



ARCHITECTURAL TECHNOLOGY

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The refurbishment of
Earlham Hall, Norfolk

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Look east

Focus on East Anglia Region

AT magazine

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Editor's foreword



Architectural Technology professionals must always be looking to the future, but should also apply their knowledge to the past.

Say the words 'Architectural Technology' and for many people this will conjure up visions of gleaming new buildings and ultra-modern design. During the boom years of the last decade this was very much the public face of architecture, with glossy, high-profile newbuild projects in the news every time you opened an architectural magazine.

Much has changed since the downturn of 2008. High-tech newbuild projects are not as much in evidence as they once were. This does not mean, however, that the skills of Architectural Technology professionals are no longer required. Architectural Technology is a highly versatile discipline. AT professionals are always looking ahead to new

technology, but they should also be aware of how it can be applied to the buildings of the past.

Instead of replacing our existing infrastructure and architecture, conservation, refurbishment and retro-fitting are highly skilled ways of applying contemporary Architectural Technology – and therefore an area well suited to CIAT members. AT professionals are innovators and can take an existing building and allow it to evolve in an exciting way best suited for those who will enjoy the project and those within the surrounding environment.

It is often said that the UK has the oldest and possibly least energy efficient housing stock in Europe, so members, the majority of whom

Members can take an existing building and allow it to evolve in an exciting way

work in the UK, are also uniquely placed geographically to take advantage of the energy-efficient retrofitting boom.

This issue looks at a number of cases in point. On page 4, you can read about Toni Page MCIAT's work on the refurbishment of Earham Hall, Norfolk. On page 14, Professor Tom Woolley examines how traditional building materials and know-how can be used in today's projects to achieve high-performance results. On page 16, James Daw looks at the retrofitting of insulation to solid masonry walls.

Regards
Hugh Morrison
Editor

Make the past your future... The CIAT Conservation Register

The CIAT Conservation Register identifies Chartered Architectural Technologists competent in the conservation of historical buildings and their surroundings. The competencies that all Members must demonstrate in order to join the Register link directly to the ICOMOS guidelines (International Council on Monuments and Sites). CIAT is a member of the Edinburgh Group, a consortium of bodies with expertise and representation within conservation, including English Heritage, Historic Scotland and professional bodies.

CIAT Accredited Conservationists are recognised by English Heritage, Historic Scotland and The Heritage Lottery Fund and others to act as lead consultants on grant-funded projects.

To join the Register and for further information please visit:
www.ciat.org.uk/en/Join_CIAT/qualifying/specialist-registers

or contact Amina Khanum, Specialist Registers' Coordinator at Central Office on 020 7278 2206 (amina@ciat.org.uk)



Restoration style

Earlham Hall in Norfolk, a grade II* listed building of historic importance had fallen into considerable disrepair and posed major difficulties for conservationists.

Toni Page MCIAT, Chartered Architectural Technologist and Accredited Conservationist, took on the challenge of its refurbishment.



The south elevation after works were completed. Compare with image on page 6.

My colleagues and I at R H Partnership Architects were delighted to be involved in the refurbishment of the grade II* listed Earlham Hall in Norwich owned by the University of East Anglia. Construction works commenced in June 2012 and were completed in March 2013.

The building

Earlham Hall stands in parkland at the western fringes of the city of Norwich, immediately to the north of the University of East Anglia. The building is owned and operated by the University of East Anglia. It is grade II* listed and was in need of refurbishment to make it functional for use by the UEA school of law whilst addressing structural issues,

poor maintenance and services requiring updating to 21st century standards.

The building is of national importance as an historic building dating from the late sixteenth century and is of social significance as the former residence of locally important figures, through its Quaker connections and association with the well-known prison reformer, Elizabeth Fry (1780-1845).

History and context

The manor of Earlham passed rapidly through the hands of a number of families in the late sixteenth and early seventeenth century. It was held by the Downes family from 1571 until 1594; by

the Cornwallis family from 1594 to 1608; and by the Hobarts from 1608 to 1616. One of these families is thought to be responsible for building the house which forms the core of the present hall. The house appears to have been extensively remodelled in the 1640s giving the hall its essential form of a substantial east-west range with cross wings.

In 1657 the estate was acquired by the Waller family and in 1682 it passed to Waller Bacon, son of Francis Bacon. Changes may have been made to the house during this period and during the ownership of Waller Bacon's son, Edward, up until his death in 1786 after which the estate passed to a nephew, Bacon Frank, who leased the hall and grounds to the Gurney family.

John Gurney was a prominent local businessman and Quaker. He and his wife Elizabeth were associated with some of the leading thinkers and reformers of the period. The Gurney family moved to Earham Hall permanently in 1786 and, in an unusual arrangement, remained as tenants of the Frank family until 1924. During their tenancy numerous changes to the hall and grounds were made right up to the early years of the twentieth century when a billiard room was added to the north west and a dining room to the north east. Dutch gables were added to the south façade and the rose garden and rock gardens formed in the grounds to the south and east of the hall.

Fabrication method, phases and interventions

Earham Hall is constructed predominantly of brickwork, with some knapped flint, flint cobble panels and red brick dressings, below plain and pantiled roofs. Early brickwork exists on the south and west elevations. The bricks are long and narrow approx. 230x50-55x110mm in size. Flints are knapped to a flush face and randomly bedded and sized, not coursed, in the earliest work. There are the remains of a moulded brick cornice and plinth capping to the west elevation, assumed to be of the 1642 north extension.

The works

Works of maintenance, fire compartmentation and piece-meal additions/alterations to services have been carried out since the building was purchased by Norwich City Council in 1925 through successive roles as a library, maternity hospital, nursery school and by the University. These works were carried out while the building was occupied resulting in routing modern services, externally and internally, across architectural and historic features and surface mounting of fittings.

These installations and physical adaptations were visually intrusive and obscured historic fabric. Through these works the building had, by degrees, been degraded and diminished. In addition to the modern alterations vegetation had been allowed to grow over all the external elevations damaging masonry, retaining damp and promoting rot and decay. An external fire escape stair had facilitated access to the roofs by thieves who stripped lead

roofing and weatherings, causing water ingress. Particular areas of concern identified were;

- the pier at ground floor level whose foundations had failed and forced the closure of the building
- the south elevation, second floor and roof structure of the main range roofs and rainwater disposal generally
- the north gables and bressumer beams over the bays to the north elevation of the east and west wings
- poor services and fittings
- presence of asbestos

The work to be carried out had the objective of repairing the building fabric and putting the building in good order such that it could, in future, be managed under a routine, regular maintenance regime. Services and facilities have been upgraded to current standards and include lecture capture AV installations. A platform lift and internal ramps enable access for all to the maximum amount of accommodation. Intrusive modern elements have been removed and historic fabric revealed and conserved, where possible. A new entrance at the east and link to University Drive via the Exemplar site provides a fitting approach and reception for the Law School.

The brick is scored with a pentangle and the numerals 666. This may have been a protective curse added by the mason.

Repairs

A large proportion of the works consisted of structural repairs to the timber framing of the main south range. Concerns were raised in the initial condition survey in November 2010 and further investigations were included within the tendered works. The results showed that above the first floor windows successive alterations and re-facing had been carried out resulting in a band of walling from this level through the second floor zone and up to the

head of the second floor windows which had no through bonding or integrity and comprised an outer, untied brick facing, an applied inner leaf supporting the timbers of the parapet gutter and a core of original walling incorporating a rotted former wallplate, rafter ends and the bearing of the principal second floor beams. Above this mixed construction the centre gable had been constructed in 1910-15 adding approximately four tons of brickwork to the south elevation of the main range.

It was necessary to dismantle the centre gable and re-build the south elevation above the first floor windows. The masonry was dismantled course-by-course and each brick marked for re-building in the same location. 95% of the bricks were re-used and the mortars carefully matched to the existing to reflect the campaigns of previous repairs and additions. The dismantling revealed a marked brick at the head of the jamb of one of the first floor windows. The brick is scored with a pentangle and the numerals 666. This may have been a protective curse added by the mason. A likely date for this would be the 1640s when East Anglia was embroiled in religious conflict and witch hunts; a period when opposing beliefs could readily be equated to heresy or evil.

Having dismantled the south gable the second floor beams and principal roof timbers were repaired using resin techniques to reduce the extent of loss or damage to the historic fabric. Common rafters and roof timbers were repaired in oak or matching timbers using traditional carpentry techniques. Beams below the north gable of the east and west wings, east wing second floor and at cellar level were also repaired using resin techniques. Lintols above several second floor windows to main elevations were replaced and dormers reconstructed and lined to reduce heat loss.

The second floor south elevation windows, originally full width double hung sashes, had been subdivided and poor quality casements installed. The frames have been repaired or replaced, according to condition, and casements similarly repaired and weather stripped. All windows and doors have been repaired and draught-stripped to improve thermal performance. Roofs and suspended ground floors have been cleaned out and new insulation installed, similarly, and the voids above and below provided with ventilation.

The building services have been extensively renewed, improved and rationalised and the UEA district heating main extended to serve the Hall, and the outbuildings in future phases, further reducing energy usage. Low energy lighting and automatic controls have been installed and point of use water heating utilised. The combined drainage system has been renewed and separated with surface water now taken to soakaways, reducing the load on the foul system.

New roofs were installed with a vented insulated deck

The external fire escape has been removed and fire compartmentation, protection and detection systems upgraded internally with automatic closing devices to doors and secondary protection to glazing on escape routes. A fire protected glazed screen has been installed through the main range at ground floor level to protect the escape route from the main stair.

Consideration was also given to the thermal performance of the building wherever possible and to comply with building regulations. Where the opportunity existed to re-roof, new roofs were installed with a vented insulated deck or warm roof construction. Window repairs were carried out and thermal improvement made via new brush seals.



New east entrance stair

Underfloor insulation was also introduced where voids existed below timber floors with ventilation. The new build east entrance elements (walls, roof, slab) all conformed to the current building regulation thermal requirements.

New build

The new entrance was designed to provide both means of vertical access being DDA compliant whilst also providing a grander entrance more befitting an institution. It uses zinc cladding to provide a low maintenance solution with a robust finish, and a contrasting whilst sympathetic material

to provide a distinction between new and old construction. The glazed roof construction provides lots of natural day lighting and makes for an exciting space for users and visitors alike.

The building is now completed with the school of law having moved in during March 2014. The whole team worked very hard to achieve repairs that are sympathetic and maintain historic integrity whilst ensuring that building will be around for some years to come. The initial feedback has been very positive from the users. Many thanks go to my conservation team colleagues, Helen Axworthy and Ian Taylor.



Top: new glazed fire screen on ground floor. Below: south elevation before work.



Urban green infrastructure

Green spaces, water and other natural features which can be incorporated into overall design schemes have overwhelmingly positive benefits for both individual and environmental well being, writes Dr Jonathan Wentworth of the Parliamentary Office of Science and Technology.

Urban green infrastructure is a network of green spaces, water and other natural features within urban areas. A green infrastructure approach uses natural processes to deliver multiple functions, such as reducing the risk of flooding and cooling high urban temperatures. This article summarises research evidence of the effectiveness of green infrastructure, and challenges to its implementation.

Green and grey infrastructure

Familiar urban infrastructure such as roads, sewer systems and storm drains is known as 'grey infrastructure'. Such conventional infrastructure often uses engineered solutions typically designed for a single function. 'Green infrastructure', includes parks, playing fields, private gardens, allotments, green roofs and walls, and cemeteries. The term refers to ecological processes rather than colour, so includes sustainable urban drainage systems, wetlands, rivers and canals, which are also sometimes referred to as 'blue' infrastructure.

Green spaces in cities are not new, for example urban parks were implemented widely by the Victorians, but ways of incorporating green infrastructure into modern urban design are still being explored. 80% of the UK population lives in urban areas¹ and with an increasing population,² many UK urban regions are

becoming more densely populated. This is often at the cost of green space^{3,4}, loss of which is associated with risks to human health that are greatest in deprived areas. This article outlines the evidence for how green infrastructure may help to address these problems, and examines the issues raised by green infrastructure delivery.

Health and wellbeing benefits

There is evidence that access to green spaces can provide health benefits, through improved mental wellbeing and levels of physical activity, reduced exposure to pollution and high urban temperatures.⁵⁻⁷ For example, the NHS is increasing green space on its estates through the NHS Forest Project, which will plant 1.3 million trees by 2015.⁸

However, there are many factors that affect human health and wellbeing, of which access to green space is just one. It is usually not practical to conduct experiments to test the effects of green space on health, so researchers often rely on observations. As a result, the evidence is statistically less certain than would be expected for medical treatments.

Mental Health and wellbeing

The UK Public Health White Paper 2010 notes that green spaces can improve

mental health and the quality of community life.⁹ Researchers have observed a link between increasing urbanisation and psychosis or depression,^{10,11} living closer to urban green spaces is also associated with lower mental distress.^{5,12-14}

However, such observations may not indicate a causal relationship and could be explained by other factors. For example, socially deprived areas typically have low levels of green space. One study aimed to reduce the problem of confounding factors by studying the same 10,000 people over 18 years.

It concluded that living in an area with high levels of green space led to a decrease in mental distress compared with living in areas with little green space, once factors such as age, gender and income have been statistically accounted for. Experimental evidence suggests that spending time in green space, or simply having views of nature, can improve reported mood, self-esteem and concentration, and treat stress and mental health disorders.¹⁷⁻¹⁹ These benefits have been shown to occur over very short exposure periods to green space, for example, five minutes.²⁰

However, indirect benefits can also come from increased exercise²³ and improved social interactions, though the evidence for these effects is less clear.²⁴

The UN Millennium Ecosystem Assessment 2005,²⁵ and the second phase of the UK National Ecosystem Assessment (under review), identify the multiple benefits of nature for mental wellbeing. There is less evidence for improvements in physical health than for mental health, because access to green space does not guarantee that local people will exercise more. The statistical evidence is weak, but some researchers have suggested that levels of physical activity increase with proximity to green areas.²⁶

Environmental benefits

Water management

Flooding in urban areas is estimated to cost a minimum of £270 million per year in England and Wales.^{26,27,29} A high coverage of impermeable surfaces in urban areas prevents surface water from soaking into the ground, increasing the risk of flooding and pollution from heavy rainfall. Two thirds of the homes affected in the floods of 2007 were flooded as a result of surface water.³³

Sustainable Drainage Systems (SuDS) are designed to mimic natural drainage and filter and retain rainfall where it lands to prevent 'grey' drainage systems from becoming overwhelmed during storm events. SuDS – including green roofs, permeable paving, swales and rain gardens – provide an example of the problems and challenges of green infrastructure (See box).

SuDS are often used to retrofit existing infrastructure including transport routes, in the form of rain gardens and street tree pits that receive surface water runoff. For example, rain gardens are now being implemented on highways in a number of London boroughs. However, while SuDS can provide drainage solutions for single sites, a more effective approach is to integrate the water cycle with the built environment at an earlier stage through planning and urban design.

Reduced air pollution

Air pollution tends to be highest in deprived urban areas.³⁴ Exposure to high air pollution can cause and exacerbate respiratory problems, heart disease and cancer. Green infrastructure can reduce exposure in two ways: trees and vegetation can reduce air pollution directly by trapping and removing fine particulate matter³⁵ and indirectly by reducing air temperatures. The strength of the effect depends on multiple factors, such as the

weather, the pollution concentration, and the type and quality of vegetation.³⁶

Urban transport infrastructure often results in the funnelling of pedestrians along major roads, where the concentration of air pollution is highest.³⁷ Green corridors across cities can reduce pedestrian exposure to pollution by providing alternative routes.

Cooling urban heat islands

Urban areas often experience elevated temperatures compared with the surrounding countryside, because of extensive heat absorbing surfaces, such as concrete and tarmac, concentrated heat production and impeded air flow.³⁸ For example, the centre of London is on average 5°C warmer than surrounding rural areas.³⁹ Heat waves during the summer pose significant health risks to urban populations either directly from the heat^{28,40} or from increased air pollution. Green infrastructure can lower air temperatures through the evaporation of water from vegetation^{31,43} and shading⁴⁴ (see box opposite). These benefits are recognised in the Heatwave Plan for England 2013 that recommends the use of green infrastructure around hospitals and care homes.⁴⁵

Challenges to delivery

Green infrastructure in the UK

The extent and type of green space in all Scottish urban settlements was mapped in 2011 by Greenspace Scotland.⁴⁶ An equivalent resource is not yet available across England, Wales or Northern Ireland, and data availability

varies between local authorities. Natural England, Ordnance Survey and others are discussing developing a mapping solution for England.

Green infrastructure policy

In May 2013, the European Commission released a Green Infrastructure Strategy⁴⁷ which promotes green infrastructure across rural and urban areas. In the UK, the Natural Environment White Paper 2011 for England⁴⁸ committed to supporting the development of green infrastructure, and led to the creation of the Green Infrastructure Partnership (GIP), co-ordinated by Defra and DCLG. The GIP aids knowledge exchange between over 300 partner organisations. From 1 April 2014 Government facilitation of the GIP ended, but Defra hopes that it will continue into the future.

Planning and design

Local authorities such as Birmingham,⁴⁹ London,⁵⁰ Manchester,⁵¹ Plymouth⁵² and Worcestershire⁵³ have developed green infrastructure strategies. However, the uptake of green infrastructure in local planning is variable. The National Planning Policy Framework 2012 (NPPF 2012) suggests that all local authorities set out a strategic approach to the creation, protection, enhancement and management of green infrastructure networks.⁵⁴ However, with the exception of SuDS, new green infrastructure is not required by national legislation.

Green infrastructure networks

While careful design and maintenance can improve individual sites, many of the

Implementing Sustainable Drainage Systems

Planning: The impact of a new development or project on the flow of water through a catchment requires hydrological modelling. Maps of flooding hazards derived from such models are required in England and Wales by December 2013 under the Floods Directive 2007. These maps can inform local planning, such that SuDS are prioritised in areas of high flood risk. This approach is used by Lambeth Council in London, using flood risk maps produced by Drain London Forum and the Greater London Authority.

Standards: SuDS are required on new developments in England and Wales under the Flood and Water Management Act 2010, although national standards remain under development by Defra. It is intended that SuDS Approval Bodies within local authorities will assess the



quality of SuDS against these standards, once they are published. Some have suggested that a similar system of guidance and approval bodies could be adopted for all green infrastructures in urban areas.

Maintenance: Maintenance of SuDS is no longer the sole remit of local authorities. The Water Bill 2013 proposes to allow companies that provide sewerage services to construct and maintain SuDS to reduce the risk of sewerage systems being overwhelmed during high rainfall.

benefits of green infrastructure such as flood alleviation, improved air quality and improved connectivity for organisms^{59,60} derive from interaction between multiple green spaces. To maximise these cumulative benefits, the network itself would need to be well planned. This may entail the provision of new green spaces, as in the case of Coventry City,⁶¹ or the strategic improvement of existing sites, as in the case of the All London Green Grid.⁶² Networks can be planned by engaging with experts during the early stages of development. Only a few local authorities have green infrastructure strategies that include spatial plans of additional sites, such as Birmingham.⁴⁹

Site-level design

Design recommendations for individual green infrastructure projects are difficult to form, as they are necessarily site specific and existing projects are rarely monitored after implementation. However, some general principles can be applied. For example, increasing plant species diversity, or increasing the range of vegetation by planting trees and shrubs rather than grass alone, can significantly increase other forms of biodiversity.^{63,64}

Planning for climate change

There is good evidence that green infrastructure can aid climate change adaption and mitigation in urban centres. The NPPF 2012, the UK Climate Change Risk Assessment 2012 and the subsequent National Adaptation Programme 2013 all recognise the role of urban green infrastructure in climate change adaptation. This is reflected in the London Climate Change Adaptation Strategy, which aims to increase green space in central London to provide a cooling effect.⁶⁹

Access to expertise

Good design depends on an understanding of natural processes. Over recent decades the capacity of local authorities to plan green infrastructure has been reduced through the loss of experts, such as hydrologists and ecologists. Worcestershire County Council has pooled its experts at the county level, to provide an ecological consultancy service for districts and cities.⁷⁰

Standards

National standards exist only for a small subset of green infrastructures such as the national Green Roof Organisation Code, and draft Defra standards for SuDS (See box). As such, approaches to green infrastructure implementation by

Green Infrastructure for Cooling Urban Heat Islands

Well designed green roofs and walls can contribute effectively to the thermal insulation of buildings,⁵⁵ reducing the need for air conditioning. Green spaces and water bodies also lower air temperatures and are on average one degree cooler than the surrounding urban areas.³¹

Heat dispersion around a city depends on a number of factors, including weather, street layout, and the surface material of buildings. Determining the cooling effect of green infrastructure at the urban scale therefore requires modelling.

In Manchester, the SCORCHIO project predicted that an increase in the area of green space of 10% would reduce the maximum surface temperature by 2.2°C compared no change in green space.

This cooling increases to between 2.4°C and 2.5°C under low and high UKCIP02 climate scenarios.⁵⁶ Similar results have been found by modelling projects conducted in Birmingham (BUCCANEER project)⁵⁷ and London (LUCID project).³⁹



The green roof of Chicago's City Hall. Some infrastructure such as green roofs, walls and rain gardens require minimal maintenance once installed.

local authorities can vary significantly.⁷¹ Codes of building excellence, such as BREEAM, and points systems, such as the Green Space Factor,⁷² can be used by local authorities to set minimum standards for green infrastructure in new developments. Many local authorities are following the northwest European approaches to implementing green infrastructure. In the absence of national standards, available guidance includes:

Good Practice Guidance for Green Infrastructure and Biodiversity by the Town and Country Planning Association and Wildlife Trusts;

Green Infrastructure Guidance by Natural England;

Delivering Biodiversity Benefits through Green Infrastructure by CIRIA

Depressions that collect rainwater from impervious surfaces, known as Rain Gardens, reduce the risk of flooding and water pollution by allowing water to soak into the ground.⁷³ However, much advice remains general since data on the effectiveness of green infrastructure projects are limited.

Maintenance

Maintenance of green infrastructure is essential to maximise its benefits. For example, while well-maintained green spaces can improve mental health, overgrown vegetation can have a negative impact by increasing the fear of crime,⁷⁴⁻⁷⁶ although these overgrown spaces may be better for biodiversity.⁷⁷ Some infrastructure such as green roofs, walls and rain gardens require minimal maintenance once installed. For other types of infrastructure, such as green spaces, the cost of maintenance can be higher. These costs often fall to local authorities, and have been the focus of budget cuts in recent years.

Maintenance may increase long-term jobs in the local community, but alternative sources of funding are required to cover these costs. Design that is sensitive to maintenance costs can improve the sustainability of a project by minimising this budget.

References

www.parliament.uk/documents/post/postpn448_urban-green-infrastructurereferences.pdf

Triple glazing: wor

Is triple glazing as good for the environment as it is claimed, once the impact of its materials and processes is considered? Paul Hicks ACIAT of VELUX looks at its performance and its environmental and financial impact.

There is an important debate developing as to whether triple glazing is as good for the environment as it is claimed. Recent desktop research from Inspired Efficiency^[1] (IE) and Circular Ecology^[2] (CE) shows that triple glazed windows are not always the most effective low carbon option due to the environmental impact of materials and production processes. Consequently, the resulting embodied carbon^[3] can make the choice of a triple glazed option less favourable and this should be taken into account when calculating the performance and impact of a building.

There is an understandable perception that low U-value is better, but if the embodied carbon in manufacturing triple glazing outweighs the savings from lower emissions when the window is in use, then it is not necessarily the right solution.

Whilst the research from IE and CE does not fully take into account the Life Cycle Analysis of different window types, it has certainly raised interesting questions to support the double/triple glazing debate and gives strength to the energy balance philosophy. Not since the energy crisis of the 1970s has the debate on the number of panes in a window been so relevant and so important.

Energy balance

A window's energy balance is the difference between the amount of heat from sunlight the window transfers to your home and the amount of heat that escapes through the window.

This can be represented as follows:

In order to benefit from the energy balance approach, it is important to understand the three main properties of glazing:

- U-value – thermal heat loss
- g-value – solar heat gain
- tv value – daylight admittance.

Using only the U-value of a window ignores the benefits from the other properties and often gives a distorted view of the value of triple glazing.

By focusing on energy balance instead of just U-values, this will help to change the perception that improved U-value is the only way forward. With a good energy balance, solar gain will help to heat the inside space and thus reduce heating costs and effectively reduce CO₂ emissions thereby increasing the climate payback potential. With good daylighting properties, this will reduce the reliance on artificial lighting and thus also reduce energy required for lighting.

Ultimately, this will support the argument that low U-value is not always best value and that the concept of climate payback should apply to products as well as finished buildings.

Climate payback

Using data from the recent IE and CE research, the operational carbon saving of a 'typical' (1770 x 1200mm) timber triple glazed window over a double glazed window is around 2.6kg CO₂/year. As it takes an extra 51kg of CO₂ to

manufacture the triple glazed option, this would result in a climate payback period of around 20 years. As sealed glazing units currently have a life expectancy of 20 to 30 years^[4], this hardly seems appropriate for some new build projects and is certainly not appropriate for renovation projects when using high performing windows in a building fabric which generally will have less energy efficiency than a new build.

Also, by maximising the concept of climate payback we can look at the extra energy saved from reduced heating costs due to good solar gain and reduced electrical lighting needs from good daylighting design which will increase the operational carbon saving potential and not only pay back the embodied carbon for the manufacture of the window product, but can also pay back for the CO₂ emissions caused by other materials in the construction that are less able to support climate payback.

High performing double glazed windows have an important role to play with regard to energy balance and climate payback, and will support the need to make effective solutions affordable.

th the pane?



Affordability

The cost of triple glazing is understandably higher than double glazing for obvious reasons – more glass, extra layer of gas (and type of gas in some cases), higher cost of manufacture in handling more components etc. For a solution to be given the consideration it deserves, it must be affordable from the point of capital outlay, throughout its operational life and ultimately its removal and disposal.

High performing double glazing has the potential to tick all of the right boxes and when we consider that it is feasible to provide a double glazed window using appropriate installation products in a recessed application to achieve an installed U-value of 1.1 W/m²K, this makes for a more cost effective solution.

As a comparison, the PassivHaus specification requires that roof windows should achieve an installed U-value of minimum 1.0 W/m²K. So what real difference does a 0.1 U-value actually make?

Fabric heat loss calculation

Calculating the heat loss through a building element requires three values to consider:

1. Area of element (m²)
2. U-value of element (W/m²K)
3. Temp difference inside and outside of building (Δt)

This gives the following calculation:

Area (m²) x U-value (W/m²K) x Difference in Temp (Δt) = Fabric Heat Loss (W)

Therefore, for 1 m² of glass x 0.1 of U-value x 11° temperature difference*

Space heating using electricity: energy loss per 0.1 U-value per square metre per year 9.64 kWhx	CO₂ per kWh unit of electricity 0.5246 kg	additional CO₂ output = 5 kg
Space heating using gas: energy loss per 0.1 U-value per square metre per year 9.64 kWhx	 0.20435 kg	 = 2kg

(*using met office data^[5] on 2012 mean UK temperature of 9° outside and assumed constant 20° inside):

1 x 0.1 x 11 = 1.1W (per hour)
Then 1.1W x 24 hours = 26.4W (per day)
Then 26.4W x 365 days = 9636W (per year).

This calculation shows that for every 0.1 U-value difference in 1m² of glass, the heat loss changes by 9636W (or 9.64kWh) per year.

Energy performance

Using this heat loss calculation, we are able to determine both the energy lost and the CO₂ created by the energy loss per square metre of roof window glazing for a 0.1 U-value difference between high performing double glazing and triple glazing. (See table below).

If we assume an average of 3m² of roof glazing per dwelling, this equates to 15kg of additional CO₂ in total for electricity and only 6kg additional CO₂ in total for gas, when using high performing double glazing instead of triple glazing.

This small amount of additional CO₂ output can easily be compensated for in other areas of the construction and more cheaply than the extra cost associated with triple glazed windows and should be considered at design stage when developing the building performance strategy to ensure the correct solution with regard to performance, environmental impact and cost.

We can also calculate the extra cost associated with increased energy loss using high performing double glazing instead of triple glazing. Space heating using electricity (14.5p per kWh – January 2014): 9.64kWh x 14.5p = 139.78p – say £1.40 per square metre of glazing per year. Multiply this by the average 3m² of roof glazing per dwelling,

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this equates to just £4.20 per year. Space heating using gas (4.5p per kWh – January 2014): $9.64\text{kWh} \times 4.5\text{p} = 43.38\text{p}$ – say 43.4p per square metre of glazing per year. Multiply this by the average 3m^2 of roof glazing per dwelling, this equates to just £1.30 per year.

As the majority of homes in the UK are heated using gas, this creates an excellent case for the energy balance argument. Even if there is a migration to using electricity over time due to dwindling gas resources, the argument is still sound. Therefore, for the next section on cost, we will use the cost figure for gas central heating.

Cost

If we continue with the assumption that the average loft conversion/new build house in the UK has 3m^2 of glazing, then this is equivalent to approximately 3 x VELUX PK10 windows (942 x 1600mm). If you purchase 3 x high performing double glazed VELUX GGL PK10s (–60 pane), this will cost £1452 (full list price Feb 2014). If you purchase 3 x triple glazed GGL PK10s (–66 pane), this will cost £1812 (full list price February 2014). Therefore, 3 x triple glazed windows cost £360 more than 3 x high performing double glazed windows of the same size.

Currently, glazing is considered to have a maximum life expectancy of 20 to 30 years^[4].

This means that over 20 years, the 3 x triple glazed windows will cost an extra £18 per year ($20 \times £18 = £360$).

The energy performance calculation above shows that with triple glazing, you only save £1.30 per year in energy costs at today's energy rates over double glazing (using gas price – January 2014). That is a difference of £16.70 out of pocket per year. If energy prices double every 5 years for the next 20 years, you will save a total of £98, which averages out at £4.90 per year. That is £13.10 out of pocket per year.

As a comparison, when using electricity for space heating over 20 years with energy prices doubling every 5 years, you will still only save a total of £315, which averages out at £15.75 per year. Still £2.25 out of pocket per year.

If the windows last for 30 years, the 3 x triple glazed windows will cost an extra £12 per year ($30 \times £12 = £360$). If gas energy prices double every 5 years for 30 years, you will save a total of £13.70 per year with triple glazing. This example at best provides payback at £1.70 per year.

Changing perceptions

The use of triple glazing has a place in future sustainable design solutions and steps have been taken to reduce the environmental impact of its manufacture. In general however, the energy performance of the window (especially in renovation projects) should be measured by the energy balance and not just the U-value alone.

The challenge therefore is to develop collaborative partnerships to influence key decision makers in order to ensure that designers and builders do not take a 'tick the box' approach in order to create the right results in software simulations and calculations. If we can encourage the project team to look at the bigger picture using Life Cycle Analyses of products and materials to develop the most appropriate solution for a project, then this supports the need to move away from the 'one size fits all' mentality and creates a more flexible template for future design solutions, with the opportunity to put Active House^[6] principles at the heart of the design process.

Embodied carbon calculations

VELUX carry out Environmental Product Assessments on their range of roof windows and this assumes a life of 40 years for the window frame and sash, and 20 years for the insulating glass unit. The assumption therefore is that the glazing will be replaced once in the window's lifetime.

When taking energy balance into account (rather than just U-value alone), the impact of the VELUX roof window on the environment over a 40 year period is turned from a negative into a positive.

Whilst Assessments have not yet been completed on the new generation of –60 and –66 pane variants previously referred to in this document, the following is an example of the global warming potential for a standard double glazed roof window of a similar size.

Test window is a VELUX GGU SK08 0050:

Centre-pivot, white finish, 1.14m x 1.40m, U-value 1.3, g-value 0.66.

Global warming potential from raw materials to installation and end of life treatment: +146 kg CO₂-equiv.

Paul Hicks ACIAT is Sustainability and Design Manager for VELUX.

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- [1] Inspired Efficiency was set up in 2005 to challenge conventions and assist in implementing energy solutions that are realistic, pragmatic and valuable.
- [2] Circular Ecology was inspired by the fields of 'circular economy' and 'industrial ecology' and provides environmental consultancy and research services for footprinting, Life Cycle Assessments and training.
- [3] Embodied carbon is the amount of CO₂ released in the manufacture and transportation of a product. Recent research has shown that timber triple glazed windows have a carbon footprint of around 60% higher than double glazed windows.
- [4] German Ministry of Buildings report 2001
- [5] www.metoffice.gov.uk/climate/uk/2012/annual/averages.html
- [6] www.activehouse.info/



Global warming potential with average use (east/west orientation):

–424 kg CO₂-equiv.

Global warming potential with best use (South orientation):

–1660 kg CO₂-equiv.

The energy balance of the window is assessed using methodology based on ISO 18292:2011^[5] – energy performance of fenestration systems for residential buildings calculation procedure - and made for replacement of existing windows in a typical single family house located in Würzburg, Germany.

The assessments do not take into account the reduced energy need for artificial lighting where good daylight design is employed, and so the figures provided indicate the minimum potential climate payback of the test window.

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The natural

Interest in the use of natural materials for building is growing, but they remain on the fringe in practice. Jo Smit of Building 4 Change spoke to sustainable building expert Professor Tom Woolley.



Historic buildings constructed using natural materials remain some of our most cherished and enduring structures, although such materials are relatively little used today. But could bio-based construction techniques and technologies become more commonplace in UK construction?

Tom Woolley should know. The architect is an expert in low impact building and has long championed the cause through organisations including the Alliance for Sustainable Building Products. He applies his expertise in his work with County Down-based Rachel Bevan Architects and through his publications and contributions to numerous industry committees. He talks about the barriers to uptake, and how they could be overcome.

Bio-based materials are inevitably associated with thatched cottages and cob houses – are perceptions changing?

There has been a shift in the last four or five years, driven partly by greater awareness of embodied energy. Marks & Spencer used hemp for its Cheshire Oaks sustainable learning store near Liverpool and you can't get more mainstream than that. Hastoe Housing Association has produced four straw bale homes in Ongar in Essex, and worked with a standard building contractor rather than a specialist.

But misconceptions remain in the mortgage lending and insurance sector. There is a fear factor, and there is also confusion about how our buildings are

built. We get a form from our insurance company every year asking us to confirm that our house is 75% brick – even though they have been told it is timber frame and stone.

What needs to happen to encourage the building industry to make greater use of these materials?

It is argued that in order to break into mainstream building the sector needs standards. Developing these can be expensive – usually manufacturers pay for it, but in this sector we have relatively small-scale businesses and materials like straw are not 'manufactured' products. We need a different approach in the form of more generic standards.

In the area of hemp and lime there are manufactured products, like TradicalR HemcreteR hemp lime wall systems, which have BBA approval. We are also reforming a trade association, called the Hemp Lime Association. The sector is half way to having a generic hemp/lime standard – a standard on how to build with hemp and lime will feature in *The Hemcrete book: Designing and building with hemp and lime*, by Sparrow and Stanwix, which is due for publication by Green Books soon.

Also, while they don't exist in the UK, there are well-established standards elsewhere, particularly for hemp and lime. France's CSTB has standards for hemp and information that could be translated and used here. Straw bale could draw on the US 'international' building codes. There are also sources for earth construction. There is an implied

need for standards but most of the work has been done – we now need to put it into a form that is right for the users in the UK.

There is also a need for better education and more information for both builders and professionals. There are no NVQ modules for construction that deal with bio-materials, for example. Architecture students complain to me that they are not taught about sustainable construction methods.

Where is the key research and development activity in bio-materials right now?

The main area is bio-based 'plastics' – there is even talk of producing the insides of planes with hemp composites. It is in fact now possible to develop most of the products we need in our lives using bio-based rather than petrochemical based material – it is a question of scaling up production.

Construction seems to be lagging, but one challenge is securing funding for research. The European Union has just launched its Horizon 2020 research programme, but the calls give little scope to apply for funding.

Why should people be building with bio-materials?

The main advantage is breathability – it is fundamentally different to sealed buildings, even though it is still possible to achieve good airtightness. These are materials that are able to manage moisture in buildings (they are

alternative



The perception of alternative building materials is changing. It is no longer just rustic cob houses (top) but mainstream projects such as this straw bale public library building in Washington, USA (below). Right: A generic hemplime standard features in the forthcoming *Hempcrete Book*.

hygroscopic) in a way that modern synthetic materials cannot, which is why we have widespread problems of condensation and mould growth. Current approaches to building physics do not take account of the benefits of hygroscopic materials.

Current approaches to building physics do not take account of the benefits of hygroscopic materials

With natural materials you don't have to worry so much about the health of the indoor environment. Unlike pretty much every other country in Europe, the UK doesn't have indoor air quality standards. And there are lifecycle benefits. Bio-based materials are recyclable – if you want to knock a building down, you can simply dispose of the material on your land or reuse them.

From what you've said, it sounds like the UK is lagging in the use of bio-based materials – is that the case?

Our systems are not as open to taking on innovation. In the USA, building regulations operate at a state level, and if you want to build with innovative building methods, that is voted on in a public debate.

However, having said that, hemp and lime were pioneered in France and yet there are now many more hemp and lime buildings in the UK than there are in France so maybe we are better at scaling up.

Tom Woolley is one of the founder members of the 'Renewable Building' (The Association for Sustainable Building products), Natureplus UK and Living Building Initiative Ireland. He is environmental consultant for Rachel Bevan Architects and visiting professor at the University of Central Lancashire.

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Insulating solid masonry walls

James Daw was Highly Commended in the 2013 Student Award for Excellence in Architectural Technology (Report). This article formed part of a dissertation for his BSc in Architectural Technology at Robert Gordon University and examines the challenges of adding insulation to 'hard to treat' buildings.

Introduction

The term 'traditionally constructed' generally refers to houses built before 1919 using materials and construction techniques that allow water and water vapour to be absorbed and transferred (or diffused) through walls, floors and roofs readily (Urquhart, 2007). These buildings are evident in a variety of forms including tenements, semi-detached townhouses, detached villas and terraces (Curtis, 2010).

Traditionally constructed houses are not energy efficient by current standards due to their poor airtightness and lack of insulation and consequently are expensive to heat. As traditionally constructed houses make up around 20% of the total housing stock (Curtis, 2010) improving their energy efficiency would have a significant impact on reducing the UK's carbon footprint and help many people who suffer with fuel poverty.

However the addition of insulation to these 'hard to treat' buildings can affect how water vapour diffuses, potentially leading to problems of condensation resulting in the deterioration of the building fabric (English Heritage, 2010). Avoiding these problems is a complex balance between ventilation, heat transfer and moisture movement.

This article looks at the affects that adding insulation to a solid masonry wall in a sample house has on its thermal performance and calculates the amount of ventilation required in the house to avoid interstitial condensation using a sophisticated spreadsheet. The insulation proposed here is blown cellulose, a (mostly) natural product, in keeping with the existing wall materials, which allows the movement of water vapour through it. The blown insulation is injected into an existing cavity in the wall, maintaining the original, historic building fabric minimising disruption to homeowners, unlike most of the other options available. The overall

impact on energy consumption is then calculated.

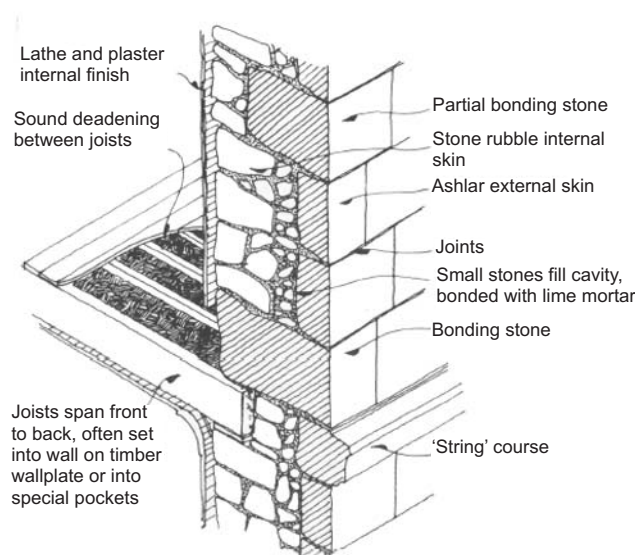
Construction and insulation of solid masonry walls

Solid masonry walls in traditional houses is generally built with outer and inner leaves, known as wythes. The outer wythe is constructed from either dressed 'ashlar' stones or irregular-shaped stones. The inner wythe is built from smaller, irregular-shaped stones and it provides the structure for timber beams that creates the intermediate floors.

Lime based mortar is used between the stones as a bedding to provide stability and to keep out the weather. Mortar, mixed with small stone and slate chippings, form the rubble core that fills the cavity between inner and outer wythes to provide additional structural stability. The thickness of the walls (between 600-1000mm) is generally dictated by the width of the masonry elements, which depends on the height of the wall. This is particularly thick, compared to modern wall constructions, considering there is no insulation.

Unlike many modern houses, solid masonry walls in traditional houses were constructed without vapour control layers. This, coupled with the fact that the sample house (like many other traditionally constructed houses in Scotland) has walls made from sandstone and lime mortar which allow the movement of water and water vapour, make them susceptible to interstitial condensation.

Traditional houses often have a lath and plaster layer constructed on the inside of the masonry of the wall. Laths are slim



Above: components of a solid masonry wall

fillets of timber nailed onto vertical timber batons that provide a surface onto which the plaster finish was applied. Behind the laths are a series of narrow cavities between the timber batons. This report proposes a building conservation approach to improving the thermal performance of the walls where cellulose insulation is pumped into these cavities through small holes in the lath and plaster using a hose. This process is relatively quick and cheap and would offer minimal disruption to the occupants compared to other methods of internally insulating solid masonry walls. This method has been piloted by Historic Scotland as part of energy efficiency improvements that they have commissioned to some of their stock of traditional buildings.

Cellulose has been chosen here because it is one of the most environmentally friendly blown insulations available. The Green Guide to Specification (Anderson et al, 2009) gives cellulose the best rating possible because it is 80% recycled, made from paper production waste and shredded newspaper and it has a good level of thermal conductivity similar to other blown insulants. However there are some issues with blown cellulose.

Cellulose absorbs water very easily and where it becomes wetted as a result of leaks, for example, it may sag creating voids that reduce the thermal performance of the insulation (Fisette, 2005).

Heat transfer, water vapour movement and interstitial condensation

Heat transfer

Heat is conducted through the materials in a solid masonry wall due to a temperature difference between inside and outside. Where the temperature difference is greater more heat is lost. To compensate for this heating systems add back the heat lost so the internal environment remains comfortable to occupants throughout the winter. For the sake of simplicity it is assumed that all rooms in the sample house will be heated to 22°C throughout winter. In reality rooms may be at different temperatures depending on what the occupants find to be comfortable.

It is worth noting that when they were built temperatures in these houses were generally lower (at around 16°C). Every 'living room' had an open fire that provided mostly radiant heat. Occupants adapted their clothing and the furniture in the house to suit conditions in the house. For example wing-back chairs were popular because they helped focus the heat from the fire onto the occupant and foot rests lifted occupant's feet off the floor level where the air was coolest (Roaf et al, 2011).

All materials have a thermal conductivity (the unit of heat conduction) which affects the rate at which heat is transferred through them. In general, lightweight materials (like insulation) have low thermal conductivity because they are filled with air, which is an excellent insulant. In an external wall made up of several layers, the thickness and thermal conductivity of each layer is combined to give the U-value (or measure of heat transmittance). As each material in the wall has different thermal conductivity so the rate of heat transfer will differ and the temperature through it will vary, creating a temperature profile.

By adding a layer of insulation the U-value is reduced, reducing the amount of heat needed from the heating system needed to offset the heat lost, altering the temperature profile.

Water vapour movement and interstitial condensation

In a similar way to heat transfer, water vapour diffuses through a wall because the concentration of water vapour inside the house is higher than outside (in cool climates like the UK). Water vapour is generated in the house by occupants and their activities. This report assumes that 15kg of water vapour is released into the sample house by a family of five every day (BS5250 [2011]).

The materials in the wall slow the rate at which diffusion occurs. This is known as vapour permeability and it relates to the size and number of pores in each material through which water vapour molecules diffuse (Hall, 2002). Lightweight materials with an open structure (like insulation) allow more water vapour to diffuse through it and so have a low vapour permeability. As each material in the wall has different vapour permeability so the amount of water vapour in the air at any point in the wall will vary. From this it is possible to calculate a 'dewpoint' temperature profile for air within that wall construction. The dewpoint temperature of air is the temperature at which it is 100% saturated with water vapour. If this air was cooled by a cold material in the wall the air would be unable to retain all its water vapour and some of it will condense on the cold material. This is known as interstitial condensation.

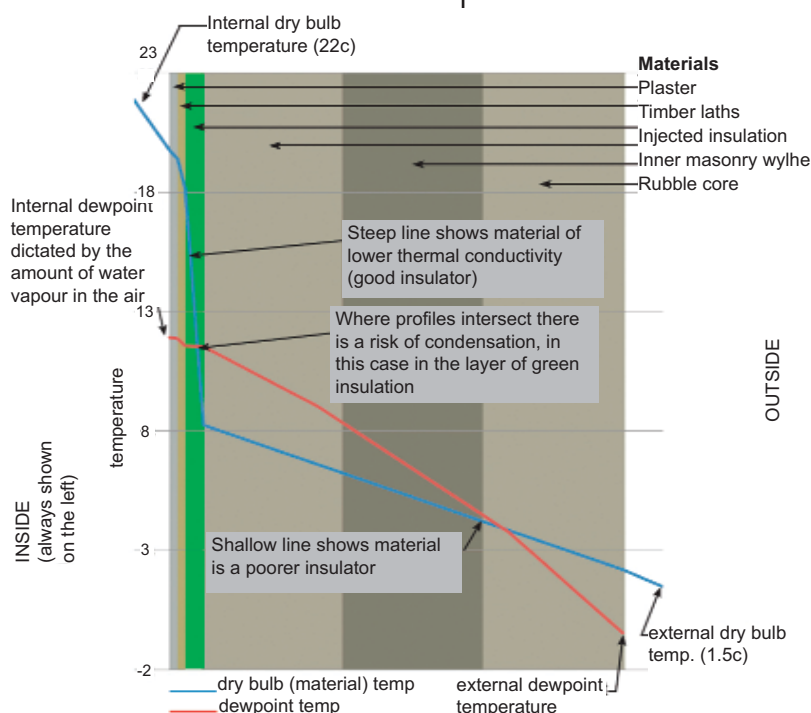
To assess the risk of interstitial condensation the dry bulb temperature profile is overlaid onto the dewpoint temperature profile. Where the profiles intersect there is a risk of condensation in this part of the wall. This method for establishing the risk of condensation is known as the Glaser Method and is used in BS EN ISO 13788:2002.

There are a number of limitations when using the Glaser method. For example it assumes that in any given month the outside temperature is always the same, a worst case, ignoring diurnal temperature swings which may reduce the risk of condensation (refer to BS5250 for a full list of the limitations of the Glaser method). More sophisticated software packages, such as WUFI or Energyplus, could be used provide a more dynamic model of the diffusion of water vapour and heat transfer. However these software packages are significantly more complicated.

The Glaser Method provides a reasonable, if basic, analysis to establish if a risk of interstitial condensation due to internal water vapour generation exists at all.

Ventilation and its effect on water vapour concentration

As the water vapour from occupant activities are absorbed into the air in the house the moisture content of that air rises. The higher the air's moisture content the more water vapour diffuses



Sample condensation profile through a solid masonry wall

though the solid masonry wall and the greater the risk of condensation becomes. The amount by which the moisture content of the air rises depends not only on how much water vapour is generated but also on how much fresh air is circulating through the house. In a traditional house ventilation is provided by natural infiltration through the many cracks and gaps in the external fabric. It is infiltration that can make a house feel draughty and cold in winter and fresh in summer. As more air circulates through the house the water vapour is diluted and the increase in moisture content is less, reducing the risk of condensation (English Heritage, 2012).

This report considers what infiltration rate is required to mitigate the risk of condensation. If this exercise were carried out in practice it would also be necessary to measure the actual infiltration rate of the house in question. One way of testing a house's infiltration to perform an air pressure test on it. This measures how much air leaks through the external envelope when it is pressurised to 50 Pascals (Sherman, 1987) and is known as the air permeability rate.

Condensation calculations and analysis

For this article a spreadsheet has been produced to predict the risk of condensation through a solid masonry wall with and without insulation in accordance with the principals of the Glaser method (BS 5250:2011). Having inputted the thickness of each material layer in the wall and their properties, the user varies the amount of moisture in the air (relative humidity) until the maximum level is found at which there is no risk of condensation in the wall in order that the cellulose and the solid masonry wall remain dry to maximise its thermal performance.

By subtracting this figure from the water vapour generated by occupants the spreadsheet calculates how much ventilation is required to dilute the remaining water vapour. Of course to maintain a comfortable temperature this cold, the outside air leaking into the house must be heated.

The amount of energy saved by heat loss due to the insulation is eroded by the heat needed to warm the infiltration air required to avoid condensation and this is calculated here.

U-value calculation for sample uninsulated and insulated solid masonry wall

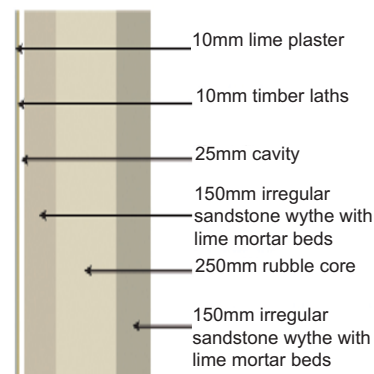
This article studies a solid masonry wall found in the author's house, as shown in the diagram *right*. The solid masonry walls studied here is constructed from non-homogenous layers of material and it is difficult to assess the proportions of material in them. It is entirely probable that the proportion of materials used within solid masonry walls are not consistent from house to house or even (probably) wall to wall within a house and so accurately calculating the heat loss (or vapour diffusion) through them is difficult. Here the solid masonry wall is assumed to be constructed from 60% sandstone and 40% mortar course throughout. This percentage of sandstone to mortar was also used by Baker (2011).

A simplified calculation (that ignores any junctions or details) shows that the u-value of the uninsulated solid masonry wall is 1.266 W/m²K. This figure is compared to in-situ measurements of walls of similar construction carried out by Historic Scotland (Baker, 2011) where U-values of 1.1 +/- 0.2°C W/m²K were tested. This suggests that the calculated values are valid for the purposes of this report.

Using the same construction with cellulose insulation blown into the 25mm lath and plaster cavity the U-value reduces to 0.812 W/m²K, an impressive improvement of 33%.

The maximum room relative humidity required to avoid condensation for the uninsulated solid masonry wall is 53%. The air change rate required to dilute the remaining water vapour is around 0.18 ach. The air change rate equates to a minimum required air permeability rate of 6.9 m³/hr/m² that the sample house should reach if it were pressure tested to 50Pa. To put this figure in context it is lower than that maximum air permeability required by Section 6 of the Scottish Building Regulations (7.0 m³/hr/m² at 50Pa) for new houses that are specifically designed for air tightness – it is low.

The affect of adding cellulose insulation to the construction is that the maximum internal relative humidity in the house can only be 42% or less in order to avoid condensation. As the maximum relative humidity is lower (than the uninsulated wall) additional infiltration (0.28 ach) is required to dilute a greater proportion of the water vapour produced by occupants. The condensation profile (*opposite*)



The solid masonry wall in this article

shows how the impact of that lowering the internal relative humidity has on the dewpoint profile in the insulated wall. This is necessary because the low thermal conductivity of the cellulose insulation reduces the dry bulb temperature of internal surface of the masonry wall from 11.6°C to 8.2°C with the wall insulated.

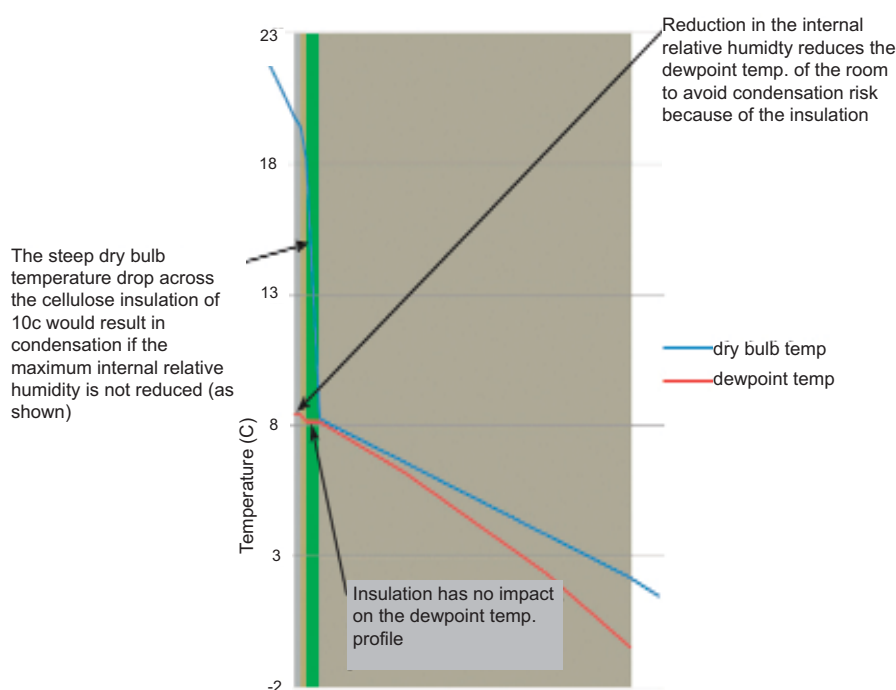
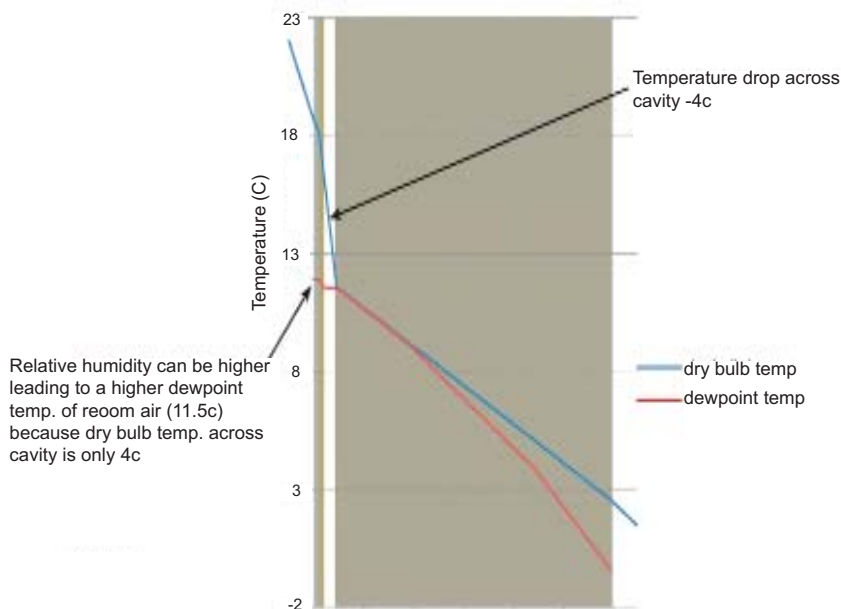
In theory a vapour control layer (VCL), applied to the inside face of the house, would slow the diffusion of water vapour through the wall allowing for an increased moisture content in the air and a lower ventilation rate. To be effective the VCL would need to be continuous on all external wall. This is impractical because there would need to be penetrations for cables, pipes and other existing services. Where the VCL is broken the water vapour diffuses outwards through the wall leaving localised areas where high levels of condensation can form causing greater problems.

The reduction in the maximum relative humidity means the minimum ventilation rate must increase from 0.18 ach to 0.28 ach, an increase of over 50%. This means the sample house would require a minimum air leakage of 10.9 m³/hr/m² if pressure tested to 50Pa. It is notable that the addition of quite a shallow layer of insulation should require such a large increase in minimum ventilation requirements.

Of course, the example described here is purely theoretical because it assumes that a specific infiltration rate in a traditional house can be precisely met to balance the internal moisture content. In practice this would be difficult to achieve.

Heating demand and annual heating energy costs

The uninsulated wall has a U-value of 1.266 W/m²K and requires a minimum ventilation of 0.18 ach. The addition of cellulose insulation reduces the U-value to 0.812 W/m²K but the ventilation



Condensation profile for insulated solid masonry wall

requirement increases to 0.28 ach to mitigate the risk of condensation. As a result of the insulation the peak heating requirement from the heating system in the sample house (on the coldest day of the year) falls from 14.1kW for the uninsulated wall to 12.8kW for the insulated wall. The annual heating energy costs have been estimated for the sample house using a degree day calculation (CIBSE B18 guide, 1986) and shows that the effect of the insulation reduces the cost of gas for heating only from £1844/year to £1677/year, a saving of around £166, a very modest reduction of around 9%. It is likely that the percentage savings would be similar on other sized houses.

Conclusion

The injection of cellulose into the 25mm lath and plaster cavity in the sample house leads to a moderate improvement in the U-value of the solid masonry wall from 1.266 W/m²K to 0.812 W/m²K, a reduction of 33%. However the ability of the blown cellulose to 'flow' from a hose into the wall cavity through a small hole in the lath and plaster means the original building fabric can be retained (unlike other methods of insulation) and so would be much less disruptive and costly to building owners and maintain the original building character. However the cellulose insulation, added internally, increases the likelihood of condensation

by reducing the temperature of the masonry in the wall, creating a cooler surface onto which condensation may form. As the objective here is to keep the insulation dry to maximise its thermal performance condensation must be avoided. To achieve this less water vapour must diffuse through the wall and so the moisture content in the air in the house must be lower (than the uninsulated wall). To achieve this more ventilation (that must be heated) is needed to dilute the water vapour, eroding the insulation savings, leading to an estimated improvement in gas heating costs of 9%.

It is clear that this strategy provides moderate savings at best and it is not likely to resolve the inefficiencies of traditional houses on its own. However, it should be noted that with the inevitable rising cost of fuel these savings will improve.

However by reducing the internal design temperature from 22°C to 16°C (as was the original design intent) the heat loss and energy costs would be lowered significantly. In this case occupants must adapt their clothing to maintain their thermal comfort. Culturally this may be difficult for homeowner to accept but it seems that adding insulation internally on its own is not the solution.

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Heart of Oak

Matthew Cross was Highly Commended in the 2013 Student Award for Excellence in Architectural Technology (Project) for his innovative design for Little Oak Primary School.



The design of Little Oak Primary School aims to provide multifunctional learning environments that encourage social interaction and creative thinking for both pupils and staff, while allowing flexible opportunities for local involvement to encourage a sense of place at the heart of a community.

Sustainability

The project aims to set an example by adopting a construction ethos of closed loop recycling, ensuring no material is confined to landfill at the end of its current lifecycle.

Direct reuse

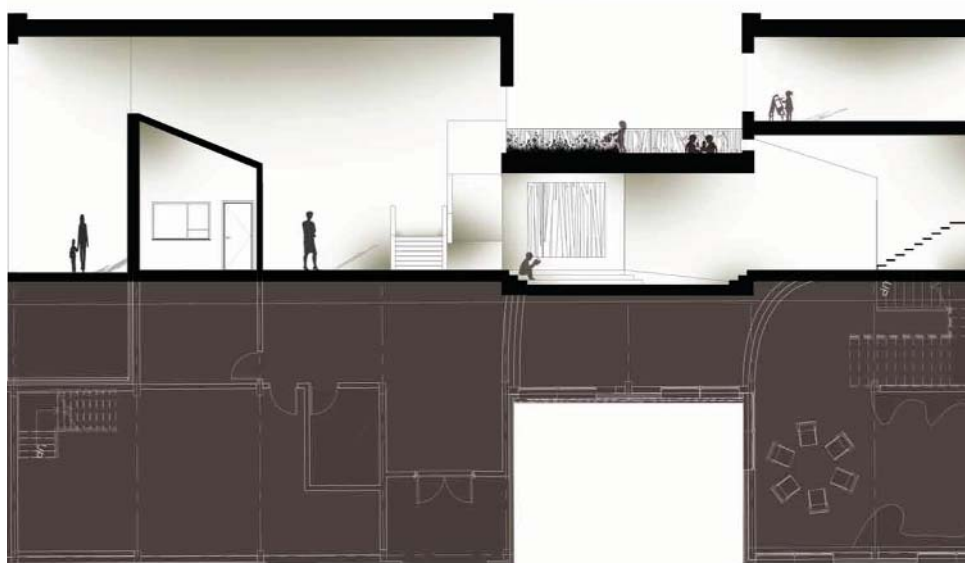
Materials have been detailed as to enable functional reuse in existing form. This is made possible through minimal wet bonding and bespoke connectors that reduce screw fixing.

Technical cycle

Materials have been chosen for their ability to be mechanically remanufactured to form the identical product without incurring limitations of strength or form.

Biological cycle

Natural materials containing minimal chemicals and voc's (volatile organic compounds) enable the school to 'breathe' and can be left to biodegrade upon



removal. Their degrading cycle provides soil with nutrients and releases carbon atoms into the atmosphere, both of which feed new biological growth of plants and insects.

Energetic utilisation

Carbon atoms in combusted material are released into the atmosphere to be absorbed by plants through photosynthesis.

Down cycling

Materials with restricted form or structural integrity can serve a new life in a down cycled form.

Buildability

The footprint of the school's four separate buildings is dictated by standard sizes of plywood which make up the faces of the breathable wall panels. The Glulam frame is set out with 360x200mm columns at 3800mm c/c, enabling 3 number 1200mm plywood panels to fit between each set of columns; this results in minimal waste, an ease of sourcing and greater construction accuracy.

The use of breathable wall panels also enables off site construction in a controlled environment for accurate and swift onsite assembly.

Construction Contracts Act 2013

Paul Greenwood MCIAT looks at new legislation for the Republic of Ireland intended to improve cash flow in the construction industry.

The Construction Contracts Act 2013 (the 'Act') was enacted on 29 July 2013. The Act will come into effect and apply to relevant contracts (as discussed below) on a date yet to be fixed.

The aim of the Act is to improve cash flow in the construction industry, particularly for sub-contractors. There has been a history of late and non-payment in the Irish construction industry. The economic downturn of recent years has exacerbated the problem in the construction sector.

The concept of a 'construction contract' is very broadly defined and relates to virtually every conceivable form of construction operation (including construction, alteration, repair, maintenance, extensions and demolition or dismantling). The Act specifically applies to:

- (a) architectural, design, archaeological or surveying work;
- (b) engineering or project management services;
- (c) advice on building, engineering, interior or exterior decoration or on the laying-out of landscape.

This is not an exhaustive list. The Act will not apply to any of the following activities in the construction area:

- Construction contracts with a value of less than €10,000.
- Construction contracts for a private dwelling with a floor area of less than 200m² where the person intending to live in the dwelling is party to the contract.

- A contract between a State authority and its partner in a public private partnership arrangement, is not a construction contract.
- Contracts for the supply of materials, plant or machinery; It is important to note that you cannot opt out of the legislation. If the contract meets the criteria in the Act then it automatically applies.

The two main changes brought about by the Act are:

- The introduction of statutory requirements regarding payments.
- Providing for adjudication as a forum for the resolution of payment disputes.

Interim payments

The Act will require that all construction contracts to include adequate arrangements for determining both the amounts of, and periods for, interim payments. Whilst most standard form construction contracts allow for such arrangements, the Act provides for default arrangements where these are absent. In the case of sub-contracts, these default provisions will apply unless the sub-contract provides for more favourable terms for the sub-contractor.

'Pay when paid' clauses, whereby contractors pay their sub-contractors only when they themselves have been paid, are prohibited, except in exceptional circumstances relating to the insolvency of the employer or contractor further up the supply chain. A procedure is set out in the Act for dealing with payment claims.

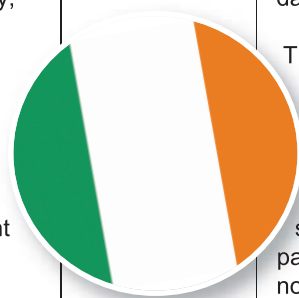
Where a payment claim notice is delivered and the amount is contested by the paying party, then it must respond within a 21-day period with certain minimum information. Any undisputed amount must be paid by the due date for payment.

The Act gives contractors a right to suspend work in the event of non-payment. A party who does not receive payment on the date that it falls due, will be allowed, under the Act, to suspend work, provided that party has delivered a written notice to the paying party at least seven days before the proposed suspension is due to begin.

Adjudication

The Act introduces an entitlement for parties to refer disputes regarding payment to adjudication. An adjudicator is required to reach a decision concerning the dispute within 28 days of referral, which may be extended by up to 14 days, with the consent of the aggrieved party.

Adjudication has been in place in the UK for some years now, although it is not confined to disputes solely relating to payment. This has proven to be a very effective and swift means of resolving disputes in the construction sector in the UK and has been strongly supported by the judiciary. The Act provides that the Minister will establish a panel of adjudicators and publish a code of practice governing the conduct of adjudications. Importantly, an adjudicator's decision will be binding on the parties until the parties finally settle the dispute or a different decision is reached following arbitration or court proceedings.



There has been a history of late payment in the Irish industry

Mass Customisation and Personalisation in Architecture and Construction

By Poorang A.E. Piroozfar MCIAT and Frank T. Piller

The authors/editors and various contributors have clearly researched this field and have made great references to other similar texts as well as given examples of past and current systems for mass customisation and personalisation. The book commences by explaining what mass customisation is and looks at how the automotive industry is not too dissimilar to that of the building industry. One case study that I was personally unaware that existed was Toyota Homes, which was launched in the 1970s and simply developed and transferred production models and strategies to off-site production housing.

By focusing upon the end user of the building this book looks to deliver innovative strategies on how mass customisation and personalisation can work within the built environment today.

The book is structured around four different areas to achieve this:

1.Principles of mass customisation

2.Enabling technologies, designs and business models

3.Practical applications, prototypes and experiences

4.Future topics, new potentials and emerging challenges

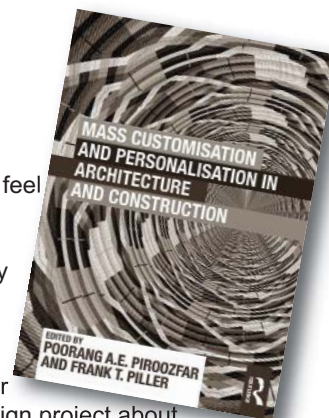
Given the recent economic crisis and the possible need/advantages to be able to produce units in volume or to simply retrofit by means of pre-fabricated kits, but also being able to personalise and control the systems to meet with both the designer's vision and client or end users expectations, it is an interesting subject which needs further interrogation.

The book is structured clearly and is laid out in a manner that each chapter has an abstract, introduction, the main body text and conclusion, this works well throughout the book. The authors/editors have made good use of diagrams and photographs to demonstrate the various points they are making throughout the book.

In summary I feel that the book would predominately suit students who may be doing a dissertation or final year design project about mass customisation with the option to be able to personalise the units. As it is written by mainly academics that clearly have a great deal of experience and knowledge within this topic and who have already carried out in depth background research for mass customisation and personalisation, this would allow any potential student direct access to existing references made by the authors/editors to other similar books/thesis/reports in this topic range, this I feel would be advantageous.

ISBN: 978-0-415-62284-4
RRP £29.99. Routledge, June 2013.

Review by Michael Greve MCIAT



Designing for Biodiversity: A technical guide for new and existing buildings



Kelly Gunnell, Carol Williams and Brian Murphy
RIBA Publishing 2013
ISBN 13: 978-1859464915
£29.99

With increasing demands for the consideration of biodiversity issues within new build and refurbishment projects this publication would make a great addition to any practice library. Unlike many books on the subject this is a practical guide in a format that will be familiar to many Architectural Technology professionals, with technical illustration and product reference. Of particular interest are the very detailed examples of nesting boxes and roosts for birds and bats and incorporating both refurbishment and new build construction. The sections incorporating measures for inclusion of biodiversity during the refurbishment of housing stock is new to this edition. For those of us who have had to include bat mitigation measures in new build, refurbishment or conversion work, the chapters outlining the different products available and there pros and cons is invaluable.

Personally I can think of several projects that would have benefited greatly from this section alone and I will likely refer to this for years to come. In addition to this there are multiple practical examples and illustrations of nesting boxes, roost and perches to assist some of the UKs endangered bird species from swifts to falcons. This second edition is up to date with some of the non-traditional construction

techniques that are becoming more popular including materials such as hemp, SIPs (structural insulated) panels and external insulation systems. Often the use of modern construction techniques has come at the expense of biodiversity, this guide aims to offer practical advice for the reversal of this trend. Within the publication there are both high and low technology solutions and also sections on the impact of renewables on biodiversity. The guide also gives consideration to invertebrates and how we can make practical allowance to support the food chain and increase wildlife within our developments.

I recently used the publication as a reference when discussing possible biodiversity-friendly measures to a client heavily involved in wildlife conservation. I found that the material contained within enabled me to expand on some of the proposed sustainability issues and contribute to a holistic approach to biodiversity across the project. For those involved with similar projects I would say this is an essential guide, for everybody else I would say that at some point you will find yourself requiring some of the information provided and it will take out a lot of product selection and detailing guesswork.

Review by Dan Clements MCIAT



When you need
help turning an
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Expert witness immunity

Loss of immunity for expert witness members is nothing to be afraid of, providing they do their job properly, writes Paul Greenwood MCIAT, Chartered Architectural Technologist and expert witness.

Much has been written on the subject of loss of immunity for expert witnesses in the three years since the case of Jones v Kaney was handed down by the Supreme Court. A lot of doom-mongering was canvassed suggesting that expert witnesses would not wish to put their careers on the line for fear of being on the receiving end of claims against them by disappointed claimants.

The fact of the matter is that to date there does not appear to have been any significant increase in litigation against experts (indeed I am not aware of any other cases having been brought). So what was all the fuss about?

I do not propose to discuss the details of the case since this has been extensively covered in the trade press on numerous occasions in the preceding three years. Suffice it to say that experts had, up until March 2011, been protected from litigation when preparing expert reports in contemplation of legal proceedings and the views the experts expressed in court. This has now been removed.

I cannot really see what all the fuss has been about. Experts must ensure that they understand and comply with their duties to the court and to their client. An expert that does not understand these duties and does not apply them should not be acting as an expert in the first place. If he or she does not understand these duties and does not apply them then it should come as no surprise if a disappointed party, who suffers loss as a consequence of an expert's inability to comply with his/her duties, commences litigation against that particular expert.

The key point to my mind to be taken from this particular case is not whether or not there is likely to be a flood of litigation against experts but that experts must ensure that they are properly trained and properly understand what their duties are before taking on expert witness appointments.

Hopefully time will show that as a consequence of this particular case the quality of expert evidence improves. This will be of benefit to the parties and to the court and should also result in a reduced likelihood of any litigation being brought against experts (not an increase). If you are thinking of taking on appointments as an expert witness then please ensure you undertake the necessary training so you are fully aware of your duties. A claim against you is far more costly than the cost of training!

Even though there have been no significant developments following the Jones v Kaney case, two cases of interest are summarised below:

Ridgeland Properties Ltd v Bristol City Council [2011] EWCA Civ 649

Shortly after the decision in Jones v Kaney, the Court of Appeal heard the appeal in Ridgeland Properties Ltd v Bristol City Council (2011) EWCA Civ 649, which challenged the award by the Upper Tribunal (Lands Chamber) of compensation payable following the compulsory purchase of its property by the respondent local authority. After the publication of the tribunal's draft determination awarding compensation, the appellant had applied to reopen the hearing and adduce further evidence that three offers had been made to it before the compulsory purchase order, but their expert had simply



Experts must ensure that they comply with their duties to the court and their client

overlooked those letters when preparing and giving his evidence. The Court of Appeal dismissed the appeal for a number of reasons which included, following Jones v Kaney, the fact that the appellant was potentially able to recover from its expert and/or solicitor, which was 'a powerful reason, which the tribunal was not able to take into account, for not permitting the appellant to mount an entirely new valuation case before the tribunal'.

A v Chief Constable of Hampshire Constabulary [2012] EWHC 1517 (QB)

In A v Chief Constable of Hampshire Constabulary, it was confirmed that Jones v Kaney had no effect upon the continued existence of core immunity. The claimant (A) was an informer who alleged that his status and identity were revealed by prosecuting counsel in court. 'A' argued that the barrister's immunity for what was said and done in court had not survived Jones v Kaney. 'A' attempted to appeal the striking out of his claim against the barrister. This case confirms that both experts and advocates can be now sued in negligence by their clients but they retain core immunity. Core immunity attaches to anyone participating in court proceedings, including judges, witnesses, experts, counsel and solicitors. They cannot be sued for libel, malicious falsehood or conspiring to give false evidence in respect of anything they say in court.

Paul Greenwood is a Chartered Architectural Technologist and Chartered Building Surveyor specialising in construction disputes. He is an adjudicator and expert witness and has been an appointed expert on over 160 occasions. Case summaries by Jason Nash, Partner, Berryman's Lace and Mawer.

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Meet the mentors

Representatives from Northumbria University and Newcastle-upon-Tyne-based practice FaulknerBrowns show how members can get involved with the Institute's new mentoring scheme.
By Paula Bleanch, MCIAT, former Senior Lecturer in Architectural Technology, Northumbria University.

Northumbria University run a CIAT Accredited Architectural Technology Honours Degree and architectural practice FaulknerBrowns are part of the Group Membership Scheme. Staff from Northumbria University and FaulknerBrowns have collaborated on student projects for a number of years. This article outlines the mentoring relationship that has developed between practitioners, students and academics; and what the advantages are for all involved.

What did we do?

At Northumbria University we asked FaulknerBrowns to collaborate with us on our second year project for the Architectural Technology students. We have been very lucky to work with the practice's Technical Managers, Mark Hudson MCIAT and Jean Paul Colback MCIAT, over a number of years. Their interest and commitment to the relationship has benefited students immensely and we are very grateful for their involvement. Year 2 is a transition year for the students; they must improve their performance in terms of technology and become familiar with more complex solutions. They are also expected to undertake a placement in Year 3, so by the end of the project they must be prepared for the world of work and to be useful in a design office.

The project brief is written by the academic staff and the chosen building type is of a suitable size and scale for the student's technical knowledge at the time. Typically the project would be to design a community building with sports

facilities. It would be stipulated to the students that they should use a framed solution in order for them to make the transition from loadbearing masonry construction, which they learned about in their first year, to more complex technology.

Students are asked to develop their own solutions and have to provide a series of key technical details for the building. As they cannot just consult a book to find the 'right answer', the students need expert help to allow them to complete their details. They also need to be able to work semi-independently, so the project is shaped by the pattern of interaction between student and expert over the academic year. To make this as real as possible, there are mentoring interactions with students, with intervening periods where the students work on their own to develop their technical solutions through research and hand drawing.

What is the timetable for involvement?

Prior to the start of the academic year:

Academic staff select a suitable project, set the student brief and meet with practitioners to discuss their involvement. It is important to make sure everyone has the same expectations and, on a practical level, to agree the dates when practitioners will be available to come into the university.

Time commitment: One to two hours.

At the start of the academic year (week 2 or 3):

Practitioners give a guest lecture to students on the practice, the work they undertake, and some technical problems

they have encountered in their work.

Questions and answers follow.

This informs the students about working in practice and what sort of tasks they may be expected to undertake in their placement year.

Time commitment: Two hours plus preparation of presentation.

Intermediate assessment: Practitioners are timetabled mentoring slots with groups of four students, but look at each student's work individually. This allows the students to get expert feedback on their own work so far and to see how their peers are approaching the project. Students benefit from the shared feedback.

Time commitment: One morning or afternoon.

Assessment

Practitioners attend assessment, which is in the form of a verbal presentation by students along with their drawn designs for the project. After a short Q&A with students, academic staff and practitioners give verbal feedback. This is then reinforced with written comments prepared at a later date by the academic staff, using notes provided by the practitioners.

Time commitment: One morning or afternoon.

After assessment

Academic staff and practitioners meet to talk about what went well and what could be improved for next year. This is a very important part of the process in order to provide continuous improvement and should not be overlooked.

Time commitment: One to two hours.

The practice view

Mark Hudson MCIAT, Technical Manager, FaulknerBrowns

As a practice, FaulknerBrowns has a long history of collaboration with both Northumbria and Newcastle Universities. We were initially asked to provide feedback to Northumbria on the performance of Architectural Technology students undertaking their year out placement with us, and one of the key concerns was that there was an increasing divergence between the student's expectations and what we feel are the core elements of an Architectural Technology professional's role in practice.

To help redress this, we developed a lecture which focused on four case studies highlighting technical challenges we had overcome and challenging the students to consider their role both in their year out, and after qualifying. We take between two and five Architectural Technology placements each year, and adopt a mentoring approach with these students, so it was logical to do this with the second year, providing them with some sound practical knowledge in addition to their academic studies. This also gives us the opportunity to assess the students in a more natural environment than a formal interview, so it helps inform our judgement as to who we would like to offer placements to the following year. We have had an extremely high rate of success with this.

The student view

Matt Davies ACIAT, Graduate Architectural Technology professional, FaulknerBrowns

The second year introduced us to framed structures, piling, pre-fabricated elements, cladding, curtain walling and rainscreen technology. Mark and Jean Paul were able to demonstrate effective use of such technologies with a presentation of past FaulknerBrowns buildings, inspiring me to look beyond traditional approaches and expand my understanding of more advanced applications.

Through the workshops I was challenged to think critically in the selection of envelope technologies; being encouraged to consider factors such as cost, buildability, manufacture, transportation, environment and the end user. This brought home the bigger picture for me and demonstrated how the Architectural Technology professional is key in facilitating integration of the design and construction processes.

I was lucky enough to secure a placement year at FaulknerBrowns during which I was involved in several large leisure projects; experience that proved invaluable in my final year studies. Since graduating I have returned to FaulknerBrowns and am now studying part-time for an MSc in Design Management and BIM at Northumbria and plan to qualify as a Chartered Architectural Technologist once I have gained suitable experience.

The academic view

Paula Bleanch MCIAT, former Senior Lecturer in Architectural Technology, Northumbria University

I graduated from the degree programme at Northumbria myself, and then went on to work as a Design Manager for several large contractors and a large local architectural practice. When I began teaching I was determined to mirror the 'real world' as much as possible, and I hoped students would benefit from my experience. Another member of staff had already involved Mark and Jean Paul in the second year project, and I was really excited to develop their participation along with Susan Dawson ACIAT, who is the Programme Leader at Northumbria.

The benefits for me were to keep in close contact with what was happening in local practice and an opportunity to keep my own technical knowledge up to date. As lecturers, we know that students learn extremely effectively from practitioners. It is interesting for the students to be in a one on one mentoring situation, just like in the design office, and we found that the second year project really helped students prepare for placement. Some of our best students have been placed or are currently working with FaulknerBrowns and I hope the relationship will continue long into the future. Experienced practitioners need to get involved in educating the next generation. Professional bodies, practitioners and academics all want the same outcome (capable graduates), so let's work closely together to achieve this.



Top left: Matt Davies ACIAT
Bottom left: Mark Hudson MCIAT
Right: Paula Bleanch MCIAT

More information

If you are interested in mentoring, please contact Tara Page, Education Director (tara@ciat.org.uk) or James Banks, Membership Director (james@ciat.org.uk)

If you would like more information about the CIAT Accredited BSc (Hons) Architectural Technology degree at Northumbria University, contact Susan Dawson ACIAT, Programme Leader at susan.dawson@northumbria.ac.uk.

More information on FaulknerBrowns can be obtained at www.faulknerbrowns.co.uk/

Paula Bleanch MCIAT was a Senior Lecturer in Architectural Technology and Construction Management at Northumbria University and is now based in Horsens, Denmark. paulableanch@gmail.com.

Lending a helping hand

As an extension of the Institute's corporate and social responsibility, CIAT is delighted to launch a new members' initiative; the Social and Community Challenge. This year members have the chance to help children with an extremely rare disorder.

By James Banks, Membership Director.

The Social and Community Challenge project has been led by the Membership Group, which spends much of its time looking at membership retention, attracting new members and reviewing the package of benefits to members across all grades. However this initiative is different; this is an opportunity to put to good and positive use the collective knowledge and amassed wealth of experience within our Institute, thereby enabling our members to give something back to provide benefit to their local and wider communities.

The concept

The premise of this challenge is that every other year members are invited to nominate a project for consideration. A nominated project will require a degree of specialist technical knowledge, research or design input with a social and community need. The nominations will then be submitted to the Challenge Panel for consideration and shortlisting, following which members will vote on the final project.

The successful project will then be launched with an outline brief developed in partnership with the representing client(s) and nominating member. All members will then be invited to volunteer their or their practice's time, forming a specific project task force.

The aim is that in bringing together the diverse technical, research and design backgrounds which we have, this 'one-off' design team can come up with tangible solutions to specific social and community issues.



© Gorilla - Fotolia.com

CIAT is encouraging members to use their skills to help children with the rare disorder Xeroderma Pigmento, an intolerance to sunlight.

The call for nominations will be in November 2015.

2014 Launch: Project Safe Garden

To launch the project we have selected a cause which is very close to the heart of the Membership Chair, Nicola Miller, as her three year old son Eddison is among the children and young adults who make up the community in need of our help.

Background information

Members are invited to work on a project to develop an affordable UV free shelter to allow children and young adults with the condition Xeroderma Pigmentosum to

enjoy time outside without being exposed to UVA and UVB light, which is harmful to them.

Xeroderma Pigmentosum, or XP is an incurable autosomal recessive disorder of DNA repair, in which the ability to repair damage caused by ultraviolet (UV) light is deficient. For patients all exposure to daylight is forbidden. Unless protected, patients with XP suffer damage to their skin and eyes which manifest into skin cancers. Around 20-30% of sufferers also exhibit neurological symptoms which include loss of hearing, brain and sensory damage. This condition is extremely rare, affecting less than 100 people in the UK and less than 1000 worldwide.

Project brief

Volunteering members (individual or corporate) will form part of a Project Team in partnership with the Teddington Trust, The XP Support Group (UK) and the XP Clinic at St Thomas' Hospital, London. It should be noted that the details and criteria of the project are set out at the start of the project and are outlined below. Any variations to the brief must be agreed by the Group. The Teddington Trust has engaged with patients across the UK, Europe and America and has compiled the following criteria.

This space should have the feel of an outdoor environment but provide complete blocking of ultraviolet light, allowing children who suffer from XP to play without the need for restrictive sun protective clothing. A safe garden space will allow these children the simple pleasures of playing with sand, water and gardening without gloves and visor, and enjoy activities such as swinging, sliding and climbing. It is also a place where children can enjoy time outside of the confines of their homes with their peers and family. The designs by CIAT members, (individual or corporate), are not intended for use at any specific site. The organisation making use of the design will be required to ensure suitability and appropriate insurance.

The following key criteria should be considered:

- Provision of complete protection from UVA and UVB.
- Transparency to give the perception of being outside.
- Provision of shelter from direct sunlight (many patients are photophobic, ie experience discomfort from bright light).
- Space should reflect the external temperature to allow perception of the outside environment but with the ability to regulate temperature to prevent overheating and allow air flow.
- Capable of being adapted to suit different floor areas and locations (for varying activities and sites).
- Strong enough to withstand ball games. Activities within might include ball

games, sand pit, garden play equipment, flower beds, paddling pool, picnics, reading, painting etc.

- Development of a semi-permeate solution for application at home, nursery, schools etc, and a lightweight portable alternative for travel.
- Provision of power.
- Planning exempt/planning friendly.
- Affordable/low cost.

This project will require innovative design ideas with consideration of specialist materials, in particular, photo-protective products and modular technologies.

This space should have the feel of an outdoor environment but provide complete blocking of ultraviolet light

Get involved

If you would like to get involved in this project, which is a first for the Institute and stands to benefit an extremely restricted and special group of children and young adults then please get in touch.

An initial 'project start' meeting will be held at Central Office following which the newly formed Project Team will meet at suitable locations. Designs will be disseminated within the global XP community as well as other groups, to reflect other applications/possibilities; and will be widely publicised within *AT* magazine and other industry media with recognition of participating members/practices.

Participants will also have their involvement recognised at the annual CIAT Awards presentation event, with further promotional opportunities on successful outcome. Participants are invited from all grades of membership. Expenses will be paid for attending an

initial meeting but following that members are expected to donate their time and costs, in the spirit of the initiative and its aims. To request further detailed information or express your interest please contact James Banks, Membership Director at james@ciat.org.uk by Friday 27 June 2014.

A video overview of the client brief can be viewed at the Institute's YouTube Channel: www.youtube.com/ciatechnologist. This has been produced by the client/s and not CIAT.

To discuss the brief/criteria please contact Nicola Miller at support@teddingtontrust.com

Disclaimer

The member (individual or corporate) agrees that its participation in the project is at their sole risk as an individual or corporate. To the fullest extent permitted by law CIAT excludes all representations, conditions, warranties and other terms. CIAT excludes all liability or responsibility for any loss or damage that may result to the individual or corporate CIAT member or any third party (including but not limited to any direct, indirect or consequential loss or damage, whether in Tort, in Contract or otherwise). CIAT does not accept any liability in respect of designs or design solutions generated or information given by the individual or corporate CIAT member. CIAT will not be responsible for any failure of an individual or corporate CIAT member to perform, or any delay in the performance of its obligations in connection with the project. CIAT reserves the right to publicise material. The obligations within the Institute's Code of Conduct continue to apply.

For more information on Xeroderma Pigmentosum:

Visit www.xpsupportgroup.org.uk, www.teddingtontrust.cm, facebook@XP Support Group, facebook @ Teddington Trust.

To read more on the daily issues of living with XP and how this project has the potential to benefit their lives go to www.teddingtontrust.wordpress.com

Regional focus: East Anglia

In the first of a series of articles looking in detail at Regions and Centres and how they work on behalf of the membership, David Taylor MCIAT, Regional Chairman, and Adrian Fleet ACIAT, Regional Secretary, report from the East Anglia Region.

Covering Cambridgeshire, Essex, Norfolk and Suffolk; Region 07 covers over 15,500km² and has over 539 members. Encompassing areas ranging from Southend to Hunstanton and Lowestoft to Huntingdon, CIAT East Anglia is the Institute's seventh largest Region.

We strive to provide support and information to our members allowing them to gain the full benefit of membership. We provide events to further knowledge of our evolving discipline whilst providing a support network for everybody from student to Chartered members.

This support is administered by a committee which is dedicated to the Institute, Architectural Technology and promoting membership. Headed by Chairman David Taylor, of David Taylor Associates, the Committee is driving the discipline and recognition of the Institute within the Region.

Whilst Regional in focus, the Committee also has national representation via its Councillor, Simon Ward, who has newly taken up the role following a successful term held by Kathy Thurman. Simon will attend events held by Central Office in London and act as a communication channel between the Region, Central Office, Council and the members.

The Committee meets a number of times a year to discuss projects such as our forthcoming Regional newsletter, feedback from meetings held in the



Norwich Cathedral is one of the Region's architectural highlights

interim, future events, educational relationships and voting at the AGM. This is just a small portion of what is discussed and we actively encourage members of all grades to attend either as observers or with a view to becoming active committee members.

Collaborative links

The Committee met in February 2014 with newly appointed Chairman David setting out his vision for the Region. David's focus is on building collaborative links with members and other Regions at all levels. Solam Sizer and James Mason

were awarded new positions to drive innovation in our Region and hopefully other Regions will co-operate. Solam will be liaising with educational establishments and students to build long term relationships with the Region. James will be producing the newsletter and would value input from members on projects, legislative and statutory information or anything of significance for publication.

Long term goals

As part of building collaborative links with members and other Regions, David and Adrian visited the East Midlands group.

David and Adrian discussed integration and 'co-badging' with other Regions, to promote teamwork and build partnerships, and emphasised the importance of close Regional relationships in sharing knowledge and raising standards. David acknowledged that Mark Wilson (Chairman) of Yorkshire Region is also looking at collaborative integration and David and Adrian will be visiting him shortly.

Our long term goal is to get Regions to communicate and integrate with each other and enhance the reputation of CIAT by getting more members involved. The Regional Committee is investigating

ways to ensure Regional content is current and relevant, and that it will provide members with appropriate professional development and maintain a network to share collective knowledge.

The Committee is organising a stimulating and diverse programme of CPD events. These will be held on the second Wednesday of each month. Past events have been well received and attended, none more so than the hugely successful AGM which the Region hosted in Cambridge in 2011.

Regional events 2014

11 July: Summer social day and co-badging event with the Chartered Association of Building Engineers (CABE)

10 September: Pro-Clima CPD event (TBC)

10 September: Committee meeting

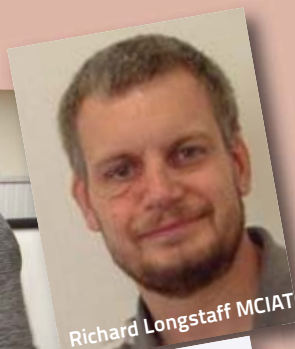
12 November: Bauder CPD event

Further details will be made available via email, the weekly Ebulletin and social media.

Meet the Committee



Some members of the committee: l-r Lawrence Coussell MCIAT, Catherine Read MCIAT, James Mason MCIAT, David Taylor MCIAT, Solam Sizer MCIAT, Adrian Fleet ACIAT.



Richard Longstaff MCIAT



Kathy Thurman MCIAT

David Taylor MCIAT Chairman

Simon Ward MCIAT Regional Councillor

Adrian Fleet ACIAT Secretary/CPD Officer

Richard Longstaff MCIAT Education Officer

Solam Sizer MCIAT Education Co-ordinator

Roger Allin MCIAT Committee member

Lawrence Coussell MCIAT Committee member

James Mason MCIAT Committee member

Charles Nash MCIAT Committee member

Catherine Read MCIAT Committee member

Kathy Thurman MCIAT Treasurer

The East Anglia Region Committee is made up of a mixture of experienced long serving and new members, including:

Kathy Thurman MCIAT

A long standing, respected and valued member of the Region and Committee. Over the years she has held various committee roles, along with those which she continues to carry out for Central Office. Kathy is Regional Treasurer and continues with various educational and membership roles, in particular at Central Office, such as

membership assessments and mentoring. Kathy has a vast knowledge and experience of our industry and continues to provide an invaluable service to public and government clients with enthusiasm and drive.

Lawrence Coussell MCIAT

Like Kathy Thurman, Lawrence is a long standing, valued and respected member of the Regional Committee. He was Secretary until 2011 and now acts as a Professional Practice Interview Assessor and moderator at

Central Office. He specialises in conservation design and is also a CIAT Accredited Conservationist.

Richard Longstaff MCIAT

Richard is the committee's Educational Officer. He lectures in Architectural Technology at Anglia Ruskin University and has a close relationship with other educational establishments in the Region. He also runs his own practice, Longstaff Associates, which won the Alan King prize for its Environmental House in 2005.

Regional events

January saw the Region continue with its CPD programme, this event was kindly hosted by Sunsquare Ltd at their premises and a group of 18 members attended a tour of their factory in Bury St Edmunds. Sunsquare is a pioneering contemporary roof light company. Mark Lambert, Technical Sales Manager led the presentation and subsequent tour.

In May a number of members visited AJ Laminated Beams in Bury St Edmunds. We were shown around the facilities and had the opportunity to ask their Danish colleagues (who attended especially) technical questions. Members were able to witness the bonding manufacture of timbers to create aesthetic Glulam beams.

Previous to this events have included presentations from the Green Building Store on the Passivhaus standard, an introductory BIM presentation and a very informative talk by the Faculty of Party Wall Surveyors, to name but a few. A new event for the Region will be its Summer Social day. This will include a factory tour, CPD presentations, networking opportunities and a buffet.

Other events in 2014 will include presentations by Bauder, Secured by Design, and an event on the use of social media within construction. We also have on our agenda a visit by President Karl Grace and we encourage members of all grades to attend. (Date to be confirmed). Information on all of these events will be coming to your inbox very soon.

It is important to remember CIAT is run by members for members and for this to work effectively, a balance of experience and knowledge with fresh ideas is best. Member views and support are essential for the success of Regions and the running of the Institute at national level.

The Region is here to support members of all grades. We encourage members to get involved and encourage interaction. With this in mind, we will be pleased to see you at any of our Regional events and meetings.

Contact details

David Taylor MCIAT (Chairman)
david.taylor@dtauk.co.uk
Adrian Fleet ACIAT (Secretary)
aj.fleet@andrewfleet.co.uk
Minutes from meetings are available on the Region web page at www.ciat.org.uk



From the Chairman...

I was pleased to be elected into my new role and look forward to working with the Regional Committee. I hope the ride will be an enjoyable one!

Taking up the reins has provided the opportunity to make the Committee more appealing for members, and to achieve this we all need to be motivated and co-ordinated.

The East Anglia Region Committee are a passionate dedicated team which looks to contribute to the achievements of the Region.

David Taylor MCIAT

Enhance your new development's appeal with the LABC Warranty...



In partnership with



This scheme is recognised by English Heritage and Historic Scotland

Working in partnership with LABC Warranty, CIAT Insurance Services can now offer a range of comprehensive home warranty insurance products to CIAT Members involved in the design and development of both new build and conversion projects.

McParland Finn Ltd, with the approval of the FSA, has a contractual agreement with CIAT that allows the Chartered Members to act in an introductory capacity in respect of the LABC range of Warranty products.

Find out more about CIAT Insurance Services' partnership with LABC by calling 0161 236 2532 or visiting www.ciat-insurance.co.uk/warranty

Council elections

Elections will be held in Council this September for those nominated to serve as President Elect, Vice President Technical and Honorary Treasurer. Here the nominees outline their relevant experience and their vision for CIAT's future.

President Elect Gary Mees MCIAT



Since becoming a member of this Institute in 1982 I have held numerous official positions on Regional Committees and represented the Region at AGMs. At national level, I was invited to join the Technical Committee, then became a Regional Councillor, then was elected Vice President Technical. After a short period away from Council, I returned and was elected Vice President Practice and have been there for the past couple of terms. I am now honoured to have been nominated for President Elect.

It has never been my goal to attain these positions, but I believe that my passion for our Institute has given me the confidence and drive to take me forward.

I have always believed in, and written about within a number of my manifesto papers, the importance of the 'eyes and ears' of this Institute. This applies to us all, where members feed back information to Central Office, on issues influencing our industry, internationally and Regionally.

For my part in this belief, I try to ensure the Institute has a presence within influential organisations where we can assist and direct from within the legislative processes. It was this conviction and enthusiasm that drove me to apply in 2001 for a position on BSAC (Building Standards Advisory Committee) the organisation that advised the minister in Scotland on Building Standards issues. I held the position for almost ten years, and continue to convene and be present on some of the working parties. More recently, on behalf of the Institute, I attend the Construction Industry Council (CIC) Health and Safety Committee;

British Standards Institute (BSi) Engineering Consultancy Services WG1 Construction; CIC Scotland and also represent CIAT on The Royal Incorporation of Architects in Scotland's, RIAS-Certification Scheme panel for the Certification of Design – Section 6 (Domestic).

As a practitioner in my forty-first year in the built environment, I have worked within a variety of disciplines and over a considerable range of project sizes. This offers me a good understanding of the different needs of the membership. My experience includes working within contractor design departments, architectural practices (at management level), local authority, and for the past 12 years, running my own practice as a Chartered Architectural Technologist, providing architectural and health and safety services to private and commercial organisations.

Combining my experience within the Institute and understanding as a practitioner provides me with a broad knowledge and awareness of the discipline of Architectural Technology. It would be a great honour to be given the opportunity to represent this institute as your President Elect and continue working with its members of the Executive Board and Council.

One of the major documents the Executive Board and Council have developed with the invaluable assistance of Sam Allwinkle PPBIAT, MCIAT, is the Strategic Plan. This, along with other documents being developed, forms a reference point for the Institute's planning and development.

If successful in this election I would like to be able to look back at the end of my term and see an Institute that has developed its recognition and status within the built environment. One that has an active network of, as previously mentioned, the 'eyes and ears' of the Institute, to ensure is in a position to respond to and influence all matters

affecting our professional lives, wherever we may work.

Summary of commitments

- Striving for members' interests, whether they are in practice for themselves or in employment.
- Assisting in the development of this Institute for it to become a more respected, influential profession that anticipates and responds to change.
- Maintaining working relationships with other organisations.
- Seeking to develop relations with other organisations.
- Enhancing the relationships we have with our fellow professionals.



President Elect Alex Naraian MCIAT

I am 45, born in the UK and gained my secondary education in

Fiji. I am married with two teenage sons. I am vice chair of a local swimming club and chair of the Executive Committee of the local Scout Group. I have also been involved with other local 'one off' initiatives with local school projects and events, as well as charitable fund raising efforts.

One unusual interest that I have is breakdancing. I was privileged to establish the largest breakdancing crew on the south coast, as well as teach at schools and events.

I have been employed by ADAM Architecture for the last 16 years where I started as a Junior Architectural Technician and through hard work progressed to Team Manager, then Associate and then finally to Associate Director in 2005 (the position which I currently hold). The practice has grown from 30 to 80 since I started. It is multi-disciplinary and has an international reputation in progressive classical and traditional design, and is now the largest

practice in Hampshire. It is also the largest of its kind in Europe.

As the practice has grown, so have my skills along with it. These range from the traditional skills of detailed drawing by hand and on CAD, specification writing and contract administration to staff mentoring, line management, project management, strategic planning and company development. Project work that I have been involved with includes interior architectural packages for new build, refurbishment and conservation projects, from high end residential, retail, institutional, leisure and commercial, in value up to £35m both in the UK and abroad.

I work closely with Southampton Solent University in Employer Liaison as well as on a collaborative academic basis on their Architectural Technology Degree course. This provides the opportunity to contribute to education, something that I am passionate about. I believe that education is the life blood of the success and growth of the discipline of Architectural Technology and that investment of time and input back into it is a vital part of the discipline's future success.

I am the Regional Councillor and Chairman for the South East Region of the Institute. I am also a Councillor Trustee on the Executive Board of CIAT and was a deputy Councillor Trustee when the new Strategic Plan for the Institute was developed last year. I played an active role in its development. I have trained as an interviewer for the new membership progression route. I have represented the Institute at various shows, such as Grand Designs Live and the National Homebuilding and Renovating Show, presenting masterclasses and providing expert advice.

ADAM Architecture has agreed to allow me the necessary time to fulfil the role, should I be successful. I have good strategic thinking skills, a reputation and a track record of seeing things through and I am decisive. I am not afraid of change, and I am used to managing change and able to identify associated opportunities. I am of an age whereby I am midway through my career, during which I have gained a wealth of experience, whilst still being young enough to be enthusiastic, determined and driven to get things done. I understand that the role of President Elect is for the good of the discipline and above all to serve members.

I have a big vision for our Institute. It is one driven by initiative, an exemplar of how Institutes should be – leading and setting trends in the industry. To see our members continue to grow in representation – in education, industry, and the media, nationally and internationally. The more this happens, the more gravitas and presence the profession will have. I want the discipline to be automatically considered a necessity for any new construction project, just like our fellow disciplines. Above all, I want every member of the Institute to be empowered and proud of their profession.

I hope that this gives you a flavour of my character and what I have to offer and my vision. It would be a huge honour if I were to be elected and I can guarantee that I would fulfil the role with integrity and to the utmost of my ability.



Vice President Technical
Kevin Crawford
MCIAT

I am honoured to have been nominated to stand for a second term for the post of Vice-President Technical, a position I consider to be an honour and privilege to hold. I have been running my own Architectural Technology practice since 2009. Previously, I was employed in the house building sector for ten years and in private practice for more than ten years prior to that. The practice has an extremely varied workload and provides a full range of architectural services to both private and commercial clients, specialising in energy efficient detailing and thermal modelling to ensure that the most efficient and economical solution is made available.

In 2011, I was elected as Regional Councillor for Scotland West Region (13) for a second time following my tenure as the Region's National Councillor between 1998 and 2005. I was then elected in 2011 as Council Trustee on the Executive Board and in 2012, I was successful in being elected to the post of Vice-President Technical. If I am re-elected, I will ensure that the sterling work of the technical committees and taskforces continues and that the Institute maintains its rightful place at the forefront of Architectural Technology.

As Vice-President Technical, I have represented the Institute externally in relation to changes and advancement in industry, overseen consultation responses on various items of key legislation as well as overseeing the Institute's Premier Award, Excellence in Architectural Technology Award and Alan King Awards. During my first term I have had the privilege of chairing the judging panel for both these Awards and have been impressed with the quality and standard of submissions.

It is critical that we continue to promote Architectural Technology and ensure that construction professionals and the general public understand and recognise the role we all play. In technical matters, this is carried out by self-promotion and with support from CIAT. Within CIAT, and more specifically the Technical committees and Taskforces, which have proven since their inception to be one of the Institute's most valuable assets, there is a core group of like-minded professionals. This includes senior members such as past Presidents and Vice Presidents, ensuring that we retain expertise and experience, younger members maintaining balance, and industry experts working together to provide input on a wide variety of issues from BIM to responding to government consultations on forthcoming policies and regulations. It is important to retain Chartered Architectural Technologists' inclusion in activities within the industry so that members' views are heard.

As Vice-President Technical, one of my key roles has been to encourage members who have specialisms in the field of Architectural Technology to become actively involved, be it in conservation, sustainability or any of the different fields which we, as Architectural Technologists work in – to stand up and promote what we do. The Institute will only grow if its members want it to and this will, in turn, improve its profile and that of the membership.

Since taking office, I have been collaborating closely with other officers, primarily through Executive Board, but most notably the Vice-President Practice, whose role, although distinct from the Vice-President Technical, is inextricably linked. It is important for the Institute to retain its strength in the unity of dedicated members for the common goal of furthering the Institute and raising awareness within industry whilst preserving its good reputation by quality representation.

As my current term as Vice-President Technical comes to an end, I would welcome re-election to allow me to continue the development of the Institute's technical activities and further enhance the services which the Institute offers.



**Honorary
Treasurer
Doug Fewkes
MCIAT**

I am a Project Manager in the Estates Function of Coventry University, having started as a Senior Architectural Technician in 1990. In recent years I have completed an MSc in Project Management and am now heavily involved in the delivery of the university's Capital Project investment programme that has seen some £80 million invested over the past 5 years and a further £100 million of new projects taking place between now and 2017.

Rigorous financial management of projects, whilst maintaining the specific needs of all associated with project delivery is an essential for success. This in-depth involvement with a wide variety of internal and external stakeholders, allows me to be best placed when advising senior management and the university. The sound financial management and continued stability of CIAT are in many ways very similar to my activities within the University Capital Projects Programmes. There are many individuals and internal/ external influences that all need to be managed. Our stakeholders are many and each has specific requests to be filled, from the general membership to each of the areas covered by the Vice Presidents and Central Office departments.

Having a broad over-view of the activities of CIAT gained from my involvement within the Institute as Regional Councillor, Finance Committee member, Trustee on the Executive Board and Chairman of ATSL allows me to understand the greater needs of CIAT and therefore provide the necessary advice and guidance for success. It is the role of Honorary Treasurer to stakeholders, manage both the internal and external influences which impact on CIAT and the way in which advice is given in its financial management ensuring growth and success.

If I am successful in these up-coming elections the following remain my priority:

1. Continue and develop the work of the Finance Committee in the budgetary management of CIAT.
2. Ensure that each of our internal stakeholders, represented by the Vice Presidents and groups are sufficiently supported to ensure their development needs are met.
3. That our Regional committees are provided with the necessary financial support to ensure that they can reach out to the Regional members.
4. That the continued growth of CIAT is the imperative and the correct financial environments are created to support the necessary growth.

During recent years the finances of CIAT have been safely managed and we have come through these difficult financial times ahead of the curve. This is now the time to increase the regional, national and international growth of CIAT on the sound underpinnings of a strong financial position. I will continue with these principles and create the most advantageous financial position for growth. I am proud to stand as a candidate for this prestigious post.



**Honorary
Treasurer
Robert Kay
MBE PPBIAT
MCIAT**

I became a Member of the Institute in 1968 but only really became involved in the Northern Ireland Region around 1985. I was elected Regional Councillor in 1987 and President in 1990. I was self-employed from 1975 having been employed straight after leaving school in 1958. I ran a small office from 1975 until my retirement from business in 2009. I keep in touch with the profession by acting as a consultant to the company which took over the business on my retirement. As well as being a Chartered Member of CIAT I was also a Chartered Building Surveyor and Member of RICS. I have been a Director of ATSL (Architectural Technology Services Ltd, the services company of CIAT) since its formation, and a member of Finance Committee since 1996.

I have a wide range of experience in many aspects of the running of the Institute on a voluntary basis; from Regional Councillor in the early days through my Presidency in the 1990s, to being a Director of ATSL and a member of the Finance Committee. Running a small architectural and building surveying practice for over 15 years before becoming closely involved with the Institute gave me valuable experience in business management and accounting although on a much larger scale.

My involvement in the Church of Ireland both nationally in Dublin and in my local diocese in Northern Ireland has, over the last 20 years, considerably widened my experience of finance on a much larger scale than that of the Institute, and I have found this invaluable when chairing discussions in finance meetings at Central Office.

Two of the main challenges facing the Institute are one, the high age profile of Chartered Members and two, the inability, at the moment, to convert student and Associate members to higher grades of membership. The Institute continues to require steady leadership in all aspects of the running of the departments at Central Office – that is why I am allowing my name to go forward for this election and if successful to help guide the Council and Institute through the economy's difficulties during the next two years as Honorary Treasurer.

I would attempt to achieve, with the assistance of the Finance Committee and Council, the moving forward of the Institute both nationally and overseas. This would include the membership nationally receiving a continuing full service from City Road and overseas development pressing ahead at an increased rate. All this is possible – we do have some reserves in the bank and Council in the past two years has authorised running our account in deficit (by using reserves) for projects to promote the Institute. We of course need to retain money for 'a rainy day' but at the same time the Institute is required to progress and this will mean spending money we do hold in the bank.

I think I have the necessary experience of the Institute to continue to advise on financial matters and in this continuing recession I would attempt to balance membership fee increases with the needs of all members of an Institute that is attaining greater recognition each year.

Off the Record

At just 22 years of age Daniel Hawkes MCIAT is the Institute's youngest Chartered Member. Amina Khanum, Assistant Membership Director, spoke to him about how he achieved this and his experience of Professional Assessment.

What is your academic background?

I attended the University of Derby in 2009 to study on the CIAT Accredited Architectural Technology and Practice programme. I chose this particular route because of my deep interest in architectural design, as well as my tendency to want to understand how things are put together. Towards the end of my studies at university I was offered a job at a multi-disciplinary firm of chartered surveyors, where I work on great variety of project and buildings.

What does your work involve?

My role entails all aspects of a project, from doing preliminary design work and planning applications, through to the production of tender packages, undertaking project management and contract administration.

Which POP Record did you complete?

I completed the MCIAT POP Record as opposed to the Professional Assessment route. When I first started work on this, the Professional Assessment

was not an option and by the time it came to fruition I had already completed 50% of the MCIAT POP Record! Not only this, but I felt that the POP Record allowed me to demonstrate to CIAT and myself that I was in fact competent to run projects from inception to completion.

How did you approach the Underpinning Knowledge units?

With Underpinning Knowledge, my Accredited degree meant that I was exempt from units 1-14. For units 15-17, I managed to complete them using a mixture of structured training and day-to-day activities.

What were your experiences with the Performance units?

With the Performance units, I tried to ensure I was producing the quality of work required before filling in the relevant unit, rather than tailoring my work to suit the requirements. I felt that doing it this way, would be beneficial in the long run as I could back up my work with relevant and concise explanations as to how and why I performed the competency.



The POP Record allowed me to demonstrate that I was competent to run projects

Who acted as your Supervisor and why?

My line manager Chris Batterby MRICS, and my colleague and Senior Building Surveyor Seonaid Brown MRICS. I felt that having qualified building surveyors to help me through the process was extremely advantageous, as this allowed me to gain exposure to the project management and contract administration side of projects. I think sometimes this can be the most difficult area of a project to break in to as a graduate Architectural Technology professional.

How long did it take you to complete?

I began filling in the POP Record almost immediately after starting work, however after about 15 months I revisited it and practically re-wrote the whole thing! This was because I felt the more recent work satisfied the competencies a lot better than my earlier work. I eventually submitted the POP Record around 19 months after completing my degree. In hindsight however I could have completed it quicker.

What does it feel like to be the youngest Chartered Member? How did you achieve this?

It's a great feeling! I think I managed to achieve this because of the slightly unique set-up of the firm I work for. Typically, a graduate Architectural Technology professional may only be exposed to a particular portion of the design and project processes. I feel that because I worked in a small team with a supportive employer, I was instantly exposed to all areas of a project, which helped me complete the POP Record within relatively quick time.

How did you find the POP Panel Review Process?

This was a very positive process for me. I passed the POP Panel Assessment first time, however the results came very quickly and allowed

me additional time to prepare for the interview.

What was your experience of the Professional Practice Interview?

The interview was very positive and made me feel relaxed. It was based around the Professional Practice units of my POP Record, and it was more of a general discussion than an intense interview. The Assessors put me at ease right away, which allowed me to

Having qualified building surveyors to help me through the process was extremely advantageous

discuss the topics raised in a clear and concise manner.

Do you have any advice to candidates currently completing their POP Records?

My advice would be to ensure that you are getting involved with as many units of the POP Record as you can in your working environment, as it certainly helped me to complete it. If you have the experience then the POP Record should take no time at all to fill complete.

How has/will the qualification benefited you?

Achieving Chartered Architectural Technologist status has allowed me to prove a level of competence to the Institute, my peers and the firm I work for. It's certainly the best achievement of my career to date.



Becoming a Chartered Environmentalist

As a constituent body for the Society for the Environment, CIAT is licensed to award the Chartered Environmentalist qualification to its Chartered Members. The Society for the Environment is the leading co-ordinating body in environmental matters and is a pre-eminent champion of a sustainable environment, and has registered over 7000 Chartered Environmentalists (CEnv).

The Society for the Environment have made changes to the Chartered Environmentalist qualification. The reason for this change is to ensure there is a sound knowledge, proven experience and best practice within the profession, as the Environment is the heart of the professional qualification. For the latest information, please contact CIAT.

To be eligible to become a Chartered Environmentalist, applicants must be MCIAT and demonstrate relevant academic and/or professional experience.

For further information please visit:

www.ciat.org.uk/en/Join_CIAT/chartered_environmentalist/

or contact Amina Khanum, Specialist Registers' Coordinator at CIAT Central Office on 020 7278 2206 (amina@ciat.org.uk)

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Please contact us today.



Graham Hambleton MCIAT 1942-2014

Graham Hambleton was a unique personality within the Greater London Region and dedicated much of his life to the Institute and the Regional Committee. He was a familiar face at Greater London Region events which he had been part of since joining the Institute in May 1967. His sudden death leaves a void to fill within the Regional Committee.

Niall Healy MCIAT, Greater London Regional Chairman, recalls Graham:

Graham Hambleton died at his home in Hornchurch, Essex and his funeral service was held on Wednesday 26 March at South Essex Crematorium, Upminster.

He was an active member of the Institute for many years and for a period of six months in 1995 worked in Central Office on a project to increase membership of the Institute. Graham served for many years on the Greater London Region Committee in the capacity of Regional Chairman, Treasurer and was currently serving as Regional Councillor.

He travelled widely to ski in some wonderful locations in Europe and the USA. The real core of Graham's passion

was speed, in addition to taking on challenging ski runs, Graham also raced motorbikes and was an active member in his local motor cycle club.

It was clear from those attending the service that Graham was well respected by those who shared his sporting and professional interests. He will be sadly missed by his family and friends.

Tributes from fellow Councillors

He was a fund of great stories about his life – Denise Germaine MCIAT, Centre Councillor, Republic of Ireland Centre.

I really liked Graham, a very dry wit – Colin Hardie MCIAT, Regional Councillor, 14.

I always remember sitting next to Graham at my first CIAT dinner and ever since knew him as an individual with a wealth of experience – David Handcock MCIAT, Regional Councillor, 08.

I got to know Graham quite well over the years. He was an avid sportsman and told me stories of taking part in motorbike races. He was also an avid skier and it doesn't seem so long ago that he told me that he had been skiing. I sat next to him at Council meetings in



Graham Hambleton: a passionate skier

the past and he was keen to put his points of view across. In recent years he had little to say at our meetings but I am sure he was taking in much of what we discussed – Chris Workman MCIAT, Regional Councillor, 11.

New British Standard for BIM

There have been significant advances in CAD and Building Information Modelling (BIM) technology, with BIM Level 2 being mandated for use on all government construction projects by 2016.

British Standards have issued a new guide to help implement BIM usage: *BS 7000-4:2013 Design Management Systems: Guide to managing design in construction*. New technology (in particular BIM) makes it more important than ever to operate a collaborative design process across the recognised design disciplines and incorporate economic and process considerations. This also increases the need for greater rigor in the management of that process and for the application of appropriate measures and techniques.

Since 1996, four key factors have influenced design management and this

revision of BS 7000-4 updates the standard to acknowledge and reference them:

- Collaborative working
- The influence of new technologies
- The effect of construction procurement
- Roles and responsibilities

BS 7000-4 gives guidance on management of the construction design process at all levels, for all organisations and for all types of construction projects. The guidance given applies to purpose-built constructions, equipment and components. It is a key document for those who work in and with the construction industry, particularly designers and those managing design.

Where general management principles are given, they may be adapted to suit any size of design organisation or

construction project. The guidance given applies to management of design activities throughout the life-cycle of a construction project, and the principles of the facilities management function.

The revised BS 7000-4 provides the principles and a common reference for company and project protocols, which can also be used in reverse to check that the bases have been covered. By following the protocols and principles in the guide, the design management process will be more efficient and there will be less wastage of time and effort.

The committee which undertook the revision was chaired by Honorary Member Keith Snook HonMCIAT.

To find out more about British Standards please visit www.bsigroup.com/

The wall of fame



Plaques were recently presented to two winners in CIAT's 2013 Awards: Barry Armstrong of Edward Architecture for Fonab Castle – Commended in the Open Award for Technical Excellence, (top) and Philip A Hapka of James Denholm Partnership for Wester Deuglie which was Highly Commended in the Alan King Award. The pictures show (top, left to right) Kevin Crawford MCIAT, Vice President Technical; Barry Armstrong, Karl Grace PCIAT and Fonab Castle owner Jed Clark. Below: Philip A Hapka (left) with Karl Grace PCIAT.

The Phaidon Atlas of Architecture

CIAT members have been offered a free 30 day pass to the new *Phaidon Atlas of Architecture*.

The Phaidon Atlas is an essential new resource for architectural professionals to access the latest architectural design concepts, drawings and construction

details, from your desktop, tablet or mobile device.

Over 3000 carefully curated projects, covering every conceivable building type, are fully documented in unprecedented detail. The 30 day subscriber pass lets you explore thousands of previously unpublished hi-res technical drawings, plans and photographs and trace the development of projects from conception to completion.

Become an accredited European Building Expert



Members of AEEBC (The Association of European Building Surveyors and Construction Experts) member organisations (which includes CIAT) can now apply for EurBE, a European accreditation scheme for construction and building professionals.

EurBE provides an opportunity for suitably qualified professionals from across Europe to achieve European recognition and accreditation alongside their national qualification. The professional designation 'EurBE' – for European Building Expert – is awarded to candidates who meet the experience and competence requirements of the AEEBC. Applicants are assessed firstly by an AEEBC National Monitoring Committee in the country in which they operate and secondly by an AEEBC European Monitoring Committee.

Professionals who are awarded EurBE will be recognised as having met the AEEBC common European wide threshold standards required of a Building Expert. All individual members of the professional institutions and associations that make up the principal members of the AEEBC are eligible to apply. Assessment is based on academic qualifications, professional experience and commitment to comply with the AEEBC Code of Conduct and Ethics.

To find out more visit www.aeebc.org

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Conduct

In accordance with the Institute's Code of Conduct, decisions by the Conduct Committee are published in *AT* magazine.

026182/F3860 – Mr Craig Buckley (student member)

Mr Buckley was found in breach of Clause 3a) and Clause 9c) from the Code of Conduct effective 1 May 2011:

Clause 3: Practice Registration

a) Only Chartered Members and profile candidates may act as principals and offer and/or provide services directly to a client.

Clause 9: Breaches of this Code

The members shall:

c) when subject to an investigation by the Institute of an alleged breach of this Code use their best endeavours to assist in that investigation at their own cost.

Disciplinary action:

In accordance with the Conduct and Disciplinary Procedures Schedule 1, Item 17 (c), Mr Buckley was suspended for a period of five years in respect of the breach of Clause 3a) from the Institute's Code of Conduct effective 1 May 2011.

In accordance with the Conduct and Disciplinary Procedures Schedule 1, Item 17 (c), Mr Buckley was suspended for a period of five years in respect of the breach of Clause 9c) from the Institute's Code of Conduct effective 1 May 2011.

Each period of suspension will run concurrently. Therefore, the total period of suspension will be for **five years**.

Only Chartered Members and profile candidates may act as principals

018299/F3327 – Mr Rodney Dellimore (profile candidate)

Mr Dellimore was found in breach of Clause 5d) and Clause 9c) from the Code of Conduct effective 1 May 2011:

Clause 5: Professional Indemnity Insurance

Chartered Members or profile candidates who:

d) are or were principals shall on request by the Institute provide the necessary evidence to demonstrate

compliance with clauses 5a)-5c) above.

Clause 9: Breaches of this Code:

The members shall:

c) when subject to an investigation by the Institute of an alleged breach of this Code use their best endeavours to assist in that investigation at their own cost.

Disciplinary action:

In accordance with the Conduct and Disciplinary Procedures Schedule 1, Item 17 (c), Mr Dellimore was suspended for a period of five years in respect of the breach of Clause 5d) from the Institute's Code of Conduct effective 1 May 2011.

In accordance with the Conduct and Disciplinary Procedures Schedule 1, Item 17 (c), Mr Dellimore was suspended for a period of five years in respect of the breach of Clause 9c) from the Institute's Code of Conduct effective 1 May 2011.

Each period of suspension will run concurrently. Therefore, the total period of suspension will be for **five years**.

A023322/F3991 – Mr Darren Thorpe (Associate member)

Mr Thorpe was found in breach of Clause 9c) from the Code of Conduct effective 1 May 2011:

Clause 9: Breaches of this Code:

The members shall:

c) when subject to an investigation by the Institute of an alleged breach of this Code use their best endeavours to assist in that investigation at their own cost.

Disciplinary action:

In accordance with the Conduct and Disciplinary Procedures Schedule 1, Item 17 (c), Mr Thorpe was suspended for a period of **five years** in respect of the breach of Clause 9c) from the Institute's Code of Conduct effective 1 May 2011.



The CIAT weekly Ebulletin

All members with email addresses receive the CIAT weekly Ebulletin featuring the latest Institute and industry news.

Non-members can subscribe too – email info@ciat.org.uk with your details.

Free guide to Part L

Online specification website, Specified By, which is supported by CIAT, has launched a free guide to Part L of the Building Regulations for England and Wales (fuel and power).

This handy guide will attempt to break it down to what you need to know, why you need to know it and how to go about finding out more.

To download please visit <http://specifiedby.com/resources>

BREEAM Briefings

The Building Research Establishment (BRE) has arranged a series of regional briefings for the launch of the BREEAM (BRE Environmental Assessment Methodology) UK New Construction. These will take place in different regions throughout June and July. These briefings are free. To find out more visit www.breeam.org/

Construction Supply Chain Payment Charter

A Construction Supply Chain Payment Charter that sets out payment terms of 30 days has been agreed by the Construction Leadership Council (CLC), the body set up to deliver the UK Government's industrial strategy for construction in England and Wales.

The Charter sets out 11 'Fair Payment Commitments'. These include a commitment to reduce payment terms to a supply chain to 30 days from January 2018. The Charter also sets out stages before this: terms of 45 days from June 2015, and 60 days with immediate effect.

Other commitments made in the Charter include not withholding cash retentions and not delaying or withholding payment.

NEW MEMBERS

021080	Steven Allcock	03 North West	029062	Robert Fowkes	04 E Midlands	017706	Guy Shorney	09 Gtr London
018979	Samuel Appleton	10 South East	019831	Matthew Freeman	08 Central	028031	Philip Skinner	01 Northern
023011	Alan Bear	09 Gtr London	019564	Jorge Granja	08 Central	015645	Allan Smithson	04 E Midlands
028605	Steve Berry	16 Wales	028996	David Haire	15 N Ireland	022859	Jonathan Sutton	C7 Middle East & Africa
028949	Kish Bhudia	09 Gtr London	021718	Ben Hamblin	08 Central	019427	Rollin Tait	07 East Anglia
026277	Darryl Bingham	01 Northern	023122	Jonathon Hardy	04 E Midlands	019541	Monika Taylor	09 Gtr London
020021	Daniel Birch	05 W Midlands	023711	Daniel Hawkes	05 W Midlands	027021	Nicholas Tsiknas	10 South East
015834	Paul Blanch	06 Wessex	021131	Matthew Horridge	04 E Midlands	023423	Phillip Wall	02 Yorkshire
028150	Warren Bone	08 Central	021636	Daniel Howell	08 Central	010543	Anthony Walsh	16 Wales Region
016756	Andy Bremerkamp	06 Wessex	021432	Niall Inman	07 East Anglia	026789	Michael Waring	08 Central
014249	Richard Briffa	09 Gtr London	018499	Neil Kelly	13 Scotland W	019479	Lea Watkins-Evans	16 Wales
028803	Jamie Buck	06 Wessex	025132	Jonathan Lane	05 W Midlands	010851	Tony Whitbread	08 Central
028312	Surinder Buray	05 W Midlands	019347	Ian Lawrence	10 South East	021853	Jonathan White	06 Wessex
011888	Steven Bushell	10 South East	012040	Robert Leadbeater	05 W Midlands	020453	Kelly Williams	16 Wales Region
018661	Chris Charlton	09 Gtr London	026787	James Leighfield	12 Western	019782	Karyn Williams	16 Wales Region
018346	Marc Churches	06 Wessex	022038	Andrew Lockyer	03 North West	022969	Robert Winter	04 E Midlands
024073	Graham Churchill	12 Western	015666	Adrian McAshea	15 N Ireland	019543	Usman Yaqub	06 Wessex
019320	Chris Clarke	09 Gtr London	026206	Daragh McLoughney	10 South East			
018258	Simon Collins	02 Yorkshire	011708	Scott Millington	05 W Midlands			
027817	Thomas Corbett	05 W Midlands	012367	Andrew Moore	10 South East			
011057	Thomas Cosgrove	C3 Australasia	026819	Brendan Moore	C2 Rep of Ireland			
010591	Keith Cottrell	06 Wessex	021015	Mark Nelson	15 N Ireland			
020998	Nick Culley	06 Wessex	019267	Crystyna Nimmo	10 South East			
020482	Chris Davies	08 Central	026622	Philip Oliver	04 E Midlands			
021366	James Dean	06 Wessex	028909	Ali Palizi	09 Gtr London			
028602	Elysia Dooley	10 South East	021857	Adam Parry	16 Wales Region			
028149	Jaafar El-Komati	C7 Middle East & Africa	024661	Anthony Rice	05 W Midlands			
			023559	Ruhizal Roosli	C5 Asia Centre			
024195	Gareth Elphinstone	13 Scotland West	010767	Jon Sargeant	E Midlands			

In memoriam

We regret to announce the deaths of the following members:

Graham Hambleton	Greater London Region
Ravindra Chury	North West Region
John Cloonan	Republic of Ireland Centre
Robert Powell	Central Region

Republic of Ireland Centre

John Cloonan MCIAT

The following is a tribute published by the Republic of Ireland Centre following the death of John Cloonan MCIAT in February.

'It is with extreme sadness that we learnt of the untimely death on 11 February of our friend and colleague, John Cloonan. MCIAT, Dip Arch Tech. John was a stalwart of the CIAT Republic of Ireland Centre and had been serving as our Honorary Secretary for a number of years. I am sure that all the members of the Republic of Ireland Centre will join with me in offering our sincere condolences to his family, friends and colleagues.' Denise Germaine MCIAT, Centre Chairman.

Region and Centre News

Yorkshire Region

23 June. A Membership Progression Session will be held at Novotel Sheffield Centre, 50 Arundel Gate S1 2PR from 11.45am to 1.00pm.

Guidance provided in the power point presentation will primarily relate to the new qualifying process – MCIAT Professional Assessment. However, the POP Record route to membership will also be discussed. The presentation will be followed by a Q&A Session.

It is free for members to attend. However, spaces are limited and will be allocated

on a first come first served basis. Refreshments will be provided. To reserve a slot, please email membership@ciat.org.uk

8 July. The Region has organised a series of site visits to the re-development of Selby Leisure Centre. A series of three visits will be held on 8 July, 2 September and 3 February 2015. 18:00 for 18:30 start of site visit. To reserve your place, please contact Henry Spence MCIAT. Tel: 01977 681199. Mobile: 07946 608220. Email: htspence@hotmail.com

Wessex Region

3 July. A Membership Progression Session will be held at Mercure Exeter Southgate Hotel, Southernhay East, Exeter, EX1 1QF, from 11.45 am to 12.45 pm. To book please email membership@ciat.org.uk



From the AT archives

Excerpts from *Architectural Technology* issue 66 (March 1984):

'Housing remains perhaps the biggest and most sensitive problem of all. New housing starts are at the lowest level for many

years and if only carried on at the present rate will result in the number of unfit houses getting greater...'

'We are pleased to welcome the Hong Kong Centre in to the Society's (CIAT) structure, and it is clear that the enthusiasm and diligence of our new members in the province will bring great credit and add significantly to our growing international reputation.'

'With the steadily increasing signs of

the long overdue uplift in the construction industry, perhaps members who have felt uneasy about their continued employment will not have to face redundancy after all.

'However should you receive the warning signals, as I did, that work is getting scarcer, that your employers are reluctant to print more business cards with your name upon them...for heaven's sake put in some forward planning.'

Nottingham 2014



Notice of the 2014 CIAT Annual General Meeting

Notice is given that the Annual General meeting of the Chartered Institute of Architectural Technologists will be held at the Council House, Nottingham, on Saturday 29 November 2014 for the following purposes:

- To consider the Annual Review
- To consider the accounts and balance sheets as at 30 April 2014
- To re-appoint the auditors and authorise Council to fix their remuneration
- To announce the results of the election of members to the Council and Regional and Centre Committees
- To receive and debate resolutions

CIAT, 397 City Road,
London EC1V 1NH, UK.

Francesca AH Berriman MBE,
Chief Executive, May 2014.

Meet fellow members, network with built environment professionals and enjoy lavish hospitality...

C IAT is holding its AGM and President's Dinner Dance in Nottingham on Saturday 29 November.

These prestigious events bring together over 250 Architectural Technology and built environment professionals – an ideal opportunity to meet fellow members and to network with related industry representatives.

If you would like to attend the President's Dinner Dance, please email info@ciat.org.uk or telephone +44 (0) 7278 2206 for more information.

For information on event sponsorship, please contact Hugh Morrison. Email hugh@ciat.org.uk or telephone +44(0) 7278 2206.





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