MILLS OF CO OFFALY:

AN INDUSTRIAL HERITAGE SURVEY

Part 1 General Review

Fred Hamond

An Action of the
Offaly Heritage Plan 2002 – 2006

for
Offaly County Council
May 2009

An Chomhairle Oidhreachta
The Heritage Council

Cover: Cadamstown Mill (OFIAR-037-002)

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PREFACE

This report presents the results of a survey of almost 200 mills, distilleries, breweries and maltings throughout Co Offaly which was undertaken in 2003 at the behest of Offaly County Council. It was funded by the Heritage Council and Offaly County Council as an action of the Offaly Heritage Plan 2002–2006.

The objective of the project was four-fold: (1) to make a comprehensive record of all mill-related sites in the county, including their current condition and use, (2) to highlight appropriate protective measures for those of special heritage merit, (3) to collate the data so that it could be used for research purposes, and (4) to highlight the various issues pertinent to the conservation of mills.

It should be emphasised that this report does not purport to be a comprehensive over-view of the entire milling history of Co Offaly. Rather it is a baseline for future historical research and more detailed field investigation by those interested in mills.

The project was monitored by a steering group comprising Amanda Pedlow (Heritage Officer, Offaly CC), Debbie Grey (Conservation Officer, Offaly CC), Stephen McNeill (Offaly Archaeological & Historical Society), and Caimin O'Brien (Archaeological Survey of Ireland). I am extremely grateful to them for their encouragement and for so patiently awaiting this final report.

I am especially grateful to the staff of the Offaly Archaeological & Historical Society Research Centre and also Mary Butler of the Local Studies Section of Offaly County Library for giving me access to their extensive collection of books and periodicals.

My thanks also go to Lisa Henry (acting Heritage Officer, Offaly CC), Gerry Bruton and Una Heerey (Information Technology Division, Offaly CC), Fionnuala Lynch (Heritage Council) and Paul McNally (Dúchas: Historic Properties) for their assistance. Paul Ferguson, Curator of Maps at Trinity College, Dublin also facilitated my historical research.

Finally, but by no means least, I should like to thank all the mill owners who generously allowed me access to their properties and answered my many questions.

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May 2009

SUMMARY

1. Introduction

1.1 This report was commissioned by Offaly County Council and Offaly Heritage Forum as an action of the Offaly Heritage Plan 2002–2006. It aims to identify and record all mill-related sites in the county and highlight those of special heritage merit for possible statutory protection. The historical and fieldwork data gathered during the course of the project is also recorded on a Microsoft *Access* database and digitally mapped using *MapInfo*.

1.2 For this study, a mill is defined as a building where raw materials are mechanically converted into usable forms or finished goods. In the context of Co Offaly, this definition encompasses grain mills, distilleries, maltings and breweries, textile mills, saw mills, threshing mills, bone mills, and hydro-electric power stations.

2. Sources

2.1 Various documentary sources were used to identify mills: Ordnance Survey maps, Valuation books, published articles (notably those held by the Offaly Archaeological & Historical Society and Offaly County Council), Record of Monuments & Places, National Inventory of Architectural Heritage, and Record of Protected Structures.

2.2 As a result of this 'paper' survey, 274 individual mill-related buildings and structures were identified at 193 locations throughout Co Offaly.

2.3 During 2003, all these sites were inspected in the field and their attributes recorded on standardised forms. The data thus collected, including photographs, were transferred to an *Access* database and also digitally mapped using *MapInfo*.

3. Mill types

3.1 The majority of the identified mill sites – 119 in all - related to grain milling. These were mostly water powered and of late 18th and 19th century date. They ranged from small corn mills where oats were dried and ground into oatmeal, to much larger flour mills in which wheat was milled. A handful of wind- and steam-powered grain mills were also recorded. Although most such sites are long gone or exist only as ruinous shells, some retained virtually all their plant and machinery, albeit inoperative.

3.2 Forty-three sites relate to distilling, malting and brewing. The majority are distilleries, with concentrations in Tullamore and Birr. By contrast, brewing was practised on a smaller scale. With a few exceptions, both industries declined during the 19th century, simultaneously with the emergence of the malting industry. Good examples of these drink-related sites survive in Tullamore, Banagher, Birr and Kilcormac.

3.3 Textile production was also carried on in Co Offaly. Wool was dominant in terms of site numbers, the processes of weaving, fulling and spinning all being represented. Flax processing and linen production was also carried on as scutching mills and bleach works respectively. From the 1860s onwards, Clara boasted a purpose-built jute mill, one of the few in the entire country. Cotton appears to have been relatively unimportant, unlike in other counties.

3.4 Fourteen saw mills, five threshing mills, two bone mills and two hydro-electric power stations were also recorded.

4. Heritage assessment and protection

4.1 The heritage significance of each mill-related site was assessed using criteria set out by the National Inventory of Architectural Heritage – architectural, archaeological, historical and technical. Depending on the quality of these attributes, each site was rated as being of 'record only' (i.e. not significant), 'local', 'regional', 'national' or 'international' significance.

4.2 A total of 189 sites which were thus rated, 59 of which were deemed to be of interest – 29 at a local level, and 30 at a regional level. None was of national or international significance.

4.3 Of the regionally significant sites, all but five currently have statutory protection within the Record of Protected Structures (RPS) and/or Record of Monuments & Places (RMP). Four are therefore recommended for inclusion in the RPS and one in the RMP. A further two, already in the RPS, are also recommended for the RMP.

5. Issues

5.1 Adaptive reuse: Of the 274 mill-related buildings and structures identified in this survey, nothing or only traces survived at half of them (133). Only 112 (41%) retained substantial or complete remains. It is evident that maintenance costs, internal space restrictions and access difficulties have all limited the reuse of such buildings. Only three function as originally intended and a further 53 have been put to other uses, generally as retail units, dwellings, apartments offices or stores.

5.2 Repair and maintenance: Not surprisingly, there is an inverse correlation between the structural state of a building and its level of use. Those still in some form of use tend to be maintained, whereas those which are defunct are neglected and decaying. The more derelict a building, the less likelihood of it being reused.

5.3 Preservation of machinery: At the time of survey (2003), substantial remains of plant and machinery survived at only nine sites – at a jute mill, six grain mills, a distillery, and a maltings. At only one site was it still operational (a turbine in the Clara jute mill). Subsequently, the machinery at Belmont Mill was restored to working order, but that at Erry Mill, Clara was removed.

5.4 Conservation of documents: Although old photographs of some mills exist, very few retain their business records. Notable is Belmont Mill, where virtually everything was retained and has now been deposited in the Offaly County Archive.

5.5 Planning issues: Some mill-related sites have been subject to redevelopment. Ideally, any planning application relating to a site of potential heritage merit should contain the following five elements: (1) historical research, (2) site description, (3) assessment of heritage merit, (4) impact of development upon features of special significance, and (5) mitigation measures to counteract any negative impacts.

The enforcement of planning conditions by the authorities is limited by the resources available to them and ultimately depends on the willingness of the developer to carry them out fully.

5.6 Funding mill conservation: Various grants are potentially available to mill owners for the upkeep and adaptive reuse of mill buildings. The restoration of mills as museum pieces, as has happened at Fancroft Mill, is problematic due to the expense of doing so, the relatively small conservation grants available and low levels of income subsequently generated. Generally some other purpose is necessary in order to generate a revenue stream. At Belmont Mill, for example, a combination of funding using tax breaks and regeneration grants have been imaginatively deployed to adaptively reuse some buildings and also restore the actual corn mill to working order.

5.7 Raising awareness: There is generally a low level of understanding and appreciation of Offaly's milling heritage, not only amongst the general public, but also by the owners of mills. Ways in which awareness of mills may be raised include web-based publications, the involvement of heritage groups in prompting them, and specific events such as open days during National Heritage Week.

Only through the combined efforts of various voluntary and statutory organisations can the future of significant examples of Offaly's milling heritage be secured.

1. METHODOLOGY

1.1 Project scope

The objective of this project was to identify and survey mills of every type throughout Co Offaly. Mills are buildings in which raw materials are mechanically converted into usable forms, e.g. corn mills in which cereals are ground into meal and flour, or saw mills in which timber is cut into planks. For completeness, breweries, distilleries and maltings have been included in this survey as they also involve the processing of grain and are as much a part of the county's industrial heritage as the actual mills. As will become clear, the vast majority of these mill-related sites are of 19th century date and those that required power almost invariably used water to drive them.

The project brief required the following data to be recorded for each site: history, description, condition, evaluation of industrial heritage significance, and photographs. Sites of special significance were to be highlighted for possible statutory protection. The information gathered was also recorded on a database to facilitate analysis and future research. In addition, the sites were digitally mapped so that their locations and distributions could be viewed, selected and analysed at various scales of Ordnance Survey maps and aerial photographs.

1.2 Mill identification

During 2003 the author was engaged in the creation of the Offaly Industrial Archaeological Record (OFIAR). This database, based on Microsoft *Access 2000*, contains records of over 1000 sites of industrial heritage interest throughout the county. It includes a significant number of mill-related sites, most of which are marked on the 47 Ordnance Survey six-inch (1:10,560) maps which were compiled for the county in the 1830s, 1880s and early 1900s (fig 1.1).

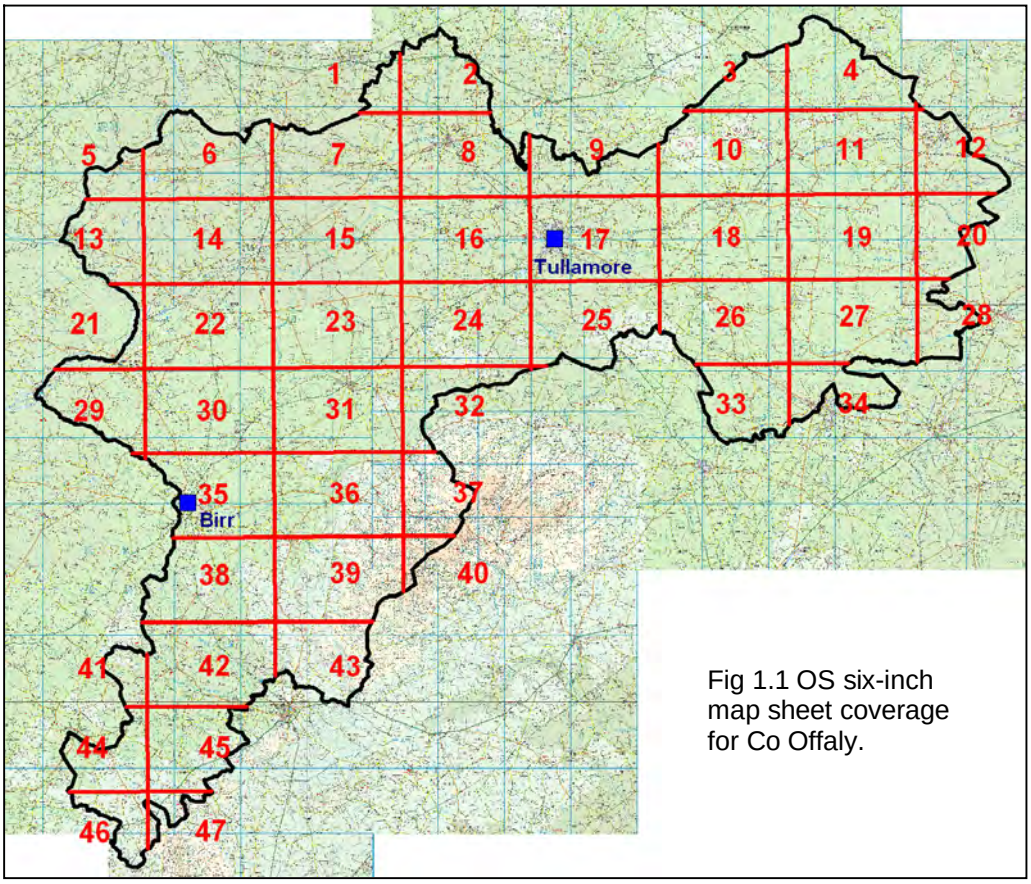


Fig 1.1 OS six-inch map sheet coverage for Co Offaly.

As part of the compilation of OFIAR, the libraries of the Offaly Archaeological & Historical Society and Offaly County Council were systematically searched for references to mills in local history books, journals, newspapers and photographs.

Mill valuation books and Griffith valuation books, compiled in the 1840s and '50s respectively, also proved useful in identifying mill sites not immediately apparent on the maps (particularly uncaptioned ones and those in built-up areas). These sources also provided additional details of the mills' owners, range of buildings within each mill complex and, in the case of the 1840s valuations, of plant and machinery.[1]

Existing databases held by other organisations were also consulted - the Archaeological Survey of Ireland's Sites & Monuments Record and Record of Monuments & Places, the National Inventory of Architectural Heritage, and Record of Protected Structures maintained by Offaly County Council, and Tullamore and Birr Urban District Councils.[2]

1.3 Site and component numbering

Using the above sources and selection criteria, 193 sites were identified for inclusion in the database (fig 1.2). Each was given a unique number based on three identifiers: (1) county, (2) OS six-inch map sheet, and (3) sequential number within that sheet; for example, OFIAR-035-003 is site 3 on Offaly six-inch sheet 35.[3]

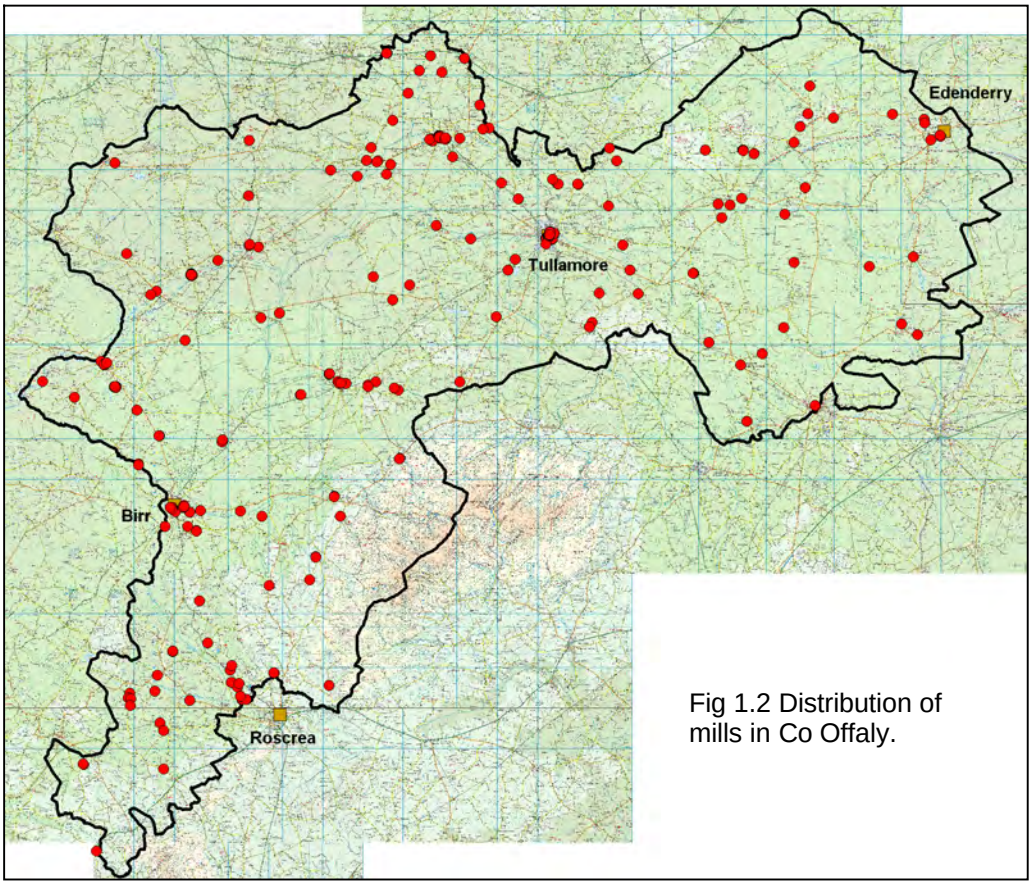


Fig 1.2 Distribution of mills in Co Offaly.

[1] The Mill valuation books are reproduced by William Hogg in *The Millers & the Mills of Ireland of about 1850* (Dublin, 2000). For this project, the original book was consulted in the National Archive, Dublin.

[2] Although the fieldwork was carried out in 2003, the OFIAR database was updated to April 2009 in respect of references to mill-related sites in the following sources: Sites & Monuments Record, NIAH County Survey 2004, Records of Protected Structures in the Offaly County Development Plan 2009-15, Tullamore Development Plan 2010-16, and Birr Development Plan 2010-16.

[3] For subsequent references to mills in this report, the OFIAR- prefix has been dropped for brevity.

Most mill-related sites comprise a single building erected for a specific purpose, e.g. a corn mill for grinding cereals. However, it is not uncommon for a building to have had more than one function, for instance where originally built for several uses (e.g. corn milling and grain drying, or corn milling and wool fulling using a common waterwheel), where a new function was added (e.g. saw milling), or where the building was converted to an entirely new use (e.g. electricity generation). Where known, all such functions have been recorded for each identified mill building.

Some sites contain separate buildings where different functions were carried out, e.g. a corn mill and separate drying kiln, or a corn mill and a tuck mill (each with its own waterwheel), or a corn mill and mill owner's house. For the purposes of this analysis, each separate physical entity was deemed to be a *site component* and accorded its own sub-number, e.g. 008-038.1 and 008.038.2 are two components of site 008-038. In the case of single-component sites and sites where it was not possible to differentiate their individual components, the default component number '1' was allocated.

In this way, a total of 274 separate components were identified at the 193 sites.

1.4 Paper survey

During the map search phase of this project, a mill site's presence or absence on each edition of its respective map sheet was noted and also any caption, if given (e.g. 'Corn mill & kiln' or 'Belmont Mills'). The sites' locations were also noted by county, townland, OS six-inch (1:10,560) map, OS *Discovery* (1:50,000) map and Planning Authority.

Where individual components could be distinguished, their respective functions were also noted, e.g. grain mill, grain kiln. Where it was not possible to differentiate them, all the site's functions were noted under its default component number ('1').

Each site component was then digitally mapped using *MapInfo* to determine its National Grid co-ordinate to the nearest metre (i.e. 12 figures). In some instances, particularly medieval mills, it was often only possible to allocate a site to its townland rather than to a more specific location within it.

Links to other sites within the OFIAR database and to relevant records in other databases were also noted, as was the site's statutory protection status. Published material relating to each site was also photocopied and placed in hard-copy files indexed by Site Number.

1.5 Field survey

Over the summer of 2003, the author visited all the mill sites identified in the paper survey. Using a standardised form, various attributes were recorded for each site, including component type(s), survival, condition, and present use. Where there were upstanding remains, detailed descriptions were also made using the format adopted by the National Inventory of Architectural Survey – size, roofs, walls, openings, interiors. Where more than one phase of building was observed, this was also noted, as were any unusual architectural features. In addition, associated waterworks (weirs, head and tail races), plant (waterwheels and engines), and machinery were also noted where these survived. An example of a completed site record form is presented in Appendix 1.

At least one photograph was taken using a Canon EOS 500 camera and 20-35mm lens. Fuji Colour 400ASA colour film was used to produce 15cm x 10cm prints. During the processing of the film, the negatives were also scanned and digitised. These digital images were then edited using Adobe *Photoshop Elements* and saved as jpeg files,

each identified according to the photograph sequence for that particular site; e.g. 001-003_02 is image 2 for site 001-003.

1.6 Database

The documentary and field data thus recorded for each site were transferred to the OFIAR database which is based on Microsoft *Access*. Each site record within the database contains a brief summary of that particular site, details of its location, history and present state, industrial heritage significance, references and photographs. Full details of the information included in the database are given in the introduction to Part 2 of this report.

The location of every identified mill component was digitally mapped using *MapInfo*. Each feature is represented by a small circle and flagged by its OFIAR site number. By clicking on a particular circle, summary details of that component can be viewed (fig 1.3). Sites matching specific criteria (e.g. all saw mills) can also be selected using the *MapInfo* query facility and the resultant distribution map superimposed on OS maps.

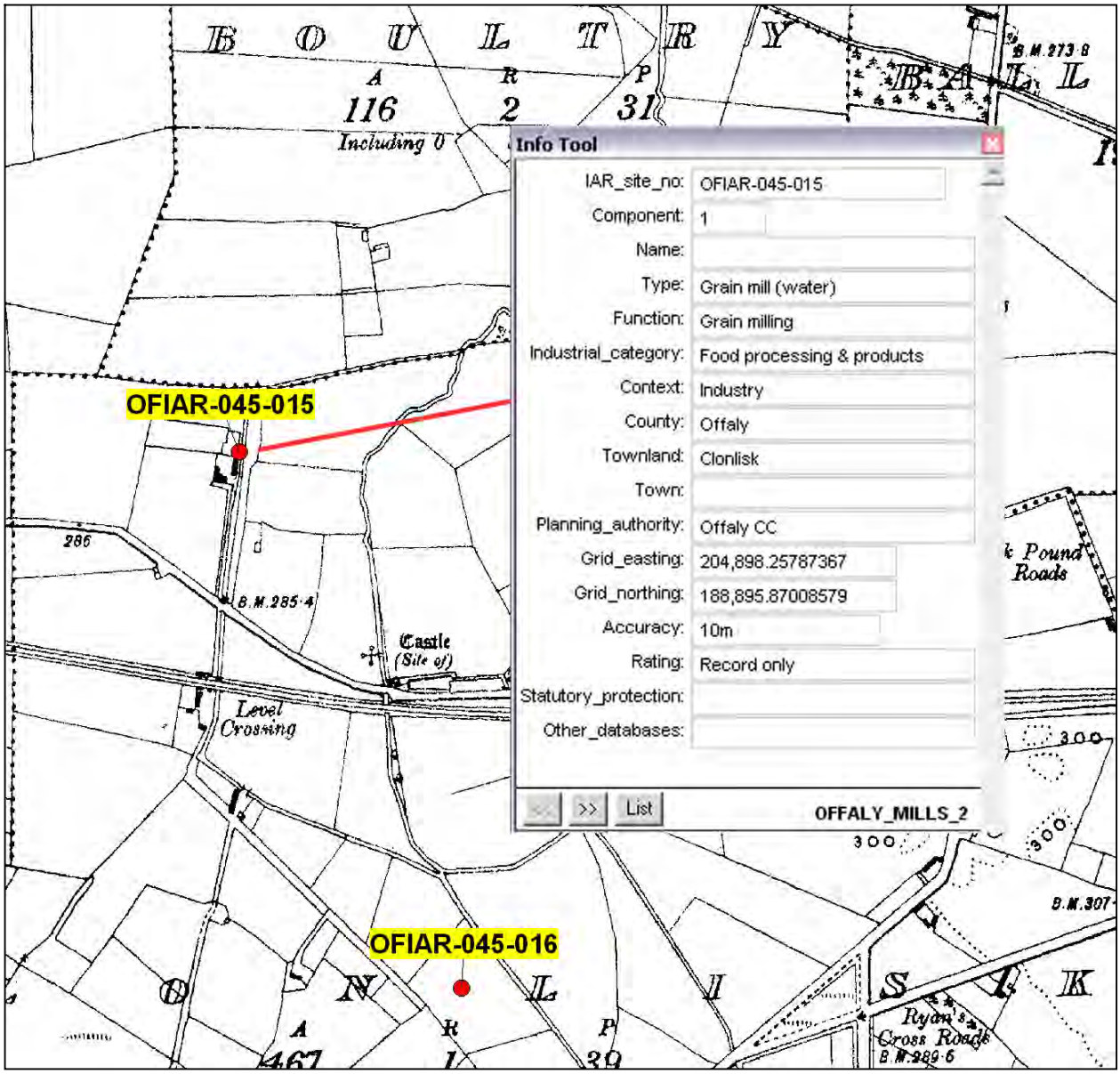


Fig 1.3 Example of *MapInfo* database view.

As not everyone will have computer facilities with which to interrogate the database and digital maps, each site record is also reproduced in printed form in Part 2 of this report. These records are arranged by OFAIAR number and include information on the site's name, location, history, description of its various components, evaluation, references and photographs. Indexes arranged by name, type and location are provided to facilitate the identification of sites of specific interest to the researcher.

Both parts of this report are also downloadable in PDF format from the Offaly County Council website, <www.offaly.ie/heriage>. High-resolution copies are also available on request from the Council, as are the *Access* and *MapInfo* databases and captioned photographs (in JPEG format).

1.7 Sample representation

Because most of the documentary sources used to identify the mills of Co Offaly date from the 1830s or later, it is inevitable that some of those which became defunct before this date will have been missed. This is also the case with those mills which came into and out of use between OS map surveys and those not established until after the publication of the third edition six-inch map around 1910.

Given that industrialisation did not begin in Ireland until the mid 1700s, most of the mills in Co Offaly date from the second half of the 18th century and later. As the majority would have been powered by water and operated over many decades, most of them are likely to have been mapped by the Ordnance Survey during its 1830s survey of Ireland, or otherwise documented, for example in the 1840s valuations. Likewise, any significant post-1910 developments are likely to have been picked up during the review of the published sources.

Whilst this report makes no claims to be an exhaustive survey of mills in Co Offaly, it is, nevertheless, a first attempt at compiling a representative overview of the county's molinological history over the past 250 years. The reader should also regard it as the basis for more detailed investigations of mill types and specific sites rather than the final word.

2. GRAIN MILLING

A total of 119 sites are associated exclusively with the milling of grain in Co Offaly (a further four operated within the contexts of distilling and malting). The distribution of these mills shows a fairly even spread throughout the county (fig 2.1).

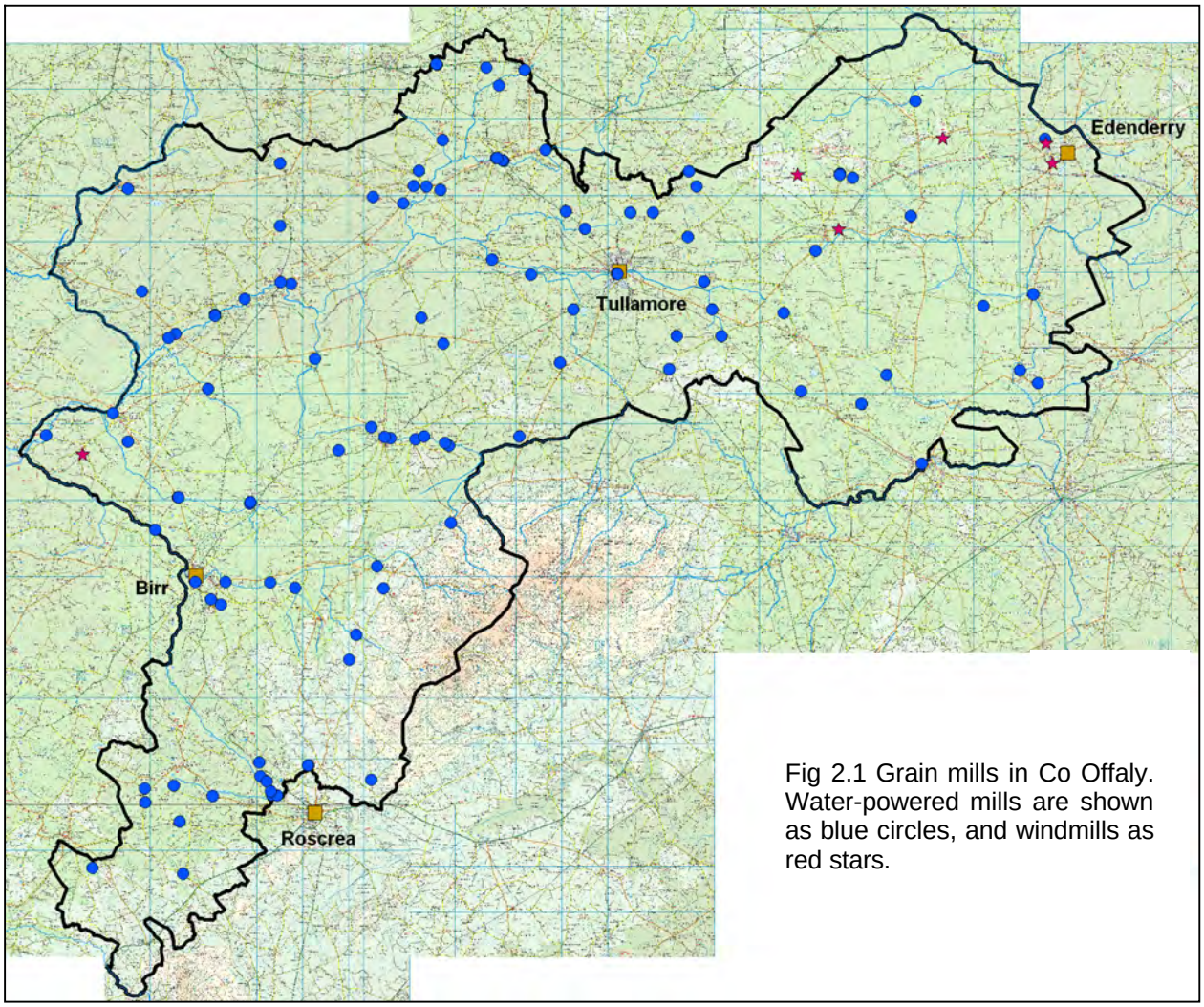


Fig 2.1 Grain mills in Co Offaly. Water-powered mills are shown as blue circles, and windmills as red stars.

2.1 Types of grain mill

The principal cereals grown were oats and wheat, from which oatmeal and flour respectively were produced. In response to specific operation demands and wider economic conditions, two basic types of mill developed to handle each type of cereal.

Corn mills

Oats were once the predominant cereal grown in Ireland and for this reason is usually termed ‘corn’. Corn mills, in which the oats were milled into oatmeal, are the most widespread type of mill in Ireland, reflecting the universal cultivation of oats and the importance of this cereal both for humans (e.g. in the form of oat cakes and porridge) and for animals (especially horses).

The local landowner usually had the monopoly on such mills, investing the capital in their construction and then either leasing them out or else employing a miller directly. Under the terms of their leases, the landowner was able to compel his tenants to take their grain to his mill for grinding, thus ensuring a steady stream of customers to the mill.

The miller received a proportion of the grain and meal ground as payment, although in more recent years cash became the norm. The miller thus was able to make a living, albeit one where it was usually also necessary to engage in subsistence farming, and also pay the rental of the mill to the landlord. The bottom line was that the landowner was assured of a reliable, long-term return on his investment.

This custom, known as milling soke, is also reflected in the use of the term ‘manorial mill’, although there is only one grain mill with this name in the county, in Ballyoran townland (031-008).

Although constant, the throughput of a corn mill on any particular day would have been fairly low, the grain being processed in batches of maybe 10-20 sacks at a time over several days. There was therefore no need for large amounts of storage space, so such mills tended to be relatively small in size. Moreover, their modest power requirements, upwards of 10-20hp at most, meant that they could be driven off even quite small streams using waterwheels typically 12-16ft in diameter (fig 2.2).

Fig 2.2 Acantha Corn Mill, north of Tullamore, a typical water-powered grain mill (009-005).

The grinding of oats into oatmeal was a two-stage process. First, they were passed through a set of shelling stones to separate the inedible outer skin (shell) from the inner edible kernel (groat). The shelling process depended on the grain being dried to 1-2% moisture content in an adjoining kiln so that the shell separated easily from the groat when passing through the shellers. Once shelled, the shells and groats passed through a current of air generated by a set of fans. This winnowing process blew off the light shells from the heavier groats. The latter were then put through the grinding stones. The ensuing oatmeal was then passed through various sieves to grade it into pinhead, coarse, medium and fine oatmeal.

Corn mills did not necessarily confine their operations to oats, being equally capable of milling wheat into flour, albeit not on the same scale as specialist flour mills. They could also produce animal feed. With provender milling, there was generally no call to remove the oat shell, as it was necessary only to break open the grain (kibbling) so that the animals’ digestive juices could get at the carbohydrate-rich groat. In later years, roller mills performed a similar function by crushing rather than grinding the grain.

Flour mills

Unlike oats, wheat contains gluten and so bread made from its flour retains its shape and takes on a relatively light texture as the dough rises as a result of yeast action.

During the later 1700s and early 1800s, wheat was an agriculturally significant cash crop in Ireland as bread became a staple in urban areas and an increasingly important export commodity to Britain. Although counties with sunny climes and fertile soils such as Kilkenny, Meath and Tipperary were to the fore in Irish wheat growing, the Midlands also benefited from this economic development.

Between 1758 and 1797, the Irish Parliament offered grants for the carriage of grain and flour to Dublin. With a bounty of 3d per mile (excluding the first 10 miles), flour attracted double the rate for wheat (1½d) and three times that of oats (1d). Thousands of pounds of profit could be made and it was this that doubtless spurred on many entrepreneurial landowners and businessmen to erect flour mills.

Although these bounties ceased in 1797, the export of grain and flour to Britain had by then grown in importance as a result of the commencement of war between Britain and France in 1793. This disrupted the importation of French wheat, thus making Britain more dependent than ever on Ireland as a source of flour, meal and cereals. Although hostilities ceased with the Treaty of Amiens, they restarted almost immediately as the Napoleonic War which lasted until Napoleon's defeat at the Battle of Waterloo in 1815.

With its ending, the price of wheat fell but was, to some extent, shored up with the introduction by the Government of the Corn Laws in the same year. These imposed tariffs on cheap foreign grain imported into Britain and Ireland (it was not until 1846, as a consequence of the Famine, that they were abolished).

Compared with corn mills, flour mills are generally much larger due to storage needs arising from the bulk purchase of wheat at harvest time and of the ensuing sacks of flour awaiting dispatch. Considerably more capital was necessary to erect such mills and fit them out not only with millstones (typically four of five sets), but ancillary equipment for cleaning the wheat and grading the resultant meal into flour.

Although wheat does not need to be parched to the same extent as oats, kilns were often incorporated in such mills to reduce the moisture of the harvested grain down to 10-12%, thus making it fit for long-term storage without going mouldy.

The difference between corn and flour mills is immediately apparent in their contrasting physical sizes (fig 2.3). This is also reflected in their rateable valuations. The 1840s mill valuations record 97 grain mills. Of the 65 cited as corn mills, two-thirds have valuations under £5 and none over £50. By contrast, two-thirds of the 29 flour mills are rated at £10 or more (table 2.1).

Fig 2.3 Erry Mill, Clara, the largest surviving flour mill in the county (008-038).

The mill with the highest rating at that time was the Manor flour mill, Birr (035-009) which was valued at £93. Six other flour mills were rated at over £50 – three in Clara (008-009, 008-038 and 008-042), and two in Drumakeenan, near Roscrea (042-009 and 042-011).

Valuation (£)	Corn mills	Corn & flour mills	Flour mills	Sub-total
0 (not working)	6	1	1	8
>0 - <5	42	1	2	45
5 - < 10	15	0	6	21
10 - < 20	1	0	8	9
20 - < 50	1	0	6	7
50 - <100	0	1	6	7
Sub-total	65	3	29	97

Table 2.1 Valuation of corn and flour mills, 1840s

A similar pattern is evident in the 1850s Griffith valuation, where 74 grain mills are recorded as being operational. Fifty-five are explicitly cited as corn mills, almost three-quarters of which are rated at less than £20; only four (7%) are over £50. Although there were far fewer flour mills at this time (only 12), a much higher proportion - half in fact - have ratings exceeding £50 (table 2.2).

Valuation (£)	Corn mills	Corn & flour mills	Flour mills	Sub-total
0 - <10	22	0	0	22
10 - < 20	18	0	1	19
20 - < 50	11	4	5	20
50 - < 100	2	2	3	7
100+	2	1	3	6
Sub-total	55	7	12	74

Table 2.2 Valuation of corn and flour mills, 1850s

The highest rating was accorded to Erry Mill, Clara (008-038) which belonged to Robert Perry and was valued at £180. Although noted as a corn mill by the Griffith Valuation, the OS maps, 1840s Mill Valuation and field evidence shows it to have been built specifically as a flour mill (fig 2.3).

As was the case with the 1840s valuations, Clara appears to have maintained its position as one of the principal centres of grain milling in Offaly, boasting three other grain mills with very high ratings: Messrs Goodbody's Charlestown No.1 and No.2 flour mills rated at £135 and £150 respectively (008-009, 008-042), and Samuel Robinson's corn mill valued at £98 (008-045).

Roscrea, Co Tipperary was also an important milling centre and its influence extended over the county boundary into Offaly as is apparent from the concentration of highly rated mills on the Little Brosna in Drumakeenan townland. Two flour mills belonging to Robert Dowd were valued at £80 and £150 (042-010 and 042-009), Fanure flour mill at £87 (042-011), and Hillsborough oat and cloth mills at £100 (042-012).

There were, for course, mills of intermediate size – small flour mills and large corn mills (fig 2.4). Moreover, oat mills were also capable of milling wheat, and flour mills could easily be adapted to handle oats, especially if they already had a kiln. The shift from cereal cultivation to animal husbandry after the Famine also brought a greater demand for animal feed which was met by both types of mill.

By the end of the 19th century, most mills were probably engaged in the milling of oats and wheat for both human and animal consumption.

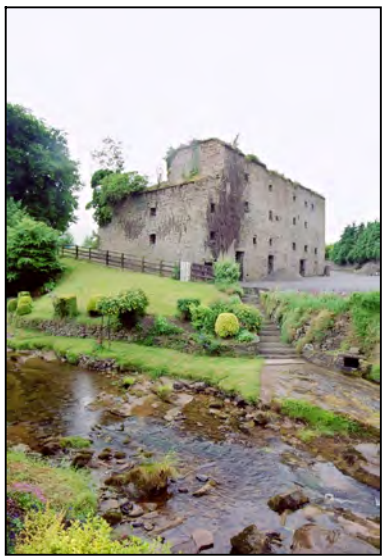


Fig 2.4 Cadamstown Mill on the Silver River.

2.2 Motive power

Water power

Of the 119 grain mills noted in Co Offaly, water provided the motive power to no fewer than 113 (95%). This overwhelming reliance on water is hardly surprising given that most grain mills were established before reliable steam engines became readily available in the mid 1800s. Compared with wind power, water can be relied upon for most of the year (in the form of rainfall!), is storable in millponds, and is also fairly straightforward to control by means of a sluice gate on the head race. Its two main drawbacks are freezing in winter and backwatering. The latter occurs at times of high water when the river raises the level of the tailrace below the wheel, thus impeding the latter's motion. Both occurrences are, however, relatively infrequent.

The energy of the water was harnessed by means of the waterwheel, of which there are two basic types. In the 'bucket' wheel, the water from the headrace fills buckets around the periphery of the wheel; the weight of the water in these buckets then turns the wheel (fig 2.5). The power obtained from the wheel is a function of the volume of water contained in each bucket (which depends on the wheel's width) multiplied by the distance through which the water falls between entering and emptying from the wheel (this fall is termed the 'head'). The wider the wheel and the higher the fall, the more power is obtained.

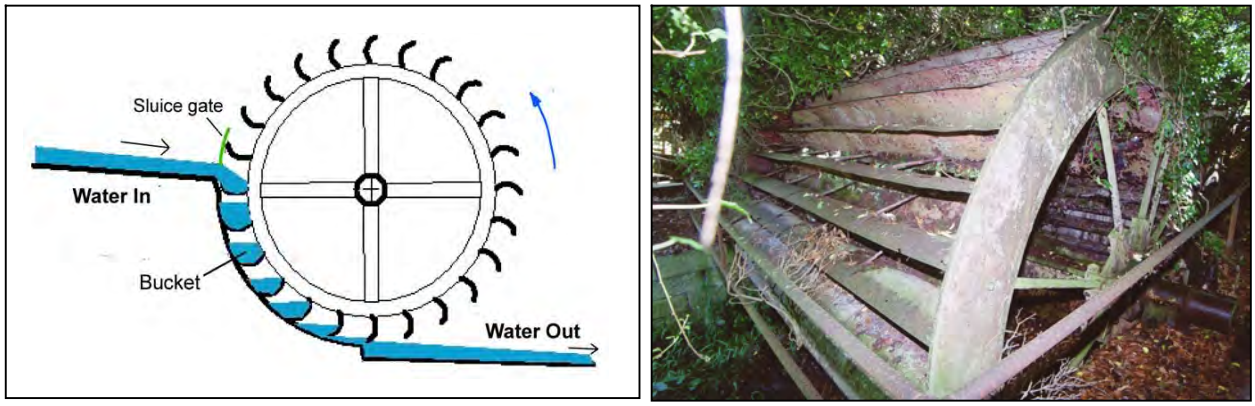


Fig 2.5 Bucket waterwheels. *Left:* Schematic diagram of operation. *Right:* Bucket wheel at Brosna Maltings (formerly a flour mill), Drumakeenan (042-009).

Fig 2.6 Weir on Brosna at Belmont Mills (014-004).

The head of water was artificially enhanced by building a weir across the river and diverting part of the flow along a flattish headrace (fig 2.6). By the time the water arrived at the waterwheel, it was therefore at a much higher level than the river.

So that the quantity of water flowing through the wheel was not solely dependent on the run of the river, a mill pond was invariably excavated between the river and mill so that a reservoir could be created and tapped at will.

With 'paddle' wheels, the water is impounded behind a sluice gate and then channelled through a narrow opening at the bottom to the gate. The escaping water then strikes the paddles (also known as floats) around the periphery of the wheel at high speed, thus turning it (fig 2.7). In these cases, the wheel's power is a function of the width of the wheel times the square of the water's speed. The latter is partly determined by the level of the water impounded directly above the sluice gate – the greater its depth, the faster its speed as it passes under the bottom of the gate.

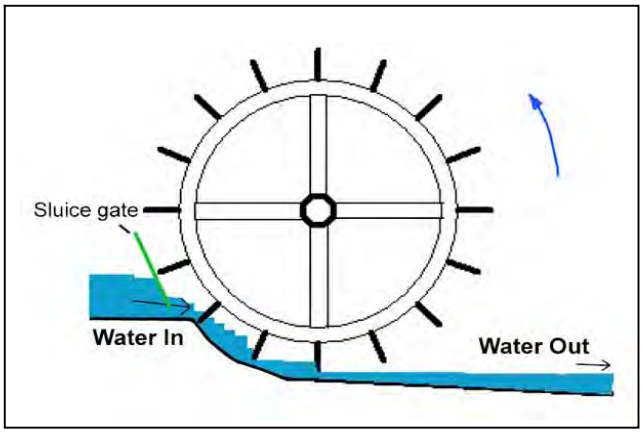


Fig 2.7 Paddle waterwheels. *Top left:* Schematic diagram of operation. *Above:* Paddle wheel at Belmont Corn Mill (014-004). *Left:* Skeletal frame of paddle wheel at Tullamore Mill (017-038).

A waterwheel can also be classified according to where the water impinges upon its rim. In the case of breastshot wheels, the water hits it between the eight and ten o'clock positions. There are also undershot, low breastshot, high breastshot, pitchback and

overshot wheels. Unfortunately, too few waterwheels now survive to carry out any meaningful statistical analysis of their types and feeds.

Six of the 97 wheels recorded in the 1840s Mill Valuation book which were associated with grain mills are specifically described as 'paddle' wheels. This implies that bucket wheels were the norm.

Moreover, comparing the falls of water on the 96 waterwheels amenable to analysis against their diameters suggests that that over half of them had breastshot feeds, 15 were probably overshot, but only two were undershot (fig 2.8).

Overshot wheels abstracted the most power from the water and undershot ones the least. However, increasing the head of water feeding on to the wheel usually necessitates a much longer headrace, so breast feeds were a practical compromise between the power obtained and cost of excavating the headrace.

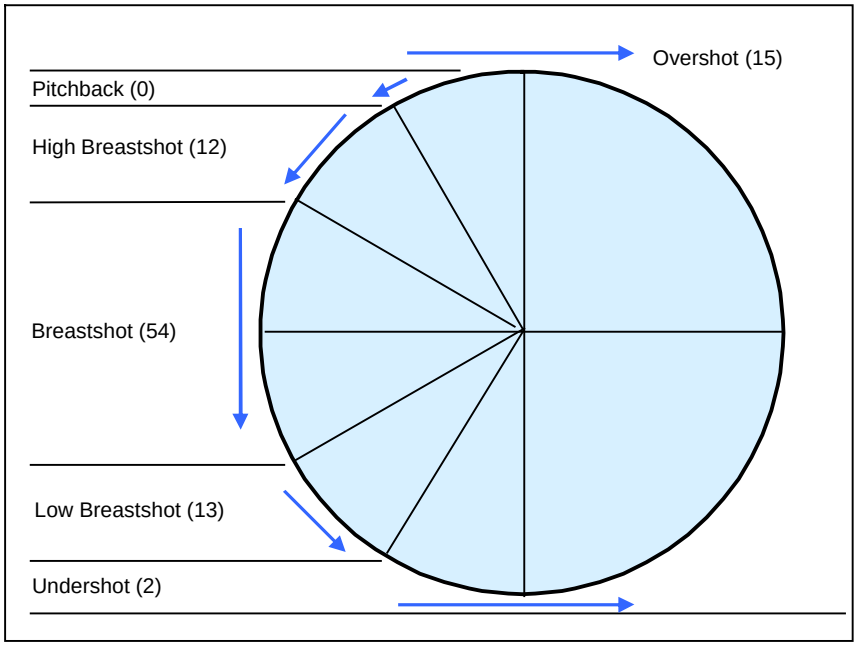


Fig 2.8 Classification of water feeds on to wheels. The figures in brackets denote the number of feed types as indicated by the 1840s Mill Valuation.

The 1840s mill valuation book notes the sizes of 97 waterwheels associated with grain mills. They average 14ft in diameter by 4ft 6in in width, albeit with considerable variation in both dimensions (fig 2.9).

Three wheels had diameters exceeding 20ft. The biggest was the 30ft diameter wheel at Garrycastle flour mill (029-011), followed by the 28ft wheel at Erry Mill, Clara (008-038) and a 24ft one at Whiteford Mill near Birr (035-031). The widest wheel – at 15ft – was at the Manor Mill, Birr (035-009). Significantly, these four mills were all flour mills; unfortunately their wheels are long gone.

At the other extreme, two wheels were only 8ft in diameter (004-011 and 016-007), whilst two others were less than 2ft wide (001-003 and 010-010). Equally significant, these four wheels were all associated with corn mills; again, none survives.

During the later 1800s and 1900s, water turbines also began to be used. These are much more compact, more efficient and easier to maintain than waterwheels. Three are recorded in corn mill contexts in Co Offaly – at Grogan Mill, Ballycumber (007-008), Erry Mill, Clara (008-038), and Ballyduff Mill (016-002). The only reason they are noted here is because they still survive and were found during field survey. Others doubtless also existed but are long gone.

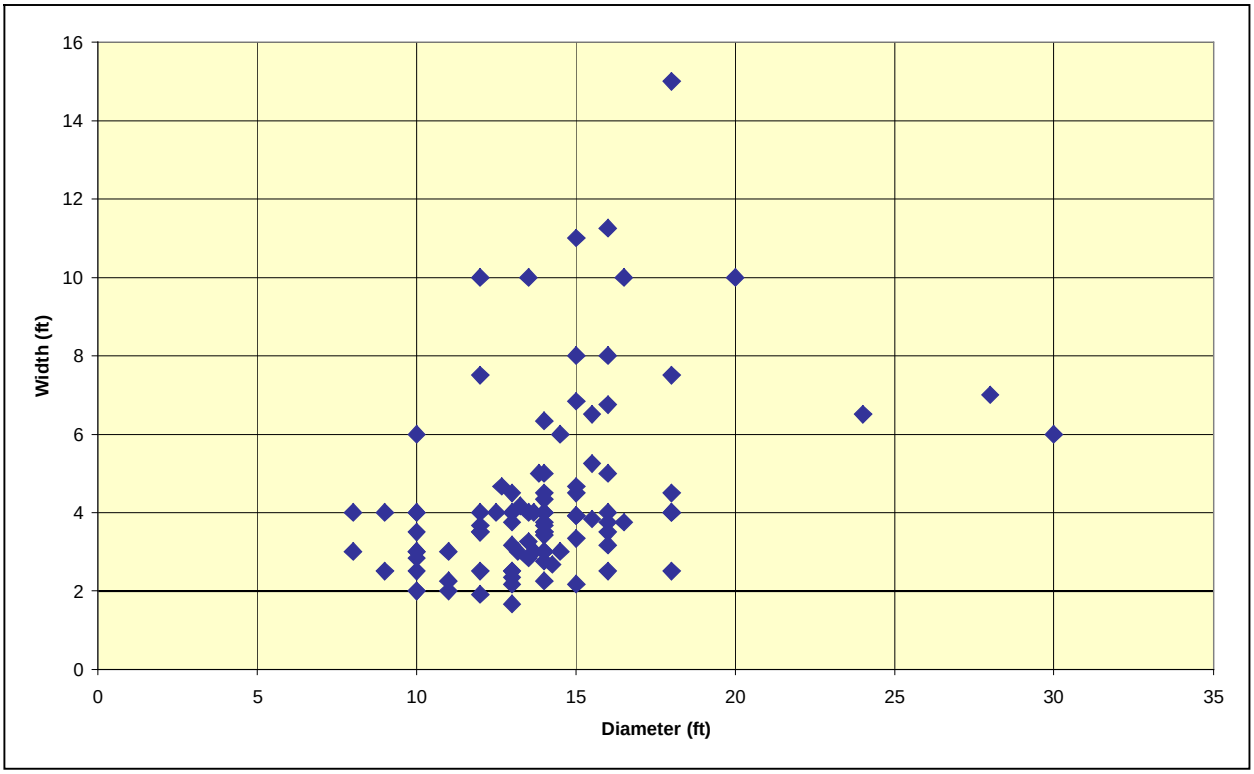


Fig 2.9 Diameter of waterwheel plotted against width.

Wind power

Seven windmills are recorded in Co Offaly, of which six were almost certainly engaged in corn milling. As can be seen from their distribution map (fig 2.1), five are situated in the north-eastern part of the county, the sixth one being an isolate north-west of Birr.

The earliest windmill appears to be the one at Barnan, north of Daingean (010-016), which is cited in the 1655 Down Survey, but which had disappeared by the time of the 1830s Ordnance survey. The other five are recorded on the OS maps, but only one was possibly still operational during the 1830s – at Fahn, just east of Rhode (011-001). Indeed, this one may still have been in use during the 1880s; unlike the other windmills, it is neither captioned as 'old' or 'disused' on the 1880s OS map.

That wind-powered mills account for a mere 5% of the recorded number of grain mills in Offaly is undoubtedly because wind power is difficult to control, impossible to store, and unreliable. Their existence indicates a demand for milling power which could not be met using water power, whether because there was no locally available stream, or the flow and head of water was insufficient to power the millstones. On the basis of their very close proximity, there is the possibility that the windmill at Monasterois (012-002) was functionally linked with a nearby watermill (012-001). If this was the case, the miller could avail of either or both power sources depending on their availability.

Only two windmills now survive – at Fahn and Cloghan Beg. Both are cap-less shells of similar design: cylindrical random rubble towers standing three floors high, with opposite ground floor doors and small windows (fig 2.10). Originally they would have had four sails at the end of a windshaft mounted in the cap atop the tower. The cap could be rotated to bring the sails into the eye of the wind and canvas would have been spread over the sails to harness the wind. Such mills probably had one or two pairs of mill-stones, for the shelling and grinding of oats.


Fig 2.10 *Left:* Fahn Windmill (011-001). *Right:* Cloghan Beg Windmill (029-008).

Steam power

Although water power is free, its drawback is that the mill is reliant on its availability. Low summer flows as well as winter flooding and freezing would all have curtailed operations.

Steam engines have been utilized in Ireland since the later 1700s, but it was not until the mid 1800s that they became generally available and reliable. For the first time, mills could be located in urban areas near their customer base, rather than being restricted to the riverbank. Most mills were, however, already well established by this time, so in practice it was a matter of deciding whether or not to adopt this new technology to augment the waterwheel. Only exceptionally, such as at Daly's Distillery, Tullamore, do we see the appearance of a mill powered exclusively by steam and not on a river (017-036, section 3.1).

Despite there being 119 recorded grain mills, only a handful ever utilized steam power. Messrs Goodbody installed an auxiliary steam engine at their Charlestown No.1 Mill, Clara in 1843 (008-009). Haughton's corn and flour mill at Banagher also had a steam engine by the mid 1850s (021-009). Although a steam mill is noted at Belmont mill during the same decade, it is possible that this mill was water powered, the steam engine never actually having been installed (014-004). A steam engine may also have been deployed at Tullamore Mill, but this has yet to be confirmed (017-038). A steam engine was also used to generate electricity for Erry Mill, Clara in the late 1800s (fig 2.11). In short, steam power was the exception and seemingly confined to the larger mills, the throughput of which made their operation viable.

Fig 2.11 Brick steam engine chimney at Erry Mill (008-038).

2.3 Power transmission

The most primitive mills had only one set of millstones, driven through a one-step gear configuration from the waterwheel (fig 2.12). Although there are no surviving examples of this type of gear configuration, one such example is noted in the 1840s Mill Valuation book at Wyre's Mill (also called the Mill of Down, 026-017) where "the same stone [is] used for shelling and grinding".

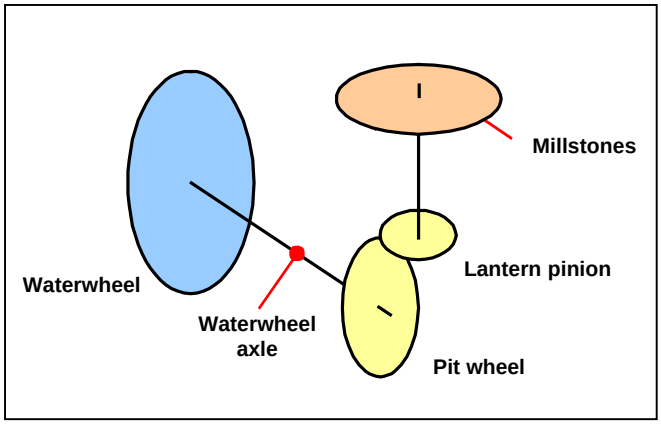


Fig 2.12 One-step gear configuration.

For shelling, the stones in such a mill were set relatively far apart so as not to pulverise the grain (which would then be blown off with the shells). They were then set closer together when it came to milling the groats into meal.

The drawback with one-step gearing is that a second waterwheel had to be fabricated in order to drive a second pair of millstones. More sophisticated corn mills did have two or three sets of millstones, but these were typically driven through a great spurwheel gear configuration (fig 2.13). This system also had an added advantage in that secondary drives could also be taken off the spurwheel for fans, sieves, elevators and sack hoists.

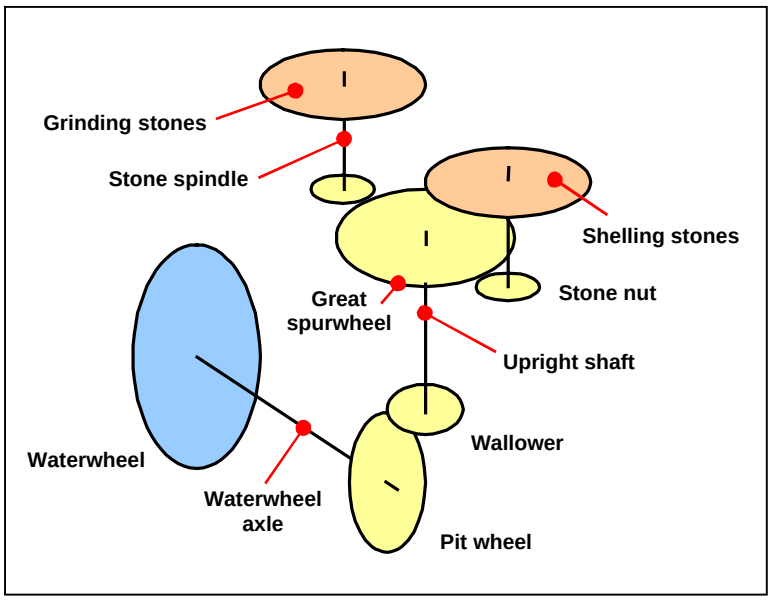


Fig 2.13 *Left:* Two-step transmission system to multiple sets of stones.

Above: Example of two-step gearing at Tinnycross Corn Mill near Tullamore (009-006).

2.4 Millstones

In mills with two or more sets of millstone, one pair was invariably given over to shelling and was generally of a relatively soft indigenous rock wrought as a single circular block (fig 2.14a). The other sets were usually reserved for grinding groats and wheat, and were often of French burr, a hard quartzite material imported from the Paris Basin. Because this material only occurs in relatively small irregular pieces, such millstones are generally made from many such pieces which were dressed into shape, cemented together with plaster-of-Paris and then held together with iron hoops (fig 2.14b). The advantage of such stones is that fragments of stone did not find their way into the meal

(to the detriment of one's teeth!), as would have been the case with softer stone such as Millstone Grit. French burrs were generally bought off specialist firms in Britain and Dublin; Belmont Mills (014-004), for example, has a burr carrying its maker's plate "Kay & Hilton, Bank Hall Bridge, Liverpool".

Fig 2.14a *(far left)* One-step shelling stone at Cappy-donnell Little Mill (002-006).

Fig 2.14b *(left)* French burr stone at Garry-brook Mill (022-017).

The 1840s mill valuation records the number of pairs of millstones in 97 grain mills throughout the county. Two sets were the norm and few had more than three pairs (fig 2.15). Two mills, both for flour, had nine sets of stones – Erry Mill, Clara (008-038) and Manor Mill, Birr (035-009). Charlestown No.2 flour mill, Clara had six sets (008-042). However, even though these mills all had sizeable waterwheels, it is likely than only three or four pairs at most were worked simultaneously.

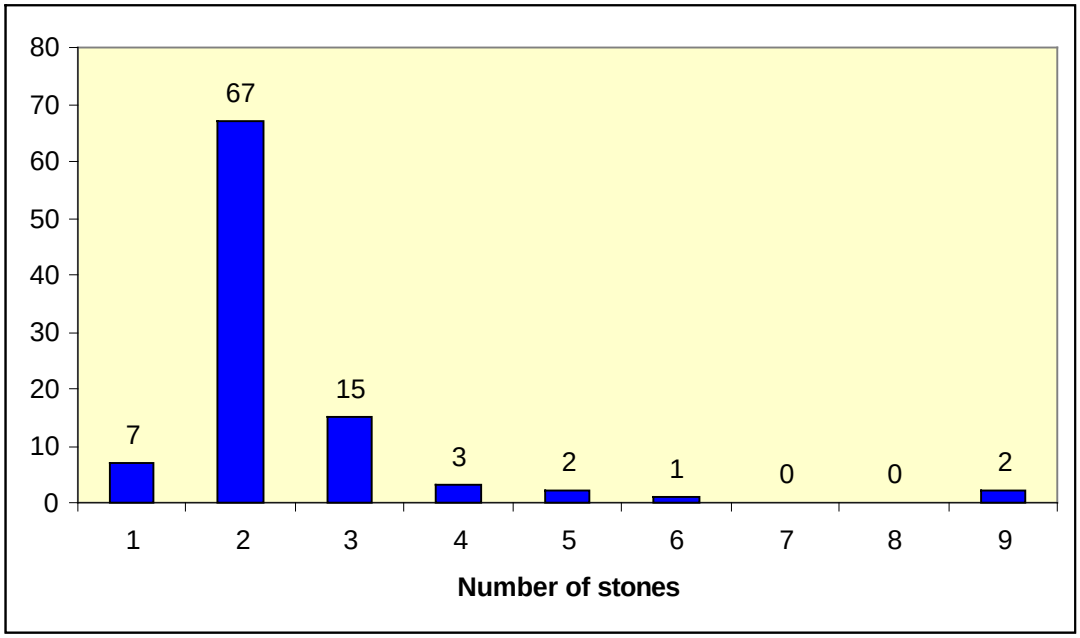


Fig 2.15 Number of sets of millstones in grain mills, 1840s.

2.5 Demise of milling industry

After the 1840s Famine, the region's milling industry experienced a dramatic decline in its fortunes due to a combination of external circumstances. The repeal of the Corn Laws in 1846 caused a fall in the price of home-grown grain as cheaper cereals could now be imported, particularly wheat and maize from North America. This imported grain could now be milled by highly efficient steam-powered roller mills in ports such as Dublin, Waterford, Cork and Limerick and their output easily distributed to every part of the country on the rapidly-expanding railway network. Animal grazing also increased in

extent at the expense of cereal acreages. The falling demand for locally-milled home-grown cereals was also exacerbated by the depopulation of the countryside.

Consequently, many small mills went out of production as they could no longer compete with larger, more efficient mills. There was also a greater emphasis on provender milling as livestock husbandry came to the fore. Flour milling in particular suffered a dramatic decline as mills went out of business or switched to oat milling and animal feed. One notable failure was Richard Dowd's massive flour mill on the Little Brosna at Drumakeenan (fig 2.16). In the 1840s and '50s, it had one of the highest valuation ratings in the county. By 1885, however, it had been converted into a maltings. Of the five other grain mills in the vicinity of Dowd's, a second one had also stopped by 1885 and three of the remaining four by 1910.

Fig 2.16 The former double-pile flour mill at Brosna Maltings (042-009).

This trend of declining numbers and a shift in type of output is clearly evident in the OS maps from the 1830s to 1910s. Assuming that captioned mills were operational at the time of survey (uncaptioned mills and those cited as 'disused' or 'old' are presumed to have not been working), the number of working mills falls from 98 in 1838 to 69 in 1885, and then to 36 by 1910. At the same time, the proportion of those still at work which are engaged primarily in corn milling increases significantly (fig 2.17).

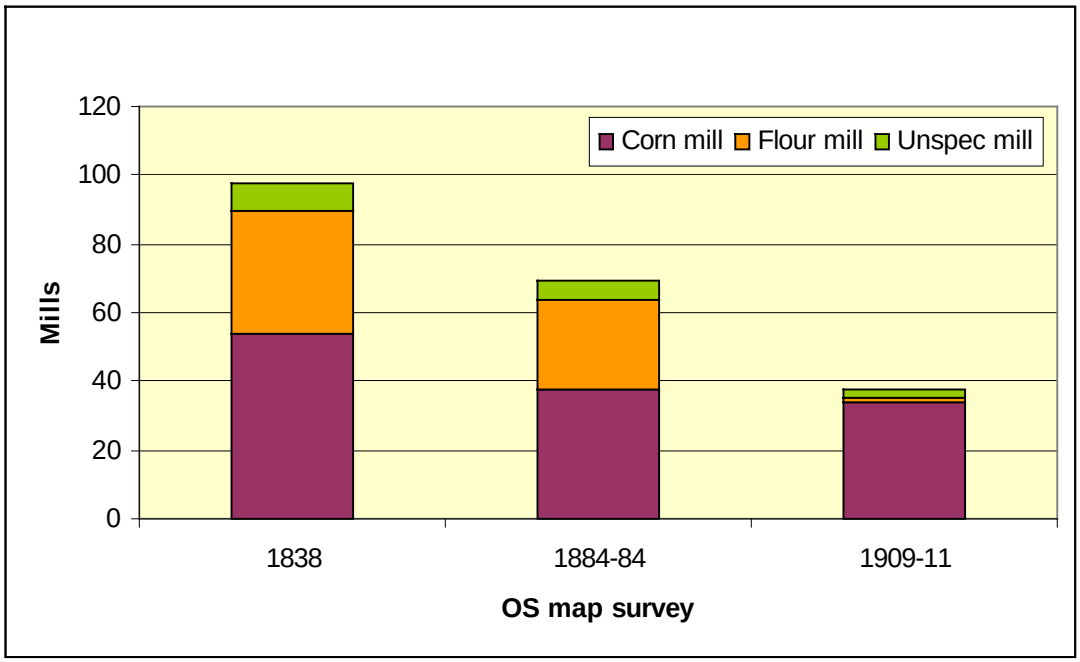


Fig 2.17 Decline in grain mills, 1830s-1910s.

Some mills did, however, show a remarkable tenacity for survival. Perry's flour mill at Belmont, for example, was gutted by fire in 1879 but was quickly put back into operation. A new maize mill for animal feed was added in 1906-09 (fig 2.18). The mill was again gutted by fire in 1925, but was back in action three years later along with a

water turbine for generating electricity. The maize mill continued to function until it was destroyed by fire for the third time in 1982.

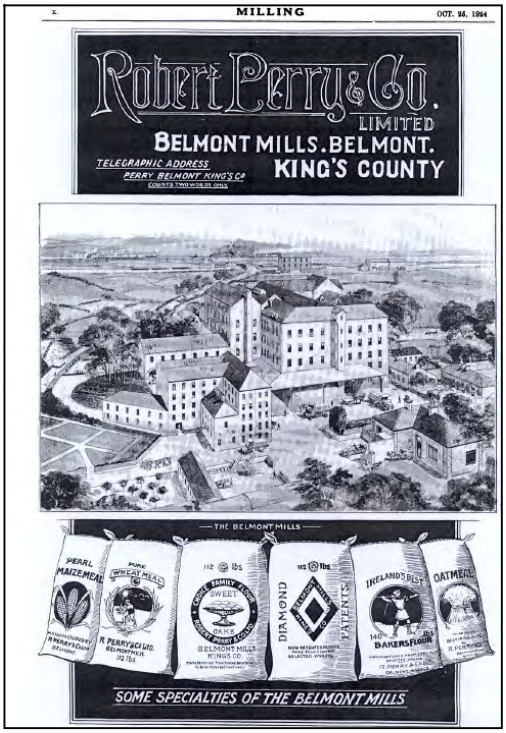


Fig 2.18 *Right:* Advertisement for Robert Perry's Belmont Mills (014-004) in *The Miller*, 1924. *Above:* The grain store is now all that remains of the flour mill block.

Fig 2.19 Semolina purifier in Erry Mill (008-038).

The industry's evolving technology is well illustrated at Erry Mill, Clara. This late 18th or early 19th century water-powered flour mill was completely re-equipped inside by the Goodbodys around 1920. New roller mills and ancillary grain cleaning and flour grading machinery were installed (fig 2.19). Large grain silos were also erected beside the nearby railway and the waterwheel replaced with turbines and a steam engine. The mill was taken over by Ranks (Ireland) Ltd in 1930 and continued working until its closure in 1969.

2.6 Surviving mills

Of the 119 recorded grain mills, less than one-third of the buildings still have substantial or complete remains (fig 2.20). Plant has faired even worse, with only 10 sites where wheels or turbines can still be seen. At only six sites is much of the machinery still intact.

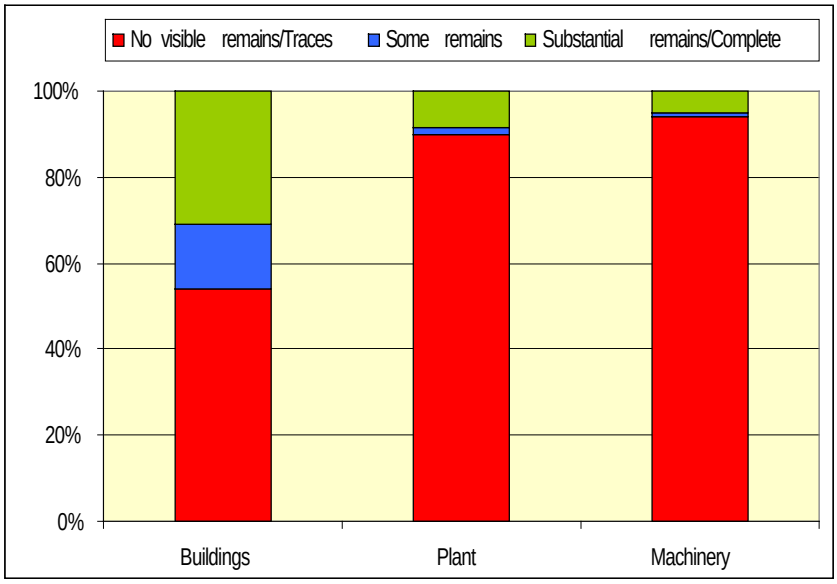


Fig 2.20 Survival of buildings, plant and machinery at Offaly grain mill sites.

Within the county, there are only six sites where there are substantial or complete remains of the buildings, plant *and* machinery: Erry Flour Mill, Clara (008-038), Acantha Corn Mill (009-005), Tinnycross Corn Mill (009-006), Belmont Corn Mill (014-004), Ballyduff Corn Mill (016-002; with a water turbine rather than a wheel), and Fancroft Flour Mill (043-002).

It is particularly fortunate that there are examples of both corn and flour mills of varying size to represent the county's milling heritage. Their survival is undoubtedly due to the fact that their owners still have regard for them, even though they are long defunct as commercial enterprises.

Adjacent to the flour mill noted in section 2.5 at Belmont is an absolutely intact corn mill and granary dating from 1867 (fig 2.21). In fact, this mill has the distinction of being *the* most intact mill in the entire county.

Fig 2.21 *Clockwise from top left:* Belmont corn mill and grain store; Great spurwheel gearing; Oatmeal grading equipment; Stone floor.

3. DISTILLING, MALTING AND BREWING

Forty-three sites are associated with the distilling, malting and brewing industries in Co Offaly (fig 3.1).

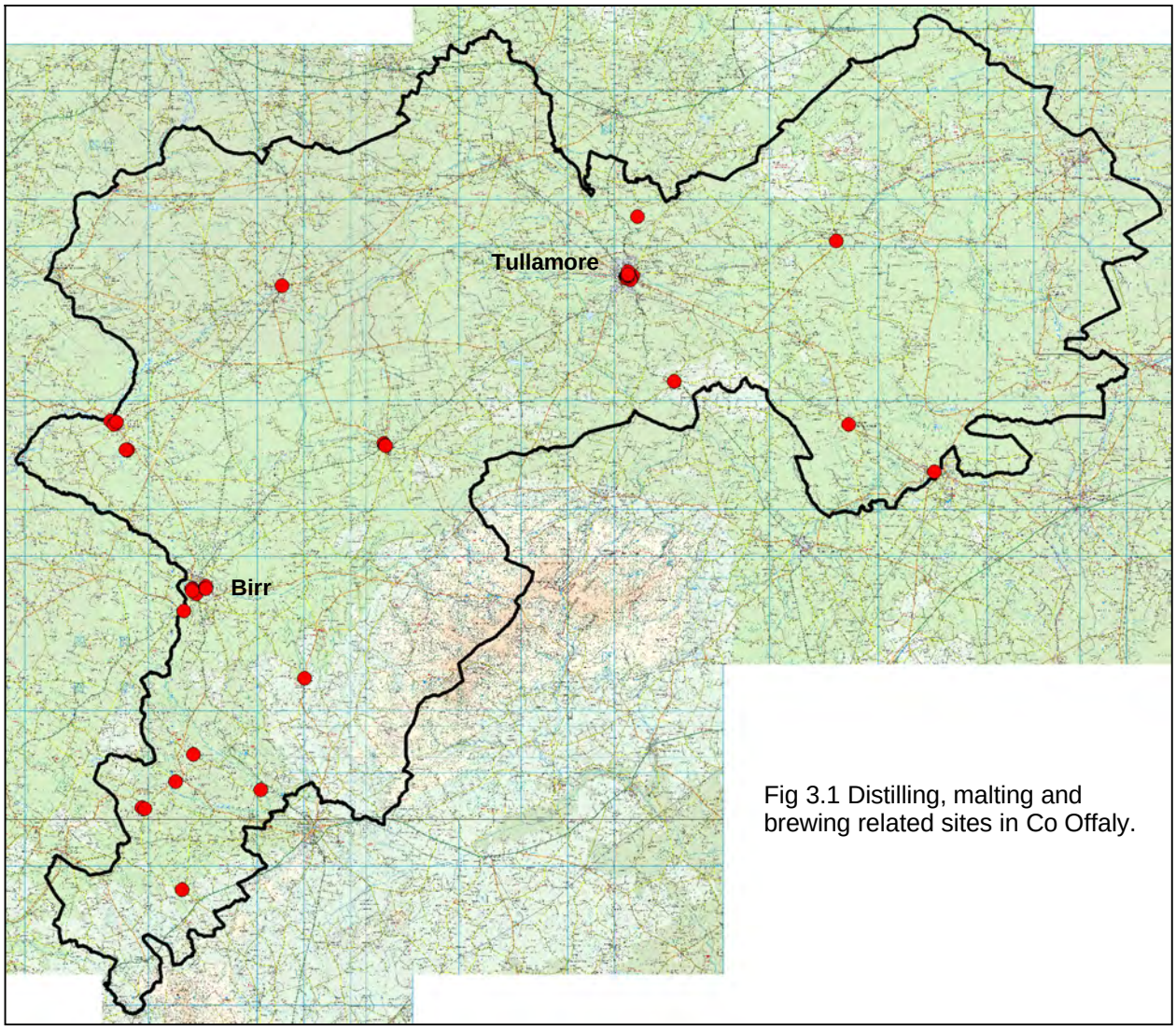


Fig 3.1 Distilling, malting and brewing related sites in Co Offaly.

3.1 Distilling

Twenty distillery-related sites are recorded in the county, of which 13 were actual distilleries; the rest are mostly malt houses and stores associated with the distilleries (fig 3.2). Most were established in the later 1700s and early 1800s and were situated in the larger towns and villages, notably Tullamore (two distilleries), Birr (three), Banagher (two), Kilcormac (one), and Daingean (one). The hamlet of Kilcomin boasted two distilleries, one of which is said to have been one of the foremost in the county during the early 1800s (41-006). Interestingly, no distillery is recorded at Clara, probably because of the influence of the Goodbody family who were Quakers.

Some of the distilleries utilized water power, undoubtedly for milling the malted barley and pumping liquids. Interestingly, four also employed steam power – Daly's and Fentlands' in Tullamore, Robinson's in Birr, and Garrycastle Distillery near Banagher. The use of such engines ensured that production would not be interrupted by a lack of water and reflects the capital which their owners were prepared to invest in the expectation of a profitable enterprise.

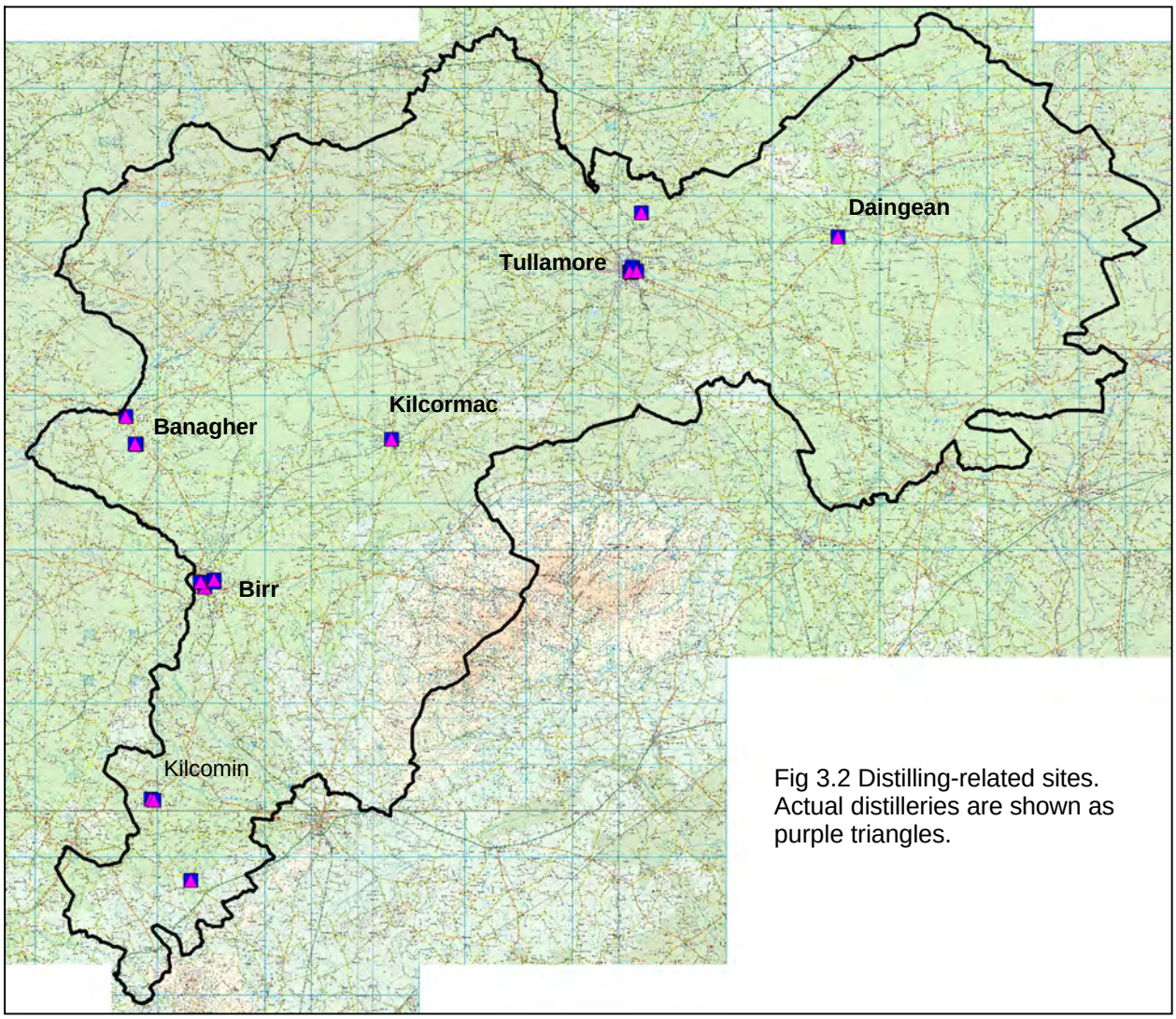


Fig 3.2 Distilling-related sites. Actual distilleries are shown as purple triangles.

The fortunes of the industry were, however, mixed. Of the 12 distilleries marked on the 1838 OS maps, four were already defunct by that time - Daingean, Birr and the two at Kilcomin. Of the eight survivors, only three were still at work in the 1850s - Daly's at Tullamore, Wallaces' at Birr, and Mitchell's at Kilcormac.

Daly's Tullamore Distillery (17-036) was established by Michael Mulloy in 1829 and inherited by Bernard Daly in 1857. At that time it had the highest rateable valuation of all the distilleries in the county (£115). In 1886, four stills were producing 270,000 gallons of whiskey per year – higher than either Birr or Kilbeggan (Co Westmeath). The premises also contained eight grain stores, four malting houses and kilns, an eight-stone malt mill, two mash tuns and three steam engines. In the late 1800s, the distillery underwent a considerable expansion under the direction of Daniel E. Williams. It was he who introduced Tullamore Dew, the name of which bears his initials.

The Birr Distillery (35-034) was established by R. and J. Wallace in 1805 and was second only to Daly's in terms of its rateable valuation in 1854 (£75). When visited by Alfred Barnard in 1886, its two pot stills were producing 200,000 gallons of whiskey per year. The extensive complex comprised a malting floor, kiln and mill, mash tun, still room, spirit store and bonded warehouse. Unfortunately, operations came to an abrupt halt in 1889 when the premises were gutted by a fire.

The Kilcormac Distillery (31-012) was worked in conjunction with a nearby water-powered brewery, but had been superseded by a large maltings in the 1880s; the actual distillery is long demolished.

The distillery at Garrycastle (29-011) originated in the 1840s and occupied a disused flour mill. In 1873 a massive new distillery was built by the Banagher Distillery Company, complete with three stills with a total capacity of 43,000 gallons (higher than Tullamore, Birr and Kilbeggan). However, the firm went bankrupt almost immediately. Over the next quarter century it passed to a succession of owners - the Banagher Whiskey Distillery Co (1877-81), the Banagher Distillery Co (1884-90), Dublin City & Banagher Distilleries (1890-97), and finally the Whiskey Distillers Syndicate (1897-1899). The fact that no one could hold on to it for more than a decade suggests that, unlike Daly's Distillery, profitability was impossible, perhaps because it was too costly to run in relation to its market share. The site was subsequently redeveloped as a maltings and most of the distillery-related buildings were demolished.

Daly's was the only distillery to continue operations into the 20th century - up to 1954. Thereafter, it focused on the production of the highly successful Irish Mist liqueur, made from its stocks of whiskey which were blended with honey.

Of all the distilleries in the county, the remains of Birr Distillery, on the eastern outskirts of the town, are the most extensive. The complex is now derelict apart from a small section at the front of the complex which has been converted into holiday accommodation (fig 3.3).

Fig 3.3 Birr Distillery.

In Birr itself, Robinson's Distillery is long gone (035-047), but its associated malt house and kiln both survive, now converted into a hotel (fig 3.4).

Fig 3.4 Malt house and kiln at former Robinson's Distillery, Birr.

Although most of Daly's Tullamore Distillery has been demolished, what survives is of particular industrial heritage interest, albeit in poor condition. Especially noteworthy is the building adjacent to the Bridge Shopping Centre which contains a horizontal steam engine and three-stone malt mill (fig 3.5). Also associated with this enterprise are several adjoining maltings (17-064, 17-065), the firm's head office (17-091), and a

bonded warehouse erected beside the Grand Canal in 1897 and now converted into the Tullamore Dew Visitors' Centre (17-076).

Fig 3.5 Tullamore Distillery. *Left:* General view. *Middle:* Steam engine. *Right:* Millstones in grist mill.

3.2 Malting

Seventeen malting-related sites are recorded in Co Offaly and most date from the second half of the 19th century (fig 3.6). Malting entails the germination of barley to convert its starch to sugar, then drying the sprouted grain in a kiln, and finally milling it into malt.

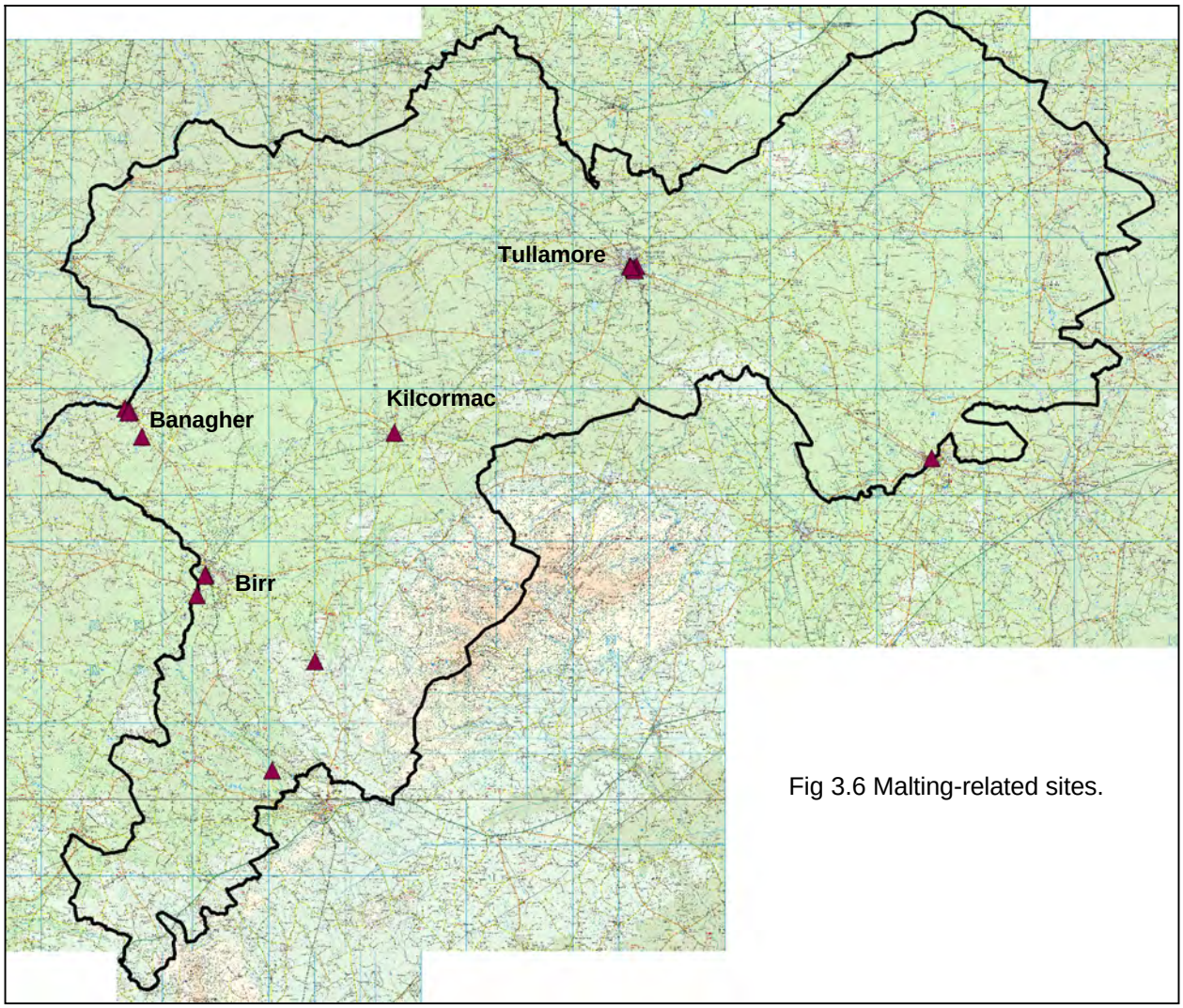


Fig 3.6 Malting-related sites.

This process has, of course, been carried on for many centuries, but generally on a small scale to satisfy local demand. The several small malt houses cited on the 1830s OS maps undoubtedly reflect the relatively low level of activity at that time.

During the second half of the 19th century, malting emerged as a significant industry in its own right. Its focus was in Tullamore where there were seven maltings – two operated by Messrs Tarleton on Tanyard Lane (17-039 and 17-053), Egans' near Market Square (17-049), two associated with Daly's Distillery in the vicinity of Bridge Street (17-064 and 17-065), as well as two smaller enterprises elsewhere in the town (17-050 and 17-054). Interestingly, Egans' was established in Fentlands' Distillery and two others were on sites of former breweries.

At Banagher, F.A. Waller established the Bridge Maltings around 1880 in a former flour mill beside Shannon Bridge (021-009). He also instigated the Crank Maltings further up the Main Street in a former brewery (21-011). A short distance south-east of the town, at Garrycastle, Daniel E. Williams (operator of the Tullamore Distillery) began malting in the early 1900s at the former Banagher Distillery (29-011). Williams also operated a maltings at Kilcormac in the early 1900s on the site of the former distillery (31-012); it was subsequently taken over by Messrs Maher & McCann. In the 1970s, Williams and Waller amalgamated to form the Williams Waller Group. This resulted in the closure of the Bridge Maltings, but the two other Banagher maltings continued in operation until the 1990s (latterly under the name of Minch Malt, owned by the Greencore Group).

Birr also had a substantial later 19th century maltings on Castle Street, beside Robinsons' former distillery (35-007). Another large enterprise from the same period was Messrs Perry's Brosna Maltings, in a defunct flour mill complex on the Little Brosna River, 4km north-west of Roscrea (42-009). A maltings is also recorded in Portarlington at this time as well (34-008).

Although there are now no operational maltings in Co Offaly, sufficient survives to indicate its former extent and scale. The Minch Malt complex at Garrycastle is by far the largest complex, albeit falling into dereliction since operations ceased. The malt kiln and malting floors at Tarleton's Maltings in Tullamore form an attractive block along Tanyard Lane, whilst much of the original character of the nearby Eagans' Maltings has been retained in the conversion of the complex to apartments and retail outlets (fig 3.7).

Fig 3.7. *Left:* Banagher Maltings, Garrycastle. *Middle:* Tarleton's Maltings, Tullamore. *Right:* Eagans' Maltings, Tullamore

The most unaltered of all the county's maltings is the one at Kilcormac, which still retains all its malting floors and double kiln at one end (fig 3.8). Its survival is undoubtedly due to its rural location which has not been subjected to the same development pressures as the maltings in the towns, and also due to it being kept in repair by its owner.

Fig 3.8 Kilcormac Maltings. Note tarred left end where kilns are located. *Bottom left:* Top malting floor. *Bottom right:* Base of kiln showing hearth.

3.3 Brewing

With only 13 sites being identified in this survey, brewing was a relatively minor industry in Co Offaly compared with distilling and malting (fig 3.9). However, because the industry peaked in the later 1700s and early 1800s, sites which were defunct long before the 1830s and are not cited on the OS maps undoubtedly await discovery.

Tullamore has four recorded breweries and Birr has two, whilst the smaller settlements of Banagher, Clonygowan, Ferbane, Kilcormac, Killeigh and Shinrone had one each. Their small scale suggests that they catered primarily for their local market and immediate hinterland. Two of them seem to have been operated in tandem with nearby distilleries - Robinson's at Birr and Mitchell's at Kilcormac. As with distilling, no brewery is known at Clara. Only one completely rural example is known, in a farmyard complex at Clareen House, and was probably for domestic use.

All the known breweries are explicitly cited on the 1838 OS map and many of them probably originated in the 1700s. Judging by the absence of millraces on the OS maps at most of these breweries, water power seems to have been the exception rather than the norm, indicating that production was probably carried on manually and on a small scale. It is possibly because of their limited output that most appear to have ceased production during the mid 1800s.

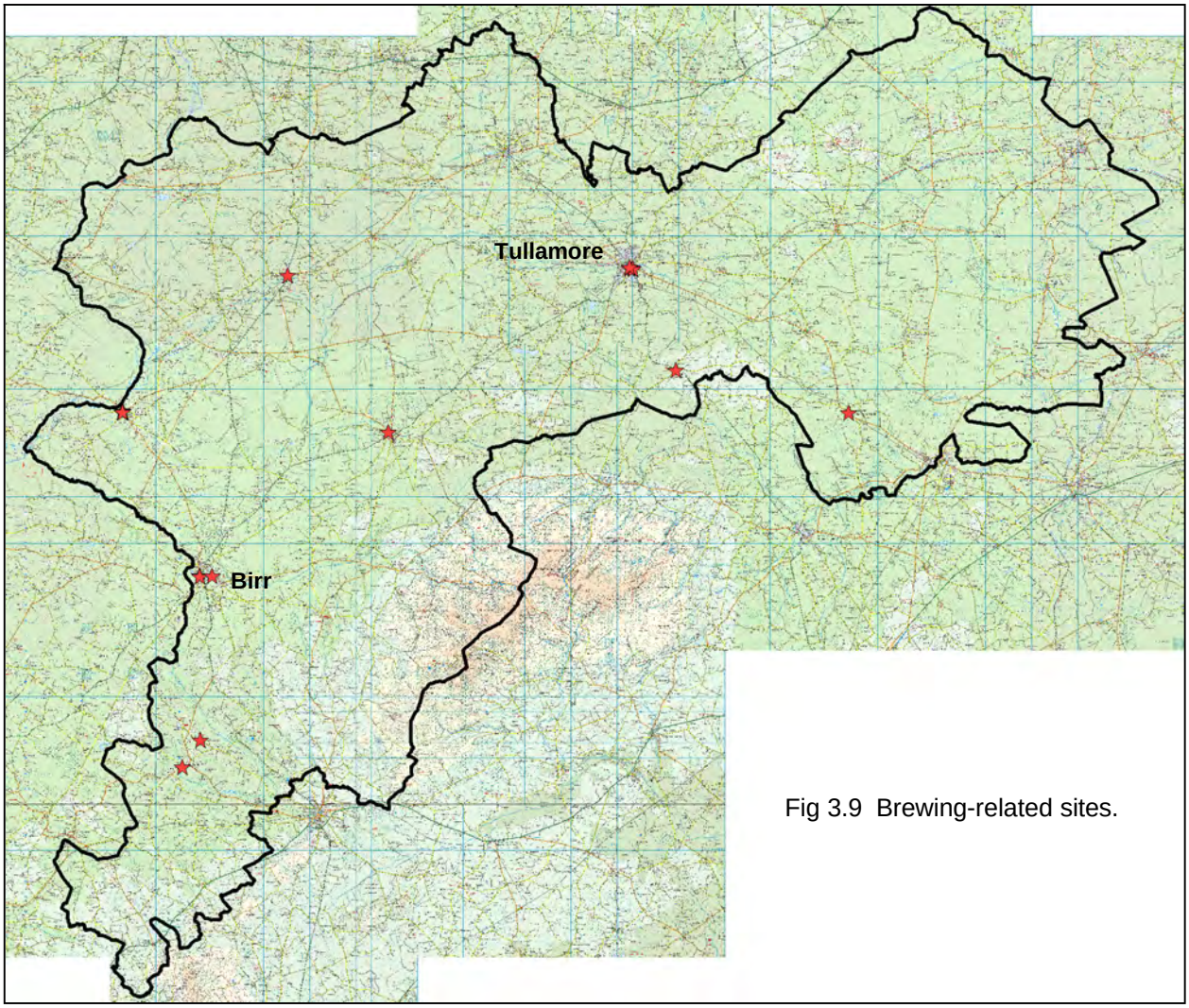


Fig 3.9 Brewing-related sites.

Two of the breweries in Tullamore (Manley's and Tarleton's) and the one in Banagher were converted to maltings in the later 1800s. Only Egans' on High Street Tullamore is definitely known to have continued operations into the 20th century. However, it closed around 1914 and no operational brewery is recorded in the county thereafter.

Little evidence now survives of brewing in Offaly. Most of the sites have long been cleared and redeveloped, including the four in Tullamore. Brewery buildings survive at Elmgrove, Birr and Killeigh, and brewery-related stores in Banagher and Birr (fig 3.10).

Fig 3.10 Brewery-related sites.

Top left: Killeigh (25-007).

Top right: Crank House, fronting a the brewery in Banagher (21-011).

Bottom left: Elmgove, Birr (35-046).

Bottom right: Stores associated with Robinson's Brewery, Birr (35-029).

4. TEXTILE MILLS

A total of 30 textile-related sites have been identified in Co Offaly (fig 4.1). The vast majority are associated with the woollen industry, but flax/linen, cotton and jute production are also represented.

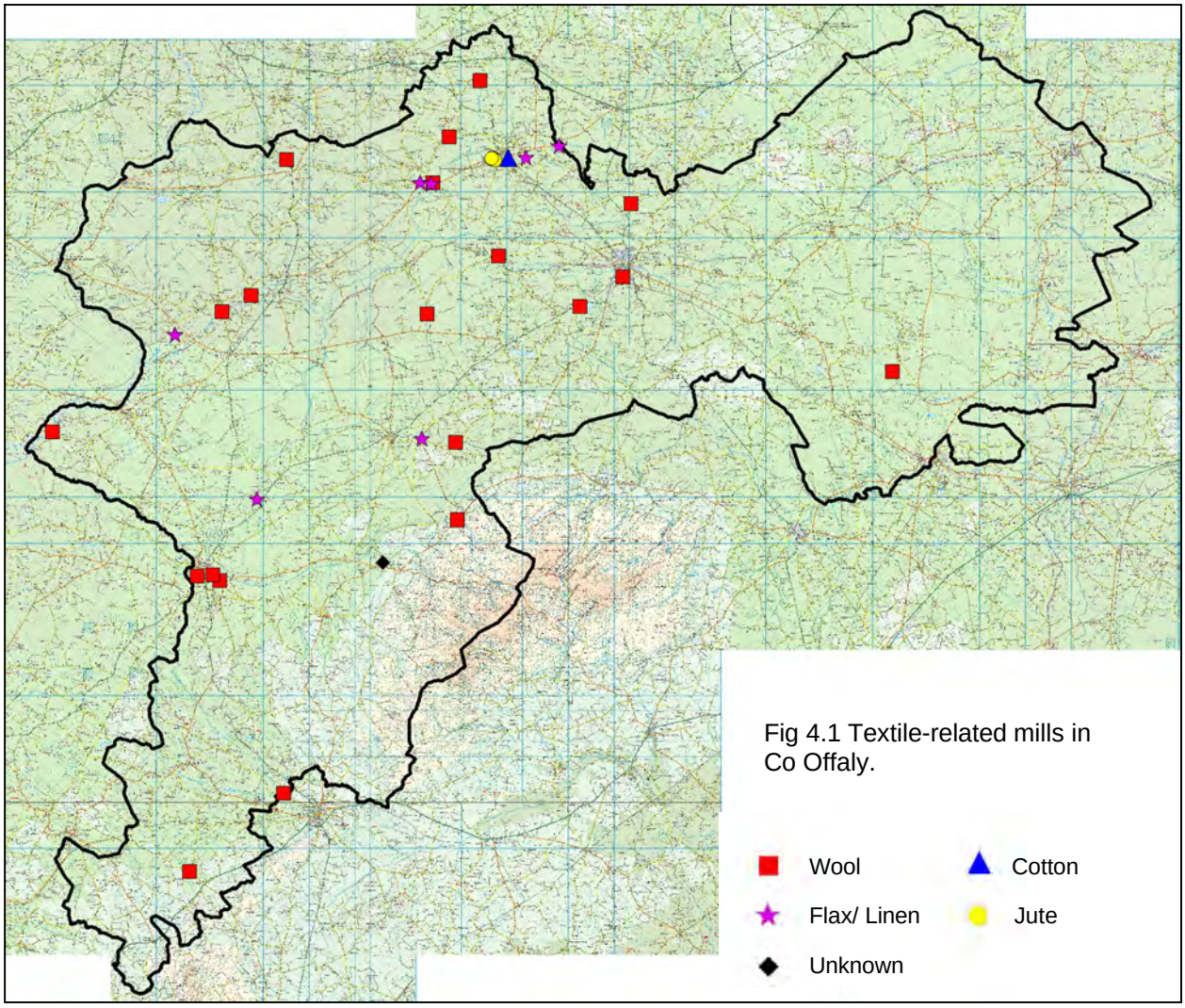


Fig 4.1 Textile-related mills in Co Offaly.

4.1 Wool

The preparation of woollen cloth entails four main processes – (1) carding the wool, (2) spinning the carded wool into yarn, (3) weaving the yarn into cloth and (4) fulling the cloth into a finished product. Twenty sites related to the woollen industry have been identified in Co Offaly (fig 4.1). The vast majority relate to fulling, but weaving and spinning are also represented.

Fulling

The vast majority of Offaly's woollen mills relate to the fulling of the woven cloth. Commonly known as 'tuck' mills, such mills pounded the cloth in a bath of urea (a strong alkali) using one or several water-powered wooden hammers. This process removed the wool's natural oil which would otherwise have given a pungent smell to the cloth. Fulling also closes up the cloth's warp and weft, thus improving its durability.

Most of these tuck mills are recorded only in the 1830s OS maps and/or 1840s valuation books, often in association with grain mills. Few are cited thereafter, suggesting that the famine was a watershed in this aspect of the industry's fortunes.

One of the largest fulling mills was at Tully, where a massive 30ft x 6ft waterwheel (one of the largest in the county) powered six fulling stocks (fig 4.2a). Cited as a woollen factory on the 1838 OS map, it appears to have continued operations until the end of the century. Although the waterwheel and machinery are long gone, part of the complex is still inhabited.

Another notable example was at Hillsborough Mills near Roscrea which is cited as a cloth mill on the 1838 map (fig 4.2b). The 1840s Mill Valuation book notes it as containing a willy, a teaser, scrubbers, stock and napping machines for washing, fulling and 'fluffing up' the cloth, all powered by an 18ft x 4ft waterwheel. Only the derelict shell of this building now survives.

Fig 4.2a *(left:* Former fulling mill complex at Tully (002-014). Fig 4.2b *(right)* Former tuck mill/ flour mill at Hillsborough Mills, Drumakeenan (042-012).

Weaving

Weaving is recorded at only one site – Cadamstown Mill (037-002), where it took place in a converted corn mill over a 15-year period around 1900. When the industry was to the fore in the 18th century, all weaving would have been done manually, doubtless at home (i.e. in domestic rather than factory contexts). Whether manual or power looms were used at Cadamstown is unknown.

Spinning

Spinning also seems to have been carried out at home rather than in factory contexts in the industry's 18th century heyday as there are no documented mills. This would also explain the apparent absence of carding mills, in which the wool fibres were mechanically aligned parallel to one another preparatory to spinning. Again, this process could have been done at home in tandem with hand spinning.

Two substantial spinning mills, both dating from the mid 20th century, are recorded in the county. One was established by Salts (Ireland) Ltd in 1938 behind the façade of the former Tullamore gaol (fig 4.3). This firm also had a spinning mill in Mountmellick, Co Laois. The presence of this English firm was a consequence of the protectionist policies which were enacted earlier in that decade by de Valera's Fianna Fáil government to promote national self sufficiency by curbing British imports.

As was the norm with such mills, the buildings where production took place were only one storey high, with multiple bays and sawtooth roof fenestration to maximise the natural light.

Fig 4.3 *Above:* The façade of Tullamore Gaol in front of Salts' Mill (017-085). *Top right:* spinning sheds with characteristic saw-tooth roofs. *Bottom right:* interior of spinning shed.

This enterprise was eventually taken over by Tullamore Yarns and operated until 1982. The single-storey saw-tooth roofed buildings associated with the factory are now in use as Kilcruttin Business Park.

In the 1950s, a wool spinning mill was also opened on the Kinnity Road, Birr by B. Wood & Son (fig 4.4). Behind its imposing two-storey façade is a range of single-storey sheds similar to those in Tullamore. The premises were subsequently converted to the Midland Tribune's printing works.

Fig 4.4 Wool spinning mill, Birr (035-053). The utilitarian spinning sheds are tucked behind the imposing office façade.

4.2 Flax and Linen

Seven sites are noted in this survey which relate to flax and linen. As one is the tailrace to a bleach mill just over the county border in Co Westmeath (008-012), there are only six actual mill sites within Co Offaly. Compared with other counties, notably those in Ulster, it appears to have been a relatively insignificant industry.

The production of linen from flax involves four main processes – scutching of the flax plant to remove the actual fibre from the straw, spinning of the fibre into yarn, weaving the yarn into brown linen, and bleaching of the brown cloth into white linen.

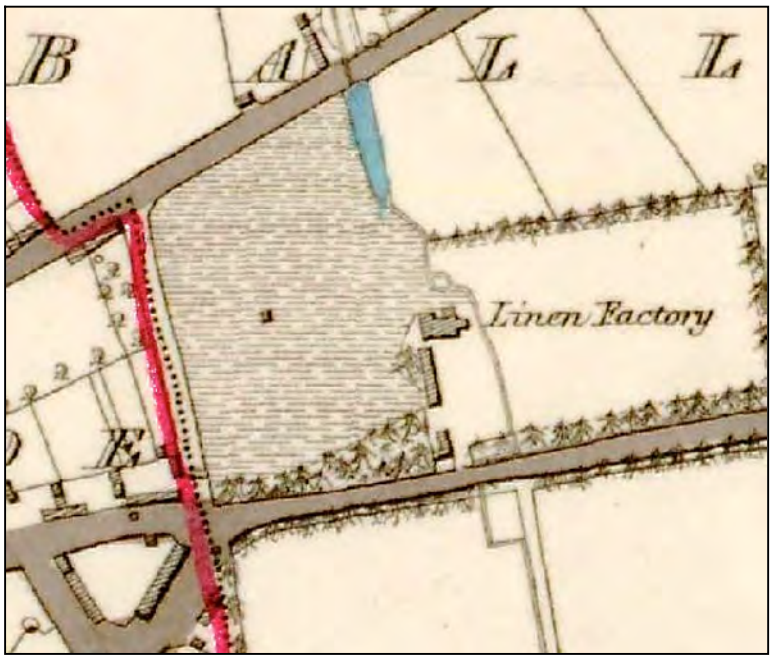
Flax scutching

Scutching was undertaken in flax mills, two sites of which are noted here. One was at Moystown Demesne and is cited as 'flax mill' on the 1838 OS map, in the same building as a flour mill (022-021). However, as there are no further references, it presumably ceased operations around 1840, at the time of the Famine.

At Ballyboy, the truncated random rubble shell of a building is said to have been a 20th century flax mill (031-019). Further site investigation would be necessary to confirm this.

Bleaching

Four bleaching sites are noted in Co Offaly, of which three are definite and one a possibility.



Just west of Ballycumber, a bleach green and linen factory are cited on the 1838 OS map (fig 4.5). The brown linen was laid out on the ground to bleach in the sun's ultra-violet rays.

Fig 4.5 Depiction of Ballycumber linen factory and bleach green on 1838 six-inch map (007-008). The small structure in the middle of the bleach green is possibly a watch house, where a guard was posted to prevent theft of the cloth laid out to bleach in the sun.

The equipment in the linen factory was powered by a 14ft x 4ft 3in waterwheel. Although spinning and/or weaving may have taken place, this building is more likely to have housed washing machinery and perhaps also beetling engines (to close up the fibres of the cloth and impart a sheen). Operations appear to have ceased by the mid 1850s, the premises having been converted to grain milling (Grogan Mill).

Nearby, in the direction of Ballycumber, is the so-called 'Blue House' (007-021). Although this designation suggests the bleaching of cloth, it is possible that the bleach works were actually the blue house and that this was the mill owner's house.

A bleach green is also cited at Kilcoursey, on the eastern outskirts of Clara on the 1838 OS map (008-025), but was also defunct by the 1850s.

The third example was at Eglish where a vacant bleach house is cited in the 1854 Griffith Valuation (030-008). This appears to have been established in a former flour mill, but seems to have been short-lived as it is not cited in any other documents.

In terms of the relative frequencies of flax, spinning, weaving and bleaching mills, flax mills were the commonest, followed by bleach mills. Moreover, flax growing in Ireland peaked during the 1860s due to the 'cotton famine' caused by the American Civil War and this is mirrored by a rapid increase in number of flax mills. However, no such mills are recorded from this period in Co Offaly.

The fact that only one definite flax mill and three bleaching establishments, all of earlier 19th century date, are recorded in Offaly suggests three possibilities: (1) that the linen was only ever a very minor industry, (2) that it was an important industry, but the various production processes were carried out by hand rather than mechanically (and hence not documented in the maps and valuations), or (3) that the industry had been important in the 1700s but declined to insignificance in the early 1800s. Further research is necessary in order to establish the veracity of these explanations.

4.3 Jute

Although the jute industry is usually associated with Dundee, it also had a presence in Co Offaly, in the form of the Clashawaun Works, Clara (fig 4.6). This factory was established on the western outskirts of the town by Jonathan and Lewis Frederic Goodbody (both Quakers) in 1865 to produce sacks made from jute which was imported from India and then spun and woven here. Initially it utilized water from the Brosna to power the machinery and, from 1870, also steam power. The factory was expanded in 1873 by Jonathan's son Robert and adjoining terraces of houses were also erected for the workers. A siding was also taken off the Portarlington-Athlone railway to facilitate the importation of raw materials and finished products. The factory continued in operation until the 1970s and is now used for warehousing.

The Clashawaun Works has the distinction of being the only jute mill in Ireland and also in being associated with the only purpose-built mill village in Offaly.

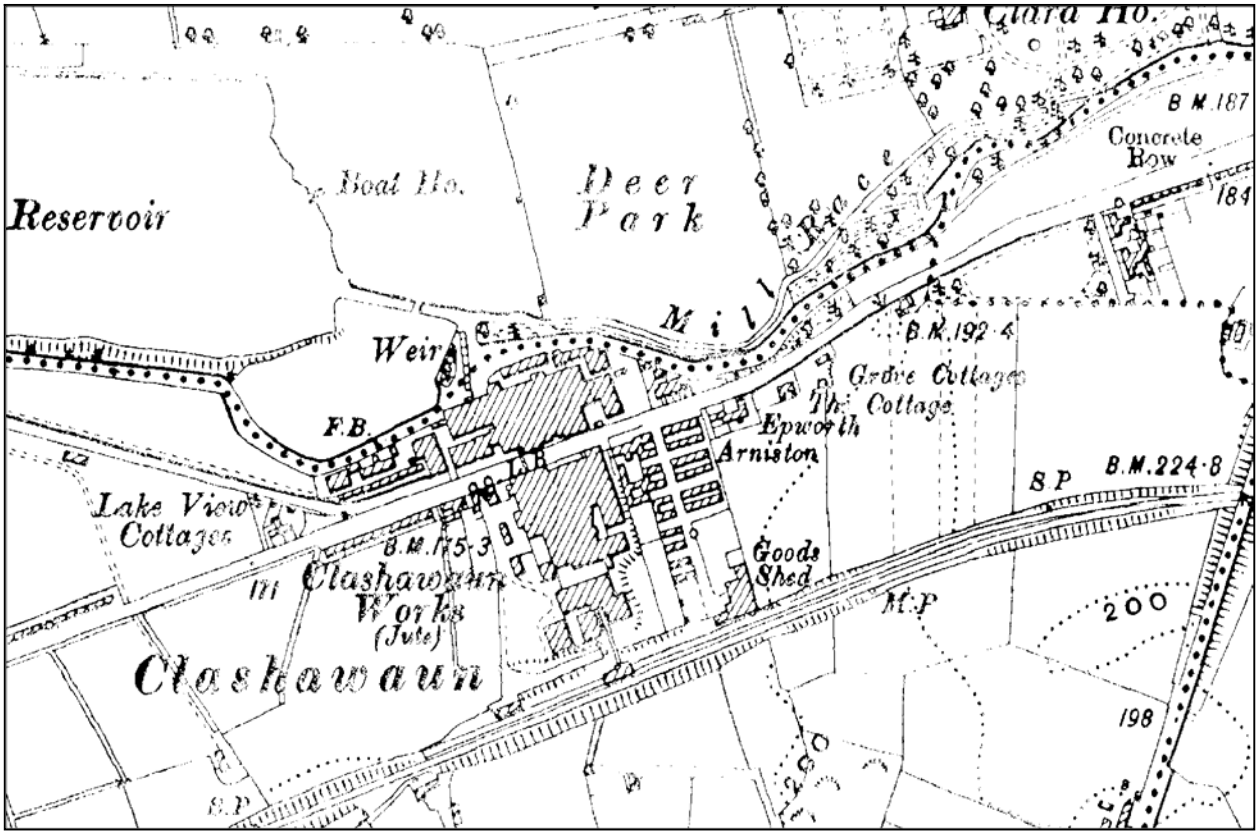


Fig 4.6 Clashawaun Jute Works (008-028). *Top:* OS six-inch map showing extent of works, 1910. *Bottom left:* Buildings along north side of road. The chimney at left is of mass concrete and dates from 1884. *Bottom middle:* Weaving sheds along south side of road. *Bottom right:* Houses on south side of road at west end of site.

4.4 Cotton

In the later 1700s, the cotton industry rose to prominence in parts of Ireland (notably Belfast) due to the mechanisation of the spinning process. The introduction of mechanical power looms for the weaving of the yarn into cloth was another significant development in the mid-1800s.

In the case of Co Offaly, the cotton industry appears to have been of little or no significance, only one site being recorded in this survey. This was the so-called 'Old Factory' at the eastern end of Clara where the Goodbodys installed hand looms for the production of cotton sacks for the flour produced at their two neighbouring grain mills (fig 4.7).

After the opening of a jute mill elsewhere in the town in 1865 (the Clashawaun Works, 008-028), the building was converted into a grain store.

Fig 4.7 Cotton factory on outskirts of Clara (008-054), now disused.

5. MISCELLANEOUS MILLS

In addition to grain, textile and drinks-related mills, other types of mill operated within the county, notably saw mills, threshing mills and bone mills. Several hydro-electricity stations are also noted.

5.1 Saw mills

Fourteen saw mills are recorded throughout the county (fig 5.1). There are doubtless others which were established during the 20th century, particularly in the urban areas, but have not been picked up during the map research phase of this project.

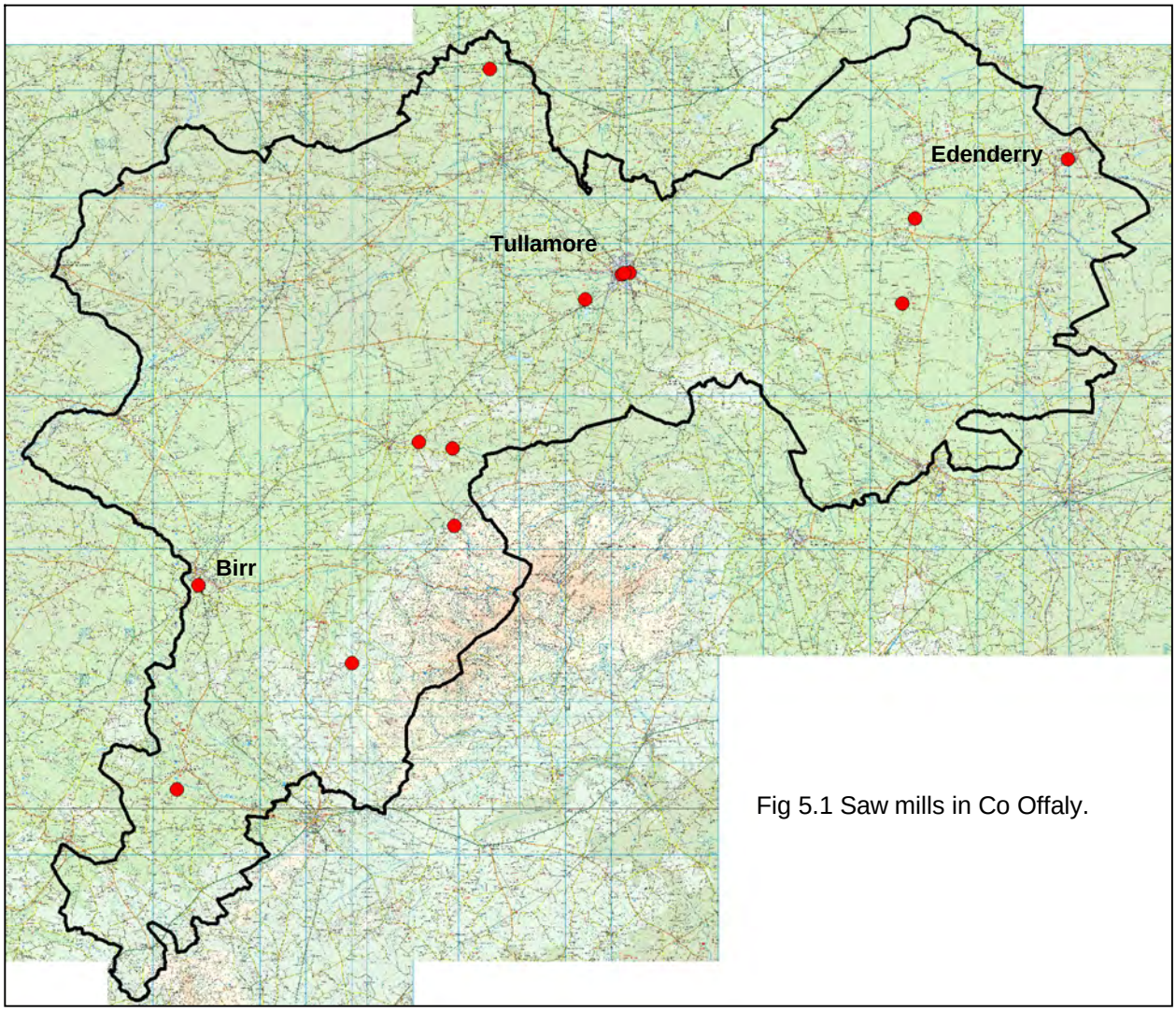


Fig 5.1 Saw mills in Co Offaly.

The 19th and early 20th century OS maps suggest that all the recorded saw mills date from the second half of the 19th century. Most are to be found at locations where grain mills already existed. In some instances the sawing of timber was carried on in tandem with corn milling, but in other cases it appears to have superseded the latter.

By the late 1800s, many of the rural corn mills would have been facing increasing competition from the large steam-powered mills and also from cheap imported meal, so diversification was probably a necessity rather than an option. The power requirements of saw and corn mills are commensurate, and it would have been a relatively straightforward task to install a saw bench and its associated shafts and pulleys within

an existing corn mill. Moreover, by this time many of the trees planted in the large demesnes to diversify out of arable farming after the 1840s Famine would have been sufficiently mature to be exploited commercially. In addition, the shift of the rural population into the towns and villages would also have created an increasing demand for cut timber for the roofs, floors and fixtures of houses and other buildings.

Fig 5.2 Waterwheel pit at the former mill in Charleville Demesne (16-031).

Although the large estates would have supported small forests, only one demesne saw mill has been identified here - at Charleville, just outside Tullamore (fig 5.2). This mill was actually part of a multi-functional water-powered unit which also contained a lathe, grindstone, thresher, grain crusher, and chaff and bone crushers. It was eventually superseded by a diesel-powered saw elsewhere on the estate.

Tullamore had three saw mills, all of them steam powered. One was at Egans' Maltings near the Market Square (17-049), whilst the other two were in the vicinity of High Street, in the centre of the town (17-037, 17-051).

The Manor Mill at Birr was converted from grain milling to saw milling in 1887 (35-009) and was powered by a water turbine. Such a device would have been more suited to such work than a waterwheel on account of its higher rotational speed.

The saw mill at Edenderry was associated with a furniture factory established in 1888 near the terminus of the Edenderry branch of the Grand Canal (fig 5.3). The factory operated until 1932 and produced household furniture, horse traps, carts and motor bodies; raw timber was possibly also cut for resale as well.

Fig 5.3 Former saw mill at Edenderry, as seen from canal (12-027).

5.2 Threshing mills

Threshing mills were used to separate the grain from the chaff and straw and five such mills are identified in this survey (fig 5.4). Although their distribution appears to be skewed towards the north-east of the county, it is likely that others existed but have been overlooked because they are not captioned on the OS maps.

All the recorded examples date from the 19th century: three are captioned on the 1838 and 1884 OS maps, a fourth is noted in the 1840s mill valuation book and the fifth dates from the 1850s. All appear to have been associated with the more prosperous farms: Clonin House (11-030), Killure House (11-031), Mountwilson House (11-035), Charleville (16-031), and Rathmore (38-009).

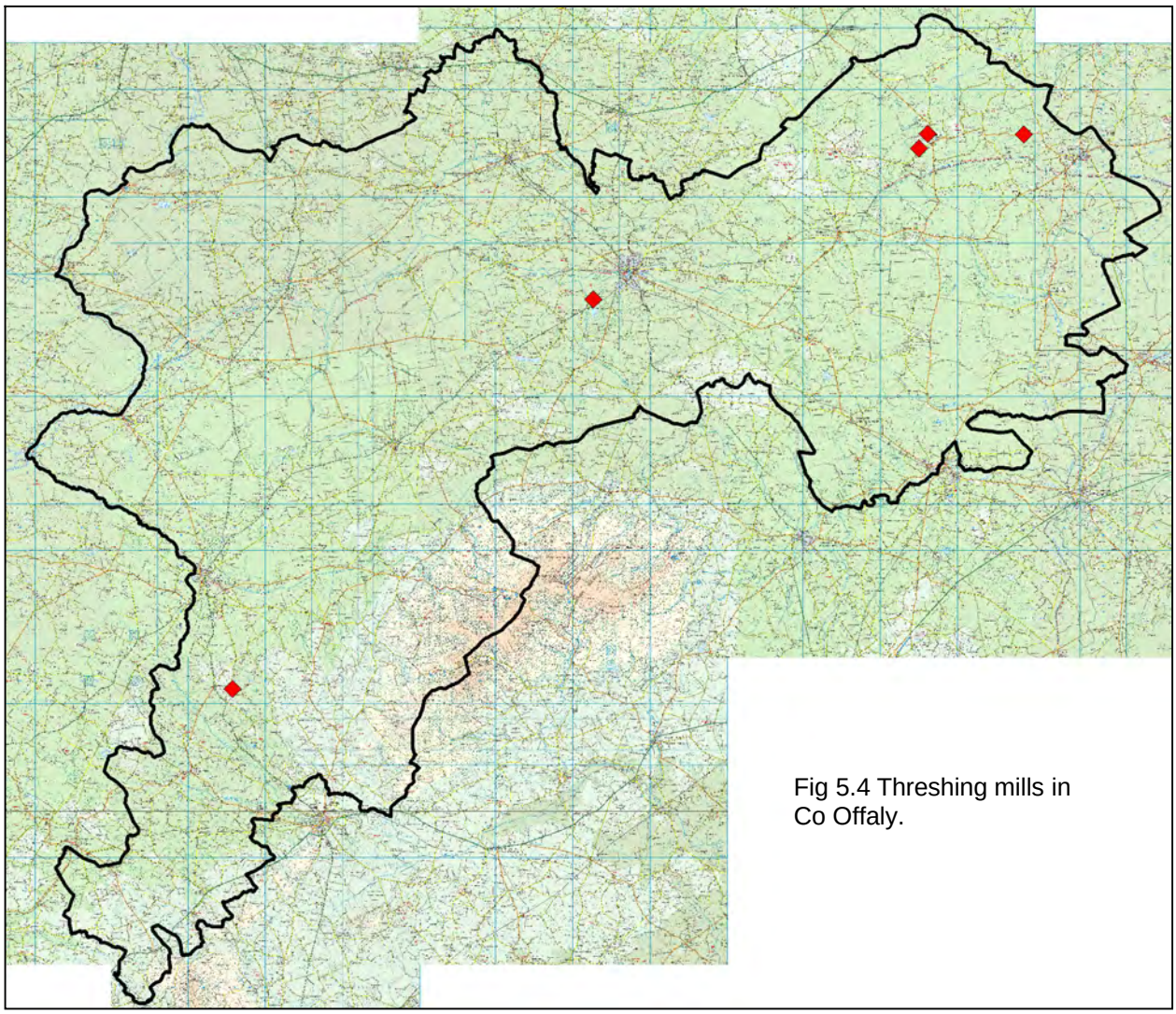
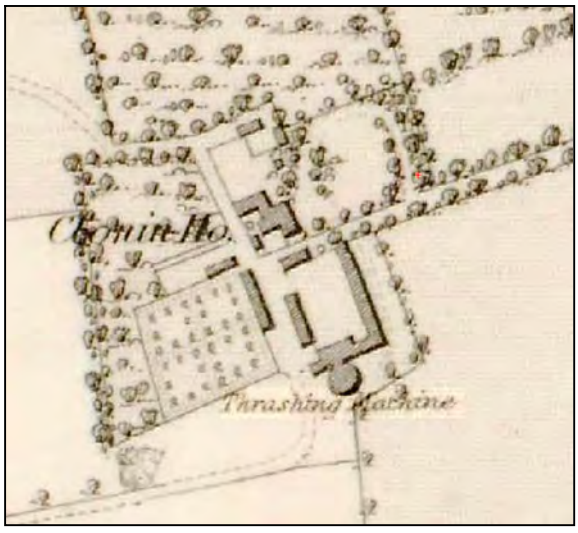


Fig 5.4 Threshing mills in Co Offaly.

None of the mills' locations appear to have been suited to the application of waterpower except for Charleville and Rathmore. The waterwheel of the former has already been noted in the context of saw milling, whilst the mill valuation book notes the latter as having a 13ft 6in diameter wheel.



At least two of the mills were operated by horses, and an enclosed circular horse walk is clearly shown at Clonin on the 1838 OS map (fig 5.5).

Fig 5.5 1838 OS six-inch map depiction of Clonin thresher. (rescaled). The circular building at the south end of the farmyard is undoubtedly a horsewalk.

5.3 Bone mills

Two bone mills are noted in the county. One was associated with a flour mill on the River Brosna at Clara (08-045) and is cited in the 1840s mill valuation book as being driven by a 16ft x 4ft waterwheel. The other was of 1850s date and was part of the water-powered farmyard complex on the Charleville Estate (16-031) which also included a thresher and grain crusher.

Such mills were used to pulverize animal bones. Although the resultant bone meal was sometimes used in the production of china pottery, in the context of Co Offaly it was undoubtedly used as an agricultural fertilizer. No vestiges of actual machinery survive, so it is uncertain whether the bones were crushed under a rotating wheel or vertical stamp.

5.4 Hydro-electricity

Two hydro-electricity generating stations are noted in the survey, both at Belmont Mill on the Brosna (14-004). The earlier of the two was established by Messrs Robert Perry to generate electricity for the adjoining flour and maize mill. Its 75kW generator was turned by a Francis-type water turbine. The later station dates from 1982 and generates upwards of 515kW for the ESB Grid using a modern Kaplan turbine.

6. MILLS OF HERITAGE SIGNIFICANCE

Using the documentary information and data collected in the field, the heritage significance of each surveyed mill-related site has been evaluated in respect of criteria devised by the National Inventory of Architectural Heritage. Sites of special merit can thus be identified and recommended to the relevant planning authorities for statutory protection.

6.1 Evaluation criteria

The criteria used by the NIAH to assess the heritage significance of structures and buildings are: Architectural, Historical, Archaeological, Artistic, Cultural, Scientific, Technical and Social.[4] For mills, the four most pertinent criteria are Architectural, Archaeological, Historical, and Technical.

- **Architectural interest** is a combination of a number of factors such as mass, scale, composition, materials, and decorative features. Where alterations or additions have been made, they should not detract from the mill's original character.

  Group value also falls within this category. This recognises the fact that a site's architectural interest may sometimes be greater than that of its individual component structures and buildings.

  Setting also comes under architecture. This refers to the positive contribution that a mill might make to its surroundings, whether beside a river or in a town or village.
- **Archaeological interest** arises if a mill was erected before 1700, or is of later date but incorporates earlier material.
- **Historical interest** derives from what a mill may tell us about the past. It may reflect the style and construction materials of the period, or illustrate a phase in the development of that type of mill, whether an early example or its most evolved form. Such interest may be enhanced by the presence of alterations which demonstrate the site's physical development.

  Uniqueness and Rarity fall within this category. These attributes arise when few examples of the once typical now survive and also where very few examples were built in the first place.
- **Technical merit** stems, in the case of mills, from their plant and machinery content.

In practice, all mills recommended here for statutory protection demonstrate at least two of the above attributes (fig 6.1).

Fig 6.1 Fancroft Mill (043-002) is of architectural, historical and technical merit and also adds interest to the landscape.

[4] NIAH, 2005. *Architectural Heritage Protection: Guidelines for Planning Authorities*, p.24 (Dublin: Department of the Environment, Heritage and Local Government). This document is downloadable from the Department's website <www.environ.ie/en/Publications/Heritage/ArchitecturalHeritage>.

6.2 Rating

NIAH levels of heritage significance range from 'Record Only' (i.e. not significant), through 'Local', 'Regional' and 'National', to 'International'. Those with a regional rating and above merit consideration for statutory protection.

Where only a few criteria are met, a *local* rating is generally most appropriate. Although NIAH policy is to protect structures only if they have a regional rating or above, local authorities have the discretion to accord such structures statutory protection.

For the purposes of this survey, locally rated mills are identified but have not been recommended for statutory protection. However, any development proposals relating to such mills should take account of the fact that they have one or more characteristics which place them above the ordinary.

Where a number of criteria are met, or there is something very special about a structure, then a *regional* rating is appropriate. *National* and *International* ratings are more problematic to apply because there is, as yet, no nation-wide body of comparative material. Some mills accorded a regional rating could therefore eventually turn out to be of national importance. However, even if incorrectly rated, regionally rated mills should, in theory, be accorded the same level of protection and planning control enforcement as those with a higher rating.

6.3 Statutory protection

Sites of special heritage significance may be accorded statutory protection against unauthorised development under the Planning & Development Act 2000 and also under Section 12 of the National Monuments (Amendment) Act 1994.

Record of Protected Structures

The Planning Act generally relates to sites which are still in use or which it would be beneficial to adaptively reuse. Such sites are listed in the Record of Protected Structures (RPS) sections of the Development Plans of Offaly County Council (2009-15), Tullamore Urban District (2010-16), and Birr UDC (2010-16). There are 38 mill-related sites included in these three Development Plans (table 6.1; fig 6.2).

Offaly CC (25 sites)				
OFIAR	Name	Location	RPS register no.	Rating
008-028	Clashawaun Jute Works	Erry (Armstrong) Td, Clara	12-37; 12-39	Regional
008-038	Erry Mill	Erry (Maryborough) Td, Clara	12-25; 12-26; 12-40; 12-41	Regional
008-042	Charlestown no.2 Mill	Kilcoursey Td, Clara	12-18	Local
008-054	Old Factory	Kilcoursey Td, Clara	12-20	Regional
008-064	Charlestown House	Kilcoursey Td, Clara	12-13	Regional
009-005	Acantha Mill	Acantha Td	23-01	Regional
011-001	Fahy Windmill	Fahy Td	16-14	Regional
014-004	Belmont Mills	Bellmount Td	30-11; 30-12; 30-13; 30-14; 30-15; 30-17	Regional

016-007	Rahan Mill	Rahan Demesne Td	22-08	Local
021-009	Waller's Maltings	Kylebeg Td, Banagher	39-29	Regional
021-011	Crank Malt House	Kylebeg Td, Banagher	39-18	Local
025-007	Killeigh Brewery	Killeigh Td, Killeigh	34-06; 34-07	Local
029-008	Cloghan Windmill	Cloghan Beg Td	39-43	Regional
031-005	Park Mill	Park Td, Kilcormac	41-14	Regional
031-007	Ballyboy Mill	Park Td, Kilcormac	42-01	Local
031-012	Kilcormac Maltings	Frankford Td, Kilcormac	41-04	Regional
032-002	Ballynacarrig Mills	Ballynacarrig Td	42-07; 42-08	Regional
035-001	Bunrevan Mill	Bunrevan Td	48-03	Local
037-002	Cadamstown Mill	Cadamstown Td	51-02	Regional
041-006	Kilcommon Distillery	Ballytoran Td	60-06; 60-07	Regional
042-012	Hillsborough Mills	Drumakeenan Td	61-18	Regional
042-030	Woods' Mill	Keeloge Td	61-14	Regional
042-033	Clareen Brewery	Clareen Td	57-07	Local
043-002	Fancroft Mill	Fancroft Td	62-01; 62-02	Regional
044-007	Springmount Mill	Gorraun Td	63-08	Local
Tullamore UDC (8 sites)				
017-036	Tullamore Distillery	Tullamore Td, Tullamore	23-281	Regional
017-038	Tullamore Mill	Tullamore Td, Tullamore	23-390	Regional
017-039	Lumley's Warehouse	Tullamore Td, Tullamore	23-398	Regional
017-049	Egans' Malt House	Tullamore Td, Tullamore	23-263; 23-275	Local
017-064	Tullamore Distillery	Tullamore Td, Tullamore	23-202; 23-403	Regional
017-076	Tullamore Dew Centre	Tullamore Td, Tullamore	23-294; 23-295	
017-085	Salts Mill; Tullamore Gaol	Spollanstown Td, Tullamore	23-242	Regional
017-091	D.E. Williams Head Office	Tullamore Td, Tullamore	23-201	
Birr UDC (5 sites)				
035-007	Maltings Craft Centre	Townparks Td, Birr	53-206	Local
035-034	Birr Distillery	Clonoghil Upper Td, Birr	49-301	Regional
035-046	Elmgrove Mill	Townparks Td, Birr	53-324; 53-325	Local
035-047	Robinson's Distillery	Townparks Td, Birr	53-207	Regional
035-053	Midland Tribune	Townparks Td, Birr	53-374	Regional

Table 6.1 Mill-related sites in Co Offaly Records of Protected Structures. Note that a site's heritage rating is as evaluated by the author, not the NIAH.

Record of Monuments and Places

The National Monuments Act is usually applied to disused monuments which merit preservation in their existing state as they are usually not practical propositions for re-use, or would suffer loss of significance if reused. Such sites are listed in the Record of Monuments & Places (RMP) which is maintained by the Department of Environment, Heritage and Local Government.

There are currently five mill-related sites in the Offaly RMP (table 6.2; fig 6.2). All are of archaeological interest, but only one - 032-002 - can be rated in terms of its above-ground remains; this particular mill complex is also a Protected Structure in the Offaly CC Development Plan.

OFIAR	Name	Location	RMP register no.	Rating
002-017	Ballykilleen Mill	Ballykilleen Td	OF002-019---	Record only
005-001	Clonmacnoise Mill	Clonmacnoise Td	OF005-067---	Record only
012-001	Monasteroris Mill	Monasteroris Td	OF012-016---	Record only
026-017	Wyre's Mill; Mill of Down	Gorteenard Td	OF026-023---	Record only
032-002	Ballynacarrig Mills	Ballynacarrig Td	OF032-00701-	Regional

Table 6.2 Mill-related sites in Co Offaly Records of Monuments & Places.

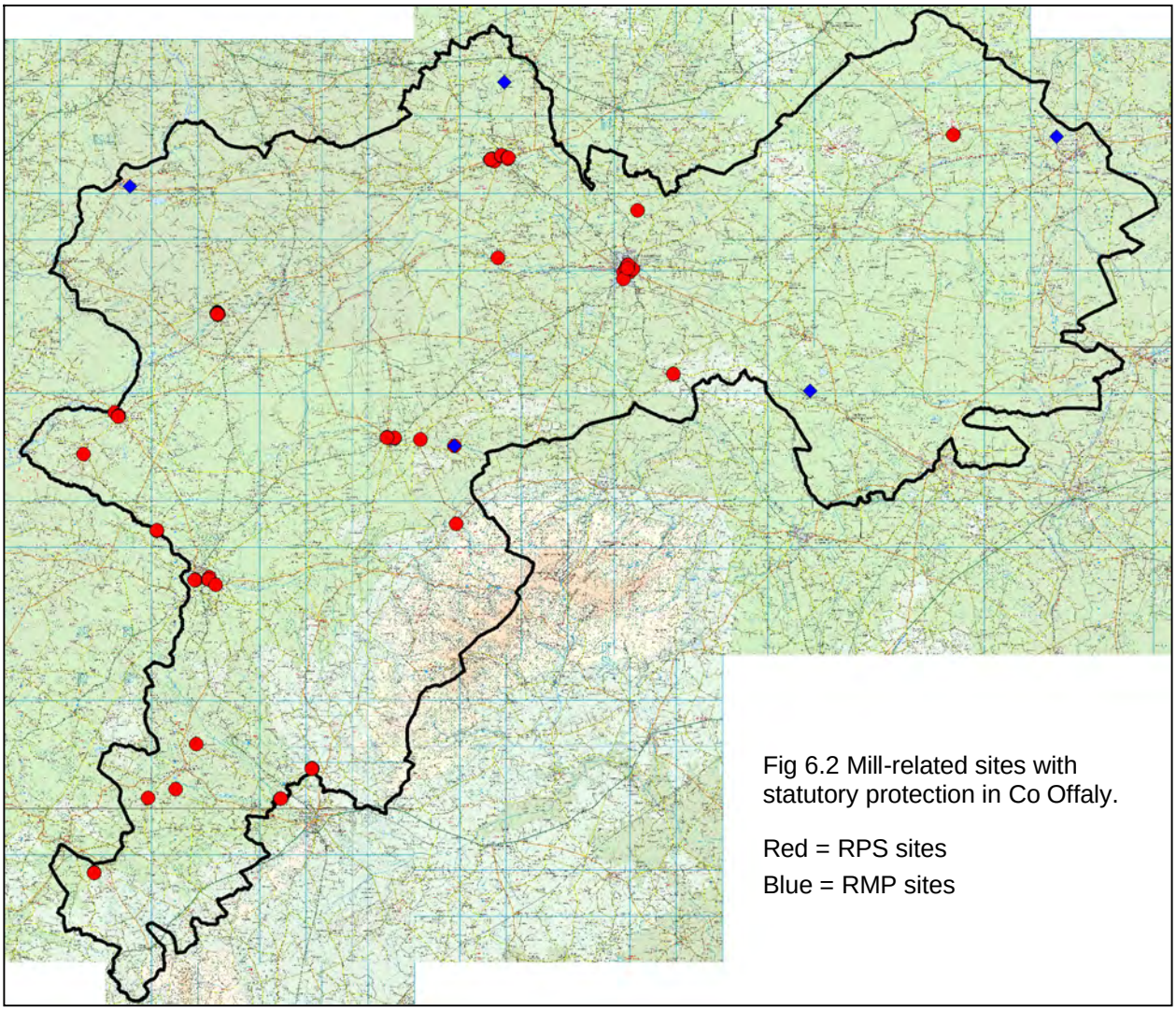


Fig 6.2 Mill-related sites with statutory protection in Co Offaly.

Red = RPS sites

Blue = RMP sites

6.4 Recommendations for statutory protection

Record only

Of the 189 mill-related sites which were evaluated (out of a total of 193), 130 (67%) are rated as having 'Record only' status. As noted above, four of these are in the RMP on account of their archaeological interest. The remainder do not merit statutory protection.

Local significance

Twenty-nine sites (15%) have been rated as being of local heritage significance. Of these, 11 are already included in the RPS. No further action is recommended in relation to the remaining locally rated sites.

Regional significance

Thirty sites (16%) are rated here as being of regional significance (they are detailed in Appendix 2). Twenty-four of them are already in the RPS and one in both the RPS and RMP. Consideration should be given to affording statutory protection to the five sites – four in the RPS and one in the RMP (table 6.3; fig 6.3).

OFIAR	Name	Location	Plan Authority	Recommendation
009-006	Tinnycross Mill	Tinnycross Td	Offaly CC	RPS
016-002	Ballyduff Mill	Ballyduff Td	Offaly CC	RPS
017-090	Tullamore Distillery	TullamoreTd, Tullamore	Tullamore UDC	RPS
037-005	Millstone Quarry	Cadamstown Td	Offaly CC	RMP
042-009	Brosna Maltings	Drumakeenan Td	Offaly CC	RPS

Table 6.2 Unprotected sites recommended for statutory protection.

Two sites are already included in the Offaly CC RPS, but they also merit consideration for the RMP as they are akin to monuments (table 6.4; fig 6.3).

OFIAR	Name	Location	RPS no	Recommendation
011-001	Fahy Windmill	Fahy Td	16-14	RMP
029-008	Cloghan Windmill	Cloghan Beg Td	39-43	RMP

Table 6.4 Protected sites recommended for RMP protection.

National or international significance

No mill-related sites in Co Offaly were adjudged to be of higher than regional significance.

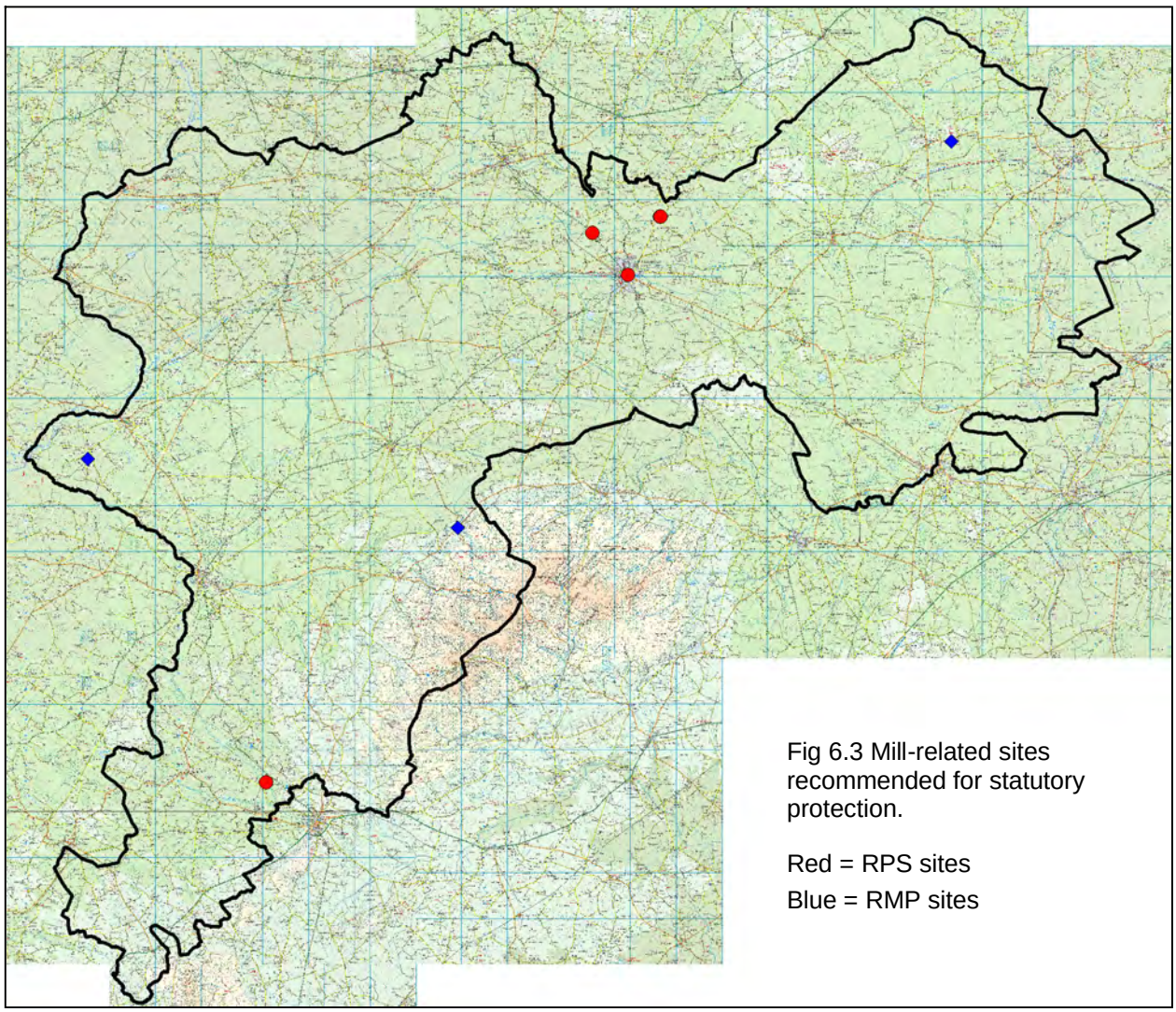


Fig 6.3 Mill-related sites recommended for statutory protection.

Red = RPS sites

Blue = RMP sites

7. ISSUES

It is evident from the preceding review that Co Offaly has a diverse range of mills representing a wide variety of industrial processes. Unfortunately, only a minority of what once existed now survives, of which only a handful are anything like complete in terms of their buildings, plant and machinery. The survival of what is left, particularly of those examples which are of heritage significance, is dependent on a number of factors such as their adaptability to new uses, maintenance and repair costs, conservation grants, planning policies and the public's perception of this molinological heritage.

7.1 Adaptive reuse

Of the 274 mill-related site components identified at the 193 surveyed sites, 133 (49%) have no above-ground remains or survive only as traces. One hundred and twelve (41%) survive complete or as substantial remains (fig 7.1).

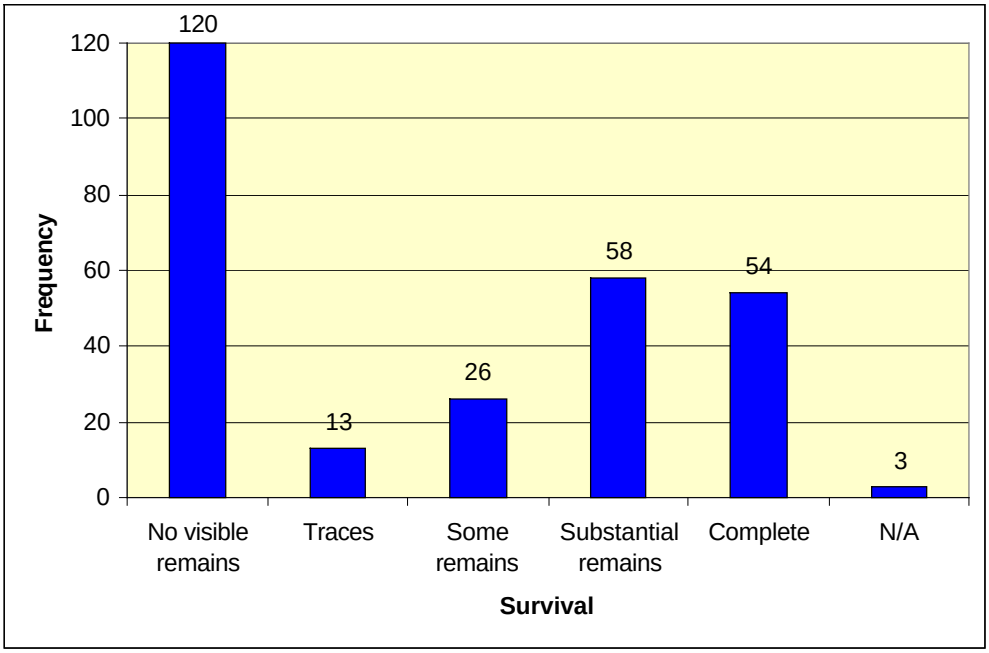


Fig 7.1 Survival frequency of mill-related buildings and structures.

Of the 151 potentially reusable remains, almost two-thirds (95) are now disused. Of the 56 which are in some form of use, only three still function as originally designed – a hydro-electricity turbine at the Clashawaun Jute Works, Clara (008-028.4), another turbine at Belmont Mills (014-004.8), and a malting house at Banagher Maltings, Garrycastle (029-011.8).

Only rarely have a mill-related building's industrial attributes been specifically exploited when converted to a new use. A case in point is the Tullamore Dew Heritage Centre on the Grand Canal (fig 7.2). This former bonded warehouse was erected in 1897 for Daly's Distillery and has been converted into a tourist amenity focusing on the distillery and its products.

The Roscrea Fish Farm at the former Fanure Mill (041-011) also exploits another characteristic of mills, namely the abundance of water abstracted from the Little Brosna River.

Fig 7.2 Tullamore Dew Heritage Centre (017-076).

Several sites have found new industrial uses, for example the former Salts woollen mill behind Tullamore Gaol. Here the single-storey saw-tooth roofed buildings now house various small industrial enterprises under the banner of Kilcruttin Business Park (fig 7.3).

At Birr, another former textile mill (035-053) has also been reutilized, in this case as a printing works for the *Midland Tribune* newspaper.

Fig 7.3 The uninterrupted interior of the former Salts Mill (017-085) lends itself into sub-division into smaller units.

A handful of sites have been converted to retail and leisure use, such as a former malt house and kiln on Castle St, Birr which is now the Maltings Craft Centre (fig 7.4a). In Tullamore, Tarleton's Maltings on Tanyard Lane has been partly reused as a shop (fig 7.4b), whilst the nearby Egans' Maltings has also been converted into houses and retail units (fig 7.4c). The buildings' original industrial character has largely been retained in these three examples.

Fig 7.4a *(left)* Maltings Craft Centre, Birr (035-007). Fig 7.4b *(middle)* Tarleton's Maltings, Tullamore (017-039). Fig 7.4c *(right)* Egans' Maltings, Tullamore (017-049).

Fifteen mill-related buildings are now inhabited as private dwellings, apartments, or as tourist accommodation. Some were already mill houses, but nine required conversion from their former industrial uses. For example, Messrs Perry's former office at Belmont Mills is now a private house (fig 7.5a), a corn mill at Killeenmore is now holiday lets, a grain store and kiln associated with Hackett's brewery and distillery in Birr is now apartments (fig 7.5b), whilst a former malt house and kiln belonging to Robinson's Distillery, Birr has been tastefully converted to three-star bed & breakfast accommodation (fig 7.5c).

Fig 7.5a *(left)* The former office at Belmont Mill (014-014.5). Fig 7.5b *(middle)* Apartments at Elmgrove Mill, Birr (035-046.2). Fig 7.5c *(right)* The Maltings Guesthouse, Birr (017-047.2).

Six former mill buildings are now used as offices. The most ambitious conversion is surely the former Manor flour and saw mill on the Camcor River, Birr. Although substantially rebuilt, original fabric has been incorporated into what is now Birr Technology Centre (fig 7.6). Sections of the waterworks have also been retained for their amenity value.

Fig 7.6 Birr Technology Park (035-009). *Above:* River elevation of partly rebuilt mill with new top floor. *Top right:* External waterwheel pit. *Bottom right:* Weir at start of headrace at Oxmanstown Bridge.

Fifteen buildings have also been reused as stores or warehouses, of which five were originally water-powered grain mills (fig 7.7a). A further eight have found use as agricultural outbuildings (fig 7.7b). Such reuses are often the 'default' option as they require minimal intervention apart from roof maintenance.

Fig 7.7a *(left)* Ballyboy Mill is now a domestic store (031-007.1). Fig 7.7b *(right)* Clonlisik Mill is now a farm outbuilding (045-105). Such converted buildings often have corrugated metal roofs in place of the original slate ones.

Adaptive reuse is nothing new. A number of grain mills, for example, had water-powered saw benches installed from the later 1800s onwards. Cadamstown Mill (037-002) was used successively as a grain mill, weaving factory and saw mill. Such reuses were successful because the existing mills met their space and power requirements with minimal conversion.

Unfortunately, this is not the case with modern industries. Nowadays, unimpeded access to a spacious interior which is all at the same level and has ample headroom is

invariably a basic prerequisite of any factory. Although traditional building materials such as slate and stone will outlast most modern ones, most mill buildings are well over a century old. They are therefore significantly more expensive to maintain than new ones solely on account of their age. Moreover, their locations were usually determined primarily by their proximity to water rather than to trunk roads and motorways, making modern vehicular access less than ideal.

In short, old mill buildings are inherently problematic to convert to new uses, particularly industrial ones, on account of their relatively small scale, internal restrictions, expense of upkeep and out-of-the-way locations.

Reuse often demands external and internal alterations but these may be so extensive that those attributes which give a building its special industrial character can be irrevocably diminished or lost altogether. In this respect, machinery is particularly vulnerable to removal in order to free up space for other uses.

Just as removals from a building can alter its character, so can additions. A degree of imagination is necessary to design add-ons in such a way that they can be distinguished from the original building, whilst at the same time being sympathetic to it.

A case in point is the grain store at Elmgove Mill, Birr which was converted to apartments in 2002 (fig 7.8). This necessitated each floor having its own separate access from the ground. Rather than put the staircase inside, thus reducing the floor space, a timber-clad stairwell and balconies of modern design were added to the outside of the building.

Fig 7.8 Elmgove Mill, Birr (035-046).

Clearly, there is a balance to be struck between heritage loss and development gain. Whilst any proposal which extends the useful life of a defunct mill building is to be welcomed, in the case of mills of *special* significance the emphasis should be on the minimising the heritage loss, even at the expense of development gain. Therein lies the challenge.

7.2 Repair and maintenance

It is self-evident that buildings which are still in use are more likely to be maintained than those which are disused (fig 7.9). Of the 56 buildings which were in use at the time of the 2003 survey, 42 (75%) were in good or excellent repair. By contrast, of the 95 buildings no longer in use, 67 (71%) were in poor repair. A further 21 (22%) were in good repair but no longer maintained (i.e. ‘fair’ condition) and therefore vulnerable to deterioration.

As a building deteriorates with age, it becomes increasingly expensive to maintain until the tipping point is reached when it is no longer economically feasible to repair and is abandoned to the elements. This trajectory is accelerated in the case of small-scale industrial enterprises of marginal profitability which are housed in old buildings.

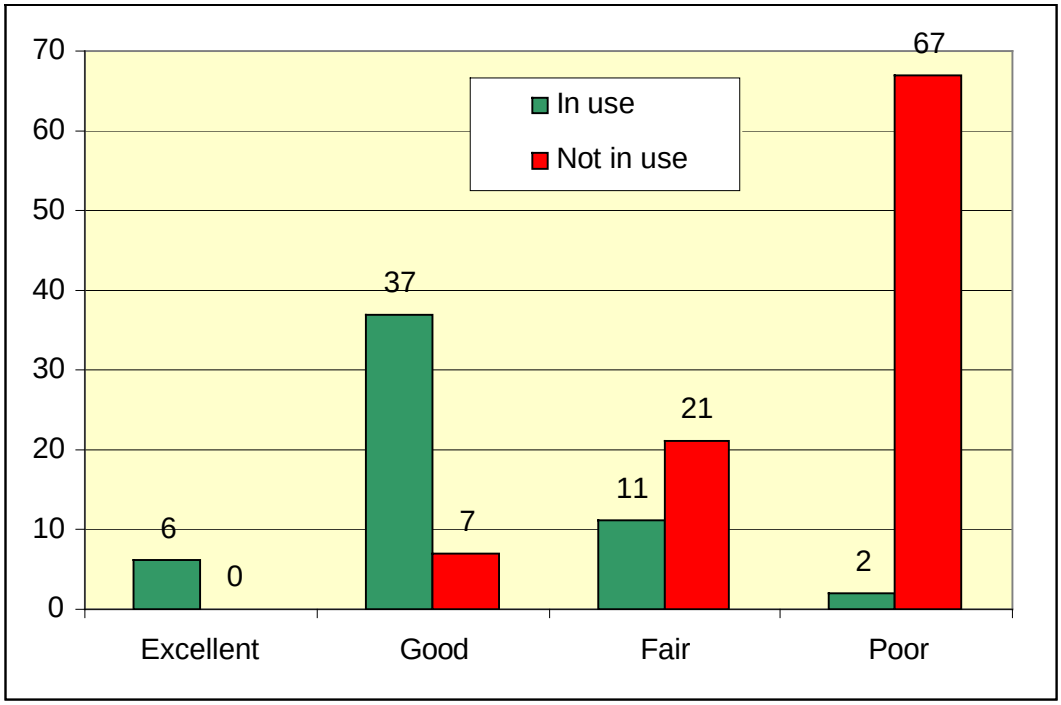


Fig 7.9 Use of mill buildings in relation to their structural condition (sample size = 151).

The soundness of the roof is the key to the survival of any building. Once slates start to disappear or corrugated tin rusts through, the supporting roof timbers will gradually rot and eventually collapse, allowing rain to penetrate the wall heads and floors (fig 7.10). Rotting of the door and window frames also facilitates unauthorised entry by vandals and arsonists.

Fig 7.10 Going, going, gone ... Two views of different sections of the roof of a malt house at Tullamore (017-064).

Roof repairs are especially challenging due to the difficulty in reaching them from the ground. The short-term costs of hiring scaffolding or a hydraulic lift ('cherry picker') can be expensive and may be perceived by owners as outweighing the long-term benefits of maintaining a defunct building in sound repair.

There is much to be said to the "stitch in time" philosophy of building repair, for example by putting slipped slates back in place, inspecting gutters and down pipes at least once a year and keeping ivy in check by cutting through its root stems.

Temporary holding repairs such as placing a weighed tarpaulin over holes in the roof, or replacing a deteriorated slate roof with corrugated metal sheeting are also relatively cheap options which will extend a building's life (fig 7.11). The funding of such work is discussed in section 7.6.

Fig 7.11 Plastic sheeting was nailed to the deteriorated roof of this corn mill at Belmont to prevent further rotting of the top floor and its machinery (014-004.1).

Owners of significant mill-related sites, especially those which are Protected Structures, should be encouraged to undertake regular maintenance and even to 'mothball' defunct buildings which have potential for future reuse. The Department of Environment, Heritage and Local Government's *Fire Safety, Security and Maintenance* pamphlet (1996) offers advice on maintaining historic buildings, as does the website <www.maintainyourbuilding.org.uk/index.php>.

7.3 Preservation of machinery

Nine of the 193 sites surveyed (5% of the total) still contain substantial or complete assemblages of plant and machinery:

- Clashawaun Jute Works, Clara (008-028)

  Contains a still-operational hydro-electricity turbine dating from 1936. The water-works are also intact.

- Erry Mill, Clara (008-038)

  At the time of survey, this large flour mill retained four water turbines and an electricity generator. Except for the actual rollers which were removed when the mill was decommissioned around 1970, it also retained its entire roller milling plant.

- Acantha Mill (009-005)

  This traditional corn mill is complete in every respect, including its waterworks: waterwheel, gearing, millstones and ancillary machinery.

- Tinnycross Mill (009-006)

  This corn mill with separate kiln is likewise virtually complete in every respect.

- Belmont Mill (014-004)

  This corn mill and its waterworks are also intact. A derelict 1920s turbine also survives elsewhere on the site, near to which is a 1980s turbine in separate ownership which supplies the ESB grid.

- Ballyduff Mill (016-002)

  This traditional corn mill was updated in the 1960s and '70s with the insertion of a second-hand turbine and roller mill. At the time of survey, however, the waterworks were incomplete.

- Tullamore Distillery (017-036)

  Although distilling ceased in the 1950s and most of the distillery was demolished in the 1990s, this now-derelict malt mill survives, complete with a steam engine, gearing and millstones.

- Banagher Maltings (029-011)

  Later 20th century malt milling equipment was in operation at this site at the time of survey.

- Fancroft Mill (043-002)

  This substantial flour mill retains most of its waterworks, waterwheel, gearing and millstones.

The mill buildings at Acantha, Tinnycross and Belmont survive in fair condition. That at Acantha is situated in a working farmyard where its owner can keep an eye on it. Tinnycross is in a more isolated situation and, although abandoned, is relatively secure. Belmont has the distinction of being *the* most intact mill in the county and has been mothballed by its owner in anticipation of eventual restoration.

Two particular sites are a cause for concern as the buildings which contain the machinery are becoming derelict. Although Ballyduff Mill is located in a working farmyard, it no longer has any agricultural purpose and has been neglected (fig 7.12).

In Tullamore, the steam-powered malt mill which was formerly part of Daly's Distillery is located close to the town centre and has seemingly been abandoned by its owner. Miraculously, it has escaped the attention of vandals. Unfortunately, however, it is becoming increasingly susceptible to the ravages of the weather as the roof deteriorates.

Fig 7.12 Derelict power transmission shafts and pulleys at Ballyduff Mill.

In both cases, consideration should be given to recording the machinery whilst it is still relatively intact and the buildings are safe to enter.

The preservation of machinery is problematic when it comes to a mill's adaptive reuse. Although external waterwheels are sometimes retained as architectural features, as was the case at Tullamore Mill when converted to apartments (fig 2.7), internal equipment is susceptible to removal to free up space for other uses. In a small mill such as Belmont, every floor is tightly packed with machinery and it would be necessary to remove almost everything but the primary gearing and millstones if converted, say, into a dwelling (not that this is the intention of the owner).

Milling machinery is invariably bolted to the floor or attached to the walls and is a functionally integral part of the building. In the case of Protected Structures, there can be no doubt that it likewise enjoys statutory protection. However, there is sometimes the belief that only the actual building is protected. Even though this belief is misconceived, the machinery is nevertheless susceptible to piecemeal removal.

Even machinery in more spacious mills may not escape removal, as happened at Erry Mill. This site was identified in the 2003 survey as of regional heritage significance. It subsequently changed hands and the new owner embarked on a redevelopment scheme. In 2005, Offaly CC commissioned a detailed survey of the equipment prior to its removal.[5] Several items were salvaged for use elsewhere and this report now stands as the sole record of what the mill once contained (fig 7.13).

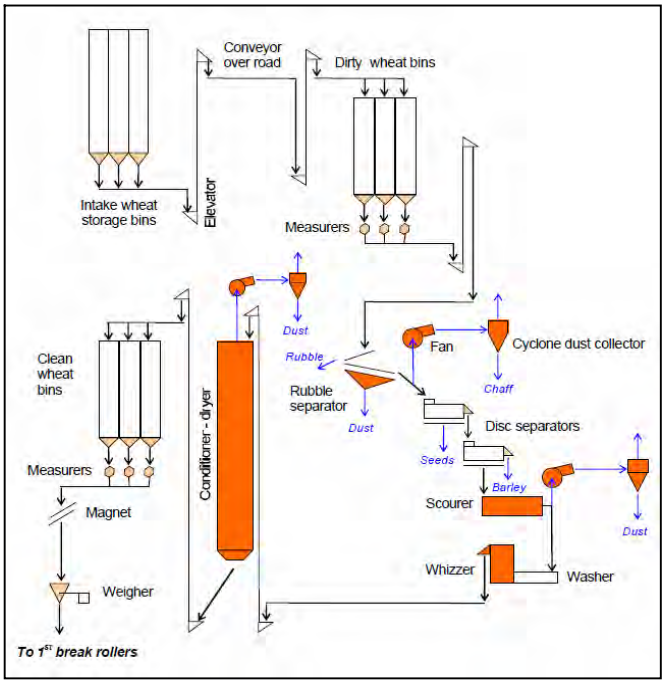


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Fig 7.13 Flow diagram of screening process at Erry Mill showing passage of wheat and by-products of cleaning. Items highlighted in red existed at the time of survey

7.4 Conservation of documents

Although information on specific mills is available in the form of Ordnance Survey maps and Valuation books, there is no substitute for the actual records accumulated during the mill's day-to-day operations. Unfortunately most such records no longer survive apart from the occasional old photograph (fig 7.14).

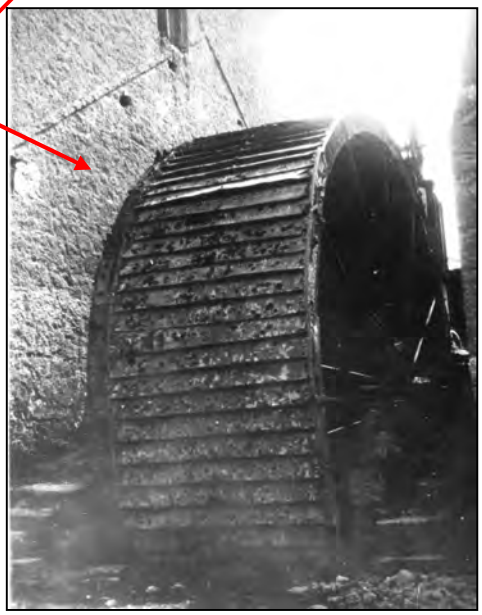

Fig 7.14 *Above left:* Whiteford Mill (035-031), c.1930 (courtesy Alistair Lindsay). At the far end of this five-storey, 11-bay building is a two-storey store *(above right).* The waterwheel *(right)* was situated between the mill and store.

The mill has since been demolished and the store and part of the kiln are now the only survivors. The old photographs are now the only indicators of its former massive scale.

[5] F. Hamond (2005), *A Survey of Erry Mill, Clara, Co Offaly* (Unpublished MS, Offaly County Council).

One remarkable exception is Belmont Mill (014-004) where virtually everything – invoices, receipts, catalogues etc - was meticulously stored away by the Perry family since the late 1800s (fig 7.15). Even more remarkable was the fact that when the premises changed hands in 1997, the records were salvaged by the new owners and generously donated to the Offaly County Archive for conservation and archiving.

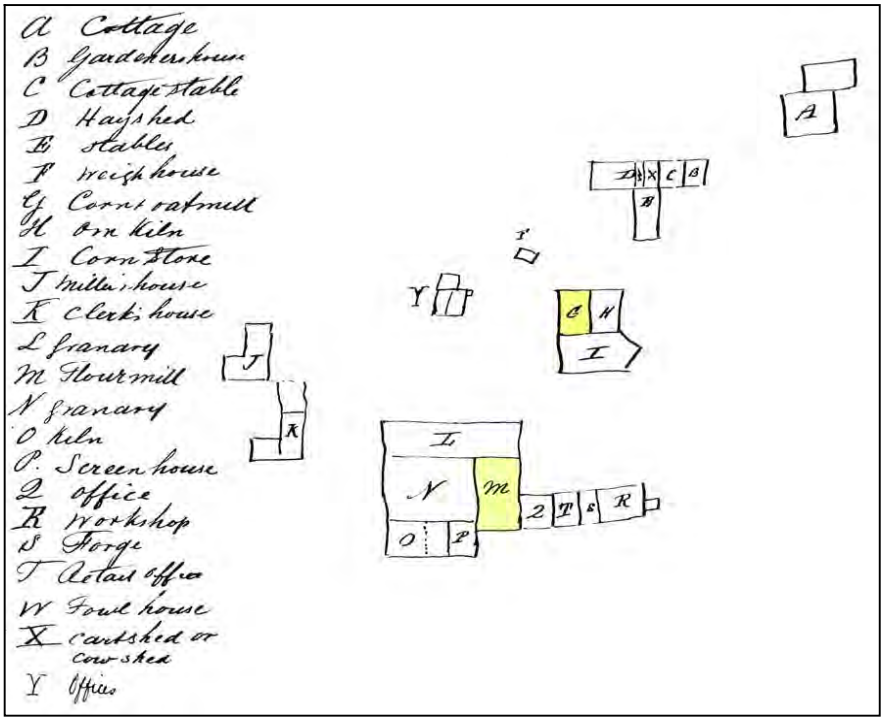

Fig 7.15 *Left:* Sketch map of premises 1880 showing the function of each building (the mills are shown in yellow). *Right:* 'Groato' flaked oat-meal bag.

7.5 Planning issues

Planning applications

A review of planning applications relating to sites of industrial heritage interest which were submitted to Offaly CC, Tullamore UDC and Birr UDC in the 1900s and early 2000s shows that whilst the proposed development was invariably described in detail, the background historical and architectural information which accompanied it was often scant or non-existent. It was also common for there to be little awareness of those tangible features of a site which made it of special heritage interest. The lack of such basic information makes it virtually impossible to gauge the impact of any development proposal on a site's heritage attributes. Moreover, where impact assessments were submitted, some were so positive that mitigation measures in respect of negative impacts were presumed to be unnecessary!

Apart from an historical review of a site's development and detailed architectural descriptions, measured drawings are useful as a permanent record of a site before any structural alterations are made. One such example is the former Egans' Maltings, Tullamore (017-049) where the planning application included 1:100 scale drawings showing elevations, sections and plans of the defunct grain stores and malt kilns.

This application to convert a maltings on Castle Street, Birr (035-007) to a craft centre was also accompanied by large-scale measured drawings showing the existing and proposed elevations and plans. Interestingly, the elevations showed the original roof to have had a distinctive ventilated pyramidal profile typical of malt kilns. This contrasted with the converted building which was to have a conventional hipped roof. The latter design was approved, so without these photographs most people would now be unaware of this significant change to the building's original character.

Also of interest were the drawings submitted in respect of the adaptive reuse of a derelict maltings on the Camcor River at Birr into 'The Maltings' guest house (035-047). Although the proposal was for two internal floors (for reasons of head height), the drawings of the building as stood prior to conversion are informative in showing the levels of its three original floors.

The drawings of the derelict Manor Mill, Birr (035-009) submitted by Shannon Development as part of its conversion to the Birr Technology Centre also make it possible to distinguish original wall fabric retained in the present building from new sections of wall erected in period style.

Photographs are also a useful supplement to drawings and inexpensive in terms of their information content which is not always included in drawings, e.g. stonework coursing and fabric colour. In only a few instances, however, were they included with the planning application documents.

Somewhat paradoxically, impact assessments sometimes focused on what was below ground rather than the visible remains. At Ballynacarrig Mill (032-002), for instance, Dúchas requested the site's owner to commission an archaeological assessment, as the site was in the Record of Monuments & Places. The granting of permission to redevelop the Manor Mill at Birr was also conditional upon an archaeological assessment being carried out. In this case, even though the site had no statutory protection, it lay within a zone designated as having archaeological potential.

The application submitted in respect of the conversion of Elmgrove Mill, Birr (035-046) to apartments is exemplary in almost every respect. The site, owned at that time by Offaly CC, was a Protected Structure, albeit roofless and floorless. The application was accompanied by an architectural report describing what existed and also outlined the site's history, the condition of the buildings, impact of the development, and mitigation measures being taken to retain the site's special character. The site was also comprehensively photographed, with over 50 prints being submitted. Plans, elevations and sections were also drawn up at 1:100 and 1:200 scales showing the existing building and the proposed alterations.

It is evident that to safeguard the heritage aspects of a site, a planning application in respect of a site of local heritage significance and above (and certainly in the case of Protected Structures) should contain five elements:

1. A full review of the site's history using information gleaned from various sources, e.g. past editions of Ordnance Survey maps, Valuation books, site records, old photographs, personal reminiscences, local history publications etc.
2. A description of its upstanding structural remains and machinery (if any), and an assessment of the likelihood of there being buried remains (based on the historical research). This description should be accompanied with photographs and, where appropriate, measured drawings.
3. The site's heritage significance should then be evaluated on the basis of the historical and field research using the NIAH criteria (section 6.1). Any features of special interest should be highlighted.
4. The impact of the proposed development upon features of special significance should then be gauged.
5. The last step in the process is to set out measures which will mitigate any negative impacts upon such special features.

In the final analysis, it is for the planning authority to decide whether or not the heritage loss resulting from negative impacts will be outweighed by the development gain.

Apart from providing the planners with sufficient information to make an informed decision, such a report will also serve as a record of the site as it now stands, even if the proposal is not progressed. Ideally it should be submitted by the developer along with all the other planning documents, rather than as an after-thought. Experience has shown that there is more likelihood of negative impacts being minimised if a developer engages with the relevant professional specialists such as conservation architects before going to the expense of drawing up a scheme in detail rather than afterwards.

Sometimes planners ask for impact assessments after they have given permission for a scheme. In practice, this can prove problematic if the developer engages a professional specialist who then suggests mitigation measures which involve material changes to the proposed scheme. Planners should demand such an assessment as part of their 'further information request' before granting permission.

Planning enforcement

The statutory protection of sites of special heritage significance has been outlined in section 6.3. Such measures are legally enforceable planning tools designed to retain a site's special character should it be subjected to redevelopment. Their successful application depends on an understanding of the site's special heritage merit by both the developer and planners, the willingness of the former to comply with any conditions imposed by the planners should permission be granted, and the willingness of the latter to ensure that such conditions are adhered to. A measure of trust between the planner and developer obviously underlies the entire planning process. In theory, regular monitoring of a scheme of works should detect any deviations from the submitted planning application, but manpower limitations mean that this is not always practical.

In 1998, an application was made to Tullamore UDC to convert a defunct mill in Water Lane, Tullamore (017-038) to apartments. Included in the proposal to convert this Protected Structure was the restoration of the waterwheel; the internal machinery was apparently in poor repair and past conserving. Planning permission was granted on the condition that the wheel was restored to full working order before any apartments were occupied.

The metalwork of the wheel was subsequently cleaned and painted and the apartments occupied. However, the wheel is inoperative as the wooden floats were not reinstated. Even if they were, it would remain static unless the sluice gates on the adjoining weir were also repaired. Unfortunately, this was not part of the original proposal or a specific planning condition. In this instance, it is a moot point whether 'working order' means the capability of working *if* water was applied to it, or actually working.

The best intentions of the planners can also be thwarted in other ways. For example, in the mid 1990s, permission was sought to alter the pyramidal roofs of the former Eagan's Maltings on Harbour Street, Tullamore to conventional pitched roofs. The planners commissioned Dublin-based CAAS Environmental Services Ltd to inspect the site. CAAS concluded that their replacement would seriously diminish the building's architectural integrity. Accordingly, the planners refused permission for the altered roofline. It later transpired that the pyramid roofs had, in fact, been removed without planning permission. The planners once again turned to CAAS for advice. They did a complete U-turn and now concluded that the roofs were "not of major architectural or historical importance" and that it would be unreasonable to insist on their reinstatement. The planners were therefore left with no option but to grant retrospective permission for the pitched roofs which now adorn the Harbour Street frontage of this building. The drawings and photographs in the planning files are now the only record of their original profiles.

7.6 Funding mill conservation

Several publicly-funded grants are available to mill owners to assist them in conserving their properties.

Conservation grants

This scheme started in 1999 and is funded by the Department of the Environment, Heritage and Local Government. It is administered by Offaly CC and applies only to Protected Structures not in public ownership. Its aim is to encourage sympathetic repairs to listed buildings. Qualifying works include those necessary to make a building weather- and damp-proof and structurally secure. Repairs to machinery which are an integral part of the structure are also eligible, as are professional fees. However, routine maintenance, alterations and improvements are ineligible, as are works which have tax relief under the Taxes Consolidation Act, 1997 (see below).

Each January, the Council seeks applications from owners of Protected Structures for financial assistance under this scheme. By May, the Department will have notified the Council of its budget for that year. Successful applicants are then notified by the Council in June, the final decisions having been made by the Councillors on the recommendations of the Conservation Officer. The applications are prioritised on the basis of the site's heritage significance, condition, urgency of the works, costs, other public funding available, and the owner's own resources. If successful, the money must be spent in the same year in which it is granted and cannot be carried over. Grants of up to 50% of approved costs are possible, subject to a maximum of €13,000. In special circumstances, 75% grant aid is possible, up to a limit of €25,000.

The amounts offered to Offaly CC by the Department between 1999 and 2009 show no consistent trend (table 7.1). Although the Council's budget averaged just under €100,000 per annum over this period, it actually varied from €55,000 to €142,500. The number of applicants chasing these grants averaged 24 per year. Had they all been successful, they would have each received only €4000 apiece.

Year	Budget	Applicants
1999	£112,000 (€142,500)	11
2000	£51,500 (€65,500)	23
2001	£129,000 (€164,000)	36
2002	€57,000	31
2003	€55,000	24
2004	€80,000	30
2005	€64,000	21
2006	€113,000	14
2007	€116,000	23
2008	€113,000	24
2009	€102,000	31

Table 7.1 Co Offaly Conservation Grant budget and number of applicants, 1999-2009

In practice, about half of all applicants are successful, but the sums granted are invariably only a small fraction of most schemes' overall costs. Moreover, as there is only about six months in which to spend the money, such schemes must be ready to go once approved in order to have a chance of drawing down the total grant on offer.

Another shortcoming of this scheme is that it is impossible to guarantee long-term funding for individual projects as the Council is only notified of its budget on a yearly basis. A fresh submission must also be made by the applicant for each phase of a project, thus making any long-term conservation scheme difficult to plan with certainty.

Only one mill – Fancroft Mill (043-002) - has successfully availed of this scheme. By tenacious applying for and receiving a Conservation Grant over a number of years, the owner has succeeded in reroofing the entire mill. Its internal machinery has thus been protected from the weather and is being restored to operational order.

Buildings at risk grants

In 1998, the Heritage Council instigated a register of buildings which were vulnerable to loss and which required funding for essential repairs. The Council also introduced a grants scheme to assist owners in securing their buildings against the weather. Whilst buildings of heritage significance are prioritised, they do not necessarily need to be Protected Structures to be eligible for these grants.

The grant is not intended to fund a complete restoration scheme but seeks to encourage holding repairs which will maintain the building's structural integrity and prevent deterioration which will lead to more costly repairs at a later date. Eligible items include roofs, chimneys, rainwater goods, walls and windows.

Although the vast majority of successful applications relate to occupied houses which are listed, other types of building which are both unoccupied and unlisted are equally eligible for grant aid - provided they are of heritage significance.

Although a number of mills would be eligible to apply for such grants, to the author's knowledge only Belmont Mills (014-004) has successfully done so, for roof repairs.

Given the number of mills in the county, this low take-up rate amongst their owners is probably attributable either to a lack of awareness about such grants or an unwillingness to undertake holding repairs.

Heritage buildings

Under Section 482 of the Taxes Consolidation Act 1997, owners and occupiers of 'Approved Buildings' are eligible for tax relief in respect of expenditure on repairs, maintenance and restoration. Such a building is defined as one of "significant historical, horticultural, architectural, aesthetic or scientific interest". It must also be accessible to the public for at least 60 days per year. Whether a building meets these criteria is determined by the Department of the Environment and Local Government. No tax relief is, however, allowable on expenditure which is otherwise tax exempt and on amounts recoverable from other sources such as conservation grants.

A number of properties in Co Offaly received funding under this scheme, including two mill-related buildings – the Maltings Guest House, Birr (035-047) and Belmont Mill (014-004).

Section 23 apartments

This government-run scheme is based on section 23 of the 1981 Finance Act 1981 and the Urban Renewal Act 1986. Its objective is to encourage the rejuvenation of run-down designated urban areas, mainly through the provision of rented accommodation. Investors and owner-occupiers can get tax relief on the construction, refurbishment or conversion of rented residential accommodation (but not the cost of the plot on which the building stands). The rental income for that property over the first year can then be offset against this expenditure and any unused tax relief carried over indefinitely.

As with the other grants outlined above, there appears to have been little take-up of this scheme by mill owners in Co Offaly. One such example is the conversion of the former Elmgrove Mill, Birr (035-046) to apartments known as Riverside House (fig 7.16).

Fig 7.16 The apartments at the former Elmgrove Mill, now Riverside House (035-046).

LEADER funding

The LEADER scheme was instigated by the European Commission in 1991 to encourage rural communities to diversify their economies and thus raise their standard of living. In Offaly, this scheme has funded agri-tourism projects, local enterprise development and community facilities.

One beneficiary of this scheme has been Belmont Mill (014-004) where its owners, Tom and Sandy Dolan have brought the water-powered oat mill back to life as a tourist and educational attraction. They have also imaginatively converted the mill's former coach house and stores into studios and apartments where artists can take up short-term residencies under Arts Council funding (fig 7.17).

Fig 7.17 The restored oat mill, June 2008. The kiln (middle foreground) has been converted into an exhibition area and meeting room.

7.7 Raising awareness of Offaly's milling heritage

The survival of significant examples of the county's milling heritage ultimately rests with their owners. The challenge is to motivate them to preserve them, whether mothballed in their existing state or in some form of adaptive reuse.

Regrettably, many owners perceive a building's inclusion in the Record of Protected Structures as a bureaucratic handicap and an impediment to its reuse as they assume that it must remain as it is. Whilst this view is completely contrary to the spirit of the listing legislation, there is, nevertheless, an issue regarding the appropriateness of 'shoe horning' preconceived uses into an existing building and the degree to which it can be adapted to a new use without losing its special character. Moreover, the relatively small amount of grant-aid which is potentially available to owners does little to encourage them to embark on long-term conservation works, let alone short-term holding repairs. In short, many owners regard the legislation as having "too much stick and not enough carrot".

Should the Council's resources permit, mill owners, especially of those which are Protected Structures, might be circulated with the relevant site report contained in Part 2 of this survey in order to make them more aware of their particular mills and why they are of heritage interest. This may encourage some to take greater pride in their mills and perhaps even move them to engage in periodic repairs and maintenance (e.g. to roofs and gutters). Owners might also be encouraged through the Council's Heritage Officer to open their properties during National Heritage Week, subject to the necessary insurances etc.

It is unfortunate that many people passively accept that mills are a thing of the past and have no relevance whatsoever to the future, even if only as a tourism and educational resource. A wider public understanding and appreciation of the county's milling heritage is therefore crucial if future generations are to enjoy and learn about Offaly's industrial past.

The raising of public awareness might be fostered in the first instance by placing this report on the Offaly CC website and also by drawing it to the attention of the various local history and amenity groups in the county.

Action by such groups, whether in the form of detailed research and its dissemination, the encouragement of a mill owner to maintain a mill, or the setting up of an 'adopt a mill' scheme could also increase a general awareness of mills.

Only through the combined efforts of all voluntary and statutory stakeholders – mill owners, interested individuals, community organisations, national bodies such as the Mills & Millers of Ireland, and statutory county and national bodies - will there be any realistic hope of securing the future of those few significant mills which still survive in Co Offaly.

APPENDIX 1: MILL RECORDING FORM

Co Offaly Mill Survey	OFIAR no:	009-005.01

Surveyor:	F.W. Hamond	Survey date:	11/06/2003

Buildings?	Y/ N/ ?	Waterworks?	Y/ N/ ?	Plant?	Y/ N/ ?	Mchy?	Y/ N/ ?

	Building	Ancillary Blds	Waterworks	Plant	Machinery
Completeness	Complete	Sub rem	Complete	Sub rem	Complete
Condition	Fair	Fair	Poor	Fair	Fair

Access: In farmyard adjacent to secondary road.

Situation: On Silver River.

Owner/agent (name, address, tel): Noted

Summary description: Substantially intact water-powered corn mill and two kilns (one mid 20th C), with remains of former 18th C distillery adjoining. Although inoperative since late 1970s, the corn mill retains its waterwheel, power transmission gearing, millstones and ancillary equipment.

Components:		
	1	Grain mill; Grain kiln
	2	Distillery (see separate sheet)
	3	
	4	
	5	
	6	

Heritage merit	High	Medium	Low
Historical		Y	
Architecture		Y	
Technical	Y		
Landscape			Y

Protection	Record only	RMP	RPS

Photographs:	Reel	Frame		Reel	Frame	
	11	35	General view from N.	11	28	Modern kiln
		34	General view from W.			
		33	Store from S.			
		32	Waterwheel			
		31	Gearing on ground floor			
		30	Millstone floor			
		29	Original kiln			

Threats None	Actions Machinery merits recording.

Details of the buildings, waterworks, gearing and machinery are given on the reverse. Each component is recorded separately.

APPENDIX 2

Mills of regional industrial heritage significance.

OFIAR	Name	Townland/ Town	Summary	Interest categories	Statutory protection	
008-028	Clashawaun Works	Erry (Armstrong), Clara	Extensive jute spinning and weaving complex established by Jonathan and Lewis Frederic Goodbody in 1865. Expanded to south side of road by Robert Goodbody in 1873. Powered by water, steam and electricity. The first steam engine was installed in 1870. Concrete chimney erected 1884. Rope walk cited in 1884 OS map. The complex was electrified in 1951. Goodbodys ceased production in 1984. The premises are now used for storage and distribution of synthetic yarns. Also incorporates two steam engine houses, water turbine, mill-related offices and housing, and siding off former railway.	A; H; R, S; T	Yes	
008-038	Erry Mill	Erry (Mary-borough), Clara	Substantial remains of late 18th/early 19th century water-powered grain mill in centre of Clara on River Brosna. Acquired by Goodbody family around 1850. Remodelled c.1920, when steam engines and turbines (for electricity) also installed. Acquired by Messrs Ranks c.1930. New generator installed in late 1900s to supply electricity to ESB grid. Flour milling equipment, engine house, chimney and hydro-electric plant survive.	A; H; T; S	Yes	
008-054	Old Factory	Kilcoursey, Clara	Large 18th/early 19th century building on north side of River Brosna. Original function uncertain. Used as cotton weaving factory by Goodbody family in 1850s and subsequently as a grain store for adjoining mills. No water power despite proximity to river.	A; G; H; S	Yes	
008-064	Charlestown House	Kilcoursey, Clara	Late 18th/ early 19th century house occupied by Goodbody family, owners of a number of mills in Clara. Enlarged and remodelled in 1853.	A; G; H	Yes	

009-005	Acantha Mill	Acantha	Substantially complete 18th/early 19th century water-powered corn mill and kiln on Silver River, and remains of a distillery of c.1782. A second kiln was added in 1954. Distilling had ceased by 1884, but corn milling continued until 1978. Corn mill retains its waterwheel, transmission gearing, millstones and ancillary equipment.	A; H; T	Yes	
009-006	Tinnycross Mill	Tinnycross	18th/early 19th century water-powered corn mill and detached corn kiln on Silver River. Mill retains its waterwheel, power transmission gearing, millstones and ancillary equipment.	A; G; H; S; T	No	
011-001	Fahy Windmill	Fahy	Shell of 18th/early 19th century wind-powered corn mill.	A; R; S	Yes	
014-004	Belmont Mills	Bellmount	Extensive 18th/19th century grain mill complex on right bank of River Brosna just south of Belmont village. Site encompasses oat mill, flour mill, grain/meal stores, two 20th century hydro-electricity stations, and ancillary buildings (houses, offices, stables). The oat mill retains its waterwheel and all its machinery. One of the electricity stations is operational.	A; H; T; S	Yes	

016-002	Ballyduff Mill	Ballyduff	18th/early 19th century water-powered grain mill and kiln on Silver River. Substantially rebuilt in 1880s following a fire, and also reequipped in 1960s. Animal feedstuff still produced using tractor power.	H; T	No	
017-036	Tullamore Distillery	Tullamore	A two/three-storey block containing boilers, tanks, steam engine and grist mill, all associated with the former Tullamore Distillery. Founded by Michael Mulloy in 1829, it was operated by Bernard Daly from 1857 and then by Daniel E. Williams from the late 1800s. Distilling ceased in 1954, although Tullamore Dew liquor continued to be produced thereafter. Most of the distillery was demolished in the 1990s.	A; H; T; S	Yes	
017-038	Tullamore Mill	Tullamore	18th/early 19th century four-storey grain mill on Tullamore River, now converted into apartments. Paddle wheel and waterworks survive.	A; H; T; S	Yes	
017-039	Lumley's Warehouse; {Tarleton's Maltings}	Tullamore	Four-storey/nine-bay 19th century malt house with early 20th century grain store at south and mid 20th century malt house to west; all on west side of Tanyard Lane and formerly belonging to Messrs Tarleton.	A; H; S	Yes	

017-064	Tullamore Distillery malt house/kiln	Tullamore	Substantial derelict remains of later 19th century malt house and kiln formerly associated with Tullamore Distillery situated along north side of Tullamore River, west of Bridge Street.	A; H; S	Yes	
017-085	Salts Mill; Tullamore Gaol	Spollanstown	Substantial remains of 1938 single-storey/multi-bay wool spinning mill situated immediately behind façade of 1830 town gaol. Now in light industrial and office use.	A; H; R; S	Yes	
017-090	Tullamore Distillery malt house	Tullamore	Derelict shell of later 19th century malt house associated with Tullamore Distillery. Incorporates late 18th/early 19th century water-powered flour mill on Tullamore River. Premises also include wrought-iron entrance gates from Patrick Street, with DEW logos.	A; H	No	
021-009	Waller's Maltings; {Bridge Malt House}; {Haughton's Mills}	Banagher	Derelict shell of late 1800s maltings belonging to F.A. Waller at SW end of Banagher Bridge. Incorporates a late 18th century water-powered grain mill, known as Haughton's Mills, which also utilized steam power in mid 1800s.	A; H; S	Yes	

029-008	Cloghan Windmill	Cloghan Beg	Shell of 18th century wind-powered corn mill on low rise to east of minor road.	A; R; S	Yes	
031-005	Park Mill	Park, Kilcormac	Derelict remains of disused 18th/early 19th century water-powered flour mill, kiln, store and dwelling overlooking Silver River at east end of Kilcormac. Mill converted to corn stores and a second kiln installed in late 19th/early 20th century.	A; H; S	Yes	
031-012	Kilcormac Maltings	Frankford, Kilcormac	Site of 18th/early 19th century distillery on left bank of Silver River. Adjoined by disused mid 19th century maltings which survives virtually intact.	A; S	Yes	
032-002	Ballynacarrig Mills	Ballynacarrig	Derelict shell of 18th/early 19th century water-powered flour mill, tuck mill and kiln on Silver River. Also used in later 1800s as a saw mill. A watermill is cited hereabouts on the 1655 Down Survey.	Ar; A; H; S	Yes	

035-034	Birr Distillery	Clonoghil Upper, Birr	Substantial derelict remains of distillery founded by R. and J. Wallace in 1805 on Camcor River just upstream from Elmgrove Bridge. Site encompasses miscellaneous distillery buildings, maltings, kiln and malt mill. Part of bonded warehouse now converted to accommodation.	None	Yes	
035-047	Robinson's Distillery	Townparks, Birr	Later 18th/ early 19th century distillery, of which only the malt house and kiln survive, on right bank of Camcor River/ west side of Castle Street; now converted into a hotel.	None	Yes	
035-053	Midland Tribune	Townparks, Birr	Early 1950s textile spinning factory on south side of Kinnitty Road. Subsequently converted to offices and print works of Midland Tribune newspaper.	A; H; R; S	Yes	
037-002	Cadamstown Mill	Cadamstown	Shell of five-bay, 4½ storey water-powered corn mill of 1831 on Silver River. Also used as a woollen weaving factory and saw mill in late 1800s/ early 1900s. Ruinous remains of an earlier mill adjoin.	A; H; S	Yes	

037-005	Millstone Quarry	Cadamstown	Millstone extraction site on bed of Silver River north of Cadamstown Bridge.	R	No	No picture
041-006	Kilcommon Distillery	Ballytoran	Ruinous shells of two multi-bay, multi-storey random rubble buildings and related house associated with 18th century distillery.	A; H; S	Yes	
042-009	Brosna Maltings	Drumakeenan	Derelict remains of substantial mid 19th century maltings belonging to Messrs Perry, incorporating an 18th/early 19th century water-powered flour mill. Large waterwheel and power transmission gearing survive.	A; H; T	No	
042-012	Hillsborough Mills	Drumakeenan	Derelict shells of a 18th/early 19th century water-powered grain mills and kiln on Little Brosna River. The flour mill was used for a time as a tuck mill.	A; H	Yes	

042-030	Woods' Mill	Keeloge	Roofless shell of a five-storey, six-bay 18th/early 19th century water-powered flour mill and kiln on tributary of Little Brosna River. Subsequently used as a saw mill.	A; H; S	Yes	
043-002	Fancroft Mill; Bergin's Mill	Fancroft	Substantial remains of a five-storey 18th/early 19th century water-powered grain mill on Little Brosna River, complete with waterwheel, gearing, millstones and some ancillary machinery. Site also encompasses a four-storey grain store, two-storey store, weighbridge, two-storey mill house and waterworks.	A; H; T; S	Yes	

Interest categories: A = architectural, Ar = Archaeological, G = group, H = Historical, R = Rarity, S = Setting, T = Technical.