



G&H SPENDER ENGINEERING

Pilcot Mill

Initial conservation assessment / treatment proposals.

Rev: 1

03/06/2023

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CONSERVATION INITIAL ASSESSMENT / TREATMENT PROPOSALS

This report is concerned only with the waterwheel and internal machinery and structures associated with the process of corn milling. The construction and structural integrity of the building is not covered. A photographic survey and a 3D scan support this document.

OWNER/S: Lorraine & Mark Fullbrook
OBJECT: Pilcot Mill
DATED: Circa 1750

IDENTIFICATION NO: N/A
CONSERVATOR: Nigel Spender
DATE: June 2023

DESCRIPTION Pilcot mill is sited on a tributary of the River Hart (186 786 528). Mills have existed on this site in the 15th, 16th & 17th centuries. The existing mill dates to circa 1750 and was decommissioned in 1928.

Pilcot Mill is a Grade 2 listed building. It is a three-storey, two stone corn mill that is timber framed with brick infill. (This is an unusual feature of Hampshire Mills). The mill features a half-hipped roof construction and is separate from the mill house.

The external iron curved bucket "Breast Shot" waterwheel is still in place but deteriorating.

The pitt wheel, hurst frame and all original gearing & machinery are still present and intact within the mill. This includes the sack hoist, grain bins, chutes and two pairs of stones, one of which is French Burr (white flour). Remains of two dressers survive on the stone floor.

Towards the end of the mill's life it was powered by an oil engine.

PREVIOUS MODIFICATIONS The former owner of the property, Geoffrey Finnigan, had been restoring the Mill, however he passed away before the restoration was complete. The restoration was funded by various grants. Records of the previous work undertaken are detailed within a comprehensive history file, in possession of the current owners. Previous building work was undertaken by R&R Builders, along with Malcom Cooper, a Millwright from the mid 1980s to the early 1990s.

CONDITION WATERWHEEL

The remaining assembly consists of a 14' long oak **axle**, of square and octagonal section, measuring 19" across the flats. The axle is supported at each end with a steel cross head gudgeon, measuring 3 ½" diameter by 3 ¾" long. The gudgeons are secured with wedges and two steel bands. The journal is sited in a half bronze bearing shell, and is mounted on a cast iron plumber block. The history file suggests the present axle was fitted in 1990.

The **pitt wheel** is mounted internally on the square section of the axle. The cast-iron pit wheel is a two-piece construction, designed to be fitted with 72 wooden cogs. No cogs are currently present. The internal axle section which supports the pit wheel is in good condition, however the pit wheel needs to be correctly secured and there is surface corrosion is present.

The pit wheel shows evidence of a strap repair to the outer edge. The wheel is cast by "J.F Watson Millwright". Currently the Pit wheel is sitting in silt to an estimated depth of 8"

The two **wheel frames** are present, without buckets and soleplates fitted. The cast-iron frames are of two-piece constructions, measuring 14' in diameter, of an 8 spoke design providing the mounting for 32 buckets and sole plates. The frames would be spaced at 6' apart and would be secured to the axle with oak folding wedges. The frames are currently, loosely positioned over the octagonal section of the axle with rotten and decaying oak folding wedges providing no security.

The wheel is a low Breast Shot type, which would be fitted with curved steel buckets. The water entry point is 6" below the centre line of the wheel. The rim of the frame casting is marked "C. Mills Andover". I estimate each frame weighs 1.5 tons

The river currently diverts the **wheel race**, instead flowing through two by-passes. The wheel race **penstock** is not fitted. The racks for raising and lowering the penstock are missing. The control shaft, one supporting plummer and bearing and two pinions are present. The wheel race or basin is full of silt, as is the area beneath the pit wheel. The wheel frames are sitting in the silt to an estimated depth of 2' This section of the frames cannot currently be assessed. The remainder of the frames present in general good condition with surface corrosion present.

N.B. Extensive rot and decay are present throughout the entire exposed axle timber, the frame that secures the wedges and the external plumber mount. The axle is beyond any repair and presents a significant hazard.

The wheel frames are currently totally reliant on the axle for support and security. Currently, should the axle fail, the wheel frames will pivot and roll. This would cause damage to the frames, brick pillars and pose a major risk to anyone present at the time. The wheel frames have indeed moved already because of the above mentioned, as such they are not sitting vertically, are not radially aligned nor correctly spaced.

MEAL / HURST FLOOR (GROUND)

The **mill floor** is accessed through a stable door fitted with original fixings and lock. Currently, this floor is being used for storage. A Hampshire Mills group have identified and recorded all items stored here (Appendix 3, Page 33).

Opposite the main stable door, on the wall parallel to the wheel race and to the right of the hurst frame is a set of steps to a landing area. From the landing area, a door can be accessed to exit the building and to access the waterwheel. Additionally, steps to the left of this landing area take you to the stone floor. Both sets of steps show signs of significant wear and are believed to be original. These should be preserved either in or out of situ.

ACRO props have been fitted to support the stone floor joists.

Historic graffiti is present on many of the **timber** uprights, which should be preserved either in or out of situ. Woodworm is also present in various timbers throughout this floor. Several timbers have been replaced and repaired across the entire floor.

The **hurst frame** is in good condition. Various timbers of the frame have been repaired or replaced. The area within the hurst frame has accumulated significant dust and dirt.

Overall, the **penstock control shaft** is in good condition, although the assembly is missing the operating handle and surface corrosion is present. It is mounted on the outside of the hurst frame, besides the lower set of steps to the landing area.

The iron **upright shaft** is sited in its bearing and is in good condition, however surface corrosion is present.

The iron **wallower** with 21 teeth is secured with ferrous wedges, all of which are in good condition, though surface corrosion is present.

The **great spur wheel** is a cast-iron, one-piece construction. In general, the great spur wheel presents in good condition, however it is missing most of its 120 wooden cogs and surface corrosion is present.

The 2 cast iron **stone nuts**, (each with 19 teeth), **bridge tree assemblies** and **lentering screws** are in good condition, however surface corrosion is present.

STONE FLOOR (level1)

This floor is accessed from steps off the landing in the hurst floor. A stable door is fitted on this floor, directly above the entry door on the hurst floor below. This door has been replaced at some time. To the right of this door are internal steps which lead to a level where the sack hoist assembly is positioned. Further steps lead up to the bin floor proper.

Various timbers, ironmongery and tooling are stored on this floor, including a door and steel straps from another tun.

Woodworm is present in various timbers throughout this floor. Various timbers have been replaced throughout this floor. The quality of workmanship varies.

The **sack hoist** is of mixed construction from timber and iron and is complete. The hoist is in good condition although surface corrosion is present on all ferrous surfaces. The sack hoist traps are complete however, the leather hinges are badly deteriorating.

Originally, the mill would have run two sets of **millstones**. Currently, one set comprises the bedstone, runner stone, rhynd tun and horse. The remainder of the stone furniture is missing; the hopper, damsel, and chutes. The **tun** has previous timber repairs (pine), and the **horse** is a later construction. Woodworm is present in the **horse**.

The second millstone is currently only fitted with the bedstone, which is complete with its rhynd. Two other millstones are stored on this floor.

With the waterwheel operating at 4 RPM the runner stones will be turning at 87RPM.

The **upright shaft** is in good condition on this floor, though surface corrosion is present.

The iron **crown wheel** is a one-piece construction. It is located on the upright shaft with wedges. All of the crown wheel's wooden cogs are present; however, they are all worn. Surface corrosion is present on all the ferrous crown wheel casting.

The **auxiliary shaft, pinions, pulleys** and **bearings** are all complete and in good condition. All but the bearings are ferrous. The bearings are non-ferrous (brass). Surface corrosion is present on all ferrous surfaces. Corrosion is also present on the brass bearing blocks (patina)

The remains of two dresser's survive on this floor. It's unknown currently whether these are of the Bolter or Wire machine design.

BIN FLOOR (TOP)

This floor is accessed via steps and a platform from the Stone floor. This floor is clear of objects; however, it has accumulated significant dust.

There are 5 grain bins in total. One large **grain bin / storage bin** is sited to the right of the access. This grain bin is fitted with a large curved edging timber. There are 4 further grain bins; two are located either side of the roof apex. The grain bins are in various conditions and completeness. A ferrous strap repair has been carried out on a **purlin** within the main grain bin area.

Woodworm is present throughout this floor. Various **timbers** have been replaced throughout this floor. Several timbers also present the marks associated with being cut on a large circular saw. Historic graffiti is also present on the rafters and the purlins. The rafters are numbered in Roman numerals.

The **sack hoist pulley** assembly is located properly and is complete. The assembly is generally in good condition

and is sited within the roof's apex. *N.B there are no ridge boards in the roof design.* Surface corrosion is present on the ferrous components of the sack hoist pulley assembly. The sack hoist traps are complete; however, the leather hinges are badly deteriorating.

The **roof felt** has two small holes directly above entry point. Various roof timbers are in poor condition.

- AIM**
- Complete conservation tasks in balance with the stakeholder's expectations for proposed redevelopment of the building.
 - Conserve the waterwheel and internal workings of the mill, including stabilising deterioration.
 - Conserve the waterwheel and internal workings of the mill to enable them to be operational in the future if desired.
 - To complete written and photographic documentation for future reference.

OPTIONS & WATERWHEEL

**PROPOSED
METHOD**

The wheel frames require immediate attention to rectify the axle rot and the consequent potential hazards. A simple repair can be carried out to temporarily relieve this problem. By placing timbers and straps between the frames, the structures will be secured to each other. A strap or chain used around the wheel frames and the RSJ to the rear of the penstock will secure the assembly. This repair will provide temporary security by stopping the frames from falling over and rolling should the axle fail.

Once the frames are secure, I recommend the wheel race be pumped dry and dredged. This will allow access to the wheel frames and to the floor area to be assessed. This will also aid in the clearing of the pit wheel area.

This work could be carried out while South East Water are installing the fish passage. They will already have all the necessary equipment and permissions. This is likely to be the most cost-effective solution.

N.B. The intention of dredging and pumping dry the wheel race needs to be communicated to the Environment Agency. Previously in 1990 when the mill was in the ownership of Mr Geoffrey Finnigan, with work being carried out by R&R Builders the agency wasn't notified of the act of dredging. Silt had entered the river, and caused discoloration resulting in a written warning of a fine being issued. (Appendix 2, Page 32).

Chocks can be designed and produced to wedge the wheel frames in the longer term. Potentially, timbers can also be placed on the race floor to aid any lifting of the wheel frames.

Once the above is complete a decision needs to be made around the intension of the waterwheel.

- Is the intention for the wheel to be static or operational?
- Will a penstock be incorporated that is functional or merely a visual representation?

OPERATIONAL

An **axle** will be produced, following the authentic and original design, from locally sourced green oak. A complete axle will naturally support the pit wheel. However, if required the **pit wheel** can be disconnected from the **wallower**, allowing the internal mechanism to remain static when the water wheel is operational. This can simply be achieved by removing the cogs.

The **wheel frames** will be built up with buckets and soleplates. These can be produced in either CorTen steel or galvanised steel. Galvanised steel will require etching and painting. All required steel fixings will be produced.

Top layers of the **brick pillars** will need to be removed to allow the axle to slide into position. Portable gantry frames will need to be erected to assist with the rebuilding. Where possible, all original components will be re used.

A **penstock** assembly can be produced in the appropriate timber, from either oak or green hart. Patterns produced and new rack assemblies cast. The penstock control shaft will need to be appropriately mounted and potentially a new plumber and bearing will need to be produced.

The **penstock control** within the building will require conservation to stabilise corrosion and enable operation.

The **river** will need to be diverted back through the wheel race. *N.B. Intention of such work will need to be comprehensively communicated to the Environment agency and proposals agreed.*

STATIC

The **axle** will be cut, leaving the **pit wheel** supported on the internal section of axle, while the rotten external section will be cut and removed. The pit wheel will need supporting and securing throughout, which relies upon dredging and clearing the pit floor.

The **wheel frames** would be built up with buckets and soleplates and secured as a separate entity. This will serve as a visual representation and provide the required structural stability. Discreet tier rods could be produced to secure the assembly to the RSJs at the rear of the penstock. A representation of an axle could then be fitted, for example using douglas fir, incorporating the original gudgeon and plumber.

This option would allow for the brick work at the axle entry to be filled in thus sealing the building. This option will provide a visual interpretation of the waterwheel, while preserving all original components, and allowing for a conversion back to operating condition in the future if required.

A second option would be to replace the axle in green oak as outlined above for an operational wheel. However, the need to divert the water course can be neglected. This option arguably allows for the easiest transition back to an operational condition. However, this option represents a large body of work and expense which may not be considered appropriate if the intention is for the wheel to remain static in the longer term.

All options require:

- The current rotten axle to be removed.
- The wheel frames to be lifted and orientated correctly before they are secured in position.

Ideally, a crane would be on site for one day to lift and support the frames so they can be correctly aligned and positioned. However, the building layout obstructs access which will likely make the crane lift an unviable option. Therefore, dredging the wheel race is crucial for any lift and may also allow for the frames to be raised from the race floor, with the aid of timbers and jacks in lieu of a crane.

HURST FLOOR /STONE FLOOR / BIN FLOOR

Until planning has been approved, details of the required conservation work cannot be confirmed. Below is a broad-brush approach for the interim period:

- All floors to be cleared of unnecessary items.
- Clean all floors and all components of dust and dirt.
- Dredge and clean floor area beneath pit wheel.
- Apply pest treatment / preservative to all timber.
- Mechanically abrade /soak or apply citric acid where appropriate to remove surface corrosion.
- Apply either Ensis DW6055 wax or warm micro – crystalline wax / or a paint finish built upon a high zinc content undercoat to ferrous items.

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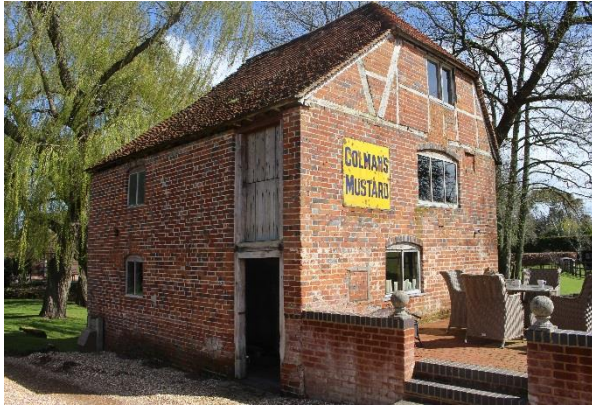


Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8



Figure 9



Figure 10



Figure 11



Figure 12



Figure 13



Figure 14



Figure 15



Figure 16



Figure 17



Figure 18



Figure 19



Figure 20



Figure 21



Figure 22



Figure 23

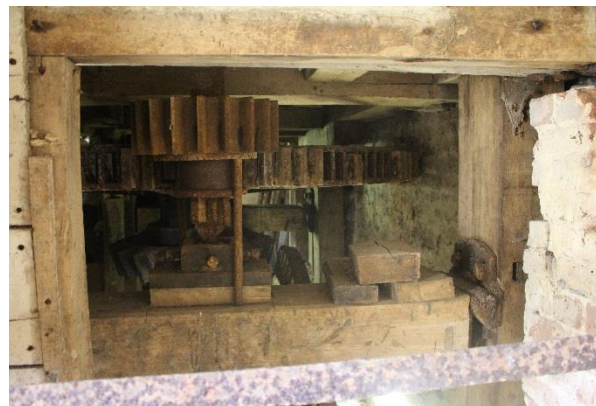


Figure 24



Figure 25



Figure 26



Figure 27



Figure 28



Figure 29



Figure 30



Figure 31



Figure 32



Figure 33



Figure 34



Figure 35



Figure 36



Figure 37

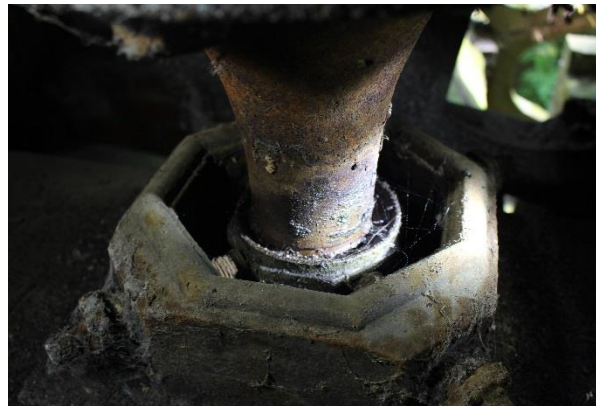


Figure 38



Figure 39



Figure 40



Figure 41



Figure 42



Figure 43

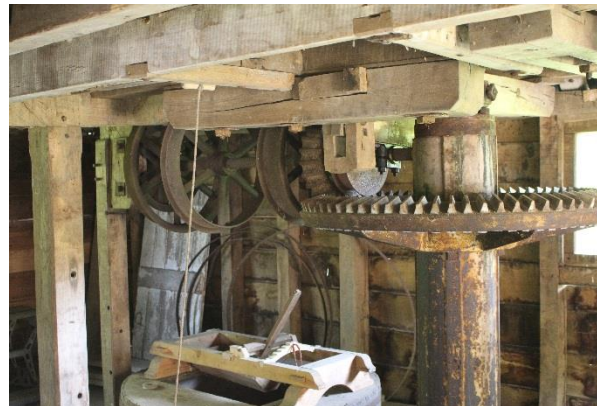


Figure 44



Figure 45



Figure 46



Figure 47



Figure 48



Figure 49



Figure 50



Figure 51



Figure 52



Figure 53

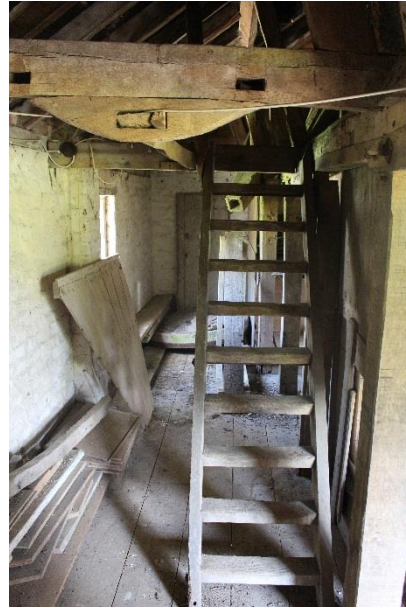


Figure 54



Figure 55



Figure 56



Figure 57



Figure 58



Figure 59



Figure 60



Figure 61



Figure 62



Figure 63



Figure 64



Figure 65



Figure 66

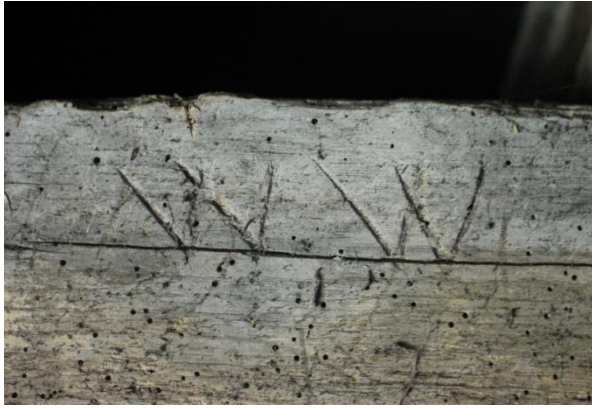


Figure 67



Figure 68



Figure 69



Figure 70



Figure 71



Figure 72



Figure 73



Figure 74



Figure 75



Figure 76



Figure 77

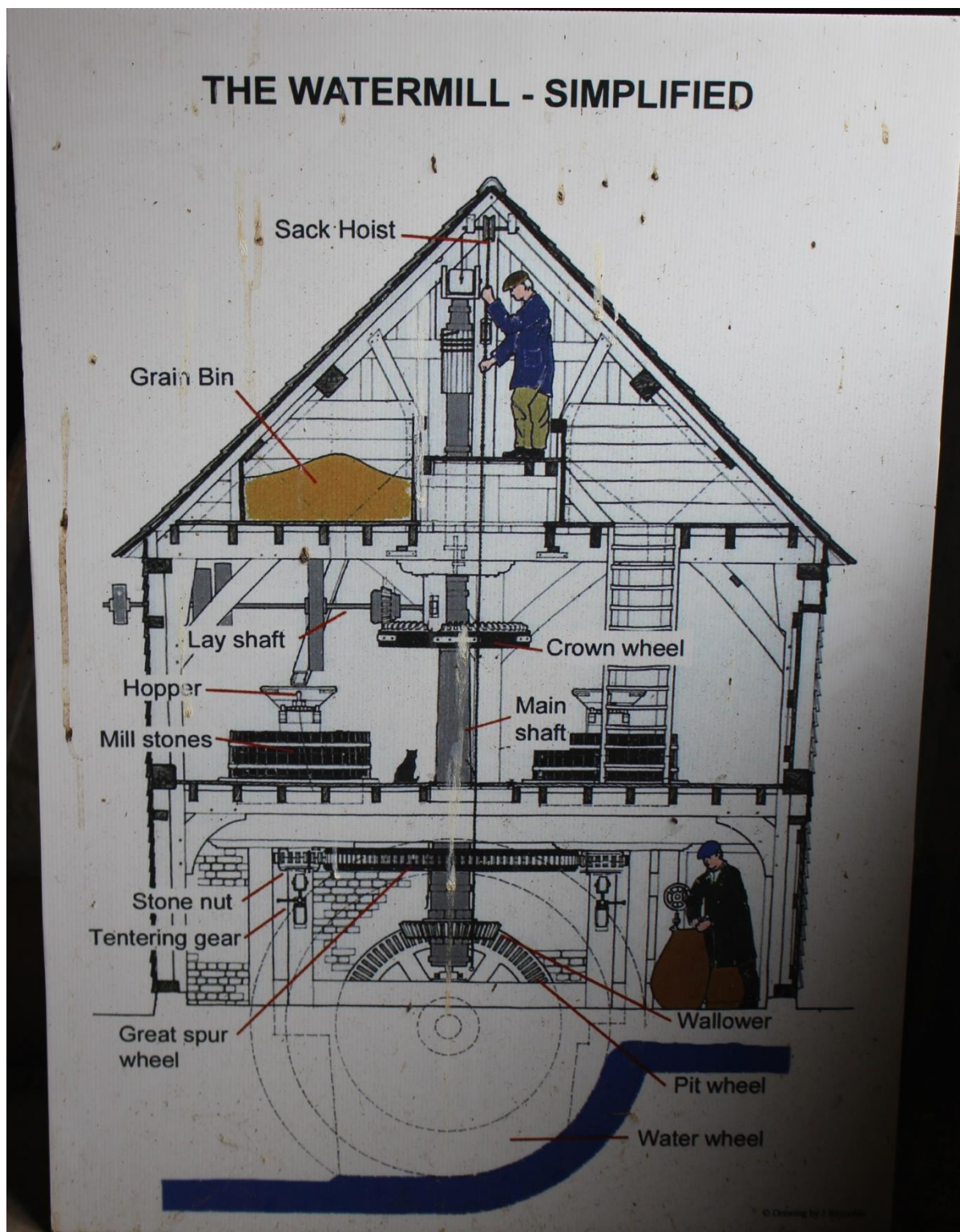
GLOSSARY

- Axle** The shaft carrying the waterwheel. Also referred to as the wheel shaft.
- Bearing** The part of a machine which supports a journal, usually made of brass or gun-metal.
- Breast Shot Wheel** A waterwheel which is turned by the weight of water in its buckets. The water enters the buckets at about the level of the wheel shaft. Developed in the 18th and 19th centuries.
- Bucket** Partitions or receptacles around the rim of a waterwheel in which the water is held. The weight of the water is used to to turn the wheel. In cases where a high velocity flow of water is directed into the buckets, some kinetic energy may be converted into useful energy by the wheel. Buckets are fitted to Overshot, Backshot and most Breast-Shot wheels. May vary in shape.
- Crown Wheel** A horizontal gear wheel mounted above the great spur wheel near the top of the main upright shaft, from which secondary drives may be taken for auxiliary machinery including the Sack Hoist.
- Cogs** When the 'teeth' of a gear wheel are separate and replaceable they are called cogs. May be wooden (or metal). Need to be a resilient close-grained wood. Woods used: Apple, Beech, Pear, Hornbeam, Oak, Acacia, Hawthorn, Holly, Ash and Oak often being used for wet work. Wooden cogs, the shanks of which are fitted tightly into mortises in the rim of the wheel after the fashion of a tenon, are secured by wedges or pins after the fashion of tusk tenons.
- Dresser** Device used to separate flour from sharps & bran, and grade it into several qualities. A type of cleaning, or dressing, machine using a fixed cylindrical frame covered with a wire mesh containing rotary brushes.
- Floats** The wood or metal blades, or paddles, of an undershot waterwheel. Often made of Elm, Oak or Pitch-pine. Fixed by the starts to the rim of the wheel. The boards are pushed by the water to turn the wheel by absorbing kinetic energy from the water.
- Great Spur Wheel** Main driving wheel mounted on the upright shaft, transmitting drive to the stones via stone nuts. May also provide drive for ancillary machinery.
- Governor** A regulator, generally of the centrifugal type, which detects the speed of the machinery similarly to control the water flow to and hence the speed of a waterwheel.
- Gugdeon** Bearing pin or journal with four wings, which the end of the shaft is shaped to fit and securely hold the wings to hold the bearing pin true.

-
- Hurst** Heavy timber or iron framework supporting millstones at floor or shoulder level, & enclosing the main gearing in the water or windmill. Sometimes independent of the main structure of the mill especially in America.
- Journal** The neck or bearing portion of a shaft in machinery.
- Millstone** One of a pair of circular stones for grinding corn. (Bedstone /Runner stone
- Pintle** The projecting piece of iron from the end of a shaft that runs in a bearing.
- Pit Wheel** In a watermill the primary gear wheel mounted on the inner end of the wheel shaft, often in or partly in, a pit in the mill floor.
- Plummer Block** An iron casting containing a bearing to support a rotating shaft.
- Pit Wheel** The primary gear wheel mounted on the inner end of the wheel shaft / axle, often in or partly in, a pit in the mill floor.
- Penstock** A sluice gate controlling the flow of water onto the wheel or launder, or the tube conveying water to the turbine.
- Race** The channel of water to and from the wheel.
- Rhynd** A device set across the eye of the runner to support the stone and take the drive.
- Sluice** A gate to control the flow of water, by raising or lowering.
- Starts** Short spurs of wood or metal, projecting from the rim of a waterwheel to support the floats.
- Soleplates** A timber, sheet-iron or steel lining to a waterwheel or a board that forms the inner face of an individual bucket.
- Stone Nut** Small cogged pinion mounted on the stone spindle or quant, which is driven by the great spur wheel.
- Tun** A removable circular or octagonal wooden or metal casing enclosing the millstones. Tun is also known locally as a vat, case, casing, hurstle, box, crib, crub, krub, crubble, ringing, or hoop.
- Tentering** Adjusting the gap between the millstones, thus regulating the fineness of the meal. Also known as lightening.
- Upright Shaft** The main vertical driving shaft of a wind or water mill upon which the wallower, the great spur wheel and the crown wheel are mounted. Also called a main shaft.

Wallower The horizontal bevel gear driven by the pit wheel to turn the upright shaft or layshaft. It is the first driven gear wheel in a wind or watermill.

Wheel Shaft The wooden or iron shaft on which the waterwheel is mounted. See also axle.



HAMPSHIRE

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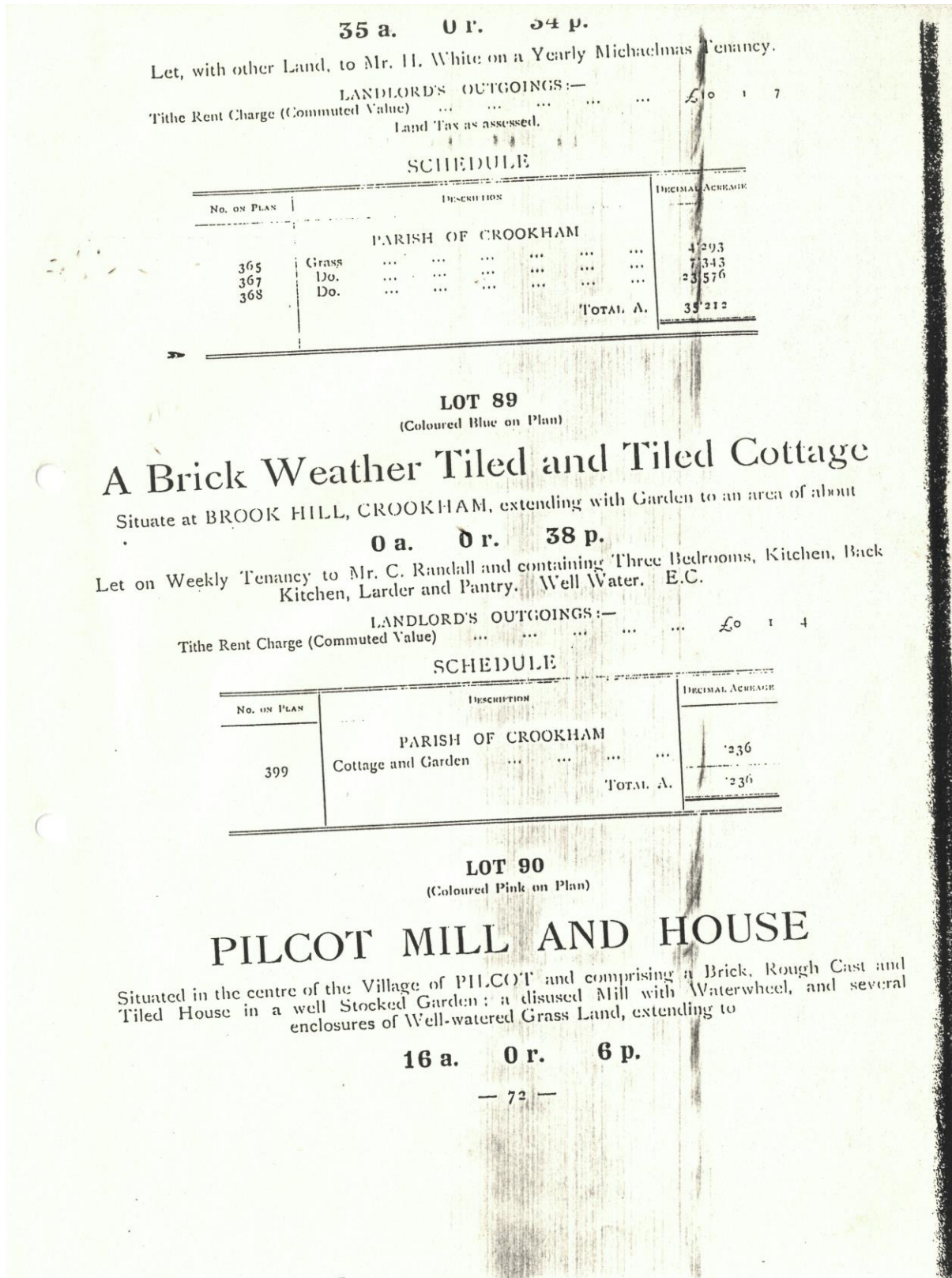
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(Sir Howard Frank, Bt., K.C.B.; John Frederick Knight; Alfred J. Burrows and Arthur Horace Knight)

*at the Town Hall, Basingstoke, on Tuesday, 14th September, 1920,
at 2.30 o'clock precisely.*

(unless previously disposed of privately).



Part of the Land is in hand.

The House

Contains:—Sitting Room, Kitchen, Scullery with Copper, Three Bedrooms, Two Attic
Garden. E.C.

The Mill

Includes Grinding Room, Store Room, Engine Room (no Engine).

The Outbuildings

Include Cart Shed, Wood House, and Carpenter's Shop, Painting Shop, Stable for Two and
Hen House.

LANDLORD'S OUTGOINGS:—

Tithe Rent Charge (Commuted Value) £6 6 0
Land Tax as assessed.

SCHEDULE

NO. ON PLAN	TENANT	DESCRIPTION	ACREAGE	TOTAL QUANTITY
PARISH OF DOGMERSFIELD				
118	J. Holland	Buildings and Yard	562	
124		Part Stream	855	
125		Pool	476	
126		Grass	903	
126A		Marsh	920	
128		Grass	2'341	
129		Do.	3'464	
				9'521
122	In hand	Grass	1'647	
123		Do.	2'938	
127		Do.	1'933	
				6'518
			TOTAL A.	16'039

LOT 91

(Coloured Blue on Plan)

**A Pair of Half-timbered Brick and
Tiled Cottages**

situate near Pilcot Bridge, Pilcot, and. with Gardens, extending to an area of about

0 a. 1 r. 32 p.

Let on Weekly Tenancies to Mr. J. Holdaway and Mr. G. W. Prince, and containing
respectively, Three Bedrooms, Kitchen and Scullery, and Two Bedrooms, Kitchen, Scullery
and Pantry.

Company's Water. E.C's. Wood Sheds.

LANDLORD'S OUTGOINGS:—

Tithe Rent Charge (Commuted Value) £0 3 0

SCHEDULE

NO. ON PLAN	DESCRIPTION	DECIMAL ACREAGE
PARISH OF DOGMERSFIELD		
121	Two Cottages and Gardens	448
	TOTAL A.	448



DATE: 28 June 1990

Mr R R Taylor
'R & R Builders'
7 Lansdown Road
Alton G34 2HB



National Rivers Authority
Thames Region

Your Ref:
Our Ref: DOGD/GENE/TW/SG
Please refer to:

Dear Mr Taylor

Water Act 1989
Re: Pollution of River Hart at Pilcot Mill

I have received a report from my Pollution Officer, Miss T Woodward, that whilst routinely inspecting the River Hart at Dogmersfield, she noticed that the river was significantly discoloured. The source of the pollution was traced to 'Pilcot Mill' where your firm were carrying out renovations to the Water Mill.

Under legislation laid down under Section 109 of the above Act, it is an offence 'to remove from any part of the bottom, channel or bed of any inland waters a deposit accumulated by reason of any dam, weir or sluice and in doing so cause the deposit to be carried away in suspension in the waters'.

Any such offence is liable to prosecution with fines of up to £2,000.

Should you decide to carry out any such work in the future, that may affect the river, I would be grateful if you could contact the N.R.A. at the address below or by telephoning (0734) 311422.

Yours sincerely



N L Marshall
Principal Pollution Officer

Fobney Mead
Rose Kiln Lane
Reading
Berks
RG2 0SF
Tel: (0734) 311422
Fax: (0734) 311438

11

PILCOT MILL, DOGMERSFIELD, HAMPSHIRE.

Date: 19th April and 4th May 2011.

HMG members attending: 5 number, at each date, (listed separately).

Reason for HMG works at this Mill.

At the request of the owners (Peter and Sarah Finnigan), HMG to clear out of the mill, loose items of non-mill related artefacts and materials. Prepare a list of equipment, tools, materials and artefacts which are of molinological importance or are reusable in the building restoration or millwrighting. This includes the separation of the blacksmith forge, all associated tools, equipment and inclusion of sound oak timber in the cart shed

INVENTORY

Mill, Hurst Floor:

1. Set of new crown wheel timber teeth (in two cardboard boxes).
2. Box of paired timber wedges (c.30 to 35 No.) + 20 loose (mixed).
3. Flour shute, built of timber with part steel lining, marked 'right shute'.
4. Pack of 10 No. 3 ft x3" x 1/2" timber boards which are reeded both sides.
5. 2 No. steel waterwheel floats. (one ex-mill, one new/unused) as patterns, for reuse.
6. 1 No. 5 ft x 6" x 4" old pine (with some nails) but sound.
7. Steel sole plates (ex-waterwheel ?) 3 riveted together, making 64" extrados & c.36" wide.
8. 8 No. steel Acrow Props – various lengths, fair condition.
9. 2 1/2" sq steel vertical drive shaft (for stone nut) 59" length with pintel end.
10. Part of compact steel, flour separator machine with spiral brush to 3 outlets (length 2ft).
11. 2 associated cast iron bearing frames for above.
12. 1 footstep bearing box (adjustable).
13. 2 No. (1 1/2" & 1 3/4" diam) steel line shafts, 2 ft and 3 ft long..
14. 3 No. cast, line shaft pulley wheels, various diameters..
15. 1 wooden two part, pulley wheel for belt drive, c.19" diam.
16. 3 No. lengths, 2 1/2" diam reinforced water pumping hose (one with suction filter).
17. Part roll of 6" wide sheet lead (4 lb) for external flashing.
18. Part roll of modern 6" DPC.
19. Part roll of modern 9" DPC.
20. Complete Darts Board in wall hanging hinged case.
21. 19 No. 9" x 3/4" t&g floor boards.- good to new condition.
22. 3 No. timber, short four legged stools.
23. 1 No. 28 lb standard weight. – *borrowed by ME to check scales at Longbridge Mill.*
24. 29 No. 5 3/4" wide oak boarding in lengths of 4 to 5 ft.

Mill, Stones Floor:

25. Scaffold boards of mixed lengths (about 10) stacked behind stones.
26. Mixed various construction timbers (largely c.4" x 2") stacked against roadside wall.
27. Mixed ironmongery, some new and unused, stacked in bags and boxes on floor.

Double Garage Floor: All except heaviest items moved into Mill.

28. Blacksmiths Anvil (in adjacent store) the stand is separately listed (in Garage)..
29. Blacksmiths Forge, incorporating manual bellows air pump below.
30. Steel stand for mounting base of Anvil.
31. Hand sheet metal cutter or snips.

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- 22
 32. 2 No. sledge hammers, (14 lb & 7 lb).
 33 4 No. forging/shaping hammers with one head only.

Blacksmith forging tools:

- 34 36 No. tongs, various.
 35 26 No. Swaging tools, various, (upper with handles).
 36 32 No. Swaging tools, various, (lower no handles).
 37 3 No. large steel drills bits, mortise taper.
 38. 1 No. steel blade, possibly leather tanning scraper.
 39. 1 No. scaffold clamp (old form).
 40. Large pair of sheet steel shears, c.3 ft long.
 41. 2 No. carpenters 'G' clamps. *(Taken home by dp to restore on advice).*
 42. 1 No. cleaver (blacksmiths).
 43. Forge cutting/forming set, (for 2" sq bar).
 44. 1 No. cobblers shoe last, (small size).
 45. 1 No. mattock, small size.
 46. Small traditional bellows.
 47. Steel adze head.
 48. Steel pickaxe head.
 49. Builders shovel.
 50. Ratchet fed, steel drill feed control, (for forge use).
 51. Plain soldering iron.
 52. Manual rotating air blower for blacksmiths.
 53. Engineers height gauge - antique (about 15" high).
 54. 2 No. builders band stands (blacksmith use).
 55. 'Enneck Bender' machine, for blacksmith, *(adjacent Forge).*
 56. Good sound timber from garage, (largely 4"x 2") moved into Mill, including 16 ft, 5" x 5".

Cart Shed & wood store:

57. Mixed corded hardwood timber (largely oak) within cart shed, in the following sizes:
 Triangular, 4 lengths of 5"x 5".
 14 No. lengths, 8"x 2".
 2 No. lengths, 6"x 6".
 1 No. length, 5"x 4".
 3 No. lengths, 9"x 10" or 9"x 9".
 This has been retained in the cart shed and not disturbed.
 Please note that sheets of old expanded polystyrene are retained in the shed and require removal.

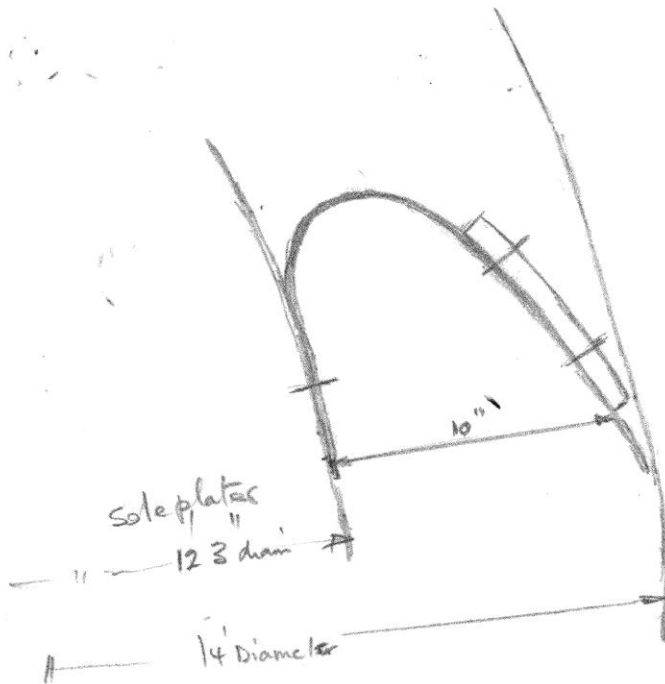
Origination, from two site listings, by David & Alison.

Editing, by David Plunkett, for Peter and Sarah Finnigan.

Email: david@millbowl.co.uk - for HMG.

Pileot Mill

BUCKET PROFILE



STEEL PLATE - Buckets

24" x 1/8" x 70"

32 off

SOLE PLATES

25" x 1/8" x 70"

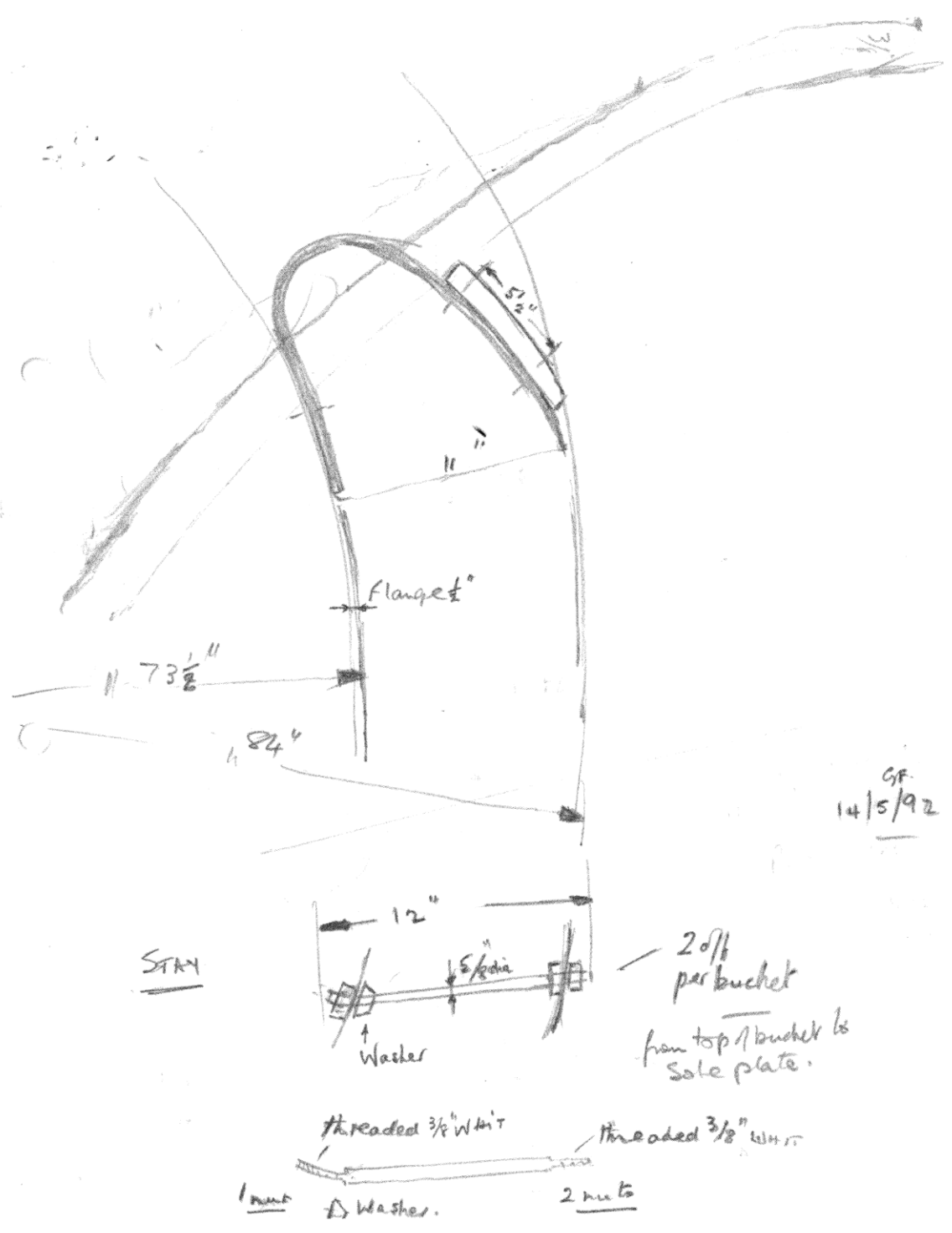
20 off

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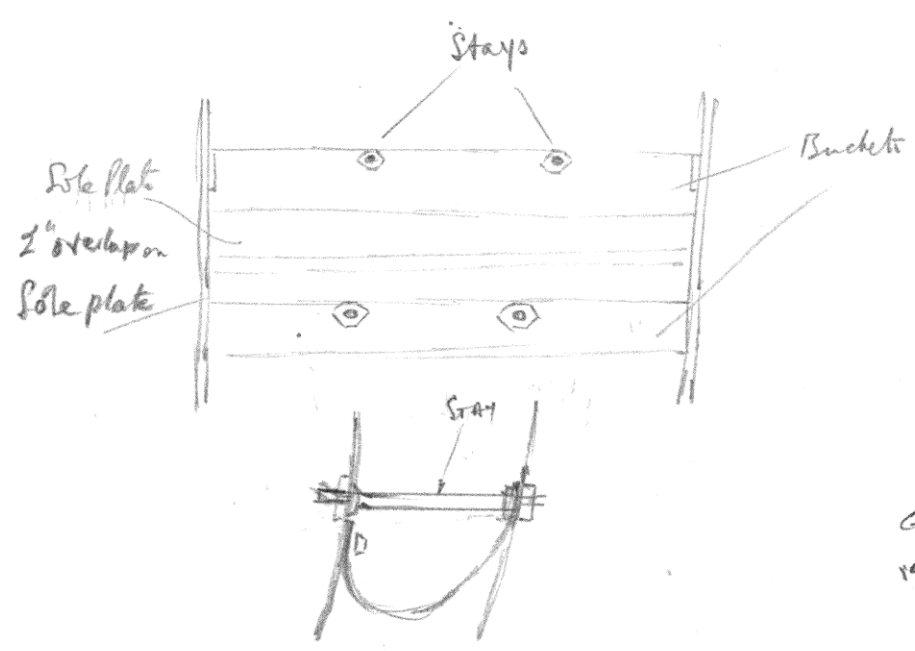
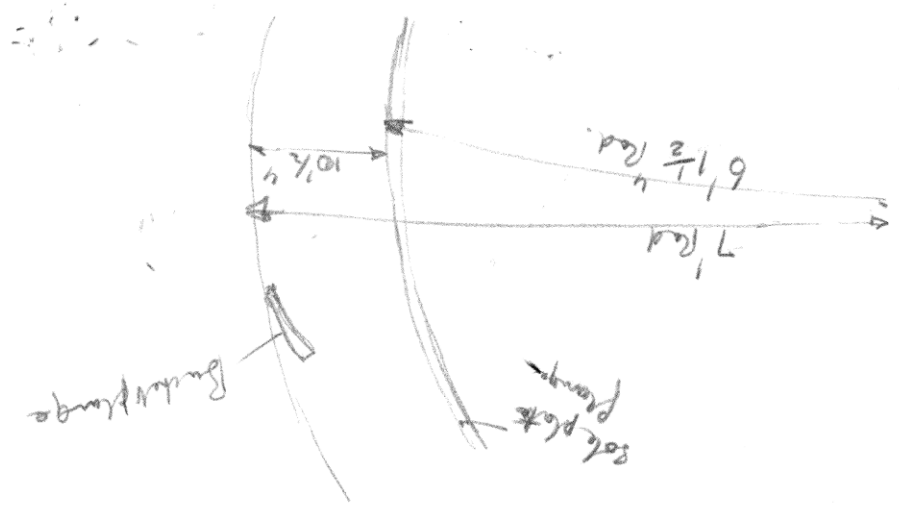
Bucket Holes needed 3 on each side plus two fasteners
Total 8 per bucket

Sole plate Holes needed - Best drilled in situ.

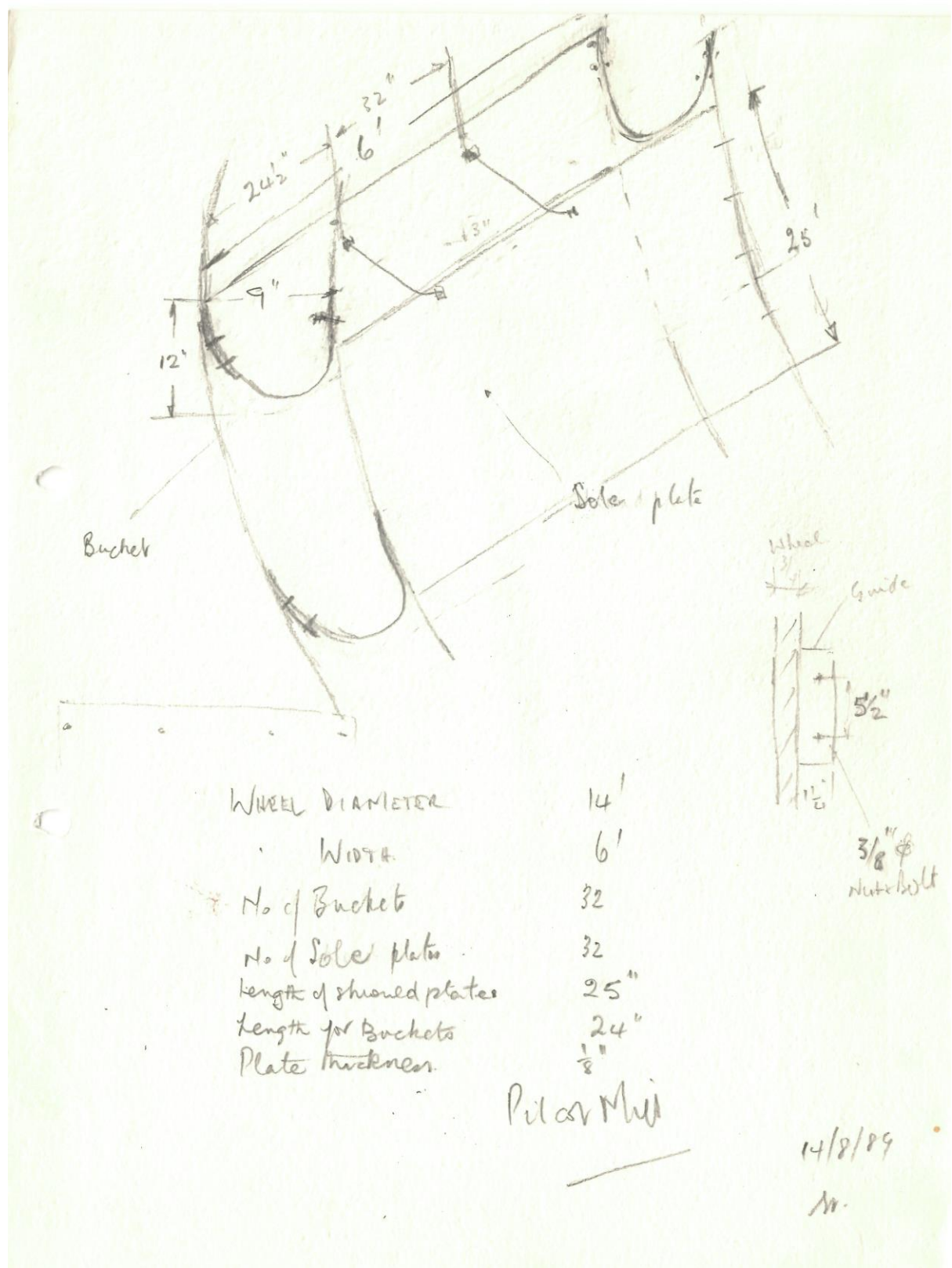
PILCOT MILL



PILCOT MILL



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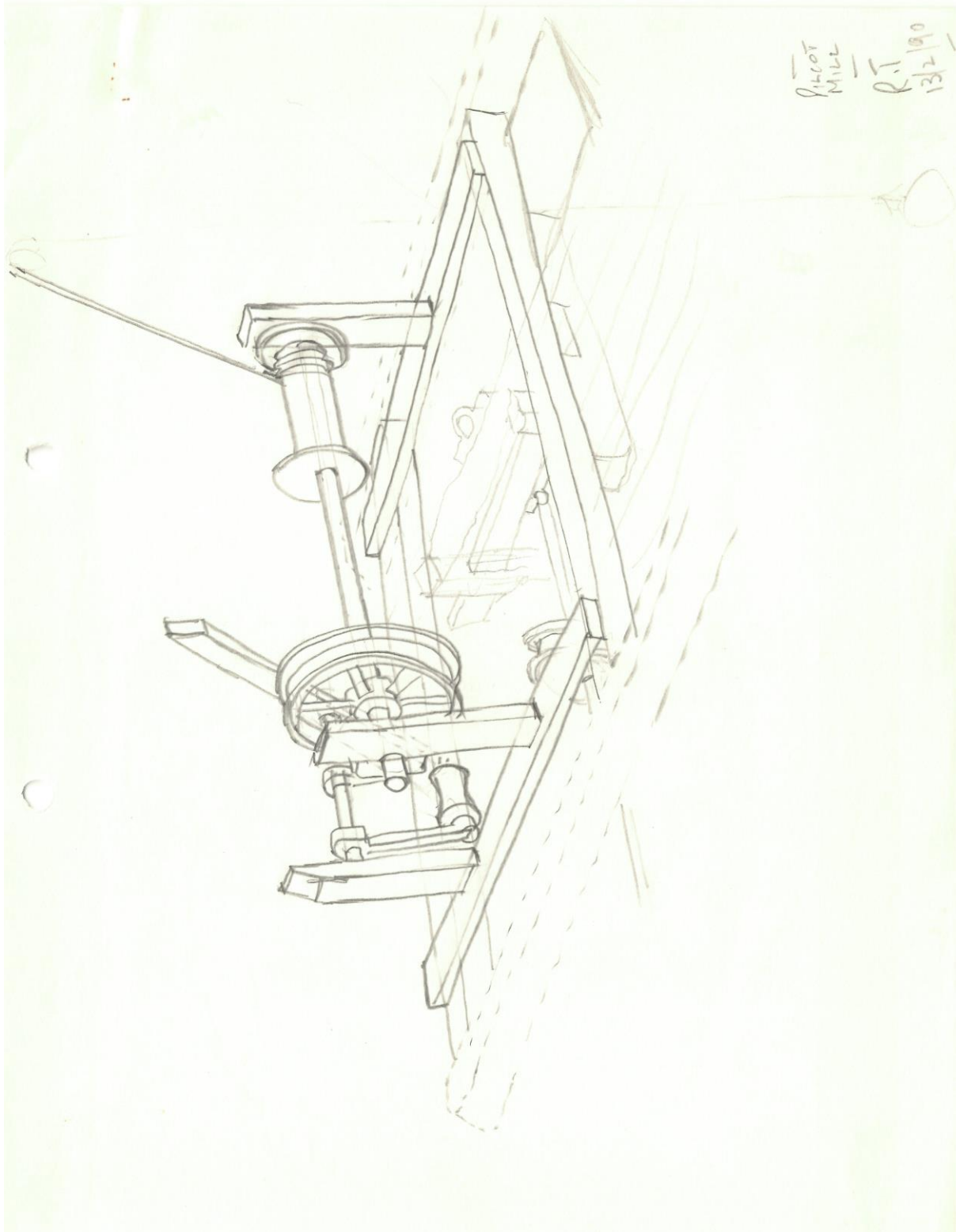


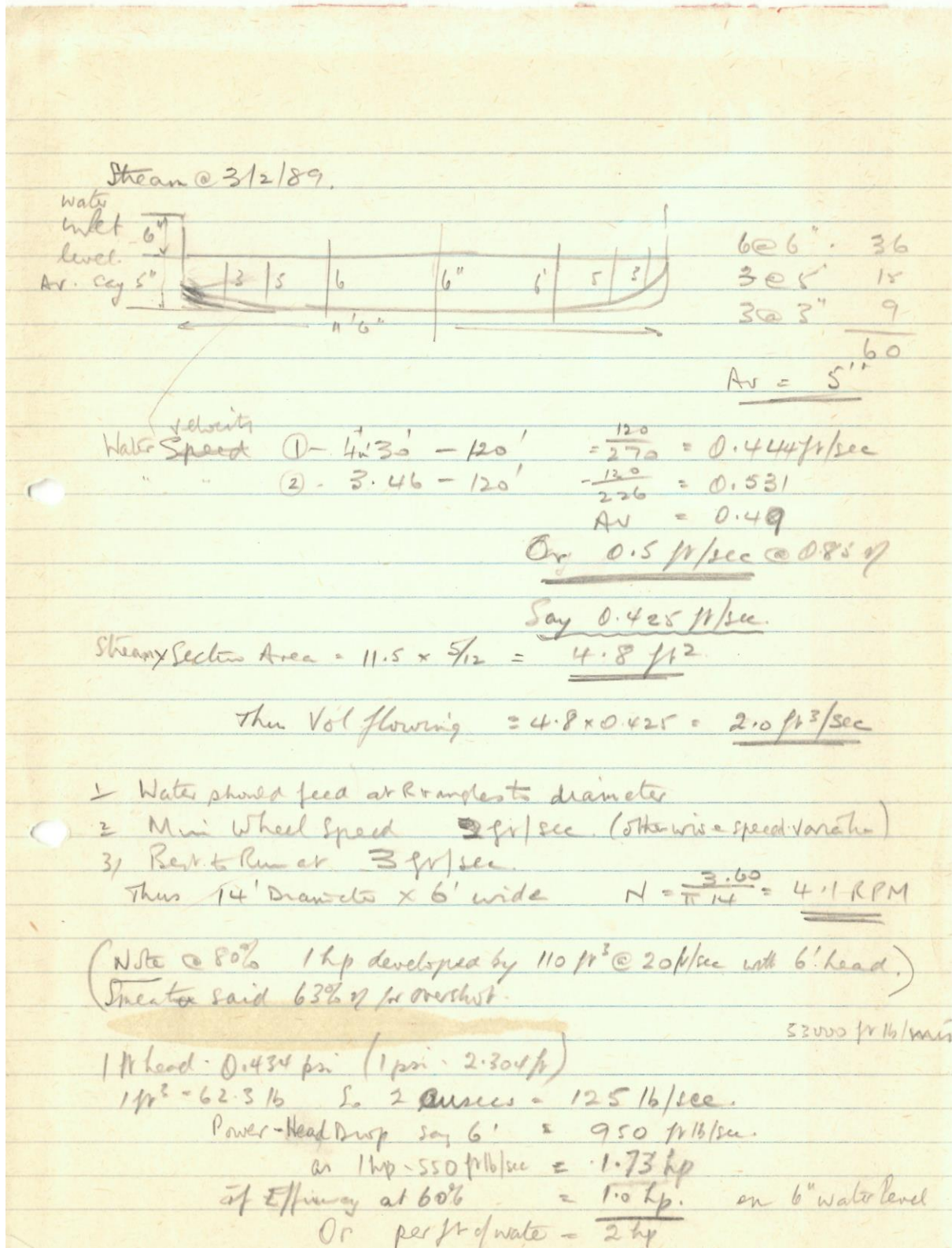
WHEEL DIAMETER	14'
WIDTH	6'
No of Buckets	32
No of Sole plates	32
length of shrouded plates	25"
length for Buckets	24"
Plate thickness	1/8"

Pilar Mill

14/8/89

M.

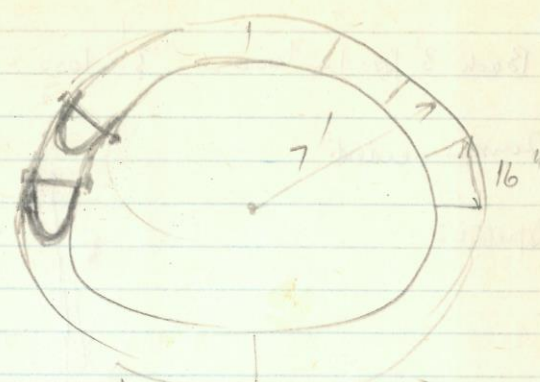




$\frac{19}{72} \times \frac{120}{21}$

Pit wheel - 72
 Shaft Cog - 21
 Great Spw wheel - 120
 Stone mt - 19

$\frac{72}{21} \times \frac{120}{19} = \frac{8640}{399}$
 Ratio = 21.7:1
 at 4 RPM = 86.8 rpm stone.



Wheel Diameter 14"
 Width 6"
 No of Buckets 32
 Bucket Plate Length 24"
 Centre Plate length 25"
 Entry position 6" below C of wheel
 " gap 1"
 Flow Velocity 0.5 ft/sec. (to 2.5 ft/sec)
 Vol of flow at entry level. 5 cusecs. (10 ft² * 0.5 ft/sec)
 Say increase at 5 cusecs/foot.
 Head drop say 6 ft. max.
 Water Press (fr 1 head) 0.34 psi
 Water level at entry - 1 ft
 On Min water (1 ft from entry) = 10 cusecs
 Then at 60% of min water
 $hp = \frac{10 \cdot 62.3 \cdot 6 \cdot 0.6}{550} = 4.1 hp$
 At 2' above entry = 15 cusecs available
 Flow power = 6 hp
 Torque = 22 * 14 * 12 = 528

