Introduction

The Technical team gives technical contributions, advice and support to various activities across CIBSE to deliver public benefit, enhance CIBSE's impact with external bodies and add value to CIBSE membership. We manage CIBSE responses to calls for evidence from Government Departments, Select Committees, and other public bodies and interact with government and other external bodies in policy and technical fields.

The team contributes to various government working groups and advisory panels. We work with the Ministry of Housing, Communities and Local Government, MHCLG, and Department of Business, Energy and Industrial Strategy, BEIS, incorporating the former Department of Energy and Climate Change, DECC. We also work with the Health and Safety Executive on Occupational Lung Disease, the Construction Industry Council (CIC), the umbrella for the professional bodies in the built environment, the Royal Academy of Engineering, the Committee for Climate Change (CCC) and more locally the Greater London Authority (GLA).

We provide the staff connection for a number of significant initiatives and seek to involve interested volunteers wherever possible. As well as the post Grenfell activity we are active in BIM, working closely with BSI and with the UK BIM Alliance. We are also engaged in the emerging work on the Clean Growth Strategy and the Grand Clean Growth Challenge.

The primary focus for the past year has been on the Grenfell Tower fire. The Steering Group for CIBSE Guide E, Fire Safety, and the Society of Facade Engineering have been key contributors, along with senior CIBSE members. Publication of the Clean Growth Strategy in October 2017 released a stream of further consultations which is continuing now. Publication of the Independent Review of Building Regulations and Fire Safety has triggered various consultations on Building Regulations matters, with more anticipated on both fire and Part L.

On BIM, we continue to support the work of BSI, to engage with the UK BIM Alliance, the Construction Products Association and the new Centre for Digital Built Britain at Cambridge University, established last autumn to take over the development of the next stage of BIM.

Through BSI we contribute to British, European and International Standards and are involved in the strategic discussions about standards in this field. We are working closely with the Better Buildings Partnership as a partner in the Design for Performance project, which seeks to support the delivery of buildings which meet user performance expectations in operation. We are also represented on the NHBC Foundation Expert Advisory Panel.

We were asked by DCLG to provide expert advice on overheating risk in buildings, which acknowledges the work of Anastasia Mylona and other CIBSE members in this particular area. Indeed, the recognition that overheating is a significant problem which needs to be considered within the context of building regulations is largely due to the ongoing work of the Institution on this particular topic over the past decade. This illustrates the significant influence that the Institution has behind the scenes. For more detail on this issue see below.

The team provides technical support for the Technical Networks, which are the CIBSE Special Interest Groups, the Divisions, SLL, SOPHE, SFE, SDE and ILEVE, as well as the CIBSE Patrons, which are now the newest Division, as well as the Young Engineers Network. Their activities are reported elsewhere in the report.
Grenfell Tower

Input to the continuing activities related to the Grenfell Tower fire is a significant ongoing commitment. We contributed significantly through both senior members and staff to responses to the final report of the independent Review of Building Regulations and Fire Safety, led by Dame Judith Hackitt.

We have subsequently contributed to the consultations on restricting the use of combustible materials in external walls, and on the use of assessments in lieu of tests.

CIBSE was also consulted by the Ministry of Housing, Communities and Local Government (MHCLG – formerly the DCLG) on the issues raised by buildings with partial ACM cladding, and MHCLG recently published guidance on this, which can be downloaded from here: https://www.gov.uk/government/publications/advice-for-owners-of-buildings-which-are-partially-clad-in-aluminium-composite-material-acm-cladding-systems

CIBSE participated in the consultation round tables that led to the publication of this advice.

Council should also be aware of the Ministerial Statement on the Review, which includes a commitment to consult on a proposal to “ban combustible cladding”. MHCLG have also established a very comprehensive compendium of Grenfell related information.

Heatwaves: Adapting to Climate Change

In February 2018 the House of Commons Environmental Audit Committee issued an inquiry to consider risks to health, wellbeing and productivity associated with heatwaves, review the level of UK resilience to them and assess the Government’s actions to date.

They particularly sought evidence relating to measures to minimise overheating in buildings and cities, especially in care homes, hospitals, schools and prisons; on urban heat island effects; on the impact of overheating on productivity and health; and on alignment of building and planning with the National Adaptation Programme and what government should do to prepare for a warming climate and future heatwaves. These are all highly relevant to CIBSE. The full terms of reference can be found on the committee website.

Dr Anastasia Mylona, CIBSE Head of Research, submitted written evidence and appeared before the committee in May. Anastasia is CIBSE’s weather and climate data expert, heavily involved in developing CIBSE Guidance on thermal comfort and overheating. CIBSE’s position is that overheating risk is not adequately addressed in current policy and regulation and highlighted in its response a need for a regulatory requirement for overheating risk to be assessed and addressed in the Building Regulations. CIBSE’s response also highlighted the Institution’s extensive work and published best practice guidance on this topic, and offered to support the work of the Committee in this area.

Subsequently, the then Housing Minister, Dominic Raab, along with two other Ministers, gave evidence, and he was asked specifically about CIBSE’s evidence relating to the treatment of overheating in the Building Regulations in England. Dr Mylona was then asked to provide further supplementary evidence in response.

The final report makes considerable reference to CIBSE guidance and Anastasia’s evidence, including a call, supported by the Committee on Climate Change, for Building Regulations to address overheating:

“Dr Mylona, CIBSE, told us that it should be the “responsibility of the building regulations or the regulatory framework to address health issues, including overheating.” Kathryn Brown, Head of Adaptation at the Committee on Climate Change, expressed frustration at the Ministry of Housing, Communities and Local Government’s view of the purpose of building regulations: “[The Ministry] has been fairly emphatic with us that those regulations are not designed to protect health ...
They are not health regulations. We recommended that something was needed - we do not have a view whether that is in the building regulations or not - that looks at the health aspects of overheating."

The final report was published on Thursday 26th July, which happened to be the hottest day of the summer, attracting more media interest than it might otherwise. The CIBSE technical and marketing teams were caught up in a whirlwind of television and radio coverage of our contribution to the report and guidance on overheating in buildings. Dr Mylona was on BBC Breakfast as the lead-in story, which repeated throughout the morning, reaching a combined audience estimate of 3.48 million viewers and ended with Dr Julie Godefroy on BBC Radio 4 PM, reaching an audience of 1.5 million. Ashley Bateson, CIBSE Vice President, was interviewed on BBC Local Radio.

A blog describing CIBSE’s contribution to the EAC Enquiry and subsequent press coverage is also available at http://www.cibseblog.co.uk/2018/08/environmental-audit-committee-heatwaves.html.

Technology Committee

Technology Committee oversees the Institution’s responses to consultations and consideration of future technical and policy issues. It continues to oversee a very full programme of consultations and contributions to policymaking.

A total of thirteen consultations have been published since the June Council meeting to which CIBSE responded to ten, and there are currently two open consultations to which CIBSE is planning to respond. Contributions to responses are always welcome, although not always forthcoming. The workload related to consultations in the wake of the Clean Growth Strategy and Hackitt Review has been particularly demanding.

Current Consultations

1. Proposed clarification of statutory guidance on fire safety (Approved Document B) (closes 11 October)

In her Interim Report, Dame Judith Hackitt recommended that the Government should consider presentational changes to improve the clarity of Approved Document B. In line with this recommendation the Government have been working with industry experts and members of the Building Regulations Advisory Committee (BRAC) on draft clarified Approved Document B, which has now been published for public consultation.

The Government is seeking views on the proposed clarification of statutory guidance on fire safety in the Approved Document B, which aims to improve usability and reduce the risk of misinterpretation by those carrying out and inspecting building work.

The clarified draft Approved Document B contains revised guidance on restricting the use of assessments in lieu of tests and the use of combustible materials in the external walls of high-rise buildings, both of which have been subject to a separate consultation.

The Government will produce a detailed impact assessment based on information received from this consultation to inform its final policy decision. The Government response will also take into account any emerging findings from the Public Inquiry into the Grenfell Tower fire.

This consultation closes on 11 October and CIBSE plans to submit a response.

2. Energy Performance Certificates for buildings (closes 19 October)

Energy Performance Certificates (EPCs) are a widely used measure of the energy performance of buildings, in the residential, commercial and public sectors, and are a key tool in promoting energy performance improvements in buildings.
Energy Performance Certificates are designed to allow consumers to reliably compare the energy performance of different properties, providing a relative understanding of energy efficiency and running costs. EPCs are required in the UK when residential and commercial buildings are constructed or put up for sale or rent, and are also required to meet the eligibility criteria for some government schemes supporting renewable energy.

The recent Clean Growth Strategy set out the Government’s ambitions to improve the energy performance of buildings in both the domestic and non-domestic sector. In particular, it set out an aim for homes in the private rented sector and all fuel-poor homes to be upgraded to EPC band C by 2030, and an aspiration for as many homes as possible to be upgraded to band C by 2035. It also set out an aim to improve energy efficiency in businesses and industry by at least 20% by 2030.

In this context, the Clean Growth Strategy committed to a Call for Evidence seeking views on introducing additional points when EPCs might be required and ways in which EPCs could be further improved.

The aims of this Call for Evidence are:
- to gain evidence on how the current EPC system is working;
- to gather information on the suitability of the current system of EPCs for both their current and emerging uses in measuring building energy performance; and
- to obtain feedback on suggestions for improvement.

This consultation closes on 19 October and CIBSE plans to submit a response.

More information on open consultations is available in the current consultations section of the CIBSE website.

Recent Closed Consultations

1. Helping businesses to improve the way they use energy (closed 26 September 2018)

The Clean Growth Strategy, published in October 2017, committed Government to consult on measures to support businesses to improve how they use energy more efficiently.

This call for evidence set out possible approaches to improving energy efficiency in business and industry by 20% by 2030 and sought views on the level of ambition and on Government plans to measure progress. It also seeks views on the actions the Government could take to support business to take up energy efficiency across buildings and industrial processes.

The Government's analysis suggest that the majority of the savings could come from commercial and industrial buildings, split broadly equally across the private rented and owner occupier sectors, with the remaining savings being delivered by more efficient industrial processes. The largest sectors in terms of energy consumption are industrial, offices, retail and hospitality.

This consultation closed on 26 September and CIBSE submitted a response.

CIBSE notes and wholeheartedly supports the recent report of the Committee for Climate Change on progress in reducing emissions from the building stock. Compliance with Building Regulations requirements to conserve fuel and power need to be taken more seriously by all concerned, with regulatory support to complement market mechanisms. Market mechanisms alone have not, and will not, get us where the Climate Change Act and Paris Agreement commit us to be, or where the basic atmospheric and climate change science demands that we go.

CIBSE supports the findings of international research mentioned in this consultation i.e. “improving the efficiency of existing buildings often requires a combination of policy interventions including performance-based energy targets, building energy codes and
standards, mandatory energy performance disclosure and voluntary standards that become mandatory supported by finance or other incentives”. These very much align with recommendations CIBSE has made over the years and in recent consultations.

CIBSE welcomes a number of options mentioned in this consultation, such as reviewing Part L of building regulations and reviewing requirements for minimum Energy Performance Certificates. The Institution very much thinks that regulations need tightening to drive improvements in new and existing buildings, and will be engaging in depth in these reviews.


Scottish Ministers acknowledge that new buildings constructed to current building standards already achieve a good level of energy efficiency. However, they wish to explore options to build upon the progress made to date in providing energy efficient buildings with reduced carbon emissions. They have called for a review of the building regulations and the energy standards that apply to both domestic and non-domestic buildings.

The review is considering the next steps to further enhance the energy performance of buildings and contribute to greenhouse gas abatement targets set under the Climate Change (Scotland) Act 2009.

The first stage of the review is looking at the effectiveness and impact that the 2015 energy standards, and the supporting guidance, had, or continues to have, on Industry in delivering energy efficient buildings. Its purpose is to gather views, supported by robust evidence, on the construction or alteration of buildings under the current energy standards, introduced in October 2015. This information will assist in finalising the scope of the review and will help identify any potential barriers to constructing buildings that are both energy efficient and reduce carbon emissions.

This call for evidence closed on 17 September 2018 and CIBSE submitted a response making a number of recommendations, as outlined below.

- Scottish Building Standards should use updated carbon emissions values for grid electricity, such as the ones proposed in the recent update to SAP i.e. 0.233 kg CO2/kWh.
- To significantly improve the quality and performance of new and refurbished buildings and to close the so called “performance gap” incorporation of some form of post occupancy assessment and improvement is needed e.g. some elements from the “Soft Landings” Framework.
- Changes should be made to the Scottish Building Standards to make fabric energy efficiency targets mandatory for non-domestic buildings. To make sure that the building fabric has been constructed correctly the use of thermal imaging should be mandatory within building standards and there should also be a requirement for the contractor to rectify any defects found.
- CIBSE agrees with the proposal to set performance targets in terms of energy rather than just emissions, but believes that perhaps both energy and carbon emission targets should be set.
- The Scottish Building Standards update should incentivise the use of energy storage, such as electric battery storage and heat storage systems, to align with the new Scottish Government Climate Change Plan and to help address the growing issue of demand management within the national grid.
- CIBSE agrees with proposals to investigate provision of Electric Vehicle (EV) charging points or enabling infrastructure within new buildings, however, Section 6 might not be the best place to cover this. If included within Section 6 then the modelling implications would need to be clearly thought through to ensure EV charging is incentivised and not penalised.
• Upskilling and training of installers is required to ensure that complex and new renewable technologies e.g. heat pumps, are installed correctly to maximise the savings achieved.

• Scottish Building Standards could also be more ambitious in terms of sustainability. It would be helpful if Section 7 incorporated some of the themes within BREEAM.

3. Banning combustible materials in cladding systems in Wales (closed 26 September 2018)

The Welsh Government, have reviewed the proposals contained in the recent Ministry for Housing, Communities and Local Government (MHCLG) consultation in England, ‘Banning the use of combustible materials in the external walls of high-rise buildings’, and concluded that the fundamental questions asked and actions proposed are relevant to Wales.

The Welsh Government agrees with the advice of the UK Government Expert Panel that systems which have passed the BS 8414 test and have been correctly installed and maintained and therefore meet Building Regulations’ guidance, provide a safe way to ensure that wall system will resist the spread of fire. However, the Welsh Ministers also recognise the concerns that the BS 8414 test does not offer as straightforward way of meeting the requirements of the Regulations as would a ban on the use of combustible materials. They also note Dame Judith’s view that using products which are non-combustible or limited combustibility is undoubtedly the lower risk option. Welsh Ministers therefore considered it right to consult on a ban which would, as a consequence, remove the flexibility offered to cladding design by the BS 8414 test on high-rise residential buildings.

This consultation sought views on imposing a ban on certain materials in cladding systems. The consultation closed on 13 September 2018 and CIBSE submitted a response which was in line with the consultation on banning combustible materials in cladding systems in England.


Dame Judith Hackitt’s review has identified serious failings with the construction industry and the regulatory system and has proposed a radical approach to address them. Reform of the scale envisaged by Dame Judith will take time and the Government, in response to public concern, considers that in addition to longer-term reform there is also a case for immediate action in relation to fire safety.

This consultation sought views on the Government's proposals to ban the use of combustible materials in the external walls of high-rise residential buildings in England.

The Hackitt review was focused principally on high-rise residential buildings and concluded that a suitable trigger was buildings of 10 storeys or more. However, the Government considers that a ban on combustible material should apply to buildings 18m or over in height, which would align with current building regulations guidance. This will prevent having different requirements for buildings of 18m and for buildings of 10 storeys or more.

A ban would also remove the option for developers to use an assessment in lieu of a test (sometimes referred to as a "desktop study") to demonstrate compliance. The Government has recently consulted on restricting or banning the use of assessments in lieu of a test. The results of that consultation will be taken into account in considering the results of this consultation.

The Government aims to make the change through legislation by amending the Building Regulations to include a specific ban. Failure to comply with the ban would be a breach of the Building Regulations 2010.
The consultation closed on 14 August 2018. CIBSE submitted a response and the Society of Façade Engineering also submitted response, with additional material on the issue of exempt products or materials.

CIBSE supports the general approach of restricting use of combustible materials in cladding systems. Since there is a proposal in this consultation for some exemptions, the Institution understands that the use of combustible materials in cladding is being significantly restricted, not banned. Such a further restrictions should be subject to a further review as findings emerge from the Public Inquiry into the Grenfell Tower Fire, responses to the Independent Review and as testing regimes develop over time. The industry is also putting in place measures to improve competency of professionals and tradespeople working on higher-risk buildings. In time, a more competent construction workforce could also merit a change to this proposed prescriptive approach, which may well be anomalous to a more performance-based approach to fire and life safety.

As noted in the consultation paper, a ban can only be delivered by legislation, otherwise it is guidance. Requirement B4 of the Building Regulations already limits the materials that may be used on the external face of a building. However, as the government has acknowledged, over 450 buildings are clad in material that is not permitted, i.e. banned, already. That has occurred because of significant differences of interpretation between professionals over the guidance that is supposed to support the application of requirement B4 but has in practice confused. Just changing the scope of what is banned alone will not solve the problems – as Dame Judith Hackitt finds in her report, there is a need for much more wide ranging change in the sector for the proposed ban to be effective, and there needs to be absolute clarity over what is “banned” in future.

5. Draft Clean Air Strategy (closed 14 August 2018)

The draft Clean Air Strategy outlines the Government ambitions for reducing pollution from a wide range of sources, making the air healthier to breathe, protecting nature and boosting the economy. It sets a clear direction for future air quality policies and goals, and sits alongside three other important UK Government strategies: the Industrial Strategy, the Clean Growth Strategy and the 25 Year Environment Plan.

The Government sought views on the actions being proposed to reduce air pollution and its effects, and wanted to hear any further suggestions. The responses received will inform the final UK Clean Air Strategy and detailed National Air Pollution Control Programme to be published by March 2019.

This consultation closed on 14 August and CIBSE submitted a response.

CIBSE supports a number of measures proposed in the consultation, but the Institution has strong concerns about the overall targets, commitments, and the package of measures:

- There should be a firm commitment to align ambient air quality objectives with World Health Organisation guidelines, with clear mechanisms for review and reporting. It is difficult to reconcile ambitions for world leadership when the UK’s ambient air quality objectives do not align with the WHO, or indeed even with EU objectives.
- There needs to be strong monitoring and enforcement mechanisms, including powers from the upcoming environment body over central departments and all public authorities, and adequate resources to local authorities.
- There is currently no comprehensive regulatory framework on indoor air quality, and poor implementation of the few guidelines related to pollutant levels in Building Regulations Approved Document F. CIBSE strongly recommends this should be reviewed, including a review of Building Regulations Part F to incorporate indoor air quality requirements. This would also align with amendments of the Energy Performance of Buildings Directive, which the UK has committed to implement despite exiting the EU.
A more comprehensive set of solutions is needed, with a focus on solutions that address pollution at source and those that offer multiple health, wellbeing and environmental benefits; in particular this should include built environment planning to promote cycling and walking and reduce transport needs, and the incorporation of green infrastructure from the local to the regional levels. Government support to modelling, monitoring, research and innovation should be aligned with these priorities, including: assessing the impact of transport policies on pollution levels and transport patterns, understanding what can drive behaviour change in consumers, and assessing the influence of urban form and trees on air pollution levels; this in turn should inform guidelines to policy-makers and professionals.

CIBSE believes these recommendations align with the WHO and with the views of other professionals from the built environment, research, and public health sectors.

6. Environmental Principles and Governance after EU Exit (closed 2 August 2018)

The Government has pledged that we will be the first generation to leave the environment in a better state than that in which we inherited it, and has published the 25 Year Environment Plan (YEP) for England. It is now developing an Environmental Principles and Governance Bill to help deliver the vision of the 25 YEP and ensure the UK is a world leader in environmental protection once we leave the EU.

The Environmental Principles and Governance Bill will create a “new, world-leading, statutory and independent environmental watchdog” to hold Government to account on its environmental ambitions and obligations after the EU exit. This new body will work alongside a new policy statement setting out the environmental principles that will guide successful and sustainable policy-making, marking the beginning of a new era for our environment.

This consultation addressed key questions around how environmental principles should be embedded into law, public policy-making and delivery, and what functions and powers the new environmental watchdog should have to oversee environmental law and policy.

This consultation closed on 2 August and CIBSE submitted a response.

CIBSE believes that the consultation proposals fall short of the public promises committing the government to replacing the current arrangements for the UK as part of the EU, especially in terms of governance. The consultation proposes that the upcoming environmental Bill and governance body would only apply in England. CIBSE notes the intention to seek collaboration with the other nations of the UK, however this is a statement of intent only. CIBSE believes strongly that environmental governance should be developed at a UK level. The Climate Change Act and associated Committee on Climate Change (CCC) are an example of this being achieved since devolution and delivering effective UK-wide advice and oversight. A UK wide environmental arrangement should provide the minimum common ground, with each nation free to implement higher standards or more extensive governance should they wish to, as happens with climate change measures.

CIBSE thinks that the proposed Environment Act should require all public authorities to have special regard to the environmental principles and act in accordance with the policy statement. This would make legislation more effective and less open to interpretation. It would also more clearly deliver the promises made by various members of the current government to maintain levels of environmental protection after the UK leaves the EU. A statutory commitment to do so would also increase certainty in business and commerce around future environmental standards, which in turn will have a positive impact on business planning.

The consultation states that the “new Environmental Principles and Governance Bill is designed to create a new, world-leading, independent environmental watchdog to hold government to account on our environmental ambitions and obligations once we have left the EU”. CIBSE strongly supports the creation of such a body. However, whilst the
consultation contains this headline statement, the more detailed proposals fall short of what is required to genuinely hold government to account.

They also fall significantly short of the requirement of Section 16 (1) c) of the European Union (Withdrawal) Act, which requires government to bring forward, by mid-January 2019, "provisions for the establishment of a public authority with functions for taking, in circumstances provided for by or under the Bill, proportionate enforcement action (including legal proceedings if necessary) where the authority considers that a Minister of the Crown is not complying with environmental law (as it is defined in the Bill)".


The Independent Review of Building Regulations and Fire Safety was led by Dame Judith Hackitt. Its purpose was to make recommendations that would ensure we have a sufficiently robust regulatory system for the future and to provide further assurance to residents that the complete system is working to ensure the buildings they live in are safe and remain so. It examined building and fire safety regulations and related compliance and enforcement. The review focused on multi occupancy high rise residential buildings.

The Final Report of the Independent Review was published in May 2018. The report identified key issues underpinning the system failure and set out more than 50 recommendations for government on how to deliver a more robust regulatory system.

The main recommendations of the report include:

- A new regulatory framework for multi-occupancy higher-risk residential buildings (HRRBs) that are 10 storeys or more in height.
- A new Joint Competent Authority (JCA) comprising Local Authority Building Control, fire and rescue authorities and the Health and Safety Executive to oversee better management of safety risks in these buildings across their entire life cycle.
- A mandatory incident reporting mechanism.
- New dutyholder roles and responsibilities aligned with the Construction (Design and Management) Regulations 2015.
- A series of robust gateway points to strengthen regulatory oversight.
- Stronger change control processes.
- A single, more streamlined, regulatory route to oversee building standards. Oversight of HRRBs will only be provided through Local Authority Building Standards as part of the JCA, with Approved Inspectors available to supplement local authority capacity/expertise or provide accredited verification and consultancy services to dutyholders.
- More rigorous enforcement powers.
- A clear and identifiable dutyholder with responsibility for building safety.
- Delivering building safety as a system rather than by considering a series of competing or isolated objectives.
- A more effective testing regime with clearer labelling and product traceability.
- Obligating the creation of a digital record for new HRRBs from initial design intent through to construction and including any changes that occur throughout occupation.

Following the publication of Dame Judith Hackitt’s Final Report, the Government sought views on how these recommendations should be taken forward. The consultation concluded on 31 July 2018 and CIBSE submitted a response.

CIBSE supports the overall conclusion of the Review in calling for wide ranging reforms to the system of building regulation in England and the management of higher risk residential buildings during their whole operating life. This is a once in a generation call for fundamental change in the way that we regulate the construction and operation of buildings to deliver safe environments, which seeks to address many of the flaws that our membership have grappled with for many years.
Whilst recognising that Dame Judith’s Terms of Reference directed her to address high rise residential buildings, CIBSE wholeheartedly supports her repeated observation that many of her recommendations should be applied more widely. The Institution supports her call for complex buildings to be recognised as systems, and for a systems engineering approach to be adopted in relation to managing their design, delivery and operation, as well as ongoing maintenance and refurbishment.

CIBSE was also actively involved in the development of the Construction Industry Council response to the Independent Review, and fully endorse that response.


Radon is a colourless, odourless radioactive gas formed by radioactive decay of elements occurring naturally in rocks and soils, and may also be found in certain building materials and water. Radon is the single biggest source of radiation exposure to the UK population in homes and workplaces, and the second leading cause of lung cancer after tobacco smoking.

This consultation sought feedback on the draft National Radon Action Plan (NRAP) which addresses the health risks from public exposure to radon. It was prepared to present, in a single document, the existing elements of radon control that make up the national radon strategy and the national radon action plan. It fulfils radon-related requirements in the Ionising Radiations (Basic Safety Standards) (Miscellaneous Provisions) Regulations 2018 (SI 2018/482) (BEIS, 2018) that put into practice part of the 2013 European Union Basic Safety Standards on protection against ionising radiation (EURATOM, 2013).

The NRAP describes the national strategy and arrangements to reduce high individual radon exposures and the overall level of radon exposure to the population whether at home, at work or elsewhere, and consequently to reduce to reduce the individual and overall risks of lung cancer. The NRAP also covers arrangements and approaches used to communicate information and guidance on radon from government and private industry to relevant groups such as members of the public and local authorities.

This consultation closed on 27 July 2018. CIBSE did not submit a response to this consultation as there were no significant comments from CIBSE Members.


The purpose of the National development Framework (NDF) is to support the delivery of Prosperity for All by developing a clear long term direction for Government policy, action and investment and for others who the Government work with. The NDF will achieve this by identifying key growth areas, the type and location of the infrastructure we need, by coordinating the delivery of housing, employment and connectivity infrastructure, and by directing key partners to help deliver the national spatial vision. Future policy development, investment decisions and the work of our key partners will be directed by the NDF, allowing coordination and early focus on delivery rather than establishing separate spatial priorities.

The Welsh Government sought views on the NDF Preferred Option, Vision, Objectives and Issues. They will consider responses to this consultation and issue a Consultation Report, and then begin preparing the draft NDF, informed by the comments received, with the aim to consult on a draft NDF in summer 2019 and publish the NDF in September 2020.

This consultation closed on 23 July 2018. CIBSE did not submit a response as there were no significant comments from CIBSE Members.

10. **A future framework for heat in buildings** (closed 11 June 2018)

The pathway to the 2032 fifth carbon budget set out in the Clean Growth Strategy is clear that action to decarbonise heat must increase during the 2020s. The Government has set out an ambition to phase out installation of high carbon fossil fuel heating in new and existing buildings off the gas grid during the 2020s. Work is underway to consolidate and improve the
evidence base on different approaches to the long term decarbonisation of heat, out to 2050, and plan to publish a report on this work in summer 2018.

This call for evidence focussed on early action to build on the gains made by the Renewable Heat Incentive and decarbonise off gas grid buildings, heated by high carbon fossil fuels such as oil and coal. In this call for evidence the Government aimed to explore the options available and build consensus for action during the 2020s. The Government also sought to understand what can be done to reduce the barriers to installation of clean heating, reducing reliance on subsidy, while preparing the ground for future policy approaches that could include regulation. Evidence provided and responses received will be used to inform policy development ahead of more detailed consultation on specific policy instruments.

This call for evidence closed on 11 June and CIBSE submitted a response.

CIBSE agrees that buildings off the gas grid can help define a future framework for low-carbon heat and can also help to create the scale needed for consumer awareness to grow and for low carbon supply chains to develop, including developing manufacturing, design and installer skills and experience, preparing for a future wider scale roll-out.

CIBSE has made the following key recommendations:

- The UK’s heat framework is a complex and inter-related system; it needs an overall vision and detailed implementation measures, “working back” from that vision to identify the measures required from today to deliver it; the framework needs systems thinking and cannot be defined in isolation.
- Energy efficiency is a key attribute of the energy system and needs to be a major part of the heat strategy; it needs more ambitious targets and a comprehensive national strategy. This would have significant benefits not only in terms of energy and carbon savings, but also in reducing the required grid capacity; it could also play a major part in helping to engage consumers with the co-benefits of low-carbon buildings, including comfort and health.
- The UK needs a clear, strong and consistent regulatory framework. Past experience from carbon reduction policies and from the heating industry shows that given the scale and timescales of the challenge, solutions cannot be left to the market alone.
- There needs to be confidence in the financial incentives in place until scale builds in the market, including support beyond 2021; incentives need to be consistent with the regulatory framework.
- Lessons can and should be learnt from past policies and incentives such as the RHI and Green Deal including, crucially, on consumer behaviour.
- Government and the public sector should lead by example.


Directive 2010/31/EU of the European Parliament and of the Council on the energy performance of buildings (Recast) sets requirements at an EU level for Member States to improve the energy performance of buildings and to make an important contribution to the reduction of greenhouse gas emissions.

As part of the implementation of this directive the Minister for Housing and Urban Development in Ireland, Mr. Damien English, announced a public consultation on his intention to amend Building Regulations Part L Conservation of Fuel and Energy - Dwellings, and Building Regulations Part F Ventilation.

This consultation closed on 8 June 2018. CIBSE did not submit a response to this consultation as there were no significant comments from CIBSE Members.

All responses to public consultations that CIBSE submitted are published in the closed consultations section of the CIBSE website.
Building Information Modelling Standards

The CIBSE Digital Steering Group is chaired by Les Copeland and continues to bring together all interested elements of the Institution and building services sector to consider the implications of the BIM Strategy. The Group leads development of the CIBSE Digital Engineering Series, the Product Data Templates and the BIMHawk tool, which aims to give manufacturers a single standard format for product data.

UK Standards have played an important role in ensuring international adoption of security minded Building Information Modelling (BIM) processes and collaborative ways of working. Publication of the first two international standards for BIM is imminent. BS EN ISO 19650–1 Organization of information about construction works – Information management using building information modelling – Part 1: Concepts and principles and – Part 2: Delivery phase of assets, are due out in November. These two ISO standards are founded on the UK’s standards for BIM and will supersede the current BS 1192 (principles) and PAS 1192 part 2 (capital/delivery phase). Publication is anticipated by the year end, with the BS documents ceasing to be current from the start of 2019.

BSI will also publish a National Annex to BS EN ISO 19650-2 to aid implementation in the UK and describe BIM Level 2 within the ISO framework. There will also be a National Foreword and a Published Document, PD 19650-0, giving transitional guidance on how the ISO develops the familiar BS framework. The National Annex and Foreword are informative, giving contextual and supplementary information that does not conflict with the standards. The transition guide will help current 1192 series users to switch to the ISOs, explaining changes of terminology and differences of detailed approach. A ‘newcomers’ guide to the new BS EN ISO standards is a slightly longer-term project, but is underway.

CIBSE is actively engaged in the development of the various BIM standards through staff and senior members. We are closely involved in the BSI BIM committee and in both the European Standards committee, CEN TC442, and International Standards Committee, ISO TC59 SC13. We aim to support co-ordination between these committees, to keep CIBSE members fully aware of the various standards being developed, and as far as possible to keep the needs of the services sector represented in these discussions.

BIMtalk, the BIM website, continues to operate in association as a valuable source of information and signposting on matters relating to BIM, offering a tangible and growing demonstration of CIBSE collaborating with other partners.

REHVA

CIBSE is a founder member of REHVA, the Federation of European Heating, Ventilation and Air Conditioning Associations. We attended the REHVA Annual Meeting in April where there were continued discussions about the relationships between REHVA and ASHRAE and CIBSE, and about the ASHRAE proposals for a Global HVAC&R Alliance, based on the ASHRAE Associate Society Alliance. Whilst this was not supported by REHVA or the other international participants in the discussions, it was agreed that discussions about some form of global alliance would continue. Discussions are continuing in the background. Further discussions are anticipated at the REHVA Autumn meetings in Brussels in November.

REHVA are now planning for the major triennial event in their programme, the CLIMA 2019 Conference in Bucharest in May 2019. CIBSE has been promoting the call for abstracts to our members, and it is likely that there will be some CIBSE participation in Bucharest.
Current CIBSE research activities

Dr Anastasia Mylona, Head of Research for CIBSE, manages CIBSE involvement in a number of research projects.

CIBSE sponsored projects

Sizing of hot and cold water systems (Start date: October 2017)

The CIBSE and Heriot Watt Knowledge Transfer Partnership, funded by Innovate UK, to develop a stochastic model for the assessment of design flow for domestic hot and cold water services for medium-large scale domestic residential installations has started. This two year project aims to update current CIBSE guidance on the sizing of hot and cold water systems in order to maximise system efficiency. The project follows on from the phase 1 collaboration with Chartered Institute of Plumbing and Heating Engineering (CIPHE) and the Loading Units Normalisation Assessment (LUNA) group to review the use of loading units as a method for sizing domestic hot and cold water systems.

Achala Wickramasinghe started work on the KTP project in October 2017. Achala previously worked on phase 1 of the project and is familiar with the project objectives. She is based at CIBSE HQ and jointly supervised by CIBSE staff and staff at Heriot-Watt led by Prof Lynne Jack. The Research Report from Phase 1 is now published on the Knowledge Portal: http://cibse.org/knowledge/knowledge-items/detail?id=a0q0O00000CBW9lQAH

Achieving Nearly Zero Energy Building Standards in a changing climate (Start date: Sept 2017)

The Climate Change Act 2008 commits the UK Government to an 80% reduction in CO$_2$ emissions from 1990 levels by 2050. Reduction of emissions from buildings will significantly contribute to meeting this target. This research will define Nearly Zero Energy Buildings (NZEB) standards based on current practices, national and international definitions, and will investigate whether NZEB buildings can remain operational under future weather conditions.

The project is undertaken by a CIBSE sponsored PhD student, Radwa Salem, based at University of West London, supervised by Dr Ali Bahadori-Jahromi. Radwa did her BSc dissertation on the subject of NZEB standards.

Weather data for daylight modelling (Start date: Sept 2017)

Maximising potential for natural daylight is essential for both indoor comfort and wellbeing but also to reduce energy demand for artificial lighting. Realistic assessment of the potential daylight availability is important in order to maximize its use and energy efficiency potential, whilst avoiding undue excesses which might cause visual discomfort or high cooling loads. Current software tools use weather data that are largely founded on temperature based criteria rather than visible radiation (e.g. illuminance) and so they are not appropriate for the assessment and modelling of daylight potential. This project aims to bridge that gap and to provide the industry with improved resources to apply in their daylight design practices.

This project is undertaken by a CIBSE sponsored postdoctoral researcher, Eleonora Brembilla, who has undertaken her PhD research in this area. Eleonora is based at Loughborough University and supervised by Prof John Mardaljevic (Professor of Building Daylight Modelling and Chair of the CIBSE Daylight Special Interest Group).

Assessing overheating in homes – an industry methodology (Start date: Sept 2016)

Homes in the UK already experience overheating, which is expected to increase in the future due to increasing frequency and severity of mean summertime temperatures and extreme heat episodes, as well as increased urbanisation of cities. This risk may potentially be
exacerbated by increasing energy efficiency of building design and retrofit standards to reduce national carbon emissions from homes. It is widely agreed that SAP is not suitable for assessing overheating in homes, and a more detailed, dynamic methodology is needed.

CIBSE, working with an industry group of professionals, has developed a methodology which has just been published as CIBSE TM59, Design methodology for the assessment of overheating risk in homes. This TM aims to standardise the assessment of overheating risk and should play a key role in limiting overheating risk in new and refurbished homes. The aim of this project is to use parametric analysis of the UK housing stock to investigate causes of overheating in various domestic typologies and identify the most effective mitigation options.

This project is undertaken by CIBSE and LoLo CDT sponsored PhD student based at UCL and supervised by Prof Mike Davies and Dr Anna Mavrogianni, who have significant experience in indoor overheating assessment of the UK housing stock. Giorgos Petrou has been awarded the studentship and he has completed his MRes at UCL in September 2017. His MRes dissertation investigated the differences in the treatment of overheating in different building simulation software packages, by applying the new TM59 methodology. The team has recently published a paper titled “Can the choice of building performance simulation tool significantly alter the level of predicted indoor overheating risk in London flats?” at the Building Services Engineering Research &Technology (BSER&T).

**Energy Benchmarks** (Start date: July 2015)

CIBSE is collaborating with UCL to revise the CIBSE energy benchmarks in Guide F and TM46, and review the methodology used for their production. We are supporting a three-year post-doc research project, which will be carried out by Dr Sung Min. Sung Min’s PhD at UCL was also sponsored by CIBSE, and was a study of the energy benchmarking methodology for school design.

The aim is to develop protocols for the collection and analysis of various energy use datasets towards producing and/or updating energy benchmarks. The analysis will also produce building typologies based on their energy use that will further inform the benchmarking process. Sung-Min produced two papers based on the above analysis, one of them presented at the 2018 CIBSE Technical Symposium.

The UCL research team, in collaboration with the Digital Engineering in-house expert at CIBSE and with Cloud Enterprise are currently undertaking the development of an online dynamic platform for the release of the revised energy benchmarks. In its first phase the platform will provide a user interface that could be interrogated by the user in order to provide them with customized information. The platform offers the capability to regularly update the energy benchmarks when new datasets become available. Future phases of the platform development will allow users to input energy data of their buildings and benchmark their energy use against national and regional building stock.

The Energy Benchmarking Tool will be launched at the CIBSE Build2Perform Live 2018 event on the 27th November.

**Designing for extreme weather events** (Start date: June 2015)

Athanasios Lykartsis, a CIBSE sponsored PhD student is researching design for extreme weather events in a three-year project at the University of West London (UWL), investigating the impact of observed extreme weather events and suggesting solutions for increasing the resilience of buildings in order to remain operational. The project also examines the resilience of buildings under future extreme events, utilising the UKCP09 information. The project has clear links with the work of the newly established CIBSE Special Interest Group on Resilient Cities and the above research benefits from the group’s expertise in this area.
Athanasios is a member of the CIBSE Resilient Cities Group and has developed links with SoPHE members Delia Marginean and Rob Boland who are the SoPHE designated advisors). He has successfully published three papers on his research; a paper on the energy and thermal performance of a highly glassed office building in London using extreme hot weather events, a paper at the CIBSE Technical Symposium 2017 that investigates the energy and thermal performance of school buildings in various UK locations, and a paper on the effect of building development on the risk of flooding under extreme rainfall at the 8th International Multi-Conference on Complexity, Informatics and Cybernetics: IMCIC 2017. He has recently published a paper on automated natural ventilation and lighting strategies for residential buildings under extreme hot weather at the SustainIT 2017 conference. Athanasios is currently finalising his results and he is writing his thesis.

Research on the effects of circadian lighting on health and wellbeing

A project jointly funded by CIBSE and the BRE Trust 'Circadian lighting effects on health and wellbeing' has successfully concluded the first stage. The project investigates when is the best time to have the high intensity, cool coloured lighting, and for how long, and when to turn it down and make it warmer. The project aims to find optimal control strategies for circadian lighting to maximise health and wellbeing benefits.

The output of the first stage of the project is a report which provides a review of the existing literature on circadian lighting and how this affects human health and wellbeing. It incorporates findings from a workshop on circadian lighting, held at BRE on 29 September 2016 as part of the project. The workshop was attended by leading professionals from academia, manufacturers, lighting designers and public health institutions.

The report is published on the Knowledge Portal at: [http://cibse.org/knowledge/knowledge-items/detail?id=a0q0O00000CF7o9QAD](http://cibse.org/knowledge/knowledge-items/detail?id=a0q0O00000CF7o9QAD)

Stage two of the project is currently undertaking field studies collecting data from site measurements and occupant interviews. The results of stage two will be available in summer 2019.

Other collaborations

Energy efficiency in the hospitality sector (University of West London and Hilton Group) (Sept 2015 – Sept 2021)

CIBSE is involved in an advisory role in two PhD research projects sponsored by the Hilton Group to investigate energy efficiency options for their UK stock. This collaboration offers CIBSE access to the hospitality sector and the challenges of trying to meet the MEES – Minimum Energy Efficiency Standard.


This jointly funded by EPSRC and NSFC project seeks to develop methods to allow meaningful dynamic total performance gap comparison in the UK and China, which would be flexible enough to allow for national context variations. China and the UK offer interesting and contrasting contexts in which to compare total performance gaps, due to differences in policy, construction, climate, as well as potential differences in occupant behaviour. Focusing on eight case studies in the UK (four selected case studies will be presented as part of the proposed publication), the research team has been able to identify varying degrees of performance gap across different criteria, and to demonstrate how high resolution and high granularity data may provide the solution to identifying when and how buildings are under-performing.
CIBSE is a member of the steering group of the project and is currently advising the research team on the dissemination of the project outputs to CIBSE Members.

A CIBSE TM publication based on the project’s outputs has been approved by the Knowledge Management Committee.


This EPSRC funded research will investigate the seasonal effects of albedo on urban temperature using London as a case-study. Albedo intervention can bring substantial positive effects during the summer while marginal negative effects are expected in winter. In mild climates such a negative effect might out-weigh summer benefits. It is possible that seasonal intervention on the urban fabric could give an overall positive impact but for this, accurate computation of urban albedo is required at urban design or intervention stage. These issues will be investigated in the proposed study which has a two-fold aim; (a) to investigate experimentally the impact of urban fabric on urban albedo and (b) to develop an empirical model to predict changes in urban albedo in relation to changes in urban fabric and solar altitude with a specific focus on advanced materials such as PCM doped cool materials. This aim will be achieved through an extensive experimental study that includes field and laboratory scale measurements followed by the development of an urban albedo calculator that is able to explore seasonal variations. These albedo values could be used to predict the urban heat island with high accuracy.

CIBSE is a member of the steering group of this project.