

Pilcot Mill Refurbishment

Comments and Suggestions

Post Visit on 23 Feb 2023

Ivor New
David Plunkett
Rev: 2 14/4/23

1. Introduction.

David Plunket (DP) and Ivor New (IN) visited Pilcot Mill on the 23rd Feb 2023 to attend a site meeting, to discuss possible options for refurbishing the mill to provide space for an office and limited living accommodation for visitors, all in a way that would, as far as possible, maintain the integrity of the mill and its machinery as a 'living museum'. Kim explained the requirement to us and said there were two aspects he would like considered: the first to review the contents to ensure important milling items were not discarded when the mill was cleared and the second to discuss and make suggestions about how to best conserve the historic mill and its machinery. DP was involved in producing the existing inventory and so has undertaken the first part, which is attached to this document as an appendix. This document, initially prepared by IN, covers the second part, it also adds some after visit thoughts.

First the weasel words - being a retired Chartered Engineer, I am conscious that neither the Mills Group nor its members have any relevant indemnity insurance so we cannot give any formal advice but are happy to discuss and suggest matters related to the mill, based on our experience.

Our first impression was that the mill building, although only used as a store, has been well maintained. The wheel and external items are mainly present but are in a derelict state with the headrace blocked by repairs to the riverbank. Enough of these items remain for restoration, albeit expensive, to take place if so desired.

We walked around the mill and its curtilage with Kim, discussing matters as they arose, starting at the front door.

2. Ground Floor – the Hurst Floor:

- The ground floor open area is relatively empty with a variety of items, some belonging to the mill and others not. IN will take the forge and most of its associated items to the Hampshire Cultural Trust at Chilcomb. Here it will be added to their heritage repair facilities where they will be available to support Heritage Projects within the County.

- The core milling equipment is essentially complete and is contained within the hurst frame*. Although the machinery is present it is very rusty and most of the wooden cogs are missing. It was agreed that, as the axel port was open to the elements, the hurst frame should be glazed to provide a display case which would separate the machinery from the accommodation. It is suggested that the glazing on the side away from the door should comprise double hinged doors to allow easy access to the machinery.

- It is suggested that the remaining machinery is scoured with a wire brush and either treated with inhibitor or specialist paint** which will not only improve its appearance but extend its life. Colour is subjective but a dark grey that looks like old steel could be good.

(*a Hurst frame is usually made of robust timbers that support the milling machinery and isolates it from the building structure)

(** The best one is probably the military product DEF STAN 68-10-2 or C-634 or PX24, Not cheap but good. If a paint is preferred a quality paint from a specialist stockist (not available on the high street) direct to rust paint should be used.)

3. Staircase and Landing

- It was noticed that the main sluice operating control was mounted on the outside of the hurst frame beside the lower old staircase steps. If possible the pinion shaft and operating gear should

be retained, as this would have controlled sluice and hence the waterwheel rotation and the speed of the mill.

- On the way up the stairs Kim drew attention to the lack of insulation on the wall. It was agreed that the practical solution would be to add an inner skin to the studding wall and fill the resulting space with insulation. If this is done, consideration should be given to providing vapour barriers to ensure that neither condensation from within the building nor moisture ingress from outside occurs in such a damp environment. It was also suggested that thin strips of suitable timber should be applied to the internal surface of the lining to replicate the impression of the current wall.

- It was only noticed later that the reason for the staircase landing, was to give access to the door out to the walkway above the sluice gate. It is suggested that the door should be glazed to provide extra light in this area as well as the facility to access the (currently incomplete) external walkway. This would not only be a beneficial amenity as it gives a fine view of the wheel, the river and the local landscape, but also necessary to retain the essential pathway by which the miller would have access to, and with the door ajar, a view of the wheel and sluice when the mill was operating. This area is important for the integrity of the mill as it is at the core of the mill's access and controls.

It is understood that in future there will be alternative access to other floors so it seems the priority in this area is to the museum aspects of the project. It is suggested that this could be achieved by removing much of the central part of brick landing leaving only low walls around three of its sides. To indicate the historical use of this area the steps to the first floor could be fixed to the left hand wall above that remaining part of the old landing. A new cill could be fixed in front of the refurbished door/ window, and the remaining right hand side would stay to support the adjacent external wall. The low steps to the landing would be converted to a 'library step' format that could be used to access the door/ window. Or even, with some plant trays, become a decorative item!

To complete the work and maintain the effect, much of the first floor above the current stairway should be replaced, with the exception of an area in the corner, which would be enclosed with two vertical glass panels with an appropriate top to provide a display area.

4. First Floor - the Stone floor.

It is understood that the area at the top of the stairs, possibly including the first stone (nearest to the stair), would be used as an office, the area around the vertical shaft, the second stone, its tun (cover), the hoist and other associated equipment, would be the core of the 'mill museum'. The rest of the space to be utilised as part of the Living space.

- It is suggested that to provide a flat and interesting floor the first bed stone should be set down into the floor to become flush with its surface. The beams that support the stone should be inspected first but in most mills these beams, designed to take the weight of two stones and a rotating load, should be strong enough to support a single static stone, even when reduced in depth. Consideration should also be given to ensure the integrity of the mill equipment on the ground floor is retained.

- It was agreed that the Sack Hoist Traps* should be retained but it is suggested that a board should be fixed from below to hold the traps shut and also cover the hole for the hoist rope.

- It was agreed that the second millstone set, should be repaired and form the centre piece of the internal display. This would require the runner stone to be put back into place, the tun to be repaired and a new hopper being made, together with other missing items. It is suggested that the exposed woodwork should be painted with a good quality spar varnish that would seal the surface

and improve its appearance. Consideration should also be given to inserting a 'window' in the top of the tun to make it easier to view the working of the grain feed mechanism.

- It was also agreed that a hopper on the Bin Floor (see below) should be constructed to nominally feed grain into the hopper on the horse** above the stones, via the transfer chute and small hopper with a canvas chute that are in the mill.

- On later consideration of the wooden frame/box in front of the second stone it was realised that it was almost certainly a grain cleaning machine***. It is missing the sloping, rotating internal cylinder and brushes that would normally be inside. The surface of this cylinder would be clad with a wire mesh that is smaller than a cereal grain. When in operation grain is fed slowly but continuously into the upper end of the cylinder which brushes the grains against each other which loosens chaff, other small particles and contaminants which then fall through the screen to be collected in the machine's outer box to be disposed of later. The clean grain falls out of the end of the cylinder into a hopper and is ready for milling. As a fundamentally important part of the mill it is suggested that this is retained, probably repositioned and possibly used as a display cabinet to house explanatory display boards and any relevant small items associated with the mill.

- To the left of the smutter there is the partial frame of what seems to be a flour dressing machine. This could have provided an example of the other essential machine that is currently missing. This machine separates the meal produced by the mill into differing grades from fine flour to bran. This would allow the museum to show the whole process of taking grain from the farm to sending flour to the baker.

(*the arrangement of hinged boards in the floor that open to safely allow sacks to be hoisted through them and then to self-close so the miller could safely walk over it.)

(**the frame on the tun that supports the various pieces of furniture above the tun)

(***a smutter machine)

5. Bin Loft and Working Platform:

It is understood that this roof space is intended to become part of the domestic accommodation. For this to happen the platform and several bins and hoppers will have to be removed and other detailed changes made. It is accepted this is necessary if the building is to be used as anticipated but it is hoped that full and detailed drawings and other documentation will be made of the mill before significant changes are made.

- It is suggested that the platform and bins are removed carefully as it is constructed of timber that should be reused as it is in keeping with the mill. It would be interesting if the cross tie-beam could be utilised to retain the mill's character.

- following discussion it was agreed that the hoist and its associated equipment could be retained and provide interest in the revised layout, although it would require secure locking off.

- It was also agreed that a small hopper should be rebuilt in an existing location under the eaves that would nominally provide grain to feed the second stone set as described above and if impractical a dummy spout should be provided instead.

6. The wheel and associated equipment.

The wheel is essentially the major external feature of a water mill and it is hoped that this wheel can become a feature of the mill. The wheel frame is currently without buckets but a metal

prototype bucket is stored within the mill. It would be good if it could be utilised to produce electric power at some time in the future.

- For the wheel to become a feature it will need buckets. The obvious materials that could be used are: galvanized steel, 'Coreten' a rust resistant iron alloy (essentially wrought iron), Carbon fibre filled resin and Reinforced fibre glass. Each has its own advantages and costs. To make a decision quotes for all options should be sought as the cheaper unit costs often have the highest setup costs. The unexpressed justification for concern was safety related – Whatever is said, it will likely become a climbing frame for the adventurous! Hence the buckets need to be strong enough to support a full body weight, say 100Kg at their centres.

- As suggested and discussed, to meet the different requirements of inside and outside the mill, the best solution could be to cut the axel at the access hole where it enters the mill. At this point there is a double wall. The internal wall should then be bricked up: to be in keeping, to seal the access hole, to fully protect the axel stub end from the weather and to have a pad to support the wooden axel and protect it from rising damp. It would be good if a section of the wall included a replica axel end to indicate its location.

The external wall and the edge of the spillway pier in the river would need to be adjusted and levelled to accept the plumber block bearings that would in turn support a new steel axel, with fabricated mounts to fit the wheel end frames and have journals compatible with the plumber blocks. There would also be a need for two flanged collars, one at each end of the axel to keep the wheel aligned, with the flanges being able to accept a 'V' belt pulley, or similar, which could then be used, say, with a motor to occasionally turn the wheel and stop it in a different position, something which would extend its life..

- To complete the external environment, the walkway in front of the sluice and wheel would benefit from wooden boarding being installed and attention needs to be given to the sluice operating gear. The sluice's pinion gear shaft needs supporting, as a minimum with replacement plumber blocks and mounts and it is suggested a simulated sluice gate complete with gear racks would give a far better appearance. A safety rail may also be required.

7. Conclusion:

The mill as an asset that is, in essence, unutilised which means it is vulnerable. Without a viable use it will fall into disrepair and eventually be lost. The proposed development will give it a productive purpose that should ensure it remains relevant for further generations.

I hope this document is clear and enhances the discussions we had with Kim when we met at the mill. It is intended not only to be a simple record of our meeting but also includes ideas that developed during the writing of this document.

It is sure to raise some queries which I would be happy to discuss, preferably on site, when we could look at the limited differences between this document and the one Kim recently produced.

PILCOT MILL, DOGMERSFIELD, HAMPSHIRE.

Revised date: 23.02.23.

HMG members attending: two attending: Ivor New, plus David Plunkett.

Reason for site meeting with Owners and Architect.

To provide advice to Client on contents of previous Inventory and storage of artefacts, mill tools, equipment and materials. Three listings required, as set out below:

Salvaging or conservation of essential internal mill engineering to explain the earlier workings of this small village watermill. Historic, grade II listed. Discussion on extracting energy from water-flow.

(A) To apex bin loft:

(B) To Stones Floor (1st Floor)

(C) To Hurst Floor (Ground Floor).

(D) To External water control and waterwheel. Etc:

REVISED INVENTORY / REUSE Appraisal 23/02/23: rev.1b/dp

Mill, Hurst or Ground Floor, to be retained at same current level.

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|-----|--|--------------------|
| 1. | Set of new crown wheel timber teeth (in two cardboard boxes). | [mill repair] |
| 2. | Box of paired timber wedges (c.30 to 35 No.) + 20 loose (mixed). | [mill repair] |
| 3. | Flour chute, built of timber with part steel lining, marked 'right shute.' | [mill repair] |
| 4. | Pack of 10 No. 3 ft x 3" x ½ inch, timber boards, reeded both sides. | [mill repair] |
| 5. | 2 No. steel waterwheel floats (buckets), (one ex-mill, one new/unused) as patterns. | [repair] |
| 6. | 1 No. 5 ft x 6" x 4" old pine (with some nails) but sound. | [repair] |
| 7. | Steel sole plates (ex-waterwheel?) 3 riveted together, making 64" extrados & c.36" wide. | [?] |
| 8. | 8 No. steel Acro Props – various lengths, fair condition. | [building repair] |
| 9. | 2 ½" sq. steel vertical drive shaft (for stone nut) 59" length with pintel end. | [mill repair] |
| 10. | Part of compact, flour separator machine with spiral brush to 3 outlets (length 2ft). | [mill repair] |
| 11. | 2 associated cast iron bearing frames for above. - | [mill repair] |
| 12. | 1 footstep bearing box (adjustable). - | [mill repair] |
| 13. | 2 No. (1½" & 1¾" dia) steel line shafts, 2 ft and 3 ft long. | [mill repair] |
| 14. | 3 No. cast, line shaft pulley wheels, various diameters.. | [mill repair] |
| 15. | 1 wooden two part, pulley wheel for belt drive, c.19" diam. | [mill repair] |
| 16. | 3 No. lengths, 2½" dia reinforced water pumping hose (one filter). | [No requirement X] |
| 17. | Part roll of 6" wide sheet lead (4 lb) for external flashing. | [building repair] |
| 18. | Part roll of modern 6" DPC. - - | [building repair] |
| 19. | Part roll of modern 9" DPC. - - | [building repair] |
| 20. | Complete Darts Board in wall hanging hinged case. | [No requirement] |
| 21. | 19 No. 9" x ¾" t&g floorboards.- good to new condition. | [building repair] |
| 22. | 3 No. timber, short four legged stools. - | [No requirement X] |
| 23. | 1 No. 28 lb standard scales weight. - - - | [No requirement X] |
| 24. | 29 No. 5¾" wide oak boarding in lengths of 4 to 5 ft. | [building repair] |

Mill, Stones Floor:

- 25. Scaffold boards of mixed lengths (about 10) stacked behind stones. [mill repair/builder]
- 27. Mixed ironmongery, some new and unused, stacked in bags/ boxes on floor. [check 1st. X]

Blacksmith forging & hand tools: OMIT – NOT IN MILL. [“all due to transfer off site”]

- 32. 2 No. sledgehammers, (14 lb & 7 lb). - [“All due to transfer off site”]
 - 33. 4 No. forging/shaping hammers with one head only. [“All due to transfer off site”]
 - 45. 1 No. mattock, small size. [RETAIN IN STORE IF GOOD DIY USE?]
 - 48. Steel pickaxe head. [RETAIN IN STORE IF GOOD DIY USE?]
 - 49. Builders shovel. [DITTO]
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To: Ivor New: For inspection and assessment before forward to Kim or Client? From DP.

[As at 07/03/23.dp].