ALVINGHAM MILL
LINCOLNSHIRE

J A Sass

Lincolnshire Mills Group 2021

Alvingham Watermill

Fig.1 Alvingham Mill, extract from OS 1:2500, Lincolnshire XL VIII.7, 1888

H.E.R Ref:41259; Listing Entry No: 1063077, Grade II*

Nat Grid Ref: TF 36654 91406

Address The Water Mill, Church Lane, Alvingham, LN11 0QD

East Lindsey District Council

Watermill with adjoining Mill House, complete and in good condition.

Water course: River Lud

Cover photograph: Alvingham Mill in 1993 before the 1900 red brick extension to the left, built in 1900, was demolished.

Introduction

There has been a watermill at Alvingham since at least the middle of the 12th century. The mill was the lowest downstream of nine water powered mills of various industries operating on the River Lud in the late 18th century and early 19th century. The present mill and adjoining house were rebuilt in c 1782 and the mill was remodelled twice in the 19th century. It ceased commercial operation in 1968 on the death of the miller, Tom Bett. The property was renovated to pristine condition by the Davies family after purchasing it in 1972 and the machinery is still operable with a live water supply.

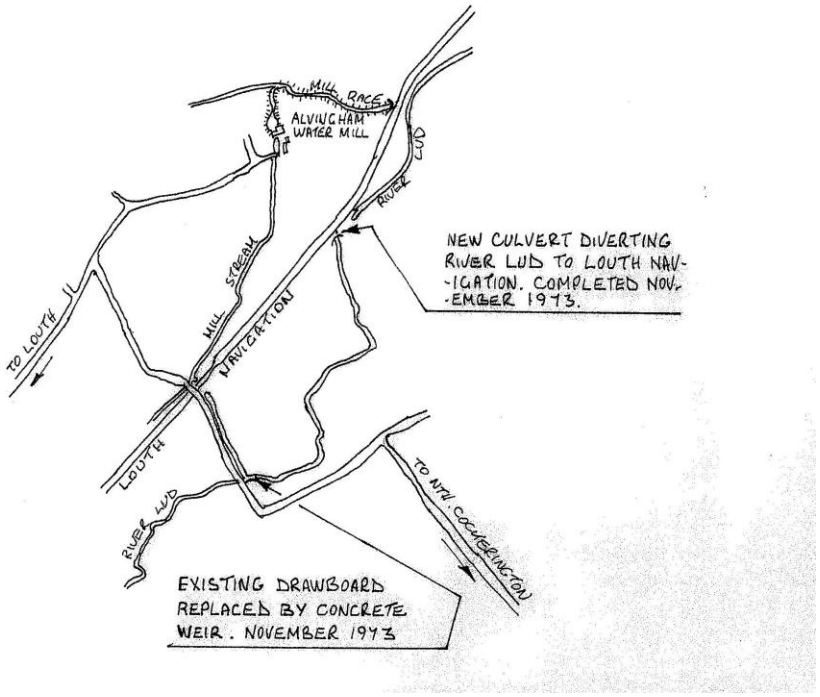


Fig.2 Watercourses to the mill with changes made following the Louth canal being designated as the main river c1972 (plan by Phil Davies)

The River Lud and the mill's watercourses

The River Lud has its source on the eastern escarpment of the Wolds to the west of Louth where chalk streams issuing from several springs come together to form the small, fast flowing river, before it babbles through the picturesque Hubbards Hills and onwards through Louth. It has powered numerous mills since the mediaeval period including corn, fulling and later leather; woollen spinning mills, and a paper mill; Alvingham mill was the lowest down stream of these.

The original course of the Lud turned north at Washdyke Corner on the road between Alvingham and North Cockerington, and passed close to Alvingham Mill, where a natural fall in the land of 5’0” (1.52 m) allowed extra power to turn the waterwheel.

The route of the Louth Canal, surveyed by engineer John Grundy Jnr. depicted in his plan of 1756, proposed that it passed to the north of the mill so not to disrupt the water course to the mill. The eventual route came to the southeast of Alvingham and skirted past the two churches of Alvingham and Cockerington. This necessitated the construction of a syphon to take the Lud under the canal at Alvingham Lock so the mill could be supplied, and a further syphon to allow the mill’s tail race to go under the canal northeast of the mill to rejoin the river.

After the canal finally closed to traffic in 1924, following the disastrous “Great Louth flood” in May 1920 several changes to the course of the Lud were made between the Riverhead and Keddington. In c1962 the route of the river Lud, which had flowed through a culvert at the side of Thames Street, was abandoned, leaving Baines’s mill without water; this was primarily to improve drainage. A syphon was installed a few metres upstream of Keddington lock and the sill of its top gates was raised to act as a weir to maintain the water level at the correct height to feed the syphon, (and Alvingham Mill). At Alvingham the syphon under the canal for the mill’s tail race was abandoned when the lock gates were removed, and the navigation water level was lowered in 1941/42; the water could then flow into the canal over a small weir.[1] In 1972 the former Louth Navigation was designated as the main river.

In June 2018 water in the canal found its way behind the sides of the derelict lock chamber at Keddington, and the flow of water into the Lud ceased. Fortunately, after negotiations between the mill’s owner and the relevant authorities empowered with the upkeep of the waterway, the remains of the collapsed lock chamber were removed, the banks repaired, and a new weir was installed to maintain the water level in the canal sufficient to feed the river and supply Alvingham mill.

Fig.3 The mill in the 1920's showing the old bridge to Abbey Farm, head race pond and outbuildings to centre right. (Courtesy of Mrs. J. Shucksmith)

History

There has been a watermill in Alvingham for over 900 years. The cartulary of the Gilbertine Priory records that William of Friston and John, son of Peter of Meaux, both gave a mill in Alvingham in the mid-12th Century. In 1538 when the priory was closed, Alexander Randale had been the tenant miller.[2] In 1662, a Humphrey Maddison purchased Alvingham Manor including one watermill, this began a long association of this family with the mill.[3]

Descendant, John Maddison, received compensation of £120.7s.9d (present equivalent, allowing for inflation, £20,386.45) for the loss of land taken, and loss of water supply to the mill during the construction of the Louth Navigation. This was £34.12s.3d less than the initial assessment by the Commissioners due to arbitration and legal fees resulting from Maddison's disagreement with the initial adjusted compensation figure of £162.0s.$3^{1/2}$d! With this money he took the opportunity to rebuild the property.

This was carried out circa 1782 and comprised the surviving red brick mill house of two stories with an adjoining mill building of the same height extending to the present eastern wall of the waterwheel channel.[4] The mill in this period would have been equipped with an external wooden waterwheel and predominantly wooden gearing and shafting. Course pitched wooden cogs would have been driven the larger diameter millstones of that period at a slower speed than those developed in the 19th century.

By the early 1820s a new owner, William Smith, updated the mill and employed millwright John Saunderson senior, of nearby Louth, to upgrade the machinery. The present waterwheel was of that period with later modifications. Using evidence from other watermills fitted out by Saunderson in the 1820s, it would be expected that the gear wheels and upright shaft would be in wood with cast iron face gear segments to the pit wheel and Great Spur Wheel. The mill was first described as having three pairs of stones after this refit. Saunderson also built a five sailed tower mill for Mr Smith at Hundleby, near Spilsby, circa 1824.[5]

By 1834 Smith had taken up residence at the Hundleby tower mill and he had let the Alvingham mill to William Taylor at which time it was also described as having stabling for four horses, sheds for four beasts, cart sheds and piggeries together with a drying kiln and 12 acres of land with a rent of £70 a year. In the early 1870's the mill building was extended beyond the waterwheel channel and bypass to the west to provide more storage and space for ancillary grain cleaning and flour dressing machinery, and a third storey was added to the whole mill.[6] John Saunderson junior remodelled the machinery at that time, incorporating cast iron gearing and shafting,

From at least the mid 1860's the watermill was supplemented by an open trestle post mill which had been moved from another site. It was set on an eminence in a paddock bounded by Abbey Road to the west and Highbridge Road to the north of the watermill. It had two pairs of stones, four hand clothed sails and a stone neck bearing. A wooden tram way allowed grain and meal to be moved between the mills and canal. A former Saunderson employee, James Emerson, working in the periods 1866 – 1874 & 1876 – 1878, left a cryptic note of the mills he had helped erect and renovate, Alvingham post mill and the 'rat infested water mill' came in the latter category. It was damaged by a storm in 1903 and demolished by Saunderson in 1904. John W. Saunderson later told Rex Wailes that miller, William Bett had gone to the pub at lunchtime, leaving strict instructions that the mill should not be "thrown down" until he returned.

Time was getting on and Saunderson wishing to complete the demolition and return with his men to Louth that evening, downed the mill much to Mr. Bett's annoyance on his return home later in the afternoon![7]

The mills were latterly worked by the Bett family, initially by Robert Bett who came here from Stickney by 1855. Son, William Bett took over following his father's death in 1874, but was declared bankrupt in the Autumn of 1893, probably reflecting the declining fortunes of a rural miller during the Great Agricultural Depression and increasing competition from roller flour mills. However, he continued to be listed as miller and baker until 1919. His son, Thomas Gilbert Bett had taken the business over by 1922 (although his father died in 1931) and on his death in 1968, aged 75, commercial operations finally ceased.

Fig.4 Members of the Bett family photographed in c 1930. L/R Mr. & Mrs William Bett, Miss Jessie Evelyn Bett (daughter), friend of Jessie, Dorothy Mabel Bett (daughter), Thomas Gilbert Bett (son & miller) (courtesy of Mrs. J. Shucksmith)

During Tom's ownership the culvert allowing the water to enter the Lud from the canal was filled in. Tom hired a solicitor who fought for the water supply's re-instatement, ensuring the mill's operation. A similar problem arose in 2018 due to the collapse of the derelict Keddington Lock chamber and the current owner again had to fight for the water supply to be restored.

Phil Davies, a mechanical engineer, and his wife Ann purchased the mill and house at an auction in September 1972 and shortly after commenced a long programme of conservation and restoration putting the mill back into pristine working order when Ann was miller and Phil the resident millwright. Phil served on the committee of the Lincolnshire Mills Group where his engineering background and millwrighting experience was invaluable and often called upon until his sudden and unexpected death in 2005.

Fig.5 J. Phillip and Ann Davies, the mill's restorers (centre front) with members of the Lincolnshire Mills Group, October 2000.

The Buildings

Phase 1.

The mill and adjoining mill house erected for John Maddison in c 1782, comprised an oblong two-storey, three bay brick mill house measuring 13.10 m long by 6.82 m deep. The front elevation and lower end gable are constructed of red bricks laid in an English Bond. The adjoining original mill building (1782) also of two stories, measuring 6.25 m long x 6.28m deep with an external waterwheel. The front elevation is also constructed in English Bond. All these bricks are the same size and colour and were stipulated by the Commissioners of The Louth Navigation to be a standard mould size of 9" x 4 ½"x 2 ¼" before drying and firing (8.5" x 2"-2.5" after firing). English bond brickwork of this specification can be seen in the lock chamber walls of the Louth canal and former warehouse buildings at Louth Riverhead. The rear elevation of the house and mill were of similar brick but laid in an English Garden Wall (E.G.W) bond. The roof of the 1782 mill and adjoining mill house would be clad in clay pantiles.

Phase 2

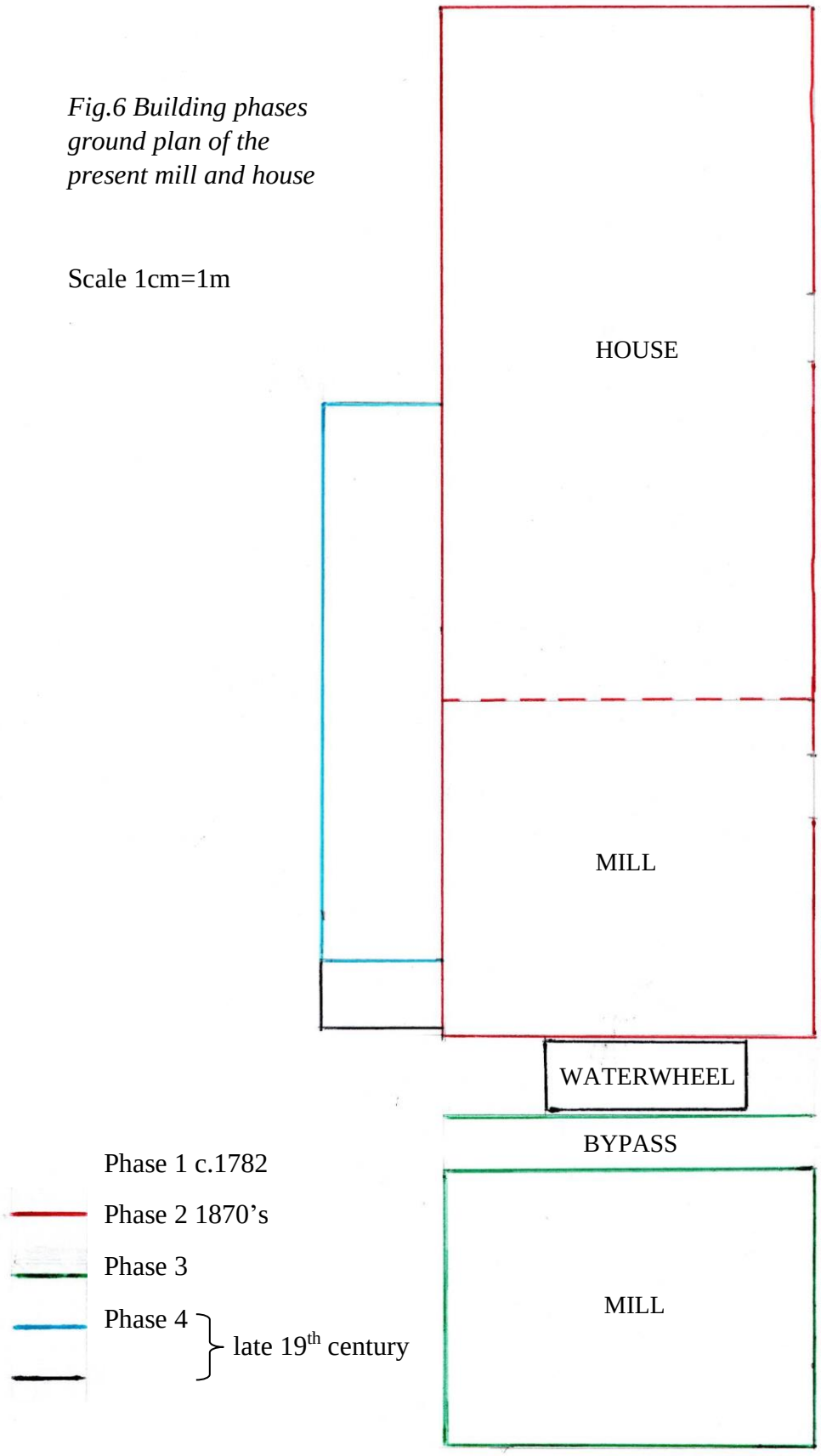
In about 1872, the 1782 mill building was extended westward over the waterwheel and bypass chambers to provide extra working space and storage. This new section measured 4.70 m long by 6.90 m deep and was constructed completely in E.G.W bond with three stretchers (|8.5" x 2.5" brick size).

The whole mill building was raised to three storeys at this time and the new roof was clad in Welsh slate, made more available in this area with the coming of the railway to Louth in 1848. This remodelled mill building has three bays to the front with a planked entrance door below a segmental head on the east bay and segmental headed opening below the second and third bay over the waterwheel chamber and bypass with a bridge in front. The east bay, first floor has a plank door below a segmental head with wooden loading platform in front. There is a distinct break in the brickwork bonding to first floor level, between this bay and the other two to the west. The ground floor has a glazing bar window to the left of the entrance door.

The first floor has two small glazing bar windows to the left of the loading door with an external platform. The second floor has three sliding sash windows, the one to the left has a pulley support frame above for the sack hoist. All windows are set below segmental heads.

Fig.6 Building phases ground plan of the present mill and house

Scale 1cm=1m



Phase 3

After the third storey had been added a two-storey extension as far as the tail race exit was built to the rear of the property to include a new kitchen and storeroom extensions for the mill on the ground floor and bedrooms above. The cat slide roof for this extension has its apex just below the upper floor windows of the mill (see Fig 11). Built in EGW bond, standard brick size 9”x3”x4”.

Ancillary buildings

Adjacent to the north of the mill house is a detached brick bakehouse with a later lower coal store addition to the west, in 1834 this was described as a drying kiln but by 1841 was classed as a bakehouse with drying kiln above. The present main structure has only the ground floor, open to the roof space and the position of the former bake oven is still discernible. Entered by a plank door and having small, glazed windows to the west and north, it is presently used as a workshop.

Fig.7 The former bakehouse/coal store to the rear of the mill house,

In 1900 a two-storey brick lean to was added to the west gable of the mill building having a cat slide roof with apex partially blocking a first-floor window of the mill. It had a plank entrance door with a two leafed loading door to the first floor. This building latterly housed a winnower on the first floor, a double drum screen on the ground floor, and a belt and bucket elevator. The machinery had at one time been driven by an external belt, wheel, and shaft from the water wheel, but in more recent times had been powered by electricity. This lean to was not bonded to the main mill and became unstable, it was demolished in 1998 and the west gable is now as it was before 1900 (see cover photograph).[8]

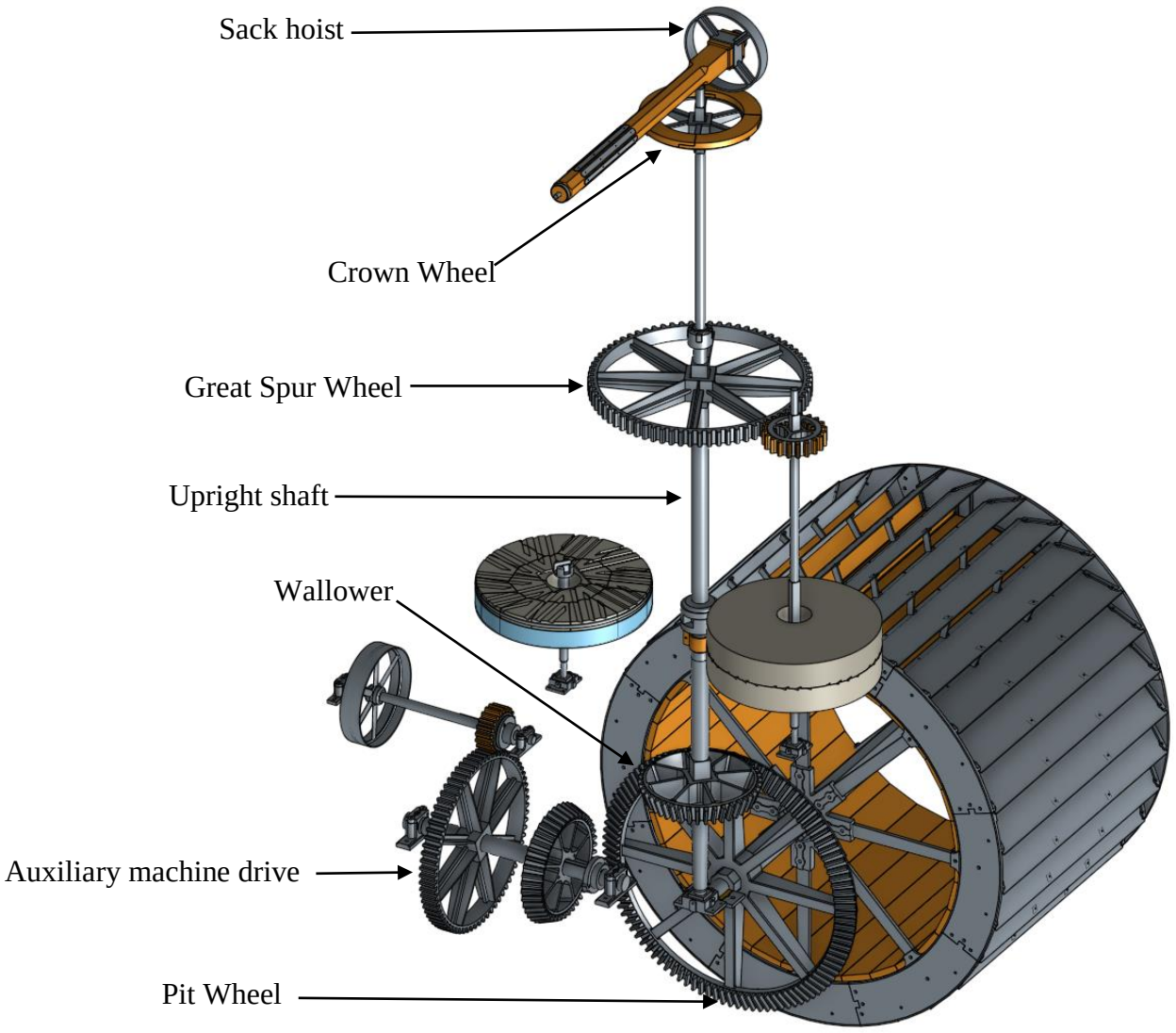


Fig. 8 Plan of the mill machinery following the 1870's refurbishment (by kind permission from Simon Davies.)

The Machinery

The breast shot waterwheel is 11’0” in diameter x 8’0” wide (3.35m x 2.44m). The octagonal axle, hub, spokes, and shrouds (cheek plates) are all of iron. The shroud sections are joined by dovetailed flanges, a typical early Saunderson waterwheel feature. There are thirty-two buckets of sheet wrought iron with elm sole boards. Water enters the buckets through two slide valves at axle height giving an effective head of five feet. The valve settings are adjusted by a rack and pinion connected to a small rachet and pawl, turned by an inserted wooden lever.[9] A passageway in front of the waterwheel. leads to a primitive toilet discharging into the bypass water, jokingly referred to as the first flush toilet in the village!

The vertical pit wheel on the inner end of the axle drives a bevel wallower on the upright shaft, all these are of cast iron, believed installed in the 1870’s. These gears are enclosed by a wooden framed and boarded gearbox on the ground floor with bridge tree adjusting screws and spout outlets on the outside together with the miller’s wooden box desk. The two curved elm bridge trees and their iron hangers are typical of early Saunderson work and were probably installed in the 1820’s remodelling.

Fig.9 The ground floor depicting the boarded gear box with meal spouts & millstone gap adjusting screws; note the mill box desk with the ratchet & pawl above to operate the waterwheel gate mechanism.

The first floor retains two pairs of stones (formerly three pairs, post the 1820's remodelling, comprising two pairs of French and one pair of Peak stones) overdriven from a cast iron horizontal Great Spur Wheel on the upright shaft and mortice stone nuts following the standard Lincolnshire windmill tradition. The stone furniture again is typical of later Saunderson practice with round stone casings/vats and having curved cast iron front legs to the hopper support frame and gimbal mountings to rear of the grain shoes.[10]

The stone floor is well lit with five large windows and a loading door to the front with exterior platform, allowing sacks of grain etc to be raised into the mill from carts below. The wooden platform is hinged to wall mounted brackets and supported by chains at the outer end which can be uncoupled with shackles to allow the platform to be laid flat to the wall when millstones or other heavy objects are raised up into the stone floor. Formerly this floor could also be accessed from the miller bedroom, but the doorway is now bricked up.

Fig.10 The stone floor, showing the surviving two pairs of over driven stones with Saunderson design stone casings and hoppers.

The third floor, with an open attic, is for grain storage with grain bins to supply the millstones via wooden shoots. A cast iron sack hoist pulley on the end of the wooden chain bollard is lifted out of gear with a lever; the pulley is friction driven from a wooden disc on the top of the flat iron crown wheel, mounted at the top of the upright shaft. When the third storey was added in the 1870's the roof was clad with Welsh slate, but this was removed in the 1970's when the property was renovated by Phil and Ann Davies and re-clad in clay pantiles to match the adjoining house.

Fig.11 The mill from the North, photographed in October 2015, showing the tail race, late 19th century, two- storey extension, and the former bake house to the left.

Appendix A, Gear Transmission

Wheel Type	Wheel Material	No. of Teeth	Pitch
Pit Wheel, bevel	Cast iron	104	2.5 inches
Wallower	Cast iron	41	2.5 inches
Gear Ratio 2.5:1			
Great Spur Wheel	Cast iron	72	$2^{5/8}$ inches
Stone Nut	Mortice, wood cogs	20 cogs	$2^{5/8}$ inches
Gear Ratio 3.6:1			

Fig.12 The iron Pit Wheel, bevel Wallower with ancillary power drive in the foreground; wooden Bridge Trees and millstone spindle above

Appendix B. Alvingham Mill, Known Owners and Tenants

Ref. or Directory	Date	Name	Owner	Tenant	Power	Notes
Deeds	1662	Maddison, Humphrey	Yes		Water	
Deeds	1782	Maddison, John	Yes		Water	
Stamford Mercury	1812	Cooke, John		Yes	"	
Stamford Mercury	1823	Smith, William	Yes		"	
Stamford M 14 Feb	1834	Smith William	Yes		"	address of Hundleby
SM 14 Feb	1834	Taylor W		Yes	"	
SM 6 June	1834	Smith Wm.	Yes		"	and occupier
SM 3 July	1835	Mumby W	Yes		"	of Aswardby
SM	1836	Mr. Cole		Yes	"	Mumby, owner
SM 12 Dec	1841	Mr. Child		Yes	"	
Kelly's	1849	Carritt James John		Yes	Water	
Kelly's	1855	Bett Robert		Yes	+ wind from c1866	SM 26 Oct 1866, post mill added
White's	1872	Bett Robert		Yes	Wind & Water	Robert Bett, died 1874
SM	1875	Chambers G T		Yes	"	
White's	1892	Bett William		Yes	"	
Kelly's	1905	Bett William		Yes	Water	p/m dem. 1904
L. Chron.	1907	Bett W Ward J W	 Yes	Yes	Water	Ward bought mill for £460
Kelly's	1919	Bett William	Yes		Water	died 1931
Kelly's	1922	Bett Thos. Gilbert	Yes		Water	
Kelly's	1930 1937	Bett Thos. Gilbert	Yes			
	1968	Bett Thos. Gilbert	Yes		Water	Died 1968, mill ceased working

Key:-
L. Chron – Lincolnshire Chronicle
SM – Lincolnshire, Rutland Stamford Mercury
Kelly's - Lincolnshire Directory
Whites - Lincolnshire Directory

References

1. Davies J.P *Alvingham & Nth Cockerington*, pub. By Alvingham & Nth Cockerington Millenium Group 2001; pp11-12
2. Redford Jill E. *An Edition of the Cartulary of Alvingham Priory (*Oxford Bodiam Library, Land Misc 642). Thesis submitted for D.Phil., University of York March 2000
3. Lincs Archive Office ref: PAR/23/23; date 1662/63
4. Sizer S.M & Clark J. *People & Boats, A History of the Louth Canal*, pub. Louth Navigation Trust,2006; p23; Davies J.P pp11-12
5. Stamford Mercury 8 Aug. 1823 p1 c3; SM 13 Aug. 1824 p2 c4.
6. Sass J.A *Saundersons Millwrights & Engineers of Louth, Lincs.* Pub. Mills Archive 2017, pp14-17, p22.
7. Davies J.P pp11-22; personal communication between Rex Wailes and J. Sass
8. Building phases confirmed in structural survey in 1998 prior to the demolition of the 1900 extension
9. Sass J.A pp14-17
10. Ditto p22

Acknowledgements

I am greatly indebted to the late Phillip and Ann Davies, the restorers of Alvingham Mill, for their friendship and generosity over many years, and for sharing their intimate knowledge of the mill's fabric, machinery, and research into the long history of this fascinating structure. Their son, Simon has continued the link; he has helped unravel the complex story of the River Lud and its relationship with the Louth Navigation and provided the excellent 3D CAD drawings of the mill's machinery.

Stuart Sizer, historian, and author, with his detailed knowledge of the history of the Louth Canal has been a great help in answering obscure queries. I am grateful to Mrs Jean Shucksmith, granddaughter of William Bett for allowing me to copy the historic photographs and provide details of the Bett family.