Re-using Farm Buildings





A Kildare Perspective

Authors Laura Bowen and Nicki Matthews

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Farmhouse at Athgarrett, County Kildare.

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Authors: Laura Bowen and Nicki Matthews

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Bridget Loughlin
Heritage Officer
Kildare County Council
Áras Chill Dara
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County Manager's Address

Traditional rural buildings, scattered throughout the countryside, are an essential component of Kildare's built heritage and landscape, providing a valuable link to our farming past. These buildings give an understanding of historic agricultural practices, settlement patterns and land-ownership structures.

The layout and arrangement of these buildings reflect the functioning of farming activity, social change and development. They are a repository for traditional buildings skills and techniques, particular to the locality in which they are found.

The County Kildare Heritage Forum, through the County Kildare Heritage Plan, has carried out a number of projects recently which serve to highlight often forgotten and unappreciated aspects of our heritage. These include the survey and recent publication on thatched cottages of County Kildare and the survey of hedgerows of County Kildare.

This publication adds to this body of work as it serves to draw attention to an integral part of Kildare's rural heritage.

Farm buildings, along with the field patterns that surround them, contribute greatly to the local character of the countryside and to creating a unique sense of place within the landscape. This publication identifies a number of farm building types found throughout the county, which reflects their historic development over the last 200 years. While Kildare may not possess an abundance of architecturally-significant farm buildings, the building tradition found in the countryside displays features that are distinct to County Kildare and are, therefore, worthy of recognition and protection. This publication will facilitate the identification of the historic and heritage significance of farm complexes throughout the county.

Societal changes and changing farming practice have left many farm buildings and houses unsuited to modern living and farming needs, thus resulting in their abandonment or inappropriate alteration. These buildings are coming under increasing pressure for change, which often takes the form of conversion or modification that is insensitive to their architectural and historic interest and landscape setting. This publication serves to provide guidance on more sensitive reuse and modification of farm buildings that takes into consideration the setting of such buildings, both within the farmyard and the landscape.

The regeneration and revitalisation of old buildings together with their continued appreciation and reuse is in the interest of all. The aim of the County Kildare Heritage Plan is to 'identify, preserve and conserve the natural, built and cultural heritage of the county'. I feel this publication will contribute toward achieving this aim.

County Manager

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Foreword

Old farmhouses have watched over forgotten stories that are worth retelling. They are the preserves of our history and heritage. Their walls resonate with the turning of cartwheels, the clatter of hooves and the sharpening of scythes. The County Kildare Heritage Forum recognises that this important aspect of local heritage is coming under threat and seeks to provide practical guidance on how to best identify, conserve and preserve, in continued use, the stock of farm buildings in the county. The commission and publication of two recent architectural heritage studies, *The Thatch Survey of County Kildare* and the *Preparation of Conservation Guidelines for Farmhouses and Outbuildings in County Kildare* as separate actions under the Heritage Plan for County Kildare, are seen as the first steps in this process of halting the loss and raising awareness of our vernacular farm buildings heritage.

Travelling through the county one can appreciate farm buildings for their grouping and setting, their palette of traditional materials and their unique sense of enclosure. This publication's purpose is to raise awareness of the significance of the farmhouse heritage in County Kildare. Historic farm structures, which had been previously handed down from one family to the next, are now being rapidly lost, modified or abandoned. This can be mainly attributed to changing farming practices and rural demographics. This publication endeavours to identify some of the measures necessary to mitigate against their loss. It also advises on the actions required to sustain this finite resource, which primarily consists of advice for the appropriate repair and reuse of farm buildings where possible.

Previously, the work of Caoimhín Ó Danachair identified five types of farmhouses in his 1947 study, *Traditional Houses in Kildare*. This study was taken as the basis for the County Kildare farmhouse study and extended by the authors to include the lesser considered types of housing in the county, such as the Board of Works and Land Commission cottages, County Council Housing Schemes, as well as the early large 18th-century estates and demesnes.

All of these structures and sites are integral to the appearance of the cultural landscape of County Kildare. It is envisaged that old buildings and sites should be cared for through the measured process of conservation. This promotes the management of change in such a way as to retain the unique character, setting and special interest.

Historic structures are a unique and finite resource. Once they are dramatically altered or demolished, their authentic historic fabric cannot be recreated. Similarly, overzealous restoration can remove the patina of age and eliminate the character and charm of past craftsmanship. Best conservation practice is really about carrying out timely and appropriate maintenance so that the processes of decay or deterioration are held at bay.

Conservation may also involve adapting these old buildings for appropriate reuse. A good design solution will attempt to reuse as much of the existing fabric as possible and should try to accommodate the main functions in the original farmhouse, i.e. the main living spaces. Additional accommodation, where required, should respect the original or earliest structure in scale and height and should sympathetically reference the original structure even though the addition may be of a contemporary expression.

An invaluable part of this publication is the discussion by the authors of farmhouse reuse through selected case studies provided. The more detailed case study on 'Knockaulin', a farmhouse at Killcullen, draws on practical experience, and it is intended with the guidance notes to inform and to provide an insight for owners and custodians into the practicalities of repair and retention of historic farm structures.

Unfortunately, the rate of change to the rural landscape of County Kildare is without precedent and has allowed scant time for the evaluation of the architectural richness of the county's built farm heritage. The modest farm buildings, which are integral to our landscape, embody the cultural values and social history of past generations and are unfortunately frequently associated with an era of great poverty and of diminished society. These farm buildings as a result have little cultural or architectural value attached to them. This lack of awareness of the architectural and historical significance of many farm buildings is a contributing factor to the pattern of abandonment that can be witnessed throughout the country.

With the publication of *Reusing Farm Buildings*, Kildare County Council hopes to accentuate the positive environmental and cultural benefits of conserving historic farm buildings for future generations to cherish and to enjoy.

Peter Black (Kildare County Council)
Architectural Conservation Officer

1 Introduction: Old Farm Buildings in County Kildare

Historic farmhouse with Classical doorcase.

Characteristics of Old Farm Buildings

This publication resulted from a commission by Kildare County Council of a timely study on the reuse of farm houses and associated farm buildings in County Kildare. This study, using previous research notes and reports, classified the historic development of farm building complexes into several categories or types as detailed in Chapter 3 of this publication. The accompanying fieldwork also undertaken as part of the farm buildings commission indicated a rich and diverse built heritage in the county ranging from modest thatched cabins to large tillage farms. Distinctive features were evident in Kildare's farmhouses, including common materials and classical details. Common strands of design underlined the pattern of settlement, such as a well-considered relationship of farm buildings to their rural surroundings, regardless of the scale or status of the property developed. The efforts and vision of previous generations have left an indelible mark on the landscape of the county and the harmonious co-existence of ancient and more recent settlements remain visible.

The selective approach to recording farm-built heritage adopted by our closest counterparts, English Heritage, has given rise to only certain farm buildings having protection. Other structures, such as barns within a complex, are overlooked. It is easy to see how this might come about, as access to working farms is at best problematic and most owners do not invite scrutiny or photographing of their properties. However, it does highlight an important aspect regarding the assessment of farmhouses in County Kildare. Whereas Ireland does not possess very substantial or architecturally important farm buildings in comparison to our British counterparts, the richness and uniqueness of the modest Irish farmhouses and their farmyard clusters is very significant.
The idea of farmyard spaces is explored further throughout this publication, chiefly because of the quality and character of farm settings to be found in County Kildare, particularly the organically shaped internal farmyards and the classically created front gardens or approaches.

Farmyard enclosure near Eadestown with a fine example of a farmyard wrought iron 'button' gate entrance.

Farm outbuildings in the mountainous range to the east of the county, separated from the principal structure and located on the opposite side of the access road.

External Character

Many different typologies of farmyard can still be seen, and the diversity that can be found throughout the county – influenced by topography, function, construction materials and economic prosperity – is remarkable. Farmyards tend to be both organic and classical in layout. They employ a range of materials, forms, and scale that provide the most attractive but underrated characteristics of farm complexes. It is evident that these underrated characteristics lead to many outbuildings in the farm complex falling into disrepair.

There are always exceptions to regular plan forms and some of these arrangements are very attractive and are to be found in the higher lands to the east of the county. Smallholdings along the Wicklow-Kildare border tend to occupy land on either side of the access road, placing the principal house on the higher side of the road with the outbuildings immediately opposite. These tend to be quite formally organised in relation to the front area or yard of the main entrance.

In the south of the county, however, very large storage barn structures – usually constructed of stone – can be seen in the midst of fields, standing quite separately from the main farm complex. Their remoteness from the centre of farm activity and inconvenience of access appears to contribute to their gradual decline and abandonment. The historic field patterns and characteristics of hedgerows and ditches are also important features which add to the character of old farm complexes, and the setting of buildings can be greatly altered and lost if extensions or additions are not carefully considered.

A comparable study commissioned by Kildare County Council on the hedgerows of the county revealed that many field boundaries are species rich and were predominantly planted in the early part of the 19th century, as evidenced by the 1st Edition of the Ordnance Survey, making their historic character and archaeological significance worthy of preservation.

Another very important aspect of the farm complex is the setting of the buildings in the landscape and the treatment and detail of entrances, approaches and boundaries.

Top: Front gates to farmhouse opposite Calverstown Demesne.
Bottom: Horse trough at Odlum's farm fed by nearby spring.

These images of farmhouses, selected from County Kildare, reflect similar qualities and characteristics: the handsome and well-ordered classically-arranged rendered exteriors; hipped slate roofs with dominant chimney stacks; outbuildings arranged around a yard to the rear and subservient to the principal structure, with a well-organised garden or planting merging the buildings with the landscape. There is usually a formality to the approach to the residence, sometimes with a framing of the main elevation using planting or other ancillary buildings. The fronts of these houses are usually laid out with gravel forecourts or turning circles and a small area of formal garden. The remaining land is left as informal pasture or parkland. Entrance gates are delineated by the use of stone piers and walls or with cast- or wrought-iron gates. Views of the house tend to be revealed on arrival at the main entrance and the bulk of the structure reduced in the landscape by strategic planting.

Conservation Practice

Recent changes in the legislative framework introduced by the Planning & Development Act 2000, brought Ireland into line with current international thinking regarding the conservation and protection standards for safe-guarding our built heritage. The key aspects of planning legislation affording protection to our historic sites and monuments are outlined in Chapter 2, and provide an insight into the legislative context with which an owner or custodian of an historic property should be familiar. In chapters 4 and 5 the concepts and principles of best practice for the repair of historic buildings are outlined. These are based on the detailed conservation guidelines No. 9, published by the DoEHLG on a statutory basis in 2004, to assist owners of protected structures. Chapter 6 explores design considerations and discusses examples of extensions/modifications to farm buildings found in the county. Carefully selected case studies in Chapter 7 raise awareness of contemporary design approaches and suggest solutions to converting old structures into new living accommodation, whilst retaining their architectural and cultural significance. The detailed case study in Chapter 8 on the Knockaulin Farmhouse, the conservation of a modest farm house for contemporary living, outlines the historical and archaeological analysis that was undertaken to inform the proper planning for the modification and rehabilitation of this historic site. A key departure in the legislative changes is the manner or the extent to which one should safeguard the significance of a historic structure. Protection of a building is now extended to include not only the external appearance but the interior features and character as well as the setting of the building.

Mylerstown House (case study no. 8) is a wonderful example of a very early modest two-storey farmhouse that was subsequently reconfigured into a more substantial edifice, while retaining a cobbled sett yard with a small box garden next to the 18th century entrance of the earlier house.

Below: Entrance to the earlier, 18th-century farmyard and house at Mylerstown.

Chestnut Lodge., Derrymahon (case study no. 1, pg. 48) is situated perpendicular to the access road traversing the Bog of Allen. The site arrangement appears to have a particular 'self-consciousness' with the formal and public garden to the front of the house and the ancillary buildings and small fields defined by a tree belt to the rear. It is, at once, a substantially more important arrangement than the setting of the smaller cabin fronting the road. Well-considered planting is used to create shelter for the property, and a raised masonry perimeter wall conceals the service yard from the road.

Setting

The boundary or ditch treatment to the county's network of roads, its field pattern, stud farms, substantial tillage farms and demesnes, are often details that define the particular character of an area and provide a sense of place and enclosure. The setting of a gateway or entrance can give the first indication of the age or character of a farm complex as there is usually a consistency of detail and design to the overall farm. Examples of long formal tree-lined avenues frequently provide an enticing glimpse of the house in the distance. Excellent examples of local craftsmanship and skilled labour are evident in the construction of substantial round stone-capped piers, or in the detail of the earlier wrought-iron button gates, or the more assured look of the decorative patterns in cast iron. Beautifully-hewn solid stone piers are also evident in older farm houses. Field stiles, animal-loading ramps and water pumps are all features of farm complexes that are becoming increasingly rare. Many farm access gates are lost through the need to provide wider openings to bring larger machines into the farm yard. Gates languish because of lack of maintenance and are frequently lost to modern replacements where timely repair is not being carried out.

Boundary walls vary from the random-rubble capped boundary wall with the vertically placed stones known as the 'cow-and-calf' detail to painted and plaster decorated treatments. These once common traditional details are now increasingly rare examples of vernacular crafts and skills that have been supplanted by readily available materials and fencing solutions. The identity of stud farms in the county is very clearly indicated by the placing of horizontal open timber fencing and beech hedgerows, allowing great visibility into horse paddocks. This detail is very different to the ditch with native species of hedges that provide a natural habitat for wildlife. Great damage is frequently wrought by removal of extensive tracts of mature hedgerow, typically to provide sight-lines or access to new rural dwellings. Road-widening schemes often remove the historic hedgerows to straighten the verges.

Interiors

The lack of information pertaining to the interiors of farmhouses, and particularly, the detail of outbuildings such as the stall arrangements, is of concern. The national pastime of refurbishment has eradicated much authentic fabric. However, lack of money often preserves wonderful examples of intact interiors that are truly significant. Very little research has been done or documentation compiled on traditional paint schemes, joinery details, internal fittings, etc. Where authentic historic fabric to interiors comes to light, it is imperative that these details are properly assessed, recorded and appropriately conserved for the future. Detailed guidance notes are provided in Chapter 8 and the appendix to assist owners/custodians with the repair of historic structures

Top left: Cow-and-calf wall. This refers to stone detail at the top of the wall where smaller stones are interspersed with larger ones.
Above (left): Stone toadstool for supporting hay rick.
Above (right): Interior shot of Belin House with red and black terra-cotta floor to entrance hall stairwell.

In keeping with the typology, status and scale of the farmhouse, internal decoration and features usually closely parallel the character of the exterior. Early 18th-century farmhouses may retain naturally tinted lime-washed plastered walls and plain plaster-and-lath ceilings. Exposed timber-ceiling joists were lime-washed and plain robust joinery features coated with matt-oil paint finishes. Floors were frequently constructed of compacted mud in the more modest houses, or timber placed almost on top of mud. This poor construction detail usually led to the extensive decay and their ultimate removal for replacement with concrete. Later, in the 19th century, unglazed terra-cotta floor tiles were laid in a red-and-black pattern. These tiles are often found and may continue to perform adequately or can be carefully lifted and relaid on better-performing substrata.

Timber joinery details are probably among the most interesting and charming features of farmhouses, as they often appear to have been recycled or adapted to suit the dimensions of the interior. Where original fixtures and fittings survive they should be carefully repaired and treated *in-situ*. Staircases, in particular, can suffer decay in the lower steps due to rising damp in the floor. The repair and retention of external joinery elements such as windows and doors is of the utmost importance in preserving the character and authenticity of a farmhouse. The wholesale replacement of historic joinery elements with modern uPVC is unnecessary, as the original details can be readily repaired to provide adequate comfort and security in line with contemporary living standards. Where old timber doors have rotted along the base, new timber can be readily scarfed in to match the detail of the existing door. A modern door is an inferior product in terms of its quality and material. It may not have the patina of age that an original door coated with layers of paint might possess. Original entrance porches, with their half-door features, should be repaired and retained. Similarly, the scale and volume of the original entrances should be retained, and the attachment of much larger porch elements to the main façade avoided.

The replacement of windows also removes the unique character of historic glass which is sometimes tinted green or purple and contains distortions caused by impurities or difficulties experienced in the early manufacturing process. Historic glass is no longer available, and once lost it is only possible to acquire modern replacements which lack these distinguishing qualities.

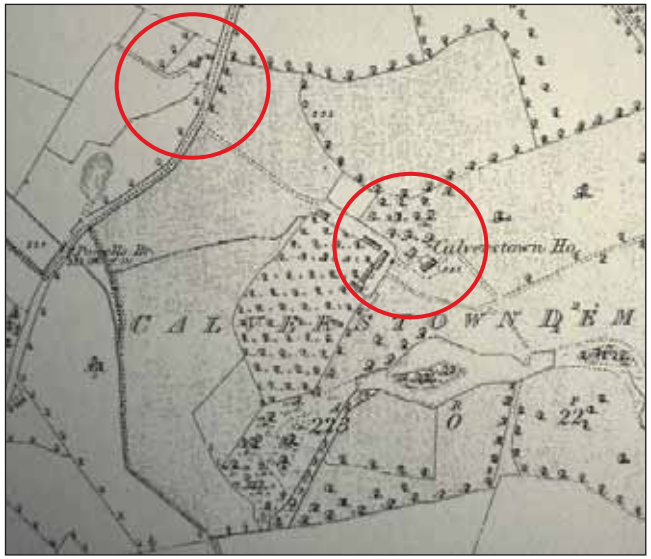
The central hearth, along with the jamb wall and the 'loop hole' window, are features of traditional houses and are of particular interest due to their rarity. The use of the jamb wall was to shelter the open hearth, the 'loop hole` window allowing some light and visibility to the dimly lit interior. Often the hearth opening may be modified or infilled with a fireplace because of the vast openness of the central chimney-breast. The condition and structural integrity of these chimney-breasts should be fully inspected where access is possible, as they often contain well-charred timbers or lintels used in their construction.

The footprint and layout of farmhouses is of importance not only for structural but also for social reasons. The relationship of the central hearth to the entrance in traditional houses is definitive. The provision of a larger reception room to that of the kitchen/parlour in more substantial farmhouses signals a greater social standing, while the separation of the staircase into its own space to provide a screen from servants is a feature of 'gentlemen's' residences. Similarly, the roof profile and its configuration is of great importance and should not be altered as it may signify an earlier structural form or building period: gable-ended roofs are evidence of the 18th century whilst hipped and overhanging eaves are typical of the mid 19th century and a steep pitch may indicate a previously thatched structure.

The significance of a farm complex, in terms of heritage and history, should be identified at the outset of any development and the owners advised of its importance accordingly.

Interior character referenced by position, scale and detail of openings.

Above left: Outbuildings to farmhouse at Calverstown, circa 1838.
Above: Calverstown farmhouse immediately adjacent to Calverstown Demesne.
Below: 1837 OS map showing the relationship between the larger estate and smaller adjoining farm.



This concept is well demonstrated by considering a disused farm complex in Calverstown, County Kildare. This appears to have been built contemporaneously with the Calverstown Estate (now a ruin) in a Gothic Revival style, circa 1838, using locally available stone. It is a particularly fine example of a stone farm complex retaining its formal relationship to the main road and possibly acknowledging the importance of the entrance to Calverstown House. The images indicate the richness of the materials and details in the construction of the principal house and the outbuildings, using brick reveals to all openings in random-rubble masonry walls, which were apparently rendered.

Historical Research

The present layout of this disused farm complex is indicated on the Ordnance Survey (OS) mapping as a scattered arrangement of structures with no distinguishing site features. A visit to the site provided a very different view of the property as the attractive construction details and materials of the farm buildings and farmyard arrangement were immediately evident, creating an unique sense of place. The comparison of the most recent OS map of the site with the historical maps of 1837 and 1910 reveals a much clearer picture of the importance of the farm and its outbuildings: the formality of the principal range to the road; the scale of the original complex; the secondary entrance to access the yard and fields to the rear along with its boundaries; and its relationship to Calverstown House. The OS map of 1837 indicates that the main entrance to Calverstown Estate is almost immediately adjacent to the farm site and suggests that several additional outbuildings were added to the site by this stage.

This type of historical map information is invaluable in unravelling the history of these modest farmhouses and identifying the key characteristics of the site, the outbuildings and the yards. This level of investigation is an important key to understanding how these farm complexes evolved so that they can be properly planned for and retained for future custodians to enjoy. Ordnance Survey Ireland is now providing access to this historical mapping through its website.

2 Legislative Context

Farmhouse near Moone/Timolin, County Kildare.

The National Inventory, Statutory Approvals, Tax Relief Incentives and Grant Schemes

The following section is an explanation of the current legislative framework that governs the care and protection of the country's built heritage and brings Ireland into line with international charters and European conservation standards and responsibilities.

The intent of the guidance provided in this publication is to raise awareness of the significance of the farmhouse heritage in County Kildare and to identify the measures that need to be implemented to sustain it as well as to offer advice for its appropriate repair and regeneration. Most owners of historic farmhouses are not subject to the rigors of planning legislation unless the National Inventory of Architectural Heritage has made specific mention of them in the recent Interim Survey of Kildare, and they have been added to the Record of Protected Structures (RPS) for the county. It is important to be aware that, through the planning process, structures found to be of some greater significance may be added to the RPS. This increased status entitles the owners to grant assistance through the Local Authority Conservation Grant Scheme. Buildings of significance, regardless of their protection status, are eligible for grants from the Heritage Council, and for Section 482 Tax relief administered by the Department of the Environment, Heritage and Local Government (DoEHLG).

An explanation of the legislation referenced is based on the detailed guidelines produced the department as Practice Note 9 for Local Authorities.

The National Inventory of Architectural Heritage (NIAH)

The NIAH is being compiled by the DoEHLG. The National Inventory forms a basis for the evaluation of structures to be included in the RPS. This process commenced in the 1980s, initially on a non-statutory basis. The NIAH was established on a statutory basis in 1999 and is now an ongoing process by which the Minister has made recommendations to local authorities on structures to be included in the Record. The NIAH has already completed an interim county survey for Kildare, which is available in published form from Government Publications, Kildare Street, Dublin, or directly downloadable from the Internet from The Buildings of Ireland website – www.buildingsofireland.ie.

The Planning and Development Act 2000

The Local Government (Planning and Development) Act 2000 came into force on January 1, 2000. It was subsequently incorporated as Part IV into the Planning and Development Act 2000 and superseded the 1999 Act at the end of 2001. It introduced the RPS and the Architectural Conservation Area, both on a statutory basis.

The main provisions of the Acts are as follows:

Each Planning Authority is obliged to have a RPS — which is to include structures of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest — as part of the development plan for its area. It is obliged to include objectives in the development plan to protect such structures and to protect the character of Architectural Conservation Areas. Incorporation of this record into the Development Plan is a 'reserved function' of the elected members of the planning authority. The Act redefines all structures listed in development plans at the end of 1999, including their interiors, curtilage and outbuildings, as 'protected structures'.

The Minister for the Environment, Heritage and Local Government may recommend that particular structures be included by a planning authority in its RPS, and is obliged to issue guidelines to planning authorities. The aim of the guidelines is to promote a consistent conservation approach to the repair and regeneration of historic buildings. These statutory guidelines were published in 2004 and they are also available from the Department of the Environment's website along with its earlier Conservation Guidance Booklets 1-16. Both publications provide invaluable information for owners carrying out rudimentary repairs to historic structures of all characters.

Dunmanoge, County Kildare. Aerial photograph indicating cropmarks evident in the field patterns, with several types and scale of settlement adjacent. (Courtesy of the Atlas of the Irish Rural Landscape, *Early Landscapes.)*

As previously indicated, a procedure has been incorporated in the legislation for amending the RPS between routine development plan reviews. This allows a structure to be protected as needs arise, with protection extending to the structure from the time it is recommended for inclusion in the RPS.

The main thrust of the enacted legislation is that "any works which would materially affect the character of a protected structure" will require planning permission, even when those works would otherwise be exempt. To clarify this aspect of the legislation, owners and occupiers of protected structures may ask the planning authority to issue a 'declaration' defining which works would materially affect the character of the structure and thus require planning permission.

Probably the most controversial and misinterpreted aspect of the legislation is the concept that the owner and user of a protected structure owes a duty of care to protect the structure from endangerment, whether by direct action or neglect. This provision is only intended for situations of deliberate neglect and damage to protected structures.

Having identified the historical importance and architectural character of a farm complex (which have come to light through the planning process or otherwise), it may be necessary to assess these structures further with the assistance of the Conservation Officer. The criteria identified by the National Inventory for the Architecture of Ireland (NIAH) can be applied to determine whether the property has particular significance as an historic structure or has characteristics of special interest that merit its inclusion in the RPS. Where appropriate, the following values need to be assessed:

- Architectural interest
- Historical interest
- Archaeological interest
- Artistic interest
- Cultural interest
- Scientific interest
- Technical interest
- Social interest

Under the review of the Conservation Officer, a structure deemed to be of considerable significance may be recommended for addition to the RPS as a 'protected structure' at any stage. The rationale for adding a structure may not be immediately obvious to owners, and very modest structures may be added due to their rarity value, their construction materials, etc. A recent document *Report on the Present & Future Protection of Thatched Structures in Ireland* recommends that all thatched structures should be added to the RPS of every county where they have been identified due to the concern arising over the rapidly decreasing numbers of this building type.

For historic structures of a more modest nature, the 'protected structure' status may be overly onerous level of protection for historic structures of a more modest nature. Planning control policies can ensure the appropriate repair and retention of modest structures, particularly their settings, outbuildings and their interiors without the onus of statutory protection. Photographic information submitted in planning applications may be used to highlight unusual features to the local authority as well as providing a permanent record of the structure prior to any works taking place.

In the case of demolition or major alteration, the submission of photographic information should be a prerequisite of determining the outcome of a planning permission. The indiscriminate demolition of redundant outbuildings may be prevented by raising awareness of the importance of the farm complex. The scale and character of the central space that the buildings create and the importance of setting clustered buildings in the cultural landscape of the county are of particular importance. For future development possibilities of a farmhouse property, conservation guidance as a service by the Local Authority is provided at pre-planning meetings.

The cultural landscape is evident around Dunmanogue, in its built heritage of monuments.

Other associated legislation of which to be aware:

National Monuments Acts 1930-2004

Structures or sites may be protected under the National Monuments Acts 1930-2004. This can be further or alternative protection to a structure in addition to the protection under the Planning and Development Acts. The protection of structures under the National Monuments Acts takes place at national level within the DoEHLG. Where both forms of legislation apply to a structure or site, there are separate requirements for notifi-

The Wonderful Barn, Castletown Estate, County Kildare.
This is a farm building of international significance associated with Castletown Estate. (Photograph courtesy of the NIAH).

cation regarding proposed works and the monument status usually takes precedent over the protected structure status.

Structures and sites protected under National Monuments legislation will generally, but by no means exclusively, date to pre-1700. The scope of the Acts is not restricted to monuments of archaeological interest. A great variety of structures and places may be protected, including habitable buildings. For example, many country houses are built on the site of, or partly incorporate fabric from, earlier buildings and may therefore also be recorded monuments.

The cores of many towns and cities are zones of archaeological potential wherein buildings or parts of buildings of an early date may survive behind later façades. Zones of archaeological interest are identified on the current development plan maps produced by the local authority. This information can be readily accessed at the planning counter of the local authority or through its website. Other structures that are regarded as familiar may be surprisingly recorded as monuments – i.e. bridges, mill buildings and other structures. It is worth noting that the status of these structures may not be immediately apparent and it is the responsibility of owners/custodians to inform themselves of their potential significance.

Categories of Protection

There are different levels and categories of protection afforded by the National Monuments Acts.

- **Ownership or guardianship** by the State or a local authority. This is the highest level of protection.
- A structure or site may be subject to a **preservation order** or **temporary preservation order,** which is a reactive measure to safeguard a site or structure.
- A structure or site may be a **registered historic monument,** based on survey information undertaken by the State.

Many of the sites protected under these provisions are in private ownership and in such cases the owner will have been notified in writing of the protection applying to their property.

Record of Monuments and Places (RMP)

Sites protected under the National Monuments Acts are contained in the RMP. The RMP is established and maintained by the National Monuments Section of the Department of the Environment, Heritage and Local Government. Maps and lists comprising the RMP are available to view over the counter at the offices of the relevant planning authority, county libraries, Teagasc offices and (by appointment) at the offices of the Department of the Environment, Heritage and Local Government at 6 Upper Ely Place, Dublin 2.

The Requirements

Section 12 of the National Monuments (Amendment) Act 1994 requires any person proposing to carry out works at or in relation to a recorded monument, to give notice in writing to the Department of the Environment, Heritage and Local Government at least two months prior to commencing work. Where a planning application is submitted for works that would impact upon a recorded monument, the local authority is obliged to refer that application to the Department for review. This referral of the planning file is regarded by the Department as fulfilling the obligations for notifying the Department.

However, the requirement for the DoEHLG to be formally notified of the proposals still applies in the following circumstances:

- Where works to a recorded monument are proposed for which planning permission may not normally be required, (such as repairs, removal of vegetation and the like).

- Where the works are exempted by Declaration under Section 57 of the Planning and Development Act 2000.

- Where the works to a recorded monument are grant-aided by the planning authority, the Department or the Heritage Council.

National Monuments

National Monuments are defined as those monuments/sites of which the Minister for the Environment, Heritage and Local Government or a local authority is the owner or guardian, and those which are subject to a preservation order.

Section 14 of the 1930 National Monument Act as amended by Section 5 of the 2004 National Monuments (Amendment) Act requires that anyone wishing to demolish, remove, or disfigure, deface or alter a National Monument must obtain consent from the Minister for the Environment, Heritage and Local Government in advance. It is also considered unlawful to excavate, dig, plough or otherwise disturb the ground within, around or, most importantly, in proximity to a National Monument, again without Ministerial consent.

Compliance with Building Regulations

It should be noted that all buildings subject to the National Monuments Acts are exempt from compliance with the Building Regulations (Third Schedule, Class 8). However, this does not preclude the necessity for these buildings to comply with other forms of legislation.

Building Regulations – Energy Conservation (Technical Guidance Part L)

Many owners of historic/protected structures may require advice at some time in the future on the appropriate upgrading of the historic fabric of protected structures to reduce their thermal transmittance, and to conserve energy. Such works can be undertaken with a view to supporting the aims of fuel conservation and sustainability in tandem with conserving the architectural heritage.

Most historic buildings can sustain some improvements without compromising their special interest and the key is to find the appropriate balance between building conservation and energy conservation.

It is worth reiterating that historic buildings are living, breathing environments. Many upgrading solutions used in modern buildings to insulate them and to conserve energy are simply inappropriate in the historic structures, which survive due to their ability to regulate and release moisture from their fabric.

The Building Regulations (Amendment Regulations) 2005 was introduced on July 1, 2006. Under this legislation, protected structures and proposed protected structures (including extensions) are exempt from the need to comply with the requirements of Part L of the Building Regulations. However, the general acceptance of energy conservation requirements for buildings will inevitably lead to the desire for improved thermal performance of historic buildings as well as playing their part in the reduction of the global consumption of energy.

For existing buildings, (Part L) energy conservation upgrading is only required for parts which are to be 'substantially replaced'. With regard to historic/protected structures, it is noted that the technical guidance produced by the Department is advisory only and that there is scope for alternative solutions and interpretations in order to meet current building standards.

Beside Jigginstown House, a farmhouse with exposed eighteenth century sash windows

Wildlife Acts

The Wildlife Acts 1976 - 2000 are the principal statutory provisions providing for the protection of wildlife (both flora and fauna) and the control of activities that may impact adversely on the conservation of wildlife and their habitats. The Minister for the Environment, Heritage and Local Government is the competent authority for the servicing of a number of wildlife-related international agreements and implements a number of EU regulations, directives and international conventions.

Competing conservation requirements of the natural and the built heritage may give rise to dilemmas. Conservation rangers from the Department of the Environment, Heritage and Local Government can be consulted and may be able to suggest measures to avoid damage to the habitats of fauna. It is normally possible to modify proposals to ensure that rare or endangered species (for example, certain species of bats) can be accommodated.

Lime washed wall with French drain to the base of the wall at Termon House, Donegal, conserved by the Irish Landmark Trust.

Grant assistance

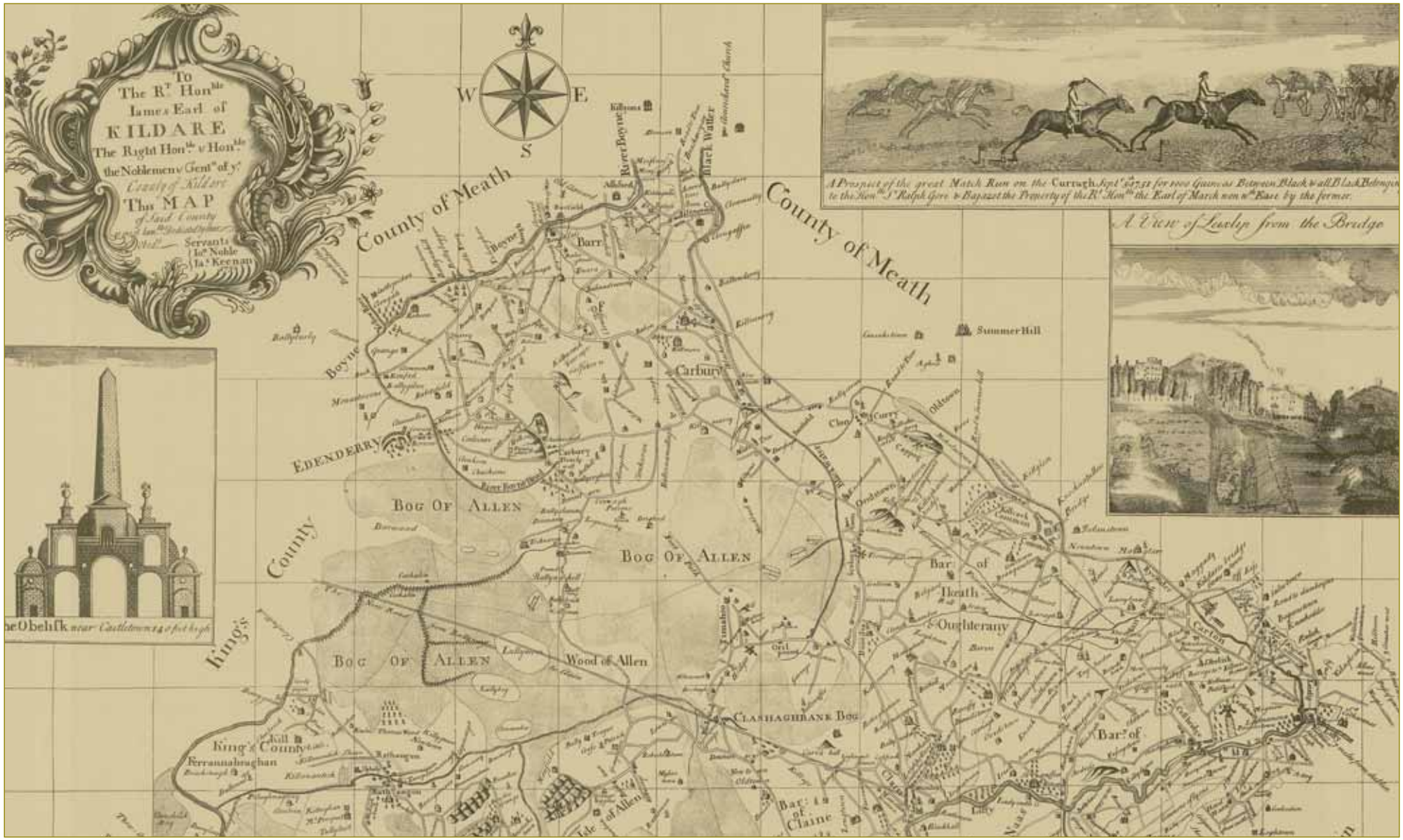
Historic structures, which are recognised as having a particular significance or value, are provided with grant assistance from the local authority through the local authority Conservation Grant Scheme. This funding is primarily focused on weathering the external envelope of the building and in particular the repair of roofs and windows, with repointing, rendering and damp treatment works open for consideration. The Heritage Council also allocates funding for conservation repairs based on the significance of the structure, the nature of the works and the proper setting up of the work to ensure best conservation practice is carried out. The Section 482 tax-relief scheme, assessed by the Department of the Environment, Heritage and Local Government, allows owners of historic properties that are considered to be of significant horticultural, scientific, historical, architectural or aesthetic interest to offset the expense of conservation works against tax liability. The criteria for this scheme include allowing periodic access to the public to the restored property.

A major benefit of the conservation grant scheme is that where structures are identified as being of particular merit, retaining examples of traditional craftsmanship and materials, expert advice is available from the local authority conservation officer on how to carry out appropriate repairs etc. Extensive and unnecessary damage often occurs during over-zealous repairs which use contemporary and inappropriate building products. The removal of authentic historic fabric from a structure greatly reduces its value and significance. The added value of properly conserving a historic property cannot be overestimated, with auctioneers openly acknowledging that the retention of original timber sash windows, for example, can add at least 10 per cent to the value of the property.

Above: Timber rafters built into top of wall showing degeneration over time due to failure of slate covering at Termon House, prior to conservation.

Below: Grant-assisted project showing new lime wash over recently applied lime render to the house exterior at Gower, County Clare.

3 The Historic Development of Old Farm Buildings



Introduction

Factors which may have influenced the building tradition of County Kildare range from the evolution of farming practice through periods of social turbulence and change, to the influence of topography and weather on the location and situation of farm structures. In addition, the availability of local building materials influenced the character and form of farm buildings. Today, we find that historic structures which have been handed down from one family to the next are rapidly being lost, modified or abandoned due to changing farming practices and rural demographics, which assert pressure on this historic building stock. The recently completed survey of County Kildare, by the National Inventory of Architectural Heritage of Ireland, focuses predominantly on the protection of the more extensive farm-holdings and their farmhouses and farmyards, which were successfully established in the aftermath of the famine. These farms still thrive today due largely to their scale and role as the major food suppliers to the Dublin metropolis. Stud farming, which had its origins in the great cavalry tradition on the Curragh, now continues in the form of a specialist farming pursuit in the county. In contrast to the more traditional mixed farming occupation, stud farming has been successfully promoted and supported by government initiatives and intervention in County Kildare, retaining the unique landscape of the Curragh at its heart. It is apparent from statistics noted in the County Kildare Development Plan that stud farming currently is one of the more secure farming enterprises in the county. In recent times, smaller private residences in the county sought permission for stable accommodation and paddocks as part their overall development.

Our understanding of the spectrum of more modest farm buildings, to be found in the county, was guided by the report *Traditional Houses in Kildare*, by Caoibhín Ó Danachair (circa 1947), in which he noted five typologies ranging from the largest farm units to small cabins. This historical list was extended to include more recent farm building types, such as Board of Works or Land Commission cottages or County Council Housing Schemes including isolated cottages, as well as the earlier large 18th-century estates and demesnes that greatly influenced the appearance of the cultural and rural landscape of County Kildare.

Above: Dissolving mud-walled house with adjoining barn, near Nurney.
Top right: Farmhouse and farmyard near Athy in ruinous state.
Bottom right: Stone pigsty as part of farmyard arrangement in Athgarrett.

Historical and social context

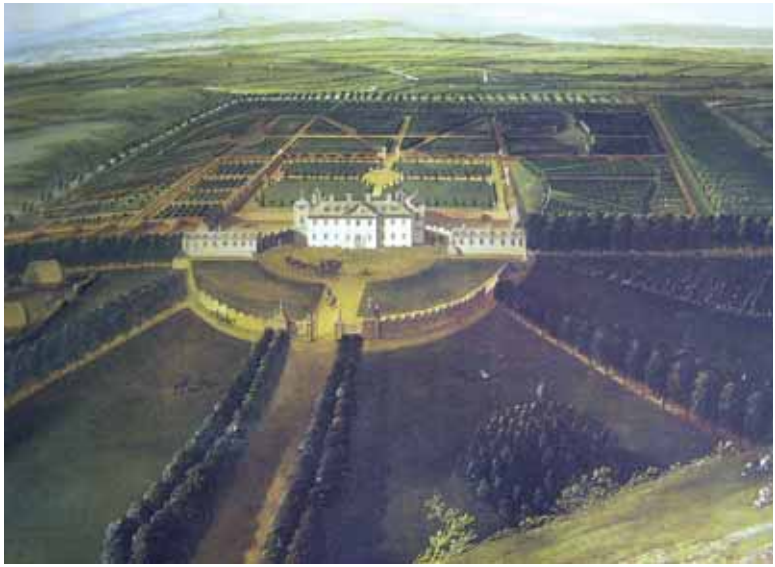
The main characteristics of the rural landscape of County Kildare are large open expanses of grasslands, lush green pastures and a considerable area of ancient bog-land, all naturally bounded by native hedgerows and mature trees. County Kildare can be divided into several different geographical areas.

To the east, a mountainous ridge separates County Kildare from County Wicklow. The central zone, characterised by the large plain of The Curragh, contains a predominance of large stud farms due to the historical association with Calvary Barracks and, subsequently, because the soil conditions were suitable for rearing horses.

Further to the western part of the county, extensive tracts of bogland are encountered. Farm units were built on the periphery of the Bog of Allen when the population boomed in the early 19th century, prior to the outbreak of the famine. Smaller cabins or complexes, set immediately on to the main road, were constructed out of available materials such as earth, rubble and thatch and thus were quite vulnerable once they were abandoned. The quality of land to the south of the county successfully supported large farms based on tillage, dairying and cattle. Farms built in this location tended to be constructed on a more substantial scale with both residence and outbuildings, boundaries and entrances all built of stone due to the availability of the material from regional quarries.

The historical evolution and ownership of land influenced the character and composition of field patterns. The Downs Survey of 1656 indicates that the land of Ireland was divided into baronies, parishes and towns. With the arrival of Henry II in 1171, the pattern of land ownership changed. The pattern of land ownership changed with the dissolution of the monasteries and the re-distribution of the land, taken and settled by Henry II's campaigners. The Civil Survey undertaken in 1640 indicated the extensive landownership of old English families. During

Cromwell's campaign, the system of landownership experienced another dramatic upheaval as two-thirds of the land in Ireland transferred from Catholic to Protestant ownership during the period of 1641-1665. By 1652, that change had led to the best land in Ireland being confiscated and the province of Connaught allocated to the dispossessed Irish and Anglo-Irish families. The subdivision of the country was between the government, the political opportunists and the English Army – large numbers of Irish peasantry as a result occupied and worked farmland as tenants. In contrast, during the 18th century, the wealthy landlords who mainly coordinated farming focused on the acquisition of good rental income to support and develop their residences, and to create extensive pleasure grounds or planned landscapes. Little emphasis was placed, for the most part, on the welfare of the tenant farmers whose presence and dependency on their smallholdings greatly increased during this period. By the end of the century, the population living off the land was such that travellers through the crowded Irish countryside witnessed considerable poverty and tenant evictions.



Top left: View of Kildare landscape with mountain range to east.
Top right: Carton Estate circa 1728 by Van der Hagen. (Courtesy of The Atlas of the Irish Rural Landscape, Demesnes.*)*
Above: Thatched, direct-entry dwelling with attached shop located at a crossroads near Mountrice Crossroads.

Top: Farmland near Kilkea, Athy with modern bales.
Above: Barberstown Castle evolved over time from a residence into a substantial hotel.
Above right: Stone outbuildings to farmyard near 'Bundle of Sticks' roundabout, Naas.

The shattering impact of the subsequent crop failures on the small farmers in the mid 19th century is well documented, but it also changed the nature of farming the land in Ireland. The unprecedented halving of the population wrought by the famine created a dramatic shortage in the labour force necessary to sustain the lands of large estates. This appears to have been one of the key reasons why landowners sold their properties, creating an exchange of land which provided the opportunity for Catholic families to buy property and re-establish themselves with large farms.

The latter part of the 19th century was coloured by the founding of the Land League. The actions of Charles Stewart Parnell, on behalf of the tenant farmers, culminated with the 1881 Land Act and reformed the ownership of land in Ireland. In the aftermath of the famine, the strong farmers increased their holdings at the expense of the smaller farmers. The improved network of transport in the country changed the focus of the lands surrounding Dublin from tillage to cattle for export. Post-famine farming focused on the intensification of store cattle production for the British market, which led to a specialised grazier core in the south Meath and north Kildare area. By 1900, Kildare was one of the leading store cattle producers.

The end of landlordism in the 1900s was heralded by the Wyndham Acts 1903, which encouraged landlords to divest themselves of their lands. This action ultimately led to the financial undermining and ruin of many estates, as farms were no longer capable of supporting the main house. The latter part of the 19th century was marked by a wave of social reform in Britain, which brought about societies and organisations such as the Congested District Board. This attempted to improve the plight of tenants by providing farmhouses and re-organising tracts of land into striped holdings of the 'Rundale system..

In Ireland, further initiatives taken under the Land Acts provided for the rehousing of the agricultural labourers in small cottages of varying design on half-acre sites dispersed in small roadside groupings. In the early part of the 20th century, the original Congested Districts Board was reformed into the Land Commission under the Free State administration. The main focus of this organisation was to continue farm consolidation and re-distribution, and the creation of small family-farm units to be farmed intensely to provide 'frugal comfort' or economic subsistence. These policies were, for the most part, effective in the agriculturally weak area in the west of Ireland. However, these small units in the depressed climate of the 1930s and1940s proved unpopular as they were not capable of supporting the large families living on them.

This brief overview of the evolution of land ownership in Ireland hints at the impacts and influences which formed the historical and cultural landscape of County Kildare. The great diversity of farm buildings which are to be found in County Kildare form part of its unique and architecturally rich built heritage today.

Building and farm typologies in County Kildare

Whilst travelling through the Irish countryside today, the dramatic changes in our building tradition are very evident, due mainly to lack of setting, inappropriate selection of building materials, and more usually the over scale and configuration of development. In contrast, it is of great interest to consider the historical farm building typologies and settlement patterns as they are found throughout the county. They demonstrate a consistency and pattern of development ranging, over 200 years, from the smallest modest cottage or cabin to the substantial farm.

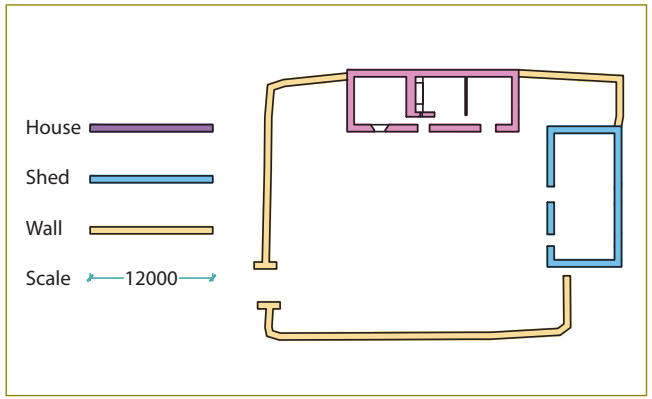
One of the strongest characteristics immediately apparent in all of the typologies, is how well each structure is sited in the landscape and how ancillary buildings and landscape interrelate with each other as well as with the principal structure. Both formal and functional work spaces are formed as the setting for the working and private life of the farm complex. The next distinct characteristic of this group is the formality and order of the exteriors of these structures, which is applicable to both the vernacular tradition and to the grand estate alike. This characteristic is present regardless of the materials that are used in their construction, such as mud-walled, rendered random-rubble masonry and dressed stone. An attitude to classical proportions and the use of symmetrical compositions is typically present and achieved by the use of simple devices, such as ordering and gradation of windows, the use of gable-ended chimney-stack, or by the deliberate landscaping such as the framing of the main facade by a planted approach avenue.

Unfortunately the wholesale transformation of the rural landscape of the county Kildare over the last decade has taken place at an unprecedented pace, allowing little time for the consideration of the particular architectural richness of the country's built heritage. Many people associate traditional or vernacular architectural heritage with an era of great poverty and a diminished society. This single factor probably is the main reason for the lack of regard or the reason that no cultural or architectural value is bestowed on these buildings. It is a contributing factor to the pattern of abandonment that can be seen throughout the country accompanied by the blight of bungalow bliss and ribbon development as society seeks to distance itself from its past.

The once prolific building type of small cabin or cottage in the early 19th century started to disappear after the decimation of the population in the Great Famine. The rate of abandonment of these modest structures, continued into the late 19th and 20th centuries so that their numbers and location are now greatly diminished in the county today. With the exception of perhaps some the very large scale farm complexes, few farm buildings were likely to have been designed by architects. However, the commonality of character and architectural quality, evident throughout all farm buildings, was achieved by the application of familiar concepts such as the use of set structural openings constrained by construction and materials, the number and configuration of rooms to be provided, or by the arrangement of the farmhouse to the ancillary buildings to achieve the most efficient shelter. The Thatched survey in county Kildare recently completed, along with the Kildare farm buildings study, revealed a surprising number and great diversity of approaches and styles in the construction of farmhouses.

Issues facing farming today: intensification of practice; declining population; and infrastructural impact.

Typology 1
Cabins, cottages and cottier's dwellings



The first two categories of building typologies are historically and intrinsically linked as they represent a change in settlement pattern and social structure introduced through the specialisation in farming during the 18th century. During the 17th century, cabins had been typically clustered around the central authority of the medieval tower house and all classes of society were accommodated in a similar fashion and shared in the production of food for the community.

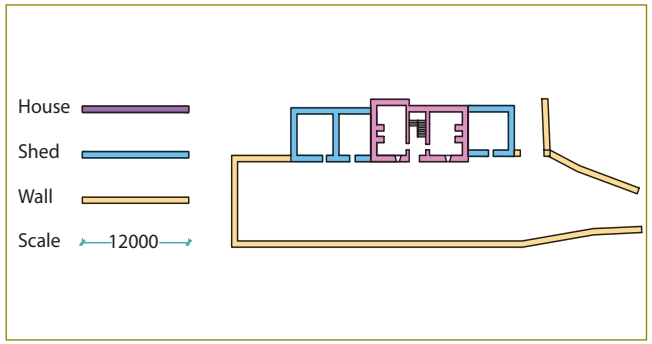
By the 18th century, social change had created independently wealthy farmers with larger central holdings. Farm labour was dispersed to the fringes of the farm, with accommodation provided in cabins situated off the access route. The field-pattern of tillage farm communities differed from the more open expanses of the grazier-holdings for dairy farming. They were laid out in smaller tighter plots, bounded by low earthen banks with hedgerows of native species such as hawthorn. This change in farming fundamentally changed the character of the landscape from an open field system to one of small enclosures.

In general, the substantial tillage farm at the centre of these communities had a more extensive array of buildings arranged around a bustling yard. The cottage structures comprised a simple cellular plan form usually with a central hearth and direct entry access. They were both road fronted or set gable-end to the road and were more usually of single-storey thatched construction, though some examples of two-storey structures still survive. Outbuildings which provided accommodation for storage or animals, were usually situated to the rear, or sometimes used to frame the main façade.

Linear extension of the main range is the most frequent form of providing additional accommodation. Less often, a change in economic circumstances may have led to the complete abandonment of the original structure and its conversion to storage. With a more comprehensive and fashionable dwelling being added to the original complex, the orientation and scale of the complex or yard layout was sometimes altered.

Top left: Illustration of this typology.
Below left: Direct-entry cabin.
Below middle: Goat-herder's house at Craddockstown, Naas.
Below right: Asymmetrical treatment of main elevation.

Typology 2
Modest farmhouses



The next category of farmhouses is comprised of more substantial farmhouse structures, usually of two-storey construction, sometimes of mud-walled construction but more frequently of random-rubble masonry rendered with lime and slate roofed with gable-ended-chimneys. Thatched two-storey examples also survive of this building type, though the readily available supply of slate made this the more popular roof covering in the mid 19th century.

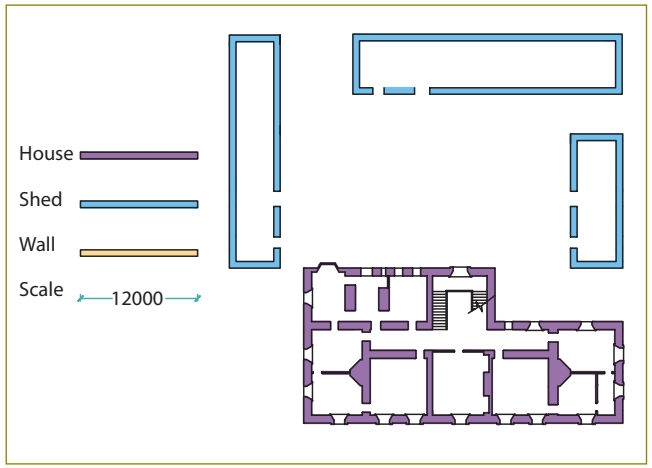
These structures typically possess classically ordered facades. They include smaller window openings at the upper floor, frequently set gable-ends perpendicular to the main road, with small formal gardens, manicured hedgerows and a range of outbuildings to a yard. The linear plan form also adapted to create a formal space or to create an impact to the culmination of a road or junction. These structures were sometimes built with arched entrances or defined gated entrances leading to more substantial adjoining yards.

Typical and subsequent modifications evident to this building type include the addition of entrance porches, single-storey wings and the enlargement of footprint length. The extension of the accommodation footprint is limited, and is usually along its linear axis retaining the continuous roofline and gable-end characteristics of the structure. The more typical adaptations include the addition of returns to the rear elevation or the doubling in depth of the footprint. Both solutions provide a double-pile plan with single aspect windows to the rear and front elevation.

Windows are well ordered in the mainly classical façade and are diminutive in scale to the upper floor with the main vertical circulation separate and centrally placed within the cellular linear plan form. Rooms are interconnected using the classical mechanism of *'en filade'* design arranged along the front façade of the house. This feature comprises all the accommodation doors being positioned in line with one another for ease of access and progression through the sequence of rooms. Modest entrance porches were also added providing additional circulation space to the central staircase and hall.

Above left: Illustration of this typology.
Above: Linear farm complex situated off Caragh Main Street.
Right: Linear farmhouse in between Timolin and Moone.

Typology 3
More substantial farmhouses



The next category is comprised of the more substantial farmhouses associated with land ownership, usually 50 acres and typically at the centre or focus of a settlement cluster of labourers cabins or cottages.

"Houses and farm buildings lie at the very centre of Irish architecture and culture; they are as constant, and as typical, as the network of fields, mountains and lakes which surround them. Built with rubble stone or earthen walls, covered with painted plaster, roofed with slate, tin or – now infrequently – with straw, they stand in courtyards with solid outbuildings, often enclosed by banks of tall trees which serve both as wind-break and as mark of habitation in an empty space... On the one hand there is a vernacular lineage descended from medieval and Celtic roots, and on the other, 'classical' houses related by plan and elevation to the principles of European Renaissance."

Extract from *A Lost Tradition – The Nature of Architecture in Ireland.* Niall McCullough and Valerie Mulvin, Gandon Edition, 1987.

The images associated with this category suggest the lineage of this typology. It is possibly one of the most exciting but least identified or understood categories still evident in the county today, as the structures' remote locations tend to conceal their architectural interest and merit. These farmhouses are substantially detached in character and they are typically remote, encountered in the depths of their farmland.

The Noble & Keenan Map of County Kildare, circa 1752, is of great interest in that it indicates field patterns, access routes, planted boundaries and substantial farmhouses relating to the smaller, road-fronted cabins. More importantly, this unique historical map not only indicates many topographical features, it also indicates the location and relationship of these substantial farmhouses and provides a remarkable insight into the overall context of these farmhouses in County Kildare.

Above left: Illustration of this typology.
Below and right: Leinster Lodge, with its location indicated on the Noble & Keenan Map of County Kildare, circa 1752.

Typology 4
Landed estates

The next building typology, which also influenced the management of land during the 18th century, was the large and extensive estate of hundreds of acres in the ownership of a wealthy landed family. County Kildare retains several significant examples such as Carton House and Castletown.

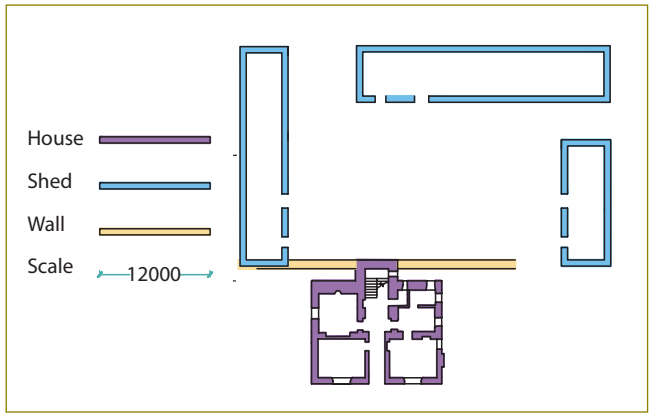
Such buildings were constructed to the designs of leading architects of the day. Who, having completed the Grand Tour, (a tour to visit all the ancient cultural sites) were influenced by the revival of Palladianism based on studies of the classical world. The structures are usually of a very different scale and construction, with accommodation provided as suites of rooms suitable for receiving and entertaining society. Ancillary accommodation to the principal structure or residence was usually arranged around substantial yards immediately adjacent. These outbuildings and service yards were used for stable or farming activities, or in some instances for servant quarters. They were placed at a discreet distance and often were shielded from the view of the main house. Access was sometimes in the form of a subterranean route or passage.

Demesnes were usually laid out as set pieces or to master-plans with the net effect of cocooning an island of land by enclosing it with a well-defined and planted boundary. The focus was on the principal house and its manicured landscape, creating a utopia in the midst of a more informally undesigned countryside.

The family papers associated with the running and management of Castletown reveal that farm leases for holdings of approximately 50 acres were designed and laid-out by surveyors or landscape designers and allocated to farmers immediate to the boundaries of the estate. This management tool determined the character of the rural landscape for miles within the environs of the estate. Louisa Conolly of Castletown was responsible for creating extensive parkland around her home, the family's passion for entertainment and cultural pursuits extending to landscaping the demesne instead of to food production. This extensive estate was not self-sufficient as a consequence and all farmed produce was bought from surrounding tenant farmers.

Top: Drawing of Carton House from Noble and Keenan's Map of Kildare, 1752.
Below: Castletown, a national monument in the care of the Office of Public Works. (Photograph courtesy of the Photographic Department, Department of the Environment, Heritage and Local Government.)

Typology 5
Gentlemen's villas



The farmhouse frequently referred to as the gentleman's villa, was also known as the classical 'Box House' or 'the Economic Villa'. As a plan type it was well received mainly due to the following attributes:

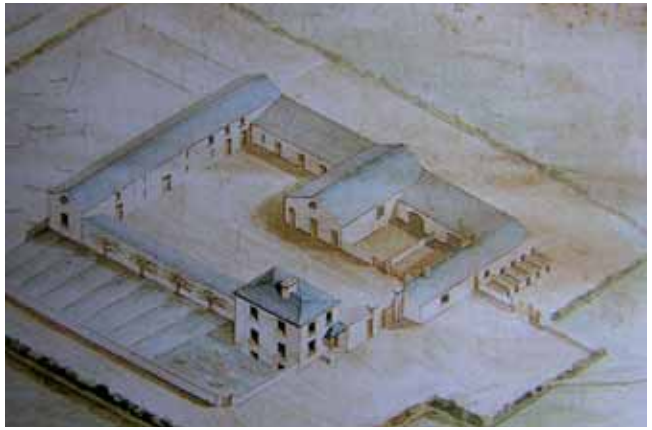
> *"Convenience, strength, commodiousness and beauty and this art (to make all buildings so) is called architecture".*
>
> R. Morrison, *Useful and Ornamental Designs in Architecture.*

This building typology became hugely popular in the late 18th and 19th centuries because of its simple unornamented style and pleasing, classical proportions situated in the midst of excellent farming land. They are usually built of stone or with lime-rendered random-rubble, square or rectangular in plan form with slated roofs, often hipped with over-hanging eaves and usually one or two chimney-stacks.

In Ireland, this typology proved to be an area of experiment as it adopted characteristics which referenced classical influences of the rustic Palladian ideal. The setting of these buildings can be most particular and huge import was made of screening and ordering of the functional/service activities within the villa or the classical farmhouse. The devise of interlocking courtyards concealed by flanking screens from the main façade were all used to good effect, making a unified and decorative architecture and providing a polite view of life protected from dirt and livestock.

The Economic Villa, the ingenious plan form established in the larger houses and adapted so that the location of the farmyard and outbuildings were directly to the rear of the principal structure, resulted in a low impact to the main façade. The setting and shelter of this farm type was further considered and enhanced by the establishment of a cluster or framing of deciduous trees in close proximity to the house. The use of this plan type and the arrangement of the house to form one side of a courtyard was deemed to be a particularly economic and suitable solution to the Irish climate.

Top left: Illustration of this typology.
Top right: Kildrought House, Cellbridge, situated adjacent to the Castletown estate.
Middle right: Substantial farmhouse in the Curragh.
Bottom right: Belin House, County Laois, bordering County Kildare.
Below: Hand-coloured axonmetric drawing. (Atlas of the Irish Rural Landscape)



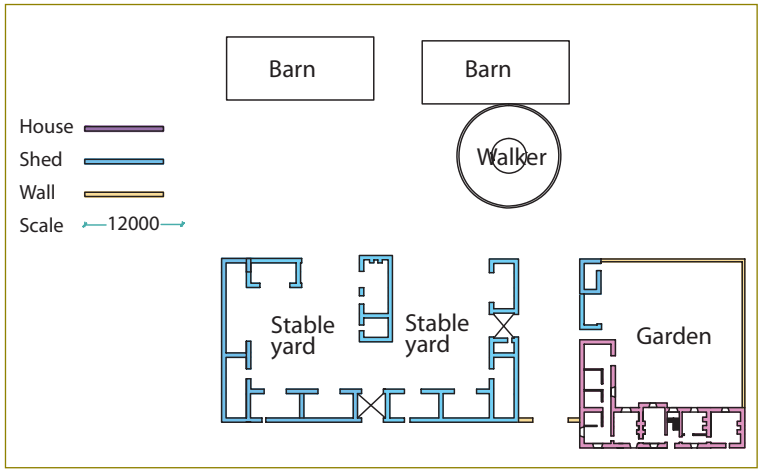
Typology 6
Large stud farms

This category comprises the stud farms which represent a thriving and growing farm type in the county. They are found mainly in the vicinity of the Curragh which is the focus of training and racing activities of national and international importance.

The building typology associated with this farming tradition can be quite diverse in terms of scale layout and construction. The examples selected indicate all types of construction material from mud-walled structures to substantial lime-rendered edifices with attached stable yards. The stable ranges are usually constructed with simple building forms, usually single-storey with pitched roofs comprising a continuous ridge-line, covered with Blue-Bangor slate or corrugated metal sheet. The stable ranges enclose an intimate bustling central space of activity, the focus of all the stud farm action, articulated by the pattern of half-closing timber-sheeted doors to the perimeter.

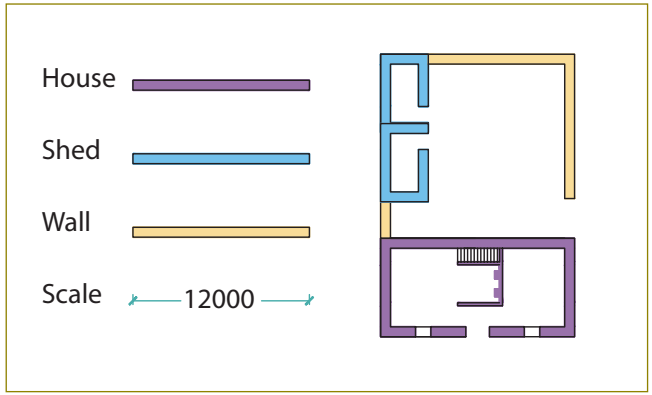
The scale of the central stable yard is usually quite low-key but functional in character, dominated by the storage barn. It is typically subservient to the principal structure or residence, with separate service entries and linkages to the paddocks, sometimes through gated or arched openings.

The boundary treatment to stud farms is distinctly different to the more organic and irregular earth ditches and native hedgerows of dairy or tillage farms which typically characterise the county. The treatment of stud farms and their paddocks in County Kildare is usually with well-ordered parallel open timber fencing with planted beech hedging to the boundaries of both the exercise paddocks and the perimeter of the property itself. In general, this farm type requires less land and fewer outbuildings to accommodate farm activity, though a practice of field rotation between cattle and bloodstock is necessary to maintain the grazing of the land.



Above: Illustration of this typology.
Left: Stud farm situated in the Curragh.
Below: Painted kerbstones defining entrance to substantial farm with stables at the Curragh.

Typology 7
Land Commission, Board of Works, County Council housing



This category comprises small country houses built in the vernacular style to accommodate the resettlement of small farmers from congested areas in the west of Ireland. In County Kildare, the presence and number of these 19th-century farmhouses is evident in close proximity to major towns, such as Athy in the southern part of the county. They were typically located so as to subdivide large areas of cattle-grazing land with smaller mixed or tillage farms.

Following the change in the economic prosperity of the larger farmed estates towards the end of the 19th century, the State took over disused farms or rented long-term farmland to migrants from the west. Farm holdings of approximately 10 hectares were allocated in the late 1930s, and in the 1960s, 18 hectares were provided together with a house, outbuildings and some livestock. The resettlement took the form of communities, grouping families from similar districts. The farms were usually sited close to a crossroads or to an access road so that they were easily reached from the existing road network, or from newly-created Commission lanes. A small formal garden or area usually fronted the road, with the service or farmyard to the rear of the property, accessed by a double-gated entrance.

The farmhouses were constructed of a variety of materials, with a simple plan form comprising of one or two storeys, with pitched roofs and well-ordered exteriors. Small yards to the rear were enclosed by a modest range of outbuildings constructed of lime-washed random-rubble stone with corrugated roofs, used for storage or animals.

Also in this category are the dwellings produced as part of the County Council isolated cottage schemes of the 1950s. Large numbers of people from unsanitary accommodation were rehoused, using many of the traditional building characteristics such as the simple plan form, loft-lit gable windows giving an exaggerated but appealing external form.

Above left: Illustration of this typology.
Top left: 1930s County Council cottage near Kildare.
Middle left: Two-storey Council house near Donadea with decorative brick work.
Bottom left: Cottage at Ballymore Eustace associated with the waterworks.
Below: 1950s isolated County Council cottage, near to Kilcullen.

4 Conservation Principles

Termon House, Donegal, conserved on behalf of the Irish Landmark Trust, promoting best conservation practice.

"Our architectural heritage is a unique resource, an irreplaceable expression of the richness and diversity of our past. Structures and places can, over time, acquire character and special interest through their intrinsic quality, continued existence and familiarity. The built heritage consists not only of great artistic achievements, but also of everyday works of craftsmen. In a changing world, these structures have a cultural significance, which we may recognise for the first time only when individual structures are lost or threatened. As we enjoy this inheritance, we should ensure it is conserved in order to pass it on to our successors."

Extract from *Architectural Heritage Protection – Guidelines for Local Authorities*, published 2004

Introduction

This opening section to the recently published guidelines, published by the Department of the Environment, Heritage and Local Government, was drawn up to conserve historic structures rated as having particular significance. It also has an equal resonance for this publication, as it identifies the importance of sometimes intangible qualities evoked by everyday places or structures that may easily be overlooked or disregarded.

The identification of the farmhouse typologies in Kildare at the outset of this publication in chapters 1 and 3 bears testimony to the richness and diversity of the county's architectural heritage, from the modest smallholdings to the large landed estates. The majority of the more modest structures, which are the primary focus of the farmhouse study, have not been fully assessed or added to the Record of Protected Structures for the county. The absence of statutory protection for these structures does not mean they are unimportant and it does not mean that they have neither cultural value nor that they lack the potential to benefit the county's economy in the future. Ensuring their consistent management and repair as a future cultural stock can be promoted by raising awareness of best practice in conservation. It is the ambition of this publication to achieve this, not through statutory protection, but through the application of common sense to the management of an economic and cultural resource.

Conservation is the process of caring for old buildings and sites and of managing changes to them in such a way as to retain their character and special interest. Historic structures are a unique and finite resource. Once they are dramatically altered or demolished, their authentic historic fabric cannot be recreated. Similarly, over-zealous restoration can remove the patina of age and eliminate the character and charm of past craftsmanship.

The following guiding principles numbered 1-10, adapted from *Architectural Heritage Protection - Guidelines for local authorities*, produced by the DOEHLG, to guide best practice for protected structures, can also be considered when dealing with, or planning for, other historic structures. They can be used as the basis for assessing the impact of proposed modifications to Kildare's old farm buildings and are as follows:

1 Study, assessment and understanding of the building

At the outset, when devising a future plan for an historic building it is necessary to study the actual fabric of the building, its context and previous functions. The process of physically measuring and recording an historic building provides the opportunity to become familiar with its overall structural and physical condition as well as its relationship to surrounding buildings. Local lore may point to otherwise unknown historical significances of the building. It is always best not to make assumptions about old buildings, but to become as familiar as possible with them both prior to and during the process of decision-making about their future.

2 Protecting and retaining the special interest or value

Owners of an old building are usually aware of its historical background or associations, but it is not always immediately apparent how significant a building or structure may be in the overall context of the built heritage of the area, county or indeed the whole country. Discussion with the local authority conservation officer can assist with establishing the relative rarity or cultural value of a property. An appraisal by a conservation architect can provide some guidance on the important aspect of a structure and its site. Many buildings are modified and refurbished over time and it is important to understand which are the distinguished features or elements that are intrinsic to the character of the structure, and which are not. A full understanding of these positive cultural values prior to reviewing reuse or repair options may yield long-term benefits for owners and the wider society.

Authentic details including historic sash window, lime rendered walls and overhanging thatched roof.

3 Maintaining a building in use

The identification of an appropriate use for a redundant building is of the utmost importance. 'Shoe-horning' of a building, an adverse function or re-use proposal, can cause unnecessary damage to the historic structure and character. Modest farmhouses and outbuildings are likely to be relatively robust in their character and able to accommodate modern lifestyles or thoughtfully chosen appropriate alternative uses. The choice of a new use can be the most critical decision in successfully maintaining the cultural and economic value of an old building.

4 Promoting minimum interventions

Conservation is the process of managing change in an historic structure. It is a holistic process, taking a pragmatic overview of a situation and evaluating all aspects of an historic building or site. Conservation generally seeks to retain existing materials and construction details and to adopt traditional methods of repair to secure the future of historic fabric. This is because it is well recognised that such an approach is less costly for the owner of the structure, avoids unnecessary loss of fabric and authenticity and retains the unique qualities and character of the original structure. Imperfections do not necessarily have to be removed or straightened out. They are the evidence of the structure's antiquity, are irreplaceable and should be preserved *in-situ* where possible.

Right: Old stone forge near Glebe West.
Below: The earthen outbuildings at Meddenstown North mirror the route of the main road.

5 Repairing rather than replacing

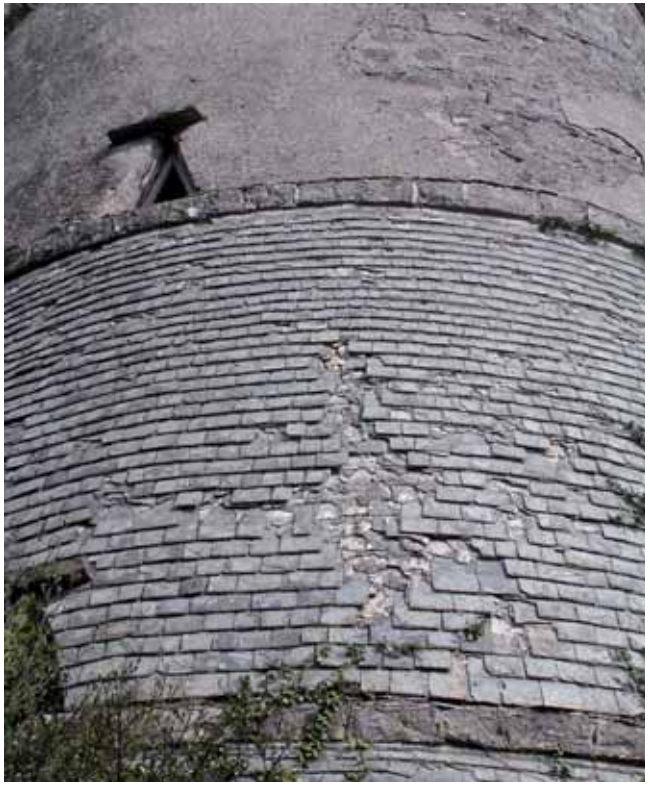
Wholesale replacement of historic fabric is often unnecessary and damaging to the historic character of the structure. It is also usually a costly process. The concept of minimum intervention allows for repair work to be carried out *in-situ,* discreetly retaining original fabric and avoiding the 'gutting' of the structure's character. Where fabric has decayed beyond repair it may be appropriate and possible to faithfully replicate historic detail, although this is not essential.

6 Using appropriate materials and methods of repair

The use of traditional building materials and skills when repairing historic structures is of considerable importance. Inappropriate modern building materials not only remove the original character and appearance of the structure but also more seriously, may damage its ability to regulate and balance its fabric properly. For example, lime mortars tend to be just strong enough to do their job, while retaining porosity and flexibility, both of which can be important for the proper weatherproofing of the building. In contrast, cementitious mortars can be inflexible and eventually crack, letting in moisture and retaining it internally. Their general impermeability forces the moisture to appear inside the building where it is most unwelcome.

7 Respecting earlier additions and alterations of interest

Buildings can be altered or repaired over time and it is important to recognise that these changes are part of a structure's history. Where they are not causing an adverse impact or have a disturbing appearance, such alterations or repairs should be evaluated for their heritage value and accepted as part of the structure's character.



Vertical slate detail set into lime at the Wonderful Barn, near Leixlip.

8 Availing of expert advice where necessary

Conservation is now a recognised specialist discipline and the input of an expert at the outset of a complex project may assist greatly in evaluating the significance of the various parts of the building and statutory planning procedures. Such specialists can also help to identify sources of funding, skilled craftsmen and ultimately assist in identifying short- to long-term management strategies. Someone with experience of the planning regulations, conservation strategies generally and the particular building type can resolve many problems that seem complex or insurmountable to the owner.

9 Discouraging the use of architectural salvage from other buildings

Removing historic fabric from another structure to its detriment is generally not recommended. Salvaging and recycling materials that are sufficiently sound for re-use from within the same structure, in the course of repairing that structure, is more acceptable. Where building materials have gone beyond salvage, contemporary sources of replacement materials should be identified. The recent cultural change and interest in conservation has provided numerous suppliers of such materials. If a part of a building has been entirely lost, the opportunity arises to make contemporary interventions in modern materials.

10 Compliance with building regulations

Since July 2006, Part L of the Building Regulations, which sets standards for efficient space heating, has stressed that flexibility is needed in its application to buildings of architectural or historic interest. In the interest of conserving the character of buildings of architectural and historical importance, the enhanced thermal insulation requirement, introduced in 2002 as an amendment to the Building Regulations, does not apply to protected structures or proposed protected structures. In refurbishment works, compliance with current building regulations can be achieved in other ways than by rigidly applying the directions given in the in the current Building Regulations, Technical guidance Documents. Specialist guidance from a conservation expert may be necessary in these instances.

5 Best Practice Repair and Retention

Refurbished interior to Termon House as part of the conservation works carried out.

Introduction

Best conservation practice is really about carrying out timely and appropriate maintenance so that the processes of decay or deterioration are held at bay. Where elements of a traditional building deteriorate beyond repair, it is necessary to consider replacement based on a 'like-for-like' basis. Wholesale gutting or full replacement is usually inappropriate unless a building has been neglected for a considerable period. Regular maintenance is good building management. Where damage becomes apparent, its prompt resolution avoids greater future cost.

The concept of preventative maintenance is based on the old adage of 'a stitch in time saves nine'. Frequently, where buildings fall into disuse, justification for their upkeep is not considered worthwhile. However, minimal maintenance is prudent during deliberations on a future strategy, as the reuse value of old buildings sometimes is not immediately apparent. If possible, simple maintenance measures can go a long way towards securing the integrity of the fabric. This is of the utmost importance when dealing with organic structures such as thatched roofs or mud-walled constructions.

Repairs to a traditional building should be undertaken only after the building's weatherproofing technology has been given careful consideration. These repairs are often different in nature from modern building techniques. Where necessary, specialist advice should be sought so that inappropriate materials or unnecessary work is avoided. Even in the case of buildings that are not protected structures, the local authority conservation officer is a useful contact when trying to assess the minimum repairs necessary and to identify local craftsmen or builders to carry out works. He may be able to advise on the importance of the fabric to be repaired and whether grant assistance is available for the project.

Once the roof of an historic building is compromised, damage to the interior will follow and eventually undermine the structure. Simple and practical steps – such as clearing gutters, particularly before the winter – are essential, so that rainwater can continue to discharge away from the structure. Blocked downpipes can cause rainwater to soak back through the walls of the building, damaging any timber it comes in contact with, including the lintels over windows and floor joists fixed into the walls. Where slate or ridge tiles become disturbed during bad weather, prompt action to refix them is essential, as the remaining roof covering will continue to loosen once a 'gap' has formed. The image to the left shows the dramatic and effective step taken by the concerned owner of a thatched house, temporarily 'wrapping' the original roof to protect the interior. There are many examples in the countryside where thatched roofs have been covered with galvanised sheeting as an expedient repair. These tin coverings often help conserve old — and potentially historically important — layers of thatch.

The best way to secure the future of an historic farm building is to retain an appropriate use. Where acceptable, temporary letting provides on-going supervision of the property, at the very least, and may in addition generate an income that could pay for its upkeep. Where a building has to be 'moth-balled' for some time while a new owner or new use is identified, it is important that its openings are secured and illegal access is prevented. However, sealing a building fully gives rise to condensation build-up in the interior and may exacerbate the break-out of rot. Where possible, ventilation from one side of the building to the other should be provided so that the fabric of the interior remains dry. Water sources should be turned off and access by pigeons and other birds should be prevented by the use of wire mesh on any openings, particularly to the roof space.

Bottom left: Preservation of thatched structure near Nurney, temporarily protected with plastic-wrapped roof.
Above: Significant road-fronting farm complex at Halverstown crossroads preserved with corrugated metal roofs.

The replacement or repair of historic fabric with modern materials or new products can detrimentally alter the intrinsic character or technical functioning of the original fabric. Irreversible damage is caused to old buildings by repairs using new materials or methods that are not based on a thorough understanding of the way old buildings work.

6 Adding to Old Farmhouses and Ancillary Buildings

Contemporary addition to farmhouse in County Fermanagh referencing the scale and mass of original house.

Introduction

Arising from the farm buildings study a tradition or pattern of adding to or extending farmhouses became apparent. The following are design considerations which may assist or guide the appropriate addition of accommodation to an existing farm complex.

Siting and orientation

Traditionally, houses were designed so that the longest axis of the building was orientated east-west. Front doors on more modest dwellings, comprising a direct entrance, or a wing porch, were turned away from the prevailing wind. In Kildare and throughout Ireland, the afternoon or evening sun comes from the same direction as the prevailing wind, which means that a farmyard courtyard to the south or west of the house could provide a sheltered area.

Scale and mass

These vary depending on the typology of the farm. Research suggests that there is a recognised depth for vernacular houses: the span of the roof timbers generally does not exceed 5m. This had to do with the technological difficulties of making a simple roof from generally available lengths of timber. The linear form of farmhouse as outlined in the study *Vernacular farmhouses in Waterford*, rarely exceeds 20m in length. Knowing these dimensions, it is possible to recommend that where additions are to be made directly to the end of an existing house, the existing widths of the gables should be matched. This is also of relevance to re-forming courtyard complexes to sizes greater than 20m in length, as the circulation areas become overextended and the sense of scale and intimacy of the original house plan is lost.

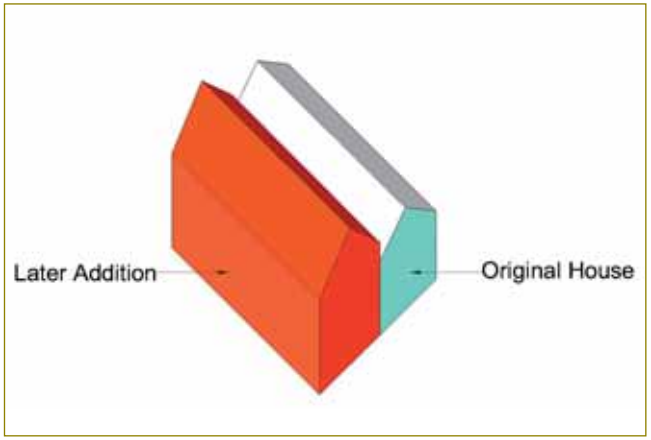
Roof design

Adding to the rear of a simple farmhouse, if single-storey, can be achieved by matching the original profile without exceeding the width of the existing building and maintaining a similar pitch and eaves height. Extending a two-storey house can be more difficult, as most old farmhouses have coved ceilings sloping down to below door lintel level in the upper storey, which means that the existing roof structure must be altered to provide access into the new extension. Extending a new roof with the same profile to the rear would mean that the only place a door opening could be accommodated into a new extension room, due to low head height, would be under the centre point of the ridge of the new rear extension. This may not suit a new corridor position or indeed the existing access within the house. This means that, in the case of a gable-ended farmhouse, it is easier to add at either end (refer to Diagram p.42).

Another option is to position an extension off the main staircase landing. A number of older farmhouse extensions are to be found directly behind – or immediately in front of – the original dwelling. Obliterating the original farmhouse with a large new building would not be considered good conservation practice now. A good design should not confuse the legibility of the original building footprint and form.

Diagram indicates minimum distance for shelter or solar access.

Above: The diagram shows the appropriate distances for the addition of an element for optimum solar gain and protection.
Below: Doubling the footprint of the original house, which dramatically reduces the penetration of the natural light to the interior.



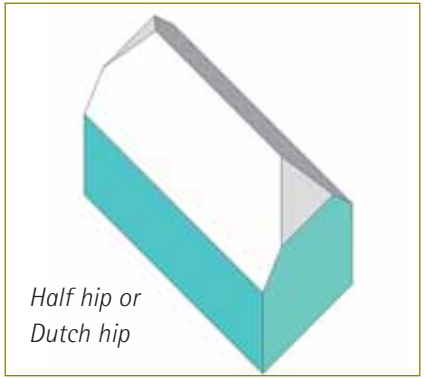
1.

2.

Variations of Roof Configurations

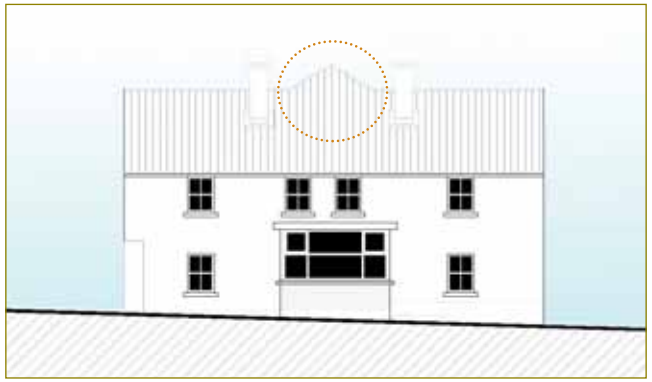
A half hip, also known as a Dutch hip, is not a common form in Kildare as it is intrusive and adversely impacts on the overall character and presentation of the principal structure. It should only be utilised if there is an obvious precedent.

The chimneys on old farmhouses are always positioned on a ridge, particularly on the linear ranges. If the modification requires a new chimney, this should be sized to match the existing width and height, particularly with chimney capping detail. Redundant chimneys should be kept as they provide very important scale and balance to the linear range.



Half hip or Dutch hip

3.



4.

Common issues to resolve include:

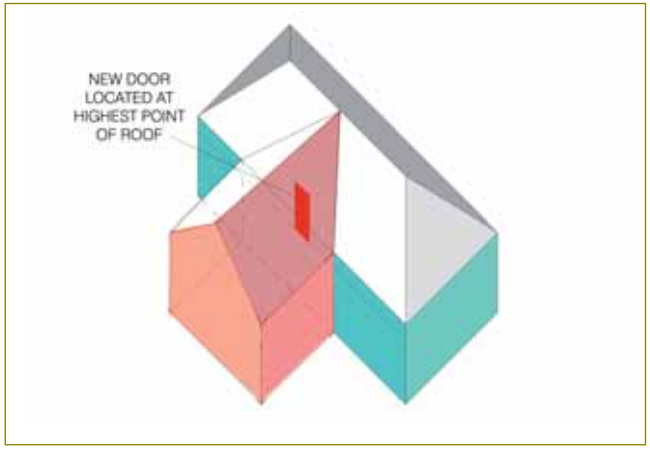
- inappropriate width and height of the rear extension, showing on the front roof elevation,
- access to the rear in older farmhouses may only be through the highest point of new extension,
- addition of visually intrusive fenestration and dormer structures,
- removal of chimney stacks,
- reduction of daylight.

Internal circulation

Internal circulation often determines where additions can be made. Often a route through to an extension can only be achieved below the highest point of the roof. In some typical buildings where head height is an issue, this will be easiest off the stairway as head height can be gained with entry off a landing.

In typical modest linear houses there are no corridors. Rooms, including bedrooms, are walked through to access other rooms. Even where a plan for a modern lifestyle can be devised without corridors, it is necessary to take care to consider an arrangement of furniture that allows for the intended use of the room without preventing movement through it. Solutions to dealing with these aspects of the layout include: allowing bathrooms to be accessed through two doors (rather than just one); or allowing smaller rooms to become large entrance halls or access rooms. Freestanding partitions that screen but do not connect with the existing ceilings can also be used to great effect, as shown in the case studies in Chapter 7.

1. Rear extentsion at differing pitch to accommodate longer extension. This is hard to detail and can cause weathering difficulties in the long run.
2. Diagram showing similar roof pitch and eaves and ridge height.
3. Wider extension causes unsightly ridge to main elevation, shown in no. 4.
Bottom: The use of dormer projections to the roof in the conversion of outbuildings to residential houses is not a common roof detail in County Kildare.

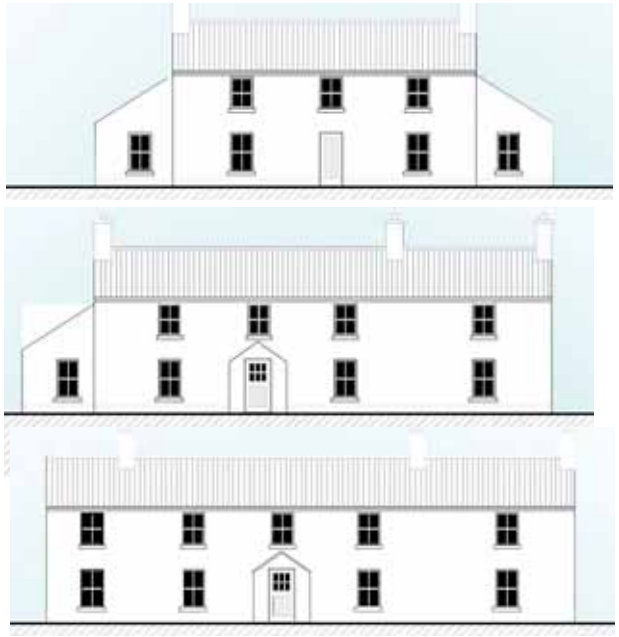


A second access stairway may also have to be considered, particularly with the larger farmyard complexes or where a two-storey section is added without a connection between old and new at the upper level. If the existing stairway is useable, it should be maintained. If the stairs are particularly steep and narrow, as in the case of the earlier more modest houses, a second stairway should be considered in a new section to allow regular safe use while the existing stairway can be maintained and used less frequently. As a rule, staircase enclosure walls should not be removed. Every attempt should be made not to subdivide rooms to provide *en-suite* bathrooms or corridors. Generally, it is advantageous not to subdivide the larger rooms in a small house, but to adapt the smaller ones to suit the occupants' requirements for toilets, utility rooms, storage and laundry rooms, etc.

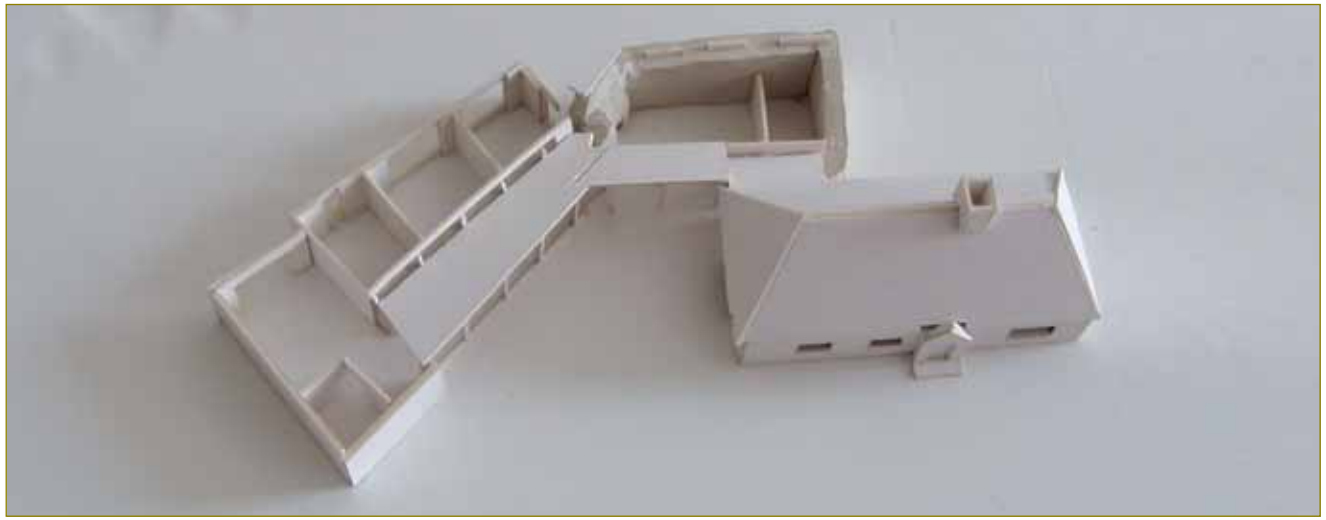
Additions and extensions

Traditional extensions to linear range farmhouse typologies adding larger volumes to modest-scale structures

The junction of an extension with the existing roof can be problematic and can unnecessarily disturb areas of roof and walls. This can be particularly relevant to mud construction, where the tops of the walls are strengthened by the wall plate which may be interrupted by any additions to the roof. As can be seen from the following best-practice examples, most successful designs opt to distance the main part of the new element from the original building and connect them with a single-storey link. This link can be glazed and flat-roofed, or roofed so that it comes in underneath the existing roof without disturbing it. This leaves the new element distinct from the original. This element does not have to match the width of the existing building or even the height. It is noticeable, however, that too large an extension can disturb the scale of the original dwelling.

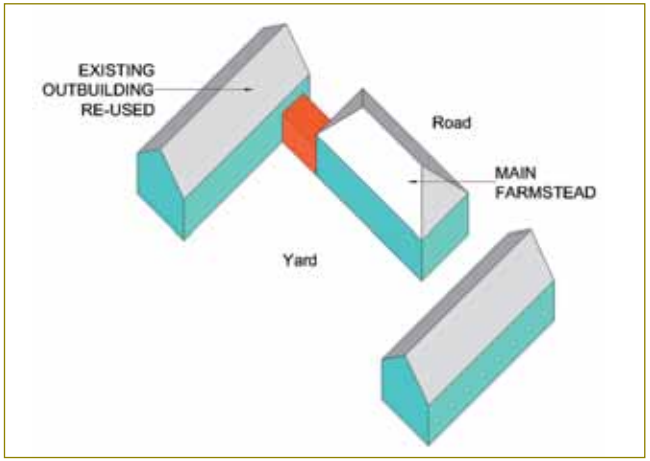


Top left: Diagram showing that due to internal roof heights, it may only be possible to fit a door into the new adjoining structure where the roof height is at its highest. This may determine the position of the addition.
Bottom left: Farm in Balitore, circa late-19th century extension to the front re-orientated the farm towards the road.
Above right: Rear view of a linear farmhouse type with single bays to either gable, 18th century two-storey, 50 acre farmhouse and complex.
Right: Example of the typical development of a linear farmhouse range through three stages, with the top showing the earliest form.



The model to the left demonstrates the manner in which a contemporary extension wraps around a modest mud-walled farm dwelling with partially surviving outbuilding. The mud outbuilding is used as the link between the new and the old, containing the key uses such as the kitchen and utility with extra bedroom accommodation.

Note how the roof height necessitates the use of a mono-pitch roof with high-level lighting to the bedrooms, thus the prominence of the height of the main building is kept.



Appropriate uses for larger complexes and conversion of outbuildings

If outbuildings are to be converted, their new use should be compatible with their building forms. Obviously, any alternative uses for the buildings generated by the agricultural holding itself will be the simplest to organise and are likely to be the most compatible from a proprietorial, if not a physical, point of view. Of the farm complexes examined in this publication, those nearer to urban centres had a greater variety of new uses.

If the use requires a change to the circulation pattern to link in with adjoining structures or redundant buildings, further new access points should be considered. In general, residences or multiple occupancies that demand the subdivision of outbuildings into smaller units, where additional stairways and services are needed as a consequence, can cause much disruption to the original layouts. If this is going to be the case, consideration might be given to finding another more suitable use to avoid problems. If there is an opportunity to add a link, as in the case studies of Knockaulin Farmhouse or Malahide in chapters 7 and 8, the modern intervention can be designed to contain the most service-intensive functions, such as the kitchen or sanitary accommodation, minimising intervention in the older and more historic part of the building.

Where new sections are added in this manner, it is good conservation practice to make the new demonstrably different from the old. If running parallel, a step back or a contrasting material should differentiate the wall planes, to reflect the difference between new and old.

Middle right: The extension is positioned in one of the service accesses to the farmyard as indicated by the diagram above. In this case the extension is for a granny flat. It is inserted in such a manner as to be subservient to the main structure, matching the existing farmhouse by using traditional building materials and details.

Below right: A good example of a low-key, well-mannered extension to an old farmhouse, which is road-fronted with gable-ended chimneys.

Additions to compact buildings

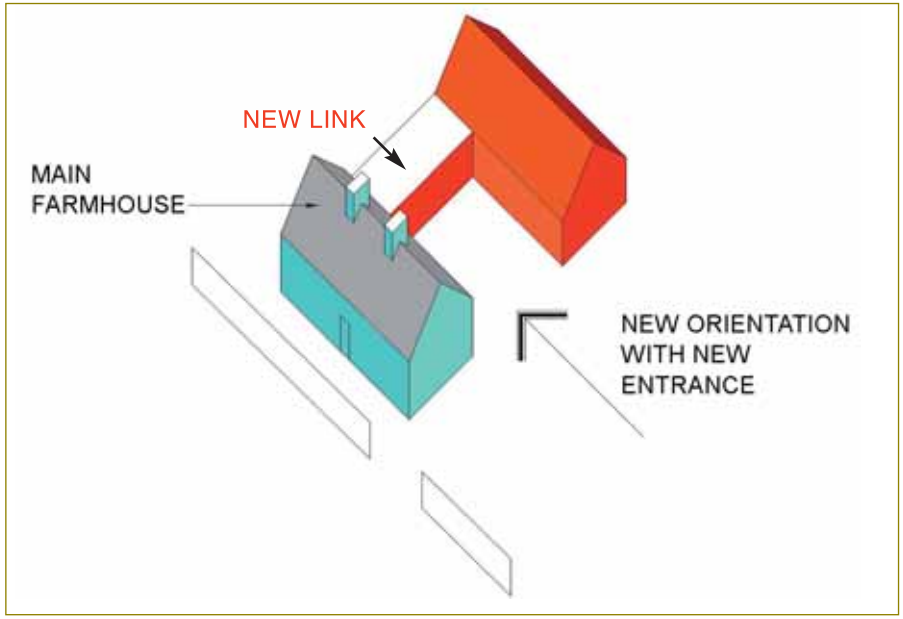
A good design solution will attempt to reuse as much of the existing fabric as possible. It will attempt, insofar as is possible, to accommodate the main functions in the original farmhouse, i.e. kitchen or main entrance. If an addition is needed, it should be subordinate to the original building in scale and height.

Some smaller houses, including those built by the Land Commission, have very little space between the building and the road. Traditionally, these buildings had small outbuildings, such as pigsties or hen coops, to the rear. The houses themselves normally consisted of two rooms on either side of a smaller entrance area, with outside sanitary accommodation. Not many of these Land Commission houses survive unaltered and most have been extended to the rear with an asymmetrical rear roof pitch. The sketch to the right indicates an alternative approach which maintains the pleasing form, character and special interest of the old house yet allows for a greater volume of extension and can help resolve road traffic and safety issues for accessing the site.

This allows design flexibility to the rear extension, which could, for example, contain larger spaces or window openings. The conservation principle of minimum intervention is respected by such a plan, the extension added being as big as necessary but without interfering with the original building.

Design Guidance

- Ensure that the external form and historic character of building is maintained.
- Ensure that the proposed extension does not compromise daylight, natural ventilation or structural integrity of original building.
- Ensure that there is a distinction made between the old and the new so that the various building phases can be seen as a harmonious progression of development.



Left: Sketch indicating modest farmhouse, with addition to rear, moving the original entrance to access the newly formed courtyard.

It is important that the original boundaries to this type of house are kept, as this provides a particular scale.

Image indicates an original farmhouse comprising of a single storey. Additional accommodation provided by adding new two-storey section set perpendicular to the original structure and integrated with glazed link.

Below left: Front elevation of an 18th century farmhouse, road-fronted, with classical fenestration pattern, retaining many original features and materials.

Below right: Rear view of structure indicating the sympathetic additon of a contemporary wing that avoids any adverse impact on the principal façade, yet provides wonderful naturally lit living space.

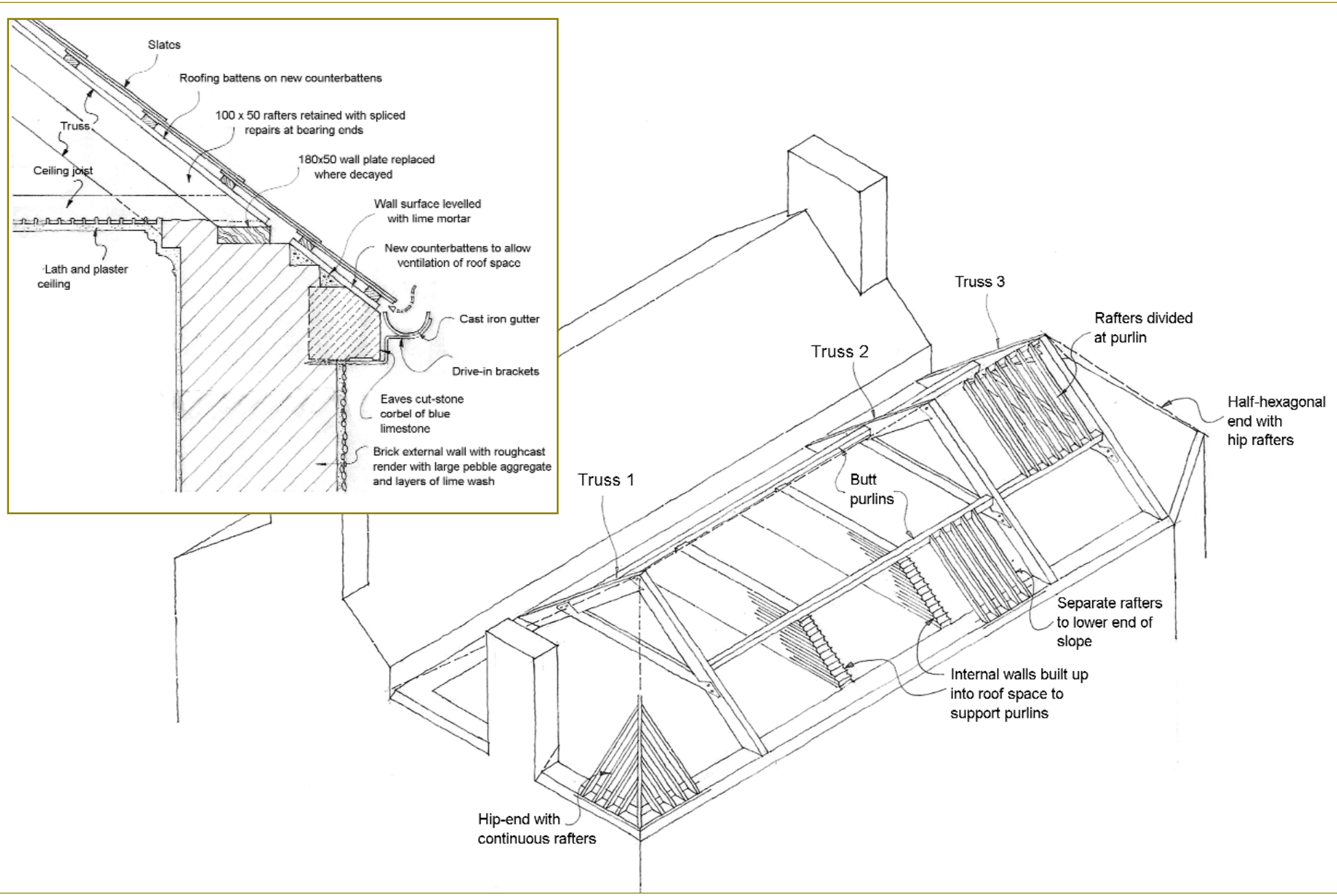
Left: Single storey original farmhouse with additional accommodation provided by adding new two-storey section set perpendicular to the original structure and integrated with glazed link.

Below left: This shows a more traditional version of attaching to a historic structure and in particular thatch. Note the link which does not disturb the original thatched roof.

Below: Contemporary addition to existing stables in Malahide, County Dublin. This addition is to the external corner of converted stable building and yard, shown in Chapter 7.

Above: Extension to principal structure by introducing additional volumes symmetrically to either side of two-storey farmhouses.

The sketch (top right) indicates a proposal for symmetrical additions on either side of the main farmhouse, which is only possible on a site much wider than the house. This maintains the prominence of the original farmhouse. The above photograph shows an older farmhouse in Mayo that connects to a new two-storey extension by a glazed link. The extension, though taller because it has been separated, is distinct and has not impacted on the main range.



Detailed drawings prepared for the refurbishment of Belin House, Co. Laois, used with the kind permission of Richard McLoughlin.

7 Case Studies – Interventions and Modifications

Rosslea, case study in a rural landscape, County Fermanagh.

1. Mud-walled farm dwelling, Derrymahon, County Kildare

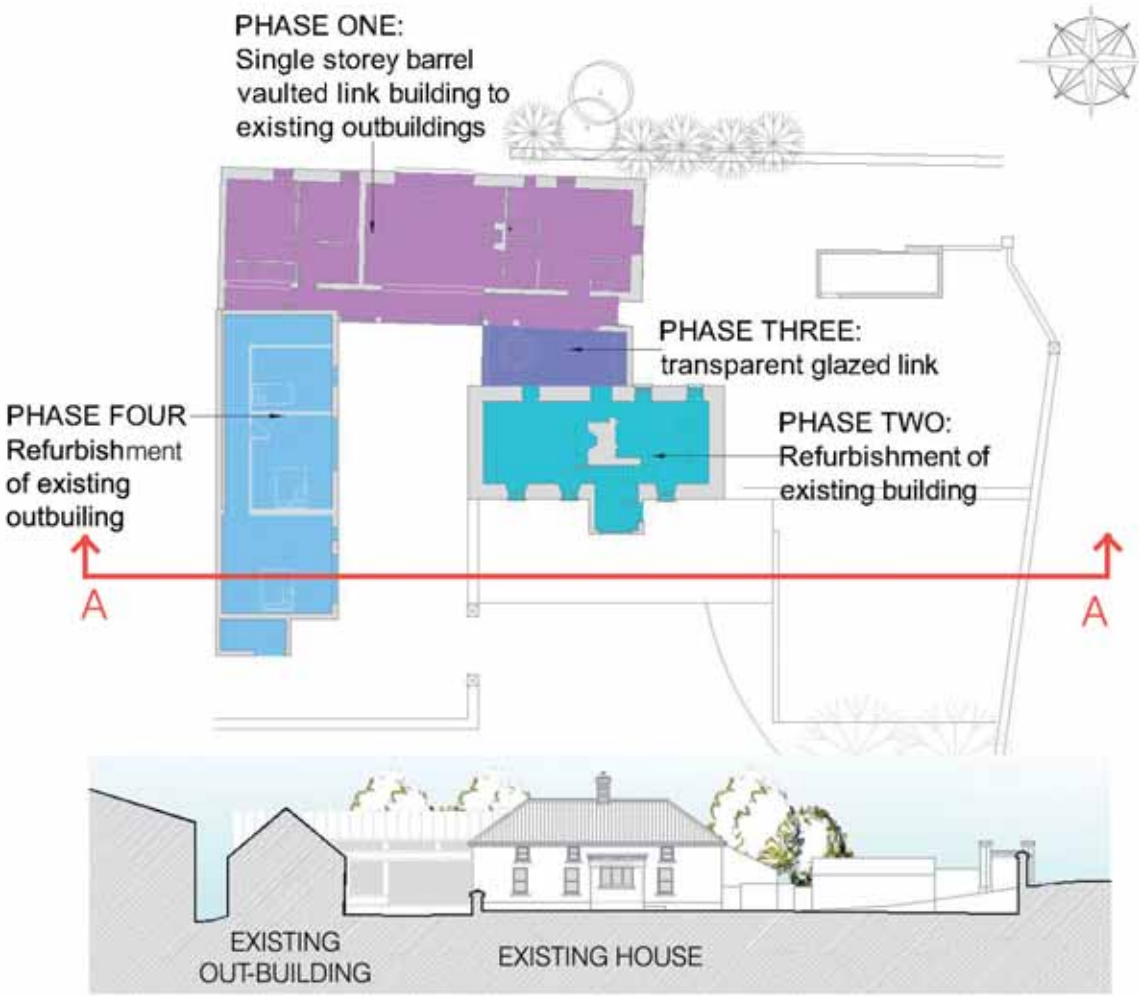
Adding a large extension to a modest vernacular farmhouse

General description

Despite its appearance, this house is a two-storey mud-walled dwelling of 135 sq. m. in area. It had been modified at the turn of the 20th century with the addition of a concrete porch and boundary walls. It is a two-bedroom farmhouse with stabling and was previously a journeyman's house-cum-shop. The new owners, both non-farmers, wished to introduce additional accommodation with fire escape and improved sanitary facilities. Two options for this extension were considered.

Option 1: Single-storey extension

The first design of single-storey accommodation added 150 sq. m. to the size of the house. This option attempted to make use of the existing outbuilding with a link building containing two bedrooms, living room, kitchen and circulation that allowed for the further possibility of using the rest of the outbuilding (76 sq. m.) if spatial needs grew. It is scaled so that its height is

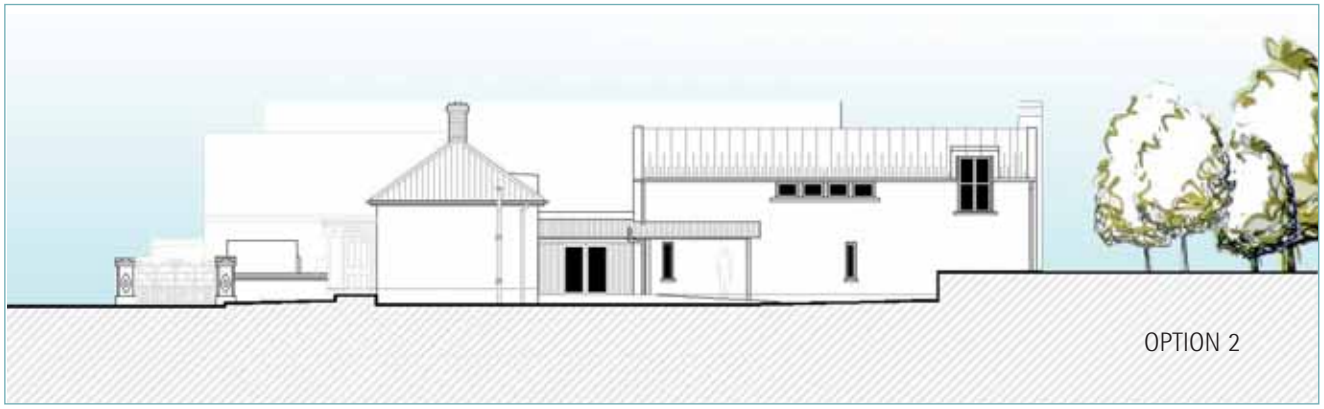


OPTION 1

lower than the existing buildings. Unfortunately, too much space was devoted to circulation in this scheme, and so another scheme was designed with a more efficient arrangement for moving from one part to another.

Option 2: Two-storey barn form

In this solution, the extension is two-storey and placed to the rear of the existing buildings, with the height reduced as much as is physically possible by using a barrel-shaped roof. This confines the windows to a low eye height upstairs, a feature of the existing farm building. The new extension contains 53 sq. m. upstairs and 99 sq. m. on the ground floor, giving a total of 158 sq. m. This is additional accommodation consisting of a living room, two bedrooms, a main bathroom, kitchen and utility with guest bathroom on the ground floor. There is a screened secondary entrance to the rear, at the junction of old and new, with a covered walkway that ties the larger extension back to the original. This is to have a roof of corrugated sheeting.



OPTION 2

An alternative rear two storey solution is shown on this overall site plan. Entending to the rear gives a better orientation for all the new rooms and a more compact form. Care was taken to ensure its height did not impact on the front view of the orginal section

OPTION 2

Points of note

- There are always options as to how an extension may be designed.
- Finding that the walls of a house are made of mud-walled construction does not mean that the property will be difficult to inhabit or extend.
- Attention to the design of the circulation spaces for the new use of the building can reduce the floor area of the extension, but may demand that it is a two-storey compact form, which must be carefully designed so as not to dominate the original building on the site.

2. Two-storey extension, Ennistymon, County Clare

Conserving residential use with a two-storey addition in existing farmyard

General description

The cottage and its two outbuildings are located alongside a small country road north of Ennistymon in west County Clare. It was built in the mid 19th century and had been extended along the front and the east gable in the mid 20th century.

The form of the cottage and outbuildings evokes the clustered nature of farmhouses and their attendant buildings, creating a farmyard. The 20th-century extensions were removed, the cottage was renovated and a two-storey building was built at the rear with a single-storey link. The extension mimics the corrugated-metal-roofed hay sheds commonly found in farmyards. A herb garden is being developed to the front of the cottage. A temporary timber fence was built to safeguard the children, pending the growth of a hedge. The original front door of the cottage remains the front door of the renovated and extended cottage. A back door was inserted, opening onto the concrete yard to the rear and east of the site. The cottage is intended to appear as one living space, with the chimney modulating the space. A sliding door separates it from the link. The hot press, washing machines and sinks are arranged on the east wall and are concealed behind three sliding doors. The playroom, bathroom and study are located on the ground floor of the two-storey extension. The master bedroom and children's bedrooms, with an interconnecting shower room, are located on the first floor.

Points of note

- The new barn form sits well in the landscape and relates well to the original structure.
- Change of ground level allows the building to be well placed into the site, giving the feeling that the building is rooted in its surroundings.
- Internally, the ceilings are boarded and timber-sheeted doors are used in reference to traditional joinery details.
- Existing front entrance is maintained as the main entrance to the scheme.
- Single-storey link between the new and the old does not disturb the original roofline and the new structure does not overwhelm the original farmhouse.
- The layout of the old farmhouse is retained and extended sympathetically.

3. Farmyard at Roslea, County Fermanagh

Creating an external space by the use of existing buildings

General description

The house is situated off a quiet country road on a gently sloping site with views of the surrounding hills. The site contained an 18th-century cottage, with outhouses relating to a farmyard. The new house is positioned opposite and parallel to the cottage, thereby forming an enclosed informal courtyard with the outhouses to the east and west. The setting is of rolling landscape with a backdrop of mature ash trees and hedgerows to complete the cluster.

The house has a simple narrow plan form running east-west, incorporating the change in level across the site. This long rectilinear form is roofed in a continuous barrel vault, reminiscent of a typical farmyard shed. This traditional form, and its clustering around the existing structures on the site, echoes Irish farmyards. A long low secondary element is expressed on the courtyard side of the house by a porch leading to and containing the main entrance of the house.

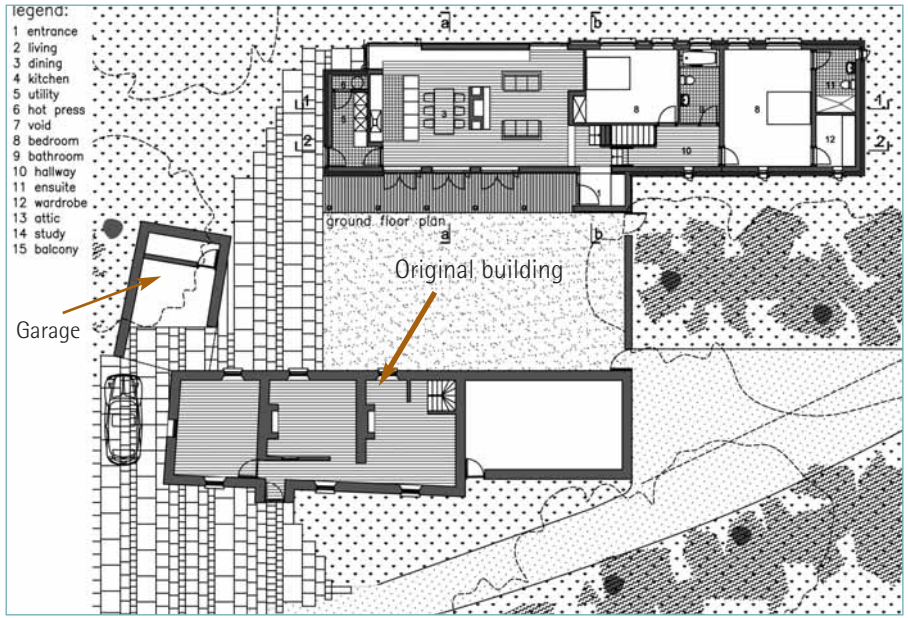
Internally, the roof is finished in painted strip boarding, the walls in painted plaster and the floors in hardwood timber. Externally, the roof is finished in untreated copper sheeting, the walls in dashed render and the windows and screens in hardwood timber.

The gravel-finished courtyard defines the central external space and links the elements of the composition.

The conservation of the original farmhouse as additional family accommodation is the second phase of development.

Points of note

- The new building is sited carefully to relate to the existing building and to form a sheltered courtyard.
- The renovation of the original cottage was not precluded by the scale or location of the new building.
- Walls, existing trees and boundaries were exploited as sheltering elements.
- The long axis of the building is orientated east-west, allowing the main rooms to be lit by south-facing windows.
- The simple form of the original farmhouse is retained, with its setting and backdrop of mature trees preserved.
- The patina of older buildings is maintained. Note corrugated sheeting as covered car entrance just discernible in the background of external yard.



4. Labourer's Cottage, Erris, County Clare

Refurbishment of house and creation of farmyard

General description

The house is situated in Erris in East Clare and is a refurbishment of a labourer's cottage. The existing building had no foundations, so a considerable amount of underpinning took place as part of the conservation works. The house formerly had other buildings added around it, and the footprint of the settlement pattern was used to inform the re-creation of the yard. By the judicious use of stone and the simple palette of materials, the architect has created a 'clachan', or cluster, with the newly added buildings. This has provided additional shelter and privacy, as well as a formal approach to the existing dwelling. Note the extension to the end of the cottage is set back from the building line with one large opening, making it distinct from the existing dwelling (top, far right).

Points of note

- The treatment of the exterior is consistent with good design, exploiting a small palette of traditional materials – slate, stone and render – to good effect, to articulate forms with pitched slate roofs and closed eaves.
- The removal of cementitious render, and underpinning to consolidate the structure.
- Clustering of the buildings is used to achieve a new sheltered yard area and approach.
- The extension added to one end of the house is in harmony with the existing building.

5. Stable refurbishment, Malahide, County Dublin

Conversion of outbuildings to dwelling within the family's farm holding, which continues in use

General description

The farm is in close proximity to Malahide, North Dublin. The architects for the project are a husband-and-wife team who recently returned to Ireland from the UK, where barn conversion is a common approach to adapting redundant farm outbuildings. Their parents live in the principal farm residence and manage the farm complex.

This is an example of an uncompromisingly modern extension which contrasts with the older building in terms of materials, window details and internal volumes. The extension is clearly delineated from the existing stable complex and is, in section, a double-height space with the original ground-floor stables adapted as an open-plan space.

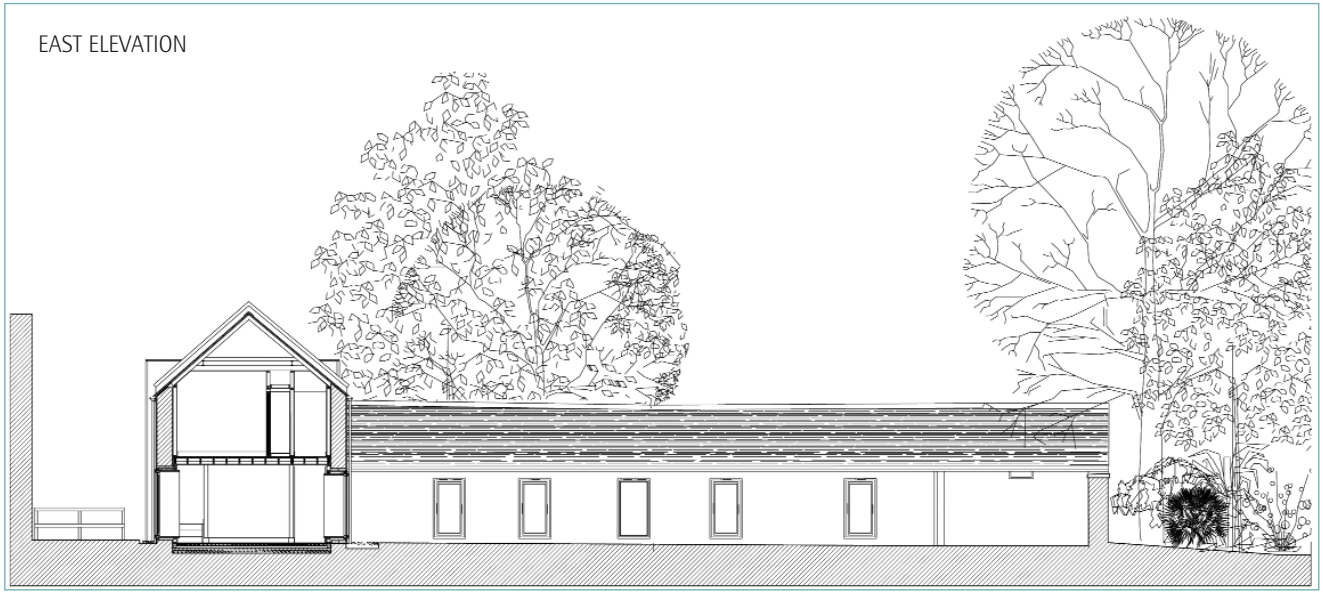
The modern extension re-orientates the view from the house away from the existing courtyard and the existing house, claiming ownership over the adjoining fields and grazing horses.

This page, below: Stables before refurbishment.
Right: View of the courtyard after refurbishment.
Following page, left: The new extension to the stable black.
Above right: Bedroom in the extension.

Points of note

- Re-use of existing stables to form a separate dwelling within the curtilage of the main house.
- New dwelling unit is accommodated on a working farm, without disturbing its workings or building elsewhere on a greenfield site.
- Formation of a second semi-formal courtyard away from the main house.
- Animals are still accommodated in the stables opposite the living accommodation.
- An example of how a modern design can be added and yet be in harmony with an existing stable yard setting. A conservation-led approach is used to handle the existing courtyard, while the new extension is located away from this and differentiated clearly from the original elevation by louvered sections.

EAST ELEVATION



6. Ballymurrin House, County Wicklow

Change of use to rural tourism and self-sufficiency

General description

Balymurrin House comprises the core buildings of a Quaker farm settlement dating from the 1670s and is set in the Wicklow countryside with the mountains as a backdrop.

Statement of significance

This is an extremely rare example of a pre-1700s dwelling of the 'middling sort' and of national importance according to the National Inventory of Architectural Heritage. The principal structure remained in good repair while the outbuildings – a collection of beautiful stone and slate farmyard structures – were left unused and neglected for many years.

Setting of buildings within landscape

This unique farm complex has a mature setting with a protective belt of trees, arranged around a central yard. The visual impact of the farm structures is greatly reduced by the manner in which it is 'hunkered down' into the rural landscape. The farmyard outbuildings include a dairy with former carriage house, old stables and bothy opposite the old milking parlour.

Case study significance

The significance of this project is that it is an example of best conservation practice and sustainable re-use. It illustrates the survival of a unique farmhouse complex with the retention and re-use of its outbuildings.

The first structure to be restored was the old dairy. This building had been far more than a dairy, comprising a carriage house, a living room and large kitchen on the ground floor, and a bedroom beside the loft on the upper floor. Its earlier connection

Top: Rear elevation of old milking parlour.
Above: Ballymurrin, Co. Wicklow before restoration.
Left: Ballymurrin, Co. Wicklow after restoration.

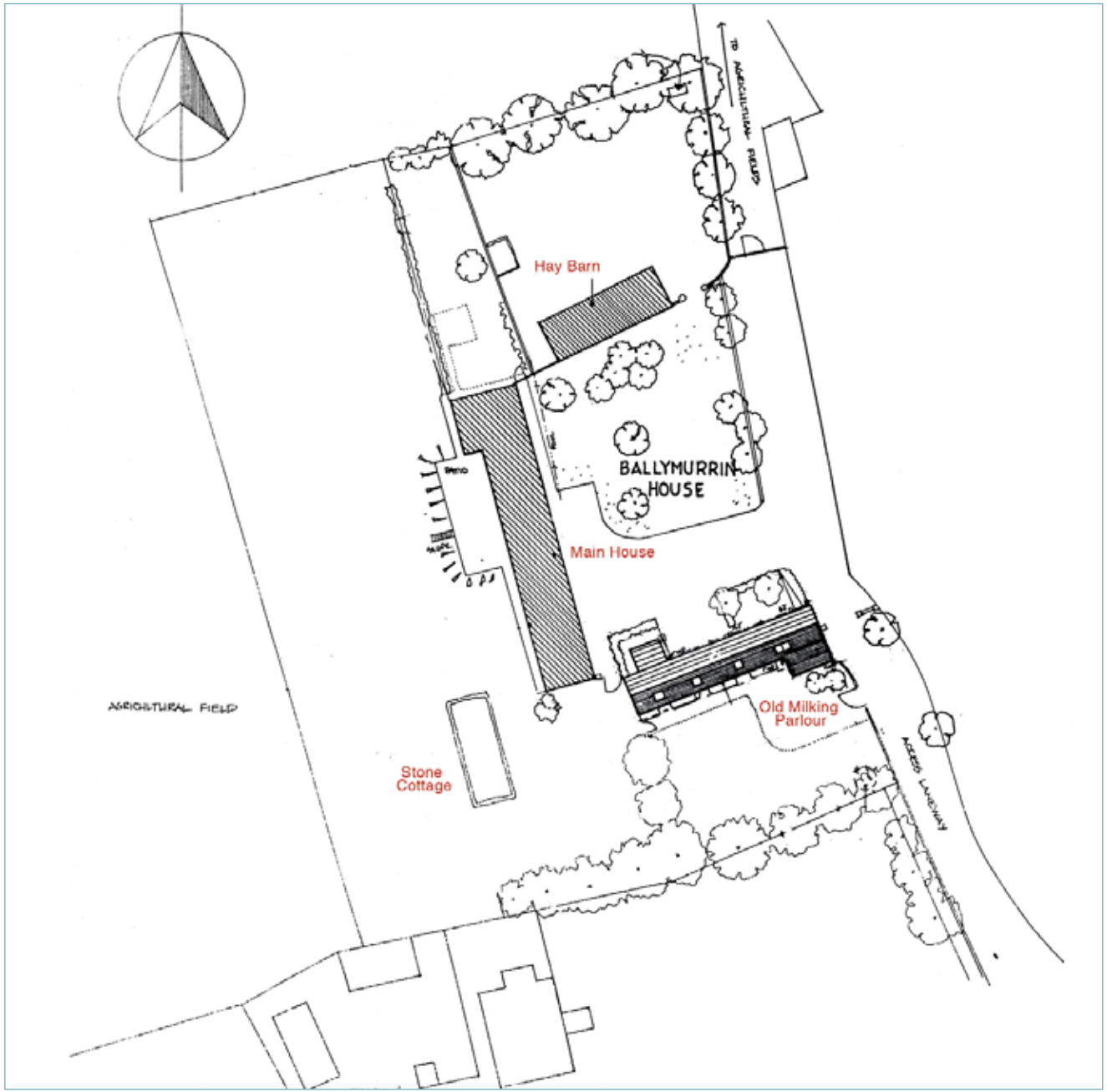
with the main house was re-established during the restoration and the loft became the owners' architectural practice base.

The old milking parlour, measuring 28 metres in length by 4 metres in width, was the next structure to be restored as an exemplary model for sustainable energy as well as for building conservation of structures at risk of being lost. The development of a sustainability brief meant that grant-aid towards restoration and use as tourism development was availed of. The proposed use was a self-catering cottage even though the space available for conversion would have facilitated the development of two units. This, however, would have been at the expense of the original internal layout and the historic form of the structure. The stepped form and rhythm of the structure was retained and fully utilised to provide different accommodation zones and architectural character. The accommodation to the old milking parlour includes two bedrooms with en-suite accommodation, a dining and kitchen area and a large lofty living room. Rooflights were used to enhance the natural light levels of the internal spaces. A state-of-the-art heating system, combined with solar energy and a default boiler for cold snaps as well as a turf/wood-burning stove, were used to create optimum comfort conditions.

Left: The studio showing simple proportions of door and window openings.
Above: Old milking parlour with the internal animal stalls retained as a division between kitchen and living room.
Right: Patio to rear of old milking parlour.

Points of note

- The survival of this unique farmhouse and its outbuildings as part of a contemporary private dwelling/work base and subsidiary enterprise providing attractive tourism accommodation.
- By providing an alternative and suitable approach to re-using the historic structures, significant funding was made available through Wicklow Rural Partnership (WRP) for grant-aid towards restoration and use as a tourism development in the form of a self-catering cottage.
- A sustainability brief was developed for this project, which addressed all aspects of the sustainable development debate, including clear energy conservation measures coupled with best conservation practice for repair and re-use.
- The repair works allowed for the re-use of the existing spaces and the historical footprint of the structures and innovatively allowed for animal stalls to be integrated into the tourist accommodation so that the historic nature of the outbuildings could be readily enjoyed. The scale and profile of original openings were kept as important features, as were internal volumes and spaces. To enhance natural light, and to allow significance solar heat gain, roof lights were incorporated into the profile of the historic roofs where appropriate.
- The redevelopment of this site paid great attention to the setting of the complex within a precious cultural landscape. Conservation works and modifications were planned and carried out sympathetically to ensure the integrity of the site survived.



7. Mud-walled House, Belshamstown, County Meath

Restoration and adaptation to modern country living

General description

A direct-entry, single-storey mud-walled house with hipped roof, formerly thatched, with an attached cow byre, stable and bird coop as part of an historic farm complex.

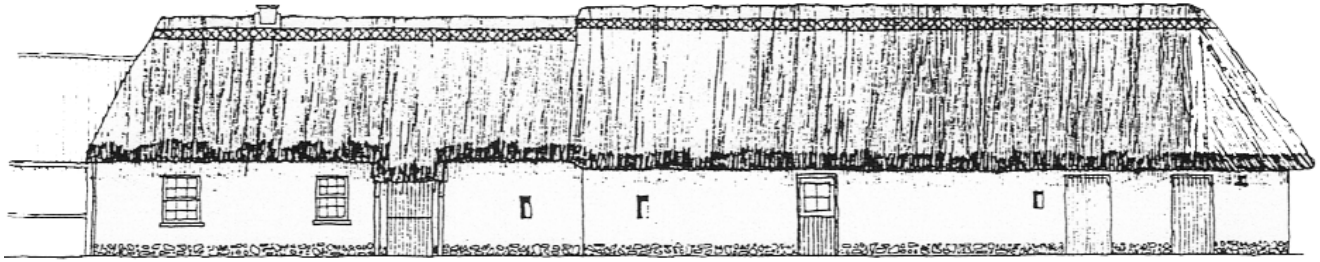
Statement of significance

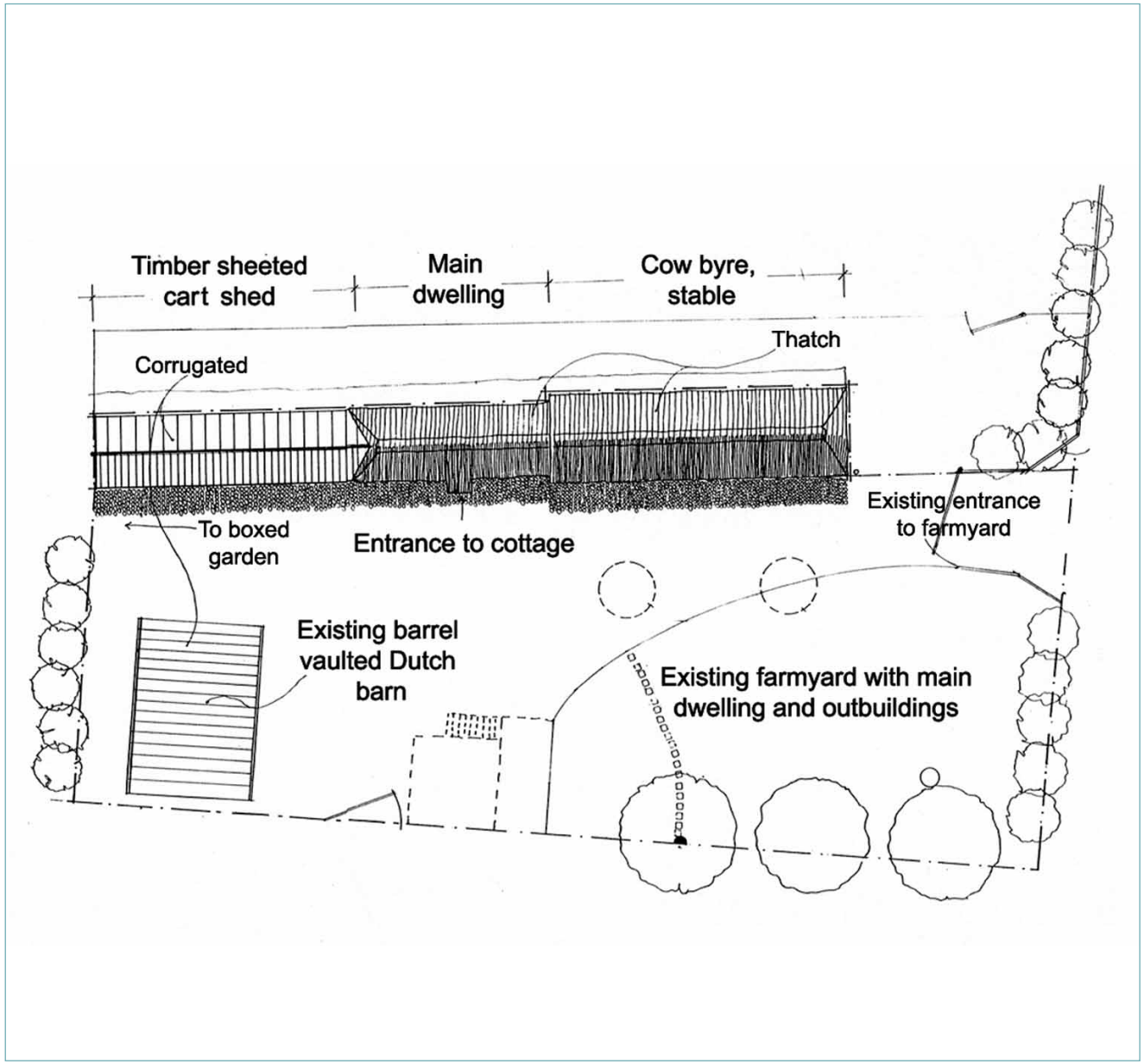
An example of a vernacular farm dwelling which retains its original use and outbuildings while adapting to modern living.

Setting of buildings within landscape

The farm consists of a continuous range of single-storey structures set at right angles to the main road and following the line of the local field pattern. The current layout conceals an underlying older site arrangement dating from the early 1800s. The existing composition provides an informal courtyard to the front of the complex and demonstrates the respect that older farmhouses had towards the setting of structures within the landscape.

The informal composition and intimate scale of the various buildings contrast with the surrounding flat lush countryside and the character and form of this earthen dwelling contributes to the visual attractiveness the rural landscape.





Site plan showing arrangement of buildings at Belshamtown, Co. Meath

Case study significance

The conservation of the house and its adjoining buildings as a private dwelling uses sympathetic methods and appropriate materials to repair and regenerate this historic structure. This approach promotes both sustainability and encourages the survival of traditional skills and the support of local craftsmen.

The survival of this vernacular farm dwelling was particularly significant as many of these smallholdings were lost as their land was amalgamated into larger beef farms in the county.

This dwelling survived due to its timely re-covering with a corrugated roof once the original thatch had deteriorated. Remarkably, there was evidence of the original thatch still apparent on the rough-hewn timber roof structure, which aided its restoration, as the new roof timbers were inserted following the historic roof profile.

The repair and retention of this farm dwelling with its attached outbuildings represented the evolution of farming practice from the early 19th century in the county. The farmyard had early examples of a thatched barn, stable and bird house with a later timber barn and the more familiar large corrugated barn. This collection of buildings provides an unusual scale and enclosure to the principal structure.

The use of traditional building materials and skills in the conservation of the structure ensured that the character of the historic fabric was retained and not undermined or damaged by the use of modern products.

The repair and retention of this low-energy dwelling meets all the requirements of sustainable development, as well as providing a unique and substantial farmhouse dwelling upgraded to meet contemporary living standards.

8. Mylerstown House, County Kildare

Conservation and change of use to sustain rural life and employment

General description

Mylerstown House is located close to the ancient castle site and yard situated to the north-west of County Kildare. It consists of a two-storey farmhouse and yard. It is situated to the north-west of the county east of Edenderry on the road to Kinnegad. The topography of the area is of interest as it is situated on a height overlooking the surrounding countryside. An ideal viewing or vantage point for the ancient castle, now in ruins, is found immediately adjacent to Mylerstown House. This landscape is of cultural significance due to the layering and preservation of settlements in the area from earliest times. To date, the area has experienced minimal development pressure to detract from its historical and architectural character.

Statement of significance

Under the criteria of the National Inventory of Architectural Heritage, Mylerstown House and grounds are of regional significance due to the structure's level of preservation, rarity of plan form, and its intact architectural character and mature setting. A rare, small formal kitchen garden has also been retained. Mylerstown House demonstrates a pattern of development frequently encountered in farmhouses which appear to have favoured retention and extension of the original dwelling in times of greater prosperity. Extraordinarily, Mylerstown House has two faces. The earlier mid-18th century façade is now situated to the rear of the property, but maintains its relationship with the informal cobbled yard which has a range of outbuildings perpendicular and parallel to the road frontage forming an

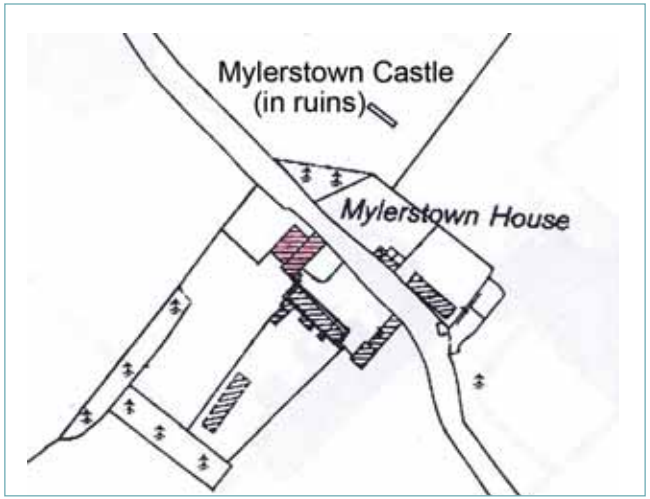
Main image: Original 18th-century farmhouse range, now to rear of the property with cobble setts to cobble yard.

irregular 'U-shaped' central space. Economic prosperity during the mid 19th century may have spurred the development of additional accommodation in the form of a two-storey extension to the rear of the 18th century property. With the grander scale and architectural expression, the 19th century extension became the new entrance to the property and reorientated the 'best rooms' from overlooking the farmyard and outbuildings.

Setting of buildings within landscape

The landscape at Mylerstown is of particular importance due to the number of artefacts and elements pertaining to the early settlement of the area, and to the subsequent use and working of the farmland. The ancient ruins of the castle are immediately evident and accessible from a stone boundary wall with a stile. A loading ramp for animals, following the line of the road, also forms part of this continuing boundary, which is paralleled

Top left: Front elevation of Mylerstown House, added in the 19th century.
Below left Internal timber stall kept as a screen for kitchen area in converted farm outbuilding.
Right: Black and terracotta quarry tiles in the 19th century addition.
Below: Plan of Mylerstown House showing farm buildings from different periods.



on the opposite side of the road by the stone screen wall to the informal enclosed farmyard.

Case study significance

This case study is of significance due to the visionary conservation of redundant/underutilised outbuildings and the recent development of commercial use supplementing the function of the architecturally significant farmyard. The commercial use identified by the owner was of a low-key nature, with minimal impact on the historic fabric so that the original animal stalls were successfully retained and utilised as part of the interior fit out and plan arrangement.

The survival of this unique farmyard with its outbuildings, the early 18th century dwelling with formal kitchen garden and the subsequent 19th century enhancement or addition, as a collection of elements provides a remarkable record of continuous living and adaptation.

Points of note

- The retention of the interior as well as the external character of the outbuildings is a remarkable achievement as the legibility of the historic fabric is evident and, in particular, the authenticity of their craftsmanship and detail of the vernacular joinery is retained.
- By providing a low impact use to the redundant under-utilised outbuildings, their survival along with the character of the farmyard has been assured as well as providing additional income to support the historic fabric of the principal structure.
- This case study demonstrates the benefit of minimal intervention, retaining the significance of the site, the sense of place, while including the concept of reversibility, allowing future changes or revisions where necessary.

8 Knockaulin Farmhouse Case Study

Aerial view of Knockaulin farm complex circa mid 1950s (showing the main Dublin/Athy road running to the side of the complex) and inset of Knockaulin today showing the N78 behind the house.

Knockaulin Farmhouse: a case study in the adaptation of a modest traditional country house for modern life

The following detailed case study regarding a farmhouse at Knockaulin, Kilcullen, County Kildare, addresses many of the issues mentioned above, as the retention and sensitive repair of the historic farm buildings are the central themes to the redevelopment proposal. This case study demonstrates the importance of having consideration for the historic form and setting of the original farmhouse and ancillary buildings – even when there is no statutory requirement to do so – so that the building's positive qualities are exploited. Adaptation of the primary fabric was undertaken in a manner that was not detrimental to the legibility or appreciation of the historic fabric or character of the buildings and site.

The subsequent detailed guidance notes in the appendix develop the philosophy and detail of conservation repair for old farm buildings in general. It drew on the practical experience arising from the Knockaulin farmhouse project and the expertise of local skilled craftsmen who carried out the conservation work using traditional craftsmanship and materials.

This section outlines the architectural approach to the regeneration of the farmhouse and its ancillary buildings. It also describes the initial architectural heritage assessment of the property, which determined the significance of the historic fabric and identified the most suitable location for adding a 'contemporary living space'—the accommodation required by the new owners. It indicates the type of remedial works necessary, including the use of traditional materials in conservation repairs, as well as the removal of some previous detrimental extensions to the building.

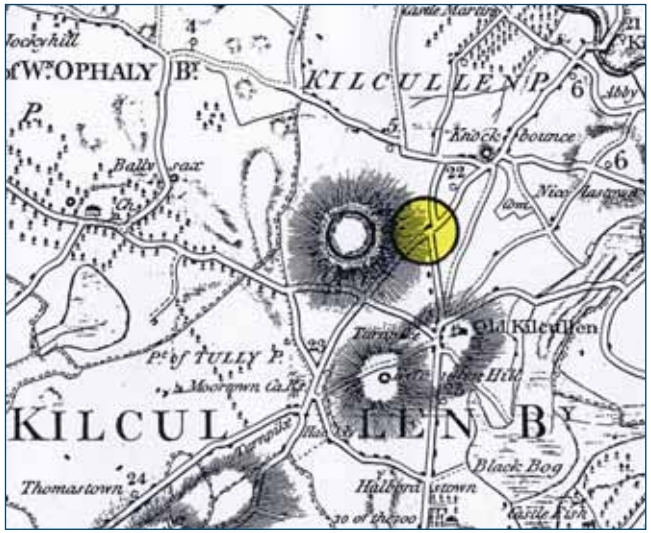
The assessment of recent planning files (part of the research undertaken for the study on which this publication in based) indicates that, in most planning submissions, a holistic approach or understanding of the layers of existing historic relationships and evidence of farmhouses and their ancillary buildings was generally overlooked. This highlighted the lack of guidelines for preserving these qualities of the farm-built environment, which this publication proposes to address.

1. General description

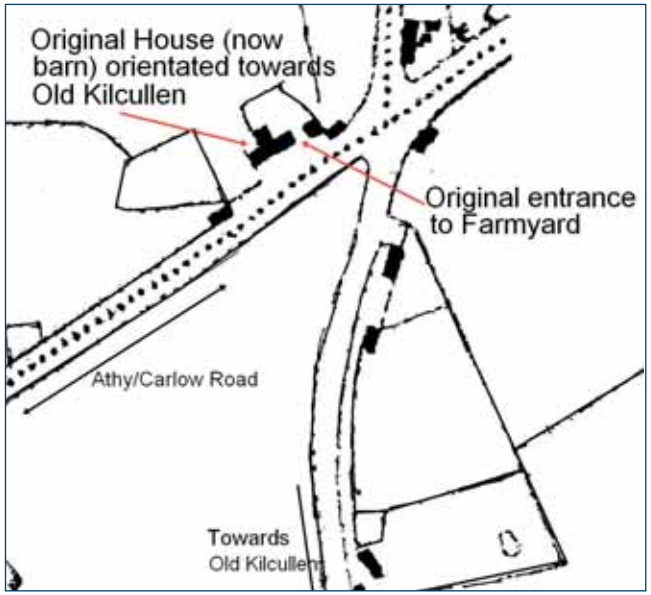
This is an historic farm complex comprising a five-bay, two-storey range with a linear plan form, with 1960s porch to the front, and kitchen with bathroom extensions to the rear. Adjacent is a random-rubble stone barn, set perpendicular to the principal range and also with a linear plan form. Prior to the development of a new road in 1995, the farm comprised a full working farmyard surrounded by outbuildings. Many of these were demolished prior to the sale of the property.

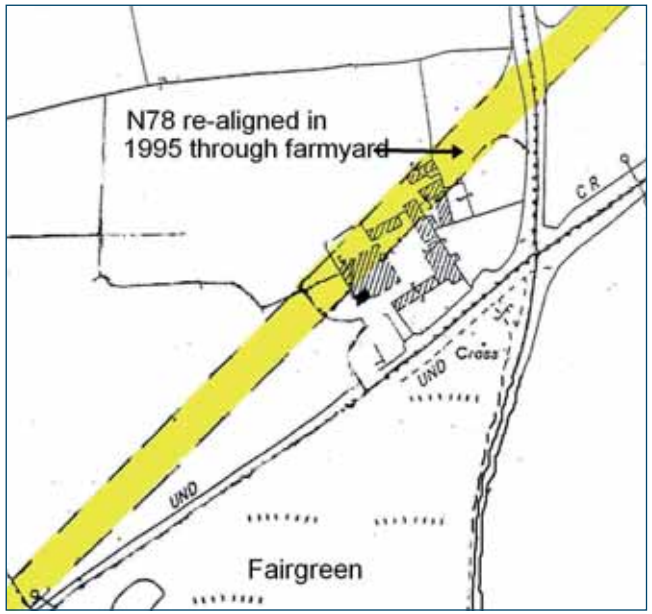
2. Condition

Externally, the building was roofed with a Blue-Bangor slate and clay ridge tile. Vertical timber sash windows were intact but in poor repair, in a classically ordered rendered façade with replacement render comprising heavy cementitious material. In general, the structure was in fair/good condition. The property had been empty for approximately 18 months prior to its sale and during that period there was a rapid deterioration in the more vulnerable elements such as the eaves, chimney linings and internal decoration of the principal range. It was evident that, over time, there were several attempts at improving damp problems, resulting in the wholesale loss of the historic fabric at ground floor level. Inefficient management of damp ingress, also aggravated by the lack of occupancy, led to the appearance of significant rising damp and the presence of some wood infestation and outbreak of dry rot to the interior of the timber-lined rooms. At first-floor level, historic interiors and detail survived.



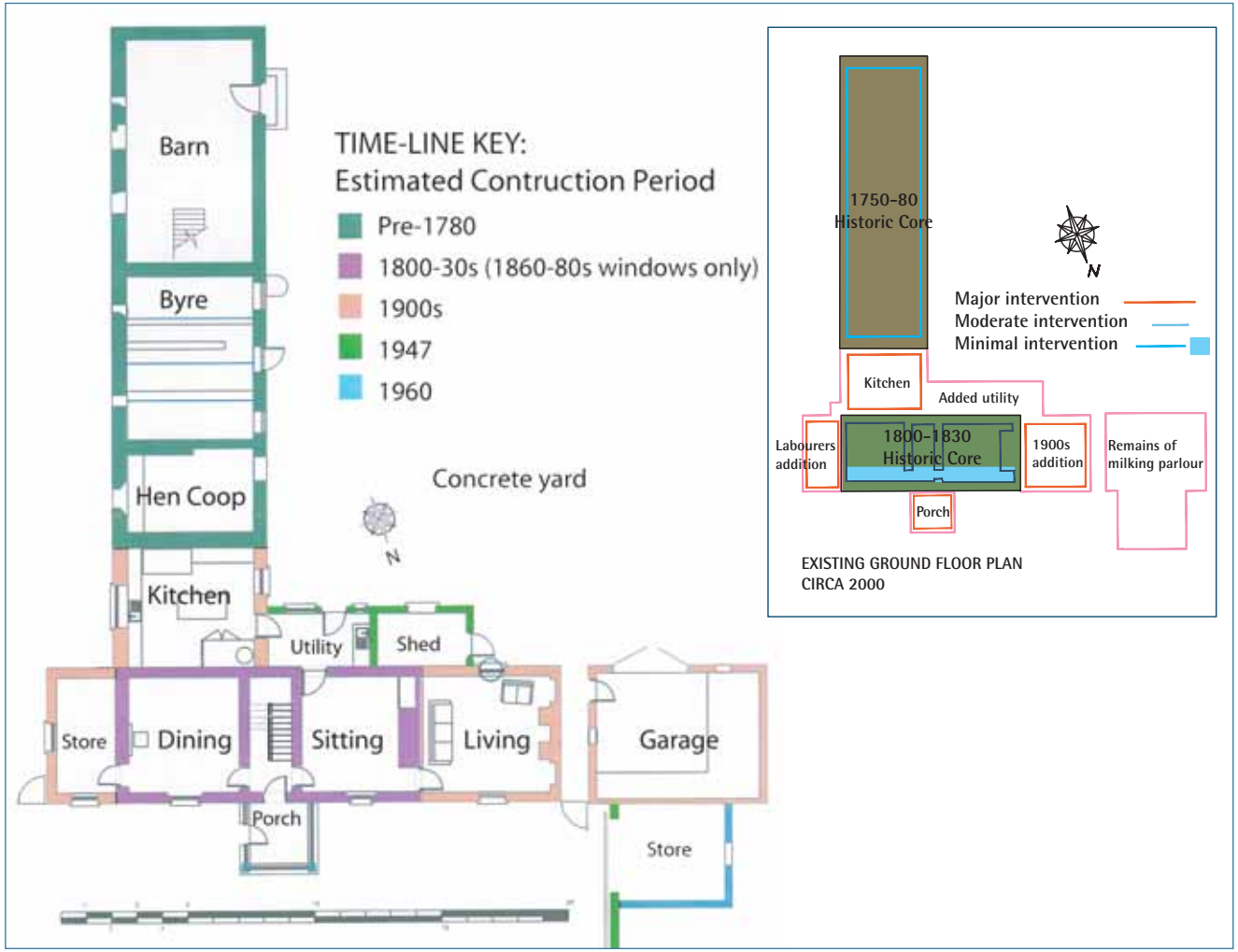
Above: Taylor's map from 1780 shows the original house (now the barn section) facing towards old Kilcullen and its fairgreen in between.
Below: The OS map from 1837.
Opp. page, top left: Map from 1908 showing the route of the N78 (which was constructed in 1995) running through the farmyard.





3. Setting of buildings within landscape

The mature setting of the farmhouse and its ancillary building is in a natural valley dominated by historically important ridges or mounds. It is situated directly beside an ancient road radiating from the round tower and ancient ecclesiastical site of Old Kilcullen. More particularly, it is at a crossroads on the route between this and the royal ceremonial enclosure of Dun Aillinne, a bronze-age hill-fort, probably at one time the seat of the kings of Leinster. The hill-fort was also the location of hostilities during the rising of 1798. The farmyard is situated in the south-east corner of Knockaulin townland, which is dominated by Dun Aillinne. The original farm building, which was more recently used as a barn, dates to the early 18th century. It was originally a single-storey, direct-entry vernacular house facing the commonage and the Hill of Old Kilcullen, and this alignment or axial relationship can still be seen on the old approach road travelling from the round tower. The principal two-storey farmhouse range was probably constructed in the mid 19th



Above: Diagram/plan demonstrating the chronological development of the site.

century and was re-orientated to an east-west axis with the front elevation facing north, on a higher contour. The front garden contains several mature specimen trees and is surrounded on two sides by a kitchen garden with evidence of former orchards.

4. Historic map research

Arising from the research of historical Ordnance Survey mapping for the area, the above diagram/plan was devised to demonstrate the chronological development of the site. It shows that the structure now known as the 'barn' was the earliest dwelling on the site, in the form of a more modest cottage or cabin fronting the road from Old Kilcullen.

Above: Rear view of Knockaulin farmyard in 2003.
Below: A similar view in 2006, with the curved copper extension and two storey infill as a link between the front and barn sections.
Right: New rear corridor, top lit.

5. Archaeological landscape

The Knockaulin farmhouse originally served the farmland on which Dun Aillinne (and several other recorded monuments) are situated. The remaining farmland is part of an archaeological complex of Dun Aillinne, (an area of numerous ring forts and recorded monuments). There is also a recorded monument to the north of the site that needed to be identified on the RPS and located to determine its archaeological significance. Close to the current entrance is a cross, commemorating the surrender of the rebels on Dun Aillinne in 1798 to the Crown forces.

6. Statement of significance

This farmhouse was of archaeological, architectural, historical and cultural significance, despite its modest exterior and dilapidated condition, and despite not being included in Kildare County Council's Record of Protected Structures at that time. It is situated at a crossroads in an archaeologically significant landscape. Knockaulin is an example of a farmstead which evolved and adapted over time. A new house was built and the old one adapted, their fabric and changing orientation recording the history of the successive inhabitations of the site. The principal house, with a barn perpendicular to it, formed two sides of a farmyard, an undervalued archetypal space of the Irish countryside. The scale of the rooms of the existing house indicates previous social conditions and lifestyles. For these reasons the buildings can be considered as a primary historical record.

The farm complex had been separated from its holding, and some farm buildings were demolished during the realignment of the N78 road from Kilcullen to Athy. Despite the negative impact of the road infrastructure, the site still retained the sense of its extraordinary alignments and relationships with the two nearby ancient sites.

7. Statutory protection

Although not a protected structure at the time when the project commenced, the adaptation of this building was carried out in compliance with the RIAI conservation guidelines and in consultation with Kildare County Council's conservation officer. Conservation architects were consulted in relation to matters of detail.

8. Decision to conserve

Buildings such as these are part of our architectural heritage, despite not being protected, and the steps taken in this case indicate how the character of these buildings can be respected, yet not prevent creative reuse. Some or all of the design decisions made – whether at the level of deciding to demolish and replace a part of the building, or the detailed design working with traditional construction techniques – can be applied to other farm buildings without statutory protection. Because they will fall in line with the heritage policies of the County Council, the process of acquiring planning approval will be less complicated. In addition, conservation as a strategy is likely to minimise the cost for a building's owner and retain the building's character. In general terms, it represents a strategy for prudent management of the country's assets.

9. Design strategy – removal of elements

The repair and retention of the primary fabric of the farmhouse was the intention from the outset of the project, as it contained an abundance of character, patina of age and architectural detail that gave the site its sense of place. The farmhouse layout, because it had developed over time, had ignored the best solar orientation. The house was not able to benefit from the light and solar energy as it had no windows opening onto the south-facing working yard.

A decision was made to remove certain sections of the building. These sections detracted from the original character and, due to their poorer quality of materials and condition, were damaging the original form of the building. As referred to earlier, the preparing of drawing of the chronological development of the building facilitated this. The decision to remove certain elements was not based on the premise of bringing the building back to a particular period in time, but to achieve clarity of character. It was considered important to be able to see how the farmhouse and outbuildings had changed in response to the changing times. This design strategy led to the removal of the 1960s brick porch and flat-roof bathroom extension, but the retention of a first floor 1960s bedroom and circa 1900 brick extensions, though both were in poor condition.

The position of the existing single-storey kitchen, of modern construction, at the junction of the two building ranges that formed the courtyard, was reused as a link between the two core areas. The existing single-storey kitchen was removed and replaced by a more adventurous two-storey element, which could link barn and house on both floors.

10. Design of the internal layout

In order to capitalise on the best architectural features, it was important to maintain certain aspects of the farmhouse. These were:

- The cellular nature of the plan, with rooms leading off rooms, which were mostly square in proportion. These proportions are important, as doubling the length of the rooms by, for example, removal of a wall, could ruin their proportions due to the low height of the ceilings.
- The positioning of doors in line with each other, which allows a view through a sequence of rooms the entire length of the house (called an *'enfilade'*). This occurred on both floors in the house, and was, in turn, designed into the ground floor of the barn. This feature gave a sense of space and size and balanced the cellular nature of the plan as found.
- The position of the existing chimneys within the main house – in particular the blocked-up hearth area discovered in the bathroom in the course of the works – and the existing staircase position were retained, as these indicated an older pattern of use and development.

The following were the main design issues which needed to be addressed:

- The lack of corridors, particularly in bedroom areas. The existing building, as was common in a linear-type plan, did not contain corridors. Rooms, including bedrooms, had to be walked through to get to the bedrooms beyond. For modern lifestyles, privacy is needed between bedrooms and so a corridor was needed.
- The lack of windows to the south elevation, where sunlight could make the rooms more attractive.
- Joining two long buildings, thereby creating a much larger building that would shift the central space of the house away from the front building, and which, if not handled carefully, could make the former barn feel like an addition rather then an integral part of the house.
- Due to further road works by the National Roads Authority, the front entrance is to be changed so that the house will be approached by car from the rear. The house has had to address this new approach, which was achieved by making the former farmyard into a new entrance court.

Below: Front elevation showing the importance of maintaining the chimney stacks as they indicate the development of the house and provide proportion to what is a very long elevation.

Above: Side view taken from the kitchen garden, showing the infill addition recessed to differentiate it from the original structure.
Right: The kitchen, the heart of the house.

How these aspects and design issues were dealt with:

- The addition of the new modern-style two-storey link with a high ceiling under a curved roof, containing a generous kitchen dining area, and lit by large areas of window. This becomes the functional and spatial heart of the house. It also acts as the fulcrum between the two wings of older buildings.
- The removal of the rear extensions allowed the installation of new south-west-facing windows giving light to rooms on both floors, and allowing their north-eastern side to be used as a corridor. This corridor was designed wider than strictly necessary so that its walls did not encroach on the *enfilade* view through the doors along the length of the building.
- At first-floor level, a new rear corridor from the stairs half-landing serviced the new two-storey section and was lit from above by skylight.
- The use of the room at the south end of the first floor as a large bathroom, accessed from the guest bedroom as an *en-suite* and from the new rear the corridor as a main bathroom. This ended the *enfilade* view and reduced the need for another bathroom upstairs and the further subdivision of rooms.
- The new windows in the main house match the proportions of the original windows and brought south light into many of the rooms. This effectively re-orientated the house, adding windows to the rooms in more than one wall and providing views to the barn, mature trees and eventual new approach.
- The positioning of the bathrooms was carefully planned so that no further subdivision of rooms was necessary. This led to the use of one whole room adjoining the access corridor to the kitchen as a large ground floor bathroom and re-using the newly formed arched hearth as a sink area. Thus, the cellular nature of the plan was maintained.
- Certain rooms, such as the family room, could be used for circulation without corridors and this determined their position. The new kitchen/dining area was equally useful as a link room and so too was the master bedroom as an access to the studio area in the barn.
- The removal of the rear extensions allowed the original bathroom doorway on the stair landing to be split into two windows, with the lower one providing a view from the stairway into the dining room, and the higher opening above the roof, casting south-west light directly onto the stairs. This also gave a new opportunity to catch a glimpse from the stairs of the view along the length of the barn, again refocusing the building towards the rear yard.

11. Addition of elements

There was a need to replace the existing porch, which was a modern addition that was oversized and out of character with the house but which provided a very useful draught lobby. The new porch was built with compatible materials to a reduced size and its roof pitch was designed to match the main house. It also allowed some reception space before entry into the house and, with its glazed internal lobby doors, counteracted draughts.

- The two-storey kitchen/dining area, with master bedroom above, as emphasised before, was of paramount importance

in its linking position. It was to act as an infill between the two buildings, and was recessed to the public side to express this. The dimensions and slate covering of the roof were designed to match the width and pitch of the original building. However, to the rear – over the dining area – an uncompromisingly modern curved roof provided a counterpoint to the elements of traditional construction. The curved roof in green copper and exposed steel beams was a visual reference to the barn roofs that had once been found across the farmyard.

- The external stone stairs to the barn wing, invoking the appearance of external milk loft stairs, provided a balcony as well as an under-stair area that could contain the boiler and access to the garden from the playroom. A doorway, in a dormer housing, was added at its top to give light to the existing loft area in the barn. A number of skylights, or a dormer window on its own, could have provided light but this platform also re-establishes the view to the round tower at Old Kilcullen, which was the original orientation of the historic farmhouse.
- The berm, or banked earth, held up by a stone-faced retaining wall (see image above right), sought to re-enclose the yard as well as provide privacy and an unfolding spatial sequence in approaching the house.

12. Phasing

The work was phased as follows:

- Initial preparatory work took almost a year. It involved obtaining planning permission, including acquiring historical and archaeological reports to address these issues with the planning authority. The plans included both the barn and the house and were prepared to a working drawing standard. This allowed time to digest the discoveries made and adjust strategies as necessary. This planning period meant, however, that the house was unoccupied and vandals caused some damage to the historic glass in the existing windows.
- On site, the work commenced on the first phase in November, dealing with the principal domestic accommodation in the front section. This was not an ideal time of the year for roof work. Security of the site continued to be an issue, so a permanent on-site presence had to be provided towards the end of the job. The work was slow and piecemeal as every aspect of the project was unique. Craftsmen were needed, rather than contractors who only knew how to do new-build, so progress on site was frequently delayed waiting for them to be available.
- The house was completed and occupied by the following November, a year later.
- The phase-two works to the barn area and outside landscaping commenced the following May, permitting a short break for the occupants to move in and settle down. These works were completed by December.

13. Landscaping

The mature landscape setting of Knockaulin is of particular significance to its sense of place. In the immediate environs of the house, built and planted traces of the way the place was used when it was a farm were to be found. The new road cut the farm off from its associated fields to the west, leaving a front garden to the north-east, a kitchen garden to the south-east and the remnants of a yard with mature trees beyond to the south-west.

14. Front garden

The exotic trees – monkey puzzles and holly – to the front give the sense of a formal garden. The design attitude to this was to enhance its formality by bringing clarity to the existing planting and boundaries. The remains of an orchard were found, following the removal of growth beneath the Ielandia trees. All the remaining trees were pruned. The entrance was tidied up and a new timber edging clarified the edge between the garden and the gravel.

The remaining walls of the outbuildings that were demolished due to the original road widening works were repaired and repointed with lime mortar, and will be used as an outdoor room or walled play area. A slate slab was laid at the entrance to prevent stones from the gravelled driveway from entering the porch area.

15. Kitchen garden

The original kitchen garden was given a less formal mood, with traditional plants and softer edges. A new patio was added to allow a breakfast area off the kitchen, sunken into the higher surrounding ground so as to be level with the kitchen floor. The original boundary wall to this side had a stone style that was repaired. Ivy and tree growth were removed. A suggestion to demolish this wall to improve the view and extend the garden over the existing disused road was rejected, as this wall is far more valuable as a sheltering and enclosing element for the intimate patio. More importantly, this was a significant historical boundary and had an irreplaceable patina of age. Following consultation with a landscape specialist, much of the existing

planting was maintained. However, young ash, fir and apple trees, planted in the side garden, were removed due to their proximity to the building's foundations. They would have cast excessive shading as they grew.

16. Rear yard

The concrete of the rear yard was removed and replaced by an Indian sandstone patio adjoining the house. Though not a traditional material, it matches the colour of the York flagstones in the dining area inside and thus extends the internal area into the external area and helps to redirect the focus of the house.

17. Mature trees

The trees beyond the barn were probably planted when the original house was established in the 1780s. These beech and chestnut trees can be seen at a great distance from all directions. Their shade and the sound of their leaves are prominent in the rear yard. The high window in the kitchen gable was designed so that an oblique view could be obtained of the tops of the trees above the barn. The high-level window to the end of the barn gable was added for the same reason. These trees mark the line of an old field boundary and an arborist was consulted with regard to their condition and future management. The roots of the youngest beech tree nearest the road were exposed by the removal of the farm sheds. The retaining stone wall allowed the ground to be built up around it again and will allow the re-installation of the original field gate to mark the transition into the courtyard area. A new tree is to be planted on an axis with the internal stairs window, to extend the vista further down the rear field.

18. Documentation preparation for planning application

As an architect, with an ability to draw on past experiences in practice the author was able to exercise the majority of the work and formulate the documentation necessary for planning. Where owners perceive themselves to be out of their depth specialist advice should be sought.

A copy of the findings of the previous archaeological studies (located in the local library) was appended to the Architectural Character Impact Assessment prepared as part of the planning submission. Dun Aillinne had previously been surveyed and this indicated that the main finds were located to the top of the hill and not immediately related to the farmhouse, as suggested by the Record of Monuments and Places map.

Due to the archaeological significance of the site, an archaeological report was sought in advance of the planning submission and a licence to dig investigative trial holes and trenches acquired from the DoEHLG, to whom all archaeological issues were directed and approved. This report was lodged with the planning application, as it provided the necessary background information to demonstrate that the proposed link building would not adversely impact on any archaeological remains.

Similarly, the historical and architectural importance of the site needed to be addressed and a detailed Architectural Impact Assessment was requested by the conservation officer to inform and justify the development proposals. This core information, once established, accompanied the planning submission as a record of the farmhouse prior to its alteration. It provided the basis on which the impact of detailed design and conservation proposals were presented, in tandem with how the significance of the site was to be retained and how it was to be repaired and modified as a new home.

Appendix Detailed Conservation Guidance Sheets

Introduction

The Knockaulin farmhouse project provided an insight into the repair and conservation of a modest farmhouse. Having being closed up for sometime and with several different building periods, the process to tackle this project became the basis of the following guidance notes. This project provided examples of several wall constructions and materials. The main perimeter walls of the principal range comprised 600mm random stone walling and the outbuildings consisted of rubble stone masonry walls with filled cores. The rear walls consisted of a mixture of 20th century mass concrete and solid clay brick of various thicknesses and sizes.

1. Walls: Damp Proof Course

Typically, historic buildings were built with no damp proof course (DPC – a physical barrier to rising moisture), though occasionally a course of slate in the wall or sub-floor drainage system can be found. The more usual construction detail consisted of the masonry walls sitting directly on the ground, with tiled or stone floors installed directly onto earth. This form of construction worked because of its breathability, with a well-ventilated house breathing out through doors and windows the moisture taken in through walls and floors. Where subsequent refurbishments took place, these floors, often of poor quality and without a damp proof membrane (DPM), were removed and a concrete slab was installed.

In the case of the Knockaulin farmhouse, the heating regime consisted of the use of bottled-gas fires to supplement the central heating system. This had led to considerable condensation build-up in the interior of the unventilated and un-insulated house. Condensation was evident in deterioration found where there were pockets of still air, as in wardrobes and on the wall surfaces behind curtains. Dampness and condensation caused by bottled-gas fires should not be confused with penetrating dampness, and should not be used to misdiagnose the condition of the fabric of the building.

Previous attempts to rectify rising damp in the house were evident. However, the problem had been aggravated rather than solved by the external rendering of the building with concrete pebble dash, the mass concrete extensions and indeed high ground levels at the base of the walls. All of the earlier attempts to solve the problem resulted in worse conditions, as the breathability of the walls was being compromised. Internally, the occupants had removed the lime plaster to the base of the wall and replaced it with a sand-cement plaster up to approximately one metre above the floor. The gypsum skim coat to this plaster indicated the position of moisture trapped within the wall by leaving an efflorescent wash, or tide-line, of salts on the walls, produced by the pressure of rising damp. This situation got considerably worse as the building was left uninhabited.

A number of solutions are available to remedy rising damp and are dependent on the overall condition and scale of the problem. Some options are more radical and have greater impact on the historic fabric and character of old buildings, so it is essential that all the adverse impacts be considered when selecting a mitigation strategy.

For extreme conditions, tanking, or the use of a waterproof additive to the plaster of internal walls may be necessary, thus creating a barrier to water ingress from the exterior. Unfortunately, these systems eventually break down and, in the interim, they conceal any damage to the structure to which they are applied.

A physical damp proof course can be inserted by cutting a horizontal joint into the wall with a diamond-tipped circular saw.

Knockaulin farmhouse project, Kilcullen
The above image indicates the progress of site work indicating the myriad constructions confronted.
Location of 'link' structure between the two historic ranges carefully inserted so as not to compromise the historic fabric adjacent.

This is a specialist service more common in the UK. The service is difficult to acquire in Ireland, as it requires specialist equipment.

A tried and tested process is to install an electro-osmotic barrier. This comprises an electrical wire which can be inserted behind a skirting or in a chase in the wall, with a charge that repels rising moisture. This type of system, if used on extremely wet walls, can cause a slight smell of sulphur.

Injecting the walls with a chemical barrier to 'hold down' rising

damp is another less onerous option. However, this has limited success in masonry walls constructed of randomly coursed rubble, as a reasonable spread of the solution cannot be guaranteed throughout the mortar in the wall. Pockets of chemical would form in some areas and other areas might not receive adequate amounts to repel moisture. If external ground level matched the internal floor level, the chemical course could be readily by-passed by rainwater splashing above the DPC level.

In early 20th-century brick-built extensions, the external ground levels were lower than those inside, and so the final option outlined above was implemented. The cohesive straight mortar beds in the brickwork also were compatible with this system.

In the oldest building at Knockaulin, the barn, a different approach was taken. Its floor construction was moisture permeable (see discussion below), and a compatible non-chemical solution for the random-rubble construction of the walls was needed. The external weathering of these walls was improved by rendering them internally and externally with lime. In addition, the drainage of the immediate base of the perimeter walls was improved by the installation of a 'French' drain (see diagram on page 78). For this part of the building, it was reasonable to take these measures as a 'minimum intervention' first step. If moisture penetration remains a problem in the future, further measures will be investigated.

Wall of barn, showing the many openings made over the long period of occupation of the building.

1. **Venting the dry lining (top).** Ships vent used as an ancillary vent to an independent stud wall.
2. **Existing timbered ceiling with tongued, grooved and 'Vee'd sheeting (below).** A common feature in farmhouses. Existing walls to this end room were originally lined with timber but this needed to be replaced due to dry rot and insect infestation. It has been replaced with a beaded sheeting to differentiate new from old.

The utility room for the house was located within the historic barn structure because of its low impact on the vernacular character and fabric of the structure. However, supplementary ventilation was provided by the installation of a timbered louvered screen to ensure there were no adverse effects from moisture build-up, and to allow constant internal drying and ventilation.

In most instances, it is a combination of approaches that remedies or improves the problem of rising damp. A solution that facilitates on-going monitoring in the interior of the fabric is to be recommended.

External renders

The principal range had been partially re-rendered externally with hard, sand-and-cement pebble dash. This render weathered the structure satisfactorily for a period, until it cracked due to settlement and its lack of flexibility. The main linear building, comprising different constructions, settled differentially over time. Copious amounts of water had also saturated the base of the walls to the front, due to broken gutters and down pipes and inadequate provision of drainage soakaways. Damp was evident in the base of the walls internally, as the rising water level trapped behind the impermeable sand-cement render on the outside of the wall was forced into the internal surfaces. Tellingly, the areas of the walling that had not been weatherproofed with sand-cement render were much drier.

In the principal range, the original traditional form of construction did not rely on the outside surface of the wall acting as a barrier to rain, but instead on the slow emission of moisture from the masonry, aided by the ability of the building mortar to assist in the drying-out process. The mortar joints and surface

renders would almost certainly have used limes as a binder. Lime is, by its nature, more flexible in its performance (capable of repairing tiny fissures or crazing in its surface over time) and more breathable than modern cement render. However, lime render is used sacrificially as a surface coating, and requires regular maintenance and renewal.

Breathabilty of walls (below)

Fig 1. Illustrates a wall rendered with a lime render, where (A) indicates the absorption of the rain by outer lime render coat and outer wall. (B) indicates the placing of glaettes or pinners into the deeper masonry joint. (C) indicates the evaporation of the moisture through the permeable render.

Fig 2 Impervious coating such as a sand-cement render where moisture enters through hairline cracks and becomes trapped within the walls. (A) indicates microporous cracks that form over time due to the inflexible nature and movement of the walls beneath. (B) Joints raking out to provide key for cement coating. (C) Moisture ingress can occurr further into the wall causing damage to internal finishes. (D) Stone decays and render becomes detached.

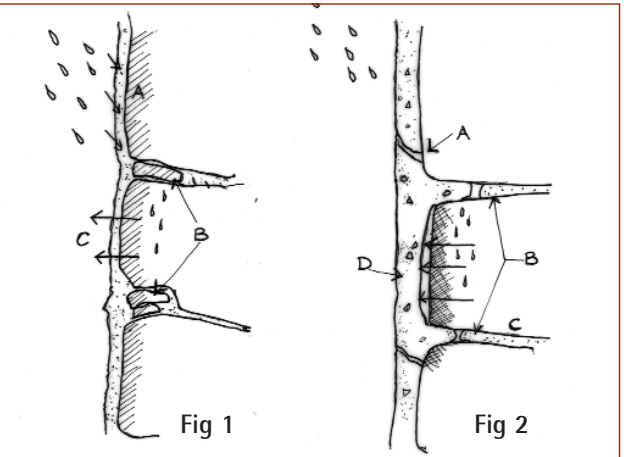


Fig 1 Fig 2

The removal of cement render from the exterior of the principal range was specified to improve the condition of the wall. However, it quickly became apparent that the process of removing this modern render was likely to cause damage to the underlying material. A test panel indicated that the use of a mechanical tool such as a Kango hammer would destroy and crack the stone, and loosen the mortar. A more pragmatic approach was taken in this instance and, instead of the full removal of the cement render, it was decided that the wettest zone, the sand-cement plinth to the front elevation, would be carefully removed (with great difficulty) and replaced with a lime render coating. This would improve the breathability of the wall where it was most susceptible to rising damp, and thus remove moisture build-up.

Another problem area of water ingress was the end gable wall of the 19th-century extension. The repointing of the exposed brickwork was investigated, but found not to be viable due to the poor workmanship of the wall, which had varying thickness and unevenness of mortar joints. It was decided to completely render the gable and rear walls with a lime render, returning a lost characteristic to the old farm building, as well as providing an appropriate weathering for its fabric. Lime render was also used on the new link extension between the two historic ranges, providing a sympathetic finish in an historic context.

Lime work needs to be carried out during the warmer months of the year, and care needs to be taken in its application so that it does not dry out too quickly and crumble off. Until lime is matured, it is susceptible to knocks by scaffolding etc., so care must be taken to protect it from damage. A skilled and experienced craftsman is needed to ensure that the correct ratios of sand and lime are used and that the lime mortar is properly 'knocked up' (aerated) before use, pressed back and protected during application. Practical courses are held intermittently at several centres around the country through Dublin Civic Trust, the Lime Forum, or FÁS, or by contacting your heritage or conservation officer. This knowledge is essential to the appropriate repair of historic buildings.

Protection during lime work

Shown above is a sack cloth hung from a batten in the gutter to protect a lime mortar coating, applied over the sand cement dashing, from direct rain wash. This same sacking was used to protect the lime render during the hotter periods when the it was exposed to strong sunshine. The sacking creates a zone in front of the wall that allows moisture to evaporate slowly without too much drying from the wind.

Wall finishes, internal and external

The principal range contained several rooms which had been timber-lined. Most of the lime plaster internally on the ground floor had been replaced with sand and cement and with impervious plastic sheeting, or 'tanking' in some locations. The sand-cement plaster was removed from these areas and an insulated wall lining was installed to the north-facing wall. This consist-

ed of a metal 'stud' structure and a wood-fibre breathable insulating mat. The studs were located 75 mm away from the structural wall and faced with beaded timber boarding fixed to plywood sheets, and the stud was faced with a vapour diffuser membrane. Holes were drilled top and bottom of the sheeting to allow ventilation of the cavity behind.

As discussed above, the breathability of the structural walls to the main farmhouse had been improved by the application of a lime-sand render plinth in place of a sand-cement one. This will be completed by the application of a vapour permeable mineral paint to the plinth. This will enhance the performance of the external skin. The wall was finished internally with breathable lime plaster and breathable paint.

Mud boundary wall with buttress near Nurney.

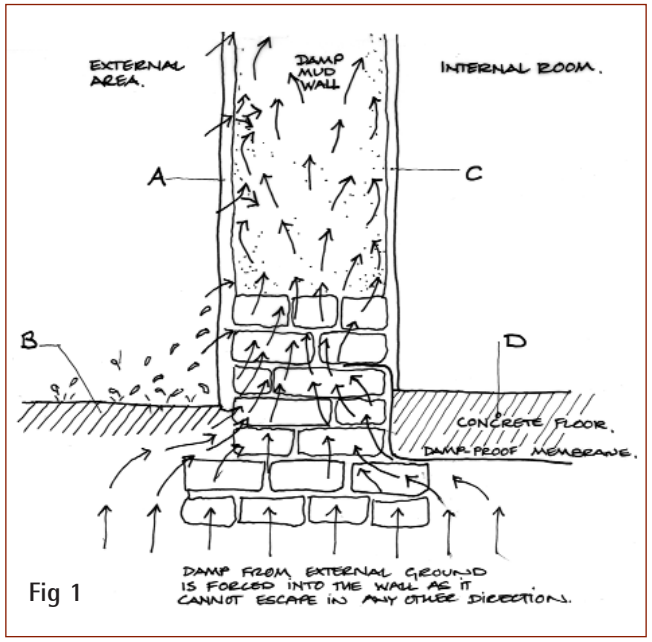


Fig 1

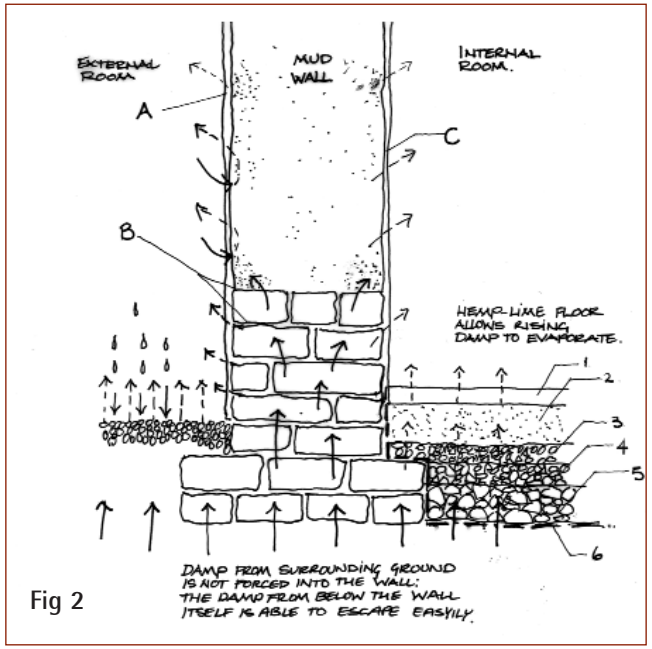


Fig 2

Mud-walled construction

While reviewing recent planning application files as part of the report on which this publication is based, it became apparent that there was a considerable number of mud- or earthen-walled structures in County Kildare. None was found in the Knockaulin farmhouse project. Unfortunately, the practical knowledge of this type of construction has generally been lost,

Fig 1. Impervious wall coating such as a sand-cement render where moisture enters through hairline cracks and becomes trapped within the walls. (A) Cement render externally allows water through tiny cracks but prevents evaporation. (B) Concrete paths or paving brought too near the building causing splashback. (C) Internally impervious plaster render, wallcovering and acrylic paints prevent evaporation. (D) Concrete floor on damp proof membrane. Where previously the moisture may have evaporated through this surface, the installation of a membrane may direct further moisture into the wall.

Fig 2. Permeable coating to mud-walled structure. (A) Lime render absorbs rain but encourages evaporation – lime mortar joints encourage damp to evaporate. (B) Rain from the ground is able to evaporate through the gravel. (C) Lime plaster with limewash or breathable paint allows evaporation. (D)Lime/ hemp floor

1. 75mm/ 3" Limecrete (Hydraulic lime)
2. 150/6" Hemplime insulation
3. 75mm/ 3" Pea gravel
4. 75mm/ 3" Fifth size drainage gravel
5. 100/150mm 6" Hardcore
6. Terram permeable membrane

to the detriment of this form of built heritage. The buildings are not immediately recognised or fully understood and are particularly vulnerable to inappropriate repairs, both for structural and weathering reasons, and in situations where refurbishment and modification are undertaken. The organic and friable nature of this building material leads it to perform in a very different manner from modern constructions.

The example set out in the previous diagrams indicates the nature of mud wall construction which typically consists of a masonry base, generally about 1200 mm high, above which an earthen wall of a clay mixed with straw and variable sizes of aggregate is built.

This construction is thermally efficient and environmentally comfortable, making houses cool in summer and warm in winter. The survival of this type of structure relies primarily on having a good roof to throw rainwater well away from the external walls and on having a well maintained external render, which needs to be breathable. Unfortunately, the confidence placed in modern cement-based products has led to the extensive replacement of old breathable renders with modern impervious finishes, which can cause moisture to be retained within the wall, to the detriment of its structural integrity as well as to the internal finishes.

2 Roofs

The conservation of the roof of a building of historic importance presents some acute dilemmas. Its role in protecting the rest of the fabric from rain is primary: however, its heritage integrity may have to be compromised in order to ensure that it continues to perform that role. Conservation practice recommends repairs on a like-for-like basis to maintain the character of the historic structure. Thus, roofs should be repaired in natural slate. As the primary route by which heat leaves a building, the roof may also need to be insulated to improve its thermal performance. Unless this is thought through carefully, its character may be damaged and the integrity of surviving fabric unintentionally compromised. In particular, the precise relationship between the roof plane and the top of the wall at the eaves, and any chimneys that protrude through it, should be kept. At Knockaulin, the condition of the roof structure necessitated extensive repairs and replacement of rafters and wall plates.

Having optimistically thought that the roof would be salvageable it quickly became apparent that poor maintenance and ad hoc accretions to the rear had caused considerable damage to the roof structure through extensive water penetration, particularly along the roof plate. The earlier gable extensions to the farmhouse were poorly attached or extended to the original roof, causing differences in the ridgeline as well as to the roof profile. To repair the roof with such discrepancies would have left it vulnerable to future water penetration as the roof slates would not align properly or abut tightly. For this reason the full replacement of the roof structure was undertaken with the reuse of the existing salvageable slate, and the maintenance of the existing profile at eaves and ridge.

There are several variations of the construction of timber eaves. The eaves detail found in the Knockaulin farmhouse is fairly common in most structures of this period and comprises a 'closed eaves' (i.e. no overhang of the roof structure to the top of the wall). Rafters are supported on a 'wall plate' or horizontal timber, at the inner face of the wall, the edge of the roof is built directly onto the wall, and the last row of slates is bedded onto the wall in lime mortar. The rainwater goods are supported independently of the eaves on cast-iron brackets driven into the wall face.

Where replacement of the roof timbers is necessary, best practice recommends the use of properly graded pressure-impregnated timbers and the loose wrapping of the rafter ends with a DPM (damp proof membrane), where they are installed on top of a previously saturated wall. The repair of the roof in the Knockaulin farmhouse required that all the wall plates had to be reset and the rafter ends wrapped in a DPM to achieve sufficient support for the cast-iron gutters on the replacement over-rafter gutter straps (Fig. pg 76).

Roof ventilation

Traditionally, natural slates were coated on their undersides with lime mortar 'parging' to fix them against excessive wind lift. This coating also absorbed wind-driven rain that got between the slates and kept it away from the roof timbers, which could remain ventilated and dry. In the 1970s, roofing felt generally replaced parging in new buildings and in roof repair. A roofing felt or membrane creates a second layer of defence should a slate slip. It can also have an adverse effect, as this bituminous sheet material allows condensation to form on its underside. This moisture can damage the timbers in the

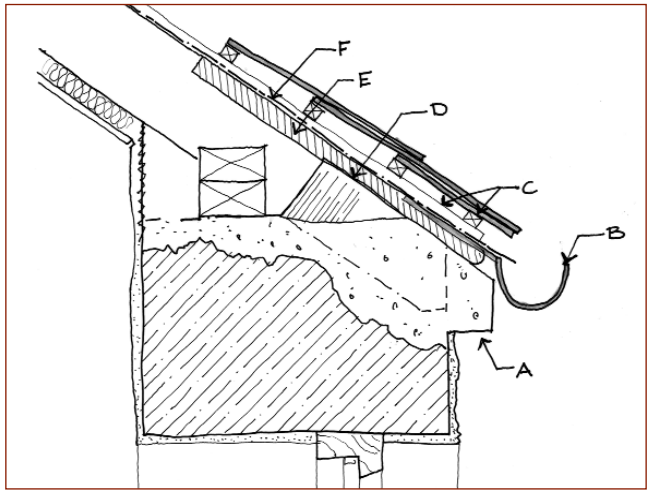
Flush slate between two conservation rooflights
The vent does not protrude above the roof. Flush slates were also used for venting the internal soilpipes.

roof space. Current building regulations require adequate ventilation below the slates and felt. These assume that air flows best through the attic from the eaves on one side of the house to the other, or from eaves to ridge. Many eaves and ridge ventilation techniques and products are available to resolve difficulties. Some of these, however, are more appropriate than others to historic roofs.

The following options can be considered to ensure that appropriate ventilation standards are achieved:

- In the case of simple gable-ended structures, a small vent in the gable at either end of the roof achieves the ventilation requirements. However, cross walls built up to slate level can block the flow of air through the length of the attic and rule out this option. Additionally, this approach only provides limited ventilation to the eaves.
- Specialised roofing products have been developed to resolve problematic situations. 'Rafter ventilators' or 'rafter rolls', comprising 25mm thick flexible plastic, can be installed over and between rafters to provide ventilation at the eaves where quilt insulation materials might block a ventilation air path. Where substantially thick walls rise up to the underside of the slates, a number of these rolls or vents may be required one above another.
- Ventilation slates can be used at high level to provide attic ventilation and also outlets for toilet soil and vent pipes. Ventilation ridge tiles are also available.
- 1" plastic pipes form another system which can be inset, or 'chased', into the top of the wall at approx. 500mm centres.

The wall plate and top of the wall in the Knockaulin farmhouse had suffered considerable damage due to overflowing gutters and blockages. To replace the disintegrated wall head and wall plate, a continuous concrete capping was poured *in-situ*, retaining the overhanging brick corbel where possible as part of the repair. A rafter roll was used in conjunction with proprietary breathable roofing felt to achieve the ventilation requirements to the roof space. Newer felts allow for the movement of water vapour through from inside to outside, but do not allow droplets to get in from outside. They vary quite considerably in terms of the details of how they are integrated into the rest of the construction, and due care in their installation and use is essential in order for them to perform as required. Several products require counter-battening which may alter the plane of the roof and therefore will not suit every roof profile. With most of the 'vapour-porous' felts, the manufacturer recommends a change to a stronger reinforced felt for the last 500mm of roof, due to their tendency to weather badly when exposed to sunlight.



Description of venting solutions

Venting to closed eaves

(A) The top of the wall had to be recast to form base for treated wall plate and overhang to gutter. (B) Indicates over-rafter gutter strap made by local metal fabricators to support cast iron gutters. Fixings/supports are required more frequently due to the weight of the gutter. (C) Indicates treated 17x 25mm battens and counter battens to ensure ventilation while not increasing the height build up. (D) Indicates DPC wrapped to end of joists – ideally the timbers, if possible, should be set into lime. A concrete capping was used in this case due to time of year and because of depth of build-up. (E) Is the rafter roll guaranteeing ventilation to the eaves of the roof. (F) Is the roofing felt laid under the battens and counter-battens.

A build up of vegetation and debris in the valley gutter of this house has caused water to leak over the top of the gutter and down into the interior of the house, emphasising the need for maintenance and easy access to the roof, i.e., rooflights for roof profiles of this type.

Installing a roofing membrane in a roof creates a layer of still warm air to the underneath side of the slates which can increase the likelihood, particularly in sheltered areas, of condensation forming to the back of the slates. For this reason, counter battening is recommended to allow circulation of air above the membrane to evaporate any moisture. In historic roof construction, counter battening can be encountered, particularly with smaller slates.

Ridge ventilation used in conjunction with eaves ventilation is necessary were accommodation is incorporated into the roof space and the insulation follows the slope of the roof. The least

visually obtrusive product is an in-line slate vent in preference to proprietary ridge vents, which may not be compatible in appearance with existing clay ridges.

Repairing chimneys

This is one of the most important items to deal with when repairing the weathering of the house. Damaged and unvented chimneys can cause a lot of harm to the interior of an older farmhouse, as they can allow water to saturate the masonry or bricks in the stack. Commonly in old farmhouses, the flue was a hollow in the thickness of the wall formed by brickwork built into the masonry. It is easier to seal brickwork as opposed to masonry to prevent smoke from getting back into the roof space or upper floor. Traditionally, vernacular farmhouses often have slate soakers in cement as the joint between the chimney-stack and the slates, rather then lead flashings. These can crack over time (as can lead if improperly fixed) and can cause water to saturate the brick. Cracked cappings, slipped slates or weathered pointing can allow water to saturate the masonry or bricks in the stack.

The following can all allow water to ingress:

- Cracked or slipped flashings around the chimney.
- TV aerials fixed to the chimney can cause stress and crack the brickwork or render.
- Debris from birds' nests can block flues and cause moisture to lodge further down internally, rotting the chimney from the inside (see image below right).
- Flues from fireplaces that are blocked up at the level of the fireplace without being vented.
- Since chimney trays (trays of lead or aluminium put in at roof level which stops water penetrating down) are only in use from the 1900s onwards, traditional construction relied on water evaporation caused by the heat of the flue to dry out the stack. If the building is unoccupied or the method of heating has changed to a lower heat-emission flue such as gas, damp can occur.
- Cracked or damaged capping to the stack, or chimney pots blocked off so that water can rest within the pot. This water can freeze, expand and crack the pot.
- If damage to the flue has been allowed to go unrepaired over time, a lean can occur as one side of the chimney dries out more quickly due to wind orientation, thus further exacerbating the damage by cracking joints and opening them further to water ingress.
- Burning plastic such as milk bottles or items other than coal or turf in the fireplaces. The plastic residues coat the flue and build up over time.
- Plants and mosses creating root damage to joints.

All of these can cause water damage. In the Knockaulin Farmhouse case study, two chimney-stacks were taken down, rebuilt and had trays installed. The quality of the brickwork and pointing to the chimney was such that a render was considered and a decision was made to use cement render. This arose due to the time of year when the work was to be carried out, as frost and cold prohibit lime setting. Also, due to the stacks' exposed location, a very hard lime mix would have to have been used, akin in hardness to cement. The joints on the stacks were raked back and two scratch coats were used, with at least three days' curing between each coat. The final coat was a white cement and white sand, as the lime wash paint proposed for use on the lime render elsewhere would "take" colour differently on a sand-cement background.

Masonry flues

The water in the chimney lining had penetrated the large middle flue and lodged in the debris of the birds' nests, due to the fact the house had been unoccupied and the flues were unused. The soot lining on the chimney dissolved and formed a liquid sulphuric acid. This penetrated the flue wall and corroded the bricks, turning them into a sticky mass. Old chimneys are not lined so these sooty stains appeared on the internal walls of the house. All of the affected bricks had to be removed and the walls rebuilt or repaired with new clay brick where possible. Even in areas where the brick was solid but charred, the brick had to be removed, as the smell had become ingrained. All possible bricks that could be reused were washed and reused to re-form the original hearth arch. When the walls to this flue were repointed in lime, the lime drew out the remaining sulphuric acid. To counteract this, cow manure was mixed with the scratch coat, as the urea was an effective antidote. An isolating paint was also applied to these areas of the wall before painting.

The external stack on the brick gable had only one flue serving two fireplaces, with the rear of the upper fireplace opening directly into the flue below. This can be very dangerous for ingress of carbon monoxide fumes, so this fireplace was removed and the flue sealed off, cleaned and reinstalled to the other stack that had two flues. The stack was lined with clay liner and vermiculite pumice installed around the flue. The vermiculite has insulation properties, which can keep the flue at an

Disintegrating chimney flue due to damp ingress and lack of use.

even temperature (particularly on an outside wall), and this in turn improves the draw and prevents build up of soot residue. All cappings were recast on a DPC (waterproof barrier) under the capping with a deep overhang and drip.

Ridge cappings

On slate roofs on older farmhouses there are many surviving clay ridges. In the Knockaulin Farmhouse case study, a roll-capped ridge, which was a 1900s addition, was reused in the main house section, with a plainer angled ridge to the barn. Replacements were sought through brick suppliers and eventually found in a salvage yard, though not for the correct pitch. Clay ridges often had the name of the brick manufacturers printed on the tile and this could be a useful starting point to date the refurbishment of a house or its construction. The intactness of the ridge for weatherproofing is important. Concrete ridge tiles, which may be used as a temporary repair, weather very differently and tend to fade and pit over time, eventually allowing a build-up of moss that exacerbates the weathering of the roof. A wash from a copper strip laid underneath the ridge prevents a moss build-up and can be particularly useful in areas with mature trees. This copper strip is sold in rolls in the plumbing department of builders' suppliers.

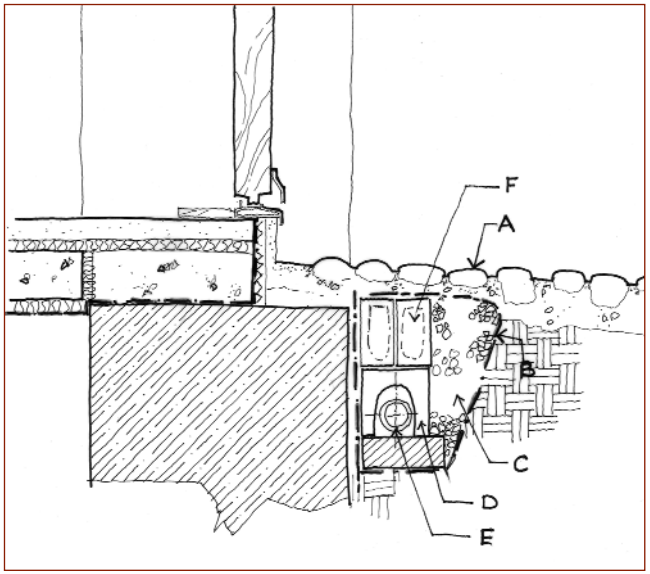
An example of an external stone stairs (generally used for access to hay loft or labourers' accommodation). The walls of this outbuilding in County Meath have been given a new coat of lime render. The structural steel ties, a later addition bracing the stone walls, can be seen as crosses. These ties can be painted to highlight them in a decorative manner.

3 Windows and doors

Lintels over openings

If timber structural elements such as lintels have deteriorated, due to wet or dry rot for example, they will need to be replaced. Again the 'like-for-like' rule of thumb applies, but if the lintel is also being asked to carry out a new and more demanding structural role (e.g. holding up the wall plate at the eaves, or preventing a structural crack from widening), a pre-cast off-the-shelf concrete lintel may be more appropriate. Where openings are made through existing walls, a number of solutions providing new structural support are possible. Timber lintels were commonly used in most masonry openings because of their ease of installation in comparison with heavy stone lintels and also because of their flexibility with settlement. Large timber lintels, or bressumers, and smaller bonding course timbers are frequently encountered in the make-up of masonry walls and can be exposed if the external wall finish has been removed or eroded away. Surprisingly, the condition of such timbers buried in masonry walls is frequently sound due to the exceptional preservation qualities of lime mortars and renders. (Rot will not take hold if the water can evaporate out of timber.) Where historic lintels are found to be in good condition and capable of carrying the loading required, they can be left *in-situ* and replastered or rendered onto a key, such as expanded stainless steel mesh.

Areas that have been soaked by water over time, and which will only slowly dry out, require the use of pre-cast concrete replacement lintels. Modern timber lintels are liable to deteriorate if installed in warm moist conditions, even if treated with preservatives. In Knockaulin, where the rear walls comprised, in part, mass concrete and the front elevation was to be rendered



Threshold to base of external door

A new opening, where the internal floor level is marginally above outside ground level. This detailing relies on good drainage to the base of the external wall. (A) Shows river-rounded cobblestones set in concrete, their shape discouraging splash-back. This is not brought tight against the length of the building but as a detail or path trim out from the wall. (B) 'Terram' proprietary, membrane that allows water through but stops the drainage pipe from clogging with silt. (C) Pea gravel between and surrounding concrete blocks. (D) Inverted U-shaped concrete block on solid concrete block base laid to fall and draining away from the house. (E) Land-drain pipe or clay pipe. (F) Brick backfilling.

in cement-based pebbledash, concrete lintels were used at the outer face and timber lintels within the thickness of the wall. Acquiring new timber treated with preservatives and of a particular cross-sectional size can be difficult. In this case, 150 mm square timber fence posts, pre-treated for outdoors, were used. Hardwood, such as green oak, could be used as an alternative, but the sizes required for structural purposes can make these expensive. When placing the lintel within the wall, a DPM should separate the replacement timber from the masonry on all sides by loosely wrapping it around the lintel end, allowing air circulation and isolation from damp conditions.

Doors

In the Knockaulin farmhouse project, existing historic doors were reused and repaired where possible. As these were also from various periods, the ironmongery, joinery details and height all varied. It was nevertheless decided to reuse these in the core area, the principal range, as their idiosyncratic features and superior craftsmanship added to the historic ambience.

The doors were stripped back by hand, rather then acid-dipped, which is an aggressive cleaning treatment that loosens joints, dissolves the earlier glues in the joints and causes splitting and warping in timber panels from excessive drying-out. A chemical poultice, applied with a 'clingfilm' cover, was used instead. This softened the paint sufficiently to allow use of a hand scrapper. The doors in the Knockaulin farmhouse had been reused several times and had been relocated. Some had even been hung upside down. Care and site supervision is necessary for this element of work as excessive stripping tends to remove the patina of age from the joinery. Care should be taken when dealing with lead based paints.

Original door (1)
This door was one of two of the earliest doors; the panelling is plain to the rear with a very thin cross section. A new base has been added to match the slope in the floor. It is less than 1.8m high; low door heights can be indication of a date of construction in the early 19th century.

Window surround (2)
During the work, the surrounds were protected and the shutters removed for safekeeping. The colour seen here is the original, following hand stripping.

Typical wide-board ledged-and-sheeted door. (3)
These simple wide-board sheeted doors are frequently found in old farmhouses and were used over a long period. This is unusual in that the diagonal bracing is missing. In general, the wider the board the more historic the door as there was an availability of wood to make large boards. Earlier doors can have beaded sheeting.

Traditional sash window (4)
This shows a tradition three-over-three sash window.

Ironmongery

In as far as was possible, all existing ironmongery was reused. This applied to windows and doors and to the rear of shutters. If new ironmongery is to be introduced, it should be appropriate to the existing door style. Houses of the more vernacular

Examples of door ironmongery (5 and 6) that are particular to different phases of refurbishment should be retained as a feature of the historic interior. Different types of ironmongery can also be discovered on shutter boxes and to timber sashes and can assist in the dating of the window fabric.


1.


2.


3.


4.


5.


6.

type tend to have wooden handles and simple surface mounted lockboxes.

Windows

In recent years, there has been a dramatic loss of this element in historic properties due to the successful marketing of alternative, supposedly maintenance-free, products. The harsh reality is that over a 10- to 15-year period, or where environmental considerations predominate, modern alternatives rarely measure up to the performance of the original timber sashes in terms of longevity or maintainability. Options for upgrading and insulating historic windows are available, and this course of action is less expensive and less detrimental to the historic fabric.

There are various aspects to timber sash windows that can assist in determining the age of a structure, or at least identifying a key refurbishment date, and which are, therefore, worth noting. Sometimes an understanding of the evolution of the whole structure can be obtained from the pattern and position of window frames and sashes. The retention of existing windows of historic buildings is of key importance to their external appearance, authenticity and character.

If, however, refurbishment or replacement works to historic windows are deemed to be necessary, perhaps to restore the overall character of the building, it is important to understand and recognise the significance and condition of each window. This is established by inspecting each window and noting its construction, condition and relationship with the rest of the building. Sometimes renovation works to an historic property have been so extensive that the only historic fabric remaining might be an arched head window to the stairwell or a forgotten internal light within the basement fabric. The discovery of an original window is invaluable if all other windows have been previously replaced. If the survey does not reveal a reliable window to use as a model, then the assessment of a nearby contemporaneous property is usually the best means of establishing the historically correct profiles for restoration purposes. To assist in recording and assessing the fabric of an historic structure, a general arrangement drawing of the main elevations onto which the location, the condition and the design detail of

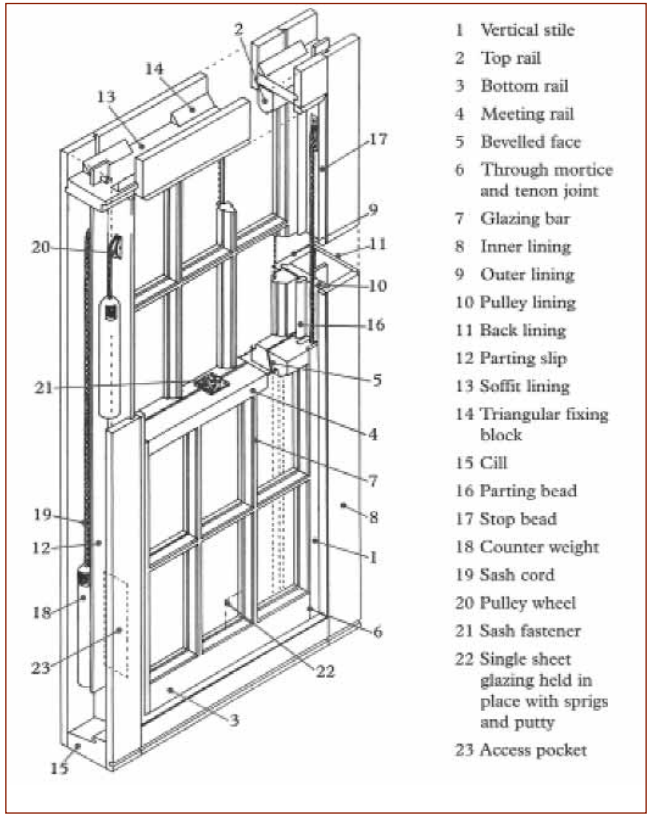


Illustration from English Heritage's Conservation Guidelines, Booklets on Window Conservation, indicating key components of timber sash windows from English Heritage 'Framing Options' leaflet 4 'Timber sash windows', available at: http://www.english-heritage.org.uk/upload/pdf/timber_sash.pdf
Right top: Internal linings with panelled shutters, two-over-two pane pattern with 19th century ogee horns.
Right bottom: Original early window. Its small panes are typical of a time when large sheets were more expensive and difficult to obtain.

each window and door should be recorded. Each opening should, as a minimum, be identified with a designated number and coordinated with some photographic information.

For further information

The Department of the Environment, Heritage and Local Government has issued conservation guidelines in booklet form, including one on windows, which contains much valuable advice on the detail of caring for old buildings. This is downloadable from http://www.environ.ie> heritage service>architectural heritage initiative>architectural heritage publications list>conservation booklets >No. 3 Windows.

Key information should include variations in sash, historic glass, coloured glass or stained glass panels, glazing bar, parting beads and horn profiles. Historic brass ironmongery such as pulleys, lifts and fastenings should also be recorded. Note the orientation of the structure and relate this to the location of replacement sashes.

It is essential to establish and record the causes of deterioration and problems in all sashes, i.e. timber decay, slipping sashes, brittle putty, loose joints, badly fitting shutter linings, damaged paintwork, etc. This information should assist in drafting a method statement and general specification for the cleaning down and preparation of all sashes, the removal of all dead putty, identification of replacement sections, and the extent of significant fabric to be retained and redecorated.

Causes of decay

The most common contributor to the decay of timber sash windows is infrequent maintenance. Timber sashes of 100 to 150 years of age can be found within historic structures, which is a testimony to the quality of the timber and previous maintenance regimes. Replacement sashes cannot replicate the quality of timber or patina of historic sashes. Owners sometimes erroneously think that brand-new timber sashes will be more desirable than retaining, refurbishing and draught-proofing originals. This view is uninformed, as it compromises the integrity of the building as a whole. The removal of historic windows is unnecessary unless huge levels of timber decay are present.

The orientation of a structure also has great relevance to the condition of its timber sashes. South-facing joinery tends to bear the brunt of rapid heating and cooling. This causes detrimental expansion and contraction in structural joints and junctions and is usually most evident in the lower rails of sashes where horizontal and vertical members meet. Canvas coverings are still used as protection for front doors during hot weather to prevent joints in raised and fielded panels from cracking open. North-facing windows appear to survive better.

Examples of proprietary draught-excluding products, which can greatly enhance the thermal and acoustic performance of historic sash windows are on the English Heritage 'Framing Options' leaflet 1 'Draughtproofing and secondary glazing', available at http://www.english-heritage.org.uk/upload/pdf/draughtproofing.pdf

Removal of old putty and repainting

The removal of old putty tends to be quite problematic when repairing timber sashes. Where a structure retains all of its original sashes and their historic glass, the most appropriate method for removal of old putty needs to be determined prior to repair work commencing. The loss of historic glass is not usually quantified or envisaged by the owner, but it is as an issue that needs to be considered. Historic glass is irreplaceable once it is broken, and contemporary reproduction or conservatory glass does not compare to the unique historic characteristics such as the spinning distortion or coloured tints.

Specialist subcontractors can provide the use of an infrared putty lamp, which slowly breaks down old putty with limited loss of historic glass. However, this approach tends only to be considered for special projects, as the work is quite labour-intensive and the cost of removing of timber sashes, temporarily securing their openings and working on the sashes in a workshop can be higher than on-site repairs. Where remedial work is implemented *in-situ,* it tends to ensure the maximum retention of historic fabric, but that has to be offset against the associated inconvenience of noise and dirt generated in the process.

The correct redecoration of restored sashes is essential to the long-term success of the refurbishment. Areas of new putty should be finished into a sharp, clean profile and fully painted with an oil-based paint within a month. Ultraviolet light starts to break down new putty if it is left exposed for much longer. Traditional painting techniques should be followed, as they are important to the survival of the refurbished sashes. For instance, along new putty lines next to glazed panes, sealing with well-struck brush strokes is essential to the long-term weathering of the glazing bars. Similarly, the base of replacement timber cills and 'scarfed-in' box-ends should be protected with the application of pooled paint where the new timber meets the stone cill. (There are many useful booklets on repair

techniques noted in these appendices, which are of great assistance when considering repairs to historic windows.) Putting shutter boxes and casings in good working order not only improves acoustic insulation, but also provides additional security and heat retention. Frequently, owners of historic properties complain of draughts from timber sash windows only to find that the access panel to the shutter weight box is missing or the window lining itself is falling away from the wall.

4 Floors

Foundations

If it is considered necessary to improve the ground floor structure or to tackle rising damp, trial holes should be dug to determine exactly how the internal and external walls meet the ground. Foundations or footings to older buildings are generally scanty and a trial hole usually indicates that they do not extend very far below the ground level and are typically no more than the thickness of the external wall. Knowing how the pieces go together, it is possible to figure out the best way to make the improvements without creating further structural problems. In earth structures, the bases of the walls were usually founded on courses of stone to avoid mechanical damage, or damage from splashes and any surface water ponding. Depths to the base of the wall can also vary considerably within a structure. There can be very little in the internal cross walls, as in the case of the buildings in the Knockaulin project. In this instance, the older external walls had a depth of 600mm, while a stone base footing was added to the walls in the circa 1900 brick extension. This meant that different remedial foundation details had to be considered at various locations on the site.

- Varying depths of foundation meant that no single detail could be applied.
- Underpinning was difficult to implement for narrow walls.

Underpinning old walls

Remedial work, especially if it is of a structural nature, needs to be properly sequenced and planned. Under no circumstances should the base of an historic wall be fully exposed internally or externally while under-pinning works are devised. Trial holes to investigate the nature and detail of foundations should be carefully selected. Surface water drainage should be carefully considered and designed to carry water rapidly away from the base of the building and, in particular, from vulnerable foundations.
In the Knockaulin case study, the insertion of the new link construction between two of the historic building ranges provided an ideal opportunity to provide additional structural support to the base of these walls by means of a new floor slab. Concrete for the new slab was poured into deeper pockets to underpin the walls on both sides. Reinforcement was added to slabs in these areas and into wall pockets. The thickness of the floor slab varied depending on its location and, in particular, on the original ground level, and had to take account of existing foundation level. Given the ceiling heights under the roofs of the existing buildings, the level of finished floors could not be varied and the new external drains had to be positioned carefully so as not to disturb foundation earth beneath the wall.

Floors

The Knockaulin Farmhouse case study is a good example of the complexity arising from the condition of the existing ground floors of different building periods. Externally, the ground level to the front of the building matched the internal floor level of the oldest central section of the principal range. Here the floors were mainly of concrete, some poured directly onto compacted earth with no damp proof membrane or means of isolation, leading to their complete saturation from rising damp. The 19th-century living room addition retained a timber floor on tassel walls with dry rot evident. The lack of ventilation and the high moisture content within the perimeter walls were contributing factors to the outbreak of dry rot, which had extended to and affected the timber wall lining of the interior.

Description of floor solutions

(Above): The floor was laid with the sub-floor pocketed beneath shallow foundations as indicated above. A conventional screed on top of the slab was only possible where there was no problem laying the structural slab at a lower level. In areas where excavation was a problem, no screed was used and the under-floor pipes were laid within the thickness of the structural slab. Where this was done, edge insulation was used to all edges of the new floor slab – not just external walls – to allow for expansion of the slab when heated.

Heating pipes

(Opposite page, left): These pipes were all surface runs and had removed considerable amounts of skirting for their installation. The over-large holes occurring in the corner location had stressed the wall, causing cracking elsewhere. Any new services were reintroduced into these holes and the openings reduced.

The existing floor needed to be replaced to allow a damp proof course and under-floor heating to be installed. Under-floor

heating is a good solution for old buildings as it allows an ambient temperature to be maintained whilst also retaining the natural harmony of the historic fabric. Extremes in temperature have a negative impact on historic fabric, causing it to expand and contract too rapidly, leading to cracking. Under-floor heating also assists in reducing the impact of rising damp, as it allows excess moisture to be dried off slowly but steadily. The benefits of inserting ground-floor insulation and an under-floor heating system to an historic structure, however, have to be carefully weighed against any likely adverse impacts.

The depth of the floor throughout had to be carefully adjusted on site, so as not to undermine the structural integrity of the existing perimeter walls. Local modifications had to be made to take account of particular situations arising within the building — for example, the expansion of the floor slab when heated by under-floor heating in areas of shallow foundations.

In certain situations, care is needed when replacing a vapour-permeable floor such as a clay-tiled floor that might be found, particularly in outbuildings. An impermeable floor construction, such as a new concrete slab, will direct excess water to the base of the older walls, which may have friable lime- or earth-based mortars. A solution to this problem, considered for the older barn section in the Knockaulin case study, is the use of a totally breathable floor of hemp and lime, without a damp proof membrane, thus re-establishing the slow release of moisture without compromising the historic fabric. A greater excavation depth is necessary to accommodate the extra drainage layer beneath this floor; 450 mm should suffice. Care needs to be taken as these lower excavation depths might affect the bases of the walls. Raising the floor can be an option if ceiling and lintel heights to openings or existing timber fixtures are not affected.

5 Heating system and ventilation

Ventilation

Old buildings depended on the free movement of air through their interior spaces to protect against the build-up of unacceptable levels of damp. Thus, sash windows which did not fit into their frames perfectly and permitted draughts, provided fresh air to the interior and were, in their draughty state, an integral part of the way the building worked as a whole. The common practice of keeping the house interior warm by a permanently lit fire in the kitchen mitigated the draughts this caused. The warm interior also helped to push water vapour through the construction materials from inside to outside.

In many old buildings, attempts will have been made in the past to apply new technology to improving the interior environmental conditions. Instead of relying solely on the on-all-day open fire to warm the house, central heating, powered by a boiler and timed to come on only for short periods of the day, was introduced. Gas fires were used supplementarily. At the same time, the draughts, which made their presence felt when the heating was off, were tackled by sealing up the loose-fit construction elements that had served the old regime so well.

Typically within old farm buildings, mechanical equipment introduced during the 20th century has now itself reached the end of its useful life. This equipment does not meet with contemporary buildings requirements and needs to be upgraded for safety and efficiency reasons. When upgrading historic structures, it is important to make careful provision for ventilation if the internal environments are going to be substantially sealed. The addition of vents to external walls may need to be considered if windows are to be draught-sealed and new heating systems added.

Wall vents

There are a number of options that can be considered when improved ventilation is necessary in an historic structure. If chimney-stacks and fireplaces become redundant, the existing

Description of venting solutions
The cast iron reproduction vents installed as room ventilators into two different wall structures. To the left, installing into a brick wall it was possible to control the vent's position. To the right, in a stone wall, which meant that the vent could not be precisely positioned to match due to the presence of a large stone.

Distinctive range from the kitchen of Belin House, Co. Laois.

natural ventilation from these features can supplement the existing air changes for a room without new openings being made in the external wall. Adding ventilation slots into an existing window is detrimental to its fabric, as it will weaken the timber member. In a brick wall, a vent opening can be cut quite easily in a carefully selected position and covered with a cast iron reproduction or salvaged vent cover, matching where possible the style or pattern of existing vents. In the Knockaulin Farmhouse, a modern reproduction cast iron vent was sourced through The Traditional Lime Company. A number of fireplaces on the upper floor were not going to be used and it was decided to use their flues to ventilate rooms. An additional benefit of this approach is that it prevented a damp penetration through the flue. A flexible flue liner was used and connected to a discreet in-line slate vent at roof level. Traditionally, the installation of decorative vents or airbricks to the side of the chimneystacks was a means of permanently ventilating an unused flue.

Heating

The existing heating to the Knockaulin farmhouse was probably fairly consistent with most farmhouse accommodation, comprising low-pressure radiators run from a range. The system had been added long after the house was built, and replaced the on-all-day open fire. Such consistent all-day heat went with the construction technologies of old buildings, as it allows evaporation of any moisture from the walls and ensures that cracking of joinery features is avoided. A modern under-floor heating system, with lower running temperatures, is compatible with historic fabric and this was chosen for the Knockaulin project. The system was installed to the ground floor and set to provide an even and low operating temperature. The edges of the heated floor slabs had to be carefully specified to have compressible foam strips, so that expansion and contraction in the slab did not adversely affect the structural walls. The use of this constant heat relies on the wall construction to be as breathable as possible, and voids to the internal face of walls need to be vented to the interior spaces of the house. (See photo *page 72).*

To the upper-floor accommodation, cast aluminium radiators were installed. Considerable amounts of skirting had been removed and large openings made in the cross walls at structurally vulnerable junctions to accommodate the earlier central heating pipework. These poorly made openings weakened the structure, causing settlement and moisture ingress. All existing pipe work was removed and openings repaired, but pipe runs were reused as much as possible to avoid making new holes in the structure.

The under-floor heating was to be used in conjunction with a geothermal pump drawing on the free transfer of ground heat from the field adjacent (to be installed in a later phase).

Special consideration is necessary when installing new heating systems into earth or mud buildings. The use of high temperature radiators can adversely dry out the structure and so they need to be isolated from the primary structural fabric. The use of a reputable contractor has benefits in terms of neatness, minimising impact on the historic structure, and reliability of the new system in operation.

6 Internal finishes and features

Internal joinery details

Profiles or samples of all the shaped and moulded timber should be made in advance of repair work. All doors and shutters should be protected during works and removed for their protection if necessary. If it is not possible to protect them in their original position, their location in the building should be carefully noted, perhaps by numbering, for reinstatement. Insofar as is possible, all timberwork should be protected and repaired *in-situ*. Contractors may suggest that historic joinery can be reassembled, but this is rarely possible and there is usually significant loss of historic fabric. Owners should plan for the provision of protection to special features and allow for the costs of protection in the course of the work.

Below: Interior of a derelict house, indicating the remains of lime-rendered walls with 'blue lias' pigment still evident to the entrance porch walls. Very little research has been carried out on the interior schemes of these small farmhouses.

Decoration

This aspect of work had to be considered carefully in the Knockaulin farmhouse project, as great efforts had been made to enhance the breathability of all main walls, the benefit of which could have been easily undone with the use of incorrect paint.

A number of different paint systems were chosen, depending on the materials to be painted. Breathable water-based paints are restricted to a white colour as they do not become brittle over time and as a result can be painted over without sanding back. This can be of great benefit with a large number of windows to maintain.

- Breathable water-based paint was used to all new sash windows externally.
- Existing windows were painted with an acrylic satin paint, as the remains of previous paint would have impeded the use of water-based paint.
- All lime-rendered walls were painted with a breathable *Agila* paint, which was used in a water-based breathable emulsion throughout the main living spaces and in a water-based flat oil finish – for its more hard-wearing properties – to the utility areas.
- All new timber sheeting was painted in a water-based flat oil finish to retain the breathability of the timber.
- All existing timber was painted with a standard satin acrylic paint.

Above left: The view is the enfilade *of Knockaulin Farmhouse which shows the use of natural breathable paints in lighter colours.*
Below: The previous doorway to the removed bathroom extension has been converted into two windows. The lower window is internal into the kitchen area under the curved roof while the upper is above the curved roof and provides natural light directly into the original stairway.
Far right: High windows on curved roof allow a view up towards the foliage of the trees above the barn, and the corner patio doors allow a view towards the rear field.

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