Scottish Building Regulations: Proposed Changes to Energy Standards, including ventilation, overheating and electric vehicle charging provision

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Full name or organisation's name

Institute of Acoustics

Phone number 03009999675

Address

Institute of Acoustics, Silbury Court, 406 Silbury Boulevard, Milton Keynes

Postcode MK9 2AF

Email ioa@ioa.org.uk

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☒ Yes

☐ No

Consultation Questions

Consultees are encouraged to submit their views in electronic format via https://consult.gov.scot/local-government-and-communities/building-regulations-energy-standards-review/ .

If you are unable to complete the consultation online, please feel free to provide your views and comments on this form and return the completed document to: buildingstandards@gov.scot. Alternatively, your response may be completed and posted to:

2021 Energy Consultation
Building Standards Division
Denholm House
Almondvale Business Park
Livingston
EH54 6GA

Part 2 – Energy, new buildings

Question 1 –

Do you support the extension of standard 6.1 to introduce an energy target in addition to the current emissions target? If yes, do you have a view on the metric applied – primary or delivered energy?

Yes, a primary energy target ☐

Yes, a delivered energy target ☐

No ☐

Please provide a summary of the reason for your view below.

Not applicable

Question 2 –

What level of uplift to the 2015 standard for new dwellings do you consider should be introduced as an outcome of this review?

Option 1: 'Improved' standard (32% emissions reduction) ☐

Option 2: 'Advanced' standard (57% emissions reduction) ☐

Another level of uplift ☐

Please provide a summary of the reason for your view.

Not applicable

Question 3 –

What level of uplift to the 2015 standard for new non-domestic buildings do you consider should be introduced as an outcome of this review?

Option 1: 'Medium' standard (16% emissions reduction) ☐

Option 2: 'High' standard (25% emissions reduction) ☐

Another level of uplift ☐

Please provide a summary of the reason for your view.

Not applicable

Question 4 –

Do you have any comments or concerns on the values identified for the elements which make up the Domestic notional building specification for either option, e.g. in terms of their viability/level of challenge?

Yes ☐

No ☐

If yes, please provide your comments.

Not applicable

Question 5 –

Do you have any comments or concerns on the values identified for the elements which make up the Non-domestic notional building specification for either option, e.g. in terms of their viability/level of challenge?

Yes ☐

No ☐

If yes, please provide your comments.

Not applicable

Question 6 –

Do you have any comments on the simplified two-specification approach to defining the Domestic notional building from 2022?

Yes ☐

No ☐

If yes, please provide your comments.

Not applicable

Question 7 –

Do you have any comments on the simplified two-specification approach to defining the Non-domestic notional building from 2022?

Yes ☐

No ☐

If yes, please provide your comments.

Not applicable

Question 8 –

Do you have any comments on the proposal to separate and provide a more demand-based approach to assignment of domestic hot water heating within the Non-domestic notional building specification from 2022?

Yes ☐

No ☐

If yes, please provide your comments.

Not applicable

Question 9 –

Do you support this change in application of targets for supplied heat connections to new buildings, focussed on delivering a consistent high level of energy performance at a building level?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 10 –

Do you agree with the principle set out, that the benefit from on-site generation within the compliance calculation should be limited by a practical assessment of the extent that generated energy can be used onsite?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Are there any particular concerns you have over this approach, e.g. with regards particular technologies or solutions?

Click or tap here to enter text.

Question 11 –

Do you agree with the proposal that new buildings where heat demand is met only by 'zero direct emissions' sources should be exempt from the need for a calculation to demonstrate compliance with the Target Emissions Rate?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 12 –

Do you support the need for new buildings to be designed to enable simple future adaptation to use of a zero direct emissions heat source where one is not initially installed on construction. And for information setting out the work necessary for such change to be provided to the building owner?

Yes ☒

No ☐

Please provide a summary of the reason for your view.

The information provided to the building owner should include that the new heat source may have noise associated with it which could have an impact on the occupiers of the building itself or on surrounding noise sensitive receptors. Furthermore, the information should state that it is the responsibility of the building owner to establish whether such a unit is permitted development under the MCS (microgeneration certification scheme) or whether planning and associated noise assessments are required.

Do you have any comments on the level of information needed to support such action in practice or on the extent to which alterations other than those at, or very close to, the heat generator can be justified?

Use of the MCS calculator tool as a minimum.

Question 13 –

Do you support the retention of the current elemental approach to setting minimum standards for fabric performance in new dwellings, supported by the option to take an alternate approach via calculation of the total space heating demand for the dwelling (as described)?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

In the context of the proposed approach, If you have any comments on the maximum U-values proposed for elements of fabric, in relation to their level of challenge and achievability at a national level, please set them out below.

Not applicable

Question 14 –

Do you support the move to airtightness testing of all new dwellings, by registered members of an appropriate testing organisation?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 15 –

Do you support the move to increased airtightness testing of all new non-domestic buildings, by registered members of an appropriate testing organisation?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 16 –

Do you support the adoption of CIBSE TM 23 as the basis for airtightness testing in Scotland?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 17 –

Do you support the introduction of the pulse test method of airtightness testing as a further means to resting and reporting on the performance of new buildings?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable .

Are there any particular benefits, risks or limitations you would seek to identify?

Click or tap here to enter text.

Question 18 –

Do you consider this amended provision provides an appropriate balance between:

- the requirement to improve building energy performance in new buildings;

- enabling the reuse of better performing modular elements; and
- enabling use of small units for short term use at short notice?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable .

Question 19 –

We welcome any other comments you wish to make on the proposed changes to the setting of performance targets for new buildings or the application of other amended provisions within Section 6 (energy) which apply to the delivery of new buildings.

Where practical, please with a reference to any particular issue in the context of the Domestic or Non-domestic Handbook (or both if applicable) and cite any standard or revised guidance clause relevant to the topic.

Click or tap here to enter text.

Part 3 – Energy, all buildings

Question 20 –

Do you agree with the proposed introduction of the term ‘major renovation’ as defined above as an additional means of identifying when aspects of building regulations shall be applied to an existing building?

Yes ☒

No ☐

Please provide a summary of the reason for your view.

The use of the term ’major renovation’ is used in legislation of the other UK administrations and should be adopted here.

Question 21 –

Do you support the improvement in maximum U-values for elements of building fabric for Domestic buildings, as set out above?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

We would also welcome your views on the proposed simplification achieved by setting of a single set of values for all building work to new and existing buildings.

Click or tap here to enter text.

Question 22 –

Do you support the improvement in maximum U-values for elements of building fabric for Domestic buildings, as set out above?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

We would also welcome your views on the proposed simplification achieved by setting of a single set of values for all building work to new and existing buildings.

Click or tap here to enter text.

Question 23 –

Do you support the standardisation of values and approach for conversions, extensions and shell buildings, as set out above and in sections 3.2.2 and 3.2.3?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 24 –

If you have a view on the preferred format for presentation of information on compliance of building services, what would be your preference?

Retain current separate Compliance Guides ☐

Move Compliance Guides into Section 6 as an Annex ☒

Re-integrate into guidance to the relevant standard ☐

Other (please specify in summary box below) ☐

Please provide a summary of the reason for your view.

Compliance guidance should be included in the relevant Handbook.

Question 25 –

Do you support the continued alignment of minimum provisions for fixed building services at a UK level within the Domestic Building Services Compliance Guide?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Are there any issues you wish to raise in relation to the amended or retained specifications set out within the draft Guide?

Click or tap here to enter text.

Question 26 –

Do you support the continued alignment of minimum provisions for fixed building services at a UK level within the Non-domestic Building Services Compliance Guide?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Are there any issues you wish to raise in relation to the amended specifications set out within the draft Guide?

Click or tap here to enter text.

Question 27 –

Do you agree with the proposal that the option of installing a less efficient heat generator and compensating for this using heating efficiency credits in existing buildings should be withdrawn from the Non-domestic Building Services Compliance Guide?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 28 –

Do you agree with the proposal to limit distribution temperatures in wet central heating systems to support effective implementation of low and zero carbon heat solutions and optimise the efficiency of heat generation and use?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 29 –

Do you agree with the proposed extension to the provision of self-regulating devices to include when replacing a heat generator?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Do you have any comment on issues of technical feasibility or determining when installation should be at a room/zone level?

Click or tap here to enter text.

Question 30 –

Do you agree with the proposed introduction of a requirement for building automation control systems, of the type specified, in larger non-domestic buildings with systems with an effective rated output over 290kW

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 31 –

We welcome any other comments you wish to make on the above topics and broader changes to the setting of minimum standards for all buildings.

Where practical, please with a reference to any particular issue in the context of the Domestic or Non-domestic Handbook (or both if applicable) and cite any standard or revised guidance clause relevant to the topic.

Click or tap here to enter text.

Part 4 – Ventilation

Question 32 –

Do you support the proposed revisions to the presentation of guidance on ventilation and the incorporation of the ‘domestic ventilation guide’ into the Technical Handbooks?

Yes ☒

No ☐

Please provide a summary of the reason for your view.

Click or tap here to enter text.

Question 33 –

Do you agree with the revision of guidance to clarify the function of purge ventilation and increase provision to align with that applied elsewhere in the UK?

Yes ☒

No ☐

Please provide a summary of the reason for your view.

Standard 3.14 (Ventilation) Guide, 3.14.3 – states that purge ventilation, *"can also assist in the cooling of a dwelling in the summer months"*. It then goes on to say that, *"This can be delivered through either openings (e.g. windows or doors) or by a mechanical extract system with a suitable high extract rate. The latter will be more common if there are environmental issues such as noise or pollution which make it more desirable to provide occasional higher levels of ventilation via an extract system."* The IOA notes that as purge ventilation is required in situations where increased air flow rates are needed for short periods of time, such as to dilute rapidly pollutants and / or water vapour, there is no requirement to include specific mitigation given that occupants would experience any increased levels of noise for only short periods. Consideration of the suitability of external noise levels to allow the opening of windows for "normal" ventilation conditions through the principles of good acoustic design should be made at Planning Stage as set out in PAN 1/2011 Planning and Noise which, *"promotes the principles of good acoustic design and a sensitive approach to the location of new development"* and suggests that *"By guiding development to the right locations and where necessary, specifying design and layout issues, planning authorities can help to prevent and minimise the consequences of noise ".*

Question 34 –

Do you support reference to a single option for continuous mechanical extract ventilation which can have centralised or decentralised fans, with the same design parameters being applied to the system in each case?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

If you have any further views on the use of continuous mechanical extract to deliver effective ventilation in both low infiltration (3-5 m^3) or higher infiltration (5 m^3+) buildings, we would also welcome your comments.

Click or tap here to enter text.

Question 35 –

Do you support introduction of proposed guidance on default minimum size of background ventilator for continuous mechanical extract systems?

Yes ☐

No ☐

Please provide a summary of the reason for your view and on any specific concerns which may arise from the proposed level of background ventilation or its application in the design of systems.

Not applicable

Question 36 –

Should continuous mechanical extract systems be considered a viable solution in very low infiltration dwellings and, if so, under what circumstances?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

We would also like to hear your views on whether heat recovery should be mandated for packaged supply/extract systems

Click or tap here to enter text.

Question 37 –

Do you support the incorporating of this additional guidance into the Technical Handbooks?

Yes ☒

No ☐

We would be grateful for comment on the content of the proposed Annex and whether there are elements absent from guidance or which would be better presented within guidance to standard 3.14 itself.

Question 38 –

Are there other elements of the commissioning of ventilation systems that you consider are both practical to implement and useful in providing additional assurance of performance in practice?

Yes ☒

No ☐

If yes, please provide a summary of the topics which should also be considered.

There is no mention of noise with regard to commissioning. There is value in undertaking sample testing of a proportion of properties to demonstrate compliance as per Section 5 sound insulation testing for party wall and floors.

Question 39 –

We welcome your thoughts on these or broader topics which would merit consideration as part of the planned review. Please set out your thoughts below, including citation of relevant supporting evidence, where relevant.

The Institute of Acoustics understand that it is the intent to undertake a fuller review of ventilation provision for both domestic and non-domestic buildings from 2022 and that all aspects of ventilation and related noise issues will be consulted on at that time. However, there are some matters which should be raised at this stage.

Guidance on noise from extract fans is given in Section 5.18 of the Standard 3.14 (Ventilation) Guide. However, there is limited discussion in the consultation on the interrelation between ventilation, overheating and acoustics. In this regard we recommended that consideration be given to guidance contained in the joint Association of Noise Consultants (ANC) and Institute of Acoustics: Acoustics, Ventilation and Overheating Residential Design Guide (AVOG) published in January 2020. It was prepared by members of both organisations and involved several years' work. The development of this guide included extensive consultation amongst the profession and describes a process which enables the issues of acoustics and noise management, ventilation and overheating to be addressed in a holistic and coherent manner.

The document can be found here – https://www.ioa.org.uk/publications/acoustics-ventilation-and-overheating-residential-design-guide

Guidance on suitable internal noise levels when a mechanical system is used to control overheating is also provided in the guide. These are the same as those provided in Section 5.18 of the Standard 3.14 (Ventilation) Guide but are not limited to extract fans. A summary of the guidance is provided in Table 1 below for ease of reference. However, it is acknowledged that a relaxation of internal noise levels may still allow the impact on users to be appropriately managed, while avoiding overly stringent acoustic mitigation measures to mechanical systems.

Table 1 Desirable noise levels from mechanical systems in dwellings to control overheating

Possible system / design solution	Desirable upper internal ambient noise levels from mechanical services, L_{Aeq} (dB) [1]		
	Bedrooms	Living rooms	Bathrooms / WCs / kitchens
Ventilative cooling (increased air flow) Comfort cooling (fan coil units, etc.)	30	35	-

[1] Section 1.10.10 of CIBSE Guide A 2015 states that "*Higher or lower values may be appropriate based on economics, space use, user needs etc.*". It goes on to state that a range of +/- 5 dB may be acceptable depending on the particular situation.

Higher noise levels are likely to be acceptable in some operating scenarios, where rapid changes to the cooling or ventilation rates quickly improve the thermal comfort of the occupant. Equally, lower noise levels may be appropriate for some types of residential development.

In addition to the above, consideration could be given to the mention of industry reference documents for non-domestic buildings, such as BS 8233:2014, BS 6472-1:2008, Building Bulletin 93, British Council for Offices and CIBSE Guide A, to point readers in the right direction to find relevant information on airborne and structure-borne noise for various building types.

Standard 3.14 (Ventilation) Guide Sections 5.19, 6.19, 6.23, 6.29, 7.21, 7.27 refer to noise "nuisance". The IOA note that care must be taken when referring to noise *nuisance* from

ventilation systems, which has a set legal meaning. A more appropriate term would be to control noise *disturbance* from ventilation systems.

Question 40 –

We welcome any other comments you wish to make on proposed changes to ventilation standards for domestic buildings.

Where practical, please with a reference to any particular issue in the context of the Domestic or Non-domestic Handbook (or both if applicable) and cite any standard or revised guidance clause relevant to the topic.

Standard 3.14 (Ventilation) Guide Section 3.14.2, suggests on page 5 under heading "Air flow within the dwelling" that *"Alternatively, equivalent ventilation provision can be made through the wall dividing each space".* Adopting this without an advice note on the provision of attenuation for noise is likely to lead to conflict with the requirements for sound insulation of internal walls in Section 5 Noise as set out in Table 5.5 and Section 7 Sustainability which states that for Aspect Silver level 7: Well-being and security, *"Noise reduction between rooms: Design performance level for a minimum airborne sound insulation should be 44 dB Rw. This refers to all internal partitions in all dwellings and intermediate floors within houses and maisonettes excluding storage cupboards and should be substantiated by manufacturer's laboratory test certificates."*

Standard 3.14 (Ventilation) Guide Section 5.18, 6.22, 7.20 should read LAeq,T rather than LAeq.T

There is always a risk of structure-borne noise from ventilation systems and the proposals should acknowledges the need for resilient fixings to help mitigate this impact. Consideration should also be given to the possibility of vibration transfer from such systems.

Part 5 – Overheating risk in new dwellings and other new residential buildings

Question 41 –

Do you agree with the proposed introduction of a requirement to assess and mitigate summertime overheating risk in new homes and new non-domestic buildings offering similar accommodation?

Yes ☒

No ☐

Please provide a summary of the reason for your view.

If you consider that proposals should be extended to non-domestic buildings which provide other forms of residential accommodation (which are not 'self-contained residential units'), we welcome your views on such provisions, including if the same or an alternate approach to assessment is recommended?

The IOA can see merit in addressing the risk of overheating, provided that the following is considered:

- Noise levels are amended to reflect the guidance in the relevant guidance; ideally, for consistency the ANC/IOA AVOG;
- Flexibility is built into the requirements to ensure that undue constraints are not placed on the construction of new dwellings;
- Consideration is given to commissioning testing of noise from mechanical systems;
- The management of noise, ventilation and overheating still has a firm place at the planning stage making use of the relevant documents to avoid key decisions at the planning stage compromising the subsequent ability to achieve the optimum outcome.

Question 42 –

Do you agree with the proposal that an initial assessment of dwelling characteristics should be undertaken to help inform design choices and the delivery of new homes which provide better thermal comfort in the summer months?

Yes ☒

No ☐

Please provide a summary of the reason for your view.

The guidance recommends a simple and detailed approach.

The simple method looks at the orientation of the building, whether it is single or dual aspect, the proportion of the facade which comprises glazing and the means of opening the windows. If criteria for each of these aspects are met, the development passes the test and no further work required. If not met a detailed assessment should be carried out to identify if mitigation is required.

The detailed method is based on overheating modelling. If a risk is identified, mitigation measures should be designed into the development. Only at this stage does it suggest that the mitigation method reviews any constraints identified at the planning stage, i.e. if windows are required to be closed due to high external noise levels.

As these planning constraints precede this stage and clearly impact the risk of overheating, information on the other factors such as noise should be included at the very start of the process, i.e. should inform the simple assessment as well as the detailed assessment along with the design mitigation measures.

We would also seek the views of respondents on other sources of good practice guidance which have been implemented by developers and the outcome (no reports of significant summertime overheating) evidenced through feedback from residents.

Click or tap here to enter text.

Question 43 –

Are there circumstances where you consider specific characteristics of a dwelling should trigger a need for TM59 assessment rather than application of a simple elemental approach?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 44 –

Recognising the level of risk identified in the published research paper, do you agree with the above proposals as a suitable means of mitigating summertime overheating in new homes through prescriptive actions?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 45 –

Do you consider that such an approach will provide adequate assurance that ventilation measures provided to mitigate summer overheating can be used safely and conveniently in practice?

Yes ☐

No ☐

Please provide a summary of the reason for your view.

Not applicable

Question 46 –

We welcome any other comments you wish to make on these proposal to introduce provisions to mitigate the risk of summer overheating new homes and new residential buildings.

As noted above, the acoustics profession, through the work of the ANC and IOA has developed its own guide on this issue. However, that guide is designed to be used at the planning stage of a development.

The management of potential overheating should feature early on during the planning stage of a building. This is because key design decisions that can affect overheating, such as building location, its orientation and massing, are made very early during the process. Consequently, the ANC/IOA guide was designed to be used during the early planning stage. Furthermore, addressing these issues at an early stage would align with the considerations for good acoustic design, required by Government policy, as referenced in

PAN 1/2011. To support further the consideration of overheating at the planning stage, it may be worth considering including a reference to the AVOG within the TAN to PAN 1/2011.

Part 6 – Improving and Demonstrating Compliance

Question 47 –

Do you have any experience of successful design or construction quality assurance regimes which you consider may be useful to consider in the context of this 'Compliance Plan manual' work for section 6 (energy)?

Yes ☐

No ☐

If yes, please share any relevant information.

Not applicable

Question 48 –

Do you have any comments on the above themes and any other actions you consider would be useful in supporting improved compliance with requirements for energy and emission performance.

Yes ☐

No ☒

If yes, please provide a summary of your views.

Click or tap here to enter text.

Question 49 –

Are there particular aspect so building design and construction which you consider should be prioritised as part of the development of a detailed compliance manual for section 6 (energy)?

Yes ☐

No ☐

No view ☒

If yes, please provide further details, including any evidence you are aware of that supports such emphasis.

Click or tap here to enter text.

Question 50 –

We welcome any other comments you wish to make on these topic of improving compliance of building work with the provisions within section 6 (energy) to better align designed and as-built performance.

Click or tap here to enter text.

Part 7 – Electric Vehicle Charging Infrastructure

Question 51 –

What are your views on our policy goal to enable the installation of Electric Vehicle (EV) charge points and ducting infrastructure (to facilitate the future installation of EV charge points) for parking spaces in new residential and non-residential buildings parking?

No view

Question 52 –

What are your views on our preferred options for EV provision in new and existing buildings?:

No view

Question 53 –

Do you agree with the Scottish Governments preferred options for the exemptions as set out in section 7.6.1?

Yes ☐

No ☐

If you disagree, please explain why?

Not applicable.

Question 54 –

What are your views on how our preferred option relating to existing non-residential buildings with car parks with more than 20 spaces could be properly monitored and enforced, given that the Building (Scotland) Regulations will not apply?

No view

Question 55 –

What are your views on the proposed provision for charge points for accessible parking spaces? Do you have examples of current best practice for the provision of charge points for accessible parking spaces?

No view

Question 56 –

Do you have any other views that you wish to provide on the EV section of the consultation (e.g. the minimum standard of EV charge point or safety within the built environment)?

No view