



Survey Report: No. 4

*Survey of Corn Mill,
Legoniel Td, Belfast.*



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- Cover illustration:- *General View of Mill Building North Gable wall* (McCutcheon Collection, c1960's, NIEA reference - Media Mogul 62605)

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Legoniel Corn Mill

Summary

This report looks at how the Legoniel Corn mill building changed in use and in shape from at least the time of the 1st Ordnance Survey of Ireland, which was carried out in the Townland of Legoniel in 1832 - 1833, to that depicted in the 2nd Ordnance Survey or 1st Revision which was carried out in 1857.

The Griffith Valuation or Primary Valuation of Ireland records for 1859 imply that sometime between 1832 and 1857 the Corn mill building was restructured and most likely became a Flax Storage unit for a Flax Spinning Mill which was established in the same parcel of land in this area of Legoniel. A Bleach Works or Bleach Mill was knocked down to allow the Flax Spinning Mill to be built.

The land in question was some 45Acre 2Rood 23Perch of land leased by a Mr Thompson from Mrs. E May on the 22nd November 1809. As an aside, it is perhaps interesting to note that the May family name has been lent to May Street, May's Field and May's Market in Belfast. As to whether or not the Corn Mill or the Bleach Mill or both had been in the particulars of the lease and what terms would have applied cannot be determined until the lease can be made available for examination. A number of attempts have been made to find this particular lease but so far without success.

Given that the Corn Mill and Bleach works, shown in the 1832 Ordnance survey, were in the same land area occupied by Mr Thompson then as a consequence the Corn Mill was not viewed in isolation in this report but was seen to be inextricably linked to the business concerns of Mr Thompson. The outline of Corn Mill ruin today substantially represents the building recorded in the 1857 Ordnance survey albeit that a few walls have collapsed.

The report suggests a possible operational layout for the Corn Mill before 1832. This of course is only a notional arrangement since there is no clear evidence pointing to the location of a Waterwheel Pit or an associated Tailrace.

Two items have been identified as requiring further investigation, namely, to obtain the Mrs E May lease to Mr Thompson of 22nd November 1809 and to carry out a Ground Penetrating Radar survey close to the walls of the Corn Mill ruin to attempt to pin point the location and direction of a Waterwheel Tail Race. The identification of the tail race would permit a better insight into the layout of the Corn Mill.

The Corn Mill ruin is a significant reminder of a very important area of industrial activity in North Belfast for some 150 years from the beginning of the 19th century to the middle of the 20th century.

Legoniel Corn Mill

Credits and acknowledgements

The survey was led by Lizzy Pinkerton and other members of the survey team were Geoff Wright, Karen Foreman, Michael Catney, Geraldine Caldwell, Robert Fitzpatrick-Sykes and Kate Todd. I wish to place on record my appreciation to Anthony Kirby and Gail Pollock from the Northern Ireland Environment Agency (NIEA) for their assistance in identifying and providing copies of relevant historical photographs relating to this mill. In researching into the background of Corn Mills in 19th century Ireland I visited the Corn and Flax Mill at Newmills, Co. Donegal and was made most welcome by the Tour Guides who also provided a very informative tour of both mills. Much appreciated was the detailed background information and drawings relating to the National Trust (NT) Castle Ward Corn Mill provided by Mr Malachy Conway the National Trust NI Archaeologist. Appreciation is extended to Sarah Gormley from the Centre of Archaeological Field Work (CAF) at Queens University Belfast for providing very useful information on previous Archaeological Surveys carried out at this location

The staff at Queen's University Belfast McClay Library, the Belfast Ulster and Irish Studies Library in Belfast, the Linen Hall Library, Belfast and the Public Records Office of Northern Ireland (PRONI) were all most helpful in sourcing books, maps and documents and their assistance throughout was very much appreciated.

Legoniel Corn Mill

1 Introduction

1.1 Location

The Legoniel Corn Mill is situated off the Legoniel Road in the Townland (Td) of Legoniel in North Belfast. It can be accessed from Thornberry Mews BT14 8EG. The Irish Grid Reference for the site is J29477 77538



Figure 1: Location of Legoniel Corn Mill- *Google Earth*TM at 54 37 46.12N 5 59 45.47W

1.2 Background

In view of the fact that the present ruin is all that remains of what was deemed to be a working Corn Mill at the beginning of the 19th Century which would likely have provided a very important source of food for the city of Belfast at the beginning of a period of rapid expansion, that is from the year 1800 until the end of the 19th century, then it was considered that every effort be made to highlight the importance of preserving this site for future generations.

Notwithstanding the fact that this area in the Townland of Legoniel had been included in a number of Archaeological Surveys carried out from the 1960's it was felt that a detailed dimensional record of this monument be made in order, if possible, to gain a fuller understanding of how the building may have been constructed when it would have been an operational Corn Mill in the early years of the 19th century and examine the changes which had taken place since then until it fell into disuse in the middle of the 20th century.

Legoniel Corn Mill

On Saturday 10th April 2014 the Belfast Hills Partnership Survey Group carried out an inspection and assessment of the site of the Legoniel Corn mill. On Tuesday 1st July 2014 the survey team went to work on the survey to fulfil the objectives mentioned above.

1.3 Previous archaeological surveys

The Wolfhill Flax Spinning Mill and what was the *Old Corn Mill* building was included in Alan McCutcheon's Archaeological Photographic Survey of this part of County Antrim carried out during the 1960's. The site was also surveyed as part of the Greater Belfast Industrial Archaeological Survey undertaken in 1989 (GBIAS No's 10309:1 and 1030:2). A more recent survey was a project undertaken in 2013 by The Queen's University Centre for Archaeological Field Work (CAF) in conjunction with The Belfast Hills Partnership(BHP) entitled *Belfast Hills Heritage Survey* which examined twelve locations within The Belfast Hills Partnership Landscape Partnership Scheme (LPS) which comprises over 5000 hectares of the Belfast Hills from Carnmoney Hill at the north to Collin Mountain at the southern extent with Legoniel Corn Mill covered under the heading *Wolfhill Mill*.

1.4 Cartographic Evidence

The cartographic evidence used to examine the changes which had taken place at this mill site from 1832 to the present was the 1st edition of the Ordnance Survey of Ireland with this location having been surveyed between 1832 and 1833 and engraved in 1833, a map produced by a Mr Paul Thompson for the Mrs E May estate in May 1835, the Valuation Map which accompanied the Griffith Primary Valuation of Ireland with the map issued in 1862, an NIEA State Monuments Records map and the present day Ordnance Survey Northern Ireland (OSNI) Map of this location as presented in the OSNI online Measurement Tools.- <https://mapshop.nidirect.gov.uk/Home/MeasurementTools>. A Marquis of Donegall estate map produced by James Crowe between 1767 and 1770 was also been chosen to depict a snapshot in time of this area of Legoniel.



Fig. 2:- 1st Edition O.S. 6'' County Series Tiles OS-6-1-56-1 and 60-1(1833) Co. Antrim

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The 1832 outline is basically a six sided building with two North facing walls, two East facing walls, a wall facing South and a West facing wall. Adjacent to the lower East facing wall there appears to what could be described as an Annex shown to extend beyond the South wall. Two mill dams were recorded at this point in time. The dam close to the Corn mill will be referred to as the Upper Dam in this report and the dam close to the Bleach Works will be referred to as the Lower dam.

By May of 1835 a map produced by a Mr Paul Thompson for the estate of Mrs E. May (Fig. 3) shows that alterations had taken place in so far as a section in the NW corner of the Corn Mill had been removed and that the mill building now had a rotated 'T' shaped outline. Noticeably the annex at the S/E corner mentioned above had also been removed. The Paul Thomson map of 1835 does not show the Bleach Works at this time but does show Wolfhill House. The orientation of the Corn Mill building in the Paul Thompson map is completely at odds with all Ordnance Surveying maps from the 1st in 1832 to the present and is also at odds with the alignment of the present ruin. However, despite the difference in alignment the Paul Thompson Map indicates that some considerable changes had taken place between 1832, the date of the 1st Ordnance Survey, and May of 1835 when Paul Thompson produced his record of the situation in this part of the Legoniel Townland.

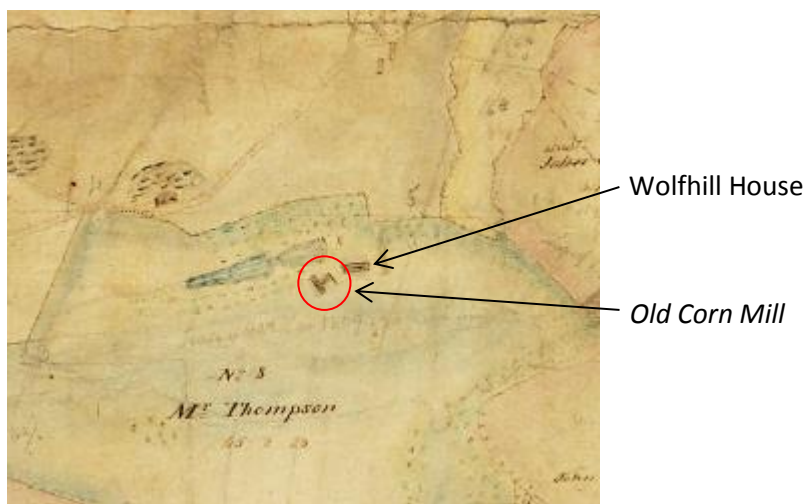


Fig 3. Outline of Corn Mill Building as of May 1835 by Paul Thompson (Surveyor):-

Note:- fig. 3 - Mrs E. May Estate map states:- "*Plot No. 3 – Leased to Mr Thompson 22nd Nov 1809*". (PRONI 1)

Legoniel Corn Mill

Tile 56

Tile 60

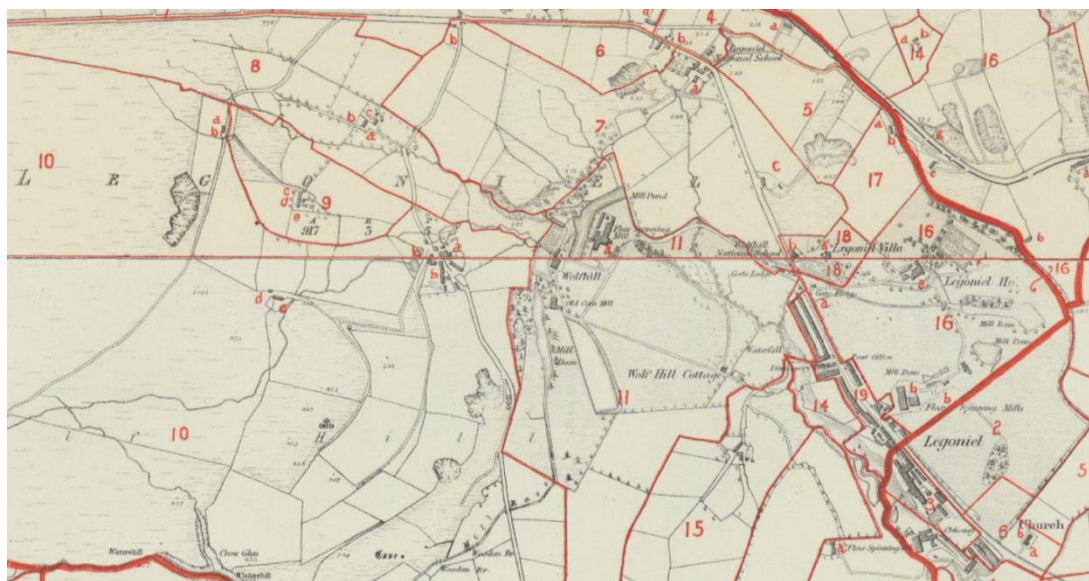
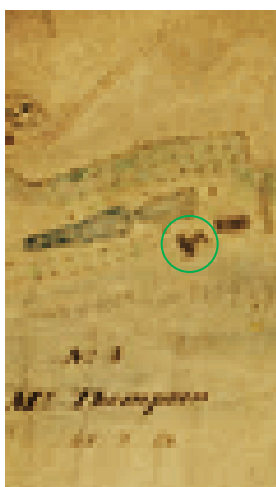
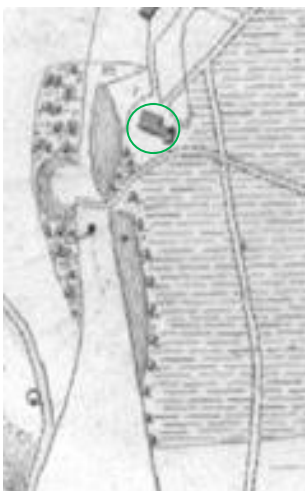


Fig 4. Griffith Valuation Map – 1862 (extract) – (askaboutireland.ie/griffith-valuation)



a) 1st OS Map 1832

b) May Estate Map 1835

c) Griffith Valuation Map 1862

Fig.5:- Legoniel Corn Mill as shown in 1832, 1835 and 1862

The map issued in 1862 with the Griffith Primary Valuation Tables (fig. 4) shows the “*Old Corn Mill*” to have been further modified from the 1835 Paul Thompson map to what is a distinctive “L” shaped building. In the 1832 OS 1st Edition map it can be seen that what appears to be a watercourse or *Leat* was in place between the Corn Mill and the adjacent mill dam but this feature seems to have been removed sometime before 1862. The 1862 Griffith Valuation map also shows that a Flax Mill had been built where the Bleach Works stood in 1832. Indeed over the years from 1832 onwards the mill complex on this property had significantly changed from two relatively simple mill layouts to that shown in figure 6 below.



LEGONIEL WARD

Waterfall
Waterfall
Weir
Wolfhill Road
Mill Avenue
Legoniel Bridge
Wolfhill Villa
Glen
El P
329463, 377548
190m OD
180m OD
Legoniel River
A
B
1
2
3
Mill Stream from North River
200m OD
190m OD
180m OD

- A** - Corn Mill site
- B** - location of Flax Spinning Mill & former Bleach Mill
- 1** - Upper Dam
- 2** - Lower Dam
- 3** - Reservoir

Fig.7:- Current map of Legoniel Corn Mill and Dams - based on OSNI 10,000:1 map.
(<https://mapshop.nidirect.gov.uk>)

Legoniel Corn Mill

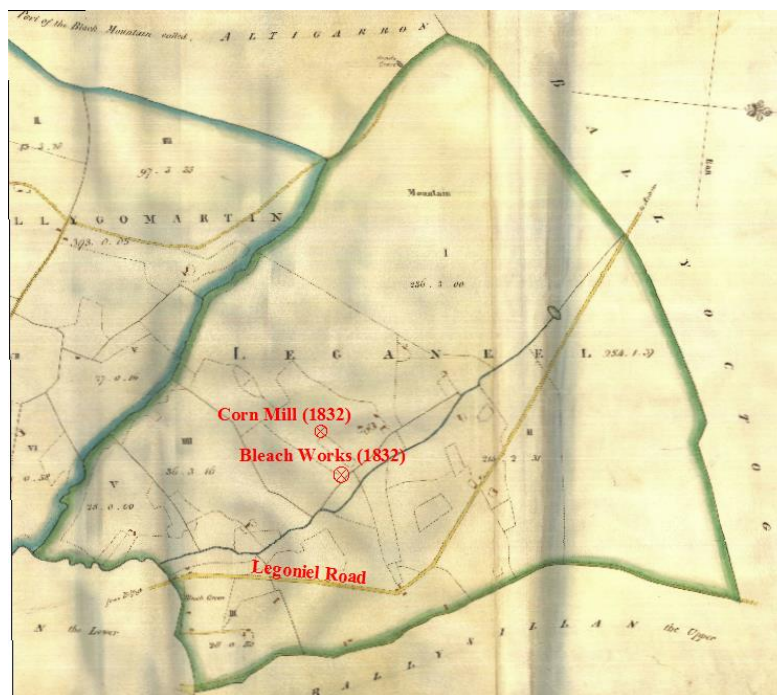


Fig. 8:- Marquis of Donegall estate map by James Crowe 1767 – 1770 (PRONI 2), extract

A record of the townland of Legoniel recorded by James Crowe between 1767 and 1770 (fig. 8) shows the Legoniel River and the Forth River together with a scattering of buildings across the townland but significantly no buildings had been recorded in the area in which the 1st Ordnance Survey of 1832 – 33 had placed the Legoniel Corn Mill and Wolfhill Bleach Works. This would tend to indicate that these mills were constructed sometime between 1770 and 1832.

1.5 Archiving

Copies of this report have been deposited with the Northern Ireland Environment Agency. All site records have been archived by the Belfast Hills Partnership, Hannahstown Hill, Belfast, with copies to be made available to download from the Belfast Hills Partnership website.

2 Survey

2.1 Method

Since this site was considerably overgrown with vegetation it was decided that the survey would be carried out using a 30 metre tape and a Bosch Rangefinder DLE 70 Professional distance measuring tool to take the required measurements. On the 10th April 2014 a visual inspection was made with points of interest noted. The full measured survey was carried out on 1st July 2014. This included a photographic survey which was itemized in a photographic record form.

2.2 Production of Plans and Profile Drawings

Because the site conditions were not favourable the site measurements taken were noted and later applied to an Autocad drawing package with a digital record obtained. The digital record was saved on compact disc format to be made available to view using a computer and be outputted to a printed as necessary.

Legoniel Corn Mill



Fig. 9:- Survey team taking a relaxed break on the day

2.3 Site Observations

The monument is a random basalt rubble ‘L’ shaped ruin two stories high aligned in a North/South aspect presenting essentially 2 North facing wall sections, 2 East facing sections a full South facing wall and a full West wall. For the purposes of this report the walls will be labelled N1, E1, N2, E2, S and W.

On inspection the building can be seen to be made up of two sections with a common dividing wall between the two sections. The larger section of the building is an “L” shaped unit whereas the smaller unit is rectangular in shape with a length to breadth ratio of approximately 2 to 1. Both of these units have been heavily overtaken with ground and wall creeper vegetation which made identification of what could be important features very difficult. A notable feature in both sections of the ruin is the presence of narrow elongated openings or *opes* with soldier arch lintels. In the main section of the building the elongated ope is in the West wall extending from about 1 metre from the eave level to the ground and is just over 1 metre wide. This ope has been blocked up. The elongated ope in the smaller rectangular section of the building is in the NE corner of this unit and extends from about half a metre below the eave level to the ground and is also just over 1 metre wide. This feature can be seen on the cover image of this report.

In the centre of the South wall of the main unit there is another blocked up semi-circular arched ope measuring approximately 2m high by about 1 metre wide which presents a 130mm deep recess on the inside of the wall. On the inside of the South wall between the blocked arched ope and the return wall at the SE corner of the main unit there is a semi-circular recess about 4m high by 2m wide and 270mm deep. In the centre of both of the recesses there is a small ventilation type ope. The purpose of these opes and the recessed sections in the South wall mentioned above is not clear at present. The South and West walls of the building are substantially intact but sections of walls in the larger “L” shaped unit have been reduced to ground level.

Legoniel Corn Mill

The ruin is situated on a raised area of ground above Thornberry Mews and nestles just below a mill dam which will be referred to as the Upper Dam in the report. At ground level, the West wall of the ruin is less than 2 metres back from a steep bank rising to the Upper Dam. The eave level of the West wall sits just below the level of this dam. At ground level, the South wall is also less than 2 metres back from a steep rise which forms part of the bank of Upper dam. This would suggest that a section of the East bank of the dam was cut away to accommodate the Corn Mill when it was originally constructed either early in the 19th century or possibly towards the end of the 18th century. At the SE of the building and at roughly the same ground level there is a large pond which will be referred to as a Reservoir in this report. The Reservoir is accessed by means of a path from Thornberry Mews and through an interlocking swing gate in the property boundary fence. Once through this gate a set of steps are in place which gives access to the Upper Dam. When approached from Thornberry Mews, BT14 8EG, the monument is obscured by a high density of trees and creeper vegetation. Access to the building is by way of beaten paths leading to the North and East sides of the ruin. To the NE of the ruin a 3m wide weir and sluice gate can be seen at the North end of the Upper Dam. The run-off from the weir/sluice is in the form of a stepped concrete channel which, at about 20m downhill, is directed underground where it is likely to feed into the Reservoir and the Lower Dam at what was the Wolfhill Flax Spinning mill complex. The area of the former Flax Spinning mill is now in private ownership and not open to the public, consequently it was not possible on the day to view the area containing the Lower dam in this report. The former Wolfhill House which is completely overgrown and only discernible on close up inspection is situated in clump of trees a short distance due North of the Corn mill building.

2.4 Photographic Archive

A photographic record of the site was taken by using Panasonic, DMC – FT4 and a FUJIFILM, FinePix S1000fd digital cameras and a photographic record sheet was employed, corresponding to photographs taken on 10th April and 1st July 2014. The archive has been compiled in jpeg format and saved to compact disc which will be held by the Belfast Hills Partnership.

3 Discussion

3.1 The Corn Mill Building

A plan view of the present ruin as surveyed on 1st July 2014 is shown in figure 10. The outline is that of a six sided “L” shaped building with the remains of a square unit attached at the SE corner and a section of a return wall butt jointed at the NE corner. The dimensions taken follow closely those taken by the Valuator in October 1859 when assessing the Wolfhill Spinning Company owned by the Northern Banking Company which at that time was being rated for Property Taxation purposes as part of the Griffith Primary Valuation of Ireland. A sketch on page 90 of the Valuator's Field Book shows an outline as given in figure 10 and refers to the building as a “2 story Flax Store” with a “single story - 7yard x 7yard “shed” attached - see Appendix 2. The map issued in 1862 (fig. 4) to accompany the Griffith Valuation Tables published at that time shows the same “L” shaped outline. The building in question shown in these maps refers to the building as the “Old Corn Mill”.

Legoniel Corn Mill

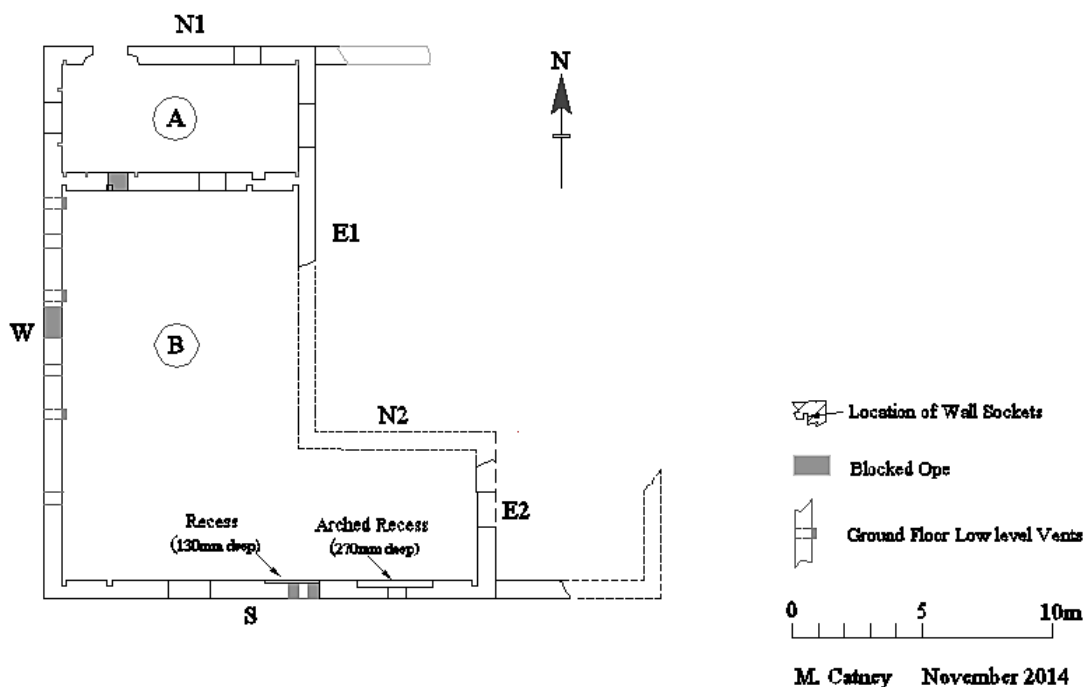


Fig. 10:- Plan view of Corn Mill ruin

The Griffith Primary Valuation of Ireland was in fact the second general Valuation of Ireland for Land and Property taxation purposes the first being the *Townland Valuation of Ireland* undertaken on the foot of the *First Valuation of Ireland Act* introduced by parliament in 1826 which required a Valuation of the whole of Ireland to be carried out on a Townland by Townland basis. The Townland Valuation of Ireland was carried out between the years 1828 and 1840 with the Townland of Legoniel assessed in October 1835. The Valuers Field Book for Legoniel Td in 17th October 1835, as shown in Appendix 1, makes no reference to a “*Flax Store*” or a “*shed*” but does state that the Flax Spinning Mill belonging to Mr Bob Thompson was on the site of the “*Old Bleach Mill*”.

If the map produced in May of 1835 by Mr Paul Thompson for Mrs E May’s estate as shown in figure 5b above is considered, then this would suggest that what had been the Old Corn Mill can be seen to be undergoing changes which would likely have produced the outline as recorded in the Griffith Valuation of October 1859 and as shown in figure 5c above. In figure 11 below it can be seen that the restructuring of the building after 1832 resulted in a change to three of the six walls which for ease of reference have been labelled N1, N2, E1, E2, S and W being the direction that each wall section is facing. The changes involved were that the E1 wall was moved inwards by extending the N2 wall, a new section was built to the North thereby creating a building with two sections, namely “A” and “B” as shown in the 1862 layout. The rectangular annex adjoining the E2 wall in the 1832 record was modified to a square section unit which was referred to as a “*shed*” in the Griffith Valuers Field Book in October 1859.

Legoniel Corn Mill

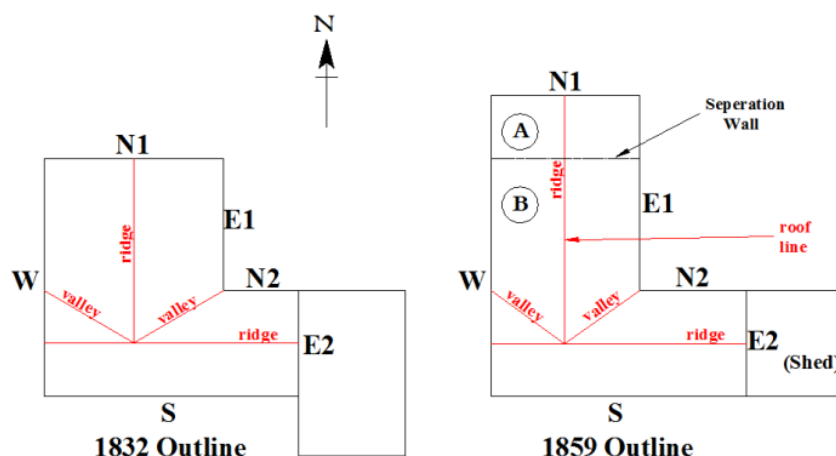


Fig.11:- Outline of Corn Mill building 1832 and Flax Store with Shed of 1862

Considering the difference in the roofing of the two layouts then all but the section of roof running along the South Wall would have been removed and completely rebuilt to that required by the revised arrangement as shown in the 1859 Outline. It is likely that the changes to the building were carried out to put in place unit “A” of the 1859 building in order to provide a specifically designed ancillary building to serve the new Flax Spinning Mill. If that was the case then section “A” would have been constructed and the “*Old Corn Mill*” building modified and joined to the new unit. One possibility is that the new “A” section would have been a purpose built drying room or kiln to dry Flax taken from the adjoining “B” section Flax Store before being forwarded to the Spinning Mill for processing and spinning. The steel plates from the kiln floor of the Old Corn mill could have been used for this purpose

The modified Corn Mill building remained on the Ordnance Survey 6 inch to 1 mile record until at least 1947 when the 5th and last edition of the Co. Antrim 6 inch to 1 mile map tile 60 (OS-6-1-60-5) was published. An additional Flax Store was added within the Wolfhill Flax Spinning Mill Yard sometime between 3rd Edition (1921) and the 4th Edition (1931) of the Co. Antrim OS 6 inch Series which could have made the original *Flax Store* redundant. It would appear that the Old Corn Mill building was retained as a store for some time after 1931 given that a man, Mr John McAloon, who in the 1950’s spent his early teenage years living in Wolfhill Cottages, which were cottages tied to the Wolfhill Flax Spinning Mill, recalls exploring the “*Old Corn Mill*” building which he described as being a store containing “dozens” of industrial size laundry type baskets or containers mostly filled to capacity with “bobbins” or “spools” of thread. He also said that at that time the first floor of the Old Corn Mill building had flooring throughout.

The Alan McCutcheon photographic record of the Corn Mill building taken in the 1960’s (fig.12), presently held by the NIEA, shows the building to be a shell with walls missing and considerably overgrown with vegetation, much as it is today.

Legoniel Corn Mill



Fig. 12 View of interior showing SW corner of Corn Mill looking West, c1960's (McCutcheon Collection, NIEA).

3.2 Water Power – source and application

3.2.1 Source

The water supply to all three enterprises carried out at various times in this area of the Legoniel Td from the beginning of the 19th century or indeed possibly dating from the last quarter of the 18th century up until the closing of the Wolfhill Flax spinning mill in the 1960's was from two identifiable sources. From the cartographic evidence a general view of the source and layout of the arrangement for water to be brought to the Corn Mill the Bleach Works and later the Flax Spinning Mill in this area of Legoneil may be represented by the schematic diagram below, (fig. 13).

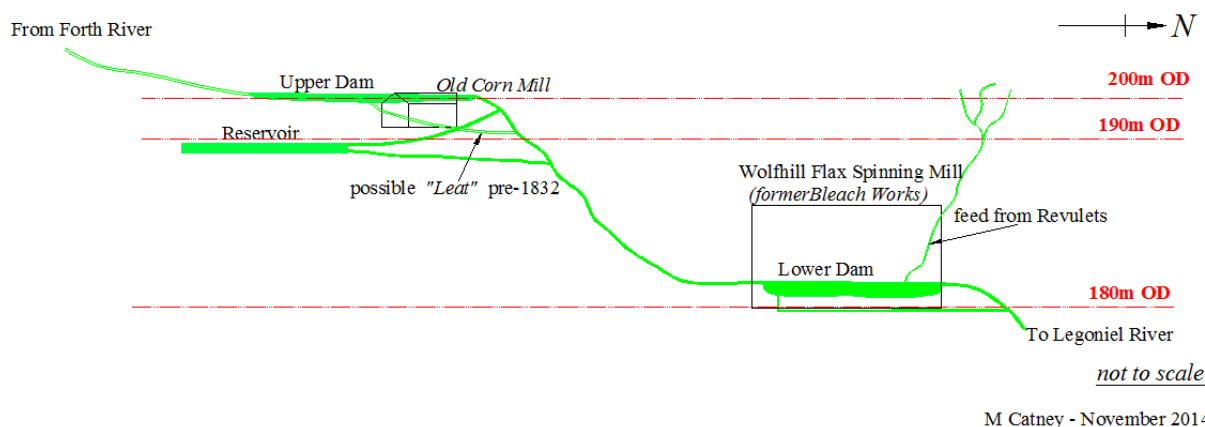


Fig. 13:- possible arrangement of Mills and dams at Wolfhill in Legoniel Td, c1835

From South of the property, water was taken from the Fort River via a mill race or mill stream to feed the Upper Dam. The second source of water can be seen to have come from a collection of

Legoniel Corn Mill

small streams or rivulets, which collectively formed the head of the Ligoniel River which was the water supply for the Lower Dam. As shown above, the Lower Dam also took water issuing from the Upper Dam. When the third mill pond or reservoir was built sometime after 1832, water was directed from Upper Dam to supply this Reservoir with the outlet from the Reservoir in turn being added to the water being fed into Lower Dam as shown. It can therefore be seen that the water supply to the Lower Dam, which provided water for the Flax Spinning Mill and the previous Bleach Works was essentially taken from both the Forth River and the Rivulets feeding the Legoniel River. When the Corn and Bleach Works were in operation up to 1832 then it would appear that each of the two mills had a dedicated mill dam with a sufficient head of water available to drive a waterwheel at the respective mill and in the case of the lower dam to provide additional water as may have been required in the Bleaching process. Looking closely at the area of the Corn Mill in the 1st OS map in figure 2 then what could be taken to have been a Leat is shown on the East bank of the Upper Dam and appears to be directed towards the Corn Mill. This may have been the channel used to supply the water power to the mill. If that was the case, then it is likely the waterwheel could be considered to have been placed along the West wall of the Corn Mill with the Tailrace discharging back into the same Leat at a lower point downstream. This would have been the main drive for the Mill Stones and other equipment such as hoists and elevators within Corn Mill. As will be discussed later a second waterwheel may have been erected to drive a Thrashing machine. If a second waterwheel had been employed then this may have been positioned along the South wall of the mill. In support of these possibilities then blocked opes, which may have been used in connection with these waterwheels, have been recorded on the West and South walls of the Corn Mill as shown on plan view of the present ruin, figure 10,

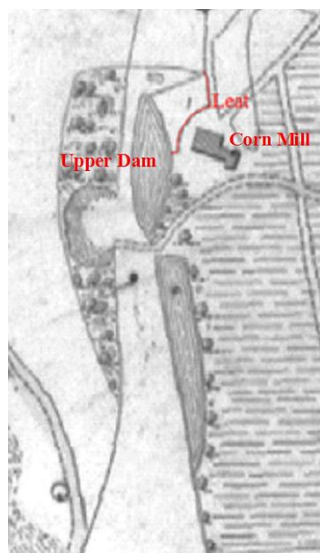


Fig. 14:- 1st OS map 1832 - extract showing a possible Leat in the East bank of the Upper Dam

The size of waterwheels used to power the Corn Mill and the Bleach Works is not known. However, an estimate may be made based on averages taken from the Ordnance Survey Memoirs issued in the 1830's. In his book "*History of Water Power in Ulster*", H.D. Gribbon gives the average sizes of Water Wheels used to power various types of mills operating in three of the

Legoniel Corn Mill

counties of Ulster as recorded in *Ordnance Survey Memoirs* (Gribbon, p20). The Ordnance Survey Memoirs were issued in the 1830's to enhance the record of 1st Ordnance Survey of Ireland being carried out at that time. In County Antrim the average diameter of a Corn Mill waterwheel was 14ft 6in (4.4m) and for a Bleach/Beetling Mill the diameter on average would have been 17ft 7in (5.3m). With a height displacement in excess of 7.5m (24ft 7in) between the Upper Dam and the present ground level of the Corn Mill then an average waterwheel of 14ft 6in could easily have been used in this mill. Regarding the Lower Mill Pond and the Bleach Works then allowing for the fact that in the case of a Breastshot waterwheel water is applied below the top of the wheel then with a given fall of approximately 5m, between the Lower dam and the base of the Flax Spinning Mill (GBIAS 2, p1) i.e. the area of the former Bleach Works, then an average size of High Breastshot waterwheel of some 17ft in diameter could have powered the Bleach Work mill up to 1832. The size of a waterwheel to be installed in a particular mill situation will depend upon the Power required by the mill in Horsepower (hp), and what the local river can provide in terms of Flow of water in cubic feet per minute and the Fall or vertical distance in feet the water will fall from where it can be applied to the waterwheel until it leaves the wheel at a lowest point on the circumference.

3.2.2 Application

As part of the First Townland Survey of Ireland, the Townland of Legoniel was surveyed on 17th October 1835 with an entry in the Valuator's Field Book (PRONI 1) recording that a Mr Bob Thompson had by that time established a "*Flax Spinning concern*". The record shows that the complex had 3 units marked as *Stores* together with - 3 *Mill* buildings, a Wheelhouse and an Engine Room. No mention was made of a Corn Mill but that the flax spinning mill was on the site of the Old Bleach Mill. The second OS survey map shows that a third pond had been constructed sometime between 1832 and 1957, namely the Reservoir referred to earlier.

Details given in the 17th October 1835 Valuation of the Flax Spinning recorded that there was a 40 feet diameter, 8 Foot Broad Waterwheel supplied with a Fall of Water of 34 feet, "*equal to a 10 horse power*". The record also stated that the mill had 2 *Steam Engines* each with an output of 30hp. At that time the flax spinning mill had an installed capacity of 7,000 *Spindles*. (PRONI 1). In October of 1859 for the Townland of *Legoneil* ("e" before "i" in this case) the Griffith Primary Valuation recorded that tenement 11b was leased to a Mr James Montgomery of the *Wolfhill Spinning Co.*, with the property against him being a Spinning Mill, Offices, Reservoir and Yard. The Valuator's Field Book also recorded that this mill now had a 40foot diameter x 6 foot broad waterwheel with 9in Shrouds and a Fall of 33 feet and calculated to have a nominal power output of 30hp. Again, 2 Steam Engines were in place and again noting that each was rated as having an output of 30hp. The engines had 30 inch diameter cylinders with a 4 foot stroke. The mill by this time had 13,200 spindles laid out in *130 ranges*. It is worth noting that a much lower estimated power output was given in 1835 for the 40ft x 8ft wheel, i.e. (10hp), than was given in 1859 for the smaller 40ft x 6ft wheel with an estimated output of 30hp. One possible explanation might be that the 40f x 8ft wheel was the original waterwheel used in the Old Bleach Works, possibly in an Low Breast Wheel mode (i.e. water being applied below the axle level of the wheel), and that it was by 1835 not capable of delivering the necessary power output required by the Flax Mill even though the water by then had been applied with as fall of 34 feet that is to say above the axle line which is a High Breast mode application as shown in figure 15.

Legoniel Corn Mill

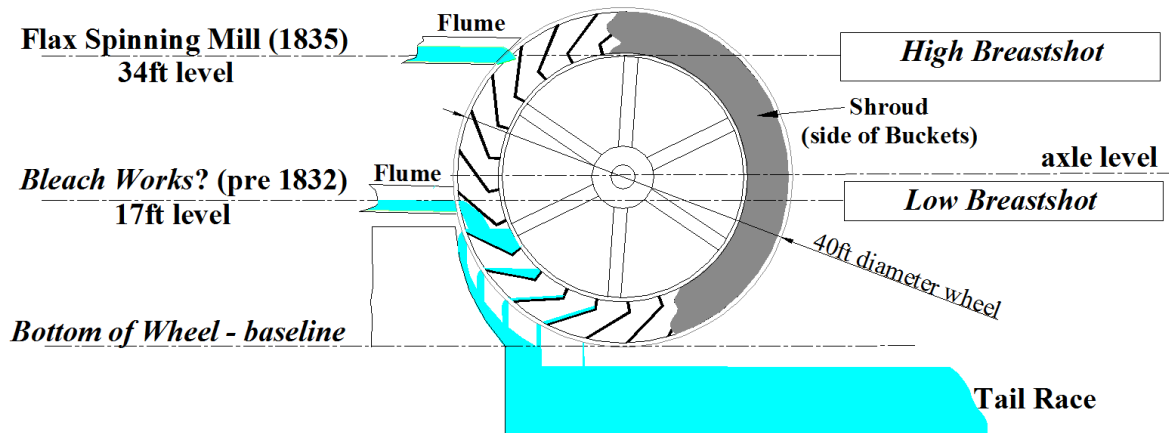


Fig. 15:- comparison of Low Breast and High Breast waterwheel - Wolfhill pre1832 & c1835

A further interesting point is that whereas the 1859 Valuator's Field book noted that the 40ft x 6ft Water wheel was, on the day, calculated to have a nominal output of 30hp the Valuation Rate applied was nevertheless reduced to 25 percent of the full Valuation Rate which could have been levied because of the "*uncertainty of the water supply*", (PRONI 2) meaning that the number of hours per annum the waterwheel could be used was severely restricted due to an insufficient supply of water in spite of the fact that there was three substantive ponds available at the time from which water could have been taken. The 1st and 2nd Valuation records seem to imply that the Flax Spinning Mill was principally a Steam operated plant from the outset but that an alternative Water Power source was included so that there was not a total reliance on one source of power alone, namely Steam Power. Since the Flax Mill was not entirely dependent upon the availability of the Waterwheel the waterwheel would nonetheless have performed a very important function in that it could be called in to allow one of the steam engines and a boiler to be shut down for, in the first instance to carry out planned maintenance or repair and secondly, and very importantly, to reduce running costs by obtaining some of the annual power required through the use of a renewable energy source instead of burning fossil fuels to run a steam engine. Given the limited amount of time waterpower could be relied upon to be available is unlikely that waterpower alone could have been considered as the single source of power for the mill. It would seem reasonable that soon after 17th October 1835 that not only was it deemed necessary to replace the waterwheel as was suggested above but that the Reservoir was also put in place at that time to ensure an adequate supply of water would be available which would provide an output equivalent to one of the steam engines (30hp) but also that it could be called into service at short notice.

With regard to the Corn Mill, this building had been recorded on the 1st Ordnance Survey and having been shown shaded means that it was in a useable state at that time but since it was not identified as a Corn Mill it had most likely been decommissioned sometime before the property was surveyed in 1832.

Legoniel Corn Mill

3.3 Corn Milling

Corn milling is a term used in accordance with Irish practice which refers to oats and the grinding of oats whereas a Flour mill refers to a mill for grinding wheat into flour and a grain mill used to grind other or several types of grain.(Gibbon, p37)

In considering the layout of the Legoniel Corn mill it is worth looking at two typical examples of a traditional corn mill both of which exist today as working examples of a traditional corn mill in Ulster which were in operation in the 19th century. The first example is the Corn Mill in the National Trust Castle Ward Demesne, at Strangford Co. Down. This corn mill is a working example open to the public during the summer months of the year.

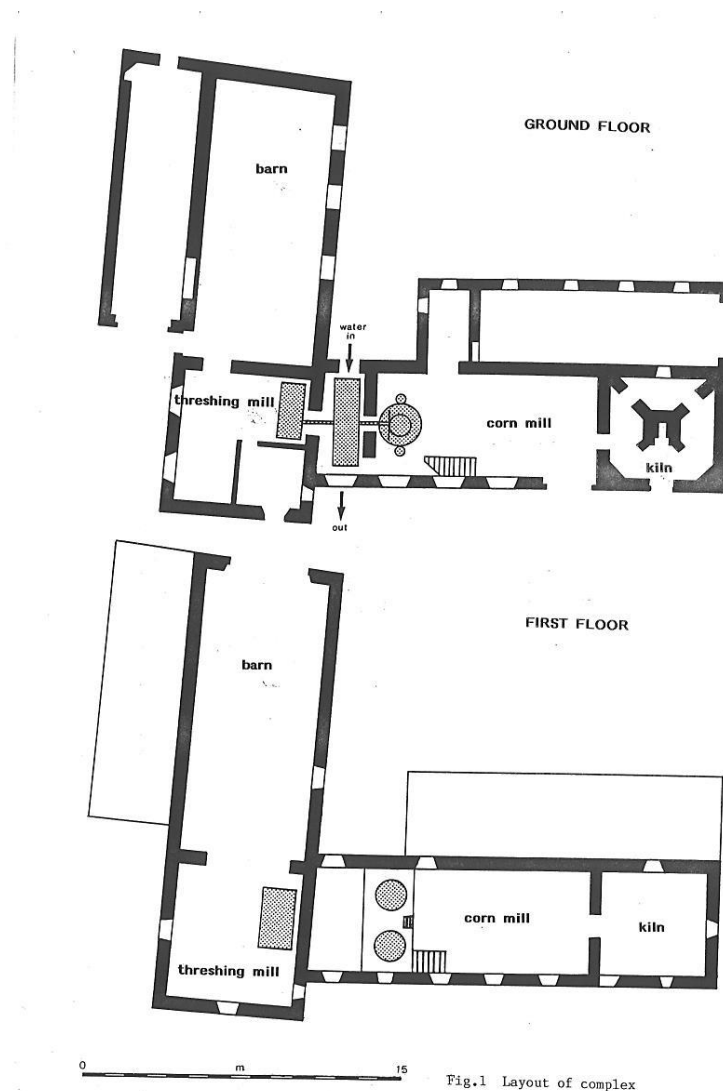


Fig. 16:- Ground and First Floor plan of the Castle Ward(N.T.) Corn Mill

Legoniel Corn Mill

Figure 16 shows the ground and first floor plan of this mill. The basic arrangement shows a waterwheel connected to a Threshing mill and to a set of gears which drive the Mill Stones located on the first floor directly above the gearing on the ground floor. The schematic also shows a Kiln for drying the grain after it has been through the Threshing mill and before it is fed to the first of the two sets of mill stones namely the Shelling or Grinding stones. The grinding process removes the grain husk or shell to leave the kernel which is then fed to the milling stones which finally reduce the grain to a desired level of fine powder or corn. Depending upon how fine the corn is to be reduced this may require more than one pass through the milling stones. A second pass is achieved by returning the output from milling stones by means of an Escalator to the milling stone input hopper. This can be repeated until the require result has been achieved.

The second example of the traditional Corn Mill is the one at present located at Newmills, Letterkenney, Co Donegal owned by the Letterkenney Council which is also a working exhibit made available to the public during the summer months of the year. Figure 17 is a representative elevation diagram which shows the basic elements within the mill. The diagram does not include a meal threshing mill.

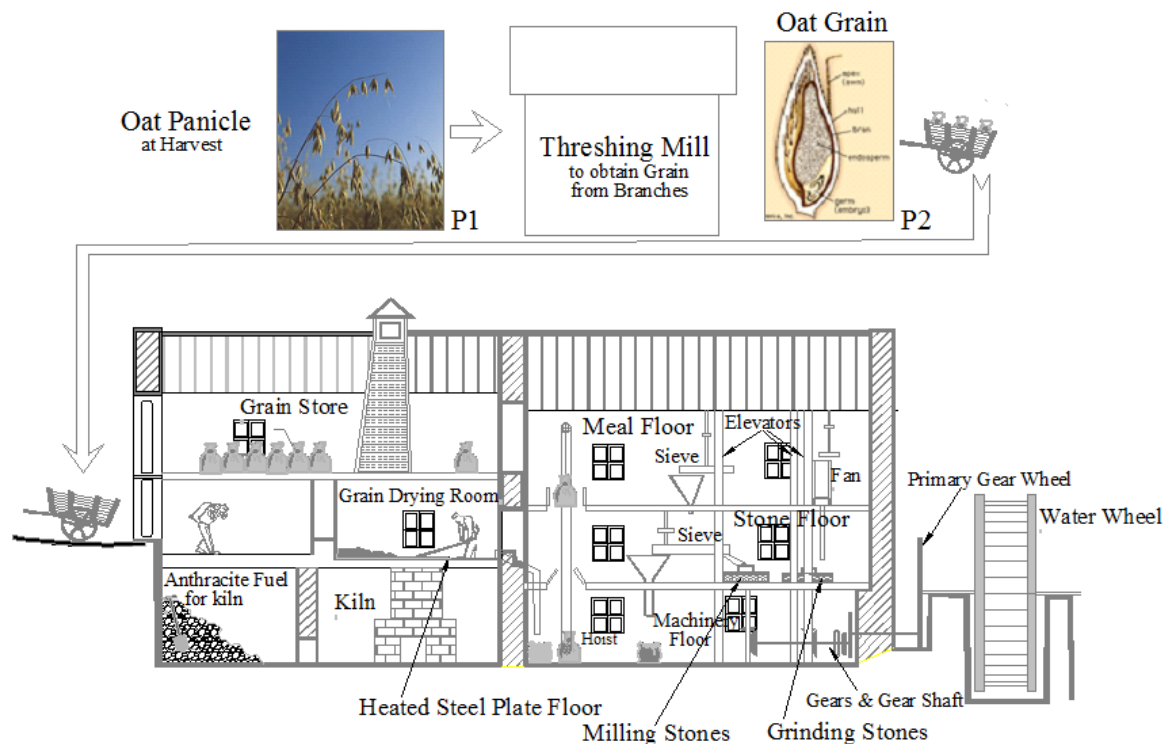


Fig. 17:- general arrangement of the Corn Mill at Newmills, Letterkenney, Co. Donegal (EB,P1,P2)

The process flow in figure 17 shows the grain being brought from a cart to the Drying Kiln and when dried is passed down through a chute to be bagged for lifting by means of a power hoist to the grain store. The power hoist is operated by a shaft driven by the waterwheel. From the grain store the grain is fed through a chute to the grinding stones hopper mounted on the Stone floor below. The outer shell having been removed the kernel is raised by an elevator to a sieve

Legoniel Corn Mill

and hopper on the meal floor. The output from this hopper is fed to the sieve on the Stone floor where it can be directed through a chute to the milling stones for milling to corn. The corn can be bagged at this stage or, as stated earlier can, upon inspection, be returned to the hopper/chute located on the meal floor where it can be either passed again to the milling stones or passed to a chute to the Machinery floor for bagging and dispatch as shown. The elevators are all power by the main water-wheel. This basic process is common in most traditional Irish Corn Mills



Fig 18:- Stone Floor at Newmills Corn Mill, Letterkenney, Co. Donegal
(<http://www.letterkennyguide.com/newmills.asp>)

Figure 18 shows a sieve, milling stones and elevators on the Stone floor at the Newmills Corn mill. The grinding stones can be seen in the background adjacent to a flight of stairs. A significant feature in figure 18 is the presence of heavy wooded uprights and cross beams with the meal floor joists resting on the cross beams. This in fact is showing what is in effect a stand-alone wooden structure inside the building to take the Stone and Meal floors so that these floors are not in contact with the building outer stone walls. This arrangement is to ensure that any vibration or shock waves produced by the heavy rotating mill stones and machinery is not transmitted to the stone outer fabric of the building which if not prevented could cause unacceptable damage to the building.

A suggested layout of the Legoniel Corn mill pre-1832 is shown in figure 19. The proposed layout sets out to maximize the space available in the building and shows the threshing bay adjacent to the barn as might be appropriate when physically possible. Again to use the space available to best advantage 4 sets of stones have been shown close to the main waterwheel. To get a closer approximation of the actual layout of this mill it would be important to determine in the first instance the location of the Tail Race associated with each of the waterwheels. At present there is no obvious surface impression close to any of walls of the Corn Mill ruin where a tail race may have been positioned. This could possibly be ascertained by carrying out a Ground Penetrating Radar survey of the ground close to the present remains of the building. As to what period in time the Corn Mill may have been built, then all that can be said is, as stated

Legoniel Corn Mill

earlier, that the May Estate map of May 1835 (fig.3), shows the corn mill on the plot of land which had been leased by a Mr Thompson on 22nd November 1809.

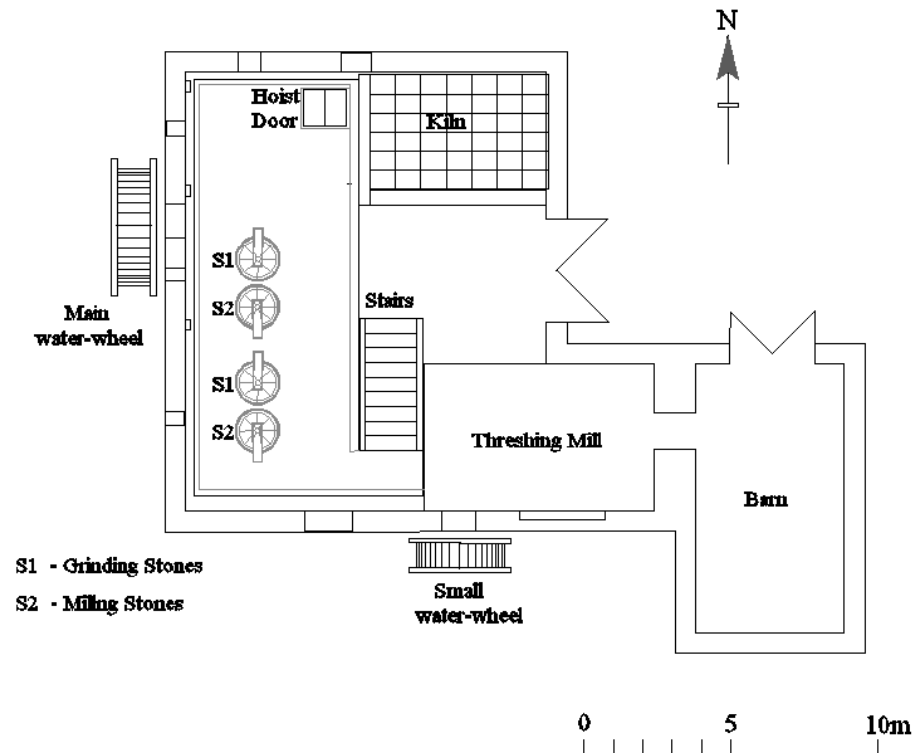


Fig.19:- suggested layout of the Legoniel Corn mill, pre-1832

Before the turn of the 19th century, corn mills on properties let by the Landlord were termed Manor Mills with the incumbent tenant bound by the terms of the lease to operate the mill on behalf of the landlord for which the tenant would receive a portion of the corn as payment for his labour. This was a throw-back to a feudal system which increasingly fell into disrepute and had all but died out by the early years of the 19th century (Gibbon, p38). If the Corn mill and perhaps the Bleach Mill had been on the land when the property was leased on 22nd November 1809 then a condition within the lease would have stated what terms would have been attached to the continued use of these mills.

4 Recommendations for further work

In order to establish if the Corn Mill and Bleach Works co-existed on 22nd November 1809 then attempts should be made to view the property lease issued by Mrs E May to Mr Thompson on that date which may confirm if one or both of the mills were included in the lease and under what terms they were to be held.

To gain a further insight into the layout of the corn mill a Ground Penetrating RADAR survey should be undertaken close to the walls of the ruin in an attempt to establish where a waterwheel tail-pit and tailrace may have existed when the corn mill was in operation.

Legoniel Corn Mill

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P2	Cross section of the oat grain

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PRONI 2	D835/1/3/17:-	Marquis of Donegall estate map by James Crowe 1767 – 1770
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PRONI 4	VAL/2/B/1/21B:-	Griffith Primary Valuation Field Book:- Legoniel Td – October 1859

Legoniel Corn Mill

APPENDIX 1

Townland Survey Field Book:- Legoniel Td – October 1835

PRONI 3 :- VAL/1/B/120A

(Page 90 left)

Townland of Legoniel Td. 1835										Townland of Legoniel Td. 1835									
No.	Names and Description.	Quality Letter.				Length.	Breadth.	Height.	No. of Squares of 10 feet each.	Rate per Square.	Amount.	Total Amount.	Names and Description.	Quality Letter.	No.	Names and Description.	Quality Letter.	No.	Names and Description.
		Bar. Val.	1 Assistant.	2 Assistant.	Settled.														
5	Mr. Kennedy												Mr. Kennedy						
5	Do	B	B	B	1	48.0	18.0	7.6	21	1.2	2.5.6		Mr. Kennedy						
	off Dairy	B	B	B	2	40.6	12.0	5.6	25	3.6	6.9		Mr. Kennedy						
	off	B	B	B	2	39.0	10.0	6.0	24	2.2	1.1.6		Mr. Kennedy						
	off Car Do	B	B	B	2	22.6	18.6	6.6	45	3.0	12.2		Mr. Kennedy						
	off Do	B	B	B	2	18.0	16.0	6.6	21	3.0	7.10.4		Mr. Kennedy						
	+ 4 1/2 ft.												Mr. Kennedy						
4.6	Mr. Thompson to Mr. Walker's Bleacher	B	B	B	1	51.6	20.0	11.0	65	1.0	3.5.0		Mr. Thompson						
	Added this & Do	B	B	B	1	51.6	20.0	11.0	65	1.0	3.5.0		Mr. Thompson						
	Next to the mill - 5 ft.	C	C	C	2	49.0	20.0	6.0	52	0.2	18.4		Mr. Thompson						
6	Mr. Thompson to John Thompson's Bleacher	A	B	B	1	27.6	20.0	14.0	55	1.4	3.14.32		Mr. Thompson						
	Do	A	B	B	1	27.6	20.0	14.0	55	1.4	3.14.32		Mr. Thompson						
	+ 5 1/2 ft.												Mr. Thompson						
6	Mr. Rob. Thompson	A	A	A	1	53.6	31.6	18.0	175	1.9	15.13.6		Mr. Rob. Thompson						
	Do	A	A	A	1	53.6	31.6	18.0	175	1.9	15.13.6		Mr. Rob. Thompson						
	off	B	B	B	1	11.6	20.0	12.0	23	7.0	13.5		Mr. Rob. Thompson						
	off	B	B	B	1	33.0	20.0	20.6	66	9.2	12.3		Mr. Rob. Thompson						
	+ 10 1/2 ft.												Mr. Rob. Thompson						
	on the house & office	A	B	A	1	53.6	31.0	21.0	110	1.02	5.16.12		Mr. Rob. Thompson						
	off	A	B	A	1	21.6	21.0	13.0	45	1.8	1.12.0		Mr. Rob. Thompson						
	off	A	A	A	1	24.6	47.0	19.0	162	11.3	7.18.7		Mr. Rob. Thompson						
	off	A	B	A	1	22.6	19.0	8.6	49	6.1	2.4.53.50		Mr. Rob. Thompson						
	off	A	B	A	1	55.0	24.6	10.0	154	1.3	6.1.5		Mr. Rob. Thompson						

See also APPENDIX 1b

Legoniel Corn Mill

APPENDIX 1 continued

Townland Survey Field Book:- Legoniel Td – October 1835

PRONI 3 :- VAL/1/B/120A

(Page 90 Right)

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Legoniel Corn Mill

APPENDIX 2

Griffith Primary Valuation Field Book:- Legoniel Td – October 1859

PRONI 4:- VAL/2/B/1/21B

(Page 115 left)

County of <u>Antwerp</u>		Barony of <u>superior Belfast</u>		Parish of		
TOWNSHIPS.		IMMEDIATE LESSORS.		Description of Tenement.		AREA.
Townlands and Occupiers.		Immediate Lessors.		Description of Tenement.		A. R. P.
Legoniel						716 2 10 717 0 0
11. a	Thos. McBlane Charles Finlay Wm. Laird Finlay R. C. Smith	Northern Banking Co.		Magnafors No. 4 Gate Lock House Flax Spinning Mill House Office		65 3 30 74 1 20
<p>See R. Montgomery (Well Mill Spinning Co.) Water Wheel. 40.0 + 6.0 + 9.0 = 30 HP. Fall about 33 feet Supply of Water uncertain. Estimated to average out more than 25 per cent of the nominal power of the wheel. 2. Steam Engines. each. 30 HP Nom. (30 HP actual about 40 HP work. w. consumption of 100 lbs. water per hour) 13. 200 Spindles. Range 130</p>						
7	Thomas McBlane Charles Finlay Wm. Laird Finlay R. C. Smith James Montgomery (Wolf Mill Spinning Co.)	Northern Banking Co.		Wolf Mill Spinning Mill Flax Store, off. River River, off. River		5 3 10
8	James Bishop	Wolf Mill Spinning Co.		House, off. River		
a	Sam. L. Bruce	Same		House, off. River		

see also APPENIX 2b

Griffith Primary Valuation Field Book:- Legoniel Td – October 1859

PRONI 4 :- VAL/2/B/1/21B

[illegible]

(Page 115 Right)

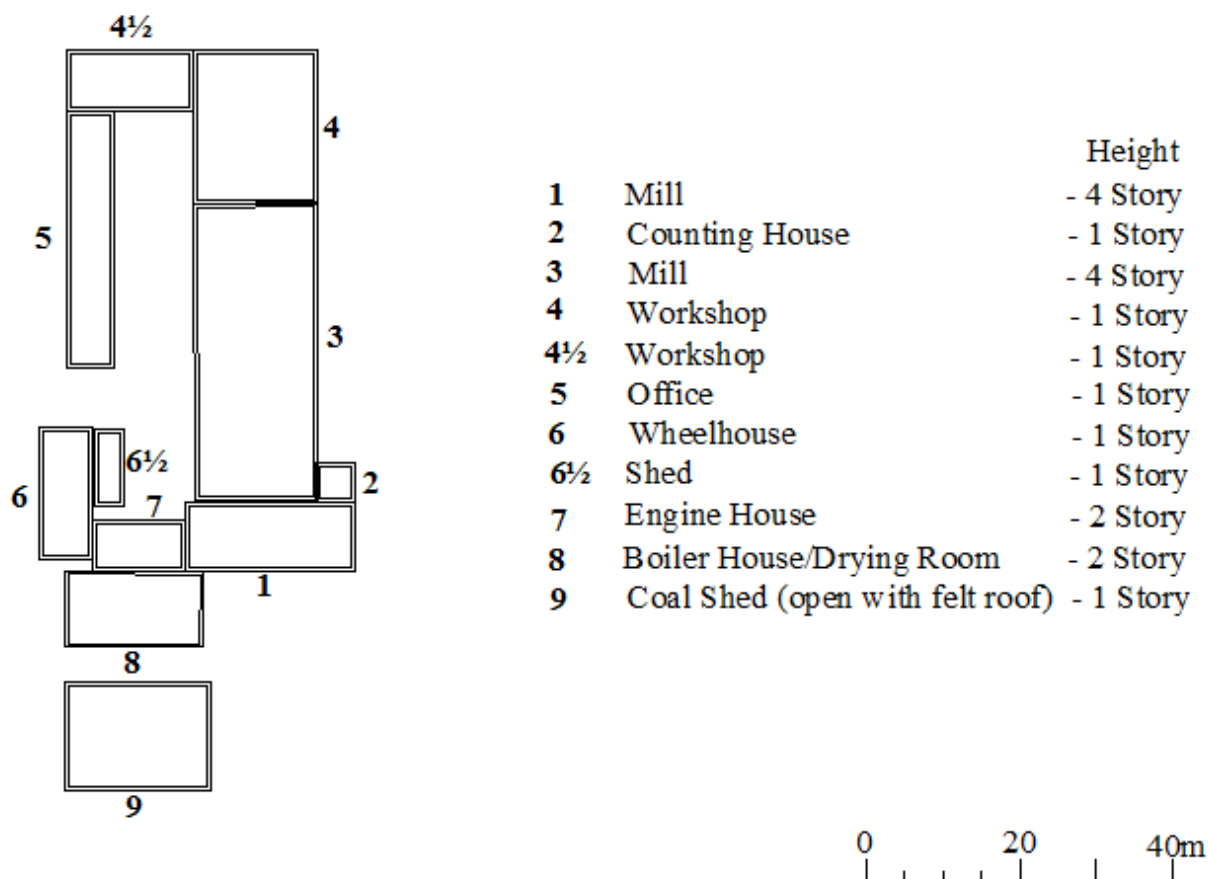
see also APPENDIX 3

Legoniel Corn Mill

APPENDIX 3

Wolffhill Flax Spinning Mill - arrangement c1859

See also Appendix 2 - page 115 Right



WOLFHILL FLAX SPINNING
Legoniel Td

in keeping with Primary Valuation Field Book 1859
PRONI: VAL/2/B/1/21B - p115

Legoniel Corn Mill

APPENDIX 4**PHOTOGRAPH RECORD FORM****Site:** Legoniel Corn Mill, Legoniel Td. Co. Antrim**Date:** 10th April 2014 and 1st July 2014.

Make and model of camera:- FUJIFILM, FinePix S1000fd Date taken:- Main Photographic Survey - 01 July 2014		
Frame no	Direction viewed from	Details
P1010490 To P1010563	Inside the mill	Notable internal features of the Corn Mill
P1010613 To P1010704	External to the mill	External features of the Corn Mill
Make and model of camera:- Panasonic, DMC – FT4 Date taken:- Preliminary Survey - 10th April 2014		
Frame no	Direction viewed from	Details
DSCF0001 To DSCF0028	Inside the mill	Additional internal photographs of the Corn Mill

Legoniel Corn Mill

APPENDIX 5

Selection of Legoniel Corn Mill Survey Photographs



View of mill looking South (P1010613)



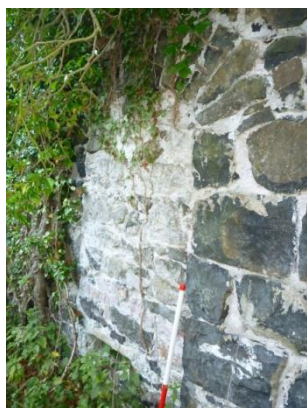
View of mill looking East (P1010619)



View of mill looking NE (P1010626)



South wall of mill (P1010630)



Blocked ope in South wall (P1010688)



Low level vent (P1010690)



a small ope in West (P1010674)



Approach to mill from Thornberry Mews (P1010639)