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AT Awards 2022 now open

The AT Awards opened for submissions and nominations on 1 February 2022 for the following Awards:

- Excellence in Architectural Technology
- Student Awards for Excellence in Architectural Technology
- Emerging Talent in the Technology of Architecture
- The Chartered Architectural Technologist of the Year
- Gold Award

Full details and application forms can be found on the website. Winners will be announced and presented at the AT Awards event on 21 October 2022.

The AT Awards are recognised as the premier accolades that demonstrate outstanding achievement in Architectural Technology and celebrate the technology of architecture.

AT AWARDS

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"The sun is shining where clouds have been, maybe it's something to do with spring", a lyric from Sir Noel Coward's song which was introduced in his revue *Words and Music* (1932) by Sir John Mills. Mills became a respected veteran of British film as Barry Cryer became a respected veteran of British comedy. Cryer died on 25 January aged 86 and 17 years ago was the guest speaker at the Institute's 40th Anniversary Dinner, held in Birmingham. Even now his *Ode to the Institute* is remembered by those who attended the evening. His sharp wit, humour and warm personality was in full force that evening, as it was throughout his 70-year career.

Barry Cryer flanked by Jim Kirwan (left) and Paul Burton (right)

A great celebration that I was honoured to attend on 17 December was the 90th Birthday Luncheon of George Lowe PCSAAT MCIAT, Past Chairman (1968-70) and the Institute's last remaining Founding Member. George has a wealth of stories and memories from our early formation and is our very own 'golden thread' though the past six decades. I'm sure you will all join me in congratulating George on this milestone birthday and here is to many more to come!

In the last issue of this *Journal* (issue 140), I replicated an email that had been sent in by Steve Judd MCIAT regarding the Grenfell Tower and an article that had appeared in the summer issue. I received a response from Denise Germaine MCIAT:

"Just one comment on Steve Judd's email, quoted in your editorial, it is my opinion, having been in the business of architecture and construction for over 50 years, it was the client/developer who engaged the Clerk of Works and not the designer. Maybe I'm wrong but the CoW answered to the client and not to the designer on quality and costs of materials and workmanship. Assuredly, the designer worked collaboratively with the CoW, who was a vital and valued member of the team."

If any readers would like to comment further on this, then I would be pleased to hear from you.

What also featured in the last issue, was an article by Professor Steve Scaysbrook FCIAT tracing the history of Mitchell's construction books. We would like to apologise for an error on page 22 as the photo of Charles should have been credited to 'University of Westminster Archive, taken from their copy of *The Polytechnic Portrait Gallery* (1894), ref. UWA/RSP/5/1/92.'

If you are looking for employment or seeking a new position, then please do take a look at AT|jobs on our website. This is the job board for all Architectural Technology related positions and can be found here: architecturaltechnology.com/jobs.html. The positions also feature regularly in *AT Weekly.*

I would like to encourage you to consider entering the AT Awards which opened on 1 February. There is a variety of categories for all to apply for and you can find all the information you need at: architecturaltechnology.com/awards/atawards.html.

In my usual sign off, please do get in touch as I would love to hear from you regarding anything in this edition or if you have any ideas for future articles – this is your Journal and I welcome all ideas and feedback – email me at editor@ciat.global.

I hope you enjoy a peaceful Easter when it arrives.

Adam Endacott
Editor

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Why 2021 proved building acoustics must be a non-negotiable consideration

Words by Ben Hancock MD of Oscar Acoustics

With the increasing densification of towns and cities the way we think about space is changing. Property owners are now looking to utilise every inch of space, allowing less conventional areas to be reimagined into unique living or working environments. While designers respond to design challenges covering aesthetics and usability, an area that is often overlooked is the importance of acoustics in the property – and the impact it can have on work environments.

The right acoustic solution should always be considered when creating and adapting workspaces.

The outbreak of COVID19 has reshaped society as we knew it. It disrupted our routines and forced us to reassess our work-life balance, environments and health. 2021 highlighted the acoustic flaws in buildings across the country, where fancy office designs are no longer shadowing how effective these spaces are to actually work in. Workspaces need to be adapted so they are not only aesthetically pleasing, but calm and inviting too, enhancing the health and wellbeing of all who enter them.

After months working remotely, many realised the importance of face-to-face interactions with their colleagues and welcomed the idea of heading back into the office to embrace a collaborative setting where they can be social and creative again. For some though, returning to the office has been a difficult adjustment and served as a stark reminder of how hectic and distracting their workspaces can be. Employers must create workspaces that inspire and support their employees' mental health.

Since the pandemic, the negative impact that poor acoustics have on our health has been thrust into the spotlight.

Since the pandemic, the negative impact that poor acoustics have on our health has been thrust into the spotlight. This has caused many to consider how distressing excessive levels of noise can be both at home and in the office. According to Yes Homebuyers, 28% of people who moved house last year held noisy neighbours responsible for their decision to move on.[1] Would this have been realised if we weren't spending so much time at home? Although the answer to that question will remain unknown, the truth of the matter is that too much noise can be hard to cope with and worryingly it can also lead to adverse health effects, increasing the risk of heart disease, diabetes, heart attacks and strokes[2].

A change for the better

The harmful effects of excessive noise are now becoming a pain-point for housing developers and building owners. Yet it is worth noting, building owners who take steps towards fixing this problem will benefit from lower costs and higher efficiency. Investing in improved acoustics directly impacts employees in a very positive way. As a result they become healthier, happier and more productive. Lockdown, particularly for those living and working in highly populated cities, highlighted the vast number of builds structures that are not fit for purpose when it comes to acoustic solutions and sound management. This has kick-started a 'sound revolution,' and it is here to stay. As noise levels have crept up the list of criteria for perspective buyers and tenants, the time has come for the built environment sector to ensure regulatory requirements are being met, and many developers and building designers are now exploring ways to create healthy sound environments, where reverberation – one of the main drivers for excessive noise, is absorbed, resulting in better communication and lower stress levels.

Control of Noise at Work Regulations state that daily or weekly, noise levels should reach no higher than 87dB and peak sound pressure, 140dB. The level of excessive 'background' noise in workspace environments should not be underestimated. Over time, it can dramatically impact staff's ability to think coherently. Although this is not tangible, it does need to be considered equally. Businesses invest in ergonomic chairs, height adjustable desks and keyboards to facilitate a good posture and often forget about the less visible but equally detrimental impact poor acoustics can have on their staff. Think of noise as a flickering screen and its impact on your eyes. Noise can have the same distracting effect on our brains.

An attitude adjustment

With the COVID crisis still ongoing, businesses are placing

a great emphasis on our physical workspaces. Many are working hard to ensure staff feel comfortable and safe to return to the office environment. Health and safety measures such as social distancing, touchless surfaces and tactile-free walkways help protect staff, however, these new open and collaborative spaces often fail to incorporate the impact of noise.

The increasing absence of dividing walls and soft furnishings along with the rising number of wipeable hard surfaces might help in minimising the spread of viruses, but they leave very little behind to absorb sound reverberation, leading to environments that become unwelcoming and rather stressful 'echo chambers.'

Designers working on office redesigns are aware of the potential problems of not incorporating acoustic solutions into the projects. A recent study we conducted highlighted how just 9% of designers believe that 'acoustic design is getting the attention it deserves by their clients.' Rather shockingly, almost half of these clients stated when interviewed that they aren't interested in 'end-user health,' suggesting they're more interested in just getting the job done and using a mere box-ticking approach. With an increasing tendency towards hybrid work, acoustic health needs to be taken seriously. Redesign projects enable the opportunity to incorporate effective solutions, which are compatible with modern co-working spaces, while also providing a pleasing aesthetic for the end user to enjoy.

Making moves

Acoustics are influenced by room geometry and noise distribution. There are a myriad of options on the market to help employers looking to improve the safety of staff, so it is important that they do their research to ensure a quality and effective finish. Both acoustic hangers and cavity insulation are great solutions to block out noise transfer between rooms, while interior coatings are increasingly used to ensure acoustically balanced interiors.

Reverberation can be significantly reduced with treatments like fire-rated acoustic sprays and plasters for walls and ceilings. These solutions can be quickly spray applied and offer quality acoustic finishes without design compromise. It's even possible to specify a through-coloured option, meaning there will be no need to redecorate, and this will also minimise the need for repair over time, and help offset the cost.

Acoustics ceiling sprays absorb sound energy instead of reflecting it, reducing reverberation times and overall noise levels in a space. These acoustic systems also allow complete flexibility with Cat A and Cat B configuration allowing for dividing structures such as office pods to be brought in without disrupting the acoustic spray finish on the ceiling above. Quality acoustic sprays can be applied to nearly all types of surfaces including plaster, wood, metal and concrete, making them suitable for all types of office workspaces.

A sound solution

Premium acoustic sprays can contribute towards a sustainable design and health certification systems including BREEAM, SKA, Living Building Challenge and adds up to 17 points towards the LEED (Leadership in Energy and Environmental Design) rating of a project. However, before investing in a spray, it is important to establish if it is GREENGUARD Gold Certified compliance for Indoor Air Quality as this will mean it meets the highest welfare standards.

Fire safety should also be considered. Acoustic sprays that go above and beyond Approved Document B fire requirement (Class 0 to BS476 & B-s1, d0 fire rating), will give peace of mind that in the event of a fire, the acoustic spray would provide little to no smoke and absolutely no droplets, assisting in the safe escape of its occupants.

If businesses are to come back stronger than ever, then it starts with creating the right environment for staff to thrive and feel at ease. Redesigns provide a golden opportunity to invest in acoustics to improve the health of those who will use the space. With safe, quality and sustainable options on the open market, it has never been easier to ensure spaces are fully protected, enabling the end user to enjoy it to the full. ■

[1] luxuriousmagazine.com/noisy-neighbours-moving-home/
[2] eea.europa.eu/articles/noise-pollution-is-a-major

New early career Architectural Technologist support initiative at Edinburgh Napier University

Would you be open to offering Micro Placements to final year AT students at Edinburgh Napier University?

Micro Placementss are the new, interactive and mutually beneficial way to enhance the knowledge exchange interactions between AT employers and early career Architectural Technologists.

Running from Monday 2 May until Friday 27 May 2022, these optional week-long shadowing opportunities offer organisations a chance to work with ambitious (soon-to-be) graduates from the CIAT Accredited Architectural Technology programme at Edinburgh Napier University, a CIAT Centre of Excellence.

Contact Sarah Steel, Placement Coordinator, at sebeplacements@napier.ac.uk to discuss next steps or find out more.

Other degree programmes are eligible:
- Electronic & Electrical Engineering
- Mechanical Engineering
- Energy and Environmental Engineering

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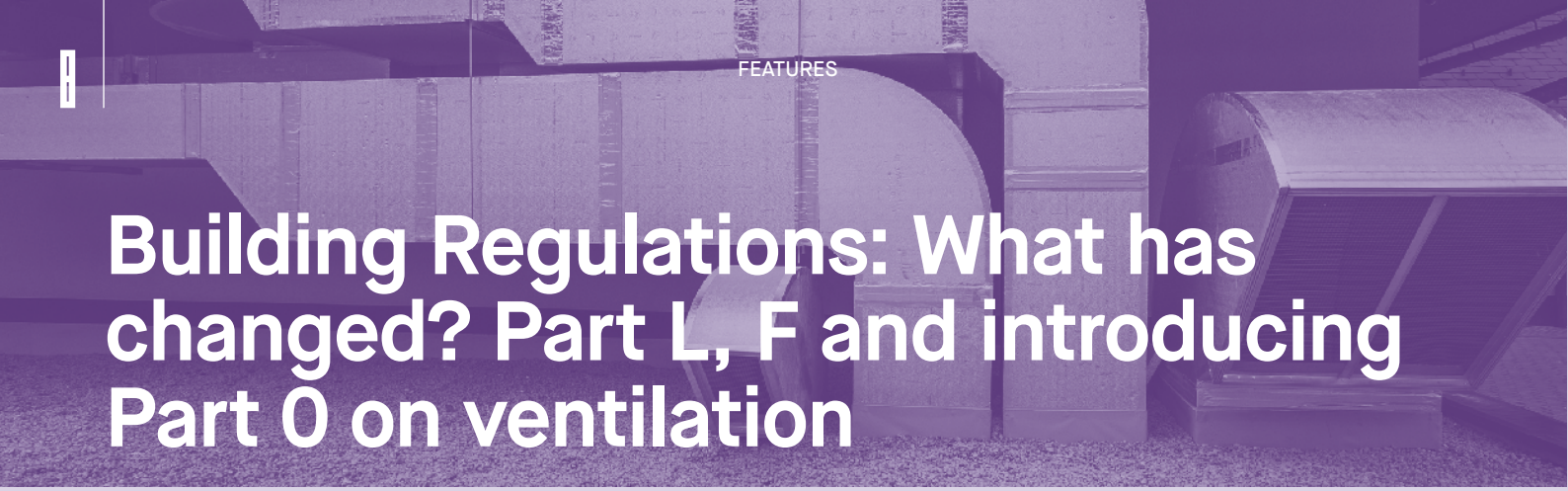


Building Regulations: What has changed? Part L, F and introducing Part O on ventilation

In the shift towards a Future Buildings Standard, the Government has introduced a range of changes to the Building Regulations, including a mandatory 30% cut in carbon for all new homes and a 27% cut for other buildings, including offices and shops.

The Department for Levelling-Up, Housing and Communities (DLUHC) set out the changes, which include interim uplifts to Part L and Part F, and the introduction of Part O, in its response to a public consultation on the Future Buildings Standard, concluded in April.

The rules will come into force in June 2022, with a one-year transition period to allow for planning applications underway at that time.

- Alongside amendments to the Building Regs, five new approved documents are published:
- Approved Document L, volume 1: dwellings;
- Approved Document L, volume 2: buildings other than dwellings;
- Approved Document F, volume 1: dwellings;
- Approved Document F, volume 2: buildings other than dwellings;
- and an entirely new Approved Document O covering overheating.

Printed versions of the new approved documents can be purchased from RIBABooks.com

Part L – Interim uplifts to standards for non-domestic buildings

Non-domestic buildings must achieve an average of 27% reduction in CO2, relative to 2013 standards. This is the more ambitious of two options put forward by the Government in its consultation, the first was for a 22% reduction.

The Government said the mandate would achieve a balance between making progress towards the Future Homes Standard, due in 2025, while providing the industry 'with the time it needs to develop the supply chains and skills that will be necessary and accounting for market factors'.

Part L amendments introduce a new principal performance metric measuring energy efficiency. 'Primary energy' will be used in combination with CO2 metrics to assess compliance with Part L. Primary energy calculations take into account factors such as the efficiency of the building's heating system; power station efficiency for electricity; and energy used to produce fuel and deliver it to the building.

The majority of respondents to the consultation (62.2%) said they disagreed with using primary energy as the main performance metric and the government has said the approach will be reviewed before implementation of the full Future Buildings Standard.

The new uplifts introduce new minimum efficiency standards for both new and replacement thermal elements, windows and doors. In most cases these will be set at levels proposed in the consultation. For example, the U-value of new walls is 0.26W/m2 K, compared to 0.35W m2 K previously. Most types of new window, roof window and curtain walling must achieve a U value of 1.6, versus 2.2 previously.

Turning to building services in new non-domestic buildings, the minimum efficacy of lighting installations in new non-domestic buildings has been increased to 95 luminaire lumens per circuit watt for general lighting and 80 luminaire lumens per circuit watt for display lighting. Lower efficacies in some rooms can be offset by higher efficacies in others.

A separate standard for lighting that requires a high level of optical control, including innovative high excitation purity lighting, has been introduced.

New non-domestic buildings now require a building automation and control system if they include a heating or air-conditioning system of 180kW or over, rather than 290kW originally proposed.

A new minimum standard is introduced to ensure that wet space heating systems in new buildings are designed to operate with a maximum flow temperature of 55°C – considered important for system efficiency.

All space heating and domestic hot water boiler installations in existing non-domestic buildings must now include controls to improve the effective efficiency of the system. The minimum standards for air distribution, comfort cooling systems and lighting will also apply in existing non-domestic buildings. BACs must also have a maximum flow temperature of 55°C.

Part L adopts CIBSE's TM23 as the single approved methodology for testing airtightness for non-domestic buildings to avoid 'practical difficulties' of using multiple testing methodologies.

Part F – Interim uplifts to standards for non-domestic buildings

New guidance includes standards on minimising the ingress of external pollutants and the proper installation of ventilation systems.

New guidance on performance-based ventilation standards will allow designers to assess ventilation strategies against individual volatile organic compounds, based on data from Public Health England, as an alternative route to using a total VOC limit.

Part F recommends that all replacement windows in non-domestic buildings are fitted with background trickle ventilators unless it can be shown that replacement windows would not reduce useful ventilation or that a mechanical ventilation system is present. Where outside noise is an issue, attenuating background ventilators should be fitted.

Regarding transmission of infection via aerosols, there is a new requirement for the installation of CO2 monitors

in offices and specifically in 'high risk' rooms where there may be a risk of airborne infection.

New guidance recommends that mechanically ventilated common spaces in offices have a minimum air supply rate of 0.5 l/s.m2, which is below the 1 l/s.m2 outlined in the Government's proposals.

Amended guidance on recirculating systems states systems should be capable of operating in a mode that prevents the recirculation of air within spaces or between different spaces, rooms or zones within offices, unless suitable filtering or cleaning systems are in place.

Government proposals to increase required ventilation capacity in offices and specify ventilation rates in 'high risk' rooms in response to Covid-19 have not been adopted. This is in anticipation of more concrete evidence on the impacts.

Part O – Standards for overheating in new residential buildings

Part O aims to ensure that new residential buildings, including homes, care homes, student accommodation and children's homes are designed to reduce overheating. It splits England into areas of 'moderate risk' and 'high risk' of overheating, the latter including urban and some suburban parts of London.

The regulation adopts a 'simplified' route to compliance based on minimising solar gain and removing excess heat. It sets standards based on whether the house or residential unit is cross-ventilated, considers orientation and introduces a standard for the maximum amount of glazing allowed in a single room.

Dynamic thermal analysis methods of overheating risk in homes allows more sophisticated analysis of buildings as an alternative route to compliance over the simplified method.

Guidance includes acceptable strategies for limiting unwanted solar gain in the summer through shading and other means. Internal blinds or tree cover must not factor into a dynamic thermal assessment because they can subsequently be removed.

Part O adopts measures to ensure overheating strategies are safe and usable by occupants, taking into account noise and pollution near the home, as well as the safety and usability of the windows and security, which may affect occupant behaviour. Information on overheating strategies must be passed to the building owner in the form of a Home User Guide.

Part L – Standards for domestic buildings

Minimum new fabric efficiency standards are being introduced for new and replacement thermal elements, windows and doors in existing homes. For example, the U value for walls is tightened, from 0.28W/m2 K to 0.18W/m2; and for windows and rooflights from 1.6, or Window Energy Rating Band C, to 1.4 or Window Energy Rating Band B. The U value for doors is cut from 1.8 to 1.4. However, fire doors are permitted to meet a U-value of 1.8 W/m2K in line with the previous standards.

The government has adopted a 'full fabric specification' for setting the level of the Fabric Energy Efficiency Standard (FEES) in new homes under Part L. This is despite the fact that almost half of respondents to the consultation (49.8 per cent) wanted a higher FEES than either of the options on the table. Extensions to existing properties must now adhere to the SAP method of compliance for metrics of fabric energy efficiency and primary energy. According to the government, this will ensure that 'direct electric heating systems are not used in unsuitable circumstances resulting in high bills for householders.

In the section on building services, wet-space heating systems in existing domestic buildings must be designed to operate with a maximum flow temperature of 55°C, as with non-domestic buildings.

Part F – Standards for existing domestic buildings

The regulation introduces a new requirement that when energy efficiency work is done in buildings, the ventilation is not made any worse, in line with existing measures for controlled services and fittings.

A mandated checklist is intended to make it easier for renovators to understand the impact of historic and potential future work to a building and whether the ventilation provision will be sufficient.

Ventilation guidelines will include a recommendation that replacement windows are fitted with a background trickle ventilator, unless it can be proven that the ventilation was not made worse.

To support homeowners, Part F now recommends that all installations of mechanical extract ventilation and installations of new background ventilators come with guidance on why ventilation is important for the health of buildings and their occupants.

A commissioning sheet and checklist, including design flow rates and maintenance requirements, should also be provided when ventilation systems are installed.

The regulation adopts a 'simplified' route to compliance based on minimising solar gain and removing excess heat.

Looking Ahead: Future Buildings Standard

Implemented in 2025, the Future Buildings Standard will aim to produce non-domestic buildings running on low-carbon heat with the best possible fabric standards. No further energy efficiency retrofit work will be necessary to make buildings zero-carbon as the electricity grid decarbonises.

A full technical consultation on the Future Buildings Standard is planned to start in 2023, including proposals for the technical detail and associated draft guidance.

Industry concerns

The interim uplifts to Part L and F of the Building Regulations and the introduction of Part O received a tepid response from built environment professionals.

CIAT has worked with its membership across the home nations to submit responses to the consultations on this issue across England, Scotland, Wales and Northern Ireland in order to achieve harmonised responses.

Kevin Crawford PCIAT, President said "CIAT is wholeheartedly supportive of the principles behind the objectives of creating a sustainable and efficient built environment that meets the needs of the population and the goal of becoming a net zero carbon society by 2050 (or earlier). Alignment with the Future Homes Standard 2025 will give certainty to the whole of the UK construction sector. We look forward to the review of the grading systems for SAP assessments alluded to in the original consultation." ■

Building regs what's changed: Part L, F and introducing Part O on ventilation' was first published in The RIBA Journal on 22 January 2022: Changes to Part L, Part F and Part O on ventilation | RIBAJ. Text by Stephen Cousins, © RIBA. Paper copies of the new Approved Documents can be purchased from RIBA Books at ribabooks.com/approved-documents.

A Golden Future for Construction?

Words by Paul McDevitt, Managing Director, TÜV SÜD Building Advisory Service

The Grenfell Tower fire exposed serious failings across the entire supply chain involved in the construction and management of high-rise residential buildings. The built environment sector is therefore under pressure to meet incoming safety, quality and sustainability regulations throughout a building's lifetime – design, construction, maintenance, refurbishment and decommissioning. This includes the UK's Draft Building Safety Bill, which introduces significant regulatory reforms of safety requirements for high-rise buildings, building products and fire systems.

For example, one of the requirements of the draft The Building (Higher-Risk Buildings) (England) Regulations is to create and maintain golden thread information – essentially an accurate digital record of key safety related information. It therefore includes: the original design intent and subsequent changes, information needed to manage the safety of those in and around the building, as well as a record of decisions made during the gateway process. Through providing access to golden thread information, the right people should be able to access the right information at the right time to ensure that buildings remain safe as risks are managed effectively.

A formal definition of the golden thread has now been approved by the UK Government's Department for Levelling Up, Housing and Communities (formally MHCLG), which includes a nine-point annex of golden thread principles:

1. Accurate and trusted;
2. Residents feeling secure in their homes;
3. Culture change;
4. Single point of truth;
5. Secure;
6. Accountability;
7. Understandable/simple to access (accessible)/ consistent;
8. Longevity/durability of information; and
9. Relevant/proportionate.

The impending regulations are of course focusing people's minds from a compliance perspective, and they are likely to have major financial and practical consequences for the residential housing industry. For example:

- When residents move into a building it will need to be registered with the Building Safety Regulator and an application made for a Building Assurance Certificate.

- An individual must be made responsible for the management of fire and structural safety for the whole building ([Principle] Accountable Person). The Accountable Person must identify themselves to the Building Safety Regulator, conduct and maintain a safety case risk assessment for the building, and ensure a Building Safety Manager appointed to oversee this day to day.
- Building inspectors, who sign buildings off as safe, will have to follow the new rules and must register with the regulator.

The Bill also introduces the concept of dutyholders that have statutory responsibilities relating to managing safety across the building's life cycle.

Golden gateways

High-rise residential buildings will go through three 'gateways' at key project points. These are stop/go decision points at which there will be rigorous inspection against regulatory requirements:

- Planning gateway one – applicants demonstrate that the planning application incorporates thinking on fire safety (where it relates to land use planning). Specialist fire safety expertise is provided to local planning authorities on a statutory basis.
- Gateway two (technical design and construction phase) – bolsters the current building control deposit of plans stage with the Building Safety Regulator as the only option of building control body for higher-risk buildings. A building control application will be required, and this gateway provides a 'hard stop' where construction cannot begin until the Building Safety Regulator has approved the building control application. In addition to the application, information will also be required on the competence of dutyholders.
- Gateway three (the current building control completion/final certificate stage) – will provide a 'hard stop' at which the Building Safety Regulator undertakes final inspections and issues a completion certificate. Prescribed documents and information, which form part of golden thread information, on the as-built building will be required. This information must be handed over to the person(s) responsible for the building in use (accountable person in occupation).

Meeting the golden thread challenge

As there are so many different parties involved throughout a building's lifetime, relevant information sits across different organisations and systems. Also, through time different methods and technologies will have been used to record information, from paper-based methods, to spreadsheets or email. Even more recent projects that are fully paperless still do not have golden thread information as various project systems are closed-off from one another. There is currently no one method for accumulating information from these various manual and electronic systems into one central depository that is accessible to all relevant stakeholders.

Although Building Information Modelling (BIM) or adherence to ISO 19650 is not mandated, conforming to ISO 19650 would support an organisation to meet many of the golden thread requirements. BIM is therefore a vital element of realising a golden thread as it utilises a common data environment to store and share digital records relating to a construction project or asset management activity between all parties – from the designers to the client.

To ensure controlled access for all stakeholders related to a building's construction and ongoing maintenance a solution should be used to gather, consolidate, store, manage and provide availability of information. By effectively and efficiently collecting, managing and analysing asset information, informed decisions can be made to save considerable time and money.

Data analytics and management across a building's entire life cycle will likely input into golden thread information so that stakeholders will have confidence and peace of mind in the information they are provided. Steps should include:

Data Collection

Firstly, a process map should be created, to capture the important/valuable information and interactions relating to a building and what must be recorded for compliance purposes. This is not about volume, but value – what ensures compliance, increases efficiency and saves money? Then you must review where this valuable information is held and in what format it exists.

The interface between data and system therefore needs to be fit for purpose and user-friendly, so that people use it effectively

To fill identified information gaps additional collection, such as on-site surveys, may be required. This may benefit from the use of 3D laser scanning technology and inspection drones, which accurately scan the interior and exterior of buildings to systematically record the structural, architectural and service elements of a building. By turning physical assets into digital representations, the asset can be tracked and analysed remotely, enabling data-driven inspections to support facility management. It will also spot data trends to identify any potential future issues.

Data Management

Data is only as useful as the systems it sits in. The interface between data and system therefore needs to be fit for purpose and user-friendly, so that people use it effectively – to both retrieve and store this data as well as to provide its meaning to become information. Joined up communications is also vital – a system that automatically alerts the right people to the right information. For example, alerting in advance when a certificate is due to run out, or that an inspection is due.

While the Building Safety Bill is an extremely positive step, as it aims to improve high-rise residential buildings safety, it does present a significant challenge for the built environment sector. These new requirements must be complied and failure to do so can lead to significant financial penalties and/or imprisonment. However, in the long-term, improving accountability for those involved in a building's entire life cycle will raise the bar for safety, quality and sustainability, ultimately reducing risk for building owners, managers and occupiers. ■

A greater understanding of the change in global weather warming and the effects on architectural detailing, material choice and human interaction

Words by Professor Stephen J Scaysbrook FCIAT, Chartered Architectural Technologist, Visiting Professor at Birmingham City University

A change to adoptive architecture – A review paper

The evidence is there, wildfires, high temperatures, high volume rain falls, large areas of the Arctic and its permafrost and ice almost nonexistent, and glaciers practically gone, the planet is warming. Global warming is here, can we do anything about it, before the so-called 'Tipping Point' comes into effect and the knock-on where events caused by the primary cause takes over if they have not already done so?

To be able to understand the complex relationship of all the causes, and there is no longer one, there are many, a comprehensive and relatively high understanding of the problem and related contributors is not just desirable, but essential.

CO2 or carbon dioxide is seen as the leading driver of climate change, and there is a lot of work that is being done to reduce carbon from the atmosphere. But whilst carbon content is seen as the main problem in climate change, and more than likely the Origen of the problem, it is important to understand there is now not one, or even several factors, but many, with a variety of influence and differing values and effects, some of which have created a cascading knock-on effect or Climate Feedback Loop, where one problematic area creates another problem, cascading back through several levels, where solving the original cause of CO2 may not cure the knock-on effect.

There is evidence that once activated, some knock-on effects now have a life of their own generating their own momentum, the Arctic and Albedo, effect of air pollution from wildfire ash and melting of the permafrost and release of methane, the increase in the global temperature, and increase of water vapour pickup, being the classic example. Apart from the pollution and carbon releases, there is the influence of the political and cultural effects to contend with on a global problem, with disinformation being seeded from all quarters, so often from political and commercial groups who have a vested interest in one of the problem areas. War and conflicts, can not be ignored as a major area of climate change influence.

Certain groups, companies or political groups have fed information specific to their cause that bends the truth in their own interest on this. It is up to such groups as NASA IPCC, The WHO, and the UN. Plus the many academic bodies writing papers for peer review to try and correct the disinformation and create a stable flow of accurate information.

Architecture and the influence of the design of buildings, on climate change, with its vast use of materials and release of carbon during the manufacturing, construct phase and after with the building occupation and use, are major contributors to the global problem, and it is here where this paper will try to introduce ideas and methodology to help combat this area of climate warming emission.

Building Regulations are ideally placed to tackle and help control carbon use in all new buildings, being present in almost all countries (a complete list of the major building control regulations, a spreadsheet is being generated with links to all). Will architecture adapt, changing both materials and detail design, allowing humans to adapt to climate change as inevitably we will have to, not just in carbon use and eminence, but in all areas of construction affected by climate change such as flooding with safe living zones, heating, cooling, access, Solar collection and roof gardens with greywater storage? The IDD or Integrated Digital Design of any building will cast its influence over much of this area of research, and often offer a solution to some of the problems, led in part by the IT giants, Google and Apple, with CAD companies like Autodesk and Nemetschek designing battery and alternative energy storage.

Many countries will see the weather in a different way, the equator and areas around the globe associated with it will see temperatures rising beyond that which humans can tolerate, crops will fail to grow, and deserts will expand. Water will be almost nonexistent, in some equatorial areas, with northern and southern areas seeing a lot more rain in heavy downpours giving local systems a major problem, being designed in many cases, by Victorian engineers for far less volume.

Weather migration is now a reality and needs to be dealt with now before it gets out of hand, climate-change adaptation offers a route to at least solve some of the problems by redesigning or adapting architecture, but also a redesign of our approach to heat, or at least a better understanding how to avoid the inevitable rise in temperature.

Other areas will see warmer climates with the ability to grow crops which have never been possible, grapes and wine production in the southern areas of the UK and Nordic, but with this comes the inevitable plague of insects they have not seen till now, together with diseases finding a new home away from the intolerable heat and spread by wind, birds and humans. It is clear that to make any effective measures, a global view is needed, together with a good understanding of the science behind the

weather, the climate construction and the underlying political problems in order to understand the effects of all, and the actions needed to be taken.

This article will try to unravel the problem and offer insight into areas of research in **adoptive architectural design** that will help understand and guide future actions.

What we should be learning

A better understanding between climate change, and the cascading effect on the planet which will not respond so quickly to carbon reduction and require adaptive architectural design and detail to combat the increase in temperature, rainfall, sea rise and wind.

But not forgetting how we might contribute to the reduction in carbon use and release, with better detail, design via an adaptive architecture and reduction in cooling and heating with a good material selection such as structure, insulation, shading and orientation of the building and materials.

A better understanding between the various Building Regulations on a global scale, and how they might relate to architecture's contribution to climate change at both domestic and city level, by limiting carbon use and emission. Looking at just one area is a massive mistake, the weather is linked globally, so we need to look at the effects of Building Regulations globally.

Climate Change

There is no simple answer to the phenomenon called climate change. Yes, there are some leading causes, but fixing these will involve a long and complex operation, mired by political will, company profits and a lot of misunderstanding of the basic problem. Governments and leading authorities have given assurances that we can fix the problem and are battling against a time scale, but it will not stop a feedback loop that is now almost out of control.

The weather machine

To understand this complex web of interacting pieces of a weather jigsaw playing out its role on Planet Earth, we need to step back and review not one, not some, but all of the small, medium and large players interacting together on a global scale as part of the global weather machine.

Without a good understanding of the global weather machine, any meaningful comparison of the current problems in how the weather is changing and causing so much damage is meaningless.

Our first understanding is the way Earth's weather machine is formulated, and this requires a simple yet fundamental understanding of the formation of the four seasons, winter, spring, summer and autumn.

There is no alteration to these fixed points, just the way planet Earth reacts to them, and it is also important to realise four seasons means in effect eight seasons if we look globally with the Earth's tilt producing summer and winter at the same time, which is not the same as winter and summer, depending on the position of the earth in its orbit, perihelion or aphelion.

Next, lets take a look at what constitutes the weather, this interaction of the sun as the Earth orbits in a slightly elliptical off centred path approaching to sun 91mm at its closest with the southern hemisphere and 94.3 mm with the northern hemisphere, slowly spinning, with a tilt of 23.4 degree, always pointing in the same direction regardless of its orbital position. Producing complex air currents in the different layers of the atmosphere:

- Troposphere
- Stratosphere
- Mesosphere
- Thermosphere
- Exosphere

Whilst not part of the above we should not forget the actual edge of outer space.

Weather models

Weather models take the seasons and add in the insanely complex weather from all the weather stations, satellite reports from shipping, planes and mobile phone data to try and predict the weather as a global model, the calculations are incredibly complex and require a very high-end computer or bank of computers to compute. A series of Cray XC40 computers are in current use at the UK Met office. Watching the Earth's weather live on one screen, has long been the goal of meteorologists, and weather watchers. That is now possible with these powerful computers, predicting the outcome over time is the hard part.

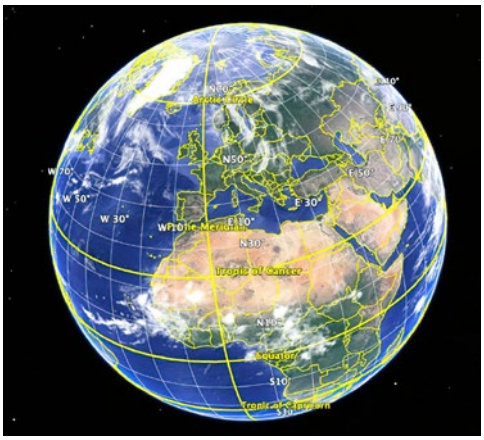
For many years the goal of a global digital earth has been the dream of so many mappers, and those who rely on maps to show information, yet the complexities of the Earth's ever-moving, and in so many ways, dynamic state, make it difficult to map, let alone display moving spatial data, such as temperature at so many levels, even at the basic stratosphere, and troposphere levels of Earth's wind currents, blowing over complex terrains which do not conform to any simple mathematical shape.

Mapping the live weather is done on an overlay of latitude and longitude, with wind currents that follow the Earth's ever-changing terrain, which can only be shown as a 2D representation.

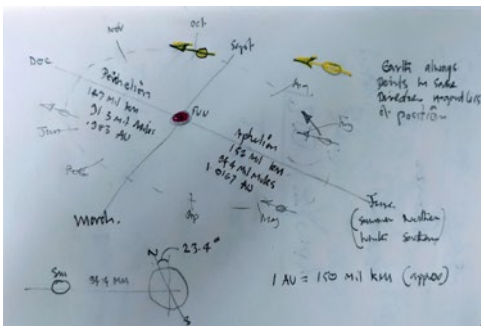
Showing the complex interaction of wind at all the different levels over every hill, mountain, forest, city and ocean in 3D is the hard part.

But the ever-increasing power of supercomputers, an increase in sensitive sensors around the globe, and the new breed of satellites that can measure so much more, at multi-levels in the atmosphere, is beginning to open up the possibility of 3D mapping and more accurate predictions, not just the weather but cross border pollution and the cause and effect of the jet streams.

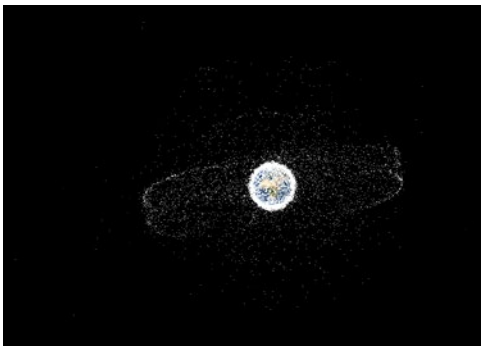
Google Earth is a classic example of a global 3D map, developed under the name Keyhole EarthViewer in the late 1990s as part of a gaming platform by Intrinsic Graphic, purchased in 2004 by Google and renamed Google Earth. Relying on images from the Landsat 8 to provide imagery in a higher quality and with greater frequency Google Earth, 2020.



These models gather data from a large variety of sources and apply a set of a very complex algorithm's to predict the weather, then do it again and again, refining, predicting and above all learning. There are many weather models, they never agree, different algorithms, data streams and needs, resulting in a differing result but by comparing models with reality, a consensus can be achieved.



The two main layers we need to be concerned with are the troposphere, which extends from Earth's surface to, on average, about 12 kilometres (7.5 miles) in height, and the stratosphere, between approximately 12 and 50 kilometres (7.5 and 31 miles) above Earth's surface. Within the troposphere, most of Earth's weather operates within this layer adjacent to the Earth's surface, most if not all clouds that are generated by weather are found here, with the exception of cumulonimbus thunder clouds, whose tops can rise into the lowest parts of the neighbouring stratosphere.



A digital Earth

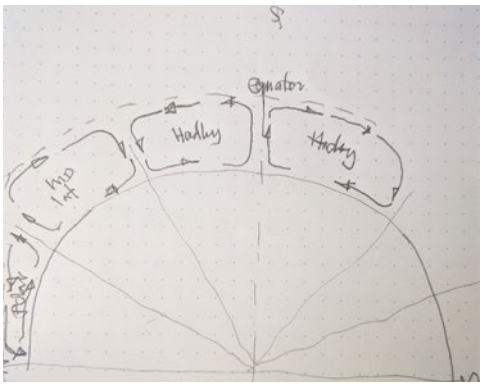
For many years the goal of a global digital Earth has been the dream of so many mappers, and those who rely on maps to show information, yet the complexities of the Earth's ever-moving, and in so many ways, dynamic state, make it difficult to map, let alone display moving spatial data, such as temperature at so many levels, even at the basic stratosphere, and troposphere levels of Earth's wind currents. Yet the complex mapping in 3D of weather is now one of many tools available for free on the internet. The Earth Nullschool website shows quite accurate weather conditions for quite a few parameters, wind solar and sea currents, is updated regularly and offers a very interactive 3D globe. The seri satellite map offers satellite mapping as a contrast.

What makes up the weather

The troposphere as we discussed earlier, is not still, it is a layer compressed by the weight of all the other layers and in a constant upheaval, by the action of the Earth's spin, called the Coriolis effect, on the atmosphere, directing it in specific directions, and the effects of the sun by day and the cold of night, the topography of the land and the sea, or water body of lakes and rivers.

To understand the flow of air and in turn the differing weather across the planet, we need to understand the six main cells of air circulation

With three in both the northern hemisphere and a mirror in the southern hemisphere making six in all, each would seem operating differently. Their range or effective circulation or zone of operation is normally about 30 degree of latitude, and normally named as specific zones:



- Hadley Cell
- Mid Latitude Cell
- Polar Cell

Although zone so often changes with the Earth's orbit around the sun, and represent the suns warming of the atmosphere and its sinking as the air cools, giving it a general flow path. Notice how the air rises at the equator 0 deg lat, creating a low pressure, at the Earth's surface, and sinks at about 30 deg lat along with the neighbouring Mid Lat cell, creating a high pressure at the Earth's surface.

The Coriolis effect is a reaction of the spin or the earth on the direction of the air within the cells of air. The jet stream also has a huge effect on the direction of the air, by controlling the location of the high and low cells that form.

Air pollution is an inevitable part of climate change, almost all parts of life produce some form of air pollution, the worst being wildfires producing ash that rises up high into the stratosphere and mesosphere via pyro cumulonimbus plumes and is distributed via the high winds and the jet stream, to all parts of the planet, in particular, the Arctic depositing a layer of dark ash over the ice, attracting heat, and staring the erosion or melting of the Ice via the albedo effect of dark coloured ash...

We discussed earlier how mountains, hills and valleys of the Earth are the next steps in understanding how the wind is pushed, moulded and directed.

- Terrain
- Rivers
- Floodplains
- Lakes
- Dams
- SUDS
- Landscape in general

All the above and more, add to the complex direction of weather, I have not ignored the effects of night and day, it just adds to the ever-increasing complexity of weather prediction and I hope highlights just how difficult the predictions might be.

What makes up the atmosphere?

Earth's atmosphere is composed of:

- 78% nitrogen,
- 21% oxygen,
- 0.9% argon and
- 0.1% other gases.

The remaining 0.1 percent consists of carbon dioxide, methane, water vapour and neon. Yet this 0.1 percent is what is causing all the trouble. Carbon dioxide the aim of so much action, amounts to only about 0.04 percent.

The reason is oxygen and nitrogen are very selective about what wavelengths they interact with they do not interact with the heat, and let it pass freely through the atmosphere. C02 on the other hand does interact absorbing energy and releasing it in in fall directions. About half goes back into space and the rest returns to Earth. So even though there is a small amount, its impact is huge.

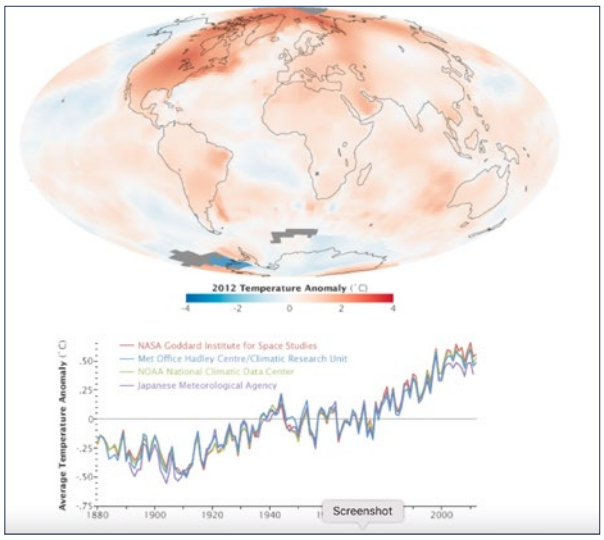
Water vapour has much the same effect but offers a new problem of dropping out and returning to Earth as rain. The more there is in the atmosphere to heavier the rain.

Global average temperature

Governments around the globe are trying to agree on a maximum temperature rise, based upon the global average temperature to keep the average temp below what is known as the tipping point, a level at which it would be extremely difficult to return to normality and a point where the weather would rise to a level unbearable to human life The datasets to begin the calculations are taken from over 32,000 land-based weather stations, several satellites and 1.2 million sea-based recordings from weather buoys and ships.

The calculations for a global average temperature are collected from all over the planet, from ship's weather stations satellites and monitoring stations, they are modified to correct for place and other factors to give a reasonably accurate global average temperature. When we see a statement that says 2021 is the warmest year on record, it is a conclusion from a variety of different atmospheric sea and satellite temperature data sets, using a variety of ways of measuring to avoid mistakes and errors. The combination of surface and satellite data sets provide the variety, and checks needed.

The value is therefore an average of all the modified



readings taken from four main data sets from the main weather centres. To change the value from say 1.5 C to even 1.4 C takes a lot of small countries to act, or one of the larger like the USA.

The tipping point

The tipping point for climate change is how climatologists describe the point in time when no matter what we do to halt or remove the underlying causes of climate change, it will make no difference, it will continue increasing to its own natural level. Often described as the end of humanity and a large proportion of life on Planet Earth.

Political agreements limit the rise in temperature to 2C but this is a global temperature value and so many areas around the world will exceed this. Some areas will not be fit for humans, and so many other life forms when this limit is reached. Spontaneous combustion small sparks, lightning, forming large uncontrollable wildfires destroying town and cities, not capable of resisting the heat and ferocious spread of flams. Lytton in British Columbia Canada reached 49.6C recently with disastrous consequences of fire destroying the complete town. A temperature level previously thought impossible to reach.

Global water supply

The world's water resource is one of the most widely distributed substances on the planet. In different forms and amounts, it is available everywhere. Within the air as vapour, in liquid form on the surface, as lakes ponds, rivers and the seas and buried deep underground.

Water forms a unique place on the planet, and is the most important substance on the landscape for life to exist, for, without it, there is little that can survive. Yet water can, when it comes in too much volume, can kill just as easy as it can give life in smaller quantities. Yet we treat this invaluable resource with contempt, reducing the potable part of the water chain by dumping so many toxic elements into it.

The total surface area of the Earth is 510 million Km^2, over 361 million km^2 is taken by the world oceans, leaving only 149 million Km^2 for land, where all of the potable water is found, the sea being saltwater and unless treated cannot be consumed.

Where water is found and the percentage:

- Oceans 97.2%
- Ice caps/Glaciers 2.0%
- Groundwater 0.62%
- Freshwater lakes 0.009%
- Inland seas/salt lakes 0.008%
- Atmosphere 0.001%
- Rivers 0.0001%
- TOTAL 99.8381%

What we have is it, we cannot make more once we pollute it, we cannot make more, and in so many cases we cannot clean it.

Water evaporation and its part in global climate change

Water vapour is the most abundant greenhouse gas in the atmosphere, both by weight and by volume unfortunately it is also a very effective greenhouse gas, absorbing long-wave radiation and radiating it back to the surface.

Compared to other greenhouse gases, water vapours does not stay in the atmosphere that long, being a shorter period of time than many of the other gasses, staying in the atmosphere for only a few days before precipitating out as rain.

Increased water vapour content in the atmosphere is a result of a warmer atmosphere, which is able to hold more moisture via evaporation from water sources and land, increasing the atmospheric moisture content, and the inevitable increase in rain volume.

As a comparison, carbon dioxide or methane will stay in the atmosphere for a much longer period of time, often as long as centuries contributing to warming formally lifetimes.

Groundwater

Water infiltrates into the ground through porous materials spreading deep into the earth. Filling pores and fractures in the layers of underground rock often making large aquifers. Some of this water although it lies far under the Earth's surface is extracted for both drinking water and industrial use.

Surface-water runoff, a major problem in built-up areas covered in concrete and impermeable roads, tries to infiltrate into the ground or return to the atmosphere, but often returns to the sea via streams, rivers, lakes, wetlands and reservoirs, with an increasingly large volume bypassing this natural sponge or waterway, via large stormwater drains and pipes.

Water and SUD's

We have seen previously that water is one of the most misused resources on the planet, We cannot make any more it does not grow, what we have is it. So, it makes a lot of sense to think about how we use this limited resource, by controlling its use, limiting the use of palatable water to just drinking, and using water that comes from washing, and as part of the process of shedding water from roofs, to flush toilets, and as part of the cloth washing process.

Storing both sources helps the usable volume of water to be kept to a level of usability. With rainwater not being consistent, careful collection and filtering of the return water from as many processes as possible, often called greywater, excluding water from WC's and urinals, called dark or black water, can be topped up via rainwater.

The large volume of hard surfaces now part of our roads and walkways sheds a huge volume of water directly into the stormwater system, bypassing the natural sponge of the earth, sending huge volumes to rivers that because of the confined spaces rivers are now allowed to use, limits their ability to take this uncontrolled volume of hard landscape water.

By controlling this watershed from hard landscaping and roofs with good SUD's management, via collection where possible as part of a recycling program, the use of retention tanks and careful release into the waterways, it is possible to prevent the flooding we now see.

The increase in the planets average temperature, and the knock-on effect of increased volumes of water vapour in the atmosphere is leading to more intense rainfall,

increasing the need to take SUD's as a major part of climate change control.

SUD's as part of any landscape design also offers the designer the opportunity to add a natural microclimate control to a scheme, adding shading from planting, water coursing to increase humidity, and as part of the retention system.

Wild fires

Large parts of the planet are suffering from climate change wildfires because of the excessive heat, this is causing another type of cloud to appear over the fire area called a pyro cumulonimbus plumes, these columns of hot are rise to the upper atmosphere and distribute ash and pollutants to vast areas, with ash from the USA's west coast fires is being drawn across the whole of the USA and some of Canada, with some of the ash is falling on Arctic ice and glaciers.

Take the singular USA wildfire problem and add all the other wildfires that are now raging across the globe, which is producing a lot of ash that is being lifted by the rising air to high levels and distributed via the jet stream. Its clear wildfires are now a major part of climate change driving an increase in temp via the albedo effect, on ice fields, turning them a dark brown. This in turn absorbs heat and melts to snow and ice below.

One of the major effects of this very hot plume of smoke and ash is the generation of a lot more lightning, which in turn is creating more wildfires.

Although it is not completely clear why, but this change of airflow, caused by the pyro cumulonimbus plumes, and a particularly hot summer is disrupting the jet stream. This fast- flowing volume of air that exists between the polar and mid-latitude air circulation cells that operate in the lower layers of air called the troposphere.

The hot summers and the effects of the wildfire plumes are causing a collapse of the polar vortex, the volume of swirling air over the polar regions, that is altering the air cell circulation and in turn, the weather of the northern hemisphere, certainly several weather prediction models seems to indicate that weather in the northern hemisphere might change for the worse.

The great ocean conveyor belt

Add to this the worries about the natural ocean conveyer belt, a global flow of water taking in most of the great oceans flowing from pole to pole, taking 1000 years to complete a single cycle. The disruption in its flow pattern is caused by the heating of the Arctic north pole. Warm water as it flows from the south is cooled by the Arctic and sinks returning back at great depths to rise again as it warms and starts the cycle all over again. If this is interrupted, then several countries will not be warmed by the flow of warm water and return to a different weather pattern, continuing the knock on weather effect.

The UK is in direct line with this. We owe much of our temperate climate to the warm currents. Remove them and we will see a turn for the worse in our weather. Many scientists are now saying it is not, but when?

Solar irradiance

Solar irradiance is the power per unit area received from the sun in the form of electromagnetic radiation on a regular grid as measured in the wavelength range of the measuring instrument. The solar irradiance is measured in watts per square metre in SI units. This basically means the area of the Earth's surface in relation to the sun's heat hitting the Earth. It is all tied up in the orbit of the Earth around the sun, the tilt and the constant direction of the tilt.

The tropic of cancer and capricorn are the natural limits of the height of the suns power with the sun being at 90 degree to the Earth's surface. The tilt and curvature of the earth, increasing the surface area, above and below this line, hence the mild climates of the northern hemisphere.

Albedo effect

A simple process but this effect is light surfaces reflect more heat than dark surfaces, and this is called the albedo effect. Ice is very good at reflecting the energy and helps the polar caps to remain frozen. Falling ash from the many wildfires discolours the surface of the ice and removes the albedo effect increasing the surface temperature and melting the ice beneath. Volcanos also create the same effect. Ice can reflect about 85% of the sun's energy, in contrast to the sea which is a low 7%.

Icecaps – ice loss

The effects of mostly the albedo effect loss on the icecaps is reducing the total area of ice, in particular, the Arctic, together with sea warming is seeing a collapse of the northern end of the great ocean conveyor belt, see above, where warm water travels north hitting the cold plan caps and sinking as the sea's density increases, and flowing back at great depth south. The collapse will eventually alter the whole of the northern hemisphere as places like the UK Ireland and northern Europe loses the warm currents and returns them to hard winters of the Canadian and Russian inland areas of the same latitude.

The loss of so much ice from the polar regions and the effect on the planet is unknown, certainly, the wobble dampened by the ice, is starting to increase, albeit very slightly, but measurable, and the loss of the weight of almost 2 kilometres of ice from the Greenland interior is allowing the Earth's crust to move, it is not known what this will mean but it will have an effect. Certain businesses are undoubtedly pleased by the icecap loss, particularly the shipping fleets who now have a route along the northern coast of Russia, primarily for the shipping of crude oil to new sites to convert crude to petrol and easy shipment to Europe. It seems like more bad after bad.

Permafrost

Large areas of the Arctic contains frozen earth called permafrost, which are both within the ice cap and beyond. The permafrost is not a new phenomenon and as such most of the permafrost is quite ancient and has trapped within the frozen ground a lot of methane, now being released giving rise to the phenomenon called rapid release of methane which has released huge amounts of methane to the atmosphere, in 2013 this was estimated to be 17 million tonnes increasing year on year.

Unfortunately, many buildings have been erected within the permafrost zone, the melting has de- stabled the foundations of a vast area making a lot of buildings unusable. Piling and extending the foundations to a safe level is a possibility for some buildings, but the vast majority of affected buildings will need to be demolished and rebuilt.

Like so many of the climate change knock-on effects just looking at carbon reduction as a cure is not going to solve this problem, it is now past any tipping point, whether it can be stopped, is a new problem, and not limited to the loss of the permafrost, the release of methane and water vapour in huge volumes only adds to the knock-on effect. Decayed vegetation and the possibility of viruses and disease frozen for so long now also being released is being assessed.

Ocean warming

The global warming and rapid rise in temperature, has had a huge effect on the sea rising the temp above that at which many fish and mammals can withstand, also a lot

of plans in the form of the corral, and as discussed earlier, a disruption to the natural circulation known as the great ocean conveyor. The natural circulation is dependent on the Arctic cooling the sea as it approaches, sinking and returning it south in the two major oceans, the North Atlantic and Pacific. It takes approximately 1000 years to circulate this planet-wide conveyor belt.

Coastal sea

Adding coastal sea to this section of the paper might seem strange, but the sea is mostly an outlet to all the waste from the land, all rivers one way or another outfall to the sea, and it is the coastal waters that are affected the most with all sorts of effluent, chemical and other discharges, that affects the quality of the coastal water. The inevitable rise in sea levels from melting arctic ice and Greenlands massive ice fields often several km deep will affect the erosion of coastal areas and affect plant and mammal life. This can already be seen in other parts of the globe. That has been affected by rising sea levels and intense river volumes washing away land. The Ordnance Survey data station at Newlyn, which provides the base for the OS maps contours and subsequently the storm and foul drains in the UK, for over 100 years, is now seen as the ideal source for monitoring sea rise from the equipment that fortunately has been maintained in working order and still provided a data output of sea levels, along with 43 other stations dotted around the coast, together with other stations in Holland, Belgium and France, to give an overall picture of the coastal sea rise.

Around the world, local communities are reacting to the rise in sea levels by planting salt water- tolerant trees to form mangroves that will hold onto the river and sea banks with their root action. I raise this point again later in the article. Other areas are slowly being swallowed up by rising sea levels to which there are no real effective measures, other than tidal barriers which are only a short-term measure. The future for these islands and coastal area looks grim.

Maps now being generated show large areas at risk. Populations in these areas are slowly leaving, seeking a safer area to live. This people migration is not limited to sea rise, but can also be seen in areas of increasing heat, and shortage of water, people migration is a new problem for small communities being seen as safe, but not really ready or able to accept a large influx of people, their infrastructure in services, and support, geared to a small population. For the UK, the UK Government document *Future of the Sea: Current and Future Impacts of Sea-level Rise on the UK* offers an insight into the erosion of coastal areas under threat, although sea-level rise projections are based on a lot of different data with complex wind tide and large scale fluctuations in the global weather patterns, are at best are uncertain but rise it will.

Planning controls contribution to climate change

Most regulations around the world are based upon rules, derived from local history, Politics, events use, weather, and geological position. Their regulations have evolved to meet local demand. So often guided by local materials and construction methods. Baer, W. C.1997

But recent years have tried and tested that scenario with weather that is evolving together with a global material marketplace offering a cheap supply of materials, that were designed for different markets, and failed to migrate not just to the new market, but the weather changes, reaping havoc on that country.

Many countries are linked directly to neighbouring countries by land, and river, and indirectly by air. The effects on weather generated by Planning Control often separated from a city's Building Control, but the policies of orientation, material choice, density and traffic, both pedestrian and motorised, have a huge impact on the technical aspect of construction regulatory design and use.

The so-called city or urban heat sink is in part a function of external colour and texture choice, which so often relates to the density of that material. Careful orientation and adequate shading from natural trees vegetation and an active SUD's plan, plus structural Brie Solee construction are ways to limit the problem.

Every significant design, no matter where it is situated, goes through some form of planning, It is here that most of the external materials and the elements as a whole are decided, mostly because of their look and appearance. Their relationship to each other, and what the combined visual effect is. But so often any concept of manufacture, energy use, its effect on the building's occupants, let alone its effect on the climate is so often ignored.

Cross border migration and political will

However good a city may or not be at controlling the urban heat sink, the effects of pollution, heat are passed across borders from linked and none linked countries, often called cross border pollution migration, with often disastrous effects, which in some cases is received second and third hand as the wind travels across the planet.

To evaluate and hopefully control the problem it is important to develop a full understanding of all areas involved, what regulations are contributing to climate change and the weather's migration effect across many border crossings.

The Earth's temperature rise can clearly be seen from graphs generated from ice cores and latterly tree ring analysis. Where the ring growth is compared to thermometer temperature readings extending back only 300 years or so to the mid-1700s and extended to the current days rise in temperature. The initial drivers of climate change being centred upon the rise of the global industrialisation of predominately the northern hemisphere and lately the southern and none industrial areas catching up with the earlier industrial countries, such as China, India and Africa.

A complex interaction between climate weather passed on via road, river, groundwater, and often the geological effects of terrain, and mountains funneling weather. There are however certain areas where control of construction was based upon the rules centred on the designer's country, using local weather patterns of their own country. So often a mistake, given the changes being inflicted.

The change in weather often came slowly and unnoticed, and in places ignored or not believed, thinking it was a one-off, the 1 in a 100 event, little realising it was anything but. Doubter as they were called, started bringing in evidence to pour cold water on the idea that the weather was changing. Led by the manufacturers of the base cause, Carbon, produced by a number of petroleum, coal products. Not forgetting the human involvement or driving force in our quest for quality of life. Compounded by a portion of the press who just did not understand the data being used and the statistical analysis being used, by a global scientific community.

Government's were reluctant to inflict change that might result in more onerous regulations pushing up construction costs to an industry that might well be sponsoring that government.

Adaptive architectural design and human adaption to heat

No matter what is done to slow down climate change, and try to remain below the limits set by Governments around the world to the global average temperature, by

reducing carbon. There will be a need to change our views on architectural design and human adaption to heat in all areas of use, from domestic housing to commercial to industrial, simply because curing the carbon content of the air will not produce immediate temperature reductions, the knockoff effects of a rise in temperature on the ice caps, and glaciers will continue to reap destruction. Therefore, architecture needs to adapt to this continuing period of warming and climate change that will last for a considerable time.

Areas to consider are dependent on location, but what is quite clear is the need to adapt architectural design to compensate for the various effects of climate change, such as orientation, alternative non carbon heating, solar power, lower power appliances and stack ventilation.

Huge housing estates are so often designed not with orientation in mind, more the number of units that can be fitted into a given site, which so often results in houses of a common design, windows to the front and back with little or no windows to the side elevation, being orientated to allow the house to fit the plot, not how it might gain or shade the solar orientation to suit the house design and occupation.

Although the cause of climate change is well known, the cure is far from easy and will take time to halt, and reverse, in the meantime temperatures will remain high, and rainstorms will increase in volume duration and frequency. SUDs need to be a major design factor, to reduce the hard standing, store good greywater and slow down the way rainwater drains away.

Rather than battle the rise in temperature, architecture might do better adopting designs that accommodate the heat without consuming expensive power or adapting solar alternatives. History shows this is not a new idea, Hot climates have long practised solar orientation, clean water storage, and careful planning of buildings and their orientation.

Humans might also seek shade more and find places that are cooler, rather than turn to air conditioning, the use of public buildings such as shopping centres and buildings open to the public to cool, supermarkets need to use a controlled atmosphere and are air-conditioned more efficiently.

It is clear from the way the climate is changing, that whatever we do to stop the rise in temperature, too many countries are dragging their heels. It is not going to be an easy job to push them along and change their ways despite major conferences and hard-hitting reports, and being hit by the knock-on or cascading extreme weather events.

An alternative approach is needed to deal with the related consequences of a global 2°C average plus, rise in temperature. The cascading effects of the rise in temperature are going to be felt during the fight to reduce greenhouse gasses and long after as the planet tries to heal itself, and in many cases, the wounds caused by the cascade effect will never heal.

Our present construction techniques, designs and building materials, are designed to cope with a way of life we will not see again for many years and are in so many cases incapable of dealing with the increase in rain, wind and power consumption.

The term adaptive architecture can be assigned to the way a building and its surroundings are modified to deal with, and in some cases gain from the increasingly diverse weather, climate change is bringing. Not all changes we may want to bring in are or should be aimed just at reducing carbon. Cleaning the atmosphere is a more correct way to bring attention to the problem of removing as many of the gasses as possible to normal levels of say a pre-industrial age, methane CH4, ozone depletion, and CO2.

Many of the changes should be seen as a collective approach, linking changes within the fabric of a building and tying them to external resources.

People climate migration

Failure to consider any form of adaptive architectural change to both new and existing build might drive the population away to areas considered safe, or to areas that have adapted to the temperatures and other consequences of climate change. The consequences are huge, leaving an area creates ghost towns, no income for the ones who stay, and more specifically for the town council to enact change.

For the towns and cities that welcome these migrants it is not always clear to the councils, just what it means, greater pressure on the services, and so often older electric and gas energy supplies not being clean and increasing the CO2 count and city heat sync.

Energy creation and use

Our use of energy across the many different ways humanity needs its power to drive and sustain of lifestyle needs to change, all of the old ways are the generators of the problem we now face, an atmosphere full of CO2 and the resultant rise in temperature.

We cannot exist in this fuels paradise of fossil fuels, we need to find better ways, solar power offers not everything, but it gives us room to cut the ties to the almost uncontrollable output of CO2. I show later how adaptive architecture could adopt new materials to collect the suns energy in multiple ways, both pitched and flat roof offer so many alternatives.

AC or DC is an argument we need to raise again, Local collection of PV electricity need not be converted to AC when DC is all that is needed to run a lot of domestic systems, many of which are intrinsically DC anyway using transformers to step down the electrical flow. Long-distance transmission for large industrial use should remain as AC.

The use of alternative heating that is more efficient should be looked at. Air source, and ground source heat pumps offer a far better heating system than gas boilers but are often bulky and noisy.

Although hydrogen is now being promoted by some of the major UK boiler manufacturers, certainly in my area the old gas mains are being updated, presumably to take the new gas. Although I see no means to supply the volumes needed, Hydrogen is a green gas, but its manufacture is not.

It is with solar panels that a lot of hope rests, with increasing performance and rotatable panels tracking the sun at optimal angles, together with new forms of solar collection embedded into elements like glass and roof tiles.

Storage technology increases daily, driven by the auto industry, not as a separate technology, but as one that can be incorporated into architectural buildings, sharing electricity when not needed by the car. The energy gained from solar and other methods, need not be stored in battery technology, kinetic storage might also be explored in both domestic and industrial/commercial buildings. Compression of air linked to a turbine to generate electricity could also be highly adaptive to modern living.

Palatable water

I discussed this item earlier, but life is reliant on palatable water, a huge amount of resources are committed to providing this resource, shipping it via pipes to where it is needed. The total surface area of the Earth is 510 million Km^2, over 361 million km^2 is taken by the world oceans, leaving only 149 million Km^2 for land, where all of the

potable water is found, the sea being saltwater and unless treated cannot be consumed, which in itself creates a knock-on effect of damage to the ecosystem of the sea.

The availability of potable water is continuing to drop from the effects of contamination, from industrial waste, bad livestock farming practices and agriculture in general.

Sustainable Urban Drainage or SUD's is the control of stormwater, from both the roof of the building together with water from some internal appliances such as baths' showers, and sinks, and retaining it for reuse within a building to flush toilets, called grey water, via its initial storage and filtering on site, with a portion returning to internal tanks, and the excess dealt with via overflows to swales or small watercourses, ponds and its eventual exit from the site to streams, return wells known as water discharge to ground, and storm water drainage. All these small but very effective measures add to the reduction of pressure on palatable water, saving it for drinking, and not wasting it flushing WC's.

Retention of water for each individual building, domestic or other is an important resource to be built into homes as part of its adaptive design this can be used in multiple parts of the SUD's (Sustainable Urban Design) to flush toilets, and as part of cloth washing when treated correctly. But it can also be used as part of a buildings own fire protection system to provide a mist cover to a building, as part of a fire protection system, which can be used on a variety of buildings with differing occupancy.

Water retention so often stored externally on existing buildings can now be brought in when new buildings are adapted in other ways to cope with climate change, such as raising the ground floor sufficiently above the external landscape to accommodate the inevitable flooding we will need to deal with. Adding basements in a flood zone is not an effective design solution, but raising the ground floor is.

SUD's is also a major factor in reducing the volume of water allowed to bypass the natural sponge effect of the earth leading to vast volumes of water being deposited into the streams and rivers.

Retention tanks allow groundwater from hard landscaping i.e. carparking, to be stored and released gently helping already overloaded rivers, with reduced natural flood plains to cope.

Smart cities

The use of adaptive architecture is giving rise to cities that might well be classed as smart. Here, technology in the form of sensors, computers and a network to link them all together, are aiding the flights against climate change. Humans are ineptly bad at controlling themselves yet alone complex buildings or cities. Yet computers with the right information, and adaptive programming algorithms, are showing they can.

Local generation of electricity generated by solar panels and a new generation of components such as glass and coated finishings that generate electricity can power networks without any carbon emission. Unlike the big central power plants that run on coal or gas, both high carbon generators.

What smart actually means is a controversial point. How far does the term extend? The general feels is as far as it can, from orientation, materials, energy use, to social the economic benefit for adopting the smart concepts of design. Does this include transport, a major contributor to almost every city?

The smart city concept, in an established city like Birmingham, is different to a new city like Songdo.

The term digital twin is being used to allow the original design CAD model to monitor the various buildings and the sensor network of the building. Is this important in climate change, well yes, clients so often commission a building only to miss understand its design, or the staff running the building do as they think best. By linking the building's network back to the original design model, the buildings use and efficiency can be monitored.

Electric vehicles and local solar charging is a must for any smart city design, but so should the connection to other cities, travelling to and from communities should and will not stop, automated EV transport utilising solar electric generation to maximise long-distance travel is now available with cars that automate almost all of the driving, travelling at speeds that are right for the vehicle not the haste and impatience of the occupants.

Solar power is predominately DC and power station AC, the two can be used together, it just takes action from designers to install DC plus sockets that a vast majority of appliances can and should use, instead of transforming down from AC to DC for each individual piece of equipment. Leaving an AC network for large power demands.

Open space

Is external space just something that the users of a town or city need and want for pure recreation, or has the space another function and be an integrated part of a smart city even if it is not digital, but more social feel good, helping to control a local microclimate?

The answer to this is yes, any space will have multi-functions, some associated with the building in question, and other functions that are for the area, and wider activities, accessibility, visibility and suitability to special needs.

But open spaces might be used to defend against city flooding offering a city flood plain, all be it hidden as an underground retention volume to absorb the increase in rainfall, provide a buffer to excessive wind speeds, and if planted correctly a carbon sink, and this is the link between social feel good and a digital city.

Carbon count

Carbon embedded into the materials used to build should be limited, and this included the carbon emitted to manufacture, the carbon emitted to transport the material to the site, and the construction carbon emissions from site equipment. Lastly, the materials inbuilt carbon can be listed as part of the release on demolition at the end of the building's life.

Could SUD's also be used in this simple count, adding carbon from wasted opportunities to save water?

Smart cities can and should monitor the carbon emissions from all sectors, could the system inform bad polluters, such as individual building owners. Digital twin technology can and should easily start to monitor the effects of large cities on climate change, old or new.

Timber

Timber offers the industry a unique building product that can remove a lot of the carbon heavy materials currently used in construction. It is a natural store of carbon filtered from the atmosphere, no longer seen as a poor structural material, with several high rise buildings being designed and constructed with timber.

Good detailing, and a better understanding of products that may be constructed with timber, or laminated timber offer so many advantages, the feel-good factor and natural weathering of timber far outweigh the harsh carbon-rich materials like concrete and cement mortar and are so often easier to protect, and when necessary, replace.

But like anything to do with climate change, the replacement of many common carbon loaded materials with timber requires a change in the way we plant and

harvest timber. The planet relies upon the living tree to regulate so much of the atmosphere. Just decimating large forests to feed the global timber market is not looking at the way timber as a whole is needed by the planet. We talk of a sustainable approach, this need to be expanded by looking at not only its replacement but how the harvest of trees will affect the planet. The certification system operated by the Rain Forest Alliance which not only looks at the trees but everything associated with it, the forest, the animals, the insect's regeneration and the soil. The UK Woodland Assurance Standard (UKWAS) is another excellent standard.

Fred Pearce's book *A Trillion Trees* is an excellent book on the subject.

Climate change, however, is causing yet another problem, trees grow in a climate-specific temperature range, too warm is bad, too cold and they just do not grow. The tree line in the north has since the temperatures started to rise, has slowly crept north, but in recent years it has started to creep at an alarming rate.

The staple of our industry, the Douglas fir is under huge pressure, as the southern European forests suffer from the heat, and we wait for the new forests to mature. But as always planning forests is not a simple affair, it takes time for trees to grow, and we need to rethink what species we will need. Planting in a straight ridged row is not good, for wildlife, and without wildlife, the ecology fails. Even more, of a reason to step back and examine our use of timber, and as mentioned earlier, the certification system. Ben Rawlence's book *The Treeline* is another excellent read and covers Scottish forests in detail.

The introduction of Building Regulations

The Building Regulations were first introduced to control safe build construction, regulate construction methods to reduce collapse, and offer a series of design recommendations as to Health and Safety.

The UK's first regulations were introduced after a fire in London in 1212, with the subsequent ban on thatched roofs in London, other cities followed London's lead, but the main building material was still timber, with no thought to the way buildings were in effect stacked on top of each other over-sailing till the top floors were almost touching, and very little light could reach the street below. It took the great fire of London 1666 for stronger laws to be enforced, resulting in timber structure being banned, with the London Building Act 1667. From this point onward the regulations in the UK evolved, with each city or area providing their own version as local bylaws, specific to each area with no link to neighbouring city's laws. It was not until 1964 that the United Kingdom adopted a national set of regulations following Scotland who introduced their regulations in 1963, Northern Ireland in 1972 and the Republic of Ireland in 1990.

Over the years changes were made to answer technical problems as new materials became common, or public awareness required some form of action and regulation. Thermal requirements were and still are a major section of the building regulation (Part L in the UK).

Drainage was also a major section, to alleviate the role of the road gutter as the main route for effluent waste with the introduction of a first a single pipe to take care of the problem then a dual system to remove rainwater from the combined pipe. Not all changes provided a complete answer to the perceived need, often changes opened up different problems, and can easily be seen as part of the increasing effects of global warming. This is evident in the rapid removal of rainwater to the major rivers increasing the volume without the rivers being able to cope with the increased flow. Hence the need to implement a SUD's plan to mitigate the misuse of water.

The UK model of Building Regulations contains a lot of easily understood law, with a copious amount of easily understood technical drawings to explain material positioning, scale and relationship.

Each country has adopted a similar approach to controlling the technical construction techniques some following the UK model, but others reinventing their own version.

Regulations, as can be expected, were introduced to provide a safe building, it should not fall down under its own weight, it should provide a watertight cladding, and not catch fire. As years go by specific rules have been added to combat rising energy prices, staircase accidents, heights of rooms, means of internal escape. And to a check on a materials fitness for purpose, the agreement system that makes use of the British standards. But little in the way of controlling climate change, either by material manufacture control, its use in life or its end of life demolition The in-use of life includes cleaning, and so often ignored, the vapours and emissions in the early days after manufacture, i.e. solvents and other gases.

My continually updated schedule of global Building Regulations shows the vast range and diversity around the globe. How many countries look at and try to control material manufacture, energy generation and use in any building. The efficiency of any building is down to many factors, most of which are controlled by regulation, but the generation of heat from whatever energy source, is not, other than as part of SAPS or other whole building calculation.

Add to this an ageing building stock of all types, giving a large hole of uncontrolled energy use with little measurement other than the owner's own bills. So it is important to review all forms of available energy to the building and fit the building to its energy needs.

The current new wave generation of solar and other sun-related energy generation relies upon the ability to store energy in the new breed of home use and the vastly changing auto industry.

Lithium is the go-to material in the manufacture of battery technology. Tibet, Chili, Australia and now Mexico are the major suppliers (Top ten biggest lithium mines in the world, 2020). New technologies sit in the pipeline offering a huge increase in performance and longevity together with new ways to incorporate into the external skin not just as fixed ridged panels.

Sensors

The rise in sensor technology, and the underlying network, often named the IoT or Internet of Things to support the widespread network traffic. Adaptive architecture will rely heavily on sensors to help understand a buildings use and its adaption to change, see my comments on digital twin technology earlier.

Sensors come in many sizes and use, allowing data to be used to measure so many things from the actual carbon content of the air, thermal and structural conditions of the complete structure, together with internal traffic of bodies.

It is clear, sensors offer a wide range of use in any new and for that matter older or historic building. From temperature control to air movement to security. Giving both the designer and building owner valuable feedback on the health and running of the building.

Powering the sensors is often a challenge, a new build is relatively straightforward in supplying live power feeds and if required a data cable, if Wi-Fi or Bluetooth is not sufficient. But so often in refurb of existing buildings, in particular, buildings with historic value, alterations to the fabric are not encouraged and are often forbidden,

alternative methods of poor and data retrieval are needed.

Adding batteries is a short-term solution, that unless surface mounted require changing or charging. Near field, technology might well be the solution, but for sensors that need to be buried deep into a structure, alternative means are needed. Backscatter technology developed by a team at the MIT, has secured a way to harness the ambient energy in the air and this is proving sufficient to partially power a sensor for small burst activity to get a reading, and transmit, then wait for the unit to recharge before making another reading.

Whatever the method, sensors are going to revolutionise the way we see how buildings work, offering a greater in-site into material performance and building use.

Sharing the 3D CAD models with the client, as a digital twin, embedded programs within the model will compare the initial design with this incoming data. A very valuable asset when clients or building owners want to sell or lease their building.

But the data collected, if it falls into the wrong hands could be used in ways, not in the generators favour, offering malicious alteration of the system to the favour of thieves.

The fire service will find instant plans in the 3D format a valuable asset, when having to enter a building on fire, although sensors will help prevent so much of this by activating misting systems, to prevent fire spread.

Data collection

So what data is being collected, and can it be separated from central open storage to private storage that might add values to the building in terms of maintenance, thermal performance and energy use? I also include security data, the movement in and out of the building. Open windows etc. sensors and the new 5G IoT offer a huge safety net to building owners on the way, a building is used, maintained and so often upgraded.

Is the data valuable and better still is it useful to the building to look back to see how it handled itself in a variety of scenarios? The answer is very much yes. Even to the point of detecting material failure or suggesting better ways to manage the efficiency of the building.

As described earlier, a digital twin CAD model offers a way to use the BIM model in totally different ways, adding not only to the data stream but as a major feedback to the designer.

Misinformation

Although global warming has long been understood by the major oil companies, a barrage of misinformation has steadily been planted into the news media to deny that fossil fuels had anything to do with global warming. This is inevitable as big manufacturers face a reduction in their turnover as their particular materials face bans of simply lose market share to similar or more effective techniques.

There is no simple answer to this problem, good research, and testing by reputable labs is the obvious answer, but so is training and robust construction education, with an open data source of material used.

Does this have value? The answer has to be yes. It is like a car without a logbook, as to one that has all services recorded, the annual mileage and trips recorded. Why is it not added to any sales document? In another paper, I looked at learning cities, how information learned helps direct change.

Coastal space

Again, as described earlier, as seas rise, and in some cases, cities sink, plans need to be made to defend that city against the increasing ferocity of the weather, from wind and rain, and the cascading effects on services.

There are no rules here, and many answers to the problem, adding defence walls, installing sophisticated drainage, or moving the entire population have all been tried one way or another, but perhaps there are other methods, such as the adoption of a coastal sustainable urban drainage system, or coastal SUD's plan, a way to use coastal wetlands to defuse incoming weather driven by the oceans, together with the adoption of ways to store or hold back the release of large volumes of rainwater in both internal storage or as part of a diverse wetland. and treat it as the valuable resource it is.

In many cases, Victorian seafronts are within feet of the beachfront defence wall and are most susceptible to damage from waves. Given that sea levels will rise, this puts these houses at extreme risk. The current sea wall defences obviously need to be redesigned, together with ways to protect these at risk houses.

Temporary barriers have proved effective in river defence work, can the design be adapted to provide winter protection when the sea is at its worst.

Sustainable urban drainage

Although I looked at this earlier, I think it wise to expand on the whole concept of sustainable urban drainage. SUD's is not just about looking after water, often it is about, living with water, Climate change has passed the so-called tipping point in many areas, and the rising sea levels are going to be an inevitable part of life in many areas of the world. Trying to hold it back in many areas is like Canute sitting on a chair on a wide-open beach commanding the tide to go back, it is just a waste of time and effort

Adapting our design skills to offer simple alternatives like raising the population above the water levels by stilts, not an unknown method but rarely talked about for a modern city. Even simple steps such as adopting internal defences to individual buildings can be adopted by individual owners from house owners to commercial buildings.

An early warning system is the first step, local news and weather channels now give detailed updates on incoming weather, this should be noted and acted upon, by any building owner.

Window and door shutters offer a building a good defence against driving rain and damage by wind-assisted missiles like chairs, signs and the like. Roller shutters hidden inside the window or door lintel is an easy installation on a new build, offering both internal and external security and weather protection. For retrofit to existing buildings, other designs are available that can be either permanent or semi-permanent, the latter fitted when warnings are issued above a certain level.

Again, so many different designs are available.

New designs also offer ways of incorporating alternative layouts on both the space internally, and its protection from flooding. Lifting the ground floor living a meter or so above the external ground level offers protection to the living space from potential flooding. And providing a space below to house grey and dark water storage, with greywater filtered, and cleaned, in self-contained units that can operate when flooded, and provide easy access for maintenance in normal times, together with car parking and nonessential storage that will not suffer from floods

The use of storage for greywater offers occupants a way of storing water for nonessential use, cloth washing, flushing toilets and possibly showers. Tie this into dark water storage for effluent will help in times of flood to store effluent efficiently, reducing the need to flush to sewers that are overloaded, and spill into the floodwater creating the potential for increased disease.

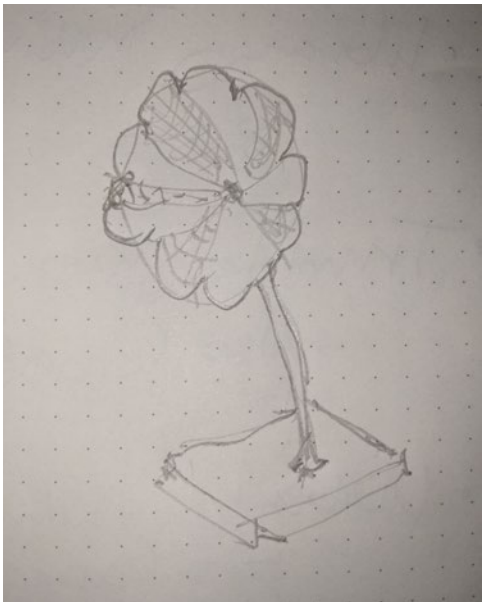
Pitched and flat roofs are difficult to design for heavy

winds, yet with careful detailing both can offer building owners a safe refuge and short term accommodation. A flat roof offers perhaps the largest portfolio of opportunities, from water collection to alternative garden space.

As climate change inevitably raises sea levels, water tables are going to rise, in some cases permanently, and raising street levels and building floor levels might be the future. Flat roofs will offer garden and external recreation space and an area for satellite and solar panel installation.

Solar panel design currently is rectangular, but new designs are being offered to mimic pitched roof tiles, but flat roofs offer designers an opportunity to create collectors that fit the space more effectively, and become interactive with the weather. Stored in a compact format for inclement weather, but opening up in better weather to take full advantage of the suns location and altitude.

External raised patios on stilts could easily extend living space above any flood level, extending the roof garden with both access and functionality.



Some form of energy storage is essential in future buildings where reliance on the electrical grid is so often disrupted but storms. And internal energy store will collect solar feeds and store unused energy in battery stores within the building. Not I might add in any basement area subjected to potential flooding.

Topping up from the grid and in many cases feeding to the grid is a viable source of income from investment, but having power in times of storm is essential.

Greywater cannot be considered as palatable water, so a third alternative drinking water storage should be considered. Bottled water is by far the easiest to store in refrigerators.

Taken from the Environment web site

Rivers, controlled by the Environment Agency, is the principal flood risk management operating authority. to manage flood risk from designated main rivers and the sea. responsible for operating, maintaining and replacing an estimated £20 billion worth of flood risk management (FRM) installations.

The Environment Agency carries out an advisory function in development control – commenting on planning applications within flood risk areas, providing advice to assist planning authorities in ensuring that any development is carried out in line with the National Planning Policy Framework.

The cost of climate change

The damage disruption, loss of life has far-reaching consequences, someone somewhere has to repair, or install damage control measures, as a consequence of climate change, some support comes from insurance, some from Government, but sadly a lot of the cost falls on individuals, who sadly cannot afford the huge cost of repair.

The damage to wildfires in just the Northwestern, Central area of the USA inflicted more than $145bn of damage, add to this severe weather damage, and Tornado's, the list is huge, added together the USA alone faces cost in the trillions, on a global scale it is mind-bogglingly huge. Yes, as I mentioned earlier companies will stand to reap a lot of this in the supply of new materials, and labour, but forests are not an instant fix, time is also needed to repair the damage. But time is not the all-encompassing healer we perceive, it does not return to the original state, the effects, as I mentioned earlier have a knock-on effect, often choosing another alternative route of repair, causing yet more damage, and cost.

Conclusion

We need to understand so much more, the way of the Earth's weather machine, together with so many side issues of tree husbandry, soil mechanics. And unfortunately, politics and big businesses, playing a major part in the climate change routes each country might take.

Many of these global large businesses are looking to climate change as a source of investment, as they increasingly see large profits from switching to clean energy and safer material sources, energy production, battery storage, and the almost meteoric rise in EV transportation, and the digital spinoffs, of data and analysis.

Large existing cities are difficult to adapt to climate change, but there are ways to help the climate battle, with open spaces, reflective roofs, roof gardens better SUDS and an adaptive architecture approach. Opening up parks in city centres with retention tanks under them will help water retention, reducing the volume of water flowing out to rivers, and most of all the trees will help manage the microclimate.

New cities offer a vast pallet of possibility in changing or using adaptive architecture to design in such a way as to not battle against an inevitable rise in temperature and water shortage, but to allow flooding, and reuse greywater. Flat roofs offer a very viable way to add microclimates to a property, and well as offering water storage.

Considering alternative carbon-free building materials will be an inevitable change in the design of any building, domestic, commercial or industrial, but so will the way any of them uses energy, for heating manufacturing or general use, tv, cooking of just the internet.

For many of us, CPD is the key, to our involvement, learning in detail, how all that's highlighted in this article can be incorporated into our detailing and building design. The headlines and the keywords below might well be used as an agenda for research, I use Obsidian as my knowledge base, linking headlines to content, often from diverse links and articles. You might want to copy this entire article as a base article within Obsidian and start your own links.

The global spread of Covid should not be discounted in the climate change argument, its effects on life are now so high, businesses are being affected by lack of supplies, staff and distribution, although some see the global move from large offices to working from home as a major gain. But the knock-on effect to city centre supply businesses can easily be seen. The city centre is about to change.

We need a COP that has global action, not words and promises. ■

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UK Construction Week London to focus on culture change in construction

The fundamental issue of culture change in the construction industry is the focus of a major event in May this year, with more than 25,000 people expected to come together to explore how the industry implements new behaviours, best practice and a true cultural shift in how it builds for the future.

UK Construction Week (UKCW), the country's largest live show for the construction industry and all its related professions and trades, is running in London at the ExCeL Centre on 3-5 May.

Nathan Garnett, UKCW event director, says "We're really excited to bring UK Construction Week to London. 2022 is the year to focus on how we achieve the systemic changes we've been discussing for some time and to share the learning from the organisations who have already made a strong start. We need to ensure there's not a corner of construction that doesn't know how to live its core values, implement new policies and behaviours, and be transformed by culture change.

"As always with this event, there's also so much to see, with many displays, exhibitors, shows and products you won't find anywhere else. It will be a chance to celebrate the sector's achievements and some of the best thought leaders and innovators construction has to offer. This is must-attend event for anyone that wants to have their finger on the pulse of all things construction."

UKCW London will include a main stage programme featuring the pioneers of culture change and debating how best to foster this across the whole sector. Sponsored by COINS, the main stage is at the heart of the show and hosts all the biggest keynote speakers.

Day one will include updates on the new rules around public procurement, the new regulatory regime on building safety, the forthcoming Building Safety Act, and the completely new ways in which the industry works on projects as wide ranging as prisons, hospitals, road and rail infrastructure, education buildings and housing. Day two will be a deep dive into digitalisation, Net Zero and energy futures, and day three will focus on people, including diversity, health and wellbeing, recruitment and retention issues.

A focus on fire safety

Of course, as the Building Safety Bill edges ever closer to becoming law, the timing of the event also coincides with a pivotal moment for the industry. Many delegates from the architectural sector are likely to have particular interest in the content of the show which deals with fire safety – including debates on how best to implement new behaviours, best practice and techniques to keep up with new building methods and to achieve the sort of culture change called for by people like Dame Judith Hackitt.

The new safety regime being introduced by the Building Safety Regulator will be a key topic for discussion. However, the warning bell is already ringing that basic minimum compliance with new legislation is not in itself going to be enough. In her third annual report from the Industry Safety Steering Group set up after the Grenfell Tower tragedy, Judith Hackitt says: "It has been crystal clear to many of us from the outset that legislation alone will not deliver the outcomes we are looking for. The culture of the industry itself must change to one which takes responsibility for delivering and maintaining buildings which are safe for those who use them."

One of the keynote speakers at UKCW London is Amanda Long, Chief Executive of the Considerate Constructors Scheme and Building a Safer Future Charter. What does she think it will take to achieve real culture change in construction when it comes to fire safety?

"Industry-wide leadership and a culture that commits to putting people's safety first is essential," she says.

"This requires, at all levels, construction industry commitment to continuous improvement and engagement with practical tools and steps to support their journey and demonstrate their progress. UK Construction Week in May – and our Building Safety First conference on 24 March – will support the sector through exploring practical ways to achieve urgent and necessary change in the construction industry."

New products on display

With even more packed into this year's offering, UKCW London will consist of over 40,000 sq m of exhibition space, more than 300 exhibitors (600 including co-located shows), 10,000 products, 300 expert speakers, seven theatre stages, multiple specialist hubs, and 150 hours of CPD content and activities.

Working with content partner Build In Digital, the Digital Construction Hub will deliver practical workshops on best practice in digital strategy, BIM, cloud computing, cybersecurity, use of Big Data and the whole range of ways in which new technology can improve efficiency, productivity and profitability.

CEMEX is sponsoring the Infrastructure Hub which also brings in expert speakers from the Infrastructure Projects Authority and Barbour ABI to showcase the learning from major projects like HS2, Thames Tideway, Royal Docks London and the West Midlands Growth Engine, and to analyse government policies that will affect infrastructure over the next 10-15 years.

The Sustainability Hub will include sessions looking at best practice in low carbon building and retrofit from Europe, regenerative design and biomimicry, hydrogen innovation, 3D printing, waste issues and building for disassembly.

The Offsite Alliance Hub will share the learning from Alliance members who work alongside leading organisations, industry bodies, government, local authorities and housing associations to increase the uptake and delivery of offsite technologies across the residential sector.

UKCW, supported by other sponsors including Aico, Northgate Vehicle Hire and Bosch, will bring a host of new products, innovations, and business and networking opportunities, and will run alongside co-located events Concrete Expo (3-4 May), the Offsite Show with Buildoffsite, (3-5 May), and Grand Designs Live (30 April-8 May).

A series of industry conferences will also run next to UKCW, including the Timber Trade Federation conference on 3 May and the Future of Work in Construction conference on 4 May.

Could you be a role model?

UKCW's role models awards campaign also returns for its fourth year after receiving a record number of nominees last year. An opportunity to recognise the unsung heroes and talented professionals across all areas of construction, it aims to attract others into similar roles by sharing inspiring stories and career journeys.

Entries for the 2022 role models awards closed on 25 February. This year's shortlist will be announced at UKCW London, with the winner crowned at UKCW Birmingham on 4-6 October at the NEC.

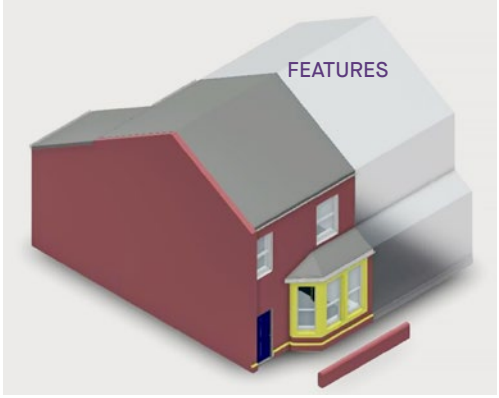
Another set of awards to be announced at UKCW London in May will be the Fix Radio Tradesperson of the Year awards for the country's leading and most innovative tradesmen and women. The winners will be chosen by a panel of industry experts and announced at a ceremony hosted by Clive Holland. Nominations close on 31 March.

Free registration to UK Construction Week London is now open with one entry badge also providing access to the Offsite Show, Concrete Expo and Grand Designs Live. Visit https://ukcw-london-2022.reg.buzz/pr

Download the free UKCW app and book one-to-one appointments with delegates and exhibitors. It is available from both iOS and Android app stores. ■

More than 300 exhibitors, 10,000 products, 300 expert speakers, seven theatre stages, multiple specialist hubs and 150 hours of CPD content and activities

To get regular updates on the event, follow UKCW on social media using the hashtags #UKCW2022 #UKCWLDN



There's no BIM like home Part 14

Words by Dan Rossiter BSC (Hons) FCIAT, Chartered Architectural Technologist

AT Journal continues its exclusive access to serialise Dan's blog on how he used BIM to produce an information model of his home.

Under the Industry Foundation Class (IFC) Schema, a thermostat is not included (it doesn't appear until IFC4) so I have had to resort to IfcSensorType. So, using a face based generic model I created a hollow cylinder and two inserts to represent the thermostat. Due to the low level of graphical detail used the object file is only around 316KB. The file was named following the BS8541-1 naming convention to:

Nest_Sensor_LearningThermostat
N.B. strangely, IfcUnitaryControlElement is included within BS8541-1, but not in the IFC2x3TC1 schema. So for consistency, I have not used it.

Using the requirements set out within my data requirements, I populated this object with the data needed to manage my thermostat. Capturing information such as: installation information, barcode, serial number, replacement cost and warranty information. When used in collaboration with my IFC Export mapping text file, my thermostat is populating all of the relevant COBie fields I require; fantastic.

Is it smart?

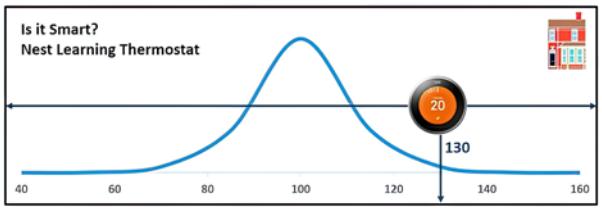
The nest thermostat ticks many of the right boxes to be considered smart.

- **Data in:** With a number of sensors, a Wi-Fi connection, and both physical and digital interfaces methods there is a wealth of ways that it can collect data. As a result, the thermostat learns about the space, proving an estimated amount of time needed to take effect based on past data. In addition, Nest stores a heating programme for your home and maintains an activity log.
-
- **Data out:** Each month, Nest also provides owners with a report detailing how long the heating has been on as well as an update about the performance of my devices.
- **Connectivity:** The ease that the nest thermostat can connect to other devices is a real strength. Other products included within the 'works with nest' category are able to access information from the nest thermostat. For example, as a security feature, my Philips hue bulbs will intermittently switch on/off in the evenings if my thermostat is set to 'away'. In addition, through the use of IFTTT my thermostat can trigger (and be triggered) by other events.

The potential

Currently, there is no method to automate the exchange of information to my nest thermostat from my information model; but this does not have to be the case. For example, within my architectural model, there is a lot of good information that the nest thermostat could take advantage of including: facility name, space name, area and volume and perhaps even external object thermal transmittance.

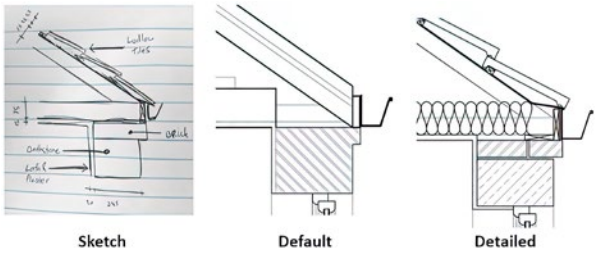
The verdict



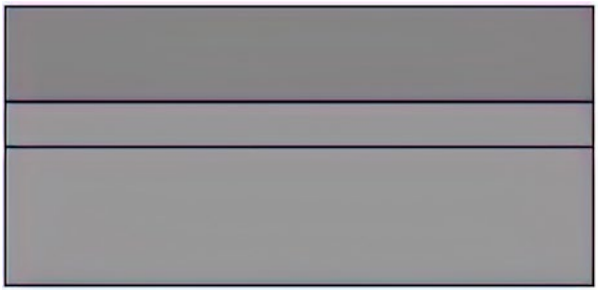
Is it smart? The answer is yes, with an impressive IQ of 130!

Since I had planned to buy my first home, the nest thermostat had always been on my shopping list and may very well have been the first purchase I made. I am glad to say it has not disappointed.

After considering the type trouble, I have been having when looking at my doors, I decided put some more work into architectural model. I have tried to give my attic some attention, so it was time to get up the ladder and have another look. To develop my architectural model, I decided to first draw out a few of my key junctions, measure the relevant elements, and then produce my information model.



The reason I developed my graphical model this way was to limit the amount of overall modelling that I needed to do. I am a firm believer of modelling as efficiently as possible. For example, to limit the amount of modelling I need to do for my roof I have set a number of informal 'volumes' within the roof itself using Revit's built-in system family layering function:



Top: tiles, Middle: battens, Bottom: rafters

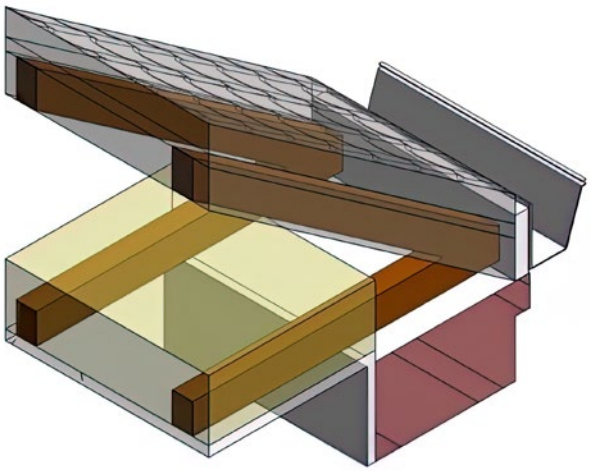
So what is a volume? Well thanks to the BRE Terminology tool, a volume as described within PAS1192-2 is: *Manageable spatial subdivision of a project, defined by the 'project team' as a subdivision of the overall project that allows more than one person to work on the project models simultaneously and consistent with the analysis and design process.*

While formal volumes can act as a tool for simultaneous working, I have also used informal volumes to limit the amount of modelling required. Each volume, as a subdivision of a project, is effectively a geometric space assigned for a particular system, element or array of components to be populated within. Typically, as the design develops these volumes can then be assigned to sub-consultants who would then populate them with their objects.

Therefore, these informal volumes I have created for myself can be used in two ways:

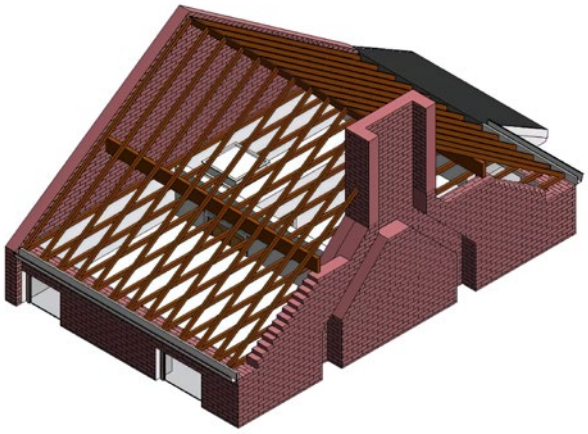
1. As a substitution for objects. For example, it would be practically impossible to model each roof tile and batten, so instead volumes are used. This also applies to other elements such as walls; and

2. As a placeholder for objects. For example, my rafter volume was drawn initially as a substitution, but this week I have added them to my model. If objects are placed within their respective volumes, then a clash free model can be created as any clashes that may occur within this volume are 'known'.



As you can see, my rafters and joists have been placed within their volumes.

Finally, to sort my attic I also had to have a look at my party wall. Now very interestingly my party wall isn't fully constructed. This along with its interesting profile has allowed me to generate some unique geometry to complete my attic.



By completing both of these elements of work I have also been able to generate another stereo panorama, with my partially constructed party wall providing a convenient light source when it was rendered. And there you have it, by exercising some attic-tion to detail, I have now captured the geometry of my attic, as well as some useful elements that will aid future posts such as the amount of loft insulation and my half-constructed party wall. Now that my attic is sorted, I wonder which other parts of my architectural model also need to be optimised before I can consider it complete... ■

To be continued in the summer issue.
@DRossiter87

Giving power to the consumer on the road to net-zero

Words by Mike Woodhall, CEO, Chameleon Technology

The way in which we engage with energy consumption within our homes has remained stuck in the dark ages whereas smart technology increasingly dominates most other aspects of our lives. For example, there is a huge divide between the car we have on the driveway and the property we live in. With the ability to tell us what our fuel consumption is; how many miles are left; when a service is needed; when tyres are at the wrong pressure; and to dynamically suggest route changes when an incident arises, our cars are underpinned by technology that makes it as simple as possible for us as consumers to run them as efficiently as possible.

The way we use energy in our homes will play a critical part in society's path to net-zero, but by comparison, we are not as engaged and our homes provide little insight when it comes to energy usage. Whilst smart meters and In-Home-Displays (IHDs) are increasingly – and necessarily – present in homes, the data they provide is but the starting point for change. It remains today far too complex for the average consumer to truly take control of the carbon footprint of their own home.

Our homes' energy management needs to move into the modern day. Just as technology and real-time, rich data has become mainstream in so many other aspects of our lives, we now need to apply it within our homes to make change seamless, easy and personal – if we are ever to reach net-zero.

Awareness but no control

Consumer awareness of net-zero and the environment is on the rise as various target dates for emission reductions loom large. With a huge drive to hit net-zero by 2050; ceasing the sale of new diesel and petrol cars by 2030; and a focus on the upcoming COP26, pressure is mounting for us all to play our part in reducing our carbon footprint. Increased awareness of climate change is leading to more sustainable life choices for many as reducing our personal environmental impact remains a key issue at the forefront of people's minds. The pandemic has also led consumers to be more aware of the environmental impact of their actions, as well as making homeowners more conscious of outgoings – including rising bills.

Despite this, consumers today have very little control

in the move to net-zero. Thus far, the spotlight has been on large organisations and the Government whilst most of the general public have to observe from afar a conversation that has not involved or engaged with them. Consumers have been left with little ability, or knowledge, to contribute to the reduction of their own carbon footprint when it comes to one of the largest uses of energy: their homes. Whether consumers are motivated by sustainability, by saving money, or a combination of both, there is a lot to be gained from a reduction in energy consumption, or at the very least a refocus on how and when we are using our energy. In order to make a real impact in the journey to net-zero, consumers need to be given the information they need to take action to make a real difference.

Increasing access to home energy data

Smart meters and IHDs are the starting point, giving consumers the access they need to their own, personal, real-time data on energy usage. The proliferation of dynamic, 'time of use' tariffs will encourage consumers to use their knowledge of their energy data to adjust usage and therefore costs in real-time, so they can choose, for example, to switch on power hungry appliances at a time of day or night when prices are at their lowest and less carbon intense. But, is this enough? Getting out of bed at 2am when energy is cheaper to turn on an appliance is not a realistic or attractive option for many of us. Even with an app or the ability to pre-set, it still requires a lot of management and time.

Currently, home energy data is too broad, providing little specific detail on an individual home and, more fundamentally, the behaviour of those within it, giving little insight for the consumer to make a decision on usage. A solution that takes the data from the IHD and gives it meaning – insights that are simple and personalised – is the next step in the quest to solve the problem for consumers. It must be accessible and affordable for all regardless of income, property size or type. And, critically, it needs to make decision-making effortless, automated and future-proof.

Balancing supply and demand

Within the next few years, more major changes will be upon us – Electric Vehicles (EVs) will become the norm and it is predicted that there will be approximately 15 million battery EVs on the road in the UK by 2035. Additionally, with the Government's ambition to deliver 19 million heat pumps by 2050 and a ban on the installation of gas boilers in new build properties from 2025, the way our lives, and homes, run is going to fundamentally change.

In parallel, the current volatility in the supply side of power, especially increasing gas prices and the susceptibility to disruption of international power links, has highlighted the need for a far more flexible and sustainable approach to our energy supply.

As power increasingly comes from renewables we will need to be able to integrate local supply into the energy mix. EVs, heat pumps and other renewable sources will transform consumers from power users to potential power generators and suppliers, able to use these resources to both store energy and produce energy for the home, or indeed, sell it back to the grid. The demand-side and supply-side of power will change for good: any technology and data-led solution will have to be smart and flexible enough to keep up.

What's next for consumers?

In the near future, we will be able to present a blend of real-time and historic data as insights, to be used by homeowners to make changes. We will be empowered to make more informed decisions on how to manage our energy. And, looking ahead, the use of apps can modernise this further still by connecting with other smart home technology to provide us with an understanding of which appliances are costing the most and how to balance this. For example, smart/connected appliances can be automatically switched on, EVs charged when prices are low – or even feed back to the home or grid when demand is high.

Through the combined use of an app, data from IHDs and a consumer's personal home energy usage, the way we manage our energy in our homes will be transformed. In much the same way as our cars give us the control and choice to help us run them as efficiently as possible, requiring minimal consumer input, it is only a matter of time before we have the capability to power our homes with the lowest environmental impact and lowest energy cost, whilst also helping to balance demand- and supply-side.

> **Smart meters and IHDs are the starting point, giving consumers the access they need to their own, personal, real-time data on energy usage**

Conclusion

A revolution in home energy is coming, driven by the need to reach net-zero and the need to give control to the consumer so that we can make informed choices. The future of home energy is going to be dynamic, automated and intuitive. Whilst consumers begin to invest in EVs and switch to dynamic tariffs, the use of technology and apps – and critically, the data behind those, for energy management will be key. It is vital we revolutionise our homes and put the power in the hands of consumers. ■

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Assigned and/or Design Certifier Course: MSc/Postgraduate in Building Surveying at DkIT

The new online MSc/Postgraduate SCSI-accredited programme at Dundalk Institute of Technology (DkIT) provides an opportunity for Architectural Technology professionals to develop a specialism in Building Surveying/ Building Engineering. It has been developed as an alternative route into the Building Surveying profession with the ultimate goal of being recognised to act as an Assigned and/or Design Certifier under the Building Control (Amendment) Regulations (BCAR) and obtaining Chartered and Registered Building Surveyor status.

This new fully-funded (subject to HCI funding qualification) MSc/Postgraduate course addresses the qualification requirement defined by the Society of Chartered Surveyors Ireland and the Royal Institution of Chartered Surveyors which will qualify participants to undertake the Assessment of Professional Competence (APC) to become a Chartered (or Registered as a Building Surveyor with the SCSI). Once Chartered or Registered they can then act as an Assigned and/or Design Certifier, under the Building Control (Amendment) Regulations (BCAR).

This course is the first of its kind in Ireland allowing students to partake online (full day Monday and half day Friday), incorporating a semester in work placement which provides students with an opportunity to gain structured and professional work experience, in a work-based learning environment, as part of their planned programme of study. The programme is due to start in September 2022, with applications open from March 2022.

For more information contact
Programme Director Dr Phil Bradley MRICS MSCSI
E: phil.bradley@dkit.ie

Architectural Technology research at University of Derby

Words by Dr Boris Ceranic MSc PhD MCIAT, University of Derby

The Institute, as part of its Accreditation procedures, recognises educational establishments as Centres of Excellence for demonstrating a robust research culture, which has a direct and significant impact to the discipline of Architectural Technology. Not only do educational establishments prepare future professionals, they are also responsible for some of the innovation which is being adopted by industry. The research institutes within our four Centres of Excellence have been highlighted in *AT Journal* for the past year and we conclude with University of Derby.

The University of Derby provides degree programmes for more than 34,000 students across three campuses in Derbyshire — Derby, Buxton and Chesterfield. Located in the heart of England, and in the birthplace of the Industrial Revolution, providing industry-relevant, expert teaching, from foundation and undergraduate degrees through to postgraduate study and research.

The Architectural Technology programme at the University of Derby is one of the longest standing Accredited programmes in the UK

The Architectural Technology programme at the University of Derby is one of the longest standing Accredited programmes in the UK, gaining its original Accreditation in Principle over twenty years ago. Furthermore, in 2013, the University successfully attained Centre of Excellence status, having demonstrated excellent links with industry and exemplary postgraduate and research activity in the field of Architectural Technology. Since then, two Masters programmes have been established. In addition, the Diploma in Professional Practice (placement year) forms a link between our Architectural Technology programme and the world of architectural practice. The employability rate of the programme for graduate level destinations was 100% in 2015/16 (DLHE) and 91% in 2016/17.

The undergraduate and postgraduate programmes are a combination of technology, design, science of architecture, sustainability and construction and are fully founded on the core subject knowledge requirements of CIAT. The design procedures and technical studio practice forms the basis of study, supported by procurement and contracts, including both legal, management and professional practice studies. This teaching approach is supported by practice and research-active members of staff and by established links with both national and international companies, regional and local industry and Derby City itself.

What makes the programmes distinctive is the quality of the student learning experience facilitated through carefully formulated and tested pedagogical approaches to live project-based learning, in particular related to studio-based modules. These are founded upon a constructivist pedagogical model. In terms of its distinct pedagogical value and recognised theories of learning, the live project-based learning also provides for experiential learning, social constructionism, situated learning and collaborative learning.

The most recent student membership figures supplied indicate 95%+ student membership uptake from the University of Derby.

The immediate research environment is provided by the Built Environment Research Group, which whilst working as a multidisciplinary teams focuses on a research profile that in particular underpins teaching and the curriculum in areas of sustainable and technical architecture, construction and civil engineering. Current research themes are organised around following key areas:

- Sustainable Architecture
- Healthy Buildings
- Technology and Materials
- BIM and Project Collaboration
- Digital Technologies
- Education and Pedagogical Research

Innovative Approach to Sustainable Material Sourcing and its Impact on Building Performance

A novel use of building materials and their impact on the building performance and its climatic adaptability is explored, based on a complex case study of a unique low energy sustainable building project. In particular, an innovative use of sycamore and its suitability as a structural and constructional timber has been investigated and reported, given that the current codes of practice deem that is not appropriate for structural applications due to its durability.

A research method of in-situ longitudinal study has been adopted, concentrating on the monitoring and assessment of its structural performance and conditions in which it might deteriorate. On the component level, the research reports on the methods and standards of sycamore grading and classification, service classes, resistance to decay, impact of the moisture movement and results of its laboratory and in situ testing. On the system level, the climatic adaptability of the building as a whole has been analysed via dynamic performance simulation and compared to the in-situ measurements. This was important in order to develop a holistic building performance monitoring strategy, but in particular, to understand the impact of building microclimate on the sycamore frame and hempcrete components of the external load-bearing wall.

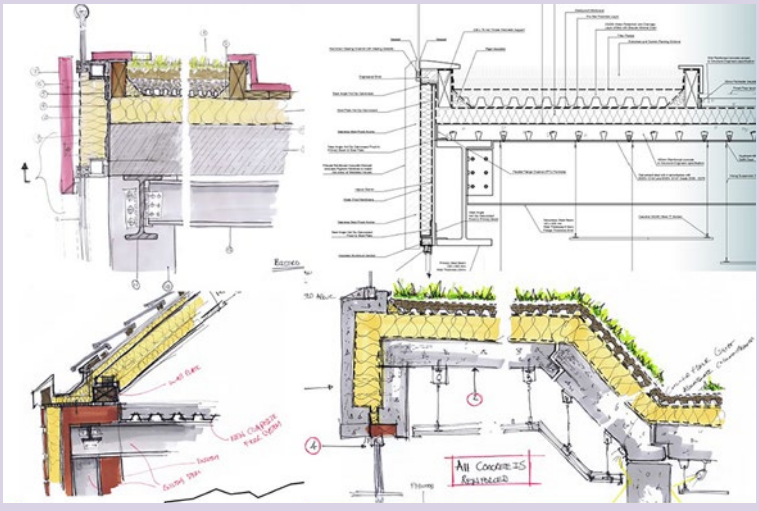
So far research has concluded that sycamore can be used as structural and constructional material in building design, but due attention has to be paid to construction detailing and provision of a breathable, low humidity environment with an effective resistance to decay and insect attack. This includes measures that ensure a low equilibrium moisture content conditions, effective ventilation provision and appropriate service class uses. It is important to state however, given the single site locality of sycamore sourcing, that results can only be interpreted in the context of the given case study, i.e. they cannot be extrapolated to broader geographical extents.

Rapid Deployment Modular Building Solutions and Climatic Adaptability: Case Based Study of a Novel Approach to 'Thermal Capacity on Demand'

In this research, a novel 'thermal capacity on demand' approach to modular thermal storage design has been discussed, seen as a key to the climatic adaptability of a proposed Smart-POD building system and its energy performance.

Smart-POD is a unique and innovative research project which provides an alternative to traditional classroom design. It proposes a rapid deployment building solution, temporary or permanent in its use, modular in design, flexible in set-up and self-sustaining in use, requiring minimal site preparation, and meeting all its energy demands from renewable energy sources. Its feasibility was tested by a design case study which investigated climatic adaptability based on the proposed approach. This approach uniquely combines balancing of energy demand and supply using renewable technologies and a bespoke low temperature thermal store. It further proposes to use an open source Building energy Management System (oBeMS) conceived in this research, to intelligently manage thermal, ventilation and humidity control strategies which adapt to the climate, season and weather in which the building is placed.

The predicted performance of proposed system demonstrates potential for an effective diurnal climatic adaptability, enhanced by integrated passive design strategies, and intelligent modes of building control. The method of BIM integrated sustainable design analysis (SDA) and building management system (BMS) has also been deliberated, as a framework for exploring the integration of proposed building management system into smart building environments (SBEs). ■



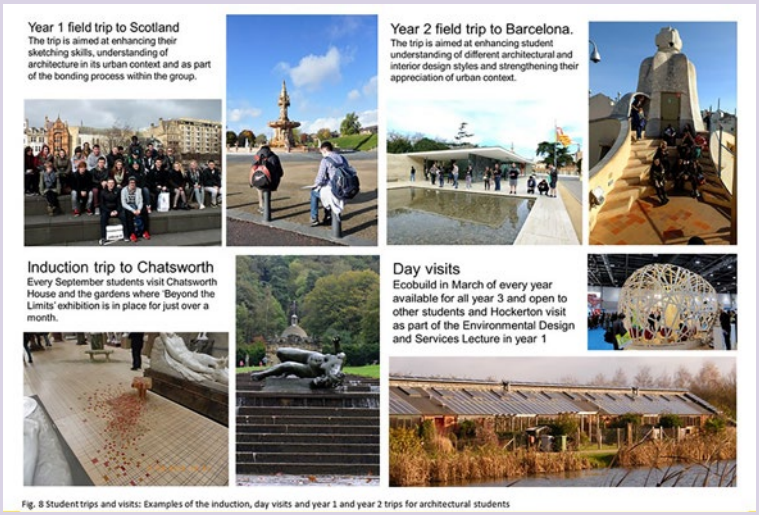


Fig. 8 Student trips and visits: Examples of the induction, day visits and year 1 and year 2 trips for architectural students

Dudley College of Technology becomes an Architectural Technology Trailblazer

Words by Satwant Saggu, Programme Leader, Dudley College

In 2018 Dudley College of Technology's programme, HNC Construction and the Built Environment, was Approved by CIAT. Prior to this many departmental tutors ran their own practice, so the College became a training ground for HNC students pursuing careers in the architectural profession. In recent times the construction department has enjoyed a renaissance by rebuilding its raft of level 3 programmes, so the HNC can be accessed by either full time students and apprentices or by those working in the built environment sector.

The College has actively developed its estate at the same time with a new university park boasting one of the few IoT's (institute of Technology) in the country to go hand in hand with the new programmes. Primarily developed as a HE provision, the IoT works in conjunction with local universities to offer a range of programmes in construction and engineering disciplines for those who wish to gain an undergraduate qualification including a BSc degree in Architectural Technology.

An apprenticeship in digital design has been running at the College for five years as a partnering arrangement with CADCOE (Construction and Design Centre of Excellence). The programme is delivered at the IoT and started life as a framework, recently to be superseded by a standard involving an EPA (End Point Assessment). The programme is aimed at youngsters employed in the construction sector training to become design engineers using AutoCAD and BIM for the purposes of draughting, creating production information or as a collaborative tool for sharing design ideas with clientele.

The programme comprises of two months of intensive AutoCAD training where students produce design studies for a car showroom, including an introduction to Tekla, where they carry out structural modelling. This project becomes the scenario for many of the BTEC assignments

that follow. The BTEC Diploma in Construction & the Built Environment, consisting of ten units, is the intense element of the programme administered over four blocks once the CAD training has concluded. The blocks are typically four/five weeks long spread over the academic year. This is delivered using a blended approach where learners are taught remotely for two blocks and are college based for the remaining two blocks. Units such as land surveying and graphical detailing are taught whilst learners are on site providing a valuable opportunity to apply knowledge through a series of practical exercises. Students are expected to sit and pass two external tests in design and construction principles respectively as part of their diploma. Ample time is available within the block to prepare for these examinations, the results of which have been extremely good to date.

However, this was not the case during the recent lockdowns where the entire programme was delivered remotely on MS Teams. This did not impact on the outcomes where students were still able to gain the necessary skills in CAD and secure the required set of results for their technical certificate. External testing did not take place, so an internal assessment was used instead where the centre awarded their own grade based on how well students performed in the assessment.

Participants are assigned an assessor who will coach them through their NVQ and EPA. The EPA revolves around their placement and like the NVQ aligns with their day-to-day work where they demonstrate knowledge, skills and behaviours acquired in the workplace. Evidence for all three competences are collected and assembled in an EPA portfolio. Students are required to upload completed assignment work for their BTEC, NVQ and EPA portfolio on Smart Assessor – a single platform used to assess and claim qualifications – before they get to gateway for their final interview.

Those who successfully complete this trailblazer programme have secured senior positions within their organisations where they have gone further to complete higher levels of training to advance their design skills and knowledge of BIM or by going to university full time to undertake study in a related field, for example project management, civil and structural engineering. Either way this programme has become a springboard for those aiming for a career in digital or architectural design. Apprentices have gained mastery of the following subjects during their studies in college:

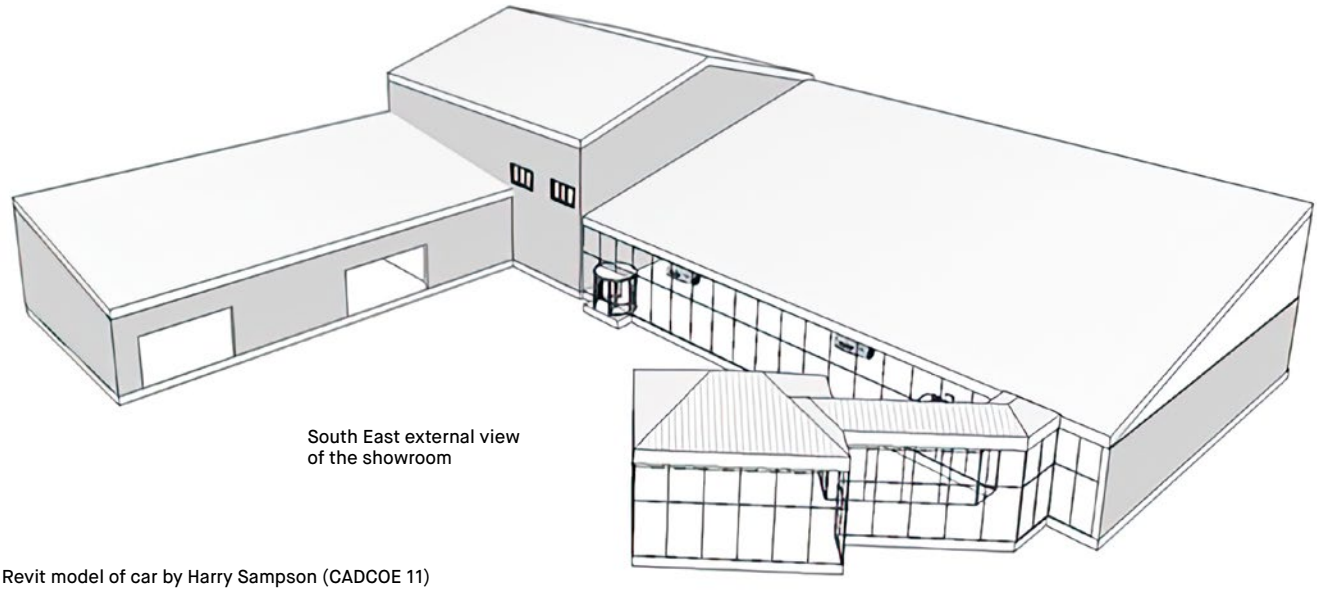
- AutoCAD and BIM (Tekla and Revit)
- Applying Principles of Surveying
- Construction Technology
- Building Regulations
- Health and Safety
- Manual Drawing
- Building Design
- Presenting

Apprentices will be expected deal with and be effective in the following areas in their workplace:

- Interpersonal/Relational Expertise
- Addressing Sustainability Issues
- Conducting Cost Analysis
- Using Own Initiative
- Communicating
- Proficient in IT
- CDP

What has made this programme tremendously successful is the fact that it is ran by qualified staff who come from diverse backgrounds bringing their own experience to the classroom. CADCOE tutors are chiefly responsible for rolling out the CAD training and are experts in using Autodesk products. They also recruit the students who are generally of a high calibre, working for well-established companies based up and down the UK. The College has a dedicated management team to co-ordinate and monitor all aspects of the programme delivery working alongside the assessors providing guidance and with tutors on class input. This partnership is proactively involved in the planning and organisation of the delivery. Approximately three cohorts have been accommodated per year since the commencement of this apprenticeship. The College are currently working with their twelfth intake.

CADCOE stipulate a rigorous entry criterion as expected on any advanced (L3) apprenticeship. Candidates wishing to be considered for a place on the apprenticeship should firstly hold a position of employment involving duties in the design office, possess a good set of GCSEs including Maths and English and have an aptitude for IT. If your organisation is UK based and employs trainee architectural technologists or CAD designers who require a formal course of study, contact the training arm of TDS Midlands by visiting tdsmidlands.co.uk to find out more. Apprenticeships are proving to be winning government funded schemes and the way forward for apprentices, employers and training providers. ■



South East external view of the showroom

Revit model of car by Harry Sampson (CADCOE 11)

Curved Intersections and Accentuated Water Ingress

Words by John Shillabeer. Cavity Trays Ltd.

Curved cavity walls and spherical corners intersecting pitched roofs

Where the requirement is to integrate an abutting sloping roof with concave or convex masonry, a number of considerations arise:

In the wall

The DPC within the cavity wall and the corresponding flashing need to be of a different shape and a different size at every intersecting course, regardless of the masonry coursing remaining regular. This is because the actual angle of intersection changes, despite the roof pitch remaining constant.

To provide the DPC protection within the wall, fabricating course by course on site using roll material is time-consuming and an almost impossible task. Roll DPC also requires support by building-into the inner skin, and where the inner skin is blockwork, it offers fewer conveniently located courses!

As continuous protection is required, each course level must link with its higher neighbour, to create within the cavity wall, protection resembling a staircase with connecting DPC treads and connecting DPC risers. At the same time, protection must horizontally project through the outer skin course and align with the face of the turning wall. It is not possible to stretch or shrink roll DPC to achieve this.

Outside the wall

Externally a flashing is required to act as a waterproof medium to fulfil two functions. It must positively link within each course with the horizontal DPC, and it must externally flash and integrate with the roof finish to provide a weatherproof join.

It is worth at this point qualifying how water behaves when it strikes the masonry surface of concave and convex walls. Water tends to be blown predominately around a convex wall, with the surface water gravitating as the leeward side is approached. The amount of water-wash traversing the curved wall accelerates on its angled downward path.

In contrast, water blown into an acute concave area has difficulty in dissipating. With both concave and convex walls, it is not uncommon for flashings to experience far higher volumes of surface water wash than is experienced with straight wall intersections. Surface water deflection in both instances increases water wash blowing into flashings, as well as away from flashings. It is important the protection of the intersection takes this into account.

Where an angled roof intersects a curved wall, each individual component is designed to exactly match the dimensional requirements at every intersecting course. These are called Type X cavitrays for curved walls.

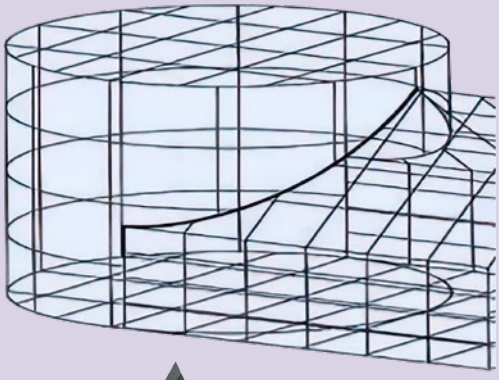
The advantages of using preformed cavitrays are numerous:

Fabrication on site is eliminated – there is no measuring, no cutting and no wastage. Preformed also means the shape is already determined – installer mistakes or oversights need not be a consideration.

Each cavitray has its own adjustable cavity upstand.

There is no requirement to locate and build into an inner skin course as upstands are self-supporting. The upstands accommodate the as-built cavity width as opposed to the as intended.

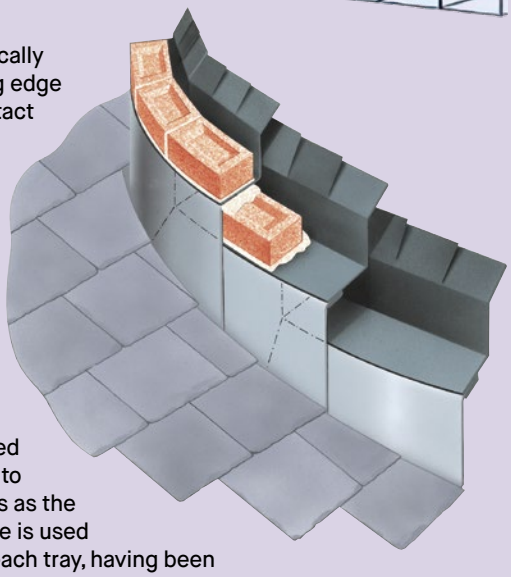
Every tray has an integral end upstand that rises within the masonry at the inboard end to provide a vertical link to the tray above. Thus, as each tray is laid it integrates with the adjacent tray, creating a linked DPC staircase.



The commencement intersection angle is almost horizontal. The highest intersection (ridge) level is similarly horizontal. All others vary as the wall turns and the roof rises.

Where trays are supplied with the flashing already attached the traditional need to rake out joints and introduce flashings separately is eliminated. The union is pre-established.

Because each cavitray and flashing overlaps the next cavitray and flashing, any wind-driven rain that seeps under a vertically dressed flashing leading edge does not come into contact with the masonry under (unlike conventionally cut running flashings). The overlap configuration provides a secondary layer to arrest such water, preventing it from permeating towards and under the adjacent sloping roofline.



Each tray is numbered and the mason has only to numerically build in trays as the wall is raised. Petheleyne is used for the manufacture of each tray, having been identified as the most accommodating and durable of all DPC materials tested for such purposes. The external flashing may be selected from either lead or a BBA approved synthetic alternative.

Cavity Trays Ltd undertakes to calculate concave and convex abutment requirements / schedules for clients. Other curved cavitrays solutions include; parapet walls, common openings, changes of level, threshold integrity trays.

Cavity Trays produces curved trays for use at various levels of the building envelope. ■

Continue your CPD with all new content on our YouTube channel from the Regions!

Now available to watch for all

From the Wessex Region

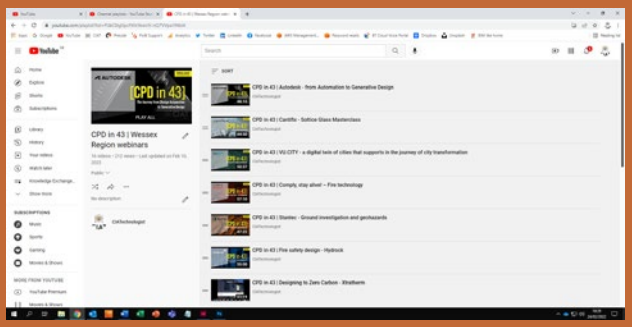
- CPD in 43 sessions
- In Discussion with...

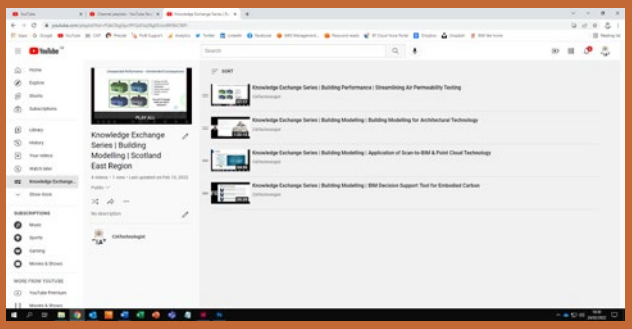
From the Scotland East Region

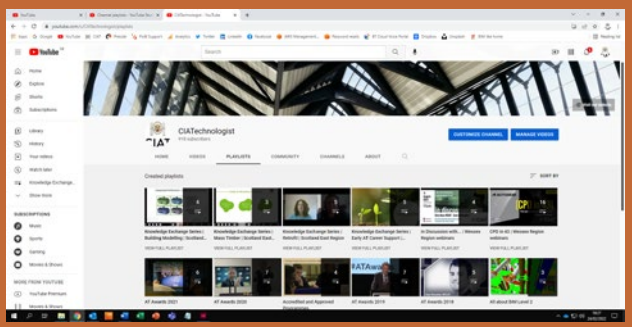
- Knowledge Exchange series:

Building Performance
Retrofit
Mass Timber
Building Modelling
Early AT career support

More coming soon!







Visit **youtube.com/ciatechnologist**

CPD...and how you can do it

Continuing Professional Development (CPD), in the minds of many, often conjures up images of having to attend a paid for course or seminar and being talked at. Not only is this a drain on time and resources, but how sustainable is it to find the right events, book your space and re-arrange your schedule accordingly several times throughout the year to meet the Institute's annual requirement[1] of a minimum of 35 hours?

This out-dated assumption of what CPD is makes you an unenthusiastic actor in your own professional development. Would you be as reluctant to act if the possibility of a promotion was there? The answer to that is probably no.

CPD is not intended to be an add-on to an already busy workload; it is meant to develop your skills and help you perform better in your current role or enable you get to the next level of your career.

Paid for courses/seminars are just a few of the ways in which you can develop yourself professionally, and in most cases you can direct your own learning and development to suit your ambitions. Best of all, the majority of these activities don't require much, if any financial investment on your part.

Activities that can count towards your annual CPD requirements include:

- **Research**

If you are having to look into specific materials or techniques for a project that you or your practice is working on, this counts as CPD.

The key is to keep track and log the time you spent researching. This can be done on your own CPD record that can be accessed within the 'My CIAT' area of the website.

Reading up on existing and upcoming regulations also counts as CPD, as this will help you and your colleagues ensure any projects are compliant with the latest requirements, rather than having to make revisions at a later stage.

- **Online**

The COVID-19 pandemic disrupted everyone's routine, and providers that offered face-to-face CPD before have now moved to hosting these sessions on platforms like Zoom, MS Teams and so forth.

All members and affiliates have access to Technology Network, which is a directory of members and affiliates willing to give guidance to other members and affiliates. Its main aim is to put members and affiliates with experience in different areas in touch with each other for guidance and support. Some Architectural Technology professionals who work in isolation benefit from contact with others in their field, as do newly qualified members experiencing teething problems. If you are not the one seeking advice, why not register the areas/topics that you would be willing to advise others on instead? Mentoring is also a form of CPD.

AT Weekly is another online resource that can keep you up-to-date with relevant information relating to the built environment, as well as the Institute'sactivity nationally and internationally.

The AT CPD Register lists a range of learning opportunities that have been assessed by CIAT and deemed professionally beneficial to Architectural Technology professionals. Similarly, Designing Buildings Wiki can also help you when researching products or methods for your projects. If you learn something new it is developing you professionally.

- **Professional qualifications**

There are several benefits to progressing your membership; Chartered status in particular, is a mark of an individual's commitment to upholding professional standards. Some professional qualifications can also denote a specialism within a particular area.

Chartered Architectural Technologist, MCIAT [2]

Becoming a Chartered Architectural Technologist does not happen overnight, but you can build steps into your professional development plan to help you obtain this status.

If you don't have much practical experience, you could refer to the Professional Standards Framework and speak to your employer about gaining experience in the areas in which you need to develop, mapped to our standards. Keep a record of this experience as this will save you a lot of time when you are in a position to complete the application process to become a Chartered Member.

For those of you that are closer to submitting, do not forget that attending the Membership Progression sessions offered by the Membership Department also count as CPD, as you will be given advice as to how best structure your application form and portfolio. If necessary, you can use the Mentor Match Me (https://ciat.mentormatch.me/) service to be mentored by a Chartered Member prior to submitting your application form, or before sitting your interview.

Chartered Environmentalist[3]

Chartered Architectural Technologists who have specialised in environmental issues may choose to 'badge' their competence by becoming a Chartered Environmentalist (CEnv). This qualification demonstrates your commitment to environmental best practice and a high degree of expertise within the sector.

Reflecting on your experience to date, and deciding how you want to continue evolving your skills within this area count towards your CPD hours as does undergoing the application process to become recognised.

Being registered as a Chartered Environmentalist sets you apart from others working in this field. It establishes proven knowledge, experience and commitment to professional standards, and enhances employability.

The application process consists of submitting a written application which requires you to address the competency statements by demonstrating how you have developed the breadth of knowledge through your work and engaged in sustainable management of the environment. This is then followed by a professional interview, carried out by CEnv assessors.

Conservation[4]

The Institute runs a register for Conservation professionals which is available for Chartered Architectural Technologists wishing to demonstrate that they are competent in the conservation of historical buildings and their surroundings. You have a choice being assessed as either a CIAT-Accredited Conservationist or a CIAT-Recognised Conservationist.

CIAT-Accredited Conservationists are conservation practitioners that take the lead in managing renovations, restorations and play an important part in preserving and conserving the heritage of buildings for future generations. They are recognised by grant/fund aided bodies such as Historic England, Historic Scotland, Northern Ireland Environment Agency, Cadw (Welsh Government historic environment service) and the Heritage Lottery fund. CIAT Accredited Conservationists are also eligible to undertake work as a Quinquennial Inspector.

CIAT-Recognised Conservationists on the other hand are those that have the appropriate knowledge and skills but who do not practise in conservation and instead have demonstrated their competence through the use of case studies.

As part of the application process for either option, you will be assessed and accredited against a set of competences in the area of conservation followed by a professional interview.

Researching, applying and/or sharing these techniques on projects or with colleagues counts as CPD, as does the process of being recognised for your knowledge and expertise in this area.

- **Engaging with the Institute**

The Institute would not be in the strong position that it is in without the continued support of its valued members and affiliates. Therefore, any time that you dedicate towards CIAT activity counts towards your CPD hours. This involvement includes, but is not limited to:

- Being a part of the local Region/Centre Committee or aspirATion;
- Sitting on any Group, Committee, Taskforce, Board, or Panel;
- Providing views on a consultation;
- Submitting articles to *AT Journal*, aspirATion magazine; and/or
- Representing the Institute at meetings or events.

As you can see, there are plenty of opportunities to learn and achieve the minimum 35 hours of CPD, and please remember, the 35 hours are across a twelve-month period. Sometimes discussions with a colleague or mentor can inform or inspire you on how to progress with current and future projects, and can be far more productive and beneficial to your career than an impersonal course or seminar.

For further information as to what constitutes as CPD, please contact the Education Department on education@ciat.global ■

[1] All members and affiliates (excluding student members) are required to undertake a minimum of 35 hours CPD every year as stated in the *Code of Conduct,* the clauses are extracted for ease here:

Cla*use A7: Continuing Professional Development*

The members (excluding student members) shall:

A7a) keep themselves informed of current practices and developments appropriate to the type and level of their responsibilities; and

A7b) be able to provide evidence that they have complied with the requirements for continuing Professional development (CPD) as published by the Institute from time to time.

Clause B7: Continuing Professional Development

Affiliates shall:

B7a) keep themselves informed of current practices and developments appropriate to the type and level of their responsibilities; and

B7b) be able to provide evidence that they have complied with the requirements for continuing professional development (CPD) as published by the Institute from time to time.

[2] For more information on how to become a Chartered Architectural Technologist, visit the website or contact membership@ciat.global

[3] For more information on how to become a Chartered Environmentalist, visit the website.

[4] For more information on how to become an Accredited Conservationist, visit the website.

Meet the President: Kevin Crawford PCIAT

Words by Adam Endacott, Editor

Kevin Crawford became the Institute's 30th President at the AGM held in Manchester and *AT Journal* finds out more about his aims and objectives for the next two years.

What do you hope to achieve over the next two years?
It is a privilege to have been elected and I am looking forward to working with Council, the Board and staff. I need to thank all those who supported me in my bid for becoming President and be rest assured that I am acting for all members and affiliates, as well as the discipline of Architectural Technology.

I am committed to the promotion of Architectural Technology as the unique and distinct profession that it has grown to become. As a side benefit of the wide influence that Architectural Technology has as a distinct discipline, our Members work not just within the traditional roles as Chartered Architectural Technologist's within practices, leading and running projects of all sizes and complexities, but also in a large variety of specialist areas where Architectural Technology is critical to ensuring that we, as members of society, contribute to a better future for ours and future generations.

In terms of what I would like to achieve during my Presidency, first and foremost is to carry on the great work that was started by my predecessor, Eddie Weir PPCIAT MCIAT, in public procurement, where Chartered Architectural Technologists can, and should be, recognised as lead consultants in construction projects.

I am a great advocate of promoting active connections between academia and industry. There are over 1700 CIAT Chartered Practices in the UK, and I would like to encourage improving connections between CIAT Chartered Practices and places of learning. To this end, I have already had discussions with the Vice-President Education to look at ways that this can be fostered.

Do you find the role of President daunting or are you looking forward to your two-year term?
I have always, and still do, viewed the role of President as the public face of the Institute and in this respect, I am overwhelmed by the trust that has been given to me by our members and affiliates to act in the institute's best interests. The President is only as good as the team he is working with and especially in these turbulent times, I am extremely grateful and privileged to have the opportunity to work with the excellent and dedicated staff at City Road and a proactive Executive Board and Council.

You joined the Institute in 1990, can you let us have a brief resume of your career?
Looking back at my early career, it was not that glamorous. I can recall my first job working for a practice in Glasgow and for the first six months I was colouring up warrant drawings on plastic paper – no computers in those days. It was quite a difficult time then and the country was in the middle of a recession, and in 1989 I was made redundant for the first time. For the next few years, I managed to maintain my career and worked for a practice in East Kilbride.

I well remember the time I went to London for my Professional Interview accompanied by my wife in July 1993 (she was seven months pregnant with our first child) and I still can recall some of the questions asked by the Chair of the Panel – thanks Neil Dransfield PPBIAT FCIAT and yes, I still know what the spacing of movement joints on a cavity wall should be and that it is different for blockwork and timber frame – I think you were impressed, or maybe that was just me!

After that, I started working for WS Atkins and then I entered the world of housebuilding, and the culture shock was eye opening. There were always rumours around that the pay from the housebuilders was better than any other, that was true to an extent, but what I will say is that when I started working for Tilbury Douglas in 1999, I had a full head of dark brown hair and when I left in 2008 (due to redundancy), I was nearly bald and grey! Great times but hard work. In 2009, I set up my own practice and I have not looked back.

You run your own CIAT Chartered Practice; how do you think you will find balancing Institute work with your practice work?
One of the biggest advantages of running my practice is that I can choose how and when to devote my time and my working day is probably no different from any other practice owner: start at 08:00, go home for dinner at 17:00, then back in the office around 19:00 to finally go home before midnight – the joys of running your own business!

What will you bring to your Presidency as a practitioner?
I would like to think that the skills that I bring to the Presidency have been gleaned over years as not just a practitioner, but also as an employee in micro practices, SMEs, and large multi-disciplinary consultancies. The reason for saying this is that as Architectural Technology professionals, we work in all fields, not just a single aspect of the built environment and my history gives me an insight into how many of the members and affiliates feel on a day-to-day basis, which enables me to relate to them and view the brief holistically.

One thing that has changed over the years, and more importantly as a practitioner and employer, I have come to realise that we are all just individuals, but we can and should act for the betterment of society. We want to make life better, not just for ourselves, but for those around us and because we work in the built environment, we are in a privileged position to make that happen by creating buildings that are healthy, sustainable and pleasing to live and work in.

As a former Vice-President Technical, do you feel this has helped shape your visions for the future and how your Presidency will unfold?
During my terms as Vice-President Technical, it was plainly evident that the industry and society still did not understand or appreciate the standard and quality that a Chartered Architectural Technologist brings to the table. The sheer quality of knowledge and understanding that our Members have is, in my view, not matched anywhere in the built environment and the fact that Members are constantly being cited and asked to comment on detailed technical papers and policy shows that CIAT is an Institute that we should all be proud of.

One of my main achievements during my role as Vice-President Technical was to be at the head of the team that looked at the AT Awards structure and created the foundations for the stand-alone AT Awards event that we currently have.

What has been the proudest moment of your time so far with the Institute?
Apart from being elected as President, it would have to be at the 2019 AGM in my hometown of Glasgow, where my great friend Eddie Weir presented me with my Gold Award.

How do you plan to promote and develop the profession/Institute?
Promotion is not something that is done on one's own. It is a collective effort with everyone working together towards the same goal. It is taking every opportunity to advocate what a Chartered Architectural Technologist is and does and that we are leaders in our field and that with changing technologies and construction methods; Chartered Architectural Technologists are best placed to lead.

Promotion is not something that is done on one's own. It is a collective effort with everyone working together towards the same goal.

Looking at the longer term, where do you see the profession and the discipline of Architectural Technology in the next five years?
With the changing world we live in, this is very a difficult question. We are emerging from the worst pandemic in recent times and the world is a very different place than it was two years ago. We are for all intents at a crossroads, and I believe that CIAT will emerge better for it.

There are great opportunities for Chartered Architectural Technologists who, as the best qualified, understand the built environment and how that will feed into a sustainable and inclusive built environment that will be around for many years to come. Use of innovative technologies and understanding how to integrate these into the traditional building stock that exists, not just in the UK, but around the world, is just one instances of how the profession and discipline will be at the forefront.

When you are not involved with the Institute, what are your hobbies?
Apart from my family, my two other hobbies are swimming and my motorbike. I recently passed my IAM advanced rider certification, something I am really proud to have.

If you were stranded on a desert island, what would you choose as your favourite book, film and song?
Favourite book – *The Thirty-Nine Steps* by John Buchan
Favourite film – *The Judge* (2014)
Favourite song – *Don't You Forget About Me* (Simple Minds)

What is your inspiration/hero?
My father. It is only after becoming a father myself that I understood what being a father is all about. ■

You can keep up to date on Kevin's activity via his Twitter account @CIATPresident

CIAT Chartered Practices – services to promote your CIAT Chartered Practice

CIAT Chartered Practice Logo
CIAT Chartered Practice Site Signboards
CIAT Chartered Practice Plaque
CIAT Chartered Practice Certificate

CIAT Chartered Practice Logo

The CIAT Chartered Practice logo is a great visual symbol to demonstrate that your practice is on the Register of CIAT Chartered Practices.

The CIAT Chartered Practice logo is free and available from the Practice Department.
Please email practice@ciat.global

CIAT Chartered Practice Site Signboards Service

Uniquely available to those on the Register of CIAT Chartered Practices, the range boasts three varying options:

1. With one line

2. With two lines

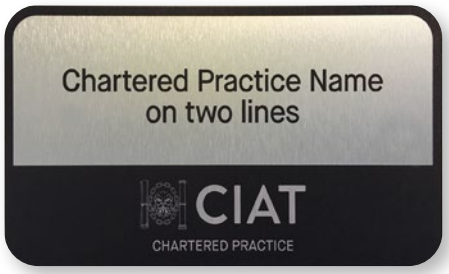
3. With three lines

The signboards are available in standard sizes (4'x1' and 8'x2'), produced on 5mm rigid foamex board (suitable for outdoor), a vinyl sticker (suitable for windows) or a mesh banner (suitable for outdoor/scaffolding). Other sizes and materials are available upon request.

To place an order, complete the order form which you will find in the 'My CIAT' area of the website, and email it to ribadesignservice@riba.org

CIAT Chartered Practice Plaque

The CIAT Chartered Practice Plaque is only available to CIAT Chartered Practices. It provides a stylish visual display of your status that can be displayed at your practice.



Your order can be placed by completing the CIAT Site Signboard order form and emailing the RIBA Design Services Team or alternatively, please email ribadesignservice@riba.org with your CIAT Chartered Practice name and number or call +44(0)20 7307 3737.

CIAT Chartered Practice Certificate

The CIAT Chartered Practice Certificate, which is issued annually from 1 May, is also exclusive to CIAT Chartered Practices. It provides a formal visual confirmation of your status that can be displayed at your practice. It has a dated hologram to validate its authenticity.

To order please contact the Practice Department, practice@ciat.global for further information.

Honorary Officer elections 2022 nominees standing for election

Following the call for nominations in the last issues of *AT Journal*, each candidate now takes the opportunity to present their manifesto.

President Elect

Nominated candidate: Paul Laycock MCIAT

Growing up, I always knew my home would be in the built environment. Coming from a family of trades and construction managers almost all of my childhood memories involve the smell, taste and feel of construction. But never did I think I would be standing for President Elect of an Institute that I regard as my home and extended family.

I am both proud and humbled to stand before you as nominee and promise above all else to do my absolute best in representing the interests of all members and affiliates if I am successful.

This will be of no surprise to those of you that know me – I am passionate about our Institute, the profession and all that we stand for. I am proud to call myself a Chartered Architectural Technologist and be part of a profession at the forefront of our industry. A profession and Institute that I believe will continue to grow and strengthen through the collaboration and commitment of our talented members.

It has been a long and varied journey to get here. After my initial Higher National studies, I entered the industry in the late 1980's as a construction manager (becoming a Chartered Builder soon thereafter) and became a Chartered Architectural Technologist in 2004, while running my own development company alongside two partners and fellow directors in the organisation. I returned to education in 2005 where I currently lead the design and technology programmes at Birmingham City University.

My team are hugely supportive of me in this nomination, and this support means a lot to me. I am more than aware of the commitment this role requires and without their support, I would not have the confidence to take on this demanding role and give it the time and commitment it deserves to make the best of every opportunity

I have been involved with the Institute at both a Regional and national level since 2005. As one of the original Moderators for Membership Assessment Panels; interviewing candidates on interview panels; judging Student Awards; Chairing programme Accreditation Panels; and as Vice-President Education. During this, I have had the good fortune to work with our strong and dedicated team at Central Office and the equal fortune to meet and work with many of you in all of our Regions and Centres.

The future of Architectural Technology, the Institute and the Profession

Our Institute is a body for its members and affiliates, run by its members and affiliates. Our future is in our hands with that future never being stronger than it is today.

I believe in the talent and commitment of our members and affiliates, not only setting the trends, but leading and developing those trends into the future and setting an example to others. My vision is to see the Institute continue to reinforce its position as a leading professional body.

Members and affiliates to be seen as an indispensable element in every professional team and the Institute to be seen as a destination of first choice, with Chartered Membership as a logical and necessary step in the career journey.

My promise – If I am successful, I promise to promote the strength of our membership and affiliates at all levels and promote a strong sense of identity to all members and affiliates.

Professional identity

I believe we all need to have a common voice in stating our identity, and the skills and attributes of the professional Architectural Technologist that make up that identity.

My promise – If I am successful, I promise to campaign to clarify what it means to be a professional Architectural Technologist in its widest sense and campaign to see this recognised throughout all levels of our educational systems; our Regions and Centres; and the industry, employers, government departments and the broader society who engage our services.

Growing into the future

Growing our membership and affiliates is imperative for our future and the sustainable future of the Institute.

Growing membership and affiliates has been a priority for many Past Presidents. I share that vision. The promise I have made above will help considerably in promoting and growing our membership and affiliates into the future.

Always in motion, the future is, and I believe, the future of our members and affiliates looks exciting. We are all familiar with the work done by organisations like CITB in identifying the "skills gap" in our industry. But perhaps less familiar with research that tells us that around 65% of the children entering primary school this year will end up in jobs that do not even exist yet. We hear about the emergence of "big data", "smart cities" and "digital technology". All of these are opportunities for short, medium and long-term growth.

But this growth must be a planned and managed growth.

My further promise – to support the Institute's growth into the future by seeking to identify the directions, needs and requirements of the future Architectural Technologist and the future of Architectural Technology.

What I would like to look back on?

If successful in this election I would like to end my term as President and look back on a stronger Institute; a stronger profession; and an Institute that has membership and members and affiliates as its first priority. I am the right candidate to make a real difference to our profession.

If you share my vision, then vote for me. I will not let you down.

Nominated candidate: Eddie Weir PPCIAT MCIAT

I feel a huge sense of honour, privilege and responsibility in representing CIAT and the profession of Architectural Technology, and no less so having the opportunity to address you once more with immense gratitude for your continued kind encouragement and nominations once again for President Elect.

It is hard to believe that I am nearly halfway through my term as your Immediate Past President. Although it has been an exceptionally busy few years, I am conscious that there will be even busier times ahead as our Institute continues to deliver its *Corporate & Strategic Plans* throughout the world and deal with headline issues such as climate change, the Review of Architects Regulation ensuring that Architectural Technology is properly represented in respect of the implications of the suggestion to protect function (rather than title) and the outcomes of the Building Safety Bill. All of which will require pronounced experience and leadership to ensure that CIAT maintains its continuing position as leaders within the construction Industry.

My term as your previous President during the COVID-19 pandemic was like no other in the history of our Institute and one which I hope will never be repeated in the future. Being restricted in serving you, our profession and our discipline, completely had at times been difficult and challenging... but it was also balanced with the successful outcomes it presented. One of these was the opportunity to meet with you all virtually and keep you updated on the fabulous work and initiatives that we were developing and working on and of course it was a perfect opportunity to ensure that everyone was reassured that support was there to those who needed it. For me personally, that support was reciprocal, your kind words of encouragement and gratitude and your request for me to accept further nominations for this role led to me standing for President Elect once again.

During my longstanding involvement with our Institute, I have visited many of our Regions and Centres. At every visit, I have been shown innovative practices and have met inspirational members and affiliates. Our successes are down in no small part to their energy and determination. I have met people who are passionate about their work and care deeply about what they do. To further augment this, it is important that we recognise the significant roles that our Regional and Centre Committees have to play and their responsibilities in shaping the future of our discipline.

I am the Principal Partner of Eddie Weir ADP, which since its conception in 1999 has grown into one of the most highly regarded architectural practices in Northern Ireland, undertaking many projects throughout Ireland and GB. Aside from my many CIAT responsibilities, externally, I am an elected Deputy Director of the Construction Industry Council (CIC), the Vice-Chair of the Northern Ireland Construction Professionals Council, and a member of the prestigious Management Boards for the Northern Ireland Construction Group and the Construction Industry Forum of Northern Ireland, representing CIAT and the built environment industry at the highest level. I am also an Ambassador for the Architects' Benevolent Society (ABS) and was honoured to be a recipient of the prestigious CIAT Gold Award in 2014.

It is imperative to me that we never lose sight of the bigger picture. We sometimes fail to see the impact we have and the endless possibilities in front of us just waiting to be grasped.

INSPIRE – we must enhance and encourage member engagement especially at a Regional and Centre Committee level. Develop good succession planning practices that will instil and illustrate the importance of the Regional and Centre Committees and Honorary Officer positions. Succession planning recognises that some jobs or positions are the lifeblood of any organisation and that these positions are too critical to be filled by anyone other than those who are best suited to perform the role.

I am delighted that my new Future Leaders initiative is gathering momentum and of course with every new Initiative, I once again would like your help and input to develop it. The Future Leaders' proposal will be an important project to build a strong network of AT professionals to become the future leaders of our profession. This project will have an emphasis on building confidence, and the knowledge and understanding on the processes of (for instance) our electoral college and procedures, the regulations of the Institute, our Code of Conduct, our policies and position statements, information on our many different taskforces and what they do, the Conduct and Finance Committees, the roles and functions of the Honorary Officers and the President. And to potentially provide training on public speaking and the psychology behind delivering influential and powerful presentations.

Our aim is to promote and facilitate succession planning; and if developed successfully our future leader candidates will develop an intimate knowledge of the structure and workings of our Institute; and the candidates for our senior officer positions can be attracted from a wider pool of members (instead of those who feel you need experience as a Council or Board member first before progressing).

Effectively done, succession planning is critical to continued success and creates an effective process for recognising, developing, and retaining top leadership talent.

PROMOTE – as an international organisation, we must continue to expand our communications and visibility by educating and promoting to the wider general public, the value and expertise that our members have to offer. Through the continued work of our incredible Public Bodies Engagement and Public Procurement initiatives (which I am delighted to continue to be a key lead on for the foreseeable future), we will continue to increase our visibility simply by the outcomes of our achievements. Uniquely, our biggest advantage and value comes from the fact we are able to consider design holistically by applying our broad range of knowledge, we are the Swiss army knives of architecture, and most certainly the lead discipline within the construction Industry. On a world platform we are held in high esteem by our peers. The contribution, views and the stances we take, matter. We must not be complacent about this and must continue to

grow and enhance our international Centres and the great opportunities that comes with this.

SUPPORT – the built environment plays a crucial role in how people understand and value the world around them and the essential pivotal discipline of Architectural Technology is at the centre of this. If the past couple of years have taught us anything, it has demonstrated that the support available to our members and affiliates has been second to none. It is with this in mind... that I feel it is imperative that we continue to inform and advise that support will always be available to those who need it.

I believe that our members, affiliates and staff are the fundamental shopfront of our Institute. The way that we carry out our business illustrates to our peers that our competencies are second to none. That is why I consider it is an absolute honour and a privilege to be nominated once again for the position of President Elect. I shall continue as always to promote the incredible ability of our members and affiliates and I look forward to your continued support for this prestigious post at the Honorary Officer elections in September. It truly is a fabulous time to be an AT.

Nominated candidate: Nicola West MCIAT

In accepting the nomination to serve as President Elect/ President of CIAT, I am excited to be given the opportunity to offer a new chapter in the history of the Institute.

As the first female to ever hold the post, I will bring my extensive local and national experience to the role. I joined the South East Regional Committee in 1988, Regional Councillor from 1999-06, Membership and Education Committee from 1995-06, Finance Committee from 2005-06, Member of Executive Board from 2002-04 and Chair of the Membership Group from 2004-06. I also briefly represented CIAT on the CIC Equal Opportunities Taskforce.

I started my career as an office junior in 1984 in South London and was the first female to pass an ONC in Building at East Surrey College, Redhill. Since then, I have gained experience working for architectural practices, developers and interior designers on various residential and commercial projects.

As part of the Membership and Education Committee, I was fortunate to Chair Accreditation and validation visits, meeting with various universities. Inspired by the opportunities for further education and to develop my abilities further, I undertook a BSc (Hons) in Building (Production Management) by distance learning at Guildford College Surrey/Nottingham Trent University, graduating in 2002 whilst being the only female on the programme.

I now live in Northamptonshire, working three days a week for an architectural practice in Leicester, working on large scale residential projects as their sole Architectural Technologist. In addition, I am continuing to run my CIAT Chartered Practice as RedBird Architecture providing technical support to architects carrying out small scale residential projects. My part-time employment will ensure ample time to carry out President Elect/Presidential duties.

I am very passionate about my role within architecture and the discipline of Architectural Technology and champion CIAT at every opportunity I get. I welcome the opportunity to lobby for CIAT and the profession of Architectural Technology with professional bodies, stakeholders and government.

As Technologists, we are analytical, methodical and creative. All of us in our various roles are often coming up with innovative ways to solve problems, develop design ideas and contribute positively to the built environment. Indeed, Dame Hackett's view of a building industry professional is the Architectural Technologist. I would use my position to promote our Chartered Members as the best professionals to collate, disseminate and co-ordinate the information needed for each gateway of the Golden Thread[1].

It is not only what we do but who we Chartered Members are that matters. We are not 'failed architects' or 'glorified technicians'. We are so much more than that; the Privy Council demonstrated that when they awarded us the Royal Charter in 2005. So, I would use my position to highlight to the construction industry our unique discipline and why our Chartered Members are relevant in today's fast-paced, technological age[2].

Indeed, the CIAT logo enshrines the fact that our discipline is born from our Chartered Members being the link between design and construction. Our specialisation is even more relevant today as we move into the changing world. A world brought about by technology, refinements in construction methods, the development of modern materials, BIM and the future of team working; all recently challenged by the effects of COVID-19 in the way we work.

As we come out from under the COVID shadow and the world returns to normal working, the opportunities for expansion and development of our Institute are perhaps more significant going forward than ever. So let us seize that momentum.

These last couple of years have been unprecedented for our members and affiliates. For some, the pandemic has hit both professionally and personally. Until now, many of those who have benefitted from sharing, learning, and teamwork within a vibrant office environment have been faced with remote working, changing work patterns and isolation. In speaking to friends and colleagues, maintaining our mental health and wellbeing are essential in filling our roles. Over recent times, many of us have found ourselves working with little or no social interaction with all the psychological challenges this can bring[3].

Whilst there have been many opportunities for taking part in Continuing Professional Development, either in person or more recently virtually, there remains the need to relate to members and affiliates through local connections. So, I will propose that we encourage members and affiliates to form 'local chapters' (introduced when we were SAAT). This initiative will offer members and affiliates practical support, with the opportunity to catch up informally with other local architectural professionals once a month in an informal setting over drinks or meals and travelling no more than 30 minutes to such meetings. Members and affiliates run the Institute for members and affiliates with help from the staff at City Road. Indeed, those who have given time to the Institute have found it rewarding both socially and professionally.

Many challenges are facing us in today's construction industry. As a Chartered body, CIAT has an obligation to society. I would use my position to comment on built environment issues affecting the public. For example, I would hope to use my post to lobby Government and industry to highlight the appalling treatment of home occupiers living in homes with cladding stripped, no cavity barriers or unsafe balconies. As a result, many live

[1] CIAT Strategic & Corporate Plans 2018-23 – Aim 2
[2] CIAT Strategic & Corporate Plans 2018-23 – Aim 1
[3] CIAT Strategic & Corporate Plans 2018-23 – Aim 4

in dwellings unfit for habitation or unsaleable through no fault of their own. Effective, practical remedies for all such householders must be put in place, legislatively if needs be. I would achieve this by actively seeking collaboration with other professional bodies to get the message across .

On behalf of our Chartered Members who have CIAT Chartered Practices, I would also use my position to review available professional indemnity insurance to ensure Members are fully protected with suitably effective and cost-efficient cover[5].

I would also hope to use my position to arrange for 'technical' or 'practice' CPD packages be put on the website for members and affiliates to access. Each topic could be on core subjects that are relevant and current to our members and affiliates and would be available for a nominal charge. These could be downloaded as needed and used against CPD requirements[6].

If you vote for me, you will be selecting a candidate with an established provenance at Council and Executive Board. I am enthusiastic and forward-thinking. As an Institute, it is time to move forward; it is time for a fresh approach.

I am happy to respond to the Regions, Centres and Council questions. I am available for virtual meetings to discuss my candidacy and manifesto. Elect me. Let me show you what I can achieve!

Honorary Treasurer

Nominated candidate: Doug Fewkes MCIAT

In preparing my manifesto, I sit and contemplate that only a short two years ago, CIAT and the world alike, were plunged into the most significant challenges of our modern times with COVID-19. As your Honorary Treasurer at the time, we were challenged to take some significant decisions in order to protect your Institute and members and affiliates alike.

We now are beginning to see the world emerge from the pandemic and whilst there may still be some knock backs still to face, CIAT, through the stewardship of your Honorary Treasurer has weathered the storm and we see ourselves able to face the new challenges that will present themselves.

Unlike the unexpected impact of a global pandemic, we are fully aware of more significant challenges that CIAT and its members and affiliates will face in the coming years and by being able to take the correct decisions now will greatly affect the membership and affiliates and CIAT for years to come.

- Work has already begun with litigation to protect Members in Ireland that will ultimately impact on the membership and affiliates, not just in the Centre, but across all arenas within which members and affiliates practice.
- We also prepare for the changes that will inevitably come from the new fire regulations following the outcome of the Grenfell Tower enquiry and of course the position all of our members and affiliates will have in the coming months and years. Ensuring sound financial management of CIAT will ensure that these key tasks are supported to the fullest needs.
- The Review of the Architects' Regulations and the impact that any proposed changes will have on our members and affiliates abilities to practice.

These key emerging issues will need the full weight of CIAT behind them and the investment of significant amounts of time from our teams in Central Office along with key external support areas will inevitably require funding.

In addition to these opportunities, we also set ourselves new challenges with the commencement of writing the next Strategic and Corporate Plans. Facing the need to grow Regionally, nationally and internationally. Not simply in our membership and affiliate numbers but as the foremost respected professional Institute within the construction industry. Our reputation is not simply down to the totality of our membership and affiliates, but the reach that each of our members and affiliates has and the way in which they conduct themselves in promoting the profession of Architectural Technology.

The tasks do not just stop at these significant issues that CIAT faces on the global stage and as I have outlined in this manifesto.

I cannot lose sight of the needs to support our Regions and Centres, the life blood of CIAT. Our Regions and Centres are our salesforce on the ground, promoting all aspects of the activities of CIAT to the general population. As CIAT Chartered Practices, In the delivery of CPD events to members and affiliates and careers events to provide the opportunity for new students to become interested and ultimately to undertake in education that will lead to membership and ultimately for the benefit of our society.

Again, and as I did two years ago, I task our Regions and Centres to challenge the Finance Committee, and myself as your Honorary Treasurer, to fund the support and development of activities in the promotion and development of CIAT. In doing so, I encourage our Regions and Centres not to think themselves just as silos, but to work collaboratively with adjacent Regions and Centres for the mutual benefit of CIAT. There are great examples of outreach such as the CPD in 43 initiative and using this as an exemplar as to what can be achieved.

Whatever the challenge, be it an un-known global pandemic or known activities that we set ourselves through the next Strategic and Corporate Plans, as your Honorary Treasurer I will continue to help steer CIAT for the future of it and all members and affiliates alike. I pledge to take on the difficult issues and aim to make CIAT a global lead Institute it continues to be. In doing so I strive to ensure that CIAT and its members and affiliates are best placed to promote, for the benefit of society, the science and practice of Architectural Technology.

Vice-President Technical

Nominated candidate: Daniel (Dan) Rossiter FCIAT

About me

After completing an Accredited Architectural Design Technology programme at Coventry University, I spent several years in practice at Cardiff City Council; designing new schools as well as the extension and refurbishment of existing buildings such as leisure centres and listed libraries. During my time in

[5] CIAT Strategic & Corporate Plans 2018-23 – Aim 2
[6] CIAT Strategic & Corporate Plans 2018-23 – Aim 5

practice, I developed an interest in technical standards, digitalisation, and optimisation. This led me to the Building Research Establishment where I developed training, spoke at events and worked with businesses across the globe to develop their approach to Building Information Modelling (BIM) as well as represented BRE on standards committees as their subject matter expert. For my efforts, I was nominated and awarded the inaugural Chartered Architectural Technologist of the Year Award.

In my current role as a Sector Lead for the Built Environment at the British Standards Institution (BSI), I provide strategic insights relating to the built environment through my understanding of design, procurement and construction in the form of thought leadership, public speaking and outreach. In addition, I contribute to the development of national, European, and international standards through technical input as well as the convenorship of several international working groups.

Current/previous involvement

Since joining CIAT in 2006, I have actively tried to support the institute and the discipline, at all levels, where possible.

Locally, this has included reviving the Wales Region, Chairing both aspirATion Wales and the Wales Region, and my current role as Regional Councillor. Centrally, this has included contribution to several taskforces including the Special Issues Taskforce, Projects Taskforce and the Technical Standards Taskforce, of which I am currently Co-Vice Chair.

In addition, I have contributed to specific subject-matter related questions and queries relating to technical documentation, information management and BIM as well as having presented on these topics on behalf of CIAT at external events and as part of the CPD in 43 series.

What you can bring to the Institute?

Anyone who has worked with me will know I bring energy and rigour to everything that I do. I intend to apply this energy to the role of Vice-President Technical.

The Vice-President Technical is an externally facing position creating a need to engage with external stakeholders including Government. As part of my current role within BSI, I have strong relationships with individuals within several government departments such as BEIS, HSE, DLUHC and the IPA. This is due to my involvement in key sector activities relating to competency, building safety, digitalisation and construction products. In addition, I maintain strong working relationships with key members of the Construction Leadership Council, Construction Industry Council, Constructing Excellence and other professional bodies and trade associations such as APS, CABE, CIBSE, CPA, RIBA and the UK BIM Alliance. I plan to leverage these relationships to support a more holistic built environment as well as share and integrate lessons learnt by others.

Goals as aligned to the Strategic and Corporate Plan

This is a tricky topic as, if I'm fortunate enough to become Vice-President Technical, I would not be appointed until the end of our existing 2018-23 plan. However, at the 2021 AGM, I suggested our next plan should have a closer relationship to government strategy documents and policies such as the *Construction Playbook and Transforming Infrastructure Performance Roadmap to 2030*. With a key aim of our existing 2018-23 plan being to enhance the profile of the discipline, I believe an effective way of doing so is through alignment with these strategy documents, as they identify the vision for a future built environment. I hope to ensure that Architectural Technology is a firm part of this vision.

Why vote for me?

As our only Member who is employed by a national standards body, I have a unique perspective on the strategic direction of the built environment as well as the technical subject matter expertise needed to realise it. As such, I want to work towards fortifying members' and affiliates' technical capability to both promote and make our discipline even more resilient. My main vision for doing so is by providing all members and affiliates with better access to good practice.

To achieve this, I plan on developing the member and affiliate knowledge zone through the introduction of new information sheets and practice resources on topics such as safety, fire, sustainability, information management, technical documentation, as well as other technical issues and relevant changes to legislation and regulations. I want to continue conversations I have had in relation to a more appropriate model for members and affiliates to access good practice content, such as standards. I also want to introduce exemplars; to allow members and affiliates to share their good practice with the wider institute. However, I am also keen to hear from you during my campaign to understand the technical support you require and how I can help to facilitate it as Vice-President Technical.

Time commitment to the role

In the past, I know that concern is expressed when employees are nominated for such roles. To put you at ease BSI has given its support and I report directly to Ant Burd (Past President of CABE) who understands the commitment required and has wholeheartedly supported this nomination. In addition, through my current involvements listed above, I already regularly attend meetings and events I would be expected to attend as Vice-President Technical; mitigating the additional time commitment.

I look forward to a spirited campaign and hearing your views on how I, as Vice-President Technical, can support you, your Region or Centre, and the institute as a whole. Please feel free to get in touch!

Get to know me!

Twitter twitter.com/DRossiter87
LinkedIn linkedin.com/in/drossiter87

Nominated candidate: Gareth Sewell FCIAT

I am a Fellow Chartered Architectural Technologist with over 34 years' experience within the built environment.

I have worked at several practices, from large multinationals to SMEs, working on a varied range of projects from small to large scale residential developments as well as healthcare and educational developments in the UK and overseas. During my working career, I have, and continue to, learn from very knowledgeable people as well as being exposed to new technology such as object based CAD/BIM solutions. This subject matter expertise has allowed me to travel

the world, (South Africa, South America Middle East and the Far East), assisting Governments, companies and individuals with their adoption of the BIM process.

Currently I am involved with the Institute as a member of the Special Issues Taskforce and serve as Co-Vice chair for the Technical Standards Taskforce. I also represent CIAT on several BSI standards committees relating to BIM and design management as well as the newly formed Uniclass Advisory Board. I am passionate about ensuring that the Chartered Architectural Technologist's pragmatic approach is represented, and workable solutions are adopted to improve industry.

I feel that I can bring a practical approach to the role of Vice-President Technical with an emphasis on assisting SMEs with adoption of new technologies in a beneficial way. As part of my roles, I feel it is important for the industry to be working collaborative to ensure more effective working, reduction in waste with methods accessible for all practitioners; regardless of their size.

In line with the Strategic and Corporate Plans, the goals that I am proposing to focus on if elected are as follows:

- Competency and Capability –The Institute needs to ensure our members and affiliates meet and exceed the requirements of the forthcoming Building Safety Bill as outlined by Dame Judith Hackett; in particular the role of the principal designer. I would look at developing member and affiliate sharing zones to promote and share good technical detailing along with the adoption of new technical solutions, especially around modern methods of construction. I would also look at educating members and affiliates to engage with suppliers to ensure correct technical information is a standard deliverable. In addition, I have been helped throughout my career by having excellent mentors and would look at how the Institute reaches its membership and affiliates to encourage more knowledge sharing.
- Technical Guidance – As we are all aware regulations and standards are arguably changing faster now than ever before and that it will become a core requirement for the Institute to help members and affiliates stay fully informed and current in their knowledge. However, as I work for an SME, I fully understand the costs that can be involved in obtaining and maintaining standards. Single copy and subscription based approaches can be a cost hurdle that prevents/restricts knowledge sharing and learning in smaller enterprises. With the help of the Institute, I would like to work with standards providers to formulate an approach that ensures the industry has a cost-effective method for all involved.
- Technology – The adoption of new technology can be costly and time consuming, especially for SMEs. as such it is critical to ensure that they can compete effectively against other providers. With the assistance of the Institute, I propose to create a specialised Taskforce, open to all, to allow for good practice and new ideas to be developed and disseminated to members and affiliates to assist with the adoption and implementation of these technologies. This could be through the creation of 'Knowledge Zones' available via the website which would include good practice guidance developed by our members and affiliates and external parties along with engaging with suppliers from all sectors to offer services to Institute members and affiliates to facilitate this.

As SMEs make up nearly 95% of our industry, I believe it is important that they feel just as supported and championed by the Institute at all levels as any others would be. My experience to date means that I am particularly suitable to be the voice of the SMEs to ensure our colleagues working in these organisations are properly represented within our Institute.

To do so, I would look to engage with members and affiliates to ensure appropriate guidance is easily accessible and available to assist them both in following the institute's policies and *Code of Conduct* as well as complying with legislation and regulations as they are first introduced as well as when they inevitably change.

I ask that you vote for me as I wish to promote the excellence of our members and affiliates and the values, skills, and knowledge they bring. I am passionate about promoting the role of an Architectural Technologist as a fulfilling and dynamic career path for all. In addition to facilitating excellent technical information which will aid members and affiliates making a real difference to the quality of our built environment.

I have an excellent relationship with my employer who sees this role as an important requirement to promote our Institute. They have actively encouraged me to share my knowledge and passion for the discipline of Architectural Technology, much in the same way that they did when training me at the start of my career. As such they will allow me time to perform the role of Vice-President Technical to the best of my abilities.

I have a keen interest in scuba diving and I am a qualified PADI Rescue Diver along with a passion for photography, motorsport, and travel (pre-pandemic!)

If you would like to discuss anything about this manifesto, I can be reached via

LinkedIn linkedin.com/in/gareth-sewell-fciat-9a327b18 and if you have any ideas that you would like to discuss then please contact me. ■

What happens next?

Candidates will be giving presentations at the Council meeting to be held on 12 March and we encourage you to liaise with your local Region, Centre or aspirATion about these.

There will be hustings held during the run-up period to the elections with all candidates – details on these will be circulated via AT Weekly and social media platforms

These manifestos for the nominated candidates will be issued to members and affiliates by email and can be found on our website. A campaign trail is now in progress with the election taking place at Council on 10 September 2022.

Key dates summary

Campaigning by candidates
24 February – 9 September 2022 inclusive
Election ealerts and updates on the website
24 February – 9 September 2022 inclusive
Election at Council
10 September 2022
Candidates advised if not in attendance at Council
Ealert announcing the election results
12 September 2022
Assumption of position
19 or 26 November 2022 close of 2022 AGM

2021 AGM

The AGM took place in Manchester on 27 November 2021 as a hybrid event with delegates in person and attending via Zoom. However, it was the turn of the weather which restricted a number of delegates from the north and east of the UK.

The Institute's 16th Annual General Meeting, held at Radisson Blu Hotel Manchester Airport, included the approval of the accounts as well as the authorisation to Council to appoint the auditors. There were three Resolutions debated and voted on by the Voting Delegates, made up of representatives from the Regions and Centres. The following were approved with some votes against:

Resolution 1

To amend the Code of Conduct to:

a) include a definition of 'CIAT Chartered Practice logo'; and
b) rename 'affiliate logo' to 'affiliate emblem' and to include a definition of 'affiliate emblem'.

Resolution 2

To amend the Code of Conduct to:

a) include a definition of 'Member logo', 'Associate emblem' and 'student emblem'; and
b) amend Clause A2 to include the use of a Member logo and emblems by Associates and students.

Resolution 3

To amend the Code of Conduct so that members and affiliates report in writing any alleged breaches of the Code by themselves of which they become aware.

In his closing President's address, Eddie Weir spoke of the highlights of his term, including his virtual visits to the Regions and Centres, as well as the development and growth of the Institute.

Kevin Crawford PCIAT was inaugurated as the 30th President of CIAT and addressed the delegation outlining his vision for the next two years during his Presidency. Kevin addressed the delegation outlining his vision for the next two years during his Presidency. He spoke on the very real challenges and issues he will tackle, some of which affect the discipline, some the industry and others society in the UK and globally.

For example, the work in relation to Climate Change, life safety and the new Building Safety regime and equality, diversity, and inclusivity. There is also work to promote to national and local governments the benefits of recognising competent built environment professionals alongside reinforcing the mantra that Chartered Architectural Technologists are the lead in the technology of architecture. He is also keen to encourage CIAT Chartered Practices, other practices, and employers to embrace the next generation and mentor new AT graduates. Kevin will also be working with the Chief Executive, Executive Board and Council in the development of the 2023–28 Strategic and Corporate Plans.

Speaking of his appointment, Kevin said, "I feel hugely honoured and privileged to take on the role of President of an Institute and profession I have immense enthusiasm for. This position is the pinnacle of our profession and I take on this role with pride, passion, and commitment. I very much look forward to representing all our members and affiliates as President for the next two years."

Carl Mills FCIAT took over the mantle of Vice-President Education from Dr Matthew Brooke-Peat MCIAT, while Dan Clements MCIAT began his term as Vice-President Practice, taking over from Rob Thomas MCIAT. They will be working with the Education Department and Practice and Technical Department respectively.

In the afternoon there were some workshops focussing on the future of Architectural Technology with presentations and discussions on Regional/ Centre Committees and their relevance, the Strategic and Corporate Plans 2023-28 and the Future Leaders initiative. ■

Subscription Renewal 2022/23

Look out for your renewal in the post and by email in early May

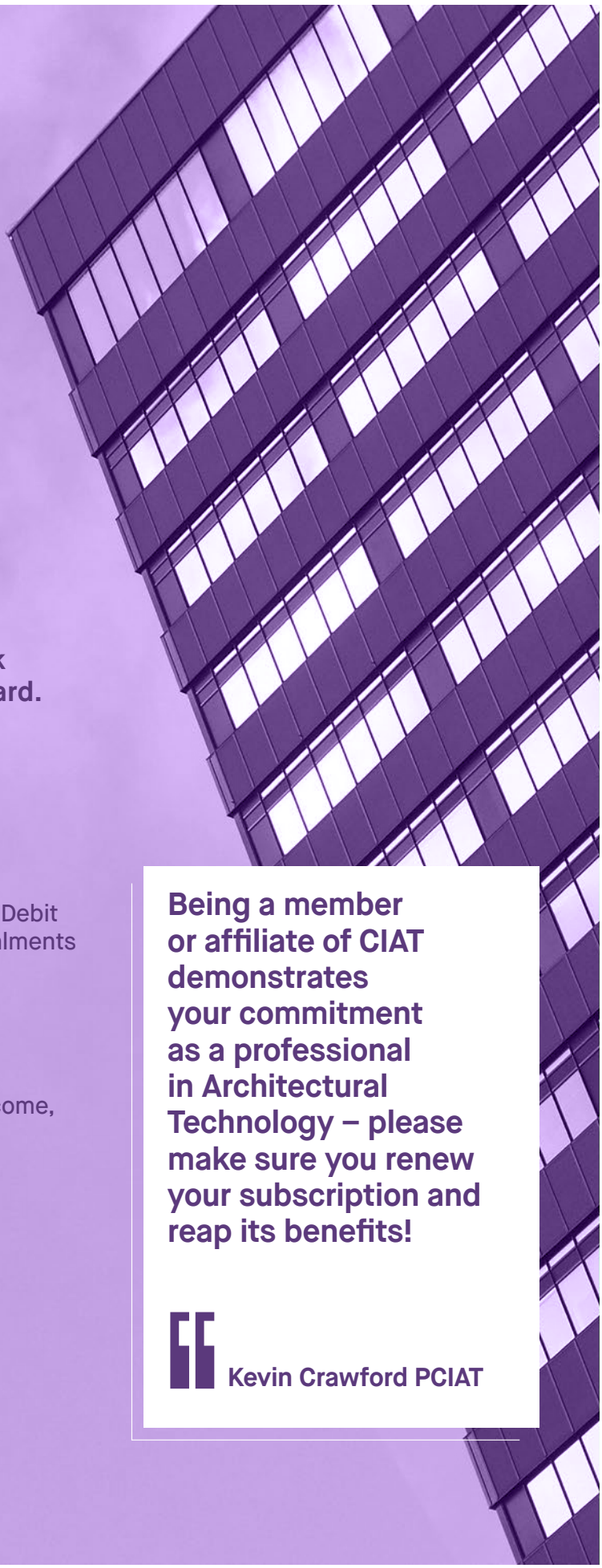
Renewing your membership subscription could not be easier via direct debit, the website, bank transfer, cheque or credit/debit card.

Subscriptions are due for renewal on 1 May annually.

Paying your subscription

- Spread the cost by setting up a Direct Debit for payment in ten equal monthly instalments or one annual instalment.
- Pay online by credit or debit card.
- You may qualify for a concessionary subscription fee if you are on a low income, unemployed or retired.

If you have any queries then please contact finance@ciat.global



Being a member or affiliate of CIAT demonstrates your commitment as a professional in Architectural Technology – please make sure you renew your subscription and reap its benefits!

Kevin Crawford PCIAT

Membership news

Chartered Architectural Technologists

We would like to congratulate the following who successfully attended their Professional Interview and are now Chartered Architectural Technologists, MCIAT:

034362	Tristan Cooper	Northern, 01
025349	Chun Yuen	Northern, 01
027805	Oliver Glaves	Yorkshire, 02
026885	Jason Nattrass	Yorkshire, 02
024782	Matthew Stables	Yorkshire, 02
016812	Richard Sykes	Yorkshire, 02
030172	Liam Briggs	North West, 03
022569	Michael Whitley	North West, 03
034281	Ryan Collington	East Midlands, 04
031391	Usman Hussain	East Midlands, 04
032445	Ryan Johnson	East Midlands, 04
018260	Philip Hunt	Central, 08
035812	Kevin Pugh	Central, 08
032436	Gemma Williams	Central, 08
028483	Samuel Jackson	South East, 10
010417	Kevin Leahy	South East, 10
028933	Josef Maunder	South East, 10
035160	Anne McElvaine	South East, 10
035813	Hina Siddiqui	South East, 10
022045	David Critch	Scotland West, 13
033251	Zeeshan Mohammed	Scotland West, 13
030749	Martyna Kulesza	Scotland East, 14
026002	Aódh McGuinness	Northern Ireland, 15
031666	Michael Molloy	Republic of Ireland, C2

Welcome back

We would like to welcome back the following Chartered Architectural Technologist:

026930	Tom Butler	East Anglia, 07

Fellow Members

We would like to congratulate the following Chartered Architectural Technologists who successfully completed their application and are now Fellow Members, FCIAT:

031623	Hadeel Saadoon	West Midlands, 05
018759	Lee Smith	East Anglia, 07
019284	Ross Cairns	Scotland West, 13
024464	Michael O'Keeffe	Republic of Ireland, C2

In memoriam

We regret to announce the death of the following members and affiliates:

020800	Stuart Hadfield	North West, 03
002491	Roger Johnston	North West, 03
004327	George Jones	Wessex, 06
013284	Roy Rodda	Western, 12

Conduct Hearings | Disciplinary Sanctions

Member 020392 – Susan Dewhirst:

At a Conduct hearing, Susan Dewhirst was found in breach of Clause 8a) and Clause 8c) from the *Code of Conduct* effective 1 March 2019.

Clause 8: Breaches of this Code

The members shall:

a) report to the Institute any alleged breaches of the Code by themselves of which they become aware;

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 & Disciplinary Procedures* effective 1 March 2019, Item 20b), Schedule of Disciplinary Sanctions, the Conduct Committee determined that Susan Dewhirst to be excluded from the Institute for a period of two years in respect of the breach of Clause 8a) from the *Code of Conduct* effective 1 March 2019.

In accordance with the *Conduct & Disciplinary Procedures* effective 1 March 2019, Item 20b), Schedule of Disciplinary Sanctions, the Conduct Committee determined that Susan Dewhirst to be excluded from the Institute for a period of one year in respect of the breach of Clause 8c) from the *Code of Conduct* effective 1 March 2019.

The two periods of exclusion will run consecutively, and the total period of exclusion is three years.

Member 019255 – Steven Hedley:

At a Conduct hearing, Steven Hedley was found in breach of Clause A1a), Clause A1b), Clause A8a) and Clause A8c) from the *Code of Conduct* effective 1 September 2020.

Clause A1: Professional Conduct

The members shall at all times:

A1a) act with integrity so as to uphold the standing and reputation of the Institute;

A1b) act faithfully and honourably in their professional responsibilities.

Clause A8: Breaches of the Code

The members shall:

A8a) report to the Institute any alleged breaches of the Code by themselves of which they become aware;

A8c) when subject to an investigation by the Institute of an alleged breach of the Code, use their best endeavours to assist in that investigation at their own cost.

Disciplinary action:

In accordance with the *Conduct & Disciplinary Procedures* effective 1 January 2021, Schedule of Disciplinary Sanctions – Section A, Item 1c), the Conduct Committee determined that Steven Hedley to be expelled from the Institute in respect of the breach of Clause A1a), A1b), A8a) and A8c) from the *Code of Conduct* effective 1 September 2020.

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