The Lost Settlement of Dunnalong

The Dunnalong
Archaeological Project 2012

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The 'Plantation to Partition' Collaborative Programme, led by Derry City Council and partnered by Foyle Civic Trust's Landscape Project funded by European Union's PEACE III programme and delivered by North West Peace III Partnership, carried out an archaeological dig and marine survey at Dunnalong, Co Tyrone from 6-23 August 2012.

It was a partnership project with Strabane District, Omagh District, Donegal County Councils, Northern Ireland Environment Agency (NIEA), Queens University Belfast, Centre for Archaeological Fieldwork (QUB CAF) and University of Ulster, Centre for Maritime Archaeology (UU CMA).

The cross-community and cross border archaeological dig at Dunnalong, Co Tyrone was a great success particularly in terms of community engagement and creating access to our local heritage. The volunteers enjoyed themselves on the dig and many of the most important artefacts were found by them too. There was a lot of hard work needed to dig out the trenches, all with the assistance of a band of willing volunteers.

Working closely with NIEA, QUB CAF and UU CMA the project aimed to explore the potential remains of a defensive enclosure dating from the Plantation period. The main purpose of the dig was to uncover our past heritage in a unique and interactive way by bringing people together to share their history and gain a better understanding of its legacy.

"It was good to get a chance to literally sift through the soil looking for evidence of the past."

"The dig at Dunnalong was great, a beautiful place, steeped in history and a real hands on experience."

"It was good to be there and see how it works from the geophysical survey through to actually digging."

Acknowledgments

We would like to thank Mr Dougie Jamieson who kindly gave us permission to carry out the excavations on his lands and made us all feel very welcome.

Thank you to all the community participants who took part in the dig and who were wonderful to work with and keen to get their hands dirty.

Thanks to all of the following: Paul Logue and the Northern Ireland Environment Agency for their financial and archaeological support of the community dig: Ronan McHugh and the team of archaeologists Brian, Stuart, Grace, Dermot, Sapphire and Sarah from Queens University Centre for Archaeological Fieldwork for their time and enthusiasm: Rory McNeary and Kieran Westley from the University of Ulster Centre for Maritime Archaeology for carrying out the river based survey which helped to present a fuller picture of the heritage of Dunnalong: the Rivers Agency for allowing the project to utilise their archived LiDAR data: Dr William Roulston for his contribution on the historical context and importance of Dunnalong: Ocean Creative Media for their support for the project and the production of the film: New Horizons Catering who provided much needed tea and sandwiches to keep all the team going: Margaret Edwards Derry City Council's Heritage & Museum Service and Liam Campbell Foyle Civic Trust's Foyle Landscape Project for their co-ordination of the archaeological project and this publication and finally the funders – European Union's PEACE III programme and the Heritage Lottery Fund for their support for the archaeology project and this publication.

"I have been really inspired by this experience and can't wait to take part in another dig."

"The excitement of this is actually the chance to get doing something you never thought you would do. Literally putting your hands on history. For me that is the important thing about today."

Preface

Plantation to Partition Programme

The Plantation to Partition Programme is part of a wider Partner Delivery Programme, whose aim is to work towards establishing the North West Cluster area as a truly shared space for all citizens whereby every citizen's contribution is viewed as worthwhile and necessary. Derry City Council's Culture Connects Communities Programme aims to develop the cultural capacity in the North West by building understanding and trust within and between communities. It aims to transform contested space and promote safe shared spaces using an integrated programme of culture, arts, sports and heritage.

The North West Councils' collaborative heritage strand of this programme is led by Derry City Council's Heritage & Museum Service working in partnership with its partner councils, Strabane District, Omagh District and Donegal County Councils.

The collaborative strand deals with the historical period from Plantation of Ulster to Partition of Ireland and also covers the centenary of the Ulster Covenant in 2012 and the lead up to a number of other upcoming anniversaries. The programme aims to explores this 400 year period and its legacy in a cross community/cross border capacity.

Foyle Landscape Project

The Foyle Civic Trust's Foyle Landscape Project aims to link the physical heritage (both natural and built) of the area with the local oral history and local cultural traditions surrounding these heritage features to create a fuller understanding of the Foyle Basin.

The Foyle Landscape Project is funded by the UK Heritage Lottery Fund, the NI Rural Development Programme, Derry City, Strabane District and Limavady District Councils. The project aims to promote awareness, conservation, utilisation for tourism and cultural awareness of the built heritage, archaeological sites, natural heritage and landscape features in the Foyle Basin with a particular emphasis on those features associated with the Gaelic Order and the Plantation of Ulster.

Northern Ireland Environment Agency (NIEA)

NIEA are the government body who manage archaeological heritage in Northern Ireland on behalf of everyone. NIEA's role encompasses a wide range of duties. These include projects to conserve and protect earthworks and buildings, excavation of below ground remains, presentation of information to the public and helping to generate money for the economy. There are tens of thousands of archaeological sites in our modern landscape and NIEA must assist communities to preserve their heritage while at the same time aiding other government departments and the private sector in their drive to provide jobs and stability. NIEA joins with local people, councils and other bodies as often as possible to undertake archaeological projects. The Agency also has long term partnerships with the Centre for Archaeological Fieldwork at Queens University Belfast, who undertake the required government excavation work on land, and the Centre for Maritime Archaeology at the University of Ulster who undertake the maritime and riverine survey. Projects such as the Dunnalong survey and community excavation show us that local communities can help deliver valuable archaeological research while having fun and forming new friendships.

Biographical notes

Liam Campbell is the Heritage Officer with the Foyle Landscape Project of the Foyle Civic Trust. He has a PhD in Environmental Anthropology and has a particular interest in river catchments especially in the areas of management and cultural heritage. He previously worked for 16 years in television production and was producer of UTV's Lesser Spotted Ulster.

Margaret Edwards is the Education Officer for Derry City Council's Heritage & Museum. Before this she taught History in both Zimbabwe and London. As Education Officer she is responsible for the provision of learning programmes and outreach projects across the Museum Service, which consists of a number of museums, reflecting the rich history and heritage of the city and region.

Paul Logue is an archaeologist with the Northern Ireland Environment Agency. He has excavated and published on sites throughout Ireland including a number in and around Derry City. He specialises in the Neolithic period and the period 1550-1700.

Ronan McHugh is the Principal Surveyor for the Centre for Archaeological Fieldwork at Queen's University Belfast. He has extensive experience carrying out archaeological excavations and topographical and geophysical surveys throughout Northern Ireland as well as working in Scotland, the Republic of Ireland and the United States.

Rory McNeary is a Research Associate at the Centre for Maritime Archaeology (CMA), University of Ulster, Coleraine. He has previously worked for The Discovery Programme (an Irish state-funded archaeological research company) and the Irish government's Underwater Archaeological Unit. As well as being interested in maritime archaeology Rory has further research interests in the archaeology of the medieval and post-medieval Irish countryside and the archaeological applications of aerial survey.

Dr William Roulston was raised on a farm on the Dunnalong Road in Bready where his family has lived and worked for generations. He is Research Director of the Ulster Historical Foundation. He has written extensively on Dunnalong and its environs, most recently in his book *Three centuries of life in a Tyrone parish: a history of Donagheady from 1600 to 1900* (2010).

Contributors (left-right) Dr William Roulston, Ronan McHugh, Liam Campbell, Rory McNeary, Margaret Edwards and Paul Logue, pictured at the Sollus Centre, Bready.


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Section One

People, Place and Participation

WILLIAM ROULSTON

‘Fort of the ships’: Dunnalong through the ages

In March 1568 Terence Daniel, dean of Armagh, wrote to one of the lord justices in Dublin that the chieftain of the O’Neills, Turlough Luineach, was ‘fortifying Dunnalong, a new castle on this side [of] Lough Foyle’. With these words the recorded history of Dunnalong begins. Daniel explained that this ‘new castle’ was in fact a replacement for a fortification that had been erected by Turlough Luineach’s predecessor as chieftain Shane O’Neill, but dismantled by him to prevent it falling into the hands of the English. As a site of military importance, Dunnalong’s history may stretch back even further in time for it has been suggested that there may originally have been a Viking settlement here on the basis that the suffix ‘long’ is reminiscent of the Norse *longphort*, a term used to describe a Viking encampment. Certainly Dunnalong was the site of an important river crossing from a very early period.

In 1568 Dunnalong was a place of immense strategic value for Turlough Luineach. Directly opposite it in Donegal was a rival O’Donnell fort at Carrigans. The castle was also on the border with the territory of the O’Cahans in present-day County Londonderry. In 1568, it represented Turlough Luineach’s only outlet to the sea which was vital to the Irish chieftain at this time. Dunnalong was a customary landing place for Scottish galleys bringing mercenary soldiers – the feared Redshanks – to the Gaelic warlords of the northwest. Through Turlough Luineach’s marriage to Lady Agnes Campbell, aunt of the Earl of Argyll, in 1569, many more of them were to arrive.

No drawing or plan of the castle at Dunnalong has survived and so what it looked like is not known (see artist impression, above and p57). It probably took the form of an Irish tower house and as such it was one of the last major Gaelic fortifications in northwest Ulster. A description of Ireland, written in 1598, noted that in upper Tyrone there was a castle at Strabane plus other castles of minor importance. These were described as consisting of ‘high towers with narrow loopholes rather than windows, to which adjoin apartments of turf, covered with straw, having large courts surrounded with ditches and bushes to defend their cattle from robbers.’ It is possible that the castle at Dunnalong fitted, to some extent at least, the above description. The castle provided a focus for commercial activities and there are references to merchants trading from here in the later 16th century.

Almost immediately Dunnalong acquired a degree of notoriety in the Gaelic world. In 1570, according to the *Annals of the Four Masters*, ‘MacSweeny Fanad, the brother of Hugh Boy Roe and McSweeny-na-dtuath were treacherously slain at Dunnalong in the presence of O’Neill by the Clann-Donnell Galloglagh’. In 1574, O’Neill’s castle at Dunnalong was visited by a force of English

soldiers under the command of the Earl of Essex, then waging a brutal campaign across Ulster. It has been suggested that the artist and engraver, John Derricke, may have accompanied Essex to Dunnalong and it was here that he encountered the Gaelic chieftains who were to feature in his book, *The image of Ireland with a discoverie of woodkarne*, published in 1581.

Woodcut showing a Gaelic Lord feasting, possibly at Dunnalong.
Taken from *The Image of Irelande*, John Derrick (London 1581)

In the latter part of the 16th century Turlough Luineach was challenged for the supremacy of the O'Neills by his kinsman, Hugh O'Neill, who in 1585 was created 2nd Earl of Tyrone. In March 1590 Turlough Luineach complained to Queen Elizabeth that the forces of Hugh O'Neill (hereafter Tyrone) had attacked and 'burned three forts called Bundenoid (Burndennet), Farsaid More and Cladache (Clady), with the castle of Dunnalong'. Turlough Luineach died in 1595, having resigned the headship of the O'Neills to the Erl of Tyrone two years earlier. By this time relations between the government and Tyrone had completely broken down and the latter was in open rebellion against the Crown. Around him Tyrone gathered a confederation of Gaelic chieftains, the principal of whom was Hugh Roe O'Donnell.

Dunnalong and the Nine Years' War

To begin with, the Nine Years' War, as the conflict has come to be known, was a disaster for the English, with a number of serious defeats at the hands of the Irish. The English government realised that the only way to defeat Tyrone and his forces was to divide their attention and force them to fight on two fronts. In May 1600 Sir Henry Docwra, an experienced soldier, led a force to Lough Foyle and established a base at Derry. Shortly after the English arrived in Lough Foyle, Sir Art O'Neill invited Docwra to come and visit him at his residence at Dunnalong. However, Docwra was initially reluctant to venture far from his base at Culmore; he had also been informed that Dunnalong was 'moist and unwholesome' to build upon.

On the first day of July, Docwra, having decided that the time was right to establish a fort at Dunnalong, sent 800 men upriver in boats to the site of Turlough Luineach O'Neill's former castle. Docwra himself accompanied this force. Landing the next morning the soldiers immediately began building a fortification. Satisfied that the fort was secure, Docwra left six companies of foot at Dunnalong under the command of Sir John Bolles and later sent 50 horsemen. The fort at Dunnalong, like the forts at Culmore and Derry, was constructed with a strong earthen rampart surrounded by a ditch. The *Annals of the Four Masters* explain that this type of fortification was stronger than forts of stone or of lime and stone, and constructed more quickly. Later in the summer Docwra wrote to his superiors that Dunnalong was really only taken to satisfy Sir Art, who wanted it to be a focus to which his followers could be drawn.

Contrary to what might have been expected, the biggest threat to the English presence in Lough Foyle was not the armies of Tyrone or O'Donnell, but rather disease which swept through the garrisons with devastating effect. At the end of August Docwra wrote to Cecil, Queen Elizabeth's chief government minister, that he could muster only 300 fit men in Derry and a further 400 at Dunnalong, and that out of a force of 4,000. It was also recorded that a number of English soldiers were deserting Dunnalong and going over to the enemy. On 28 October 1600, Sir Art O'Neill died at Dunnalong after three days illness brought on by what was described as 'immoderate drinking'. Though at times he had been rather troublesome, Docwra trusted his Irish ally and called him a 'faithful and honest man'. Shortly after the death of his brother, Cormac O'Neill approached Docwra, claiming to be Sir Art's lawful successor and hoping for 'good entertainments from the Queen'. However, soon after this Sir Art's son Turlough approached Docwra, and it was he, rather than his uncle, who was accepted by the Crown as the rightful heir.

A description of the fort at Dunnalong

A couple of plans of the fort at Dunnalong have survived and these give us a good idea of its layout. The fort was star-shaped in imitation of the fortifications which had been built in the Low Countries during the wars between the Dutch and the Spanish. As a veteran of these wars, Docwra had no doubt a good knowledge of their construction. Sir John Bolles' house stood on the site of the original castle of which only the ruined walls remained. Surrounding it was a 'faire 4 square ditch filled [with] water out of the ryver', though whether this was a new construction or simply part of the original defences of Turlough Luineach's castle is not clear. Beside the bridge leading to this artificial island Bolles placed two pieces of artillery as well as the main 'corps de garde' of the fort. It would appear that Bolles intended his house to be the citadel for the garrison, supposing a successful attack was launched on the fort and its ramparts breached.

A 'great bruehous', the construction of which Docwra had ordered in October 1600 was sited right on the water's edge. The brewery was built to supply cheap beer to the garrisons in Lough Foyle, something that was a major concern in the ranks. Certainly the Irish made their own beer which they sold to the English soldiers, but at exorbitant prices. The beer produced at Dunnalong was transported down river to Derry by means of a specially adapted horseboat. Within the fort was a market-place where the merchants traded with the soldiers and possibly also with the local inhabitants who had submitted to Bolles. The market-place would appear to have been an integral part of the fort, both because of its positioning and its extent. One of the drawings of the fort shows 'certain cabans or lodgings' which were located to the immediate north and east of the fort and which, although located outside the ramparts, were fairly secure, having the bog about them and also a 'trench cast up for their safety'.

The inhabitants of this 'village' may have been the local Irish and its origin may have dated from the time of Turlough Luineach's castle. Alternatively, it may have sprung up in response to the

Map of Dunnalong ('Dounalong') c.1600 (TNA: PRO, SP 63/207 pt VI, no 84 (2)).

revival of Dunnalong's importance, following the establishment of a large English garrison there in July 1600. It may even have been where the merchants and their followers lived. At the same time the houses are shown as having chimneys, which at that time was a distinctly English feature. Apart from possibly Bolles' house the buildings inside the fort would not have been of permanent construction.. This goes a long way towards explaining the virtual absence of any traces of the fort to-day. At about this time a muster at Dunnalong recorded the fort's strength as being 1050 foot soldiers which is a good indication of just how large this garrison was.

The 'Battle of Dunnalong'

Throughout the spring of 1601 minor raids had been carried out on the fort at Dunnalong, mainly attempts to steal some of the horses or cows grazing around it. However, in May 1601 an incident occurred which can perhaps be called the 'Battle of Dunnalong', even if it was only on a small scale. In the spring of 1601, the Earl of Tyrone had brought a large part of his forces to the Strabane area. Naturally his attention turned to the garrison at Dunnalong. On the day before 'battle' Tyrone and his men had made a minor raid on the fort and had captured some cows grazing near it. Buoyed by his success Tyrone returned the next day expecting to find more easy pickings. However, what he and his soldiers encountered this time was much more serious as a ferocious attack was launched on them by both English troops and Irish soldiers in the service of the Crown. Together they chased Tyrone and his soldiers for six miles, killing many of them and nearly killing the Earl of Tyrone himself who was often 'within a stave's throw' of death. This may have been the closest that Tyrone came to death during the Nine Years' War, and it would have been ironic had it occurred while attempting to steal some cows from Dunnalong, the old castle of his former rival, Turlough Luineach. In all, 300 of Tyrone's men were killed in the encounter. One hundred of these were killed when the initial attack was launched, with eventually 200 more by the time the pursuit was called off.

By the summer of 1601, with Docwra waging a successful campaign against the forces of the Earl of Tyrone and his allies, the fort at Dunnalong was no longer a frontier outpost on the eastern side of the River Foyle, from which the garrison was frightened to venture too far. It therefore declined in importance as its garrison was substantially reduced. Following the end of the Nine Years' War in 1603, the fort at Dunnalong seems to have been abandoned for a time. A small garrison of ten soldiers under the command of Captain John Vaughan was placed in it in 1607 after the Flight of the Earls. In the summer of 1608, Sir Josias Bodley was commissioned to carry out an investigation into the condition of some of the principal fortresses in the north of Ireland. He described Dunnalong in the following terms:

> The great entrenchment at Dunalonge is more fitt to be raised than repaired, but the peece of ground within the same neere the river, which is held by the ward, having no other defence but a deepe and broad ditch about it at this time, if it were sufficiently walled on the inside of the ditch, which considering the stone at hand, and the small circuit of the place, will not cost above 150li. I shoulde it of good strength for a ward of 10 or 12 men, and capable of more if neede required.

However, even before Bodley's report was finished it would appear that a decision had once again been taken to abandon Dunnalong. It does not seem to have been used again as a fortification.

Dunnalong since 1610

In 1610 the fort formed part of the land grant made to James Hamilton, 1st Earl of Abercorn, under the terms of the Ulster Plantation. The name given to this block of land was the 'manor of Dunnalong', reflecting the continued significance of the name. Abercorn introduced significant numbers of Scottish families to his lands and Dunnalong was undoubtedly an important landing place for them, as it had been for the Redshanks in an earlier period. Though no longer a fortification, Dunnalong remained an important local site for a number of reasons.

There had been a ferry crossing over the Foyle between Dunnalong and Carrigans from time immemorial. In 1622 it was noted that a quay had been built at Dunnalong and there were sufficient boats for both men and horses. Occasional references to the quay at Dunnalong are found in the correspondence between the 8th Earl of Abercorn and his agents. For example, in the summer of 1768 John Sinclair, Abercorn's agent, instructed Gabriel Gamble to repair the quay at Dunnalong. Gamble employed two men to raise stones in Tamnaclare for this purpose. The following February an outline of what ought to be done was drafted:

> The quay will require to be ten perches in length and nine foot broad, that by taking down three feet of each side of the old quay, that by rebuilding it and properly joining it to the three feet of the old work in the centre may answer when fully bound with timber along each side, large bars across and staked to secure the stones from falling … the timber must be all well bound with wood pins as iron would very soon rust and break with the salt water, but there must be some staples and rings to make the boat fast to.

A fair was established here in the early 17th century, which became renowned for its horse sales. In the early 19th century the fair became the scene of a number of faction fights. The *Londonderry Journal* of 5 September 1815 published a proclamation by the magistrates of Co. Tyrone of which the following is an extract: 'The circumstances of the riot which took place at Donelong on the

Twelfth are at present in progress of enquiry and in order to do justice to those who may have been beaten or abused ... we hereby call on all aggrieved parties to lay their complaints before us'. In 1859 the influence of the Revival was felt at Dunnalong. A local newspaper reported that whereas in past years 'vagabonds of every type and class' had gathered here 'to drink, dance, fight and gamble', at the fair of that year 'business was conducted in an orderly manner; there was no riot, no drunkenness' and an open-air religious service was held. The fair continued to be held until about 1912 when the last licence holder was a publican from New Buildings. The ferry service was discontinued in the 1920s.

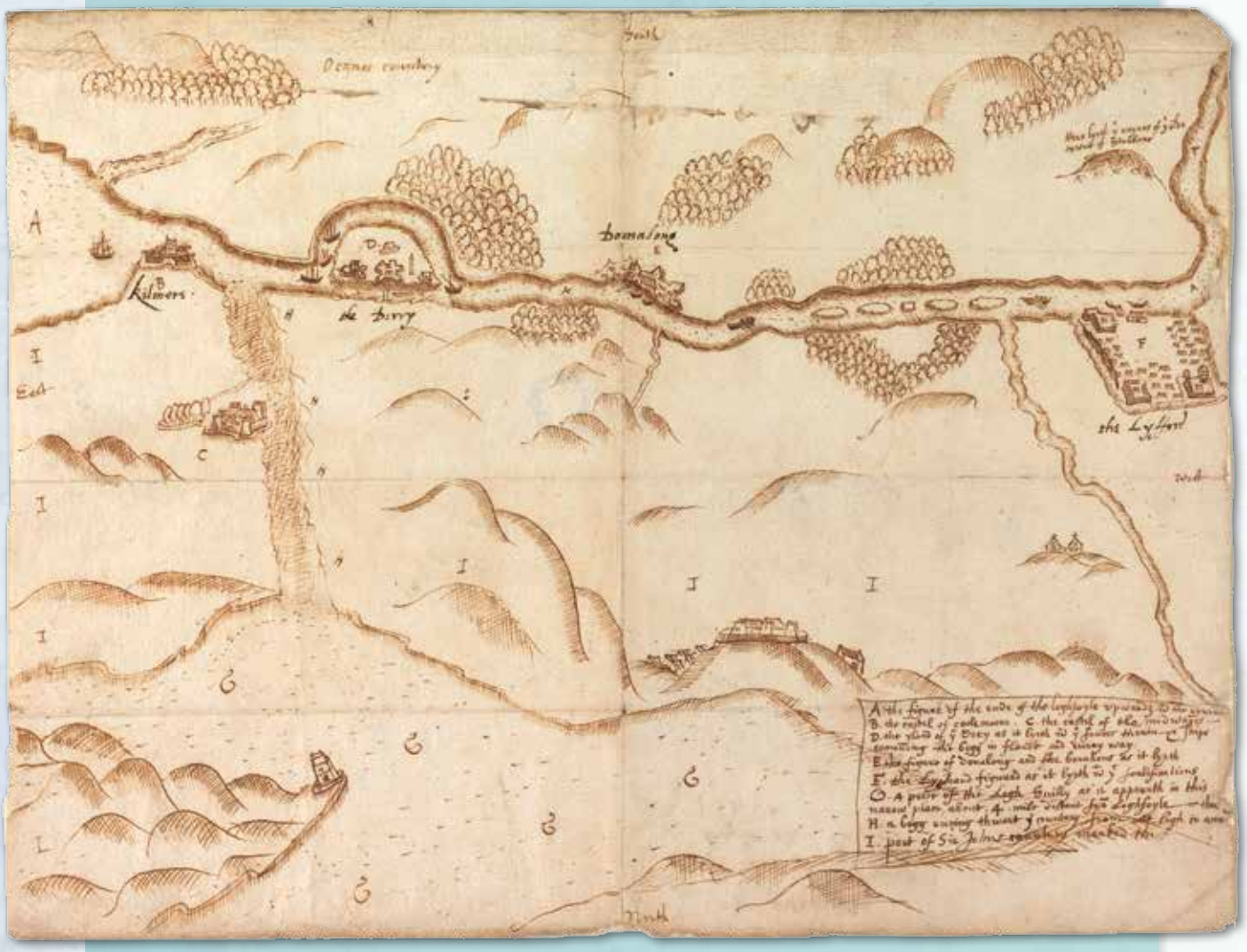
Dunnalong was the site of some industrial enterprises in the 17th and 18th centuries. In the 1650s it was noted that a Michael Marshall was in possession of a 'fee farme of a tenement house garden and malltbarne with a parcell of grounde adjacent, estimate three acres, with grass for three Cowse' in the townland of Menagh Hill. The mention of a 'malltbarne' would seem to imply that Marshall was involved in brewing and this is an interesting continuation of an activity begun by Docwra in 1600 at Dunnalong fort – which would then have been part of the townland of Menagh Hill. Marshall's fee farm was the basis of the small modern townland of Dunnalong. Another industry practiced there in the 18th century was brick-making. In 1751 John Colhoun, the Earl of Abercorn's agent, reported on a brickyard at Dunnalong that was being worked by 'James Paterson at the ferry boat who says he had made bricks seven years past … says he also depends more on the bricks than on the ferry for his rent'.

At one time a large wood adjoined the site of Dunnalong fort. This is shown on the maps drawn during Docwra's campaign at the beginning of the 1600s. In the 1660s this wood provided a place where local Presbyterians could meet in secret during a time of persecution at the hands of the Established Church. In 1751 the trees were said to be 'chiefly of alder, a little ash and a very little oak'. Over time as the trees were cut down the wood diminished in size. Much of this felling was done illegally. By the end of the 18th century Dunnalong wood was no more. However, in the townland of Magheramason there is a place still known as The Wood.

The 17th-Century Maps of Dunnalong

Although measured, metrically accurate surveys did not become commonplace until much later, contemporary maps can provide a rich source of information in the study of 17th century Ireland. This is certainly true for the campaigns at the beginning of the century, when English cartographers of the calibre of Richard Bartlett were employed by crown forces to record their efforts to supplant the Gaelic lords. These campaign maps were generally drawn to document the fact and extent of the military features that are depicted, as well as to emphasise success and achievement. The size and often perfect symmetrical design of the forts and machinery of war may occasionally reflect artistic licence and a measure of bias on the part of the cartographers but, nonetheless four contemporary maps have survived which provide an invaluable insight into Docwra's fortification at Dunnalong. Moreover, the consistency in these cartographic representations, as well as the level of detail they contain, is remarkable.

Two of these ('Map A' and 'Map B') were enclosed in correspondence dated 19 December 1600 sent by Docwra to Sir Robert Cecil. It is possible that both maps were drawn by the



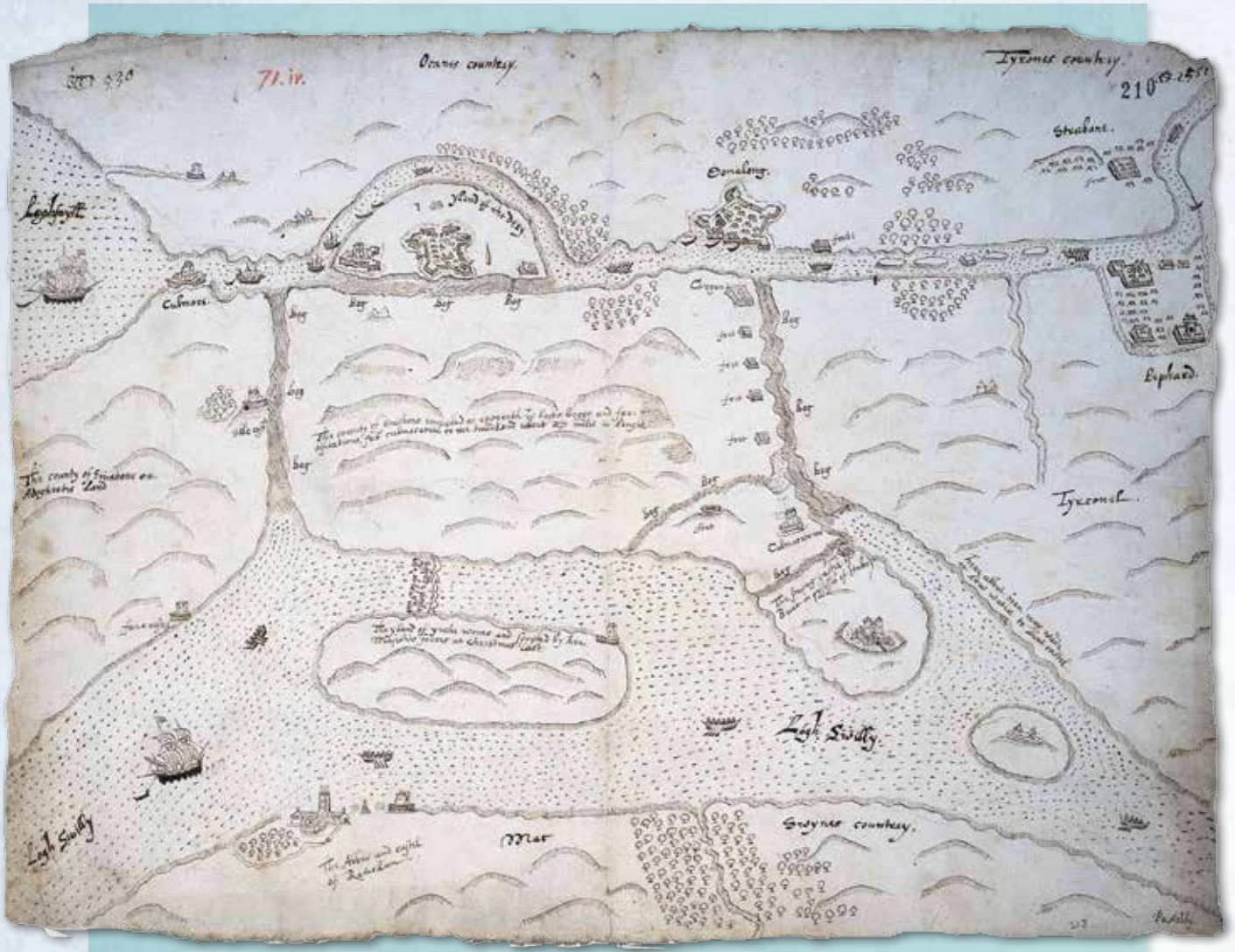
Map A: 'The Derry'. General map of River Foyle area and the country between the Foyle and Lough Swilly c.1600 (NLI, MS 2656, No. 16).

Map B: 'Dounalong' c.1600 (TNA: PRO, SP 63/207 pt VI, no 84 (2)).

military engineer and mapmaker, Robert Ashby. The first of these (Map A) shows Dunnalong Fort in its contemporary landscape close to 'The Derry' The landscape is primarily notable for the extent to which it has been militarized with camps and fortifications, and its purpose was doubtless to provide Cecil and the English command with an idea of the country in which Docwra was operating. Accompanying this view of the landscape were more detailed drawings of the principal English fortifications, including one of 'Dounalong' (Map B). This is one of the most informative contemporary accounts of the fort as many of the principal features are shown labelled and then described in an accompanying key.

A second general map of the Foyle/Swilly area was sent in dispatches to Cecil on 15 May 1601 and again shows 'Donalong' at the heart of a strongly fortified area ('Map C'). Again probably drawn by Ashby it appears to be based on Map A, although it is more detailed, and was designed to illustrate Docwra's progress in the Foyle region in the months since December 1600. Probably the most detailed of the contemporary drawings of the fort itself is by Griffen Cocket and probably dates to sometime in 1601 ('Map D'). The features depicted closely replicate those shown on Map B, although Griffen Cocket's drawing is the only one of these contemporary drawings bearing a scale.

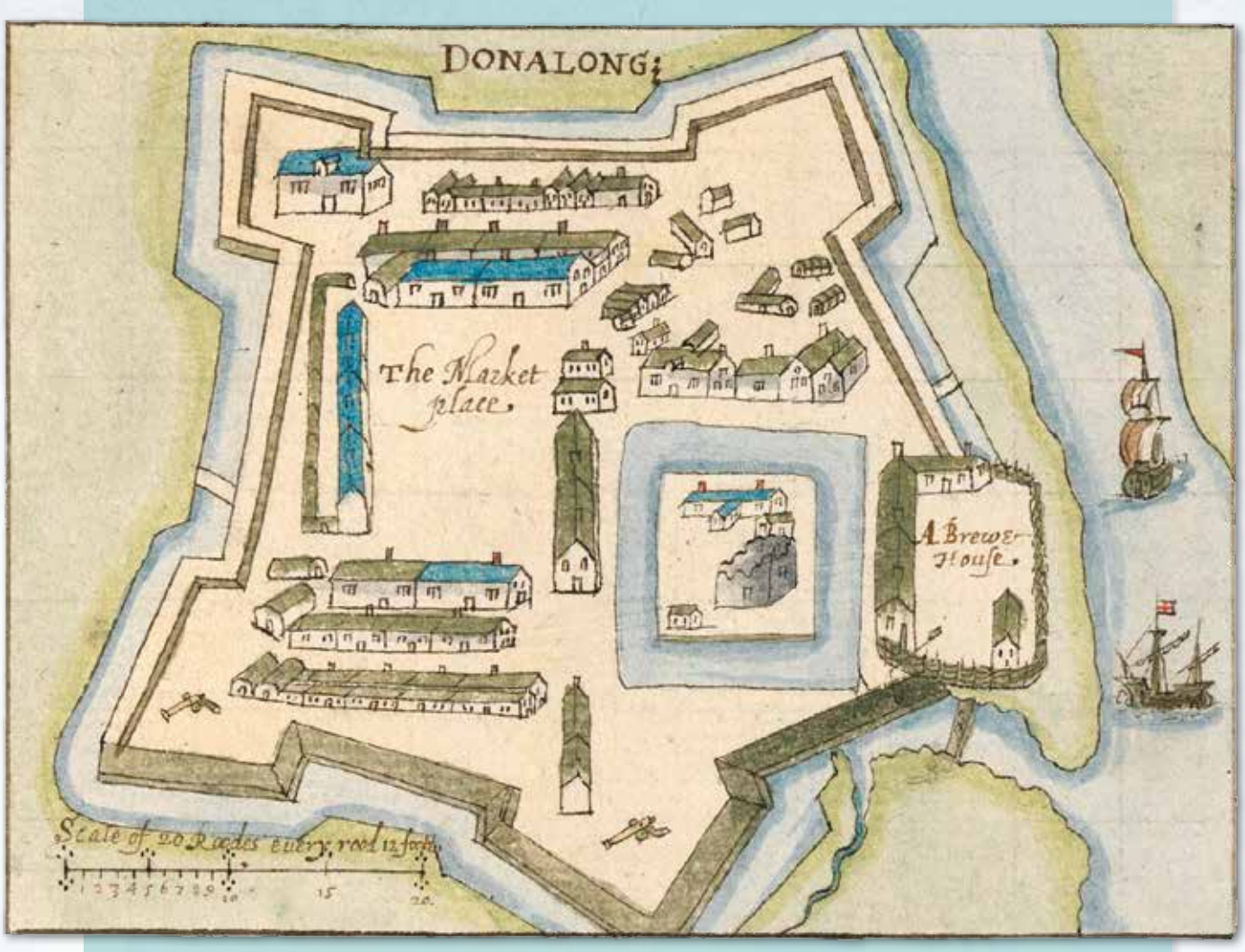
Taken together, the maps provide a consistent and comprehensive pictorial record of Dunnalong Fort during the short years of its primacy. The fort was clearly of a grand scale. The two general landscape views show Dunnalong as being of similar size to Derry, while the scale on the Griffen Cocket map suggests it enclosed an area of roughly 30,000m^2, measuring from the external edges of the massive ditch depicted. All of the maps show the curtain of the fort



Map C: General Map of the Foyle/Swilly area, 1601. Robert Ashby (TNA: PRO, MFP 1/335/1).

defined by formidable defences of an outer ditch with a substantial earthen rampart rising from its inner side, enclosing a trapezoidal interior. The form of the fort shown echoes the record of the Four Masters, who stated that 'The English immediately commenced sinking ditches around themselves and raising a strong mound of earth and a large rampart' (O'Donovan 1856 at 1600). All of the maps show symmetrical full bastions at the corners of the fort although, while the other three maps show four bastions, Map B shows an additional one. Three of the maps (B, C and D) show that the fort was guarded by canon and the presence of artillery is verified by an inventory of ordnance in the Foyle region from 1611, which lists a single saker at Dunnalong (Carew MSS 1603-1623, 95). The fort appears to have had the additional natural defence of a bog surrounding much of its exterior, while the Foyle, of course, protected it from the north.

All of the maps demonstrate that the fort contained rows of cabins, the majority of which would have been of wooden construction and used to house the English soldiers and guards. The more detailed maps, however, show that extra protection was afforded to the Garrison commander, Sir John Bolles. His quarters were located alongside the ruins of the Gaelic castle within a square moated area in the northern half of the fort. The castle, of course, formed the military centrepiece of the Dunnalong landscape before the arrival of Docwra's forces.



Map D: 'Donalong', c. 1601. Griffin Cocket (TCD, MS 1209 (Hardiman Atlas), no. 14).

The other building that is emphasised on all of the maps is the brewery, which is consistently shown as a long building on the shore of the Foyle. The two detailed maps (Maps B and D) emphasise a market square at the centre of the fort, suggesting that the site took on the character of a fortified town where commerce was transacted and provided for.

Two of the maps, A and B, show an extra line of defence beyond the formal curtain of the fort. On the eastern side, but outside the fort, a cluster of cabins is shown surrounded by what appears to be a less impressive, but bastioned, defensive feature. On Map B these structures are described as 'cabins and lodgings which, although they are without the fort are yet strong enough having the bog without them and a trench cast up for their safety'. It is likely that these are the quarters of Docwra's Irish allies.

LIAM CAMPBELL

Thirty acres on the Foyle – Dunnalong a river landscape

Travelling the road from Derry to Strabane over many years I was always aware that there was quite a lot of land between the road and the majestic Foyle. In recent years my explorations of the Foyle catchment, have led me down one of those roads to a small townland of just under 30 acres called Dunnalong. What unfolded was the life of a community intimately connected to the river. The river is in their blood but this is changing.

There are many ways of getting to Dunnalong by land and water. By land, the easiest way is down Meenagh road, just as you come to the end of the climbing lane out of the village of Magheramason. However, you soon realise that when you get to the riverbank, that the road was not an end, by simply a connection for a ferry crossing. What you encounter is a quiet place, largely untamed, calm and contemplative with little or no human activity. This was not always the case.

One of my first visits many years ago was with William Roulston to the site of the Dunnalong fort. A few things amazed me – firstly, how there was not a trace, above the surface at least, of a fort that once housed more than 1000 men and of which contemporary maps and accounts showed a substantial fortified settlement with its great 'bruehous' sited right on the waters edge and a market-place within its walls, to trade with locals and soldiers alike. A fair was to continue here to the early 20th century. Had things been different, this may have been our Derry~Londonderry! At times on the riverbank the past seems very near.

However landscapes change and people change but there is continuity in the river that keeps it own time. For most there is little connection with the river now, so much has changed and yet many knew little of its existence. What is most noticeable about this tiny townland is its relationship with this river – a place of immense strategic value, a landing place for Scottish galleys bringing mercenary soldiers to the Gaelic warlords of the northwest, and as a river crossing, its importance is centuries old. These ferry crossing places are humbling, for they are landmarks that speak of habit rather than suddenness. Crossed by innumerable feet they are records of journeys to market, to sea, to worship, to courtship. To stand here is to access a world of deep history. Rivers may have formed borders in ancient times between feuding kingdoms, but for many of this area the river was a great connector.

As William Roulston (snr) whose family have farmed in the area for generations, says "There was a lot of marriage across the river... my mother came across from the far side... yet most would not

know anyone across there now." He recalls fondly people from across the river coming to visit his family on a weekly basis. Clearly the ancient river crossing between Dunnalong and Carrigans in Donegal continued to be an important communication link until the first half of the last century. How many journeys have taken place across here, to here and from here? The river brought the earliest peoples in and brought others away. From day one the Foyle was a great entry point. Brian Lacey calls it, our equivalent of the Boyne valley. To understand the people and the place of Dunnalong we have to look first to the Foyle itself and its precious inhabitant, the salmon.

The Foyle and salmon

As I stand at the riverbank at Dougie Jamison's farmyard I am aware of the presence of seaweed and thrift (seapinks) growing abundently. This is brackish water whose tides are dictated by the moon and the tidal surge of the North Atlantic. Lacey (2009) contends that in ancient and medieval times the modern terminological distinction between the river and the lough apparently did not form part of Gaelic geographical thinking. The people who lived in early medieval times along the east bank of what we now call the River Foyle, were known as the Uí Meic Caithhinn Lócha Febail (of Lough Foyle). In the minds of medieval people the lough was seen as continuing right up to what is now Lifford, where it is joined by the Rivers Mourne and Finn. The Foyle is still tidal to this point, and remains so for another few miles upstream beyond this junction.

We forget how big the Foyle catchment is. The river catchment area covers a drainage basin more than 50 miles long north to south and approximately 30 miles wide east to west, in all, roughly 3,600 sq km astride the border in the counties of Donegal, Derry and Tyrone. Some 900 miles of rivers and streams in all. These flow from the Sperrins and the Bluestacks down two great valleys and past Dunnalong – gateways in the past for early settlers, monks, Plantation farmers and marching armies, and later still providing natural routes for roads and railways.

You cannot have a conversation about the Foyle or Dunnalong without having as its central character, the salmon. Ecologists have long recognised that some species, by virtue of the key roles that they play in the overall structure and functioning of an ecosystem, are essential to its integrity. Similarly, in our culture there are animals and plants that underpin that culture and without which society would be completely different – none more so than the Atlantic salmon (Salmo salar) of the Foyle river system. The salmon has more lore attached to it that any other species. It was used as a symbol by the ancient poets, not only due to mystical ideas but also to the fine taste and nutrition of the fish (Ó hÓgain, 2006). Records point to archaeological evidence that Neolithic farmers suffered severe scarcity of food in winter. Preservation and storage of food was not easy. However, large salmon in the peak of condition entered the Foyle soon after mid-winter and made their way upstream to spawn. The salmon run continued until at least the month of May and so enabled the communities of these river valleys to survive. It may be no coincidence that the greatest sites of Neolithic civilisation known to Ireland were at the Boyne and the Bann. It is no coincidence that the easy access to a source of food such as the salmon would have been a major factor in the situation of a fort. The river valley's diet would have been well known to those in less favoured regions. What applied to the Boyne and the Bann would have also applied the Foyle. Moody records that:

> The salmon fishing of the Bann and Foyle, particularly the former was far – famed. It was estimated that in 1609 that these rivers yielded 120 tons of salmon annually and in 1635, at Coleraine alone 62 tons were taken in one day (Moody, 1938: 1; Curl, 1986: 20).

In 1609, the wealthy companies of the City of London were approached about undertaking the "planting" of this stretch of country. A form of prospectus, dealing with the advantages and profits likely to be derived from the proposed plantation, was prepared and submitted to the city of London. The prospectus was entitled "*Motives and Reasons to induce the City of London to undertake the Plantation in the North of Ireland"*, and it is interesting to note, that it proposed the Londoners should be granted the rights of salmon fishing on the Foyle and the Bann which at that time were estimated to be worth between £800 and £1000. Initially, the London merchants were not enthusiastic, but they were eventually persuaded to view the prospective territory. The river systems were vital to the project. Salmon, among other items were sold to members of the 'viewing' delegation from the City of London's Common Council, at a low price, no doubt in an endeavour to convince the members of the delegation of the quality and nature of the many products available in Ulster and thus induce the City of London to go ahead with the scheme. (Curl, 1986; Moody, 1939; Foster et al. 1997; Hadoke, 1972). Sir Thomas Phillips, in the Londoners guide for the Plantation of Londonderry, described the Foyle "as rich and fruitful as anywhere in the realm" (Phillips quoted in Moody,1939: 44). The 1837 OS Memoir recorded that 121 tons of salmon were taken in 1721 on the Foyle and that the yearly average for the Foyle was 17,363 fish. The salmon was popular, being readily obtainable without the trouble or expense of going to sea or even sitting on a lake. But unlike other fish, salmon would keep its flavour for some days after death and could be transported easily. They were a shippable and sellable commodity and Dunnalong fish were to be found in the markets of London.

The salmon fisheries of the Foyle have been in the control of various bodies through the centuries – the Church, The Honourable The Irish Society, Foyle Fisheries Commission and now the Loughs Agency. The history of this ownership and management could fill volumes alone such is its complexity.

Fishing – Legal and Illegal

It is easy to underestimate how big an 'industry', both legal and illegal, that salmon fishing was until recent times. Indeed, in researching this article some folk made it clear that they wanted to remain anonymous such is the emotion around the subject. The fishing families had a knowledge of how the river 'worked' and agreed among themselves to regulate the fishing. As one fisherman said "Each family had different shots in the river as far back as I can remember ... everyone respected these ... I can count up to 100 shots on each side of the river." There is a whole way of life associated with the salmon season that had social and economic consequences, as explained by a local woman,

> "The whole family life revolved around the river, tides and lunches ... all the family were involve. Growing up everyone knew the times of the tides even the pubs had special hours, fishing licences ... fishing supplemented the family income. Children got shoes and new lino was put on the floor.. it was great crack and any fish other than the salmon were shared out ."

William Roulston says that all farmers along the river around Dunnalong had licences to fish and there was a lot of money to be made in times when farming was not all that lucrative. To understand how it worked and the extent of the operation, I visited Tom Casey, a Strabane man and one of the few local salmon dealers who worked the river. Tom begins by explaining how the river was divided up into a number of stations, better know as shots for which licences were issued, sometimes to individuals or syndicates by the Foyle Fisheries Commission, laterally the Loughs Agency. Each of these shots had a local distinctive name usually based on the landowners name or some topographical feature. At its peak there were some 523 licences issues for the Foyle estuary covering some 100 shots. This was down to 205 in 1980, 30 in 2009 and has now ceased as the numbers of salmon entering the Foyle are deemed too low to allow draft net fishing. The licence did not stipulate which shot the holder must use for his net but they generally "agreed" this on proximity or tradition. There could be many licences at any one shot. In order to agree the order of fishing, known locally as

the "round", the fishermen would arrange for ballots to be held prior to each season in order to determine the order of fishing at each station. Tom tells of how, this time was often limited to half an hour due to the tides. He and his extended family collected the fish by the tides, twice a day. Every two weeks the high 'spring' tides reached their maximum two days after the full moon, while the low 'neap' tides occurred at the time of the half moon. The highest tides occurred at the equinox. The close season Tom tells me, operated from September 1st to April 30th and the weekly close time extending from 06.00 hours on a Saturday to 18.00 hours the following Monday.

The Casey family worked the shots from Culmore to the Gribben, twice a day depending on the tide. "My uncle Tom collected at Culmore, my father at the Dunnalong bed, myself at the Point or Tolands bed, my brother Frank at Magee's bed and my brother Liam at the Gribben." The extent of what they collected per day at peak times was huge, with Tom indicating that it could be between 100 to 150 boxes, each containing at least 10 fish. "Things were different in those days, we carried £400-£500 cash in notes tied with a piece of string."

Jimmy Hamilton, a retired local shopkeeper and fisherman tells of how the biggest salmon that he ever caught (legally) was in 1972, and weighed 26lbs. He says that the average at that time, was about 19- 20 lbs which he mostly caught at Dunnalong. In one year he remembers catching 900 salmon in 6 weeks. "We bought a washing machine with the money that year… The next year it could have been 400 but that was that, there were good years and there were bad years." The Casey family were only one of a few salmon dealers working in the Foyle area, indeed Jimmy Hamilton remembers at least five operating in the Dunnalong area. Tom says there could be up to 70 licences at one shot and up to 30 fishermen at Dunnalong alone, often living in hedges and under whin bushes between tides.

I myself, remember as a child, seeing the Gallaghers and the Middletons from my home parish, which was only some five miles from the Foyle, preparing two ancient buses that they would use to live in, on the banks of the river for the fishing season. There seemed to be something exotic about these men heading off to live on the riverbank for some six weeks. According to some a disused bus was a good place to sleep, as men were sleeping anywhere along the river, most surviving on around four hours sleep per night. I envied their trip, never thinking of the future of salmon stocks. "We thought it would last forever" the Gallaghers said. Salmon are so much part of the culture of the river and evoke strong feelings. People have indicated how they were tied to the entire history of the area, including the transportation system: "Salmon is a very emotive issue and if you are not a salmon fisherman it is sometimes hard to understand the logic of some of these people ... there is a long history of arguments..it all started many years ago when salmon were an easy and cheap source of food ... they were easy to harvest and so very profitable ... this was the main reason for the train to Derry ... to get the salmon to London. The railways and the salmon declined together. In 1965 the railway closed and in 1969 the Troubles began."

Poaching

Salmon fishing and poaching are very much part of the folklore and tradition of the Foyle system. This was facilitated in many ways by the creation of the border after Partition in 1921. Indeed the creation of the Foyle Fisheries Commission in 1952 was largely in response to poaching which had to be tackled on a cross-border basis.

On the issue of illegal fishing, Jimmy Hamilton explains that the legal fishing was done with draft nets which were licensed for use in the river and Lough Foyle. Drift net licenses were issued for use, outside Lough Foyle but these were the method of choice of the illegal poaching trade.

Jimmy Hamilton who fished legally with draft nets, tells how he also poached with drift nets.

"Then, the salmon more plentiful and ballifs slower… we poached as far as Prehen. I remember one night, my wife and I shot a net about 200yrds long at about 9 o'clock at night and we went up to Harkin's bar for a few drinks. We came back at 10.45 and we had 37 salmon in the net."

Jimmy recalls how, just as poaching ran in families, so did the occupation of water baliff, "I remember three generations of the Patterson family who were bailiffs based at the Gribben... I can still remember looking out for the light of their pipes in the night when we were out poaching." He also remembers buying a minivan for £439 in the '60s and using it to transport fish. He was caught poaching once in 1979 and fined £85 at Strabane court. He quit after that, as from then on they could confiscate your vehicle too. One fisheries official told me that,

"Poaching always straddled the border as did smuggling. Island Mor, Porthall, McKinney's Bridge and Mary's Pool were great spots for poaching. The poaching had died down but it's coming back with the credit crunch."

It seems that the current crisis is putting added pressure on our salmon stocks:

"We work very hard as this is a serious problem. We have confiscated more than 40 illegal nets on the Finn and Foyle so far this year. We have also successfully prosecuted a number of local people in the courts. And the reason that we spend more time policing the Foyle is because, if we do not, the fish will not even reach the Finn."

Whereas poaching may be on the increase, legal salmon fishing is lamented as a way of life that has passed, "The salmon fishing always started on the 15th June. It's a short season of 6 weeks, 24 days. I was fishing like this since I was 13. Back then it was from May till the end of August. Out for 16 weeks at every tide ... from Derry to Lifford... there are now no licences but back in 1980 there were 205."

Fishermen have always been aware of fluctuations in salmon numbers but they are now aware that there is something much bigger happening to the salmon population and speak with a sense of dread and loss, "There were many more salmon in the river forty years ago ... I don't think they will come back ... you always had a few bad years but not like this." They were conscious of the ecological value of the salmon even though they may not have used this language, "What's good for the fish is good news for the whole river." As of the summer of June 1st, 2010, the Loughs Agency has suspended commercial netting in the River Foyle and restricted angling in the Finn and Foyle to a "catch-and-release" basis. This is due to the fact that the number of salmon upriver of the Finn fish counter has not exceeded 5,410 in the past five years. This is the optimum figure stipulated by Loughs Agency for salmon resilience in the system. Salmon populations are declining and science seems divided as to the cause of this. It appears that there is something happening on the macro level worldwide rather than simply the micro level in the Foyle catchment (Folke et al. 2004).The managers of fisheries today have to face the prospect that no matter what they do in management terms, external factors beyond their geographical jurisdiction could undermine this ecosystem resilience. Climate change is one of these factors (Hanna, 2008; Healey, 2009; Whelan, 2009). Salmon are sensitive indicators of so many environmental factors. What is good for the salmon is good for us all.

The question of the scale of fishing was an issue back in 1906 when Alfred Munn addressing The Honourable The Irish Society posed the question: "Is it better that 1,400 men should cease fishing for salmon for five or six weeks and fish for herring, white fish, lobsters, etc or that some 860 men should go out of employment altogether; also that anglers should cease to come to these rivers, and that hotels' fishermen etc. should also lose their employment. And further, when protection had so ceased and the salmon fisheries were depleted, that then these very 1,400 should also be obliged to stop fishing for salmon for these very five or six weeks because there would be no salmon to be caught" (Munn, 1906: 33). These debates about the river are not new but all seem to originate in the 17th and 18th centuries with issues of ownership and a new economic and industrial system.

Farming and landscape changes

Towards the end of the 19th century the farmers in the Bready area, as elsewhere, took advantage of a series of acts of parliament to buy their holdings and thus own their farms outright. Thus the Abercorn estate was gradually broken up as the farmers, many of whose families had been tenants to the Abercorns for more than two hundred years, became proprietors in their own right.

As the population of Ireland expanded in the 18th and early 19th centuries there was increasing pressure on the available agricultural land. This caused expansion into previously uncultivated areas. Bog in the low lying areas was steadily exhausted and the ground converted into arable land.

Along the Foyle an embankment was constructed in the early 19th century allowing an extensive area to the reclaimed and turned into agriculturally productive land. This was most noticeable in Grange Foyle. Without this, William Roulston tells me, the water would still come up to the main Derry road at Bready. The 1858 Ordnance Survey map of the area shows the elaborate drainage system in this townland and the regular plantings of trees in what was an important example of landscaping at the time. The use of lime had become widespread in the 19th century. Other fertilisers and manures which were used in the district included farmyard manure, sea shells, bone dust and guano. William Roulston proudly shows me a collection of conch shells that he has collected from one of his fields, obviously imported from further out in Lough Foyle. Records show how all along Lough Foyle there was a business in collecting shells to send inland to fertilise the fields.

The ground is now good 'fattening' ground, but like all fluvial valleys that are rich in minerals washed down from the mountains, they can be wet. Without an elaborate system of embankments linked to drains and sluice gates the area would flood easily, "Much of it is still wet ground, with an underlying blue clay... some field s are even known as the 'Blue Clay Fields' One of the shots was even known as the Blue clay", William says.

This brings up another related Dunnalong subject, that of brick making, which was very popular in the area due to the presence of this blue clay. It is estimated that brick making had been going on in the parish since at least the early 18th century and by 1770 there were so many people in the area making brick that there was a glut on the market. Indeed due to Dunnlaong's proximity to Derry, it is probable that much of Georgian Derry and later, was built with Dunnalong brick. William Roulston tells of how this continued until the 1920s and was carried on by his grandfather. "It was made on the far side too and being so close to the river it was easy to get them by boat to Derry... many of the fields about here are still full of brickholes where the clay was extracted from before being moulded and fired."

What emerges about the Dunnalong area is a place in which life is so connected to the river. But what of farming today? The fishing and the brick making have disappeared but this rich land is still farmed. The Roulston family can trace their farming legacy to the townland of Gortavea, having come there some 180 years ago from the Castlederg area and buying out the two Hamilton farms in 1830. William snr recounts the dramatic changes in farming as up until the '30s and '40s the farming was mixed on a rotation basis – mostly arable. "Everyone grew a mix of potatoes, barley, corn/oats and turnips... but the change from hay to silage making came with the late '50s. We had a silage pit in 1955... it was a real breakthrough ... you couldn't make hay now. So, what happened in the area was more and more farmers specialised... one farmer would grow most of the potatoes in the area, whilst another grew most of the barley and so on... but this is now changing again... we are going back to more native breeds.. this is good fattening land."

Fair, ferry, sand and woods

One important connection to the Plantation settlement and fort at Dunnalong was the fair that continued until about 1912 and the ferry that continued until the 1920 on an ad hoc basis. It was obviously a very wooded area at one time. A large number of the letters in the Abercorn correspondence are concerned with the woods in the Abercorn estate, particularly those in the manor of Dunnalong, where the woods included Tullyard, Castlemellan and Dunnalong, which took in parts of Menagh Hill and Magheramason. By the end of the 18th century Dunnalong wood was no more. Talk of wood prompts Jimmy Hamilton to recall how the river was a great source of logs that were washed down along the river bank, "We were steady down there, especially between the Gribben and Roulstons.. we were taking logs away by the trailer load.. the river was good to us." Another change did not happen on land but in the river or riverbed itself to be exact. Tom, Dougie, William and Jimmy have all noticed major changes in the sandbanks of the river – some old ones are gone and new ones have appeared. But then that is the nature of rivers although some of the changes may not be natural, sand extraction still exists on parts of the river to this day.

William Roulston says there was no fear of the river when he was a child, "As children we were let down to the river from 9 or ten years of age.. we would have got it any boat, there were so many along the bank then and went for a paddle and then left the boat back where we got it.. nothing said and allowed by all." That connection is now gone for most. Man's dependence on the river has changed, so that is no longer immediate but distanced. The river is often relegated to history. It is time that the human ecology of rivers, a fascinating record of human ingenuity and endeavour, was rediscovered, and re-appreciated. This is no plea for museum status for the river. It is a plea for understanding, appreciation and appropriate consideration of the rich heritage of the Foyle. These 30 acres of townland on the Foyle may undergo many landscape changes in the future. The river may once again become central to the people's lives, it may yield new energies and sources of food once again but it must be cared for and appreciated by all even if we do not live on its banks.

MARGARET EDWARDS

Archaeology, Museums and Community Engagement

Museums and archaeologists work closely to make sense of the human past. This partnership aims to enable the public to learn about the past and in turn interpret the present. The community archaeology project at Dunnalong in August 2012 is a good example of this partnership.

During the Renaissance it became popular to visit monuments and collect works of art for aesthetic reasons as opposed to medieval religious reasons. This idea spread to Northern Europe and educated people of sufficient financial means began to visit Mediterranean centres of Classical civilisation in Italy, Greece, Turkey and Egypt. This led to the purchase of antiquities as souvenirs and the creation of collections.

A museum opened in Oxford in 1683 to house the collection of John 'Gardener' Tradescant. It later moved to the 19th century building now known as the Ashmolean Museum. The Renaissance idea of collecting contributed to the establishment of public museums. The 18th century saw the establishment of national museums such as the British Museum in 1753 and the Louvre in France 1793. The Ulster Museum was founded as the Belfast Natural History Society in 1821 and began exhibiting in 1833.

Museums have gone on to become the first point of contact with archaeology for many members of the public. The essential features of the early Ashmolean Museum (collecting, scholarship and public display) are now accepted as integral parts of museums.

However this partnership has become more noticeable since the 1980s when the word "heritage" became popular and heritage management has developed as a major industry. This has helped to further the relationship between museums and archaeology. The rise of heritage has also coincided with a post industrial society in which leisure, tourism has replaced manufacturing. This has led to a growth in visitor attractions and museums whose aim to raise their public profile and also generate income. Since 1994 more than £5.3 billion has been spent across the UK by the Heritage Lottery Fund on heritage projects. This has played a major part in bringing museums and archaeology closer together.

An ancient site or historic building open to the public will be preserved as far as possible in its original form. However a museum is a modern creation built around the display as determined by the museum staff and designers. Often older museums would have presented the artefacts in chronological order and place of origin and focus on the objects with little documentation or interpretation.

Paul Logue NIEA and Linda Langford archaeologist at the Thornhill Unearthed exhibition in the Tower Museum, Derry ~ Londonderry.

However many museums today use a range of interpretative methods to enable visitors to access the past such as audio visual displays, interactive elements and living history. This understanding is enhanced by placing objects into context with the help of models and reconstructions, greater use of illustrations and captions to provide further levels of access. Museums are powerful in helping to shape society's ideas about the past.

Societies such as the Society of Museum Archaeologists exist to promote museum involvement in all aspects of archaeology. Their aim is to emphasise the unique contribution of museums to the archaeological profession. Museums play a very important role in promoting greater public understanding of the archaeological past and the importance of archaeology. This society and other bodies such as the Northern Ireland Environment Agency and the local universities work towards placing museums as the custodians of a vital part of the nation's heritage and a good place to store and interpret archaeological material. This relationship is beautifully illustrated through this project at Dunnalong. Here the museum staff and the archaeologists have collaborated to uncover the past stories associated with Dunnalong and work towards displaying the finds and making these stories more widely accessible.

A clear example of museums and archaeology working together can be seen at the Tower Museum Derry~Londonderry. The exhibition , 'An Armada Shipwreck – La Trinidad Valencera' tells the story of the discovery of the wreck of La Trinidad Valencera and the excavation of the wreck by a team of underwater archaeologists in the 1970s. The items discovered were then conserved by staff from the Ulster Museum. The exhibition opened in the Tower Museum in 2005 with a range of objects on loan from National Museums Northern Ireland.

A more recent illustration of this relationship was the temporary exhibition at the Tower Museum, Thornhill Unearthed, in partnership with NIEA. In 2000 whilst building was underway for the new school for Thornhill College, Derry ~ Londonderry, an excavation was carried out by NIEA. During the excavation a significant Early Neolithic settlement was uncovered dating back to around 5,500 – 6000 years ago. This exhibition, which opened in February 2013, displayed

archaeological finds from the Thornhill site and also provided interpretation of the Neolithic settlement thus showing that by working together museums and archaeologists can enable visitors to gain a better understanding of the past.

The relationship between museums and archaeology has been further developed by the rise of popular archaeology in the media. Programmes such as Channel 4's Time Team in which an archaeological puzzle is investigated and solved over three days introduced the general public to a wide range of archaeologists and archaeological techniques. Such television programmes also give a positive view of archaeology and illustrate the way in which archaeology works alongside science, geophysical surveys and historical and museum based research work towards creating a rounded interpretation of the past. Through the project at Dunnalong, we have been able to bring together a range of archaeological expertise. We have examined the techniques used in both land based and marine based archaeology. This has included giving volunteers a hands - on experience of different archaeological techniques such as geophysics, LiDAR as well as more traditional methods of field work.

Community Engagement

Outreach projects are a way in which museums and archaeologists can connect with and involve the public. These types of projects can generate mutual benefits for archaeologists, museums and the wider community. Outreach can promote the sharing of skills and knowledge and increase the public's awareness of the role and work of museums and archaeology. By involving the wider community in archaeology, it helps to ensure the importance and relevance that archaeology has on society and how it shapes the place where we live. Outreach projects that also involve young people are very effective in making them feel part of something tangible. It is recognised that if a person knows more about their community, its history and how life was lived there, it often strengthens the sense of identity and in turn the local environment becomes more meaningful. The Dunnalong project presented the perfect combination of rich archaeological potential as well as a wonderful site where volunteers could be given greater access to literally placing their 'hands on history'.

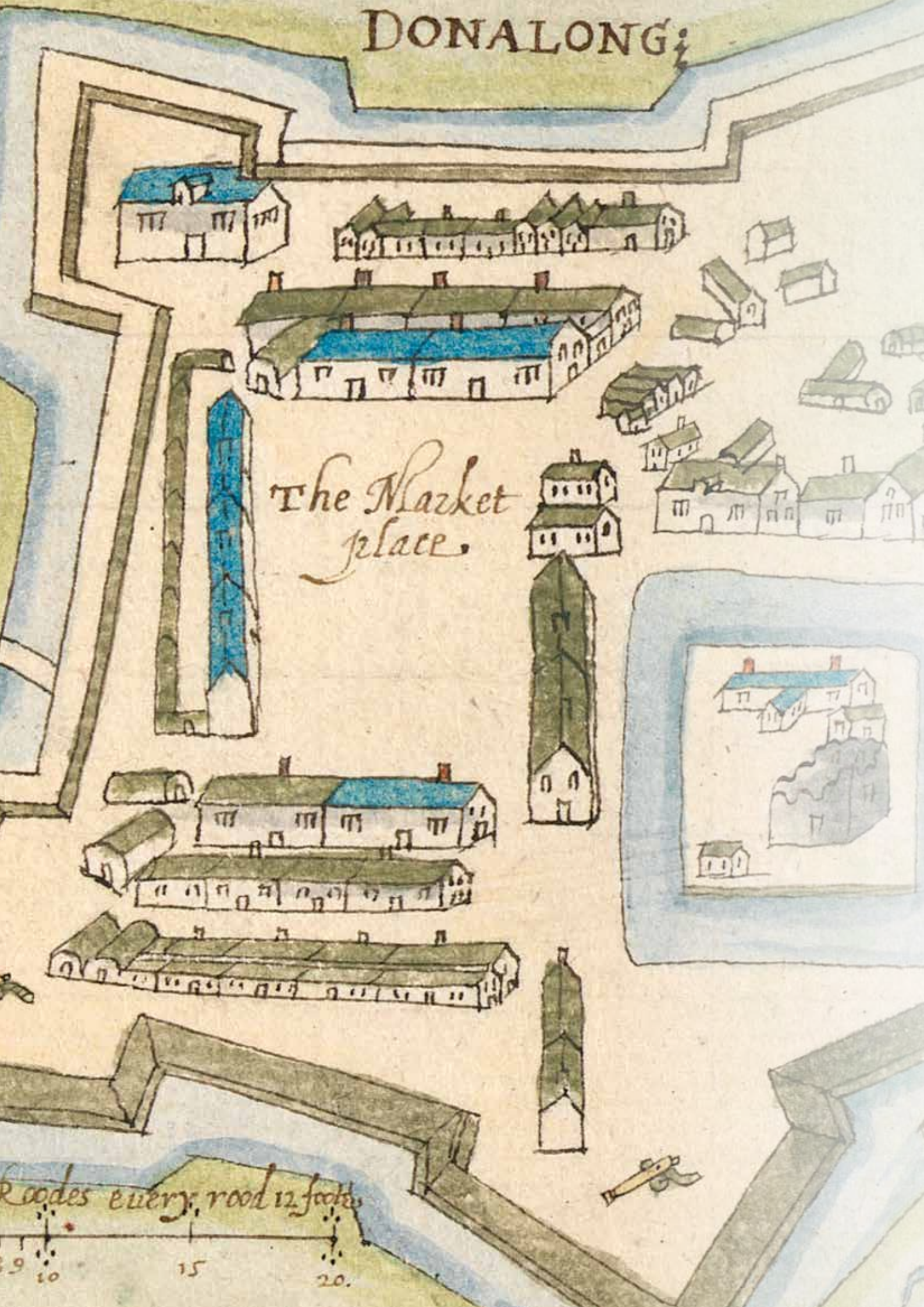
Community archaeology has recently become a popular term in archaeology and opportunities to take part in this kind of activity are on the rise. It describes the activities of work carried out by professional archaeological organisations and institutions in which public involvement is actively encouraged. It can also describe activities that are initiated and led by local communities themselves, such as historic building conservation, landscape survey projects and of course excavations. Organisations such as the Council for British Archaeology or statutory bodies such as the Northern Ireland Environment Agency have championed the role of the voluntary sector in archaeology. The excavations and maritime work at Dunnalong is only one example of such type of community archaeology in Northern Ireland.

Community archaeology projects work at the heart of a community. Such projects encourage communities to see that statutory bodies and local authorities value heritage, museums and archaeology. It helps promote the work of museums and archaeologists and give greater weight to the need to support it and give it the place it deserves at preserving our heritage for future generations.

Getting volunteers to take part in an excavation can lead to many benefits. It is a powerful, hands-on method in helping people to gain a deeper understanding of the past and at the same time can lead to a growth of self esteem and worth. It helps to instil a sense of belonging and community to people living in areas that may have been centres of social or economic depression. This is reflected by the comments from our community participants.

The community dig undertaken in Dunnalong, County Tyrone in August 2012 is an excellent example of an activity designed to bring people from the wider area together to work at uncovering the past. The act of working together is also at the heart of the PEACE III Plantation to Partition and Foyle Landscape Programme aimed at creating opportunities for people from different backgrounds to come together to find out more about our shared heritage.

At a time when museums, heritage and archaeology are under threat from cuts to public spending and funding, the positive experience of partnerships which bring local people closer to their own heritage cannot be underestimated. The overall message is that museums and archaeology have an important fundamental relationship and that projects which promote community archaeology and heritage are diverse and wide ranging and above all fun.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Section Two

The 2012 Dunnalong Archaeological Project

Dunnalong Today

The previous section has shown that the fort at Dunnalong is well marked in the pages and documents of history, and the significance of the place is embedded both in tradition and in the memories of the local people. Today, the area is serene; the modern townland of Dunnalong lies on the southern shore of the Foyle in north Co. Tyrone. It is the smallest townland in the parish bearing the same name, and contains an area of just over 12.5 ha. The green fields of the parish form the lands of Dunnalong Farm and are largely given over to pasture. There is little obvious indication of the site's former significance.

As the site is currently in private ownership, it is protected under the terms of the Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995. Effectively this means that all applications for invasive work are carefully monitored by NIEA so that any impact on the remains of the fort can be avoided. The scheduled area includes two fields, one on either side of Dunnalong Road. We have labelled these "Field 1" to the west of the road and "Field 2" to the east (Figure 01). A number of small undulations in the ground surface in Field 1 have traditionally been said to indicate the position of the fort, but the first edition of the Ordnance Survey (OS) 6-inch map dating to 1833 shows the outline of the fort occupying a significant area of both fields (Figure 02 – the 1833 OS map). The depiction on this map is significant as, unlike the campaign maps referred to earlier it has been metrically drafted and intended to illustrate the actual form and dimensions of the features shown. It depicts the fort as a subrectangular area, measuring approximately 108m north-west/south-east by 92m north-east/south-west with four irregular, unmatched bastions. It had been bisected by the Dunnalong Road, with the largest portion to the east of the road. In this field (Field 2), the northern, eastern and southern bastions were shown, although the northern bastion appeared to be both truncated by the road and partly incorporated into early field divisions. The eastern bastion was shown as a broad, curved protrusion that may have been the damaged remains of a full bastion, while the southern bastion was much smaller, with a more elegant curvilinear profile that may again have been intended to represent the remains of a full bastion. To the west of the road, the western bastion had a flattened, angular appearance, possibly depicting a demi-bastion.

To the east of the fort is an additional feature of interest, shown expanding from a stream or watercourse. It appears to form the shape of an external bastion, mirroring the form of the eastern bastion of the fort, before continuing into the Foyle. Given its pointed form, it seems certain to have formed part of the English fort and it may mark the line and position of the 'trench cast up' for the safety of the settlement outside the fort described in the key to Map B (page 17) and that is depicted on both Maps A (page 16) and B.

By the time of the second edition of the OS (1850-55) the outline of the fort had disappeared, suggesting that the land may have been levelled or improved in the intervening years, removing most traces of the earthwork. The site of 'Dunnalong Fort' is indicated on all of the maps from

1905 to the present day as being close to the shore of the Foyle, and it may be that this is an indication of the location of the Gaelic castle, rather than the 17th-century earthwork fort. In any event, the labelling as the 'site of a fort' suggests that there were no visible remains in the 20th century. The angular feature to the east is shown on all of the OS maps up until the end of the 20th century, but is no longer visible today. All of the field boundaries that define the modern area were shown from the 1905 map and appear to have altered little in the interim.

The 2012 archaeological work

At the outset, the 2012 Dunnalong archaeological project was equipped with the existing historical and documentary evidence, and inspired by the interest and memories of the local people for the hidden site in their midst. While these records and the testimony of local people hinted at the supposed size, shape, outline and position of the fort, the archaeological team aimed to test these records by the application of modern scientific techniques and archaeological methods. The objective was to conclusively locate Dunnalong Fort in the landscape and, once this was done, to investigate the makeup and composition of the fort and hopefully to see if any evidence could be found of the various features it enclosed, such as the Gaelic castle, the brewery and the garrison cabins. The waterways around Dunnalong were also to be investigated as these provided the main means of transport to and from the fort in the 17th century, and probably for many centuries before. The archaeologists brought with them a range of expertise and techniques to achieve their objectives. In the following pages each of the archaeological experts who worked on the project describes the work they carried out at Dunnalong, outlining the scientific techniques they used and, most importantly, the results of their work and the new information they discovered about Dunnalong Fort and its environment.

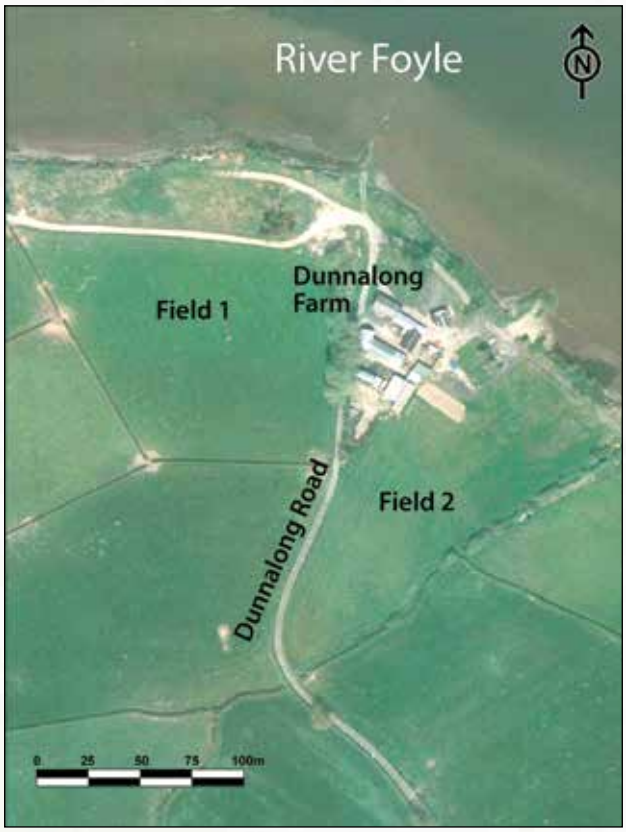


Figure 01. Dunnalong today, showing the fields where the 2012 archaeological project took place.

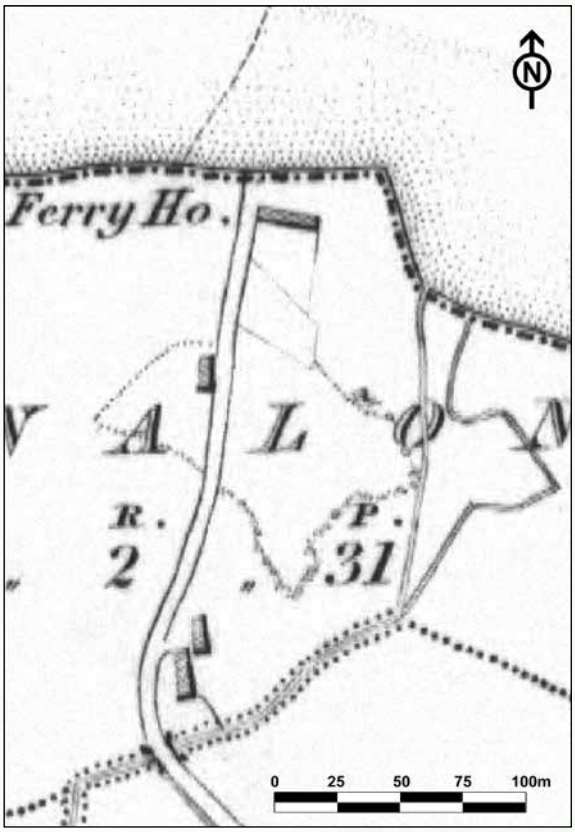


Figure 02. Excerpt from the 1833 OS 6-inch map, showing the ruins of Dunnlong Fort as they survived in the 19th century.

RORY McNEARY

Maritime archaeology and the river

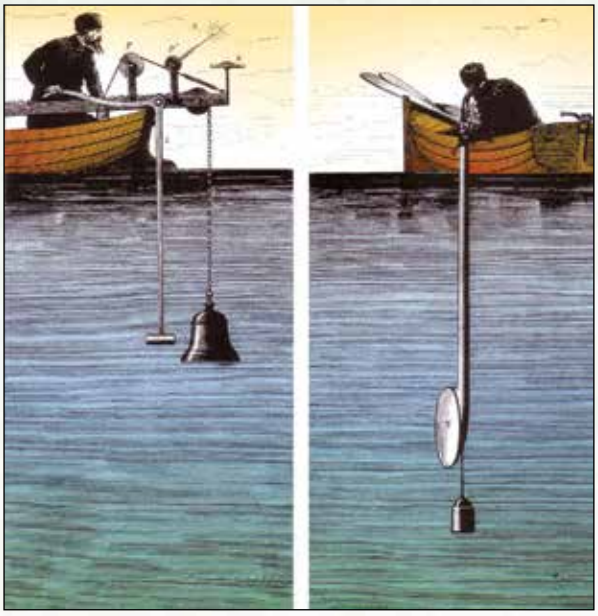
Maritime archaeology is a formal discipline within archaeology that is concerned with the study of man's interaction with the sea, lakes and rivers (Delgado 1997). More of often than not it is the shipwreck that captures the public imagination but maritime archaeology reaches far beyond the limits of ship archaeology. It requires much broader definition, to include the study of the archaeological remains of lakes, rivers, wetlands, harbours, associated dryland sites, and the applied technology which enables archaeologists to recover information in a scientific manner (O'Connor 1992).

Given that Dunnalong has an obvious maritime context, situated as it is on a tidal stretch of the River Foyle; and, that the location has served not only as a settlement and fortification but also a ferry, fishery and port, it was decided that maritime archaeology would from an integral part of the wider archaeological study being brought to bear at the site. The Centre for Maritime Archaeology (CMA) based at the University of Ulster, Coleraine was charged with the task of surveying the riverbed and associated foreshore. The CMA conducts research, as well as promoting and addressing statutory issues, relating to Northern Ireland's maritime archaeology on behalf of NIEA: Built Heritage. It is the only agency active in underwater archaeology in Northern Ireland.

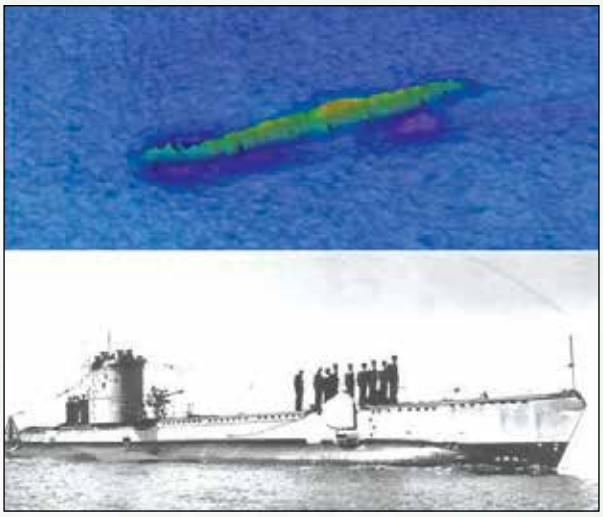
While a riverine heritage gazetteer compiled by the CMA in 2009 does record the location of fishing 'shots', the ferry (and associated causeway), landing places and two logboats hauled up in nets by fishermen in 1917 (Wallace 1917), no previous field study had been made of the riverbed or foreshore area. During the course of the two week project a small team from the CMA walked the inter-tidal exposures on the Dunnalong side of the river and carried out underwater remote sensing surveys of the adjacent riverbed. This work played an important role in extending the archaeological survey beyond *terra firma* and into the muddy depths of the river itself.

What is underwater remote sensing?

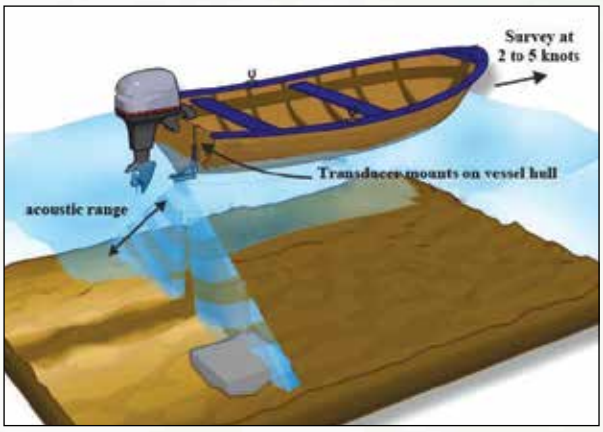
Since the 1960s a variety of marine geophysical techniques have been used to investigate submerged archaeological sites; the most commonly used methods are acoustic (sound or sonar) systems which include echo-sounders, multibeam swath systems, side-scan sonars and sub-bottom profilers (Figure 03/Figure 04). These systems have the advantage of collecting large amounts of information quickly and can overcome restricted underwater visibility that can hamper diver-led surveys. The survey team from the CMA utilized a single-beam echo-sounder (SBE) and a side-scan sonar (SSS) in order to produce a detailed bathymetric (depth) chart and a sonar mosaic of the riverbed. The team's system is highly portable, easy to deploy and perfect for shallow water usage as the transducers are small enough to be mounted aft on the survey vessel's transom (Figure 05).



Above: Figure 03. 'Old school' attempts to measure underwater acoustics (reproduced from J. D. Colladon, *Souvenirs et Memoires*, Geneva (1893)).



Above right: Figure 04. Sate-of-the-art multibeam sonar image of a U-boat wreck (U-1003) lost 1945 (lying off the coast at Portstewart) (image reproduced courtesy of Kieran Westley, CMA).



Right: Figure 05. Hull-mounted sonar system explained (image adapted from: http://www.engineerlive.com)

Surveying the riverbed

It was recognized by the CMA team that the river would prove to be a difficult environment in which to conduct a survey as no nautical charts exist for the river above Craigavon Bridge. What was known was that the river at Dunnalong is tidally influenced and strong currents may be encountered. The significant tidal range at Dunnalong can leave not only the foreshore but also mid-channel sand bars exposed at low water. The river runs on average at 4.5 knots but currents are even stronger on an ebbing tide and/or if the wind is from the southwest. With this in mind it was decided to carry out a reconnaissance survey of a 0.5km² area of the river adjacent to the site. The primary focus of this first survey was to collect depth readings across the channel so as to better ascertain hazards and inform further surveys at the site. Given that the opposing bank is in County Donegal in the Republic of Ireland, and the border falls somewhere mid-channel, permission was sought from the Archaeological Licensing Section of the National Monuments Service in Dublin and a 'Consent to use a Detection Device' was acquired.

A total of 28km of trackline data were collected during the course of this initial survey and 62 target anomalies identified from the side-scan data. This first survey provided a detailed snapshot of the underwater terrain, bedforms and identified areas of shallows/sand bars (Figure 06). Currently depths range in the channel between 0m-8m depending on the tide. The deepest part of the river surveyed is located in the northern half of the river in the Republic of Ireland, c. 7-8m deep at high water. In the large sheltered embayment immediately to the east of Dunnalong Fort depths ranged from less than 1m to c. 2m at high water. Within this embayment there is a bar c. 395m E-W by c. 78m N-S visible at low water and upon which there is a recognized salmon net 'hauling ground'.

This was used by salmon netsmen in living memory and represents an area of this natural bar which has been artificially raised by fishermen to form a cairn from which their nets could be deployed on a rising tide. This initial survey also recorded relatively deep pools at the terminus of both north and south ferry terminals/stone causeways. This latter finding seems to reflect a clear rationale when it came to the original siting of the settlement and ferry as these pools would have facilitated the loading and unloading of persons and goods at all states of the tide.

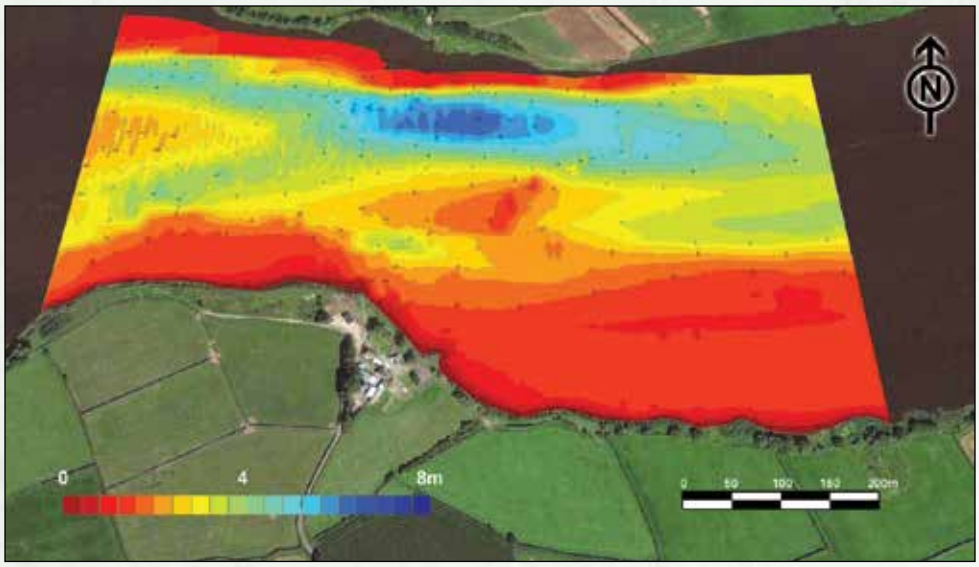


Figure 06. A colour isopleth map of the riverbed bathymetry at Dunnalong (red is shallow; blue is deep). Note the 'ferry pool' just offshore at Dunnalong (©Rory McNeary, CMA).

What is a 'target anomaly'?

This is a general descriptive term given to upstanding or stand-out material imaged during the course of an underwater sonar survey. Sometimes these anomalies are discernible, such as sunken boat remains, or some other recognizable cultural heritage material, but most times they are not and follow-up diver verification is required. There were over a hundred anomalies imaged on the riverbed off Dunnalong but unfortunately most are hard to readily explain. But given the sheer number we would expect some to be the remains of material associated with the settlement, fishery and ferry at Dunnalong.

In addition to these findings some very general statements can also be made about the nature of the riverbed sediment encountered in the locality of Dunnalong from both the geophysical data and observations made at low water conditions. East of the ferry causeway and taking in the large shallow embayment, noted as an area of deposition, the riverbed consists of a finer silty mud overlying more compacted sand and shingle. This more compact sand and shingle was evident at low water to the west of the ferry causeway and at low water on the sand bar exposures. Both the bathymetric and side-scan data also revealed extensive bedforms that would appear to reflect the action of strong current on a largely sandy bottom (Figure 08).

A second phase survey focused on a smaller 0.04 km² area in and around the identified 'ferry pool' on the Dunnalong side of the river and a further 6km of data were collected. This survey revealed 113 target anomalies (although admittedly some of these anomalies may be repeat detections of the same object on the riverbed allowing for position errors) with a particular concentration in the immediate environs of the 'ferry pool' itself (Figure 07). This 'debris scatter' imaged with the sonar equipment off the old ferry quay certainly indicates a zone of high archaeological potential and worthy of future diver-led underwater archaeological investigation (Figure 09).

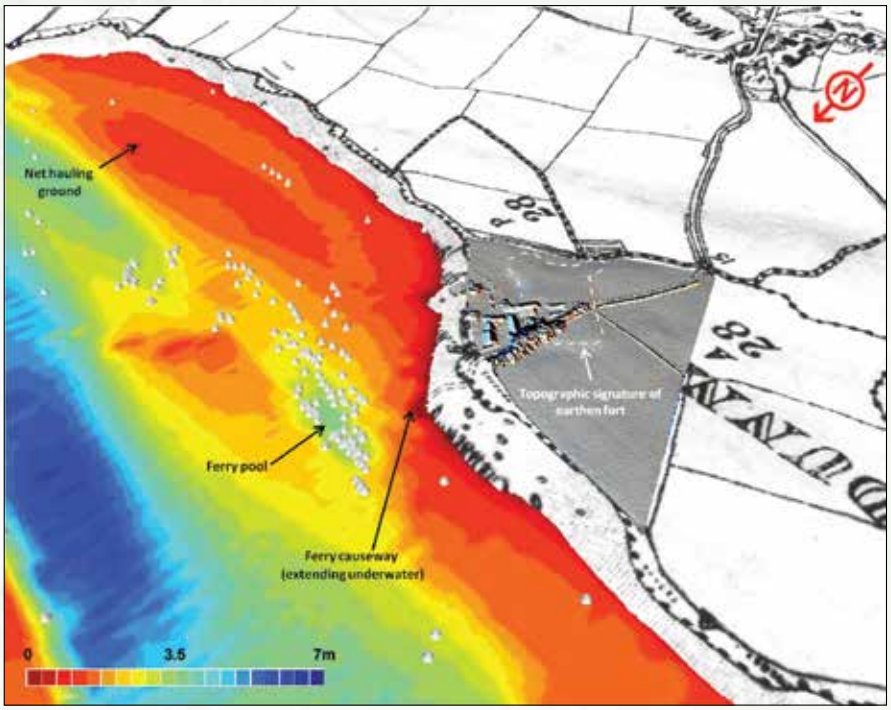


Figure 07. 3D data integration at Dunnalong; concentration of sonar anomalies in vicinity of 'ferry pool' indicated by white cones (©Rory McNeary, CMA; LiDAR source, Rivers Agency).

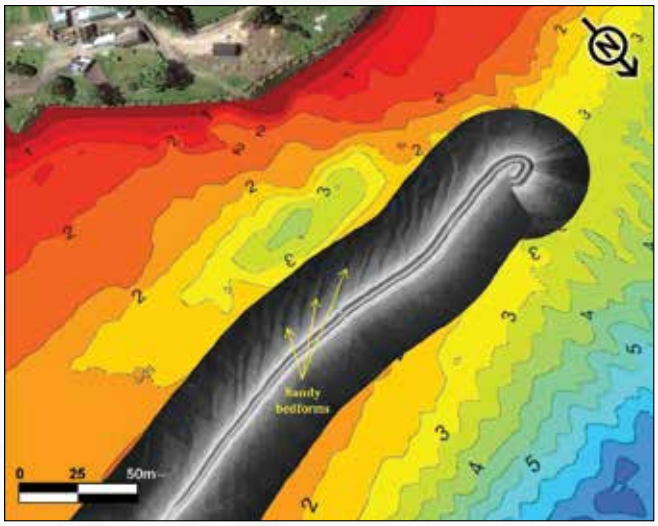


Figure 08. Example of sandy bedforms imaged with side-scan in the river channel off Dunnalong (©Rory McNeary, CMA).

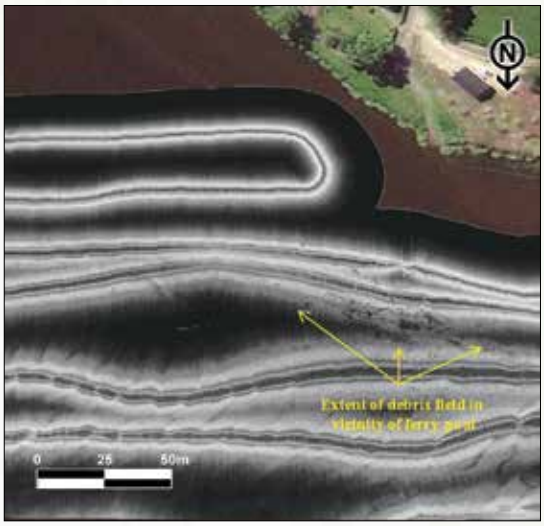
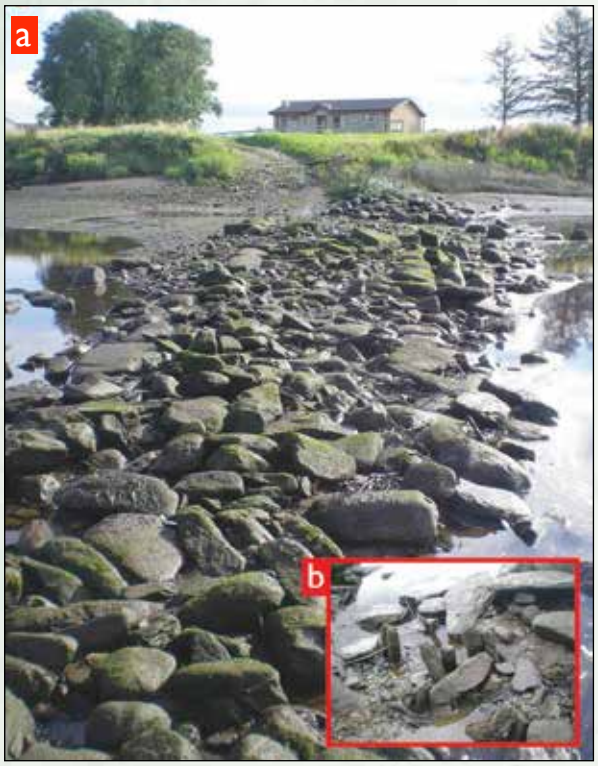


Figure 09. Extent of debris field as imaged by the side-scan sonar in the vicinity of the 'ferry pool' (©Rory McNeary, CMA).

Foreshore walkover survey

In the Sites and Monuments Record (SMR) file for Dunnalong it is recorded that: '…a stone revetment has been built to contain the river. This is recent and built by the occupants of the house. One cut-stone fragment – a window or door arch fragment – lies near this revetment and is the only 'object' which the owners report finding in the area. They maintain that it lies where it was found'. The aforementioned masonry fragment is now kept in the landowner's farmyard and would appear to be part of a door arch, perhaps from the original medieval Gaelic castle. In addition it is also reputed that an intact piece of wickerwork was also discovered on the foreshore in recent decades by the late Annesley Malley (Brian Scott pers. comm.); the location of this artifact is not presently known. Apart from these two instances of archaeological material being casually observed on the



Left: Figure 10a. Extent of ferry causeway exposed at low water. Figure 10b. Wooden stakes within quay structure (©Rory McNeary, CMA).

Above: Figure 11. Artificially constructed net hauling ground visible at low water (©Rory McNeary, CMA).

foreshore there would not appear to have been any foreshore examination carried out by archaeologists at any time in the past.

The CMA team carried out an inspection of the foreshore at low water during the course of the project and noted a number of interesting features; which included the stone ferry quay, the aforementioned artificial net hauling ground and reclamation features and/or a possible stone fish trap. In addition there were further small finds on the foreshore some of which might be worthy of future systematic collection and recording.

The stone causeway, or quay, associated with the ferry still reveals itself with every dropping tide (Figure 10a). It is located 70m north-west of the modern farmyard on the foreshore and comprises a low linear boulder spread c. 55m in length and c. 12m wide, orientated south-west/north-east. The former edges of the structure are still marked in places by larger smoothly-faced boulders aligned alongside each other and containing a rubble core of smaller and more irregular boulders. There is also evidence of wooden components, such as stakes, which are mentioned in a description of the process of refurbishing the quay in the late 18th century (Figure 10b; see Roulston this volume).

The artificial net hauling ground is visible at low tide conditions as a low stone cairn and is situated 480m to the north-east of the present farmyard on a prominent sand bar within the sheltered embayment to the east of the site (Figure 11). It was not possible to visit the site on foot due to the treacherous riverine muds that surround it and an opportunity did not present itself to land by boat. However, approximate dimensions can be deduced from the bathymetry and observations made from the shore. The stone cairn roughly measures 16m E-W and 10m N-S and is approximately 0.6-0.8m high. This net hauling ground would have been used to fish the four recorded 'shots' c. 325m to the north and located along the Drumnashear shore in County Donegal (Figure 12).

Also located in the embayment to the east of the site the team discovered some peculiar double-boulder alignments (Figure 13). These extend along the river bank and in one instance out onto the foreshore itself. These features are, in all probability, attempts to reclaim additional farmland from the riverine foreshore; a common practice undertaken by improving landlords in the 18th and 19th centuries. However, the double boulder alignment of these features reminded the maritime

archaeologists of medieval fish traps discovered in Strangford Lough; for this reason alone the team believes these features warrant a closer inspection (Figure 14).

In addition to these large man-made structures located on the foreshore a range of curious objects were noted lying around – the 'flotsam and jetsom' of any river bank, but, given the close proximity of the fort there is always the potential for associated material, such as pottery and other artefacts, to be found. A closer examination of the muddy foreshore alongside the fort by archaeologists is a must for any future studies at the site.

Figure 13. Double boulder stone alignment at Dunnalong; could this be a medieval fish trap? (©Rory McNeary, CMA).

Figure 12. Fishermen hauling nets on the Foyle c. 1928 (reproduction courtesy: Mr. Roger McCorkell).

Figure 14. Ballyurnanellan stone fish trap, Strangford Lough, Co. Down (image reproduction courtesy: Thomas McErlean, Rosemary McConkey and Wes Forsythe, CMA)

What was the Tod Stone?

During the course of the project the place-name specialist Dr. Kay Muhr brought to the attention of the team an unusual feature on the foreshore depicted on an old Ordnance Survey 6-inch map from the 1850s called the 'Tod Stone' (Figure 15). According to the map this large L-shaped stone is located c. 240m to the north-west of the ferry quay close to the low water mark and appears to measure 23m x 16m. The team failed to re-locate this enormous stone during the course of the survey. Has it been 'stolen' or could it have washed away? Or perhaps removed as a hazard to navigation? The past significance of this stone is hard to gauge. It was undoubtedly a naturally occurring glacial erratic but due to its size and location must have been a recognized landmark and warranted being named the 'Tod stone'. Was Tod a person or as Kay suggests did the word 'Tod' mean a fox (as Tod is the Scots word for fox)? Perhaps this L-shaped stone reminded former fishermen of a recumbent fox and was named accordingly

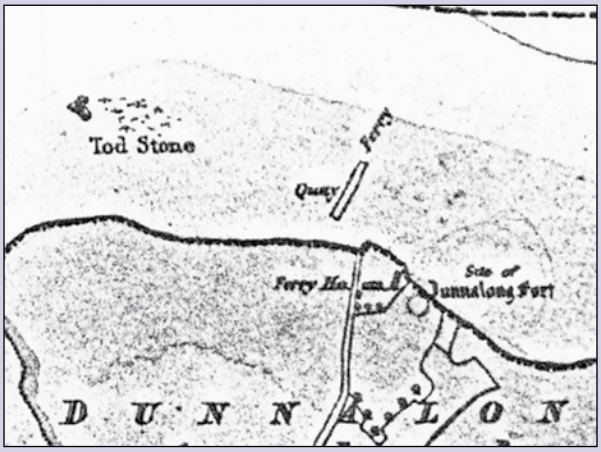


Figure 15. Location of 'Tod Stone' as depicted on OS 2nd Edition map, 1850s.

RORY McNEARY

Relocating the site of the fort using aerial survey

Aerial reconnaissance techniques, particularly aerial photography, can be used to discover new archaeological sites but more usually it is used in their recording and interpretation and to monitor changes to them over time. The application of aerial photography has developed into one of the archaeologist's most valued tools. In Northern Ireland the origins of the application of aerial photography for archaeological study can be traced back to the late 1920s. The 502 Ulster (Bombing) Squadron of the Royal Air Force (RAF) stationed at Aldergrove, Co. Antrim were employed to fly sorties over some of the leading monuments in the country, such as, the Dorsey entrenchments in Co. Armagh. Since this time a great many more aerial photographs have been taken and many of the individual archaeological site records held at the offices of NIEA: Built Heritage hold aerial photographs.

Aerial photographs are of two types: the oblique and the vertical (Figure 16). Oblique photographs are taken at an angle to provide perspective and are best for discovering sites. Vertical photographs are usually used for mapping sites. However, with developments in computer technology obliques can now often be mapped quite accurately and rapidly. Digital imagery, such as orthophotography, is now widely available. These can be more readily cross-referenced with other digital data sources in a Geographical Information System (GIS).

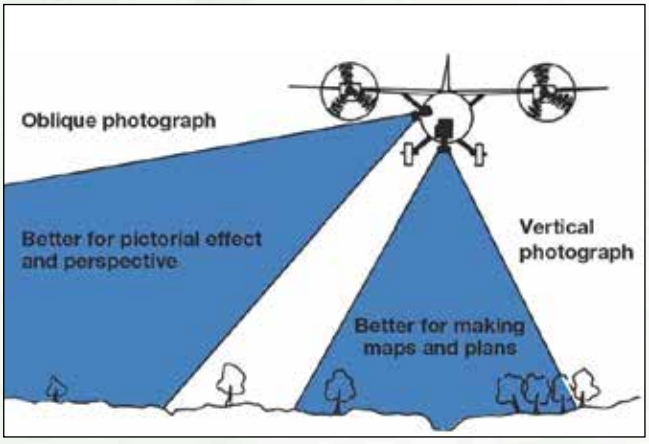


Figure 16. Oblique and Vertical aerial photography explained (image reproduction courtesy: Thames-Hudson UK).

What is a Geographical Information System or GIS?

Geographical Information Systems allow archaeologists to combine (geo)graphical information with other kinds of data and have become a popular tool in archaeology in the last decades. GIS software can deal with large amounts of data and store, manage, analyze and present these data (aerial images, LiDAR scans, topographic information, etc.) in one system (Figure 17).

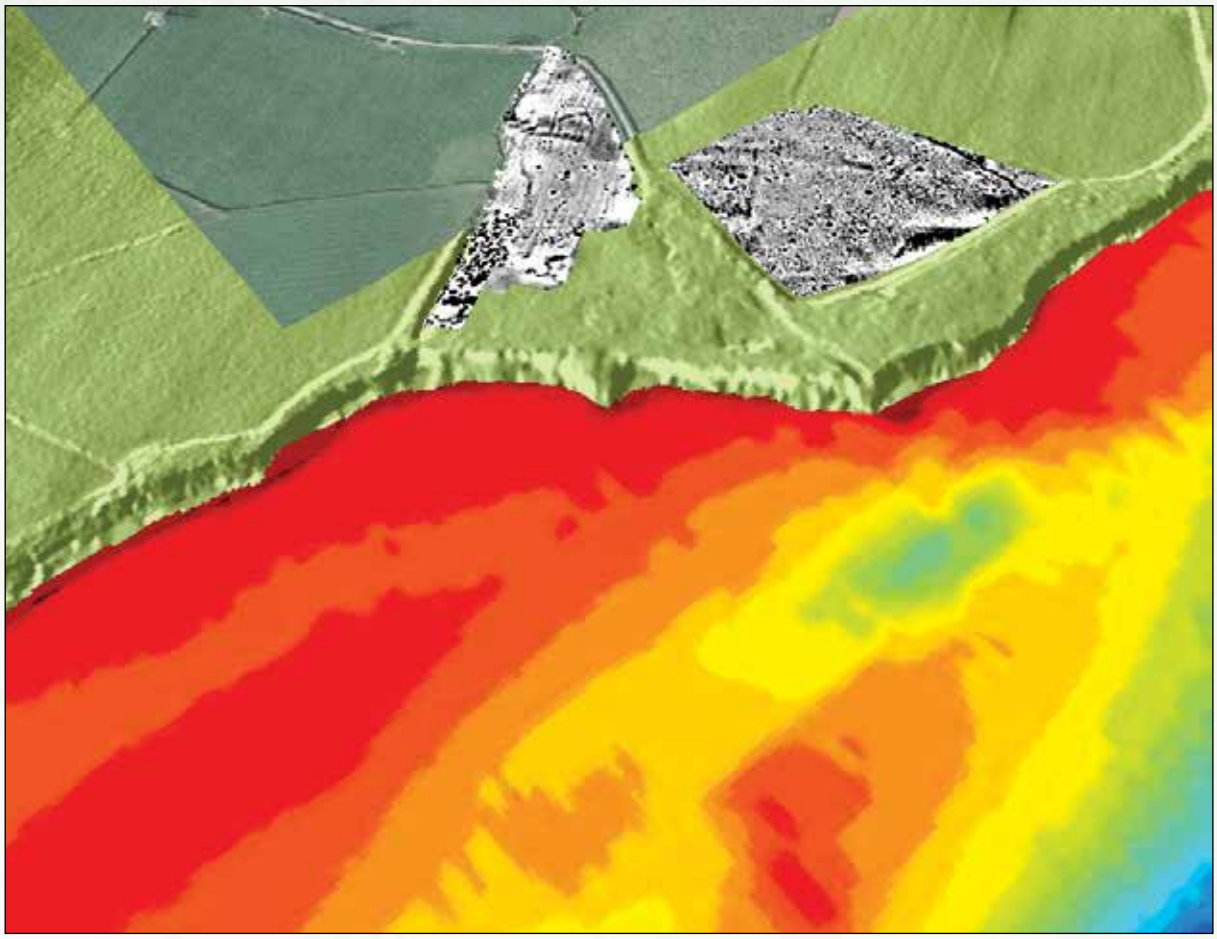


Figure 17. 3D image of the Dunnalong site created in a GIS combining LiDAR topography, aerial orthomimagery and underwater and terrestrial survey data (©Rory McNeary, CMA; LiDAR source, Rivers Agency; terrestrial geophysical survey data, CAF).

The aerial photography that exists for the site at Dunnalong is relatively recent. This includes high resolution aerial photography from Google Earth™ and the Ordnance Survey Northern Ireland (OSNI) dating from 2003 to 2010. A further suite of privately-held oblique and near-vertical photographs dating from some time in the early 1990s was also kindly made available to the project team by independent researcher Mr. David McConaghy. There would appear to be no archived photographs of the site in the records of Built Heritage. These relatively recent photographs are useful nonetheless as they do reveal a series of changes to the landscape setting of Dunnalong fort, the understanding of which is crucial to any interpretation of the lay-out of the fortification with relation to the modern-day farmscape. The early photographs belonging to Mr. McConaghy and the OSNI orthophotos from c. 2003 reveal that the north-eastern bastion was in fact extant and has been removed in the last eight years as part of wider farm improvements in the vicinity of the foreshore as reflected in later photographs (Figure 18). These 'improvements' also included the re-direction and straightening of the stream course to the east of the farmyard. This stream is depicted on the contemporary maps of the fortification and presumably would have fed a leat which in turn filled the 'Square Ditch filled w water out of the river…' that surrounded 'Sir John bolles…hous', the former site of the O'Neill tower house. These changes would perhaps not have gone unnoticed if archaeologists had not sooner made a study of the site utilizing aerial photography.

A relatively new aerial technique employed by archaeologists is that of airborne LiDAR (Light Detection and Ranging), which describes the method of determining 3-dimensional data points by the application of a laser scanner mounted on an aircraft. The scanner emits a laser beam which

A sequence of aerial photographs that span two decades at Dunnalong – can you spot the changes?
Figure 18a. A near vertical aerial photograph taken in the early 1990s (courtesy of Mr David McConaghy). Figure 18b. Vertical OSNI orthophoto, 2003. Figure 18c. Vertical GoogleEarth™ image taken in March 2003. Figure 18d. Vertical GoogleEarth™ image taken in August 2010 (©Rory McNeary, CMA).

is reflected off the ground surface and back to the receiving instrument (Figure 19). The time between the emission and return of the laser beam is measured allowing for the distance between the ground surface and scanner to be calculated with a high level of accuracy. The position of the aircraft is precisely located using onboard Global Positioning System (GPS) technology. The results from this type of scanning allows for the high resolution mapping of ground surfaces and archaeological earthworks. The LiDAR derived height data can be manipulated using GIS software to create hill-shaded relief models and other interpretive visualizations in 2D and 3D. The 3D models produced allow for the draping of other digital data, such as aerial orthoimagery.

The LiDAR survey of the site was flown by a company called Fugro-BKS Ltd on behalf of the Rivers Agency for their programme of strategic flood mapping. The potential usefulness of this data for an analysis of the environs of the site was recognized by archaeologists

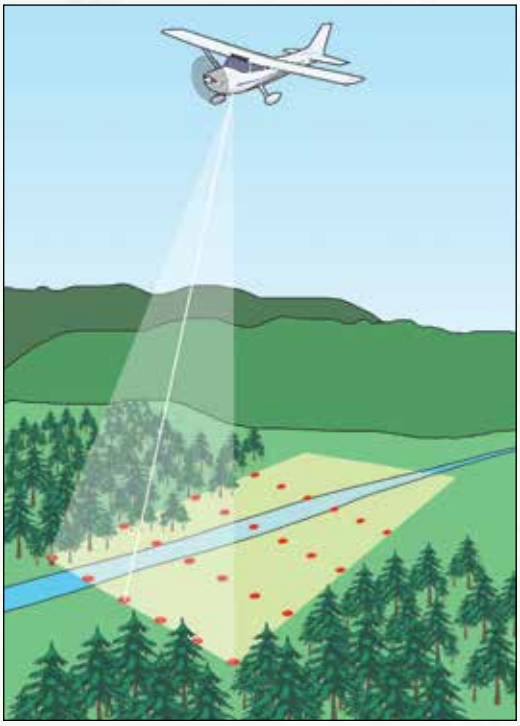
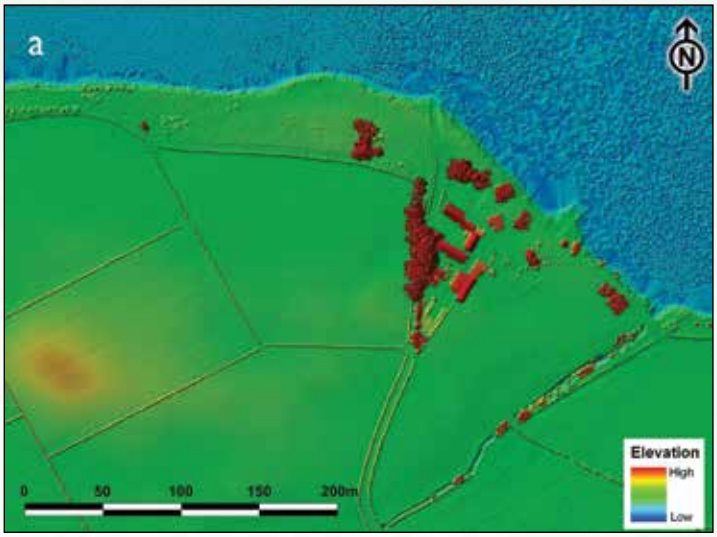
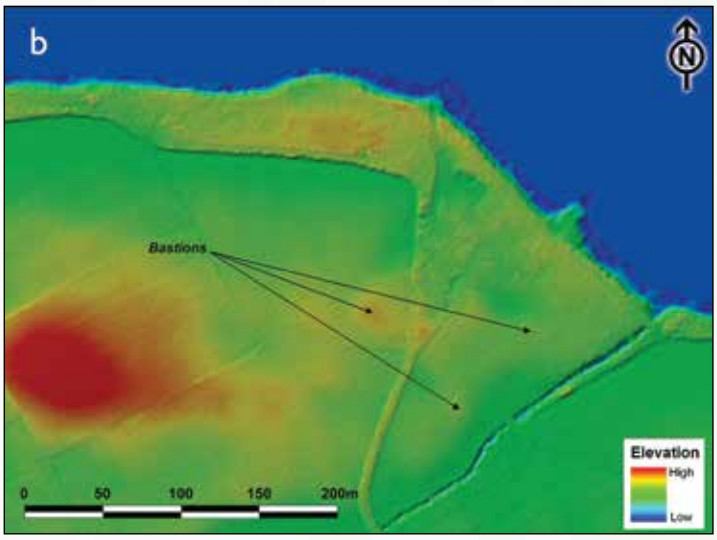


Figure 19. Airborne laser scanning or LiDAR explained.

from the Centre for Maritime Archaeology (CMA) in 2010 when the data was first acquired. The data consisted of three-dimensional coordinates at around every metre across the landscape allowing for the construction of a 'first pulse' Digital Surface Model (DSM) which includes trees and buildings (Figure 20a) and a 'last pulse' Digital Terrain Model (DTM) of the bare landscape with upstanding trees and buildings removed (Figure 20b).

The topographic bare earth model produced from this 2010 study allowed for the earthwork remains of the fort to be mapped for the first time since the cartographic efforts of the Ordnance Survey in the 1830s (Figure 20c). This was very exciting and proved that there was still a topographic signature of the fort surviving in the fields adjacent to the modern farmstead.





Top right: Figure 20a. LiDAR first Pulse Digital Surface Model (DSM). This model includes the vegetation and upstanding farm buildings.

Above right: Figure 20b. LiDAR last Pulse Digital Terrain Model (DTM). This view reveals the bare earth model devoid of vegetation and buildings. Note the faint topographic signature of the fort in the fields surrounding the farmstead. This signature complements the terrestrial geophysical survey results (©Rory McNeary, CMA; LiDAR source, Rivers Agency).

Right: Figure 20c. The LiDAR analysis of Dunnalong fort hits the *tabloids* in December 2010 (©Mirror Group Newspapers PLC).

RONAN McHUGH

The Geophysical Survey of Dunnalong fort

In the past 30 years, geophysical survey has become almost as common and productive a tool on archaeological fieldwork projects as excavation. Thanks to exposure on television programmes such as Channel 4's *Time Team*, and regular newspaper and journal reports detailing the often spectacular discoveries made, geophysical survey images - presented either as x-ray like greyscale plots or increasingly as more impressive 3-dimensional models - are now familiar to anyone with even a passing interest in the discipline of archaeology.

The phrase 'geophysical survey' is an umbrella term covering a variety of different scientific prospecting techniques available to archaeologists. Most of these have been developed for geological or mineral prospection, and from the point of view of archaeologists, it is the 'near surface' or 'shallow' geophysical techniques which are of most use, since the majority of hidden archaeology is located at a metre or less below the modern ground surface. The application of these techniques allows archaeologists to build up a picture of what lies beneath the surface without any ground disturbance or excavation. It is important to note that these techniques do not automatically identify archaeology as such. Rather, each measures a particular property of the earth and, when the natural or background readings are recognised, man-made or archaeological features can be detected as anomalies against this background. The skilled geophysical surveyor will often be able to point out the location of a buried archaeological feature and comment on its nature minutes after completing the survey. This is an invaluable asset in archaeological research. Geophysical survey offers a relatively cheap, speedy, efficient and, perhaps most importantly non-invasive means of assessing the archaeological potential of a site. It is usually possible to cover a much greater area by means of survey than is ever excavated.

The most commonly used geophysical techniques in an archaeological context are magnetometry, magnetic susceptibility, electrical resistance, conductivity and ground penetrating radar. Each of these has its own inherent advantages as well as limitations, and in every instance, local geological and environmental conditions will inform the choice of technique. In addition, the configuration of the specialist equipment, as well as the resolution of the survey samples, will determine the level of detail captured during the survey.

The Dunnalong Survey

The two techniques used at Dunnalong were electrical resistance and magnetometry (see opposite) and the survey was carried out by experienced surveyors from CAF at Queen's University Belfast. Phase 1 of the survey was designed to test the relative efficacy of each technique on the site of the fort, so a

magnetometer survey was carried out in Field 1 to the west of Dunnalong Road while a resistance survey was undertaken in Field 2, to the east of the road

The resistance survey produced limited results although the outline of the fort is discernible (Figure 21). The magnetometer results were much more encouraging. The magnetometer survey was therefore extended to cover the entire site and the impressive results reveal much about the nature and extent of Docwra's 1600 fortification of Dunnalong (Figure 22). Figure 23 is an interpretative diagram, highlighting the important anomalies detected in the survey which have been identified as archaeological features, and which are discussed in this account.

The survey shows that the remains of the fort (M1) are bisected by the modern road, but there are substantial surviving remains in both Field 1 and Field 2. The northern part of the fort coincides with the buildings and outhouses of Dunnalong Farm, so nothing probably remains in this area, while the imaging of the eastern edge is obscured by a zone of strong magnetic 'noise', coinciding with an area of modern landfill and drainage deposits (M2). It is not possible to determine if this landfilling has affected survival of the fort in this area. Elsewhere, the definition of the fort's perimeter and form is spectacular. The image shows that the subsurface remains closely mirror the depiction on the 1833 OS map (see Figure 02). It was slightly asymmetric in form and almost certainly had four corner bastions. The only complete side of the fort imaged, from the tip of the western bastion to the tip of the southern one, measures almost 112m in length. From the southern bastion to the eastern edge of the fort, the length is approximately 91m, although it may have extended further to the east into the landfilled area.

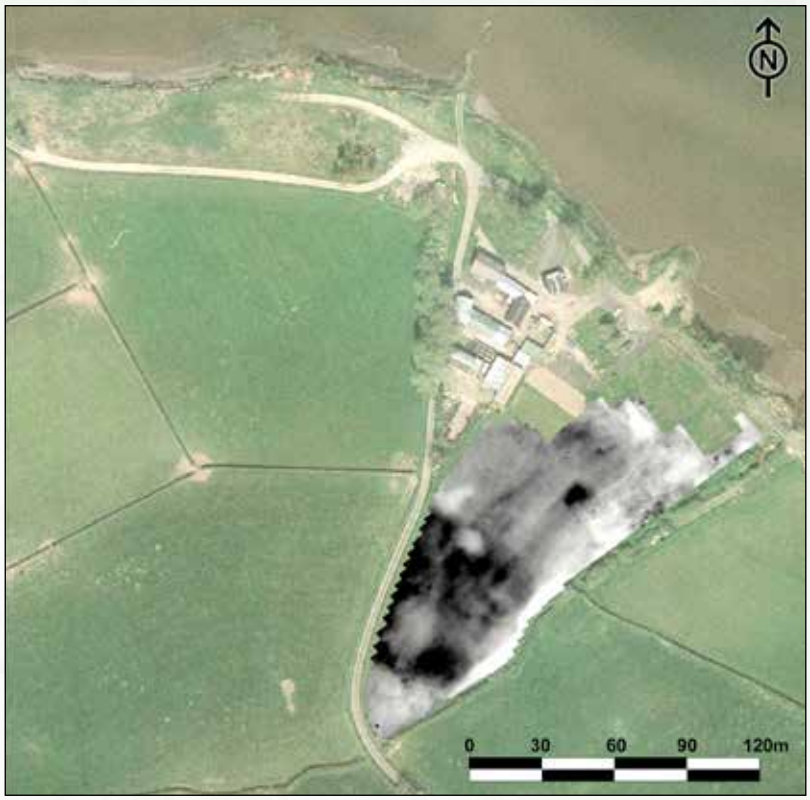


Figure 21. Resistance survey of Field 2. The outline of the fort in this image can be picked up, but the detail is not clear.

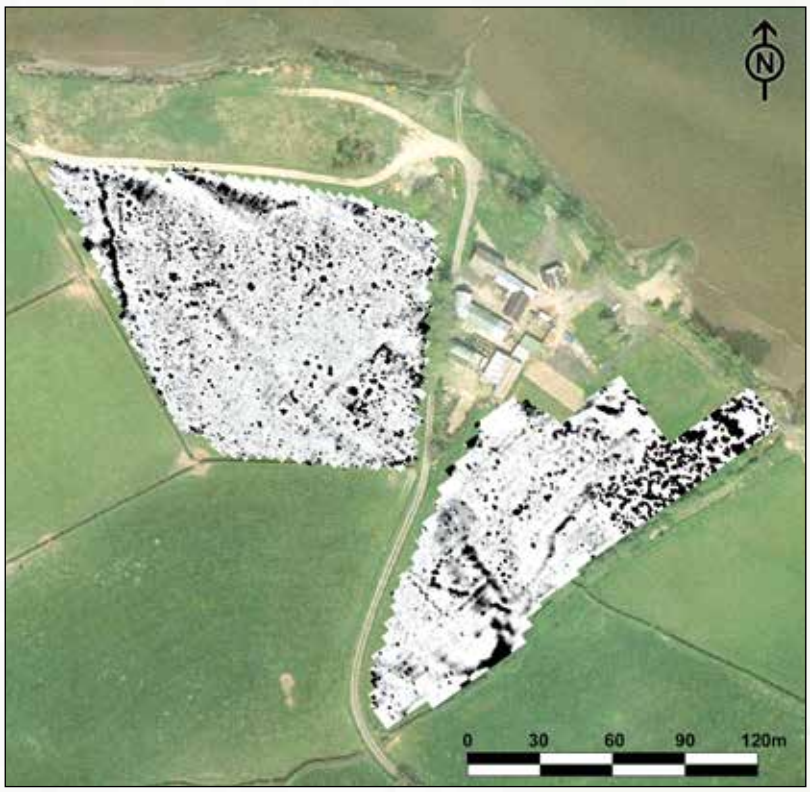


Figure 22. The magnetometer survey of the site revealed the outline of the fort and many other features across the site.

The geophysical techniques used at Dunnalong

Magnetometry – The most commonly used technique in Irish archaeology, magnetometry is based on the principal that human activity on a site can change the magnetic signal of the soil on that site. The effect of intensive burning on a soil causes the most dramatic and easily recognisable change, so this technique is especially useful in locating features such as kilns or areas of early industrial activity. Other features, such as old ditches or pits, can be detected because the soil that fills them can have a different *magnetic susceptibility* to that of the parent soil. This is a property of a soil that can determine the strength of its magnetic signal. Habitation debris or fragments of fired brick as well as biological factors can alter the magnetic susceptibility of a soil so can therefore be detected by magnetometry survey. Survey readings are normally quoted in *nanotesla* (nT).

Electrical resistance – The principal of electrical resistance survey is that different types of buried archaeological remains will create a different level of resistance to a weak electrical current passed through the soil – a buried stone foundation will return a high level of resistance to the current, while a waterlogged ditch will cause a low resistance reading. Modern survey equipment will detect much more subtle variations in the resistance levels between such extremes. Resistance metres are versatile, and can be set up in a number of different ways, known as arrays, depending on the requirements of the survey. The most practical array in archaeological survey is usually the 'twin probe' array, and this was the configuration used at Dunnalong. In this array, the current is passed into the ground by one set of probes, which is systematically moved over the survey area, and is picked up be a second set of probes which remain in a fixed position. The resistance level is recorded each time the mobile probes are inserted into the ground and in this way the location and shape of buried archaeological features can be indicated. The technique is most useful in the detection of masonry remains, or where large earthwork banks, ditches, pits and trenches have been constructed. Electrical resistance is measured in *ohm* (Ω).

The fort therefore contained an area of well over 7,000m^2. The outline of the fort shown on the survey represents the image of the original ditch, which formed the outer defence of the fort. From this, we can see that the width of the ditch was, on average, approximately 4m. The ditch is distinctly imaged in the magnetometer survey because it has been filled with material of a stronger magnetic character than the surrounding soil. It would originally have been supplemented by a thick internal earthen rampart, but this has been levelled and its remnants were not clearly detected in the survey.

Two of the forts corner bastions have been revealed. The survey suggests the southern bastion was a gently-curving, full bastion, with two flanking and two facing sides (M3). It expands from the curtain of the fort to a maximum width of approximately 34m before tapering to a rounded point. This shape is reflected both in the survey data and the 1833 map, although it is considerably smaller on the latter depiction. The western bastion has a more flattened wedge shape (M4), with a maximum width of approximately 41m, and, again is shown similarly on the 1833 map. This corner may have formed a demi-bastion, as it does not have the symmetrical definition of the southern bastion. The OS depiction of the eastern bastion shows it as a more curvilinear expansion from the body of the fort and, while this is not clearly captured by the survey, a rounded profile can be detected in this area (Figure 24).

All of the early maps show that the fort enclosed a cluster of buildings, shown in the main as single storey cabins. These would have been built of wood rather than brick or stone, making them difficult to pick up in geophysical survey. However, a zone of strong magnetic readings inside the western bastion point to an area of significant burning, and this has been interpreted either as the location of a building destroyed by fire or an area of industrial activity (M5). A large building is shown at this location on the Griffen Cocket map (Map D, page 19). Elsewhere within the fort, the remains of timber buildings may be suggested by the cluster of possible post holes near the southern bastion (M6).

All of the contemporary accounts and depictions of Dunnalong Fort contain reference to two buildings of particular interest; the remains of the original Gaelic castle and the brew house. Neither of these was definitively identified in the survey. The brewery probably lay to the north-east of the survey area in an area of marshy ground which is today overgrown with rushes and may, in any case, be compromised by reclamation activity. A more substantial, stone built structure, the O'Neill castle would surely have been clearly detected had it stood within the survey area; the stone castle foundations and the moat that surrounded it are both ideally suited to detection by both magnetometer and electrical resistance survey. The absence of evidence of both may suggest that they lie to the south-east of Dunnalong Farm, in an area that was fenced off as an animal paddock at the time of the survey, and tantalisingly beyond its limit. A zone of magnetic noise close to the paddock (M7) may represent structural remains, but the resistance survey did not detect evidence of masonry in this location, so the anomaly may, again, be a response to the remains of a wooden cabin.

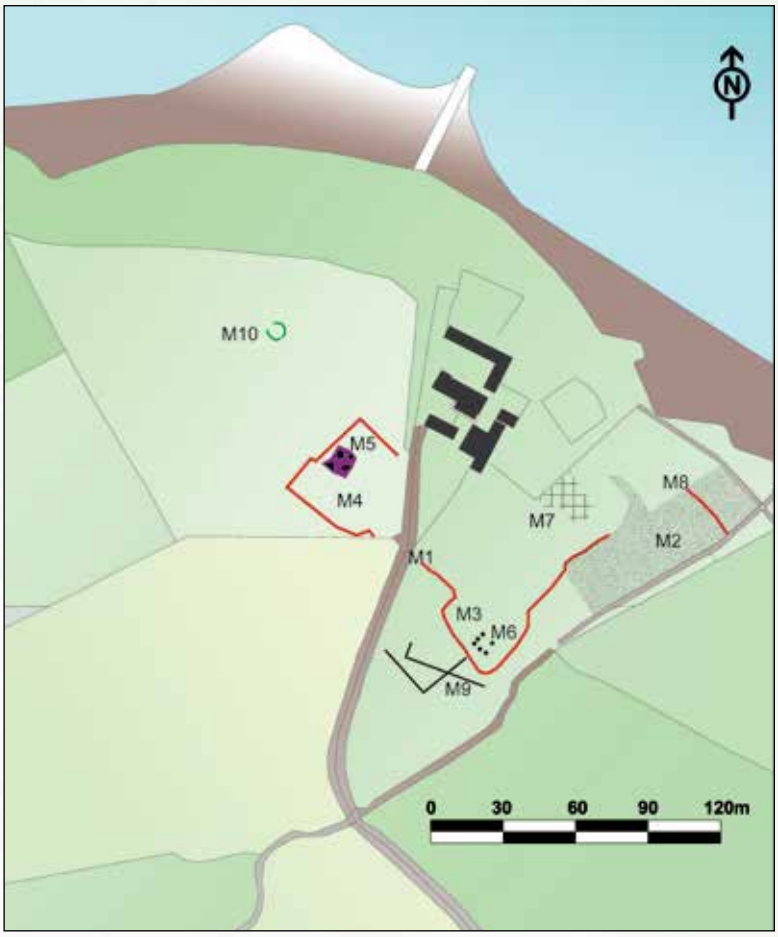


Figure 23. Interpretive diagram depicting the most significant results of the geophysical survey. The anomalies show marked in the diagram are discussed in the text.

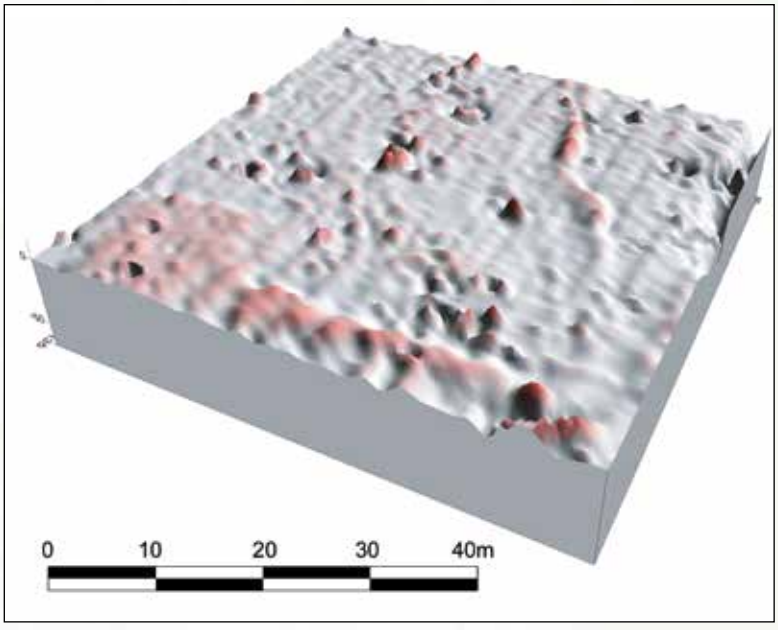


Figure 24. Magnetometry image of the southern bastion, depicted as a 3D model (anomaly M3).

One of the less obvious anomalies outside the actual fort itself also seems to be related to the fort and its defences. Marked M8 in Figure 23 only a small portion of the anomaly was within the area of survey, and even this is barely visible against the magnetic noise of zone M2. However, the anomaly is sufficiently strong itself to be detectable against the dipolar interference, and it coincides exactly with the position and course of the bastion-shaped protrusion or boundary shown outside the eastern bastion of the fort on the

first edition OS map (see Figure 02). In the later maps it is shown incorporated into a watercourse, but still maintains some of its shape (Figure 25). It is no longer visible today as this watercourse has been rerouted to form the linear brook that constitutes the eastern boundary of Field 2. There is not sufficient definition within the geophysical results to assist with the interpretation of this anomaly, but the answer may be obtained from the 17th century maps. Two of these maps (Maps A and B, pages 16/17) show a cluster of cabins beyond the confines of the fort itself, but protected by a second defensive feature, which is described in the key to Map B as 'a trench cast up for their (the cabin's) safety'. The anomaly M8 is certainly a response to the feature shown on the 1833 map to the east of the fort, and it appears likely that both mark the location and course of this defensive 'trench'.

Figure 25. The Dunnalong site, with the 1833 OS map superimposed on the modern landscape. Shown in red is the line of the watercourse shown on subsequent editions of the map, which coincides with the outer fortification shown on the 1833 map, but which is not visible at surface level today.

There are, of course, a host of other features within the survey area which are not related to the fort. Some of these (e.g. the strong linear anomaly M9 which appears in both magnetometry and resistance datasets) may relate to farm buildings which are not shown on any of the OS maps. However, one feature which may be significantly earlier than the fort itself is the circular magnetic anomaly M10 detected in Field 1. This is possibly the location of a prehistoric ring barrow, and a reminder that Dunnalong was an important locus for settlement long before the advent of the O'Neills (Figure 26).

The 2012 geophysical survey at Dunnalong has definitively located the English fort of 1600, and has provided superb definition of much of its perimeter. It has resulted in the creation of a robust dataset that is of immense value in its own right; the survey results provide information on the siting, location and dimensions of the fort and, at the west and south at least, define the shape of its defensive bastions. Given the amount of interest that the 2012 project generated, the survey also represents a stand-alone cultural resource for the local community, providing a welcome insight into a well know but heretofore poorly understood landmark.

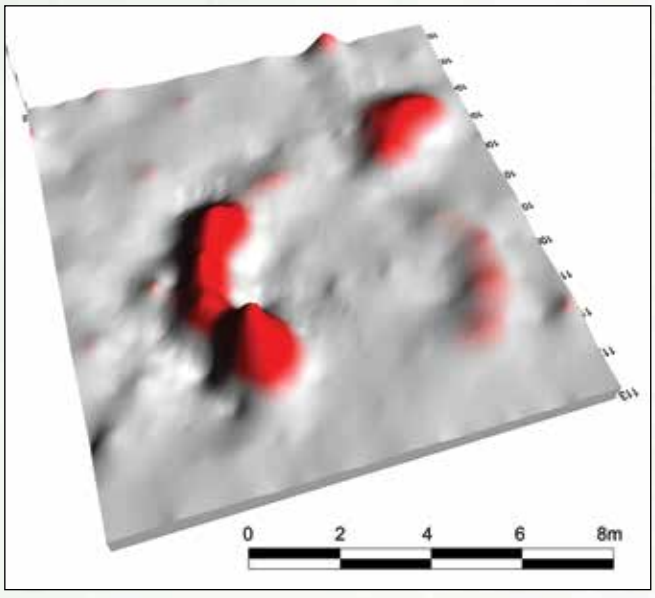


Figure 26. 3d model of the ring ditch detected to the north-west of the fort in Field 1.

PAUL LOGUE and RONAN McHUGH

The 2012 Excavation

The excavation took place from the 6–23 August 2012 and, during this time, the normally quiet townland on the shores of the Foyle became a busy hive of activity. The work was overseen by archaeologists from the NIEA and the CAF at Queens University. The professional archaeologists were ably helped each day by local volunteers made up of participants on the 'Plantation to Partition' programme funded by the 'Peace III Initiative', as well as other members of the public. Not only did the local volunteers enjoy themselves on the dig but many of the most important artefacts were also found by them. We should mention too that the digging out of the fort ditch and bank was no easy task and a good deal of it was accomplished with the help of volunteers.

The importance of the project attracted national interest, and the entire excavation was recorded by the media production company 'Televisionary' for their *Ulster Unearthed* programme on the archaeology of Northern Ireland.

While local traditions, early maps and aerial photography provided an indication of the location of the fort, the success of the geophysical survey allowed its various elements to be pinpointed to centimetre accuracy. This enabled the archaeologists to precisely position excavation trenches in areas that were likely to be of archaeological value. The focus of the excavation was in Field 1 where survey identified definite remains of the fort defences as well as the most promising signs of habitation. The excavation took the form of a keyhole evaluation of the targeted areas rather than a full, open-plan excavation of the site; small or narrow test trenches were positioned over locations highlighted by the survey so that the nature of the remains preserved at Dunnalong could be investigated with the least disturbance to the site. The location of the trenches is shown in Figure D1.

The pivotal question to be addressed related to the form and extent of the fort defences. Trench 1 was located across the western bastion, in an area where the geophysics revealed that the ditch was well-defined (Anomaly M4 in Figure 23). The hope was that Trench 1 would provide evidence of the ditch, internal bank and associated defences of the English fort. Trench 2 was located nearby, to the south-east of Trench 1. It was intended to target an area of strong magnetic activity that was interpreted in the survey results as a burnt structure or area of industrial activity (Anomaly M5 in Figure 23). Trench 3 was the only trench located in Field 2. It was precisely located over the interface between the area of magnetic disturbance probably representing landfill (Anomaly M2 in Figure 23) and the ordinary ground. The objective here was to test the hypothesis that the unusual signals in this area were indeed due to modern activity and to see if the perimeter of the fort could be detected when this material was removed. Excavation in all trenches was carried out manually, with the excavation teams made up of a mix of professionals and volunteers.

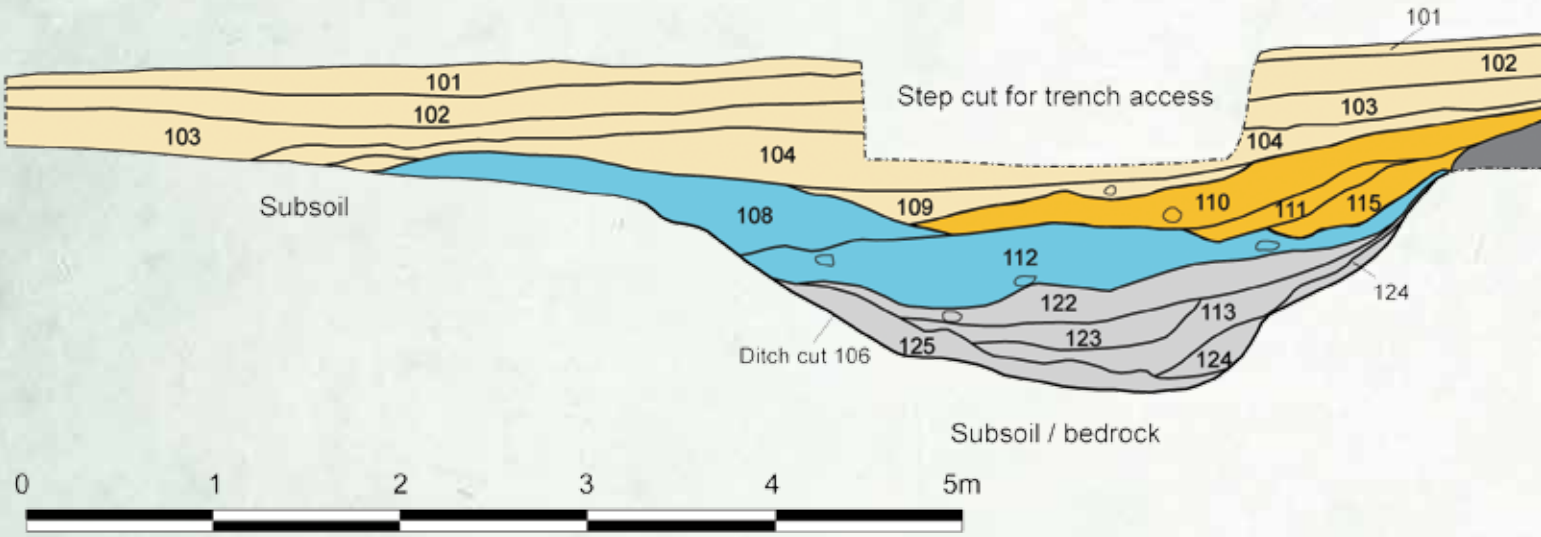
Trench 1 was opened on the first morning and measured 10m by 1m. The grassy sod which forms the modern ground surface was removed (Figure 29), and, almost immediately, artefacts from Dunnalong's past began to be recovered. The uppermost deposit consisted of a light brown loamy soil that contained a mix of more recent glass and ceramic artefacts as well as some earlier material, including a lead shot and the stem of a clay pipe. The recovery of early finds right at the beginning of the dig encouraged everyone and hinted at the rich history of the site. This uppermost deposit represented 19th and 20th century agricultural activity at the site with the modern artefacts finding their way into the ground during agricultural practice, more often than not by simply being dropped there. The earlier material was probably disturbed from deeper in the ground during ploughing and spread across the site while it was being cultivated. Similar cultivation or plough soils are commonly encountered at the upper levels of rural archaeological excavations throughout Ireland.

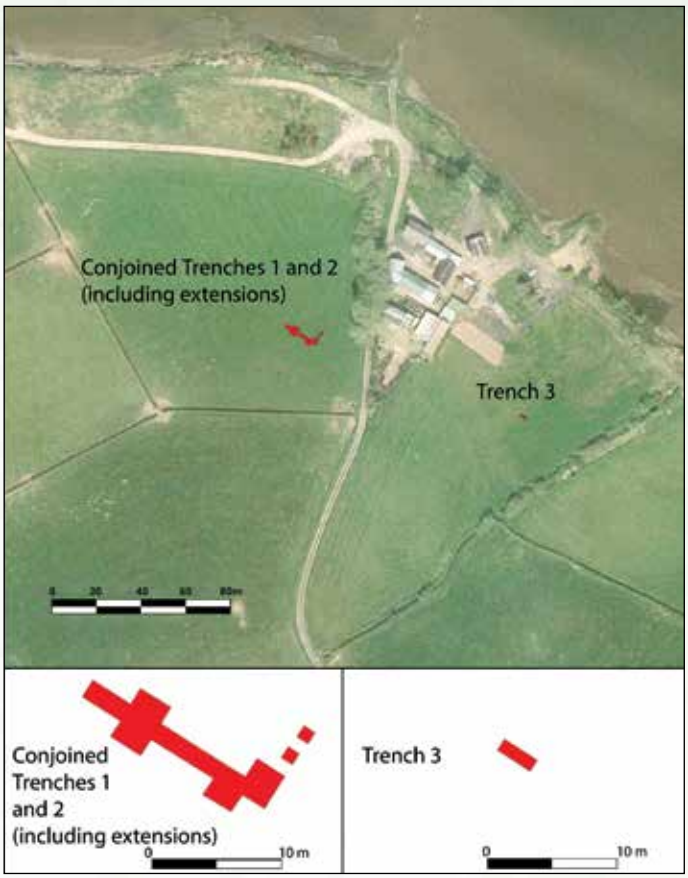
Once the upper modern deposits were removed, the first obvious indication of what we were looking for was exposed. It showed itself as a band of darker soil, some 6.5m wide running north-east/south-west across the trench, coinciding with the position and alignment of the ditch identified by the geophysical survey. Important archaeological features are often first recognised by contrasts in the colour of the soil, and the excavators immediately identified this band as an upper fill (C104) of the major defensive ditch which formed the perimeter of the fort. Thus, quite early in the project, the excavation had located some good-quality artefacts and one of its primary targets. Much of the remainder of the work in Trench 1 would involve the hard work of digging out the deposits which filled the ditch to reveal its original shape and extent. It also would include the search for remnants of other major defensive features at the site, such as any remains of the earthen rampart.

The 6.5m width of the ditch at the top was somewhat wider than suggested by the geophysical survey, but the excavation showed that it tapered very gently to a width of 4m at the core of the ditch. At that point the ditch sides became much steeper, to form a formidable, U-shaped cut with a maximum depth of almost 2m. The outer slope of the ditch was notably the more gradual, sloping down to the rounded base before rising more sharply to the interior of the fort, in a gradient punctuated by a pronounced step close to the bottom (Figure 30 and Figure 31).

The ditch contained a number of discrete deposits as opposed to a single homogenous material, suggesting it filled gradually rather than in a single dramatic event. The numbers (e.g. C112, archaeologists call them context numbers) assigned to each of the excavation deposits are shown in the section drawing Figure 30 which graphically demonstrates many of the features found.

The context numbers are used in this account to distinguish the various layers and features discussed here. The deposits were removed in sequence, with cultural finds occurring in most of





Above right: Figure 27. Modern Dunnalong, with the position of the 2012 excavation trenches shown in red.

Above: Figure 28. Excavations at Dunnlong's Trench 1,

Right: Figure 29. The excavation begins. Trench 1 demarcated with string, with sections of the topsoil removed.

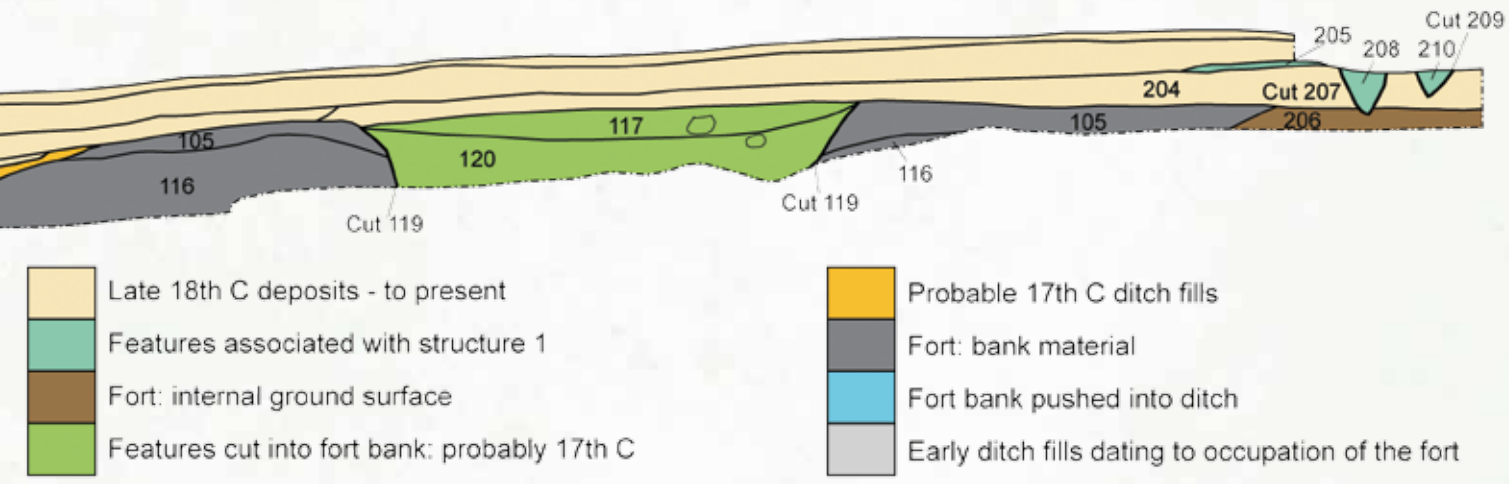


Figure 30. Long-section drawing prepared by the archaeologists and illustrating the sequence of events at Dunnlaong.

them. The finds from the uppermost deposits in the ditch consisted of a mix of 18th and early 19th century material. Just below this the artefacts found dated layers of fill soil to the later 17th and 18th centuries. This suggests that the upper layers of the ditch had been pushed into it during agricultural practices and possible deliberate levelling episodes over the past three hundred years.

The largest deposit within the ditch occurred approximately 60cm below the ground surface and consisted of a layer of yellow clay (C112). It extended across the width of the ditch and was up to 30cm deep. C112 contained an abundance of artefacts, including 17th century red brick fragments, a clay pipe stem, a caliver shot and 17th century pottery (Figure 32). This deposit probably represented an early deliberate attempt to fill in the ditch. The associated artefacts hint at a date for this infilling somewhere in the 17th century after the fort, or at least the majority of it, had gone out of military use. Red brick fragments were found in many of the upper fills of the ditch showing that bits of a nearby early building or buildings formed part of the material used to fill in the ditch.

Of the deposits beneath this level, only a layer of mottled grey clay (C113) contained any artefacts. These included what may be a piece of lead buck shot that bore the scars of impact (Figure 36). The relative sterility of these lower layers, and indeed the presence of the possible spent projectile, may indicate that these deposits had accumulated during the three years of Docwra's campaign while the ditch was still open and maintained as a defensive feature.

A number of other features were unearthed in Trench 1. Amongst the most significant of these were the remains of the earthen bank that formed the forts rampart. This had long disappeared above ground but fortunately the dig has now shown it to survive below the ground surface.

The uppermost surviving layer of bank material found was C105 an orange-brown clay representing subsoil dug out from the ditch and piled up as a bank behind it. This clay was found in parts extending back around 6.5m from the edge of the ditch to where it overlay another early layer C206. As C206 did not form part of the bank then that relationship gave us a measurement for the width of the bank, of at least 6.5m at this point. As the ditch was also 6.5m wide then the ditch and bank would have combined to give a formidable obstacle of 13m to any would-be attackers. The bank would also have given a sound base for the fort defenders.

Above C105 the rampart bank had been destroyed most likely by being ploughed and dug out into the ditch to level off the field. But before that levelling episode occurred the rampart bank had been cut into creating what seemed to be a large pit. The pit contained deposits rich in charcoal and a good degree of iron slag suggesting that iron working was going on very close by. The pit and the iron working remain undated at present but it is hoped that the charcoal can be used to give a radiocarbon date in the near future.

Below C105 the base of the rampart bank was represented by a ramp of clay (C116), rising from the edge of the ditch and going back into the forts interior almost as far as C105. The discovery of the bank along the interior of the ditch proves that the two pivotal elements of the English defences lie preserved beneath the ground surface at Dunnalong, and this is of immense significance given the paucity of excavation evidence for military forts of the period.

When the base of the bank was removed, it revealed a large, charcoal-rich, burnt spread, which was obviously the remnant of a fire. However, the deposit yielded no artefact evidence to help date it and at present all we can say about it is that it was associated with, or even predated, the creation of the forts rampart in 1600. It may have been the remains of a fire lit by the English soldiers immediately before they commenced their building work, or could equally date back to settlement of the banks of the Foyle in earlier periods. Again, it is hoped that radiocarbon dating will resolve this question in the near future.

As the excavation progressed and more soil deposits were removed, the precise outline of the ditch and bank created by Docwra's forces in 1600 was revealed. Even with only a small section of

it exposed, it provided evidence of the strategic importance placed on Dunnalong by the English commander. With this one small snapshot into the past, and the geophysical survey delineating the remainder of the perimeter, the excavation crew and volunteers were able to get a very vivid and awe-inspiring impression of how the Dunnalong Fort would have stood in the contemporary landscape.

Trench 2 was located 3m to the south-east of Trench 1 and set out on the same alignment. It was located over the centre of the magnetic hotspot (M5) detected in the survey and had the objective of determining whether the hotspot represented a structure at this location. The trench initially measured 3m by 1m, but early on the remains of not one but two possible buildings were exposed within it. These finds were thought to be of such importance that the trench was extended to the north-east and south-west, and finally also connected to Trench 1 (Figure 33).

Figure 31. An image of the northern end of the trench, showing the defensive ditch after all of the deposits had been excavated from it.

Above: Figure 32. A selection of the artefacts excavated at Dunnalong

Right: Figure 33. View of Trench 2 at competion of the excavation. The original 3m x 1m trench was extended to investigate archaeological features and then connected to Trench 1.

The Irish at Dunnalong

On the 29th October 1600 Captain Humphrey Willis wrote a letter to Sir Robert Cecil in which he stated that eleven days earlier Sir Art O'Neill had died at Dunnalong after 'lying sick for three days'. Willis put the death down to 'immoderate drinking'.

Turlough Luineach O'Neill, Art's father, had fortified Dunnalong with a tower house inside a square ditched enclosure in 1568 and lived between there and his other castles at modern day Strabane and Newtownstewart. In time the site passed from his father to Art and Dunnalong had been a residence of Art's for several years previous to the arrival of Docwra and his men. He would have lived in the tower house and this later became the hub of the later English fort. In 1600, Sir John Bolles built his house within the ditched enclosure but the tower house was already ruined by that time, possibly on the orders of Hugh O'Neill. Art switched sides to fight against Hugh O'Neill in 1600 and went over to the English, inviting them to come and build a fort at Dunnalong.

During the excavation we noticed three fragments of stone in the modern farmyard that must come from the tower house. One was recovered years ago from the shores of the Foyle (A) but the other two, originally from a window or doorway, are now built in to the doorway of an outhouse (B).

The excavation itself also recovered evidence of the Irish presence at Dunnalong. Not only did Art O'Neill live at Dunnalong but his men did too. In the reconstruction drawing of the fort we have added their houses to the foreground inside an adjoining defensive earthwork. Evidence for their presence came in the form of a sherd of what is termed Medieval Ulster Coarse Ware, or Everted Rim Ware, a type of pottery made and used by Gaelic society from around 1200 to the 1600s (C). We hope to come back again and find out more about the Gaelic inhabitants and history of Dunnalong.

Figure 34. Reconstruction drawing of the gaelic tower house at Dunnalong.

We called the earlier of the two buildings Structure 2 and it was represented by three postholes (Figure 35). The three postholes were set close together and in a line, on a broadly north-west/south-east alignment. The postholes had diameters of 18cm, 21cm and 14cm, and respective depths of 20cm, 17cm and 10cm.

The postholes had been cut into a layer of compacted silty clay loam (C206) which lay on top of the natural clay subsoil in that part of the trench. As the postholes were cut into layer C206 we can say that they are technically later in date than that layer. C206 was overlain by C105, which formed the rear of the fort bank in this trench - so we can also say that the postholes and C105 are likely to come from the same period in time. As C105 formed part of Docwra's fort rampart then the postholes seem to represent a building or other structure at the rear of the fort's rampart in 1600. We will discuss what this early wooden structure may be at the end of this section along with our interpretation of Structure 1.

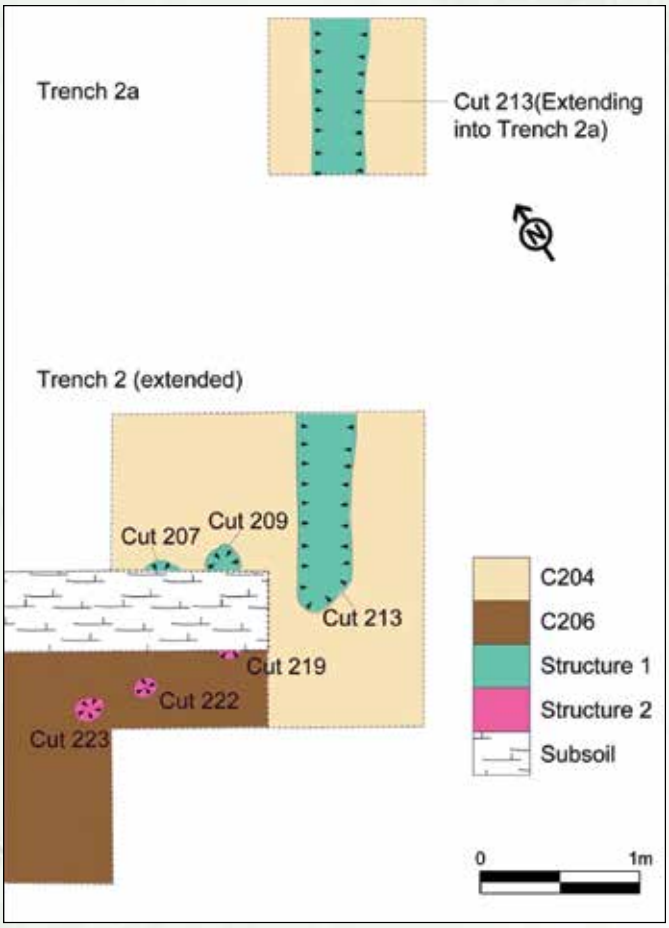


Figure 35. Plan of the principal archaeological features in Trench 2, including the two recognised phases of buildings.

The other structure uncovered (we termed it Structure 1) was the later of the two in date and was exposed directly beneath the plough soil. The building was cut into a layer of brown clay loam (C204). The features representing Structure 1 were unearthed in the north-eastern extension of the

Figure 36.

trench. Here, a gully approximately 40cm wide and 15cm deep was revealed (Figure 35), running for nearly 2m into the north-eastern edge of the trench. Closely associated with this gully were two post-holes, both containing charcoal-rich soil. The post-holes had diameters of 20cm and 25cm, and were respectively 25cm and 15cm deep. The sandy loam fill of the gully contained some charcoal flecks but few artefacts other than small lumps of slag and fragments of burnt bone. Because the gully extended beyond the edge of the trench, two 1m x 1m test pits were excavated to the north-east of the Trench, on the projected line of the gully to determine its length. The first of these (Trench 2a), was located 1.5m from the edge of Trench 2, and the gully extended through it. A second test trench (Trench 2b) was excavated a further 1.5m north-east of Trench 2a, but the gully did

Cannon ball or not?

During the excavation Liam Campbell one day brought in a small iron cannon ball. The cannon ball had been found in the nearby fields and the story went that it must have been fired from the fort. Sceptical of the story, the archaeologists then took up the challenge and studied the ball and the story of Dunnalong further. The reason for the initial scepticism was because there was no record or likely reason that cannon had been fired from the fort.

Then we came across a record from early July 1600 when Sir George Carey reported that, on Saturday the 5th July, the Dunnalong garrison had begun its fortification work and had sent many of their men to fetch some wood. Hugh O'Neill's forces attacked the large wood-gathering party but were reported to have eventually been beaten off with the loss of 100-120 men. It was then stated that the English 'ships did the rebels much hurt with their shot'. We must presume here that the information refers to ships in the Foyle supporting the English infantry with fire from their guns.

The ships that came up to Dunnalong were not the major ocean going multi-gunned warships people may have seen in later Hollywood movies but smaller vessels armed, by and large, with smaller cannon. A very common type of cannon used on these ships was known as a Falconet which had a barrel of four to six feet in length and a calibre of two inches. The cannon balls fired from a Falconet weighed between one and two pounds giving a standard weight of around one and a half pounds. So if the Dunnalong ball was a cannon ball it should also be in that range to comfortably date it to the 1600 event.

Further study showed that the find brought in by Liam was indeed a cannon ball and that it weighed exactly one and a half pounds. When we add in the historical records we reach the very reasonable conclusion that the cannon ball was indeed fired at Irish troops in 1600 but from a Falconet cannon onboard a nearby ship not the fort. Another great discovery for the Dunnalong project and a lesson that local traditions should always be followed up.

not extend into it. The gully therefore had a length of at least 5.7m and must have turned in another direction or terminated before Trench 2b. Even though the post holes and slot trench formed only a corner of the building they confirmed the position of a wooden structure at this location. A very thin and intermittent layer C205 was found within the building and may represent the remains of a clay floor. The dating of this second wooden structure is not fully clear as yet but as it overlay the remains of the forts bank it clearly post-dates the early 1600s.

Even allowing for the extension of Trench 2 from its original size, the excavation at this location can still only be regarded as a small evaluation exercise. That said it achieved its purpose of confirming that the magnetic anomaly did indeed show subsurface structures at this location. It is worthy of note, however, that the excavated area did not produce evidence of the level of heat or burning anticipated by the geophysical results. Evidence for nearby burning of a high temperature came in the form of iron slag found associated with some of the features, notably the large pit cut into the slumped bank deposit. This may point to industrial activity, but no definite remains were found. No artefacts were retrieved from any of the postholes to assist with their dating, but soil and charcoal were sampled from all of them and it is hoped that scientific techniques will allow close dating of the two structures. The exact outlines and sizes of the two buildings could only be found through the excavation of a much wider area and this was too much work for our 2012 dig. The aim of the 2012 dig was simply to prove or disprove the presence of such buildings so it was a success and their remains lie at Dunnalong awaiting further study.

The excavation of Trench 3 was the only intrusive work carried out in Field 2, and was carried out while the geophysical survey was being undertaken in the same field. The trench was positioned over the junction of the 'normal' magnetic readings and the zone of unusually strong signals in the magnetic survey (M2). The resistance survey also showed a narrow channel in this region separating the areas of differing signals. While this was considered too small to represent evidence of the defensive ditch, it was decided to investigate the source of these readings as it may have proved to be important. Trench 3 measured 3m by 1m.

The usual cultivation soils formed the upper deposits in the trench but, when these were removed, there was an obvious contrast between the two sides of the trench; in the western portion of the trench, a layer of mottled clay loam similar to surfaces inside the fort in Trenches 1 and 2 was located. By contrast, the remainder of the trench at this level consisted of a silty grey/black deposit filled with stones, glass and other modern debris. This deposit was obviously the result of modern land-filling activity in the field and excavation demonstrated that it served to level the previously uneven and boggy ground surface which naturally sloped gradually eastwards towards the brook. It was intended to remove all of the modern material, to investigate whether the remnants of the forts perimeter defences could be detected beneath. However, at a depth of approximately 55cm, a functioning water pipe was encountered running through this deposit. This prevented the full excavation of the landfill deposits and resolution of this part of the site. However the work carried out did confirm the source of the anomalous magnetic readings as modern activity, with large fragments of metal and tarmac contributing to the strong readings picked up by the magnetic survey in the eastern part of the trench. The narrow channel detected by the resistance survey proved to be the boundary between the artificial and natural ground surfaces, where water accumulated. No artefacts of archaeological value were located in the trench.

Discussion – What did we learn from the archaeological project at Dunnalong?

The dig at Dunnalong set out to prove the existence of the 1600 campaign fort in the fields of Dunnalong Farm and to see what form it took by examining the ditch, the rampart and a possible contemporary building. In this the dig was remarkably successful but it also allows us to check the archaeological record against the written record. It has thrown up some great discoveries.

The ditch at Dunnalong was marked on a map of 1601 as being around 12m wide on average, a substantial undertaking. The map was drawn by one Griffen Cocket, presumably under the direction of the local command, and sent over to the government in London as a proof of what had been done at Dunnalong (Map D, page 19). Our dig has shown the ditch, at least where we dug it out, was only 6.5m at maximum width. Even at 6.5m the edges are very shallow and the ditch is really only an effectively deep barrier of around 4m in width. Thus the dig has shown that the fort builders deliberately exaggerated the width of the ditch in an attempt to impress their superiors in London. This evidence also now serves to warn archaeologists and other colleagues that the Derry maps, of Griffen Cocket at least, cannot be trusted as an exact illustration of the truth – the artist took liberties and adjusted certain details probably under instruction from local commanders.

Our discoveries didn't stop there. The ditch was begun by Docwra's men in the first weeks of July 1600. The work would have been undertaken partly by pioneers but the ordinary soldiers too would have had to have pitched in – we know that one of the complaints from the officers at the Foyle was that the men's clothes were worn out from their continual labours. Sir John Bolles and his men probably finished the works at the fort and they definitely lived there subsequently. Tasked with building another fort soon after Sir John requested what he believed was required, which included 500 pickaxes, 500 spades, 200 de-turfing spades, 500 shovels, 20 iron crowbars, 20 sledges, 60 handbarrows, 40 wheelbarrows, 300 felling axes and 300 bill hooks. We must assume he had, or would have wanted, these types of tools for the building of Dunnalong also. The method for digging the ditch and making the rampart was to first cut turfs from a wide area around the fort. These turfs were cut out in a triangular shape with the de-turfing spades and were used to face the rampart and build the parapet on top (Figure 37). The excavated boundary where the layer C105 lay over C206 marks the spot where this de-turfing stopped and started. C206 represents the remains of the 1600 topsoil and the inside of the fort where the turf was left on. Everything from that point outwards was cut out to add to the rampart.

Once the turf was cut away then the ditch digging and rampart building could begin. During our dig we revealed the presence of a step on the inner face of the ditch. While at first glance the step

may seem unimportant it is further evidence of how the defences were created (Figure 30). The fort rampart was created from the material dug out of the ditch along with the turfs stripped from the surrounding area. The material dug out of the ditch had to be thrown up by shovel to men above with more shovels and barrows. The quickest way was to throw it directly from the ditch onto the rampart where others could level and pound it down. But, as the ditch gets deeper and wider it becomes ever harder to throw the clay up out of the ditch onto the rampart. The solution is to initially dig a slightly narrower ditch and throw the material up onto a ledge on the ground surface where other men then throw it up onto the emerging rampart. When the section of the rampart reaches a certain height the diggers move on and the ledge is dug down to widen the ditch to the edge of the rampart, or where intended. In Figure 38 you'll see that ledge being removed as the workers move on.

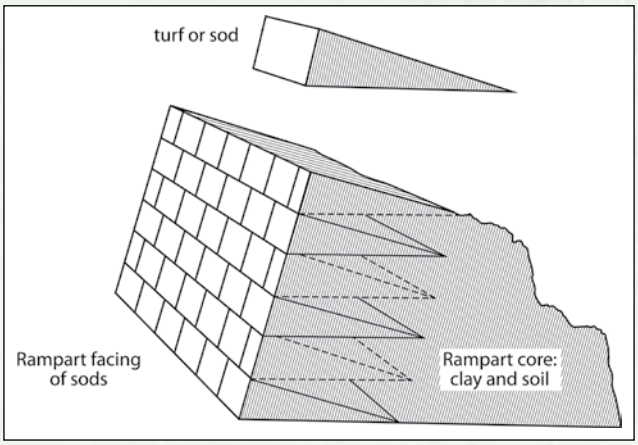


Figure 37. Illustration showing how the earthen sods were integrated with the clay and soil from the ditch to form a 17th century rampart.

Our excavation has probably uncovered this practice. If you look back to the section drawing again and note the lower portion of fill deposit C124, then look at the upper deposit of C124 to its upper right. You are looking at the point at which the ditch was widened out to the right in its final

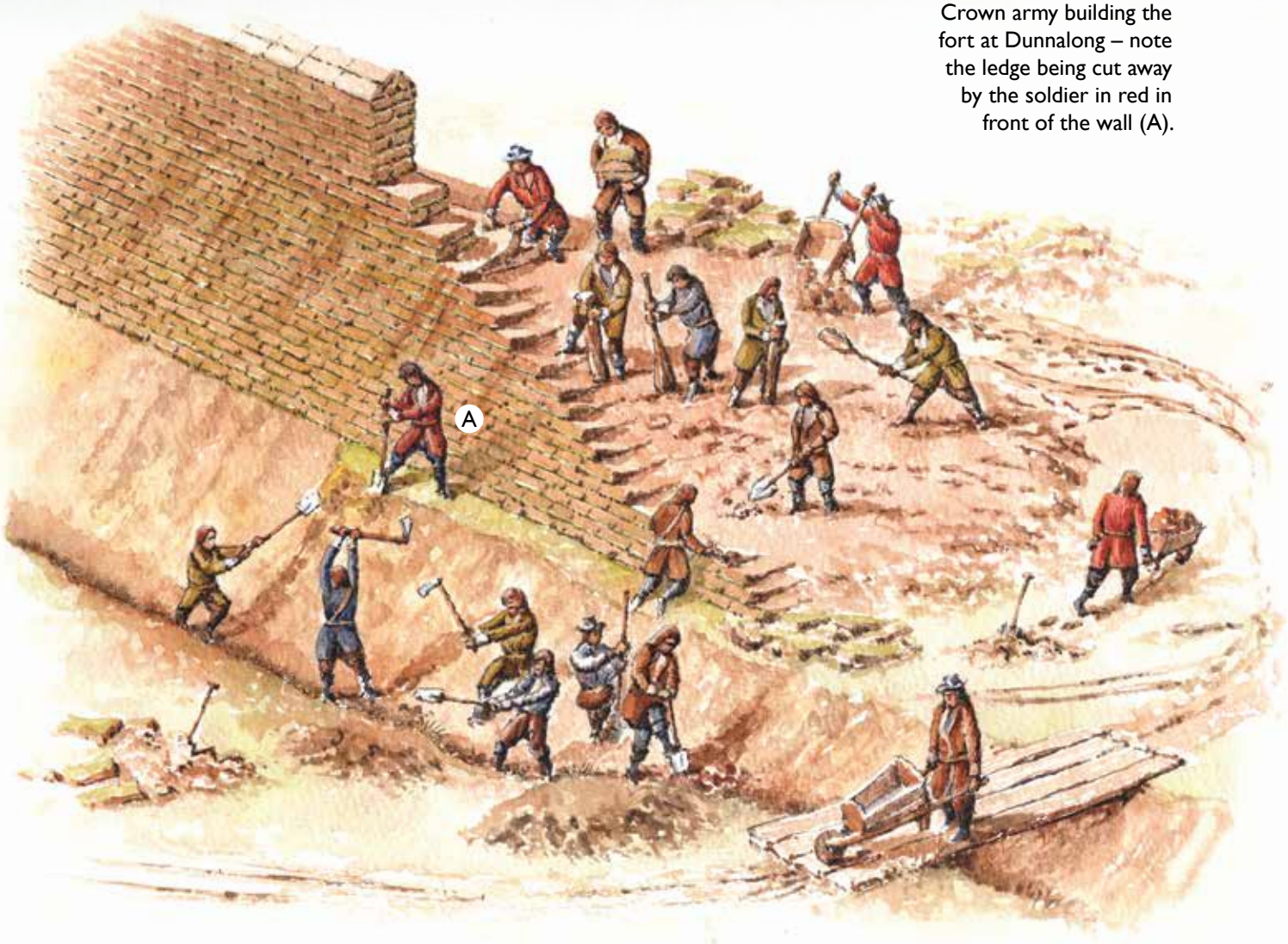


Figure 38. Showing the Crown army building the fort at Dunnalong – note the ledge being cut away by the soldier in red in front of the wall (A).

phase of ledge removal. This is another direct link between the military manuals of the Elizabethan period and the excavated evidence at Dunnalong.

As for our excavated buildings then the dating of Structure 1 is uncertain and will await further post-excavation analysis. That said its position in the soil layers and the size of its posts points to a later date not associated with Docwra and his campaign in the north-west.

However, with Structure 2 we have more direct links with the Elizabethan records. In October 1600, Sir Henry Docwra wrote a letter to the Privy Council in London mentioning in it that the 2,000 deal boards recently arrived at the Foyle were for the use of a Mr. Newcomen for the building of a brew house at Dunalong. Docwra had earlier mentioned that he needed more fir posts as the men couldn't build much with just boards. This tells us how many of the buildings at Dunnalong were created – they were made from fir posts driven into the ground with wooden (quite often oak) boards then nailed onto them. We even know that the ideal size of post was meant to be of a diameter where you could almost get two hands around it – probably 15-20cm. The postholes from Structure 2 measured, 14cm, 18cm and 21 cm across and fit well enough to that pattern. The oak boards would have long rotted away or been recycled into other buildings or firewood, leaving no trace for the archaeologists. Hopefully the ongoing post-excavation analysis will identify some of the corroded iron from this location to have been iron nails – Sir John Bolles recommended that a contemporary fort and infrastructure would need 20,000 nails. The little houses the soldiers built for themselves would have been roofed with boards, posts and /or turfs – our reconstruction drawing shows some of each (Figure 39).

If you look closely at the colour version of the Griffen Cocket map you will see that while the vast majority of the buildings have wooden/turf roofs some of the buildings have blue slated roofs. The slated roofs mark the important buildings like the munitions storehouse, other storehouses and the commander's house in the centre of the fort. Sometimes these important buildings were made of brick but Cocket doesn't seem to show that – what then was the contemporary brick found by us dumped into the ditch used for? If you look even more closely at the colour version of the Griffen Cocket map you will see that many of the buildings have chimneys and these chimneys are coloured orange. This must be a reference by Cocket to them being constructed of brick. The bricks would have been used to build a fireplace and chimney inside each building where the soldiers could keep warm and cook their food without threatening their wooden walls and roof with an open fire and the sparks etc from it. The presence of brick in the ditch fill indicated its use in a building not far away and that building is almost certainly Structure 2 located only metres away. On the available evidence then Structure 2 then is a post-built Elizabethan army building with central brick chimney – the first time such a thing has been excavated and a great first for the Dunnalong dig.

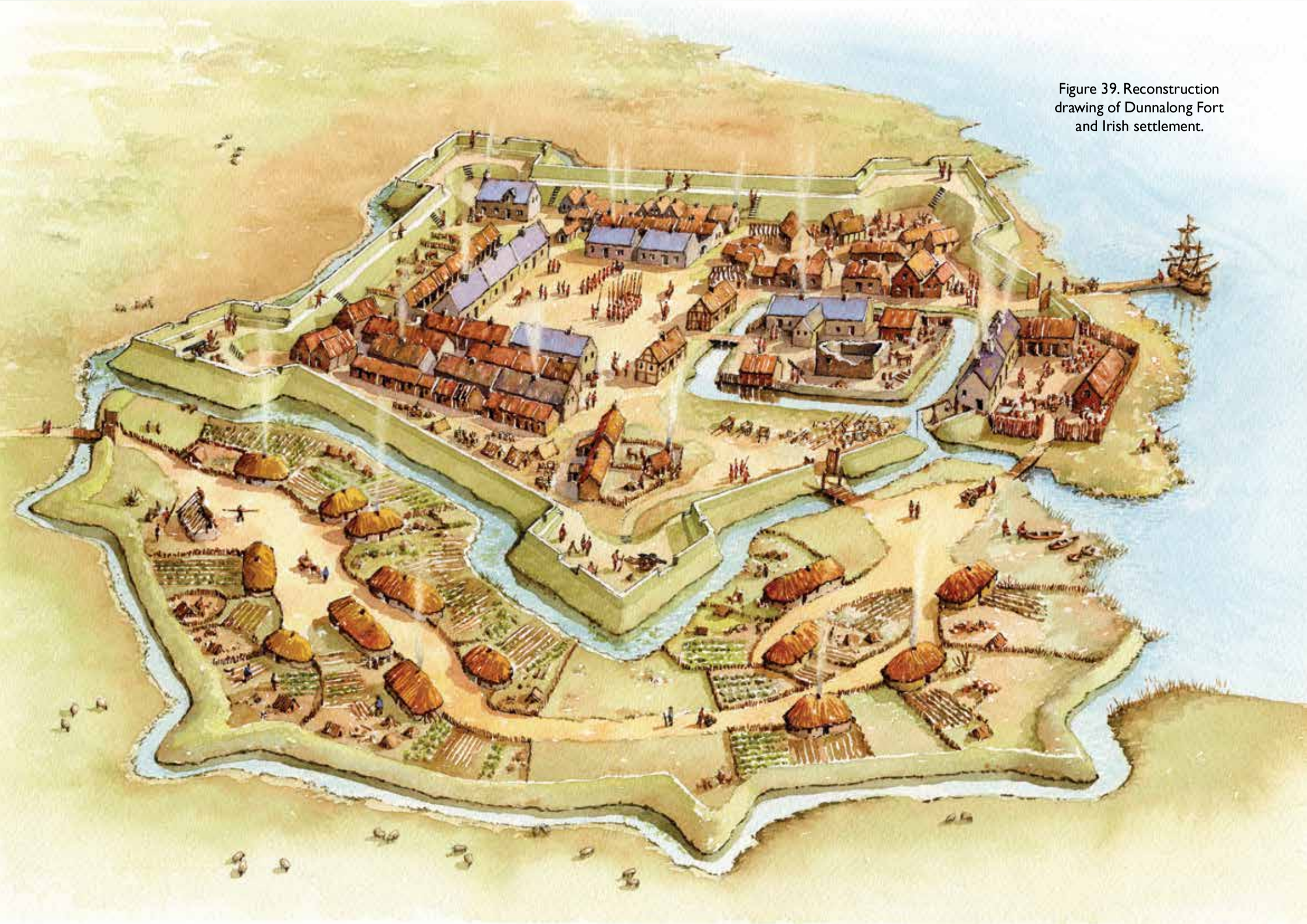


Figure 39. Reconstruction drawing of Dunnalong Fort and Irish settlement.

The Great Brew House at Dunnalong

For the Elizabethan army on the Foyle ale or beer were staple drinks. Alongside their long recognised social roles, they were also known to be safe drinks during a period when water was often contaminated.

In the summer of 1600 Robert Newcomen, who then managed the supplies for the army in Leinster, had offered to ship brewing materials from Dublin to Lough Foyle and set up a brew house for the army there. By October 1600 Newcomen's offer must have been accepted as Sir Henry Docwra recorded that he had shipped in 2,000 wooden boards with which to build a brew house at Dunnalong. Plans of the fort in 1600 and 1601 show a group of buildings called the *Brewe House* or *Great Bruehouse*.

In our reconstruction drawing of the 'Great Brew House' (Figure 40) at Dunnalong we have tried to link the details shown on contemporary maps with what we know of the brewing process. On the left of the drawing a crane lifts water from the fort ditch and this is brought into the malting room where it is used to soak barley. The barley has been brought over from the building opposite which we have suggested was a grain store. Once soaked the grain is spread out on the floor for a few days until it starts to sprout and becomes 'malt'. It is then dried in the kiln (or outside if the weather is warm enough) and brought into the middle room where it is added to water again and heated until it becomes a 'mash'. We have shown two large vessels to heat the mixture in, which are known as 'mashing tuns'. The sugary liquid from this process is called the 'wort' and this is separated from the mash and taken into a well-ventilated third room where it is cooled in large flat pans and transferred to a low, wide container where it ferments. The residue is then skimmed off the top and the ale is transferred to barrels ready for the occupants of the fort or customers elsewhere.

Figure 40. Reconstruction drawing of the brew house at Dunnalong fort.

Concluding words – Dunnalong

There are two words in the Irish language that best describe the "goings on" at Dunnalong in the summer of 2012. The first is cruinniú, roughly translated as gathering or meeting, and this is indeed what took place. Dunnalong is certainly a meeting place – a townland where land meets water and where ancient kingdoms met; a site where fishermen met and where fairs were a common feature. It is also a site where the river was crossed and relationships were forged. It is our Boyne Valley. Cruinniú, can also be translated as gathering and folk did indeed gather there with the sun shining and the scrape-scrape-chink of the trowels gathering information –the quest for the lost settlements of Dunnalong in these few acres on the banks of the Foyle. This was the first time that archaeologists set out to find and excavate a Crown fort from the Nine Years War. While the other large Crown forts of the Foyle are now buried beneath streets and buildings in Lifford and Derry, our archaeological gathering dug unhindered amongst the green fields of Dunnalong. Another first for Dunnalong was the use of new sonar equipment to study the river bed alongside the fort. However, another word to describe the activities of the summer of 2012 is meitheal – roughly translated as 'working party'. But like so many translations it does not carry over well into English. This was an exercise in cooperation, collaboration and genuine partnership. A meitheal is community based and place based; it is about heritage but above all, it is fun.

So many organisations were involved: Derry City Council, Strabane District Council, Omagh District Council, Donegal County Council, Foyle Civic Trust, NIEA, CMA (UU) CAF (QUB) with the project supported by all of the various funders such as the European Union's PEACE III Programme, Heritage Lottery Fund and DARD.

But this was about community participation and the locals who have a deep attachment to their place. Indeed the aim of PEACE III is to have people coming together to connect with their shared heritage. The locals knew that Dunnalong was a special and distinctive place and have for years yearned for more information about this site. Local input from the first day was essential and the research could not have been carried out without the permission, continued help and sheer grace of the landowner, Dougie Jamison.

So often heritage can bring conflict with it and it can invoke inclusion and exclusion, a division between "them and us" or the professional and the amateur. This was not the case at the works in Dunnalong – it was entirely community based and could only begin to cater for the public's passionate interest in archaeology.

Archaeology cannot discover everything about the past but as an ongoing process it can unearth certain things and give them a significance and relevance that would otherwise go unnoticed. The value of our archaeological heritage needs to be taken seriously and appropriate investment made. In these times of economic austerity the way forward is the combining of resources, disciplines and most of all peoples to harness the potential of the archaeological resource that could pay significant educational, social, environmental and economic dividends in the future.

One of the pillars of the 2013 UK City of Culture is purposeful enquiry – this was what Dunnalong was about. Dunnalong tells us a lot about our past and how communities can change or even disappear.

Another pillar is joyous celebration – the meitheal of the summer of 2012 is testimony to that as a way of working, learning and having fun.

"It's the anticipation. I suppose it's a bit like fishing. You are expecting you may catch something. That's part of the attraction."

"Taking part in the dig at Dunnalong was an excellent opportunity to get our hands on history. It allows us to get in touch with our past and explore aspects of our shared history, given that the finds at Dunnalong show that the site has been use from Neolithic period (flint finds) to Plantation of Ulster (muskets shot)."

"I had never been to an archaeological dig before and this experience has really helped me to get a better understanding of how it works."

"I was really enjoyed hearing about how we can find out so much more from maritime archaeology and how the river bed can reveal its stories too."

"I think projects such as this one are wonderful as they offer tangible opportunities for people in the community to help us get a better understanding of our past."

"It was great to get a chance to take part in an archaeological dig, get my hands dirty and try to uncover the past."

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