discarded and that 10'' would be the smaller size used.

During the Development Stage the total replacement of internal ceilings had been specified, but after the above mentioned site inspection with the main contractor and the trustees it was agreed that the boarded ceiling above the master bedroom could be retained. Therefore, the roof construction specification was amended from PIR along the eaves and mineral wool over the flat ceiling areas to TLX gold along the roof slope (AIs no. 1 to no. 4).


Left hand side image: roof under construction, image kindly supplied by Maurice Steele. Right hand side image: south elevation of the cottage after reroofing and repointing works, 26th October 2018

Works to the chimneys included the incorporation of lead soakers and flashing at roof abutments and the removal of an oversized cement flaunching to the western chimney (AI no. 6).

Left hand side image: western chimney with cement flaunching, 6th September 2018. Right hand side image: western chimney after hacking off the cement flaunching, 9th October 2018

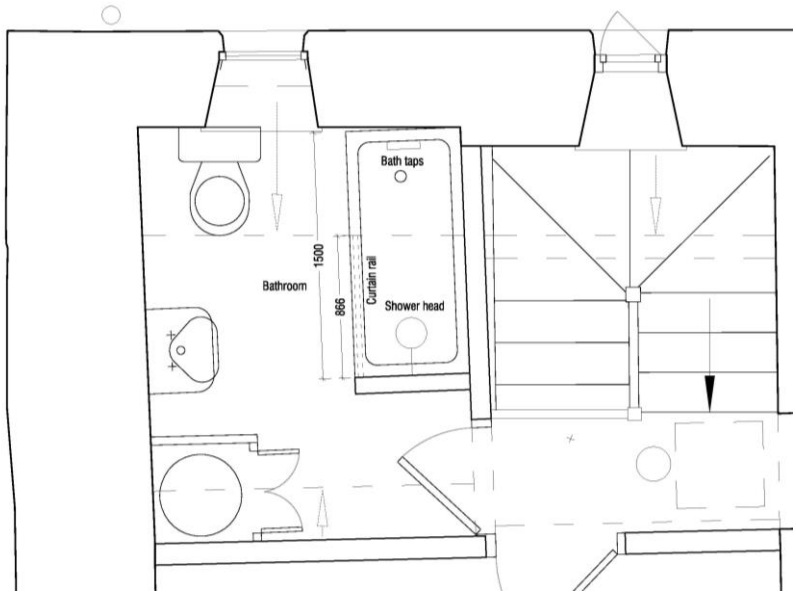
Image of the cottage taken from the scaffold at the mill on 6th November 2018

The existing external joinery has been refurbished following the development stage specification.


Left hand side image: splice of splice joint between new bottom timber section and existing door frame to front door, 22nd November 2018. Right hand side image: image showing the refurbished door frames on 13th December 2018

Internally, works continued with the construction of the new ground floor and the total refurbishment of the bathroom and the kitchen. These rooms are quite small and therefore the design of both areas had to be carefully considered.

In the case of the bathroom, the area around the bath was re-designed to incorporate a shower fitted onto a new stud wall. Also, the specifications of the hot water tank were reviewed with the plumber who is aware of the space limitations and will install the tank to maximise the circulation space.



Left hand side image: revised proposed drawing sent to contractor on 9th November 2018. Right hand side image: image of the bathroom on 13th December 2018

For the kitchen, the design team and the contractor met with a representative from Howdens Joinery to discuss the requirements and constraints for the kitchen units. The design provided by Howdens was accepted and the units have installed.

Left hand side image: Mock-up of the kitchen provided by Howdens on 7th November 2018. Right hand side image: image of the kitchen on 13th December 2018

Floor and wall tiles were installed during the last week of November (AI no. 9 and no. 10).


Left hand side image: image of the tiled step between the living room and the kitchen. Right hand side image: image of the kitchen wall tiles. 13th December 2018

The first fix for water and electricity has been undertaken.

Originally, the cottage did not have a central heating system and relied on two wood burning stoves at ground floor level. Hot water was provided by a hot water tank with an immersion heater. The Development Stage proposal included for installing a heating system with economy 7 storage heaters which will benefit from a reduced night tariff. Similarly, the new hot water tank will be able to use the reduced tariff thanks to the incorporation of 2 immersion heaters. Finally, a new solid fuel stove in the living room will incorporate a water jacket and hot and cold primaries and will also be connected to the hot water tank to contribute to the water heating and reduce the overall use of electricity. British Gas installed the required Economy 7 meter on 5th December 2018.

The water supply to the cottage used to be unfiltered fell water and this was deemed to be unsatisfactory and conversations with United Utilities and Cumbria County Council Highways are currently underway to provide a connection to the main water supply (which at the moment finishes some 10m to the south of the end of the bridge).

WORKS TO THE CART SHED AND THE PRIVY

The Stage 1 bid for a programme of works to improve the visitor experience to the Heritage Lottery Fund had allocated the cart shed for storage / workshop space and only an allowance for roof repairs to the cart shed and privy was included.

During the Development Stage, the design team proposed that the redundant cart shed should become the visitor reception / shop, with an externally accessed wheelchair accessible toilet. This change was welcomed by all stakeholders as it took the reception / shop out of the mill (allowing more interpretation space); provided an accessible toilet (which had previously not been included) and gave the team the opportunity to accommodate a laundry room in the cottage outbuilding where a non-wheelchair accessible toilet was sited. Removing this toilet and replacing it with a washing machine / dryer improved the otherwise cramped living accommodation).

The cart shed roof and timber boarded south elevation were in poor condition and required complete refurbishment to create a comfortable internal environment for the mill manager to operate in. The proposed works approved during the development stage will upgrade the building to achieve a watertight envelope, including thermal insulation to roof, walls and ground floor construction.

The cart shed is built into the bed-rock of a bankside and installing an external perimeter french drain was not a viable option. The Development Stage specification included for tanking the masonry external walls with Sovereign's Hey'di K11 system, but during the excavation of the floor water from the fell seeped through the rear wall, which was similar to what happened in the cottage).

Left hand side image: general image of the cart shed with the western pitch stripped off, the ground floor excavation and the concrete foundation to the new south elevation. Right hand side image: masonry opening for doorway into new wheelchair accessible toilet, 9th October 2018

A new drain was introduced below floor level to drain the area (AI no. 10).


Image of the concrete slab to the cart shed and the tanking to masonry wall on 26th October 2018

The roof insulation specification to the cart shed was amended to substitute TLX gold instead of PIR insulation between rafters (AI no. 7) and salvaged roofing slates were re-fixed over new battens. The roof to the privy was also re-roofed with salvaged slates fixed onto new battens.


Left hand side image: roof to cart shed under construction on 26th October 2018. Right hand side image: image of the finished roof kindly supplied by Maurice Steele

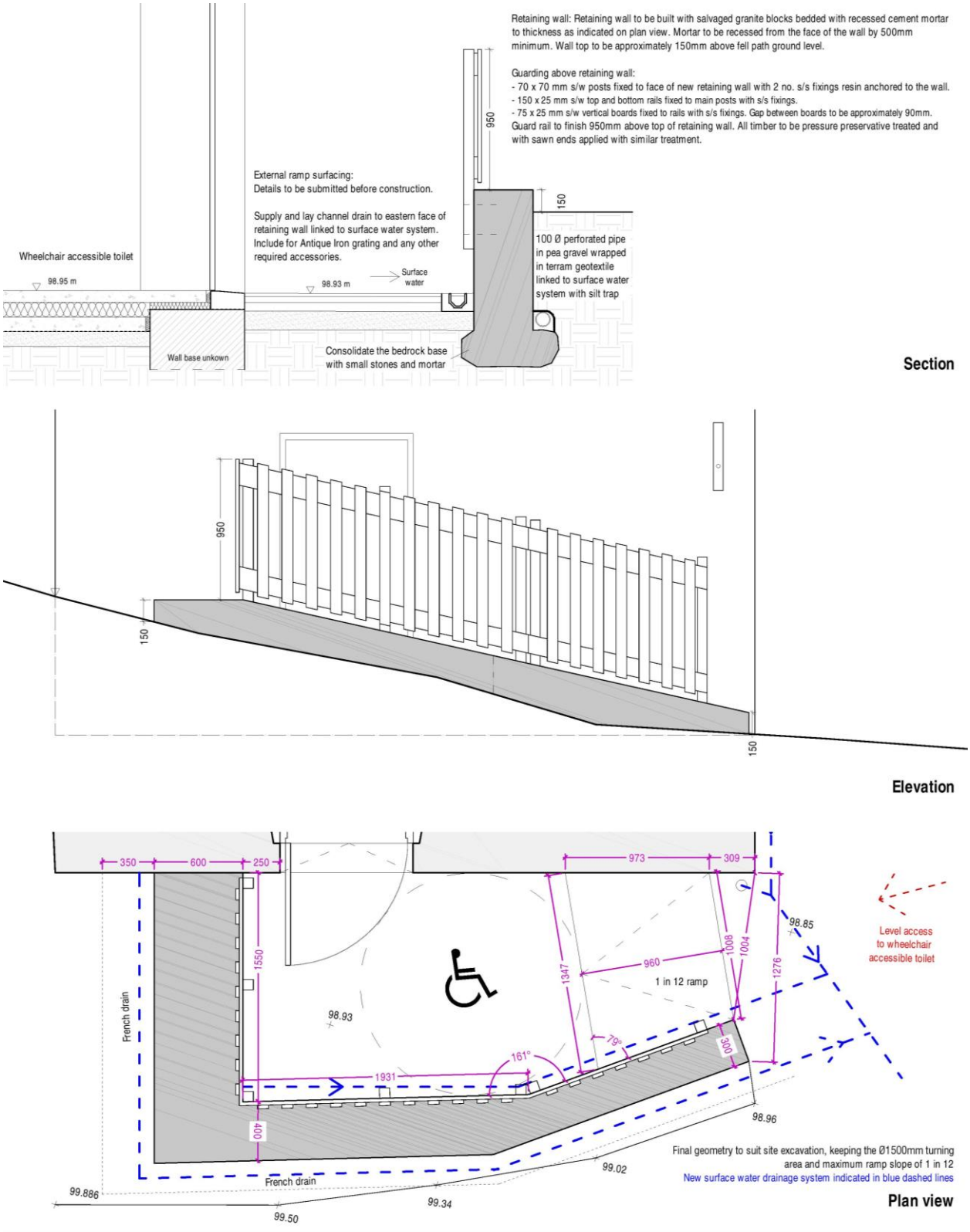
The new foul drainage for the wheelchair accessible toilet has been laid down ready for connection onto the existing cottage drain. The picture on the right hand side below shows the new inspection chamber next to the cottage's outbuilding where both systems will be combined before discharging onto the new sewerage treatment plant (which will replace the existing septic tank in the garden).


New foul drainage system to the wheelchair accessible toilet, 22nd November 2018

The area for the access ramp to the wheelchair accessible toilet was excavated in November. Although during the value engineering exercise it had been agreed that a concrete retaining wall finished in render could be appropriate, the contractor suggested re-using the salvaged stone on-site (obtained from the ground excavations to the cottage and the cart shed and also from digging out the area for the ramp). The design team accepted the suggestion and designed a granite retaining wall with a timber guarding and a perimeter french drain. The design was approved by the conservation structural engineer and works to build the wall have commenced.

Image of the setting out of the retaining wall, 13th December 2018

The wall surface was one of the conditions of the listed building consent and an application for discharge of conditions has been submitted to the Lake District National Park.



Detailed drawing submitted to the Lake District National Park Planning Authority, 12th November 2018 – not to scale

The new south elevation to the cart shed / reception was designed keeping in mind the original appearance of the building. A vertical oak cladding has been proposed, with cover laths between the boards creating a ventilated system to enhance the life of the timber sections. The finish of the cladding will be rough sawn oak, which will weather in time to a dull grey that will blend with the granite stones around the site.

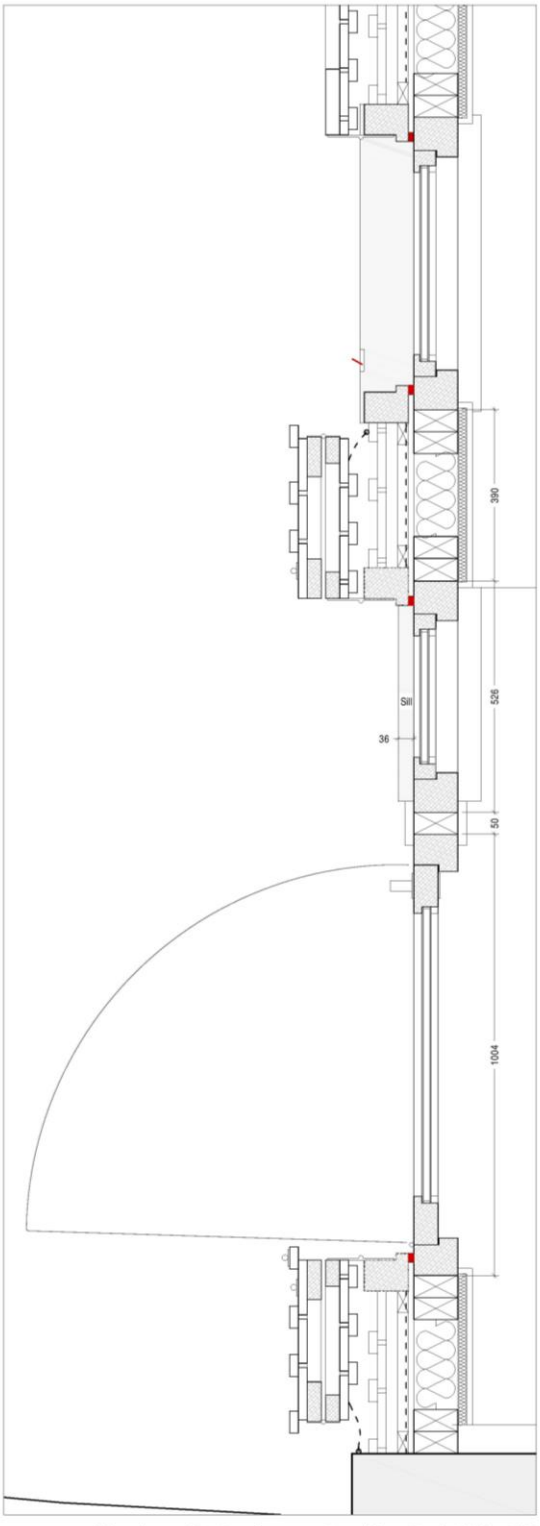
The colour of the timber was also a condition of the listed building consent and an application for discharge of conditions has been submitted to the Lake District National Park.

Left hand side image: colour of rough sawn timber board newly installed. Right hand side image: expected colour of weathered rough sawn timber board

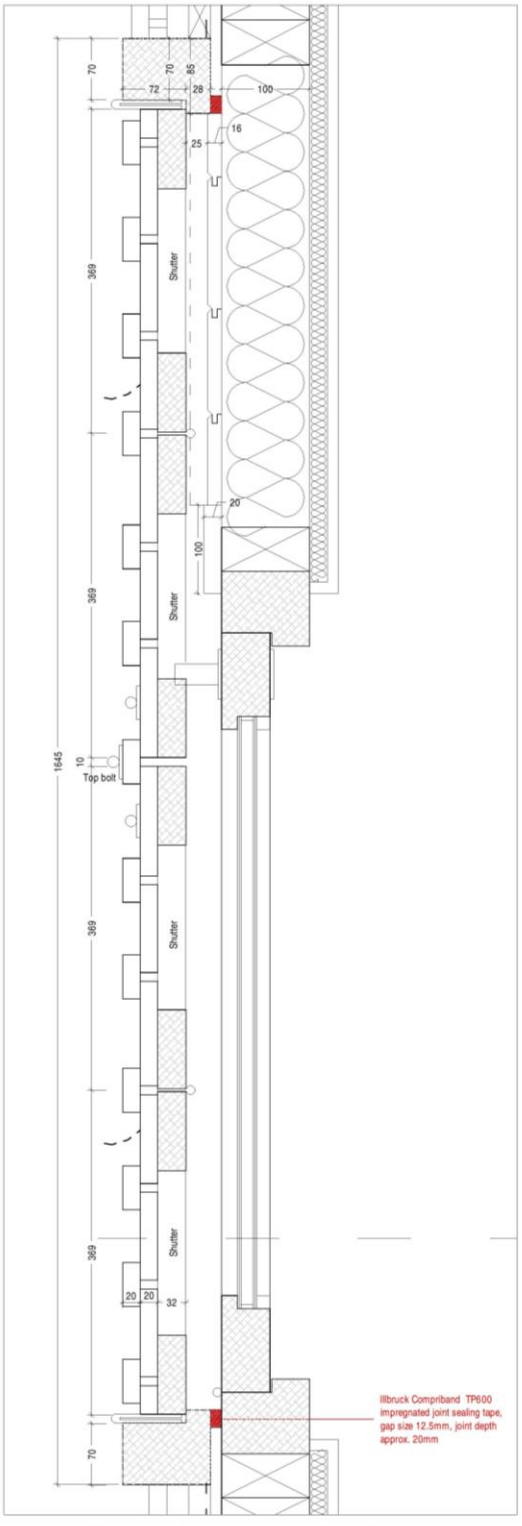
The main structure of the elevation has been built, including the internal thermal insulation and the external battens ready for the cladding being fixed.

Images of the timber cladding to the south elevation under construction. Left hand side image: image kindly supplied by Maurice Steele. Right hand side image: the south elevation on 22nd November 2018

The proposed openings are a reminiscence of the original openings but incorporating double glazed units to allow for a visual interaction between the inside and the outside. Two shutters have been designed in order to keep the agricultural image of the setting while the reception is closed. Detailed drawings were submitted to the joiner in late November and the construction of the openings, shutters and cladding is underway.



Plan view - Shutters in opened position. Scale 1:10 at A3



Plan view - Shutters in closed position. Scale 1:5 at A3

Example of detailed drawings sent out to joiner on 27th November 2018 – not to scale

Internally, the insulated plasterboard to the roof construction has been installed, along with the internal blockwork partition and the first 2 no. layers of Diathonite insulating plaster finish. Also, the first fix for water and electricity has been undertaken.


Images of the inside of the cart shed taken on 13th December 2018

WORKS TO THE MILL AND THE BAKEHOUSE

The proposed works approved during the development stage aim to repair the buildings and, where possible, improve their water tightness.

The masonry of the Mill buildings resembles a dry wall construction in that almost no mortar is visible in the masonry joints. Therefore, the architect specified that the external walls would be deep-tamped with NHL 3.5 lime mortar (areas of voids would be filled by pinning or galleting) in order to reduce water penetration into the wall while retaining the appearance of the buildings. Consolidation works below the roof verge were also undertaken.


Western gable to Exhibition Room. Left hand side: image taken on 5th May 2016 before works commenced. Right hand side image: taken on 13th December 2018

A different approach was taken with regards to the east wall, where the 2 no. waterwheels are located. This elevation is exposed to the splashing of water almost continuously, and therefore a lime pointing using NHL 5 mortar was specified.


Image of southern wall around the south-west opening. Left hand side image taken on 8th June 2016. Right hand side image taken on 30th August 2018

Structural repairs to external stone lintels have been undertaken according to the conservation accredited structural engineer's design.

At roof level, minor repairs to slates are to be undertaken and the main external task has been improving the abutments between roofs and between walls and roofs:

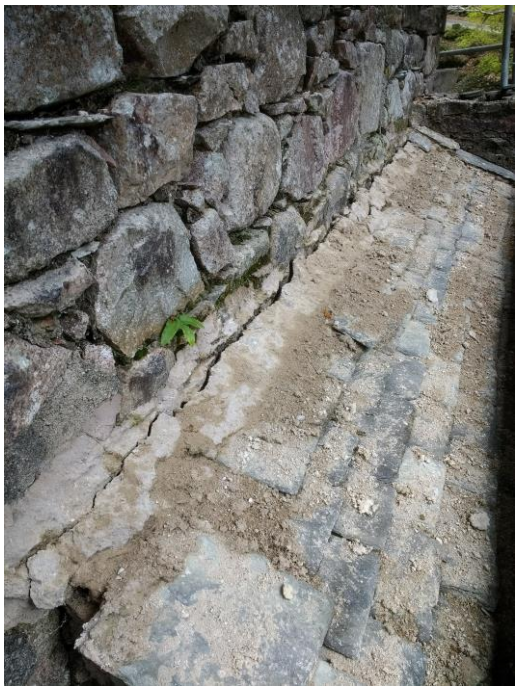
1. Replacement of the perished lead valley gutters between the Exhibition Room and the Milling Room.


Left hand side image: northern valley gutter under construction, image kindly supplied by Maurice Steele. Right hand side image: finished southern valley gutter. 6th November 2018

2. Incorporation of lead soakers and flashings between at the abutment between the Milling Room roof and the southern gable of the Drying Room.


Abutment between the Milling Room roof and the southern gable of the Drying Room. Left hand side image taken on 6th September 2018. Right hand side image taken on 6th November 2018

3. Incorporation of lead flashings to abutment between the Bakehouse roof and the southern gable of the Milling Room.

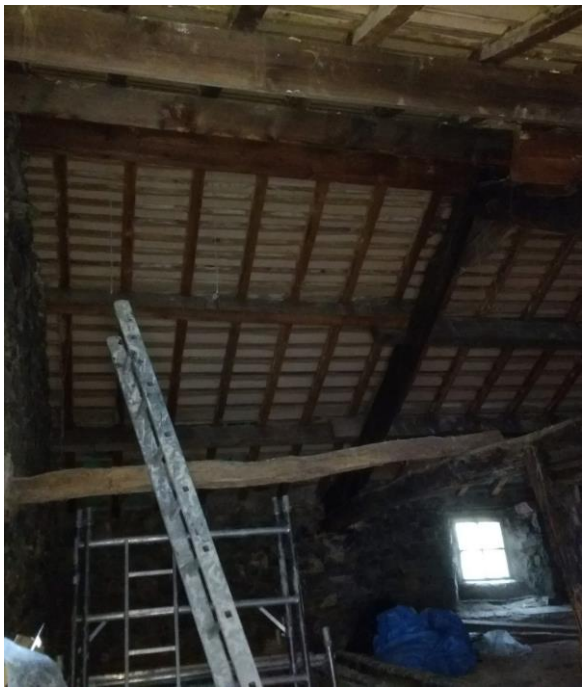



Abutment between the bakehouse roof and the southern gable of the Milling Room. Left hand side image taken on 6th November 2016. Right hand side image taken on 13th December 2018

4. Incorporation of lead soakers and flashings to abutment between canopy and mill walls.


Abutment between canopy and mill walls. Left hand side image taken on 5th May 2016. Right hand side image taken on 22nd November 2018

Internally, the application of a lime torching to the underside of the slates will not only help to keep the slates in place but will also prevent wind driven rain getting into the buildings.




Images of the torching to the underside of the roof above the Drying Room, 22nd November 2018

The electrical first fix is underway, after on site discussions between the design team, the interpretation consultant and the electrical subcontractor to fine tune the design.

WORKS TO THE STABLE WITH HAYLOFT OVER

The proposed works approved during the Development Stage are to repair the stable / hayloft and, where possible, improve its water tightness.

Similarly, to work undertaken to the mill and the bakehouse walls, the walls to the stable/hayloft, which were not exposed to splashing from a nearby watercourse were deep-tamped with NHL 3.5 lime mortar, including for pinning and galleting as necessary. Where the west and south walls meet the watercourse, lime pointing with NHL 5 was specified.

South elevation to stable/hayloft. Left hand side image taken on 5th May 2016. Right hand side image taken on 13th December 2018

During a site meeting with the roofing subcontractor on 7th August 2018, the possibility of retaining the eastern end of both roof pitches was considered. Slates had moved along the western elevation due to unsatisfactory roof verge and wind and rain action. However, an inspection carried out on 27th September revealed that the roof was suffering from "nail sickness" and total re-roofing was required.

South pitch to stable/hayloft. Left hand side image taken on 5th May 2016. Right hand side image taken on 26th October 2018, showing the new roof overhanging the western gable

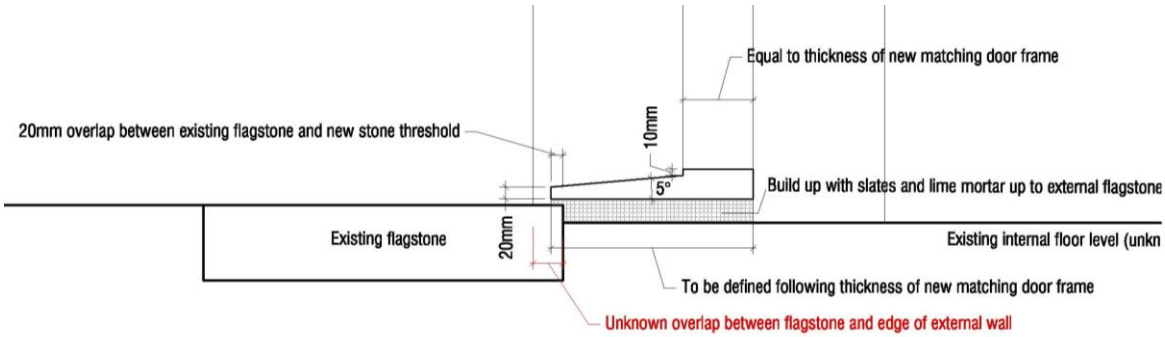
Both roof pitches were re-roofed with salvaged slates fixed onto new battens. The stone finials to either side of the ridge have been retained.

Internally, lime torching has been applied to the underside of the slates not only to help to keep the slates in place but will also to prevent wind driven rain getting into the building.

When the condition survey was undertaken in August 2016, the external door giving access to the stable was still in a reparable condition. However, this past two years the door has been exposed to water running from the courtyard in such a quantity that the door frames have completely rotted away and the lower leaf is not in a repairable condition.

Stable door. Left hand side image taken on 9th June 2016. Right hand side image taken on 13th December 2018, showing the current condition of the joinery

A new stable door matching the existing will be incorporated. In order to minimise the direct contact between the timber and surface water, a stone threshold will be installed (AI no. 6).



Sketch showing new door threshold to the stable door – not to scale

Also, a culvert will be incorporated into the courtyard area, diverting water into the existing culvert running along the western elevation of the stable/hayloft and discharging onto Whillan Beck.