



IfA Buildings Archaeology Group

NEWSLETTER 36
Autumn 2014



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Introduction

Welcome to the latest edition of the Buildings Archaeology Group (BAG) newsletter and apologies for the newsletter's somewhat sporadic nature. Following news from the committee and beyond, contributors cover an interesting range of topics. Kerry Massheder-Rigby discusses the regeneration of West Derby Carnegie Library for use by a local charity and as a centre for community engagement. Continuing with a community/regeneration theme Jackie Heath and Andy Shelley discuss the restoration after the fire that devastated Hastings Pier, funded in part by a community shares scheme. Our own chairman, Mike Nevell, contributes a piece comparing the fate of Euston Arch with the recent consultation process for the Ordsall Chord Railway. We head back out to sea for Tim Murphy's piece on Maunsell's Redsand Fort and the work being carried out by the charity Project Redsand for its conservation. Back on dry land Geoffrey Sharpe's article on bee boles will have you looking at recesses in buildings with new eyes while Mark Samuel explores Vanbrugh's connection with a barn built for Stowe House, now Stowe School. The committee extends a big thanks to all who contributed to this newsletter.

News from the committee

The last full committee meeting took place at Somers Town Coffee House, near Euston Station, London on 1 July this year. The Coffee House is Grade II Listed and forms an original part of the Ossulston Estate. According to the National Heritage List

(entry no.1113232) this is "the most important inner-city estate of the inter-war period, representing the most considered attempt by the LCC to inject new thinking into inner-city housing estates. It was influenced in particular by Viennese housing models and was innovative in terms of layout and elevation". If you're in the area it's well worth going to see. See below for news on the main matters discussed at the committee meeting: the proposals for a BAG session at the IfA 2015 Conference and the possibility for future BAG CPD events.

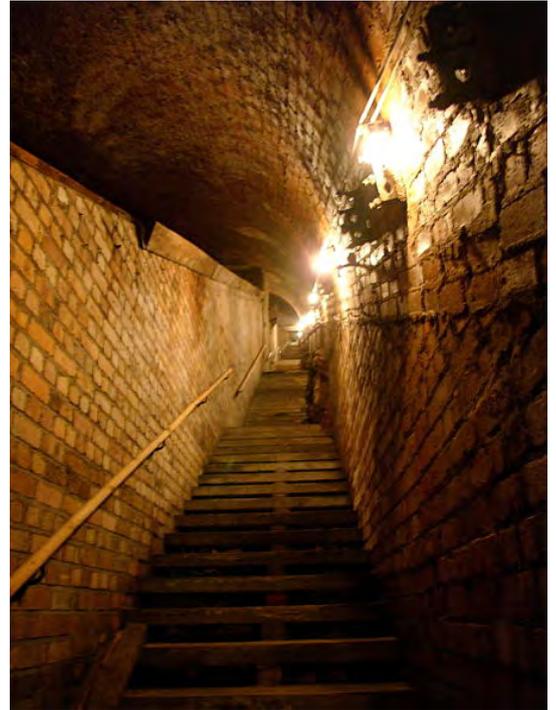


Somers Town Coffee House, Image © Yummy Pub Co

A smaller committee meeting took place in Bristol on 15 September followed by a guided tour of the [Clifton Rocks Railway](#), arranged as an open CPD event for BAG members. This water powered funicular railway was designed to link Clifton, and in particular a proposed Hydropathic Institute, with Hotwells and Bristol Harbour at the bottom of the Avon Gorge. To reduce the visual impact on the picturesque Avon Gorge it was built, with great difficulty, inside the cliffs. It opened in 1893 but was never a going concern and closed in 1934 due to diminishing trade. Its active life did not stop there however. It soon entered the second phase of its life as a WWII transmission base for the BBC and as a bomb shelter for local inhabitants. The BBC occupied various parts of the structure until the 1960s but after that it remained empty and disused. It was saved from partial demolition in the early 1990s and the Clifton Rocks Railway Trust formed to care for it. It's accessible to the public on various publicised open days but outside of these tours can be booked for groups of ten or more. It's a really fascinating place, not least because of the layers of history in evidence so, again, a visit is highly recommended.



*The lower railway entrance, Image Fae/Wikimedia Commons
A view up the stairs, Image TimTay/Wikimedia Commons*



The IfA 2015 BAG conference session

The Buildings Archaeology Special Interest Group are running a session at the 2015 IfA Conference, and we invite you all to consider participating. The session is focusing on the twin strands of whether existing conservation principles are meeting the challenge of balancing the needs of the historic environment and the imperative to be sustainable in light of the increasing threat posed by climate change, whilst also considering the role of buildings archaeology within that debate, and what that role could and should be in the future of our profession. Questions that will be posed and issues that need addressing include:

- Should the need to adapt, update and modify, where necessary, our built heritage to mitigate against climate change, outweigh the need to preserve historic fabric? How can the buildings archaeologists of the future contribute to the debate about what needs to be preserved?
- Given the importance of understanding our built heritage and its significance, how does the role of the buildings archaeologists in the planning system need reforming in order to best target our expertise to enable the conservation of built heritage whilst mitigating for the effects of climate change? How can we change the way clients view buildings archaeology to effect this reform?
- Should archaeological resources be directed at sites identified as being under particularly serious threat to gain as much information before they are lost?

- How might we future proof heritage assets to increase their longevity and reduce future expensive repair and reinstatement programmes after extreme events? Where does the expertise of the buildings archaeologist fit into this process, and how could it be better applied in the commercial sector?

We are hoping that this will be an interesting and thought provoking session. If it's something you feel you might be able to add to, please consider contributing. The deadline for proposed papers is 30th November, and BAG committee members [Edward James](#) and [Cath Poucher](#) are the session organisers. See the official [Call for Papers](#) for details.

CPD events

Two CPD events were planned at the committee meeting. The first of these, An Introduction to Historic Building Construction, was aimed at archaeologists and others in the profession who undertake historic building investigation and took place on 14 October in Birmingham. The course covered typical construction methods and materials for small to medium sized domestic architecture, c 1400 - 1939/45. It cost £65 for IFA members and £95 for non members. Details were sent out to IfA members and the 24 available places filled up quickly.

Attendees came from across the UK and included English Heritage employees, local authority archaeologists and planners, archaeological contractors and the self employed. Attendees agreed that it was an extremely useful course and could even be expanded to fill two days with further emphasis on building construction and a practical, field element. The aim is to run the course again in February, taking into account attendee feedback.

Details of the second event discussed at the committee meeting have yet to be finalised but it was suggested that this could be a two day course providing an introduction to the theory, method and practice of buildings archaeology in the commercial archaeology sector, delivered in partnership with a professional Registered Organisation. Ideally the course would include lectures and seminars looking at the broad development of the discipline and the place of buildings archaeology within the planning process, as well practical introductions to survey types, techniques and outputs. It would be aimed at those in their early career who want to focus in this direction as well as those already established within the sector wishing to broaden their skillset.

The course would be endorsed by the IfA, and would contribute significantly towards member obligations in terms of CPD and personal development. It would form a solid foundation upon which archaeologists can build further experience through professional practice. It would be run as a pilot in the first instance but we are hopeful that it would become a regular event. We are very much looking forward to getting it up and running.

Social media

The committee now has a LinkedIn group and are working on putting discussions and news up there. We'd love you to join in with discussions. We also have a Twitter feed so you can connect with us there too.



[@IfABAG](#)



[IfA Buildings Archaeology Special Interest Group \(BAG\)](#)

Other news

English Heritage

The consultation process for the restructuring of English Heritage closed on 7 February this year and on 14 October, DCMS confirmed that English Heritage will be re-structured from 1 April 2015. The 420 properties currently run by English Heritage will remain in public ownership, managed by a charitable trust under the same name. Advisory and other services will be carried out by a new non-departmental body called Historic England. See the [announcement](#) and [the results of the consultation](#) for more details.

With regards to planning issues and heritage the Guidance on Tall Buildings, originally produced by the Commission for Architecture and the Built Environment and English Heritage in 2007, is under revision. A [consultation questionnaire](#) has been issued and should be returned to English Heritage by 30th November, 2014.

SPAB Maintenance Co-operatives Project

Stella Jackson

The Maintenance Co-operatives Project is moving ahead with regional officers already gaining a following of enthusiastic participants. This is the SPAB's ambitious scheme to create a network of informed community groups dedicated to the care and repair of historic buildings used as places of worship. Backed by the HLF, the aim is to connect, encourage and support the army of volunteers across the country who are largely responsible for the upkeep of some of our most beautiful and significant landmarks.



Training plans are maturing and the team is working hard on developing baseline condition surveys for the buildings involved, with four already having been completed by our Hereford and Worcestershire Officer. In the Spring we held our first taster events, and these were followed by further events in the the Autumn including a textile conservation day in Cumbria, a grants and funding workshop in Lincolnshire, and a Faith in Maintenance training day in Bath and Wells; as well as preventative maintenance taster days in the North East. We've got plenty more lined up over the next few months, and they're all free to attend, so please have a look at the Events page of our website (www.spabmcp.org.uk). Everyone's welcome, even if they're only there for the free lunch!

The team is also gearing up for our National Conference on 21 November, which will launch the SPAB's National Maintenance Week. The conference is being held in York this year, at the fabulous Merchant Taylor's Hall, and there are still a few tickets left - full details can be found on our website.

To find out more about the project and how you can get involved, follow our progress on Twitter: [@SPABMCP](#) and Facebook: [SPABMCP](#); or get in touch with one of our Regional Project Officers

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Features

Ruination, regeneration and re-use: West Derby Carnegie Library

Kerry Massheder-Rigby

Lister Steps, a childcare charity in Liverpool, have secured initial support from the Heritage Lottery Fund to regenerate the Grade II listed former West Derby Carnegie Library on Lister Drive in Tuebrook, Liverpool.

The West Derby Carnegie Library, known locally as Lister Drive Library, was established with funding from an Andrew Carnegie grant, and opened in 1905. The library is a one-storey brick built structure with stone dressings, a slate roof and an octagonal turret. It was designed by Liverpool Corporation architect Thomas



Shelmerdine who was responsible for a number of Liverpool's libraries. The library originally contained a lending library and a number of reading rooms. Sadly, following health and safety concerns, the library closed in 2006 and has remained vacant since. This period of un-occupation has resulted in the library being subject to theft, vandalism and neglect. Items stolen from the library include lead flashings, the glazing to roof lights and feature ridge tiles. There has been substantial rainwater ingress which has severely damaged the timber structure and internal decorative plasterwork and joinery and dry rot is common throughout the building.

The 'Lister Steps Carnegie Community Hub' project, funded by the Heritage Lottery Fund, is currently in its development stage, however once completed Lister Steps aim to relocate their existing childcare services into the building. The regenerated building will also serve as a centre for community engagement, a 'hub' offering refreshments, activities and training opportunities for the local community and visitors.

The project will shortly begin a period of consultation with stakeholders and members of the community. The project aims to host a number of heritage activities in the near future such as tours of the library and grounds, an oral history project, building recording activities and training opportunities. We welcome comments, suggestions and advice from BAG members via our online survey: <https://www.surveymonkey.com/s/NPBB39Z> and we are keen to hear from members willing to share best practice ideas and suggestions for match funding.

Please follow our progress on Facebook (facebook.com/listerstepscarnegiecommunityhub), Twitter ([@ListerStepsHub](https://twitter.com/ListerStepsHub)) and our website (<https://listerstepscarnegiecommunityhub.weebly.com>)

Kerry Massheder-Rigby, Heritage Development Officer,
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After the fire: the rebirth of Hastings Pier

Jackie Heath and Andy Shelley, Ramboll UK

In October 2010 a devastating fire tore through the Grade II Listed pier at Hastings in Sussex. By the time it was extinguished the above-deck structures had been reduced to charred wreckage. This was not the death knell of the pier that many expected. The accretions which had done so much to diminish the pier's significance were burnt away to leave the structure's core once again exposed.



The 2010 fire. Image © Simon Hookey



Hastings Pier after the devastating fire of 2010

A vigorous and sustained campaign by Hastings Borough Council, Hastings Pier and White Rock Trust and, latterly, Hastings Pier Charity (HPC, www.hpcharity.co.uk) has ensured that visitors to the pier can now see major repair works in progress. New steelwork is being fabricated and installed in the below-deck structure and a new timber deck is progressing seaward. In place of the confusion of earlier buildings HPC will then erect a new state-of-the-art visitors centre that will allow multiple community functions to take place.

Underpinning the project is a communal will for it to succeed. Piers, a peculiarly British type of structure, are valuable historic assets that embody collective experience and communal memory. Unlike many communal spaces they generate extraordinary goodwill. This is possibly because most people associate them with overwhelmingly positive experiences. Piers lead eventful lives and, if not being damaged by winter storms or wayward vessels, are often burning down. Those that survive require constant maintenance and have few ways of generating the substantial income required to sustain them. How is Hastings Pier rising to meet these challenges?

The birth of the People's Pier!

As part of the current £14m project the below-deck structure is undergoing major repairs, the new visitors centre (designed by architects dRMM and engineer Ramboll) is being added and the only surviving historic building, the western pavilion, is being refurbished to create an affordable social enterprise restaurant, bar and kiosk. The capital costs of this work are being met by a mix of grants and loans from the Heritage Lottery Fund (HLF), the Big Lottery Fund, the Social Investment Business, the Architectural Heritage Fund, Hastings Borough Council, East Sussex County Council and a community share scheme.

The early days of Hastings Pier

Britain's Victorian railways played a major role in the development of its coastal resorts. A day at the seaside quickly became a hugely popular pastime, especially after the Bank Holidays Act was introduced in 1871. Piers were a response to the inconvenient fact that the sea receded from the promenade for large parts of the day. Hastings Pier was one of fourteen designed by Eugenius Birch, a pre-eminent railway engineer who effectively exploited the development of iron and, more innovatively, Mitchell's invention of the screw pile. The pier opened on August 5 1872, a day chosen specifically to coincide with the country's recently introduced August Bank Holiday. Photographs



In one of the earliest depictions of Hastings Pier, the ornate tollhouses and slender deck can be seen

show the driving rain that continued relentlessly throughout the opening ceremony.

Birch's pier extended to c. 280m and had a much narrower neck than today. The decking was of Jarrah planks and joists (6"x3" laid flat) that spanned wrought iron beams supported on Warren and Pratt trusses fabricated from bolted angles. The trusses were in turn supported by cast iron columns with spigot connections to the cast iron screw piles. Stability was provided by transverse trusses, vertical diagonal 'X' bracing and horizontal rails. As was typical in pier construction there was much redundancy in the bracing, which partially accounts for the structure's survival. The

first violent storm struck in 1877 and wrecked one of the pier's two tollhouses. In September 1899 a part of the decking caught light and the following July there was another outbreak of fire during a concert. These episodes were a prelude to a major fire in 1917 in which the ornate pavilion at the head of the pier burnt down.

The pier in the 20th century

The end of Victoria's reign coincided with a decline in the simple pursuit of promenading. Daytrippers began to demand more sophisticated diversions. The Hastings Pier Company responded by introducing bowling and a shooting gallery and then, in 1910, a large 'joy wheel' roundabout. In 1916 the landward end of the pier was significantly widened by the addition of the Parade Extension, which is when the curving bandstand shelters were added. This proved to be a genuine improvement which would have undoubtedly helped arrest a decline in the pier's wartime fortunes had the pavilion not been destroyed by fire the following year. In the early 1920s there were further improvements, including a widening of the deck. Today the original pier is readily identified within the enlarged structure by its raking piles which delineated its original perimeter, and also by the connection details of Birch's columns which are more elegant than those of later examples.



The bowling alley and roundabout were added in 1911. The pavilion at the end of the pier burnt down in 1917

The highwater mark of the pier's 20th-century popularity was reached as long ago as the 1930s. The pier was requisitioned at the outbreak of WWII and in 1943 a section of the deck was removed to prevent its use by the enemy. When it was replaced in 1946 precast concrete piles with fabricated steel columns were used rather than cast iron. Understandable though this decision was, it was in time to accelerate the vulnerability of the structure.



As much of the pier's early success had depended on the popularity of holidaying beside the

Dancing in the rebuilt pavilion

British seaside, the growth of foreign holidays during the 1970s helped accelerate its decline. The pier's ownership became gradually less secure and vital maintenance was not always carried out. The pier closed temporarily in 1999, re-opening in 2001 under new ownership and after major above-deck works had taken place. However, in June 2006, amidst concerns over public safety, Hastings Borough Council closed the Pier Head, Central and Access sections to the general public.

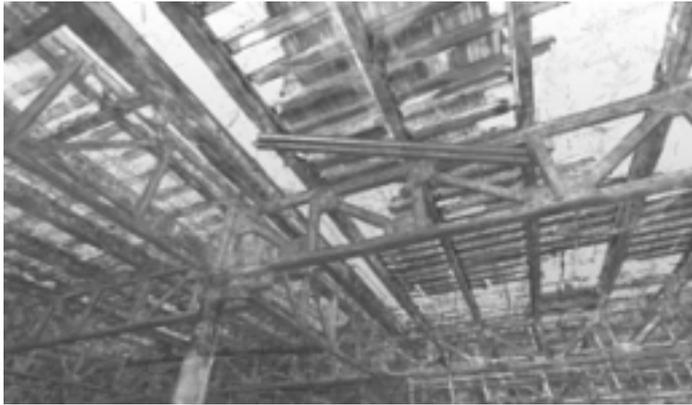
In 2007 the council commissioned Gifford (now Ramboll) to undertake a structural assessment and heritage appraisal of the pier. The heritage appraisal (and Ramboll's later Conservation Management Plan, written in support of the HLF application) confirmed that whilst the pier's structure had a significant heritage value the pier's principal importance lay in its communal value. This was derived from the meaning the pier held to those who knew it, and the role it played as a bank for collective memory and experience. What was self-evident was that, from the time of The Rolling Stones first appearance to the incendiary performances of the Sex Pistols, the pier had been an important thread in the cultural revolutions of 20th-century Britain.

The next chapter - conserving the pier

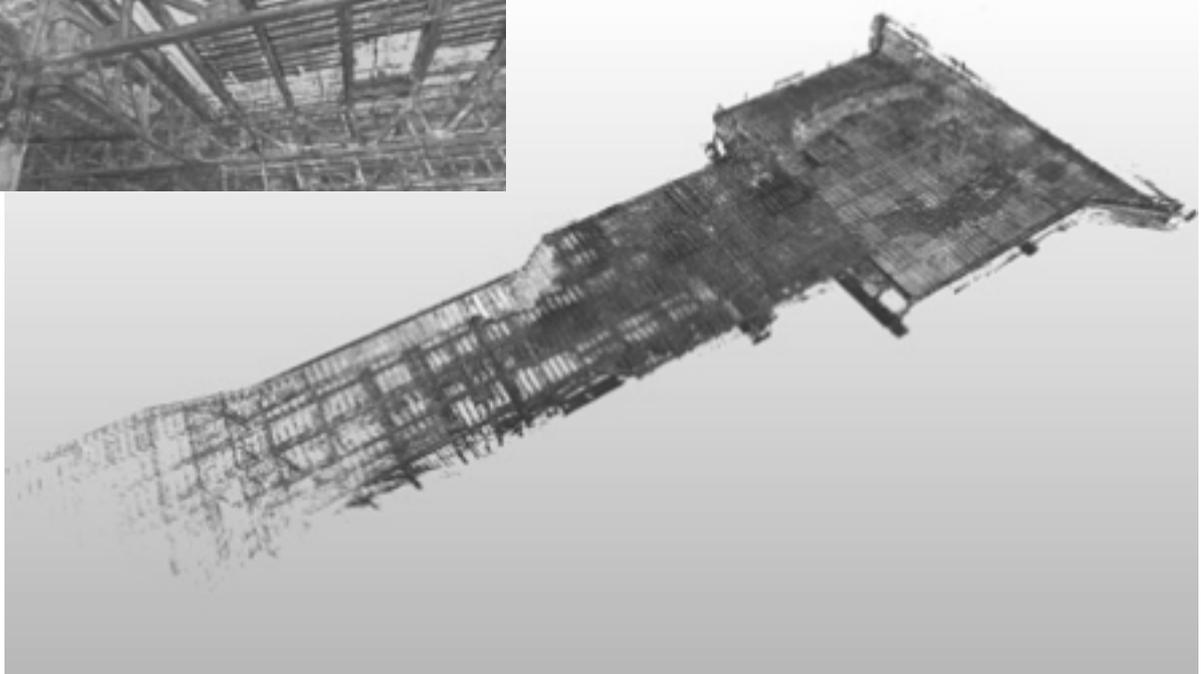
In 2013 Hastings Borough Council compulsorily purchased the pier from an absent landlord and HPC, which had been formed specifically to repair, re-open and manage the pier, bought it for a nominal sum. Major repairs began in January 2014 and are scheduled for completion in 2015.

The repairs are critical to restoring the pier's stability. The contractor, FPE, is replacing the missing and most severely damaged structural elements with new components designed by Ramboll's marine and conservation engineers. The repairs refer to, and are being informed by, the original engineering details and historic construction drawings from 1916. For example, clamps are being used around columns to fix bracings, and large washers are used to fix joists to steel beams. However, they are designed to comply with current codes of practice and are best described as new, honest interventions. They are pragmatic repairs. New trusses are being formed from bolted angle sections (rather than from welded box sections) in order to more closely replicate the original trusses, but the new sections are of steel rather than wrought iron. Damaged trusses are being cut out and new trusses bolted together in situ. Roped access is gained from a temporary working truss above the deck and a scaffold platform. Using hand methods of construction (rather than lifting in prefabricated trusses) is proving a successful method of working. A 50-year durability is being provided by galvanisation of the new steelwork (a technique which offers 15 years of protection) and a sacrificial thickness of steel to compensate for a further 35 years of active corrosion. It is

accepted, however, that cross bracing rods will not be galvanised because so many have failed in the past, and these will need to be replaced as and when required.



Ramboll commissioned a laser scan of the structure to aid their design



Little original deck timber had survived into the 21st century, and almost all that had was destroyed in the 2010 fire. The original intention had been to re-use the remaining planks in the repair works, possibly to define the original footprint of Birch's pier. However, it soon became apparent that they were not thick enough to support point wheel loads from vehicles, and sustainably-sourced Ekki has been used instead, with some of the old timbers being used to make pier furniture. Work is currently progressing seaward and in mid-2014 is about half way along the deck.



Above: Works underway in 2014. Slicing through deck beams. Image © Ramboll

Right: The new trusswork and decking is evident from this angle. Image © Ramboll



The visitors centre will be built from cross-laminated timber with mirrored glass cladding. The vision is of a contemporary and sustainable venue that offers spaces for interpretation and education, and a roof terrace accessed by an external flight of steps which doubles as seating for external events. The sides of the gently-curved western pavilion will be opened up and its timber structure will be exposed to create a new restaurant. The rest of the deck will be a public space within which a revolving programme of seasonal events will take place.

Community conservation

Hastings Pier Charity is a community benefit society with over 3,000 members. They are dedicated to delivering a programme of activities that help people to engage and appreciate their pier. 'The People's Pier' is very much a community conservation project and it is the community who are managing the changes to the pier. The strong and very evident value that the people of Hastings have always placed in their pier was a critical factor in securing funding to help save it. The restoration is bringing the pier back into the heart



Proposal for the new visitors centre

of the community; many of HPC's supporters, employees and trustees are local people, and local firms are being used wherever possible. The pier has also become the inspiration for several creative projects including a television documentary, university projects, short films, songs and children's works. Unusually, HPC are managing the construction themselves. Their engineer is involved in the restoration and rebuild and will continue to maintain the pier when it is open. In this way HPC aim to help conserve the heritage and tradition of pier maintenance as well as the heritage and fabric of their pier.

The renaissance of Hastings Pier is emblematic of how we as heritage professionals should approach heritage conservation. We need to look beyond an asset's architectural or engineering characteristics, important though they may be. The key to successful conservation lies in understanding why people value a place, and then empowering them to sustain it. The genuine affection people hold for Hastings Pier gives it the very best chance of a viable future.

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The Ordsall Chord Railway proposal

Mike Nevell

I visit London by train at least five or six times a year for a variety of reasons. Yet, whatever the cause of my trip to what is one the great cities of the world two things always strike me as notable. Firstly, the drama of the landscape of the journey, which starts with industrial Manchester, develops into the rolling foothills of the Peak District, takes in the flatter fields and increasingly large towns of eastern-central England, and finishes with the suburban, then industrial and commercial sprawl of London. Secondly, the shock of Euston Station: from the lead-in of the deep, brick-lined, cutting with its multiplicity of rail tracks, the rectangular canopy of the station building which seems to press down on the long platforms, to the waiting-cum-booking hall which seems designed to intimidate the traveller with its brutalistic concrete architecture [1]. Finally, there is the shock of the exit which is hidden by a group of non-descript office blocks, clustered, seemingly, to hide the embarrassment of the 1960s terminal station from the Euston Road. It is not a building I have any sympathy for....at all.

What is missing, of course, is the Euston Arch to give the entrance to the station the dramatic presence of St Pancras or King's Cross stations, ten-minutes-walk away. Euston Arch was one of the first great monuments of the

railway age. Built as a classical triumphal arch in 1837 to a design by Philip Hardwick for the London and Birmingham Railway it marked the entrance to the first great terminal station in London, hiding the mechanical age behind this classical facade. Yet, it was demolished in a hurry without any consultation in December 1961, though amid widespread protest.



The Euston Arch in 1960 © John Edgington/The Euston Arch Trust

The Architectural Review criticised the cynical means employed by British Rail in achieving the demolition of the arch: 'Its destruction is wanton and unnecessary - connived at by the British Transport Commission, its guardians, and by the London County Council and the Government, who are jointly responsible for

safeguarding London's major architectural monuments, of which this is undoubtedly one. In spite of [...] being one of the outstanding architectural creations of the early nineteenth century and the most important - and visually satisfying - monument to the railway age which Britain pioneered, the united efforts of many organisations and individuals failed to save it in the face of official apathy and philistinism.'

Fast-forward 53 years to Network Rail's northern hub proposals to significantly improve railway capacity between Liverpool, Manchester and Leeds. This involves building a new line called the Ordsall Chord between Manchester's Victoria, Oxford Road and Piccadilly Stations. Central to this is a viaduct across the River Irwell which in all its various options will impact on the view and fabric of Stephenson's classical-inspired 1830 railway bridge, built for the Liverpool to Manchester Railway: the first intercity railway in the world. The proposals will not demolish the viaduct, although it will cut off the rail access to the Manchester Science and Industry Museum, lead to the demolition of two other bridges, one of which is Grade II Listed, and impact on eight other listed structures.

In contrast to the hurried demolition of the unprotected Euston Arch, the alterations to the Grade I Listed Stephenson's skewed masonry River Irwell Bridge, and the other industrial structures around Liverpool Road Station, are part of three phases of consultation including a public enquiry. This finished gathering evidence at the beginning of June and is due to report its findings in the autumn. I might not agree with the particular option favoured by Network Rail, indeed nor does English Heritage, but the discussions and consultation at least fully recognise the importance of the industrial archaeology of the Liverpool Road Railway Station site, and there is no thought of wholesale demolition in the 1960s style. Progress, then, of sorts in the conservation of our industrial past, and recognition of the central importance to the Industrial Revolution of the building of the railways. As for the Euston Arch, it's just possible that it might be rebuilt [2] as part of the London terminal for the controversial High Speed 2 line. The Transport Secretary Patrick McLoughlin announced in March 2014 that he had asked '...HS2 Ltd and Network Rail to develop more comprehensive proposals for the redevelopment of Euston, working with the rail industry and the local community. This work should include proposals for the Euston arch, which should never have been knocked down and which I would like to see rebuilt' [3]. Let us hope that we won't be regretting the damage to the Liverpool Road Station site in 50 years time.

- [1] For a fantastic even beautiful piece of modernist concrete architecture take a trip to Preston to see the bus station cum multi-storey car park.
- [2] Roughly 60% the stones from the arch were found dumped in the bed of the River Lea, at the Prexcott Channel in eastern London in 1994; "Euston Arch found at bottom of river". The Times. 4 June 1994.
- [3] www.construction-manager.co.uk/news/euston-and-crewe-could-benefit-from-hs2-rethink, 18 March 2014. Accessed 21 June 2014.

Redsand Fort: Maunsell's World War Two Thames Estuary Sea Fort

Tim Murphy



View of Redsand Fort

During World War Two, engineer Guy Anton Maunsell designed some of the most innovative and unusual structures for the defence of the United Kingdom. Placed in the Thames and Mersey Estuary, they were installed to deter the threat of aerial bombardment and to shipping through the placement of magnetic mines by the Luftwaffe.

Today the few surviving structures provide intrigue to those who see them from air, land and sea. Redsand Fort, located approximately 7 miles north of Whitstable, Kent, is the last complete example of Maunsell's "Army Sea Forts". The site is currently being conserved by Project Redsand, a charitable organisation, which was established in 2005 to save these unique structures, the significance of which is being realised more and more in recent years.

World War Two: The need for the Sea Fort

At the outbreak of war in 1939 the German Navy aimed to disrupt the Port of London, one of the busiest ports in the world at this time, and merchant shipping navigating the Thames. The German Navy employed the use of a new weapon, the magnetic influence mine. The mines were laid by aircraft and detonated by the presence of a large magnetic object, such as a steel hulled ship. The mines were extremely effective, as their detonation required the ship only to pass in close proximity rather than have physical contact.

The plan was successful at the outbreak of war sinking over 100 ships in the Thames Estuary alone, this included both merchant and Royal Navy vessels. One victim in the early period of the war was H.M.S. Gipsy, a G-Class destroyer constructed in the 1930s. At the outbreak of World War Two she was stationed in the UK to escort shipping in local waters. At around 2100 on 21st November 1939 the Gipsy was ordered to leave Harwich to establish a North Sea Patrol. The ship hit a magnetic mine which was apparently dropped by a German Heinkel 59 (He 59) earlier that day. The hull was breached and the ship was later salvaged and broken for scrap. An irony of the disaster was that earlier in the day the Gipsy had rescued three German airmen adrift in a rubber boat in the North Sea and brought them safely to port. The airman reportedly may have been from the He 59 which had earlier laid the magnetic mine leading to their rescuers demise.

Action was required to stem the losses of vessels and disruption to merchant shipping. Ships were requisitioned and used as mobile anti-aircraft batteries. These were found to be inadequate and a more practical and efficient solution was required. This need was also compounded by the fact that later, in 1940, the Luftwaffe were using the Thames to navigate towards London during the Blitz. The issue was also found in Liverpool where anti-aircraft defences, along the banks of the Mersey Estuary, were proving ineffective.

The construction & military use of the Sea Forts

The answer to mitigating the threat was found by innovative, and some consider outlandish, engineer Guy Anton Maunsell (1884-1961). By World War Two Maunsell was an experienced engineer, having worked on both military and maritime structures. During World War One Maunsell had been involved in the construction of explosive factories and a secret anti-submarine construction scheme in the form of concrete towers placed in the Solent. During the inter-war period he had worked for the Ministry of Transport on schemes which were as unconventional as his later sea forts. These included his idea for a 'floating sea dome' in the middle of the Atlantic for use by short-range aircraft and assessing the viability of a Channel Tunnel. Prior to outbreak of war in 1939 he had taken up a position with his friend's practice at Sir Alexander Gibb & Partners.

In the early years of World War Two Maunsell had several ideas for innovative engineering schemes which would contribute to the war effort including submersible observation posts, pre-fabricated airfields and a submersible harbour which some historians believe influenced the Mulberry harbours later used in D-Day.

Maunsell's main contribution during the war was to be the design and construction of the sea forts. His original idea for the design of the forts began in October 1940 as 'A Proposal to Establish Martello Towers for the Defence of The Thames Estuary'. This was a paper by Maunsell in response to a request for advice from the Port of London Authority's Harbour Master, Commander E C Shankland. Maunsell had come up with the idea a few months before, detailed in a separate paper to the Admiralty, entitled 'Marine Fort No 3'. He had envisaged, around the time of Dunkirk, a network of forts off the Belgium and Dutch Coast which were used for observation. Maunsell described how the forts would be built, similar to those later realised in the Thames:

"The form of construction is extremely simple and has been designed so as to lend itself to speedy erection. The pontoons can be built on light slipways on any river foreshore in tidal water and after they have been floated, the pedestal and citadel would be rapidly constructed on the pontoons by pouring concrete in prepared shuttering. The time taken to construct on of these forts would be two months. A number of Forts could be built in the Port of London, so that within three months from the start, several Forts can be made available".

Commander Shankland was concerned about the effectiveness of the magnetic mines and believed that a network of sea forts stretching 26 miles from Margate in Kent to Clacton-on-Sea in Essex may deter the threat or at least provide a method of noting where mines had been laid. The sea forts project was almost shelved by Director of Naval Construction, Sir Stanley Goodall, who believed the proposed concrete and steel marine structures would be unstable. The project was eventually pushed forward by Vice Admiral Fraser, Controller of the Navy.

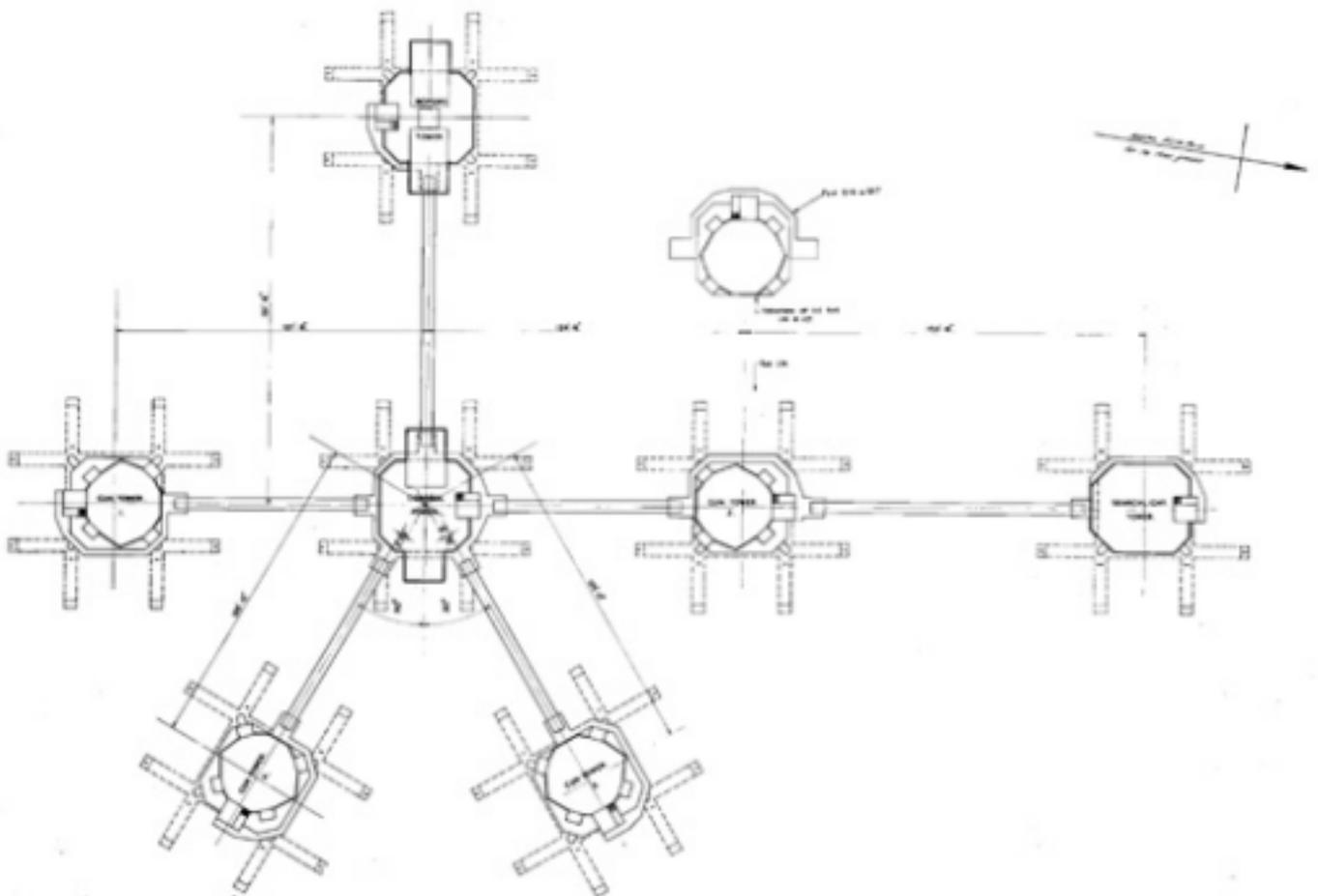
By March 1941 the design details of Maunsell's Navy Sea Forts had been agreed. The Navy Sea Forts were a precursor and different in form to the later Army Sea Forts. The earlier Navy Forts comprised of a citadel structure supported by two large reinforced concrete legs which rest upon the seabed. The most well-known surviving example of this type is Roughs Towers, located 7 miles from the coast in the North Sea and today better known as "Sealand".

The success of the Navy Forts resulted in the commission of the Army Sea Forts which were to be placed in the Thames and Mersey Estuaries. The initial concept of the Army Sea Forts was a single gun tower capable of resting on sand. The Army Sea Forts were however realised as a group of these towers linked by bridges. Both Maunsell and Sir Alexander Gibb were appointed as joint structural engineers on the project. In October 1941 the Cleveland

Bridge & Engineering Co Ltd won the £336,000 contract to build the first of the Army Sea Forts, in the Mersey, at Bromborough Dock. The first fort in the Mersey Estuary was positioned in October 1942 and the last in July 1943.

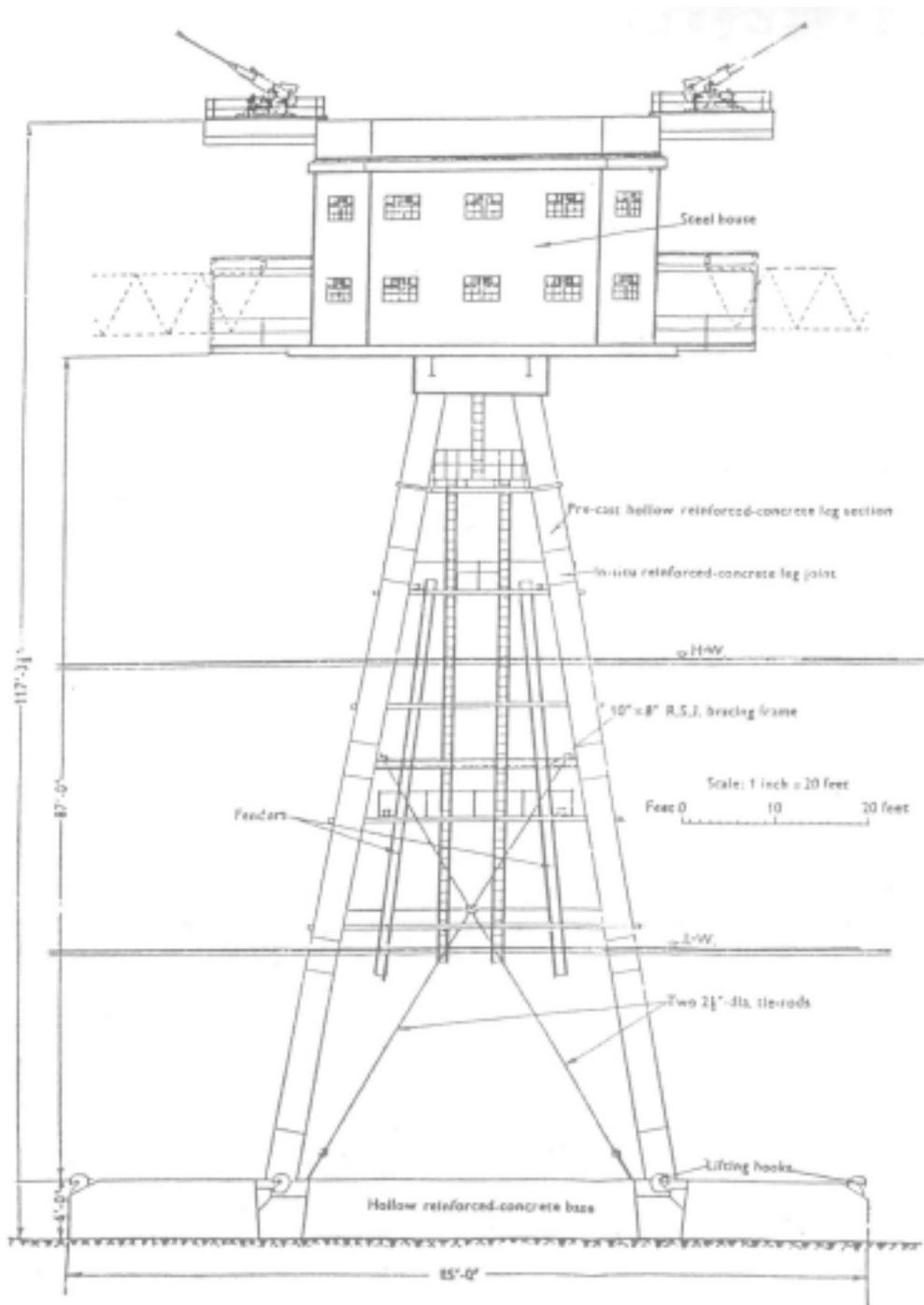
The Thames Army Sea Fort project was originally designed to accommodate 49 towers and was realised as 21 forts (three groups of seven) constructed between May-December 1943. The Holloway Brothers were the contractor working from Red Lion Wharf, in Gravesend, on a tender cost of £724,000. The three Thames Army Sea Forts were placed in the centre of the mouth of the Thames Estuary, between Essex and Kent, and almost identical to each other in scale and form. They included Nore Fort, Shivering Sand and Redsand. They were codenamed Fort U5, U6 and U7 respectively.

Redsand Fort comprised of seven towers which were linked by tubular steel catwalks. The towers comprised 1 Bofors (anti-aircraft gun) tower, 4 gun towers, a search light tower and central control tower. The legs of the fort were constructed of reinforced concrete with an "Oxford picture frame" design for the base resting on the estuary bed. The legs supported a reinforced steel superstructure or citadel. The two floors in each citadel accommodated a range of rooms including restrooms, messes, magazines, washrooms, stores, workshops and engine rooms. The roofs of the towers accommodated operational equipment such as searchlights and artillery. The prefabricated Redsand Fort towers were floated into place. The first tower was placed on 23 July 1943 with the last tower positioned six weeks later on 3 September.



Plan of Thames Army Fort

The fort could accommodate a garrison of up to 165 men. In July 1943 the No 1 Anti-Aircraft Fort Regiment was formed with headquarters at the Drill Hall, Watling Street, Gillingham, Kent. The fort was initially manned by 165 personnel, this rose to 265 after June 1944 when the Luftwaffe had employed the use of the V1 flying bomb against London. The period on-board for a crew was four weeks followed by a ten day break ashore in Gillingham.



Elevation of Bofors Tower

All enemy engagements by the individual forts are not recorded. As a group the Navy and Army Sea Forts are known to have shot down both V1's and aircraft. There is also known to have been a number of friendly fire incidents which resulted in a special notice concerning 28 Brigade stating that special permission was to be sought from R.A.F. Uxbridge before firing could be opened on any unseen targets.

The post-war period & decommission

The 1st Anti-Aircraft Fort Regiment was disbanded in September 1945 and a newly established unit, the Anti-Aircraft Fort Maintenance Detachment took charge of the sites. During the late 1940s and early 1950s proposals were put forward to reuse the forts as a 'Cold War' defence. This was never realised, mainly as a result of the large cost in a time of post-war austerity.

The Thames Army Sea Forts were decommissioned in 1956, the main loss in this period was the roof mounted anti-aircraft guns. Nore Army Fort was dismantled in 1959 as it was perceived a hazard to shipping which was not



unfounded after a collision with the Swedish Pulp Carrier “Ballbeck”, destroying three towers and killing four civilian caretakers. A base from the Nore Fort was dragged 17 miles upriver to the foreshore of Alpha Wharf in Cliffe, Kent where it can still be seen today at low tide.

Shivering Sands Fort was later hit by the 295 ton Ribersborg in 1963 which destroyed one of its gun towers. During the 1960s many of the towers were used by pirate radio stations. Redsand Fort was occupied in 1964 by “Radio Invicta” and later in 1965 by “Radio 390”. Since the end of

View of base of Nore Fort on bank of the Thames at Cliffe, Kent

the 1960s pirate radio era little has happened at the forts which have for the large part been left to deteriorate in the harsh marine environment.

The Future of Redsand Fort

Today Redsand Fort is the only surviving complete example of Maunsell’s Army Sea Forts. Nore Fort and the examples in the Mersey have been removed with little or no trace of their existence. The six surviving towers of Shivering Sands Fort are still in place in the Thames. However this fort is located in a busy shipping lane and unlikely to be subject to any future schemes of conservation.

Before 2005 it seemed that Redsand Fort’s fate was sealed and it was only a matter of time before these innovations of maritime structure and 20th century military defence had completely disappeared. Project Redsand, a charity with a dedicated team, was established in 2005 with the goal of conserving these towers and finding a sustainable use for them. Initial structural surveys have suggested that the reinforced concrete legs and steel citadel are in better condition than was historically believed and their reuse, subject to funding, is viable.

Whilst other sea forts, such as those constructed during the Nineteenth century in the Solent have been successfully conserved, Redsand Fort presents a very unique conservation challenge. Project Redsand have many tasks ahead to realise their ambition but perhaps one can draw a comparison to the challenges, such as viability and funding, Maunsell faced in his attempt to construct these buildings in the first place. These buildings now add a unique aspect to our historic building stock.

Although the site has no statutory protection, research to date has found that Redsand Fort is of heritage significance for various reasons. The structures are unique and tell a story which has largely fallen out of public consciousness and this will continue further as time moves on. They also present one of the most innovative construction projects of The Second World War and that of Guy Anton Maunsell. They were a fundamental part of World War Two defences and a forerunner of North Sea oil rigs in their design. Their story is not only one of engineering triumph and home defence but also a social story of the men who garrisoned these buildings. This was perhaps one of the most isolated and unique postings a serviceman (stationed for home defence) could be sent. With the exception of a publication by Frank Turner there is little known of this story. The same may also be considered of the pirate radio stations, a topic which will also soon disappear from living memory.

Like Project Redsand, I hope that in years to come there will be something more for those people who inquisitively gaze from the north Kent coast towards the site pondering what the structures are and if there is a way to visit them. A programme of conservation and reuse will not only save the significant site of Redsand Fort but also protect a unique example of marine defence structure for future generations to understand and appreciate.

To date Project Redsand have provided access to one of the towers which is currently being conserved. Waterman Group are currently working with the charity, providing baseline studies to inform future conservation and their viable use. For further news about Project Redsand and their work please visit: www.project-redsand.com.

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Authors Note:

The Author would like to thank Project Redsand and Frank Turner for the provision of information and photographs for this article. Most of the historical information in this article has been sourced from the following publications:

Turner, F. (1995) *The Maunsell Sea Forts; Part Two: The World War Two Army Sea Forts of the Thames and Mersey Estuaries*

Turner, F. (1995) *The Maunsell Sea Forts; Part Three: The World War Two Thames Estuary Defenders, The Human Element*

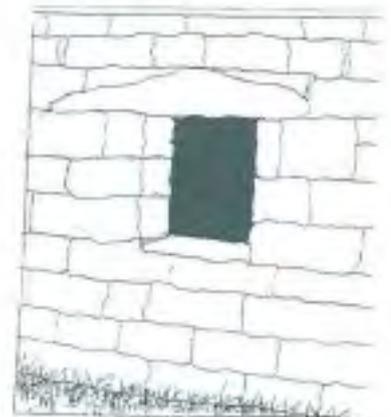
Watson, N. Turner, F. (2005) *Maunsell: The Firm and its Founders*

Relics of the past: identifying bee boles

Geoff Sharpe

Recesses and apertures in old walls are usually perceived as being aesthetic features which mark a fashion from the past and are regularly used to display potted plants, shrubs and garden ornaments. In many cases this was not the original purpose and they often conceal a much deeper historic significance. In reality most were used in early farm husbandry for bee-keeping with both the honey and the wax making an important contribution towards farming incomes. Termed bee boles in most parts of the British Isles they are sometimes described as bee keps or bee garths but localised names may also be found in some regions. References to bee garths more correctly relate to recesses accessed from an enclosed high walled garden. For a long period of time honey was one of the few available sweet foods and was regarded as a highly prized commodity, with the wax being used for candle making and by craftsmen for a variety of purposes. Honey was also in much demand for the brewing of mead.

They are generally found in walls constructed of local materials, but shape, size and location are the more important clues to correct identification. There are however no hard and fast proportions to work from and regional variations are to be found. Nevertheless they are usually some 38 to 66 cm (15" to 26") in width and around 46 to 76 cm (18" to 30") in height. The depth from front to back mostly varies from between 30 to 60 cm (12" to 24"). Designs can differ from arched heads to ordinary rectangular shaped recesses and rounded (or half bell) shaped backs are also found. The early history, use and original status of a property may also be a factor with those with a prestigious past often displaying ornate stone carving and similar embellishment. Boles were a particular feature of the manor houses built during the Tudor period but records show they existed in the early 14th Century and they may have much earlier origins. The climax to this form of bee-keeping occurred during the 18th Century and the early part of



the 19th Century.

They are mostly discovered in garden walling which is sheltered and has a southern or south eastern aspect. It was usual to place them some 46 to 60 cm (18" to 24") above ground level but exceptions to this rule are to be found and they can be discovered at eaves level, over doorways and even under window cills. It is easy to mistake similar features for this purpose such as those used for falconry. Recesses of like dimensions were sometimes made for falcons in captivity but in their natural habitat the birds prefer high places and in an attempt to replicate a similar environment, niches intended for nesting are likely to be found at a high level. In some parts of the British Isles the formation of goose pens within the integral part of a wall became regular practice. The much larger size and occurrence at ground level usually provide clear distinguishing signs. A good tell-tale sign for a bole is evidence of old metal fixings. It was regular practice to protect them with a lockable metal grill or louvred doors to prevent the theft of honey. They are seldom found as a single entity with at least 6 or more being spaced closely together.

Bees were originally kept in skeps (hives) made of wicker fashioned into a tall conical shape which was then coated with a mixture of clay and dung usually termed clome. These were superseded by skeps made of coiled straw with the modern moveable hive not appearing until the mid-nineteenth Century. An important variation to the bole is the bee alcove (Figure 4). Most were



A skep



A bee alcove

designed to provide room for two or more skeps on each shelf. The recesses are much larger and measure around 1.5 m (60") in height and about 1.3m (50") in width.



Some of the big estates and grand houses hosted more intensive methods of bee-keeping using specially designed summer-houses which often featured artistic latticework and other decorative embellishments. Surviving examples are now important historic relics. During the winter

months it was normal practice to keep bees in purpose-built winter quarters which can be readily identified as windowless out-buildings having a series of recesses within the thickness of the internal walling. A likely distinguishing feature is exceptional wall thickness and well insulated roofing, which helped to maintain equable temperatures during the critical periods of the winter frosts. The development of the sugar cane plantations in the West Indies, and the later discovery of processing sugar from beet around the time of the Napoleonic wars, diminished the demand for home produced honey and bee-keeping gradually declined as an essential activity.



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Vanbrugh's Barn? Re-examination of the Carpenters' Block (Nugent House, Stowe School, Buckinghamshire)

Mark Samuel



Nugent House in its new coat of render, looking west

Architectural Archaeology carried out recording work during the conversion of the Carpenter's Block (Nugent House) during the very wet May of 2013. Additional recording work ultimately descended to AA through the Stowe Project Director, John Morris, via the architect via Network Archaeology (David Bonner). The involvement of archaeologists in the process was entirely down to Stowe School's voluntary funding of this work. This resulted in an entirely new discovery. An earlier Historic Building Assessment had made the key recommendation: 'Where possible the date of alteration should be ascertained and marked on the plans. This will form a permanent baseline recording of the surviving original fabric of the building as well as alterations carried out since its construction'.

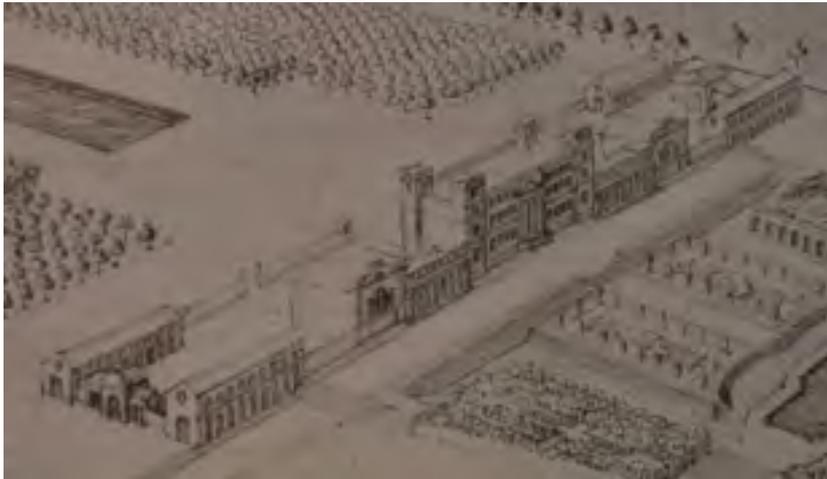
The stripping of the building made important new insights possible. Stowe School is therefore to be congratulated for supporting 'a rolling programme' of research allowing incremental increases in knowledge. Such a model will hopefully be imitated by other major bodies with such great buildings in their care.

Network Archaeology had originally been commissioned by Stowe School to undertake an assessment of Nugent House in advance of proposals to create additional boarding accommodation. This earlier assessment was carried out on a 'un-stripped' and functioning building; its contents still in place; severely constraining what could be discovered. It was concluded that the '...original function of the building is not known' but it was hazarded that the building might be connected with 'food production or storage' [1].

The house built by William Cleare was a conventional construction of brick built 1677-1683 [2]. An engraving (1683) [3] shows the four-floor house flanked by passages; these lead to vernacular two-floor oblong houses with hipped roofs (kitchens?). Other service buildings were sited in the best medieval tradition away from the main house to prevent fires. Fashionable tunnel pergolas concealed these buildings.

Nugent House (a 19th-century name) is first seen in a drawing directly from the south [4] that probably shows Vanbrugh's intentions rather than actuality [5]. Nugent House (far left) is clearly indicated as one of four ranges that

balance the house symmetrically. An extant pedimented 'link building' closes off the west end of a yard. The area enclosed by the two ranges later became known as the Kitchen court. Roundels and doors in the west (gable) ends correspond to reality if exaggerated in size. Arrays of tall openings run the full length of both blocks. Shorter first-floor openings run above the ground-floor openings separated by a heavy plat band (south block only). To what



The 'Gough view' 1722; The Carpenters' Block is furthest to the left extent does this record reality, as revealed by archaeology?



A detail of Bridgeman's map (1739) shows an additional block to the west; this may never have been built

A 1739 map [6] makes the symmetry of Vanbrugh's complex clear. Two blocks (not shown in the Gough view) are separated from the end of Nugent house and its counterpart by slight gaps. A massive (extant) red-brick wall is apparent for the first time. This cut off all view of Nugent House from the northern approach. As with all these records, it is not certain if the map shows projected works rather than what was present on the ground.

The construction of a cupola at the east end of the roof is dated to the recorded date of its bell (1747). The roof is thought to have been built in its present hipped form as a result of the conversion of the building into a brewery in 1817 [7].

Robert Adam was active at Stowe between 1770 & 1772 [8]. A map of the park [9] shows the extant orangery touching the NW angle of the Carpenters' Block as it does today. The 'additional' western block is not shown and again we have to ask ourselves if it was ever built.



Detail of Bickham's map (?after c. 1772)

After this time, few alterations of note were made to the western part of the complex. The west part of Nugent House was variously named the Brewery Cottage or the Gardener's House and comprised 'sixteen rooms and offices' [10]. Alterations of a functional nature were made to The Carpenters' Block (the area described here) in 1865 when the Dobinson Corridor was built against the north side. The corridor leads to a bridge at the north-east angle of The Carpenters' Block to form the Northern link Block. The architectural effect of the building was largely destroyed to allow such communication with buildings to the east. The Garter Dining Room was built into the gap between earlier buildings and the southern counterpart of Nugent House.

Nugent House had a chequered history after Stowe became a school in 1923. The west part was adapted to become accommodation for masters, while the east part (The Carpenter's Block) became a series of workshops in the 1930's [11]. The Victorian bridge was replaced with one of little beauty in 1948 [12] and a series of unsympathetic repairs were carried out in 1962. The architectural significance of the building was almost entirely masked by these changes.

Historic building recording exercises of this type now rely very much on adaptation of the CAD .dwg files of the architect (which can vary greatly in quality). There were other constraints on the degree of recording. The exterior

had been exposed and was already hidden under new render by the time of the author's involvement. Anna McEvoy (Stowe House Preservation Trust) had sensibly made a digital photographic record of the exposed windows on a Sunday just before fresh render was applied.

Even with the aid of the author's 'work-experience' son, little time was available for anything more than the speediest internal photographic survey, with accompanying notes and measurements with annotations directly applied to hardcopies of the existing surveys. The stripped interior was being directly concealed again by new work and there was no time for such niceties as 'single-context' recording.

The conclusions about the building below are based upon the new examination of the east half of the building apart from what limited information about the west component was available in the historic building assessment. The recent examination has not solved the chronology of this building, but has firmly placed this rather neglected part of the complex within Vanbrugh's remit. The Gough drawing shows an architectural 'state' that never existed. We now know that the clock tower was added to a single-storey building and the second floor was added about a hundred years after initial construction. Vanbrugh seems to have initially envisaged a gently-pitched roof over a two-floor range, but a quite different building was actually executed. The new research indicates that the Gough drawing was in fact a 'presentation drawing' to his client. The 18th-century mapmakers likewise incorporate intended alterations on the principle that a 'stitch in time saves nine'. These may never have come into being however.

The 1683 elevation of the south front shows that the area now occupied by Nugent House and its counterpart was then empty. The date of Nugent House must therefore be shortly after 1725, the supposed date of the Gough Drawing. This date could be confirmed by dendrochronology.

In its initial form, Nugent House was a simple one-storey building. The outside length of the building at ground level was nearly one hundred feet (30.48 m); this created an internal space 94 feet 5 inches (94.7 m) long. There can be little doubt that the design of Nugent House was based on eight-foot bays; five on each side flanking a central bay of 14 feet five inches for the carriageway. The lost trusses of the original roof were probably at ten-foot (3.048m) centres. The carriageway formed the axis of symmetry.

The building was of good brick with rubbed-brick 'camber-arched' windows. The windows were subtly varied in form and position, hinting at the direct attention of the architect. There were five windows to either side of the carriageway. Each half had three central openings; centred on the notional eight-foot bays; the central window being wider than the others (the extant east window is of this size). The two outer windows were 'toed in' one foot so as to impinge less on the SE angle and the carriageway. The openings may have been unglazed. Internally-opening shutters would have been supported on frames behind the rebates. The height of the structure in its original form is uncertain although the original floor may correspond to the ?1962 internal concrete floor which is well below the surrounding ground level (a considerable build-up of yard surfaces may be expected over three hundred years).

The fine east pediment is demonstrated to have stood proud of the original sharply pitched roof. The clock tower was added to the original roof structure in 1747 and retains the only remaining timbers of the first roof. A new roof employing king-post trusses was provided when the building was converted into a brewery in 1817. The carriageway was walled up at this time and an additional floor was added to the building. This may still incorporate tie beams from the original roof. A first floor was inserted, probably at this time, and the original barn windows were fully blocked on the south side to allow the insertion of floor joists into the wall face. The building was therefore converted from a single-floor structure to a three-floored structure. The timber internal lintels of these embrasures survive in the other half of the building and could be dated by dendrochronology.

A thick coat of render was applied after 1865. The brutally functional alterations made in 1962 involved the punching of a series of new windows into the south elevation (including reinforced concrete lintels). This was done with utter disregard for the earlier fabric. The carriageway arch blocking was refaced to conceal the arch completely and a keystone removed to allow a window! (the arch has recently been reinstated).



The south elevation today showing details of Vanbrugh's barn (in red) annotated onto the architectural survey (Limbrick Associates)

Nugent House was an 'architect-designed' barn. In England this was a unique concept at that date and intended to form part of the composition set out by Vanbrugh. The massive carriageway is the best evidence of the building's purpose. In its original state, it was open-sided and capable of admitting a haywain. The internal width (N-S) of the building allowed a clear distance between the two archways of 22 feet 3 inches (6.78m), only slightly less than the recommended 24-foot (7.31m) length of a threshing floor. Open carriageways provided a through-draft for this purpose. No porches were employed but these features only come in after about 1750 [14]. An apparent absence of barn doors may be connected with the carriageway's additional role as a thoroughfare. The opposing range was different in several points of detail; raising the possibility that it served a different role in this putative 'home farm'.

The utility of HBR involvement has been made apparent here, even under circumstances which are less than perfect. The special circumstances also show the need for experience in rapidly setting priorities for recording and determining 'what really matters' as opposed to recording for the sake of it. It is inevitable that much can only be subsequently determined from records but while a point-cloud laser survey is very impressive, such exercises really can do no more than delay interpretative decisions to a later day. The best place to make interpretation is when the evidence is in front of one! Subsequent analysis should then aim to test such 'site interpretations', and if necessary replace them with entirely new ones. There really is no way of escaping interpretation at every stage of the process.

- [1] Network Archaeology Historic Building Assessment, 1
- [2] Wikipedia 'Stowe House' passim
- [3] Stowe House [south facade], anonymous (1683), RCHME
- [4] Gough Drawings a.4, fol.46; Bodleian
- [5] op. cit. 1, 9
- [6] Sarah Bridgeman's map prepared for Viscount Cobham (1739); repr. Austenonly.com/2011/05/08/the_ha_ha_at_stowe/
- [7] op. cit. 1, 1
- [8] Wikipedia
- [9] Map printed by George Bickham Junior in the Beauties of Stowe (1750)
- [10] op. cit. 1, 8
- [11] op. cit. 1, 3
- [12] op. cit. 1, 108
- [13] S. Wade Martins (1991) Historic Farm Buildings p.166
- [14] ibid.

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